

Rationality and the Recall[‡]

R. Michael Alvarez and D. Roderick Kiewiet
California Institute of Technology

January 2005

Abstract

Certain features of the 2003 California recall election lend themselves nicely to the investigation of voter strategy and rationality. Several candidates were running, and they varied considerably in their levels of support. Voters who most preferred a minor candidate needed to decide whether to vote strategically in the contest to select a replacement for Davis, and simultaneously to decide whether or not to vote for Davis's recall.

Data derived from our survey of 1500 voters reveals that preference orderings over the major candidates rarely displayed intransitivity. Pairwise comparisons yield more accurate assessments of preference orderings than do feeling thermometer scores. The lower a candidate's initial level of support, the more they suffered from strategic defection to the top two candidates. Voter strategies in the replacement election and on the recall question displayed a remarkable degree of sophistication, but some voters also appeared to make simple mistakes.

Introduction

Writing in the heyday of the Progressive Era, William Bennett Munro (1912) was nevertheless guarded in his assessment of the recall. He feared that it could become "...an effective instrument of intimidation and blackmail," as incumbents would live in constant fear of being removed from office before the normal expiration of their terms. Munro expressed hope that "the power to recall an officer will be used sparingly and for good reason only" (p. 51). For good reason or not, the recall has been used sparingly. Recall elections occur infrequently, and few result in the incumbent losing office (Sych 1996; Bowler 2004). This is particularly true for state governors. After the 1921 recall of Lynn Frazier in North Dakota, the next recall of a governor did not occur until October 7, 2003. On that day the voters of California recalled Gray Davis, whom they had reelected less than a year earlier, and replaced him with movie star/action hero Arnold Schwarzenegger.

The 2003 California recall was thus a rare and unusual event, something akin to the arrival of Halley's Comet, and for that reason alone warrants attention. More importantly, certain features of this election lend themselves particularly well to the investigation of some fundamental propositions concerning voter rationality and voter strategy. To that end, we conducted a survey of 1500 registered voters in California to better understand the choices they made in this election. Information regarding this survey is reported in Appendix 1.

Previous empirical studies of voter rationality have focused upon what we call Duvergerian strategic voting, and it is a subject of our study as well. This occurs when voters believe that their most preferred candidate does not have a realistic chance of winning. So as to not "waste their vote," they opt instead for a less preferred (but more competitive and still acceptable) candidate in order to counter an even lesser preferred candidate (Duverger 1964).¹ Evidence of strategic voting is abundant, in parliamentary elections, in primaries, and in presidential contests with third-party candidates (Cain 1978; Abramson *et al*, 1992; Ordeshook and Zeng 1997; Cho and Hong 2000; Burden 2003; Sinclair 2004).

To gauge the extent of strategic voting, it is necessary to first identify the preferences or orderings that inform voters' decisions. There is a large literature in political science on strategic voting, but only Brady and Ansolabahere (1989) and Radcliff (1993) have sought to systematically characterize the nature of voters' preference orderings. In keeping with their studies, our analysis is to determine how closely voters' preference orderings conform to the basic tenets of rational choice. Are voters' preference orderings transitive? How many voters instead harbor intransitivities in their rankings of major candidates? How many voters report a complete, strict ordering over all major candidates? Answers to these questions are important in their own right, but they also have direct implications for strategic voting. Put simply, it is hard to see how voters can decide whether to vote for a less preferred candidate instead of their favorite when intransitivity or indifference prevents them from distinguishing between first, second, or third choices.

Voters who act strategically presumably do so because they believe that their most preferred candidate has no chance of winning, leading them to opt instead for a candidate who does.² But how exactly does Duverger's "psychological factor" work? At what point do voters come to believe that voting for their favorite candidate is futile, i.e., that the p term in Riker and Ordeshook's (1968) calculus of voting is too low? When they do conclude that their favorite has no chance of winning, why do some choose to vote sincerely anyway, while others opt for a less preferred but more viable candidate?

For a number of reasons, data from the 2003 recall is particularly useful for investigating these questions. First, we can get a clearer picture of the workings of Duverger's psychological factor because of large differences in levels of support for various candidates. Only two candidates had a chance of winning the contest to replace Davis. Early polls showed Lt. Governor Cruz Bustamante (Dem.), leading Schwarzenegger (Rep.), but the final *Los Angeles Times* poll before the election showed Schwarzenegger in the lead (Finnegan 2003). There was speculation that Schwarzenegger would be damaged by allegations of sexual harassment that were publicized days before the election, but the contest to replace Davis clearly remained a two-person race. Assemblyman Tom McClintock (Rep.) consistently polled in the double digits, but always ran well behind both Schwar-

zenegger and Bustamante. Green Party candidate Peter Camejo and liberal commentator Ariana Huffington also ran visible campaigns, but both ran well behind McClintock. Huffington withdrew from the race on September 30. In the end Schwarzenegger and Bustamante garnered 48.6% and 31.5% of the vote, respectively. McClintock came in third with 13.5%, Camejo followed with 2.8%, and the remaining 131 candidates garnered the residual 3.6%.

Bustamante and Schwarzenegger presumably benefited from strategic voting, while all the others should have been hurt by defection of their supporters to the top two (Palfrey 1989). But did McClintock, Camejo, and the others experience similar defection rates? In other words, is there some threshold value of p that triggers strategic defections? If so, strategic voting would reduce every minor candidate's vote share to those cast by "hard core" supporters undeterred by the prospect of certain defeat. Or does the rate of strategic voting covary with level of support, such that candidates who are at least plausible in some sense retain more support than candidates who are more obscure? If so, we would observe that Camejo suffered more strategic defections than did McClintock, and that the fringe candidates fared even more poorly than Camejo.

The unique structure of the recall election further enhances our ability to investigate strategic voting. In previous studies, the scope of strategic voting has been confined to the small group of voters, typically in the five to ten percent range, favoring third-party candidates. The 2003 California recall ballot, however, required voters to make two separate decisions: 1) to recall Gray Davis or not, and 2) to select a replacement if a majority of voters supported recall.³ The two-part ballot, combined with the ineligibility of Davis to be a candidate in the replacement election, means that *all* voters had to decide upon a voting strategy. Those who most favored Davis had to decide who to support in the replacement election. Those who most favored candidates other than Davis had to make a choice as to how to vote on the initial recall question.⁴

Consider, for example, a conservative voter whose preference ordering, from first to last, is McClintock, Schwarzenegger, Davis, and Bustamante. Believing McClintock cannot

win the replacement election, such a voter might decide to vote for Schwarzenegger. But if that voter believed that Bustamante had a good chance of winning the replacement election, he might also decide to vote *against* the recall, preferring to retain Davis rather than risk ending up with Bustamante. Bustamante, at least at the beginning of the campaign, explicitly justified his candidacy on strategic grounds. He called upon voters to oppose the recall, but to vote for him in case Davis were ousted.⁵

The 2003 California recall also provides a favorable setting for the analysis of strategic voting because of institutional features that were *not* present. Most previous studies of strategic voting are based upon presidential primaries or general elections with a minor-party challenger. In the case of primaries, many states award delegates on the basis of proportional representation formulae, so candidates who finish second or lower are able to win delegates. A stronger than expected second or third place finish in one state, furthermore, can enhance a candidates' chances in subsequent primaries (Bartels 1988; Abramson, Aldrich, Paolino and Rohde 1992; Grafstein 2003). In general elections, voters may stay loyal to a candidate with no chance of winning because the candidate has a chance of winning a state's electoral votes, which, in a close election such as 1968, might deprive both major party candidates of an electoral college majority (Abramson, Aldrich, Paolino, and Rohde 1995). Alternatively, voters might stay loyal to a minor candidate, such as Anderson in 1980, in the hopes that the candidate will surpass the five-percent threshold and thus secure public campaign funds. In both primary and general elections, voters confront several considerations that serve to undermine the "wasted vote" rationale for strategic voting. No such considerations were present in the 2003 California recall.

A final reason why the 2003 recall election presents an opportunity to add significantly to our knowledge of voter rationality and voter strategy is a methodological one. Previous research in this area has relied primarily upon "feeling thermometers," long a staple of NES surveys and commercial polls, to infer voters' preference orderings. These measures ask respondents to rate candidates on a 0-100 scale according to how favorably they feel toward them. It is assumed that if a voter assigns one candidate a higher thermometer score than another, he or she prefers that candidate to the other. But warm feelings do not

necessarily translate into preferences. Voters frequently vote for someone other than the candidate whom they have assigned the highest thermometer rating, even when they have no strategic rationale for doing so. As a consequence, estimates of the amount of strategic voting occurring in a particular election may be subject to large amounts of error.

Fortunately, in studying the 2003 recall election we were able to employ an alternative method of inferring preference orderings. The measures used in our survey are derived from responses to a series of pairwise comparisons between the major candidates involved in the recall. This method allows us to assess voter's preference orderings more thoroughly and much more accurately, and to thus produce more accurate estimates of strategic voting rates.

Preference Orderings

A decade ago, Green and Shapiro (1994) asserted that rational choice theory, despite its growing popularity in political science, "...has yet to deliver on its promise to advance the empirical study of politics" (p. 7). Their critique focused upon the haphazard way researchers often formulated and tested hypotheses about rational behavior, and regrettably much of their criticism remains valid today. Other factors, however, have also served to limit the contribution of the rational choice approach to empirical research on elections and voting decisions.

One limitation that we cannot do much about is the fact that elections, especially in two-party systems, often present voters with simple, dichotomous choices, e.g., Democrat vs. Republican, incumbent vs. challenger (Ordeshook and Zeng 1997). In cases of Candidate A versus Candidate B, the axioms of rationality hold that voters should select A if they prefer A, and B if they prefer B. This theoretical implication is not particularly insightful. Granted, in most elections there is usually a smattering of minor-party candidates, but only a handful of voters have enough information to even consider voting for them (Abramson *et al.* 1992).

The 2003 recall election, in contrast, presented voters with one candidate, Gray Davis, facing recall, and 135 candidates in the replacement election. As indicated earlier, the most prominent challengers were Arnold Schwarzenegger, Cruz Bustamante, and Tom McClintock. In such situations voters confront several meaningful choices, and so the empirical status of rational choice predictions can be assessed. First, we can determine how consistently voters rank their preferences. Whatever else it might mean to be rational, rationality requires that preference orderings be transitive. Voters whose preferences are intransitive essentially have voting cycles in their heads, and thus we cannot establish a rational basis for their voting decisions. Preference orderings can also be more or less complete. While some individuals may be able to order all relevant alternatives, others may be indifferent between one or more choices. Indifference is perfectly rational, but allowing for indifference requires the following relations to hold if transitivity is to be satisfied (Raiffa 1970):

Preference for A over B and for B over C implies preference for A over C.

$$\left. \begin{array}{l} A \succ B \\ B \succ C \end{array} \right\} \Rightarrow A \succ C$$

Indifference between A and B and between B and C implies indifference between A and C.

$$\left. \begin{array}{l} A \sim B \\ B \sim C \end{array} \right\} \Rightarrow A \sim C$$

Preference for A over B and indifference between B and C implies preference for A over C.

$$\left. \begin{array}{l} A \succ B \\ B \sim C \end{array} \right\} \Rightarrow A \succ C$$

Previous research indicates that the completeness of preference orderings is primarily a function of information: the less information voters have about the choices they confront, the more likely they are to be indifferent between them (Alvarez, Brehm, and Wilson 2003). Failure to acquire information may reflect lack of interest on the part of the voter

(Downs 1957) or the absence of a well articulated belief system to facilitate the acquisition and retention of new information (Converse 1964).

What amount of transitivity and completeness in voters' preferences should we expect? Findings from a number of areas suggest that we should keep expectations modest. Laboratory experiments show that individuals frequently display inconsistencies in the choices they make, as in the case of the "preference reversal" phenomenon (Cox and Grether 1996).⁶ Survey research has shown that much of the mass public is poorly informed about the basic political facts of life (Dell Carpini and Skeeter 1996), and that they typically reveal a great deal of uncertainty in identifying candidate issue stances (Alvarez 1997). Preferences over taxes and spending are especially prone to inconsistency. Large numbers of Americans profess a desire for less government spending in general, but favor more spending on virtually every specific program that is presented to them (see, *inter alia*, Sears and Citrin 1985). Social scientists have generally concluded, as Hansen (1998) puts it, that "People lack complete, consistent, and realistic preferences on most public policy issues, and especially on the most important. They are simply not equipped to choose" (p. 513).

These findings, however, may tell us more about the choices presented to people than about the people making them. Choosing between lotteries or evaluating hypothetical policy tradeoffs are novel and unfamiliar tasks that most people have previously given little or no consideration. In contrast, research in cognitive psychology indicates that when it comes to person perception, extremely stable and salient classification categories are automatically and unavoidably activated (Macrae and Bodenhausen 2000). Consequently, preference orderings over real, flesh-and-blood candidates might well be more consistent and complete than preferences over other types of alternatives. .

Eliciting Preference Orderings

Previous research on voter's preferences and strategic voting has been based primarily upon the analysis of survey measures known as feeling thermometers, which ask respon-

dents to rate candidates on a 100 point scale. Higher numbers reflect warmer, more favorable feelings. Preference orderings are inferred by assuming that voters prefer candidates assigned higher thermometer scores over those given lower scores.

Unfortunately, feelings are not necessarily the same as preferences. In a 1979 pilot study, Weisberg and Miller (1980) report that 23% of the respondents in one subsample and 16% in another expressed an intention to vote for a candidate other than the one they had assigned the highest thermometer score. We cannot completely discount the possibility that some respondents in this study were reporting a strategic voting choice, but it is highly unlikely that this was a major factor affecting results. Conversely, Bartels (1988) finds that in the data he analyzed, 10 percent of the Republicans and 12 percent of the Democrats expressed an intention to vote for the candidate to whom they had assigned the lowest thermometer score.⁷ Another 5% and 7%, respectively, indicated that they would vote for a candidate whom they had not even rated on the feeling thermometer.

Other studies have also found discrepancies between voting choices and thermometer scores. In some cases the discrepancies are small, in other cases they are not. Ordeshook and Zeng (1997) report that 98% of the respondents who assigned Ronald Reagan the highest thermometer rating in 1980 voted for him, but only 85% of those who gave Carter the highest rating voted for Carter. In 1992, 7% of those rating Bill Clinton highest on the feeling thermometer and 11% of those rating George Bush the highest voted for a different candidate (Cho and Hong 2000).

The amount of potential slippage between thermometer scores and preferences is large enough to seriously compromise estimates of the rate of strategic voting. Cho and Hong (2000), for example, report that 22 percent of the respondents in the 1992 NES survey who assigned Ross Perot a higher thermometer rating than either Bush or Clinton did not vote for Perot. How many of these respondents had chosen to vote strategically? How many instead gave Perot the highest thermometer rating, perhaps because they perceived him to be particularly outspoken or entertaining, but nonetheless preferred Clinton or

Bush in their choice for president? There is no way to know, but the evidence discussed above suggests that the second category of voters may have been larger than the first.

Another problematic feature of feeling thermometers is the tendency of respondents to report ratings of exactly 50 degrees (Weisberg and Miller 1980; Ordeshook and Zeng 1997). A 50 degree rating may reflect a completely neutral assessment of a candidate, but it may also mean that the respondent has no opinion regarding the candidate whatsoever. In any case the bias toward 50 degree ratings may dramatically overstate the extent to which voters are indifferent between competing candidates.

Even if measurement problems were negligible, feeling thermometers cannot be used to gauge the extent to which voters have transitive preference orderings because transitivity is locked in *a priori*. Assume, for example, that when asked to assign thermometer scores, a respondent picks a random number between 0 and 100 for each candidate. That respondent will report a series of numbers that, when arranged from highest to lowest, will unfailingly yield a transitive preference ordering.

For these reasons we chose a different method for identifying preference orderings. On both measurement grounds (Dennis 2003) and in terms of consistency with rational choice theory (Luce and Raiffa 1957), the gold standard for eliciting preferences is to present respondents a series of pairwise choices involving all the alternatives in the choice set. Because the number of pairwise choices increases combinatorially with the number of alternatives, this method is impractical if the number of candidates is large; six candidates, for example, would entail fifteen such queries. But for the four most serious candidates involved in the recall (Davis, Schwarzenegger, Bustamante, and McClintock) only six pairwise comparisons were required.

The only major study to date of political candidates that employs the method of paired comparisons is that of Brady and Ansolabahere (1989). They presented a sample of 307 respondents with pairwise comparisons involving six presidential candidates in 1976 (Jerry Brown, Jimmy Carter, Gerald Ford, Hubert Humphrey, Henry Jackson, and Morris

Udall), and another sample of 611 respondents with pairwise comparisons involving five candidates (the same list above, minus Ford). In their study, about 7% of those in the five-candidate sample revealed violations of transitivity, but over 20% of the six-candidate sample displayed this pathology. Preference orderings over candidates were more deficient in terms of completeness, i.e., an inability or unwillingness to choose one candidate over another. Their findings suggest that the more alternatives people have to consider, the more likely their preference orderings are to be inconsistent or incomplete.

In designing our survey we were cognizant of the potentially reactive nature of any questions asked prior to the pairwise comparison questions. Research on the “Socratic effect” has shown that a person’s beliefs and attitudes can be affected without giving them new information, but by simply asking them questions that increase the salience of different bits of information that they already possess (McGuire 2000). For this reason we were concerned that asking questions about candidates or issues prior to the pairwise comparisons might induce respondents to sort out gaps and inconsistencies in their thinking, and to thus induce transitivity and completeness when it had not previously existed. The first substantive questions asked in the interview were thus the pairwise comparisons:

We would like to begin by having you make a series of one-on-one comparisons between the major candidates. Regardless of whom you actually intend to vote for, please tell me which candidate you most prefer in the pairs I will present to you...How about Gray Davis and Arnold Schwarzenegger? Do you prefer Davis over Schwarzenegger or Schwarzenegger over Davis?

This was followed by the other pairwise comparisons. CATI technology allowed us to systematically rotate the order of the six questions. As in the Brady and Ansolabahere (1989) study, we did not explicitly offer respondents the choice of indifference between two candidates, but coded them as being indifferent if they said that they were unable or unwilling to choose one over the other.

Table 1 reports the nature of the preference orderings derived from choices made in the pairwise comparisons. A little more than half of the respondents exhibited complete, transitive preference orderings, a figure similar to the 52% in Brady and Ansolabahere’s five-

candidate sample. Another 27% had transitive orderings, but said they were indifferent between one pair of candidates—a figure that was also very similar to that obtained by Brady and Ansolabahere. Those in the “transitive, two indifferences” category also had no problems with intransitivity, but essentially grouped the four candidates into a top and bottom pair in a sensible, party-based fashion. All but one of these 23 respondents were indifferent between Schwarzenegger and McClintock, and also indifferent between Davis and Bustamante, but ranked one pair over the other pair.

Table 1 about here

Placement in the “transitive over three” category means that the respondent ranked three candidates transitively, but could not fully rank the remaining candidate. In these cases a most preferred candidate can be identified. One such respondent, for example, preferred Schwarzenegger to Davis and Davis to Bustamante, and also preferred Schwarzenegger to McClintock, but expressed no preference in the comparisons between McClintock and Davis or McClintock and Bustamante. Brady and Ansolabahere describe such preferences as “interval-ordered.” They believe, as do we, that this pattern is most likely produced by respondents with transitive preferences but thick indifference curves. While only one percent of the respondents in their five-candidate sample fell into this category, 5.5% of ours did. Confidence that these respondents in fact had coherent preferences is bolstered by the vote choices they subsequently reported. Only two of the 82 respondents in this category made choices that were not sensible, e.g., not voting for Schwarzenegger when Schwarzenegger was the candidate they most preferred. As we shall see, this error rate is on par with the overall error rates we observed in our survey.

Although “preference ordering” may seem like too strong a term to characterize those in the “Only top choice identified” category, they do satisfy, albeit minimally, the canons of rationality. The respondents here always reported a preference for one particular candidate in comparisons with the other three candidates, but that is all. In all comparisons not involving their favorite candidate, they were indifferent between the two candidates presented to them.

Only 3.3% of the respondents manifested intransitivity in their preference orderings. Most were afflicted by an explicit preference cycle, e.g., preferring Schwarzenegger over Davis, Davis over McClintock, but McClintock over Schwarzenegger. Others violated transitivity with an inappropriate indifference relation, e.g., preferring Schwarzenegger over Davis, indifferent between Davis and Bustamante, but preferring Bustamante over Schwarzenegger. A few exhibited both pathologies.

Intransitivity in their orderings over the four major candidates did not condemn all individuals in this category to behaving irrationally at the polls. After the six pairwise comparisons, we asked respondents, “Is there any other candidate on the ballot whom you prefer over all the candidates I’ve mentioned so far?” Five of the 49 respondents in this category indicated that they intended to vote for (or had already voted for) Camejo or one of the other lesser candidates. Cycling over candidates does not necessarily present a difficulty when the alternatives involved are all dominated by another choice. Two respondents, similarly, had a clear favorite among the major candidates and had their intransitivity confined to lesser preferred candidates. Nine others indicated that they did not intend to vote in the recall election, or at least had not decided how they would vote. It is possible that in the process of making a decision as to whom to vote for, at least some of them would have resolved the problems in their preference orderings.⁸

In any case, the percentage of Californians with intransitive preference orderings over the four major candidates in the 2003 recall was remarkably low—about half the percentage present in Brady and Ansolabahere’s five-candidate sample. This is further evidence that the more alternatives people have to evaluate, the more likely they are to lapse into intransitivity. Those unable to formulate a rational voting strategy because of intransitivity in their preference orderings constituted an even smaller share of the electorate.

Was Schwarzenegger the Condorcet Winner?

In the view of most political theorists, the normatively correct outcome in a multi-candidate race is the selection of the Condorcet winner—the candidate who would defeat

all other candidates in pairwise contests. In the weeks prior to the election many pundits were concerned that the recall would not select a Condorcet winner, if in fact one existed. If the 130 or so fringe candidates garnered a sizable fraction of votes cast, and if the serious candidates split the remaining vote fairly evenly, it was plausible that a Condorcet winner would not be selected in the replacement election. According to another scenario, Davis, quite possibly the Condorcet winner, might be recalled by a narrow margin (e.g., 51% to 49%) and be replaced by a candidate winning less than 35% of the vote in the replacement election (Miller 2003).

As it turns out, Davis lost decisively, and Schwarzenegger received a near majority (48.6%) of votes in the replacement election. This suggests that Schwarzenegger, not Davis, was most likely the Condorcet winner, a verdict that is confirmed in Table 2. The entries in this table display the outcomes of the six pairwise candidate comparisons that were posed to respondents in our survey. Schwarzenegger wins all contests against the other three candidates.

Table 2 about here

One of the more remarkable results revealed in Table 2 is the poor performance of Cruz Bustamante, a Latino Democrat in a Democratic state with a large Latino population. He fares badly in comparisons with the Republicans McClintock and Schwarzenegger, but also loses by a large margin to Gray Davis, whose August 2003 approval rating of 22 percent was the lowest ever recorded by a governor in the 56-year history of the California Field Poll (Booth 2003). Bustamante's campaign was battered by disclosures concerning both his personal life and political dealings (Whalen 2003), but we were nonetheless surprised by how poorly he fared. Conversely, we had not expected as strong a showing by conservative Republican Tom McClintock. McClintock barely loses against Schwarzenegger, and actually fares slightly better than Schwarzenegger in the comparisons with Davis and Bustamante.

Strategic voting

In the 2003 California recall, at least three types of strategic voting warrant examination:

1. Supporters of minor candidates in the replacement election had to decide whether to remain loyal and vote sincerely, or to opt instead for a less preferred candidate with a realistic chance of winning.
2. Because Davis was ineligible to run in the replacement contest, those who favored him over all other candidates were constrained to vote for a less preferred candidate. To be sure, that they had no choice but to vote for someone other than Davis means that calling their choices “strategic” may be stretching the meaning of the term.
3. On the recall question itself, supporters of candidates other than Davis had to decide whether to give full backing to the candidate they favored by voting to recall Davis, or to hedge their bets and vote against the recall.

To determine the extent of strategic voting in the replacement election, we begin by comparing the percentage of respondents who most preferred each candidate to the percentage of voters who intended to vote for them.⁹ Preference ordering over Schwarzenegger, Bustamante, McClintock, and Davis were derived from responses to the six pairwise comparisons. An additional follow-up question, “Is there any other candidate on the ballot whom you prefer over all the candidates I’ve mentioned so far?”, allowed respondents to identify their most preferred candidate as someone other than those four.

As the figures in the first column of Table 3 indicate, a third of the respondents picked Schwarzenegger, a fifth chose McClintock, and, mirroring his poor showing in the pairwise contests, only one in ten respondents named Bustamante as their most preferred candidate. Six percent selected Camejo, while another four percent named Huffington or one of several others. Voters’ preferences, not surprisingly, strongly reflected their partisan and ideological leanings. Democrats and those who described themselves as liberals

strongly backed Davis or Bustamante, while conservatives and Republican identifiers overwhelmingly supported McClintock or Schwarzenegger.¹⁰

Table 3 about here

Duverger's law implies that in general the top two candidates should benefit from strategic voting, and that all others are hurt by the defection of their supporters to the top two (Palfrey 1989). The entries in Table 3 confirm this to have been the case in the replacement election. Schwarzenegger's vote share was boosted significantly by strategic voters, and over two-thirds of Bustamante's votes came from those whose first choice was for another candidate. It appears, of course, that most of these votes came from the backers of Gray Davis, who were necessarily constrained to vote for someone else. The combination of Bustamante and Davis supporters sums to 34.1%, which closely approximates Bustamante's 32.8% share of the votes.

A more definitive picture of the choices made by voters in the replacement election emerges from Table 4, which reports the actual choices of voters broken down by which candidate they preferred most. Theoretically, Schwarzenegger and Bustamante should have suffered no strategic defections. The first two rows of Table 4, which reveal that less than three percent of their supporters voted for someone else, closely approximate this prediction.

Table 4 about here

These data indicate that the preference orderings we inferred from the candidate pairwise comparisons are more accurate and reliable than orderings derived from feeling thermometers. As indicated earlier, previous studies using feeling thermometers to estimate preference orderings typically report the percentage of respondents who do not vote for their most preferred candidate to range from around 10 percent to sometimes over 20 percent.

We were curious as to why *any* of Schwarzenegger's or Bustamante's supporters chose to vote for someone else, and closely examined the small number of cases in which this occurred. Those who made such choices—eleven of Schwarzenegger's supporters, three of Bustamante's—were not distinctive in terms of any background attributes, such as education, income, gender, or ethnicity. Perhaps these respondents were acting strategically but were just badly mistaken, e.g., choosing to vote for their second choice, say McClintock, in the erroneous belief that McClintock had a good chance of winning and Schwarzenegger did not. Such voters would still have to be classified as rational, but we would hasten to also characterize them as delusional

It is our sense that the discrepancies observed here between preferences and vote choice constitute a small but irreducible rate of error. Respondents sometimes don't hear a question clearly or misunderstand it. Interviewers occasionally read questions incorrectly, or mistype a keystroke. Perhaps a small number of respondents actually change their rankings of candidates during the course of the interview. It is important to reiterate, however, that the correspondence between the preferences and vote choices of Schwarzenegger and Bustamante supporters is extremely high. We are thus confident that pairwise comparisons identify preference orderings much more accurately than do feeling thermometers.

Earlier we posed the question of exactly how Duverger's psychological mechanism works. As indicated earlier, it may be that once a candidate's support falls below the threshold of viability, strategic voting reduces their votes to those cast by "hard core" supporters undeterred by the prospect of certain defeat. While McClintock ran well ahead of Camejo and Camejo well ahead of all the rest of the candidates in the replacement election, it is nevertheless true that none of them had any chance of winning. If so, McClintock, Camejo, and all the fringe candidates should have experienced similar defection rates. Some indirect evidence that this may be the case comes from Jackman (2000), who finds that those who cast votes for Ralph Nader in the 2000 presidential election were indeed diehards; fewer than one in ten of them said that they wished they could change their vote in light of Nader's weak showing and the closeness of the election.

Another possibility is that the rate of strategic voting varies with a candidate's levels of support. It may seem more reasonable to voters to remain steadfast and vote sincerely for a serious third-place candidate like McClintock than for a more obscure politician like Camejo, and it is another thing entirely to cast a vote for a candidate whose support is in the trace element range. If so, we would expect to find that Camejo suffered more from strategic defections than did McClintock, and the fringe candidates more than Camejo.

The evidence presented in the next three rows of Table 4 backs the second hypothesis: the rate of strategic voting varies directly with the candidate's level of support. While 61.8% of those who most preferred McClintock registered a vote for him as well, Camejo was able to hang on to less than half of those who most preferred him. Over two-thirds of those who most preferred one of the more minor candidates indicated voting for another candidate. Duverger's psychological mechanism thus acts as a sort of vicious circle: the lower a candidate's standing in the polls, the more his or her supporters defect to more viable candidates. The worse they do, the worse they do.

A large share of the voters who favored a minor candidate (29 of 49) were supporters of liberal pundit Ariana Huffington, and so it is not surprising that they, along with Camejo backers, were much more likely to cast a strategic vote for Bustamante than for Schwarzenegger. In fact, the second choice of many such voters was Gray Davis. Bustamante was actually their third ranked candidate, but they presumably voted for him in order to counter Schwarzenegger. Of the Camejo supporters who voted for Bustamante, 10 ranked him second behind Camejo, while 14 ranked him below both Camejo and Davis. Similarly, 10 of the 16 Huffington supporters who voted for Bustamante ranked him below both her and Davis.

The last row of Table 4 reports the voting decisions of voters who most preferred Davis. As the entries in Table 3 presaged, the vast majority (83.3%) of them supported Bustamante. Fewer than 5 percent opted for Schwarzenegger. Davis supporters who voted for either Bustamante or Schwarzenegger were in almost all cases simply opting for their second choice. The choice confronting Davis supporters whose next preference was

McClintock was more interesting: vote for McClintock, even though he had no chance of winning, or vote for their third choice, e.g., Bustamante, to counter the candidate they favored least, e.g. Schwarzenegger. It turns out that few were inclined to adopt the latter strategy; only 24% (4 of 17) of them dropped down to their third choice to vote for Bustamante, and none did so to vote for Schwarzenegger.

Some of Davis's supporters made other choices in the replacement election that were not in keeping with Duvergerian strategic voting, by voting for Camejo (4.5%) or one of the other more minor candidates (1.6%). Although not reported in Table 4, nine other Davis supporters told us that because they most preferred Davis they would abstain in the replacement election.¹¹ Had they voted, we presume that most would have voted for Bustamante. Their support would have boosted Bustamante's vote share by a few percent, but would have not have materially affected the election.

Election analysts have noted a tendency for minor candidates to slip in the polls during the waning days of a campaign (Rosenstone, Behr, and Lazarus 1996). This happens, they believe, because as the day of reckoning approaches, the specter of Duverger looms larger in voters' calculations; what seemed like a noble cause becomes increasingly viewed as a futile gesture. To determine whether campaign dynamics of this nature occurred in the California recall we compared the vote intentions of minor-candidate supporters who were interviewed on or before September 30 (roughly half the respondents) to those interviewed after that date. For these comparisons we consider only those respondents who had not already voted. We found that McClintock voters interviewed after September 30 were slightly more likely to back Schwarzenegger than those interviewed previously, while Camejo supporters actually became slightly more loyal to their candidate. In both cases, however, the differences were small. We thus detected no systematic tendency for McClintock and Camejo supporters to become more strategic as time ran down.

Among the small number of respondents whose first choice was one of the other minor candidates, in contrast, the percentage reporting an intention to vote sincerely for their

most preferred candidate dropped from 34% to 20%. These candidates also tended to drop off the radar screen entirely, as the percentage of respondents naming a truly minor candidate as their favorite dropped from 6% before September 30 to 2.2% afterward. Some of this drop was a consequence of Huffington announcing her withdrawal from the race, quite conveniently, on September 30. This decision, a manifestation of the second part, or “mechanical factor,” of Duverger’s law, was informed by rational expectations. Seventy-three percent (19 of 26) of the Huffington supporters we interviewed before she pulled out reported an intention to vote for somebody else, usually Bustamante. Findings from a survey taken in early September 2003 further underscore the interplay of candidate and voter decisions. Shaw, McKenzie and Underwood (2005) report that large majorities of respondents backing Schwarzenegger, McClintock, or Peter Ueberroth agreed that their candidate should bow out of the race “if his support proved limited.” Ueberroth did drop shortly thereafter. In Duverger’s law, the psychological and mechanical factors operate synergistically.

Table 5 presents a more a detailed look at the choices of those whose favorite candidate was McClintock. We can see that there were two reasons why they broke so heavily for Schwarzenegger. First, nearly three out of four McClintock supporters ranked Schwarzenegger second. This is not surprising; Schwarzenegger lacked the conservative credentials of McClintock, but he was surely ideologically more palatable to McClintock voters than Democrats Bustamante and Davis. Nearly half of these voters cast a strategic vote for Schwarzenegger. McClintock supporters who ranked Bustamante or Davis next in their preference orderings were far less common, and most of them voted sincerely for McClintock. McClintock supporters who ranked Davis or Bustamante ahead of Schwarzenegger presumably did so for non-ideological reasons, e.g., lack of political experience, the groping charges, or they just didn’t like his movies. But having rejected the idea of voting for Schwarzenegger, they apparently found the prospect of voting for the much more liberal Bustamante just too far a reach.

Table 5 about here

The Recall Question

While those who most preferred Gray Davis were unable to vote for him in the replacement election, the tables were turned on the initial recall question. Here voters had only Davis to vote for or against. Those whose favorite was Davis could presumably vote in accordance with their preferences and oppose the recall, and those whose least favorite was Davis correspondingly vote in favor of it. All other voters, however, had to make a strategic choice. They could sincerely support the candidate they favored in the replacement election and vote for the recall, or, to hedge against a replacement election victory by a candidate they disliked more than Davis, vote against the recall.

Voters' decisions concerning the recall question thus depended upon comparing the utilities they derived from retaining Davis, from the election of the candidate they supported in the replacement election (not necessarily their favorite), and the election of some other candidate. In principle, a complete analysis of a voter's decision regarding the recall would entail consideration of their entire preference ordering—a daunting prospect, given that respondents in our survey reported 84 distinct patterns of preferences over the four major candidates (Davis, Schwarzenegger, Bustamante, and McClintock), and many dozens more when we extend consideration to the preference orderings of those who most favored one of the minor candidates.¹²

Fortunately, the major contours of voter strategy on the recall question can be discerned by aggregating preference orderings in a fairly simple way. In Table 6 we report the percentage of each candidate's supporters who voted for the recall, broken down by their ranking of Gray Davis—second, third, or last. The number of observations upon which the percentage figures are based are reported in parentheses below each entry.

Table 6 about here

Looking first at those whose favorite candidate was Schwarzenegger, we see that few of these voters ranked Davis second, and nearly two-thirds of them ranked Davis last. Those

who ranked Davis either third or at the bottom voted overwhelmingly for the recall, but Davis fared nearly as badly among the small number of Schwarzenegger's supporters who ranked him second: over 80 percent of these voters also favored recalling Davis. Few Schwarzenegger supporters were either happy enough with Davis or frightened enough of a Bustamante victory to vote strategically against the recall.

McClintock supporters were more likely than Schwarzenegger's to rank Davis second, but nearly 90 percent of them still put Davis third or last in their rankings. On the other hand, the degree to which McClintock supporters favored the recall varied dramatically with their ranking of Davis. Only 27 percent of those who ranked him second favored the recall, compared to nearly 90 percent of those who ranked him lower. Voters whose favorite was Camejo or one of the minor candidates generally placed Davis higher in their orderings than did McClintock supporters, but their support for the recall was similarly quite sensitive to Davis's ranking. Very few who ranked Davis second favored his recall, but those who put him at the bottom of their list favored the recall unanimously.

Supporters of fellow Democrat Cruz Bustamante gave Davis the highest rankings of all, with most ranking him second and few ranking him last. Still, the degree to which even Bustamante supporters favored Davis's recall is remarkable. Half of those who ranked Davis third voted for the recall, as did three out of four who ranked Davis last. We are more struck, however, by the fact that even one fourth of those who ranked Davis second favored recalling him.

Our data thus bear witness to the rift that developed between the Davis and Bustamante campaigns. Davis backers had urged Democrats to concentrate all their effort and resources on defeating the recall, and sought to persuade all other Democratic candidates to refrain from running in the replacement election. They feared that the presence of a credible Democratic alternative to Davis would offer voters the potentially attractive fall-back option of voting for that candidate while also backing Davis's recall. When Bustamante entered the race he instructed his supporters to oppose the recall, but argued that Democrats should also support him to insure against a Republican victory if Davis were

to lose. Davis backers became increasingly suspicious that the Bustamante campaign was soft-pedaling the anti-recall message in order to bolster Bustamante's prospects of winning the governorship. Their suspicions that Bustamante's candidacy served to undermine Davis were at least partially justified. Although 83 percent of Davis's supporters backed Bustamante in the replacement election (see Table 4), only 62 percent of Bustamante's supporters backed Davis by voting against the recall.

Voters whose favorite candidate was Bustamante accounted for about 10 percent of the electorate. If they had voted against the recall at the same rate that Davis supporters backed Bustamante in the replacement election (83 percent), the vote against the recall would have been about 2 percent higher, i.e., around 47 percent—closer, but not a different outcome. If *all* Bustamante supporters had opposed the recall, on the other hand, the no vote would have been close to 49 percent, which might have allowed Davis, with a few breaks here and there, to retain office.

The last row in Table 6, which reflects the choices of those whose favorite candidate was Davis, shows that 6.9 percent of them voted for his recall. This is a low figure, to be sure, but why is it not zero? Why would any Davis supporter favor the recall? Similarly, if we sum across supporters of all other candidates, we find that 6.5 percent of those who ranked Davis last voted against the recall. There is undoubtedly some level of background noise present in virtually all survey data, and it is to this that we attributed the fact that about two percent of Schwarzenegger and Bustamante supporters reported voting for someone else in the replacement election. The incidence of anomalous voting decisions here, however, is considerably higher. Why?

There is no way to know for sure, but we suspect that some voters were confused as to whether “recalling” Davis meant that he would lose office or retain it. There is a general problem that characterizes many direct ballot measures, i.e., that being in favor of something requires casting a “no” vote. In this case, a vote in favor of Davis meant voting “no” on the recall. But there are additional problems with the word itself. If one is auditioning for a role in a movie or play, for example, it is good to be recalled, because it

means that you have survived a cut. If so, some voters might have inferred that voting to recall Davis would keep him in office.

Fortunately, the wording of the recall question as it actually appeared on the ballot was probably more helpful in this regard than was the question we posed to respondents in our survey. We asked the following: “How are you going to vote [did you vote] on the question to recall Gray Davis as governor of California. Are you going to vote [did you vote] for the recall of Davis, or against it?” The question voters confronted on the ballot was “Should Gray Davis be recalled (removed) from the Office of Governor?” Insertion of the word “removed” should have helped to resolve ambiguity about the meaning of the word recall, and thus voters at the polls should have made fewer mistakes than did the respondents in our survey. Still, some problems along these lines appear to have been present in the actual election. Election officials noted that “recall” does not translate well into the Asian languages (Chinese, Japanese, Korean, and Vietnamese) that were used in this election, and precincts with large numbers of immigrants experienced relatively large numbers of residual votes (spoiled ballots) on the recall question (Hoffman 2003; Alvarez *et al* 2004).

It is also possible that some who ranked Davis last nevertheless voted against the recall as a protest vote, expressing their disapproval of the recall mechanism in general. Appealing to Edmund Burke, Will (2003) put it this way: “Truly conservative Californians—you few know who you are—will vote against the recall to protest its plebiscitary cynicism.”¹³

In order to determine how many Californians, conservative or not, viewed the recall mechanism as an excess of democracy and consequently opposed the recall of Davis, we asked respondents the following question: “Would you favor changing the California Constitution to get rid of recall elections, or do you favor keeping recall elections as part of the political process in California?” As the results indicate, over 70 percent favored retaining this tool of direct democracy. Their views about the recall in general were also colored by the outcomes portended in October 2003. Schwarzenegger supporters over-

whelmingly endorsed the recall mechanism, with McClintock supporters nearly as enthusiastic. Slightly over 60 percent of those whose favorite candidate was Bustamante, Camejo, or one of the minor candidates favored retention of the recall, compared to 40 percent of Davis's supporters. A simple cross-tabulation of support for Davis's recall and support for the recall in general shows the same pattern: over 90 percent of those who favored recalling Davis also favored retention of the recall in general, compared to only 46 percent of those who opposed Davis's recall.

Table 7 about here

The second column in Table 7 indicates that Will's call for conservatives to reject the recall on ideological grounds fell on deaf ears. The more conservatively respondents characterized their general political leanings, the greater the margin by which they favored retaining the recall. These findings clearly uphold Rikers's (1980) general point that preferences over institutions depend considerably upon the outcomes that the institutions are expected to produce.

Discussion

The picture that emerges from our analyses concerning voter rationality is a reassuring one. Preference orderings over the major candidates in the 2003 California recall rarely displayed intransitivity. Some voters appeared to make simple mistakes, particularly on the recall question, but overall their strategies in the replacement election and on the recall question displayed a remarkable degree of sophistication. We also found that the voters in this election collectively got it right. The highly unusual nature of the election and the peculiar structure of the ballot that was employed did not prevent them from selecting the Condorcet winner. Evidence from our survey, finally, indicates that Duverger's law acts as a vicious circle. The lower a candidate's initial level of support, the more they suffered from strategic defection to the top two candidates. The "psychological" and "mechanical" factors that Duverger identified also work to reinforce each other.

Perhaps the reason why voters performed so well in our tests of rationality was because we set the bar too low, and it was thus a very easy test. The very uniqueness of the recall election, combined with the celebrity status of eventual winner Arnold Schwarzenegger, may have generated a much higher level of interest in this election than in other, more typical elections. Intense media coverage may have created a high information environment. Voters may have thus become more informed than usual about the candidates, more consistent in their preferences, and more strategic in the votes they cast.

But it could also be argued the test to which voters were subjected in the recall election was in many respects fairly demanding. They confronted an unusual two-part ballot involving the initial recall election and a replacement election with 135 candidates. They received conflicting signals from pre-election polls and late-breaking news stories, and inconsistent directives from political elites. Much of the media's attention was focused on candidates who were unconventional to say the least. It seems to us that the pre-conditions for large numbers of voters to behave irrationally might well have been present in October 2003.

In any case, we are struck by the extent to which our findings regarding preference orderings closely mirror those of Brady and Ansolabehere's (1989). The fact that their results, from a long time ago (1976) and a completely different information environment (presidential primaries), are so similar to ours is, we think, strong evidence against the assertion that our results are a specific to a unique and unusual event. Our results, like those of Brady and Ansolabehere, thus serve as a bit of a counterweight to the large body of research documenting the difficulties that people have in making choices in a consistent manner. We pose, and leave for future research, a hypothesis that perhaps the key difference lies in what people are asked to evaluate. In this study, they were asked to evaluate and rank people, while in other work they have been asked to make choices over courses of action that are hypothetical and to some extent counterfactual. As indicated earlier, evidence from psychological and neuroscience research on person perception gives us reason to believe that preferences and choices involving flesh-and-blood candidates may be particularly stable and consistent.

**Table 1 Preference Orderings over Candidates in the
2003 California Recall Election**

Type of Preference Ordering	Percent
Transitive and complete	50.7 (761)
Transitive, one indifference	27.0 (405)
Transitive, two indifferences	1.5 (23)
Transitive over three candidates	5.5 (82)
Only top choice identified	6.9 (103)
Intransitive	3.3 (49)
No Candidates Ranked	5.1 (77)

The number of observations in each category is reported in parentheses below each percentage entry.

**Table 2 Outcomes of Pairwise Comparisons
(in percent)**

Schwarzenegger	56.5	Davis	58.8
Davis	43.5	Bustamante	41.2
	(1389)		(1094)
Schwarzenegger	58.3	Davis	41.6
Bustamante	41.7	McClintock	58.4
	(1349)		(1340)
Schwarzenegger	51.2	McClintock	58.5
McClintock	48.8	Bustamante	41.5
	(1244)		(1294)

Table 3 Most Preferred Candidate and Vote Shares in the Replacement Election (in percent)

	Most Preferred	Vote Share
Schwarzenegger	34.2	45.6
Bustamante	10.3	32.8
McClintock	21.9	15.6
Camejo	5.8	3.7
All Others	4.4	2.2
Davis	23.8	-----
<i>n</i>	1346	1202

Table 4 Strategic Voting in the Replacement Election

	Vote Choice (in percent)					
Most Preferred Candidate	Schwarzenegger	Bustamante	McClintock	Camejo	Other	<i>n</i>
Schwarzenegger	97.4	0.7	1.7	0.0	0.2	417
Bustamante	1.8	97.3	0.0	0.0	0.9	113
McClintock	37.0	1.2	61.8	0.0	0.0	238
Camejo	10.1	36.2	5.8	44.9	2.9	69
Other	12.2	42.9	8.2	4.1	32.7	49
Davis	4.5	83.3	6.1	4.5	1.6	245

Table 5 Voting Decisions of McClintock Supporters
(in percent)

Vote Choice	Candidate Ranked Second			
	Schwarzenegger	Bustamante	Davis	No Second Choice
McClintock	52.3	85.7	86.2	92.9
Schwarzenegger	47.7	4.8	10.3	7.1
Bustamante	0.0	9.5	3.5	0.0
<i>n</i>	174	21	29	14

Table 6 Support for the Recall of Gray Davis (Percent Voting Yes)				
	Ranking of Davis			
Most Preferred Candidate	Second	Third*	Last	Total
Schwarzenegger	81.8 (22)	92.0 (125)	94.0 (283)	92.8 (430)
McClintock	27.3 (33)	86.7 (165)	92.3 (65)	79.7 (263)
Bustamante	25.3 (75)	50.0 (26)	75.0 (16)	37.9 (117)
Camejo	5.6 (36)	27.8 (36)	100.0 (2)	18.9 (74)
Others	14.3 (21)	28.6 (14)	100.0 (12)	40.4 (47)
Davis	—	—	—	6.9 (290)

* Respondents who are coded as ranking Davis third also ranked another candidate below him. A small number of respondents ranked Davis third, but only revealed a preference ordering over three candidates (see Table 1). In these cases they were classified as having ranked Davis last. Those who were indifferent between Davis and another candidate but ranked the pair of them last were also deemed to have ranked Davis last.

Table 7 Support for the Recall Mechanism
(Percent in Favor)

Most Preferred Candidate		Ideology	
Schwarzenegger	91.4 (440)	Strongly Conservative	88.7 (151)
McClintock	82.1 (280)	Moderately Conservative	82.0 (345)
Bustamante	60.9 (133)	Moderate	67.5 (538)
Camejo	63.0 (73)	Moderately Liberal	58.9 (175)
Others	63.6 (55)	Strongly Liberal	54.8 (115)
Davis	40.1 (304)	Non-ideological	70.3 (37)
Total	71.2 (1285)	Total	71.4 (1361)

Endnotes

‡ We thank Ralph Adolphs, Stephen Ansolabahere, Peter Boessarts, Bruce Cain, Jack Citrin, John Ellwood, Donald Green, David Grether, Phil Hoffman, Thad Kousser, Jonathan Nagler, Peter Ordeshook, Tom Palfrey, Charles Plott, Robert Sherman, Betsy Sinclair, Matt Spitzer, and seminar participants at the University of Michigan, and University of Southern California, and University of California-San Diego for comments and suggestions. We also gratefully acknowledge the California Institute of Technology for its financial support of this research.

1. Although this proposition is eponymously associated with Duverger, Riker (1982) notes that Henry Droop (1871) expounded the rationale for strategic voting some eighty years earlier.

2. Strategic voters thus appear to be acting upon considerations of Riker and Ordeshook's p term (the probability that their vote will be pivotal); because their favorite candidate cannot win, they conclude that they have no chance of being pivotal unless they opt instead for a less preferred candidate who does have a chance of winning. In large elections the probability of a voter being pivotal regardless of the choices he or she makes is orders of magnitude less than the $p < .0001$ level that is conventionally regarded as the threshold of "moral certainty" (Meehl 1977). This fact has generated controversy as to whether or not it is instrumentally rational to vote strategically, or, more generally, whether it is rational to vote in the first place. As the analysis reported in this paper is descriptive rather than prescriptive, philosophical questions about the nature of rationality will not be considered here (see Ferejohn and Fiorina 1975).

3. The only states other than California that provide for recall elections to take this form are Colorado and Michigan. All other states that hold a special election to fill the vacancy created by a recall allow the recalled official to run as a candidate. Davis challenged the prohibition against his running in the replacement election as unconstitutional and unfair, but the California Supreme Court rejected his complaint (Delsohn 2003).

4. The law governing the conduct of recall elections in California stipulated that voters must vote on both the recall question and in the replacement election for their ballot to be counted as valid, but this requirement was struck down by the federal district court on July 29, 2003. Voters could also choose to abstain in one of the contests, although, as we shall see later, it is hard to see why they would choose to do so.

5. Davis supporters sought to dissuade all other Democrats from entering the replacement contest, and were disappointed when Bustamante announced his candidacy. Ironically, Davis likely would have benefited from a stronger Bustamante showing. If Bustamante had been doing better in the polls going into the election, more conservative voters might have chosen to vote *against* the recall, preferring to retain Davis than risk ending up with Bustamante.

6. In this situation, subjects choose between a lottery that pays out a small amount of money with high probability, and another that pays out a much larger sum of money but at a much lower probability. They are then asked how much they would be willing to pay to play each lottery, and later asked which of the two lotteries they would rather play. Subjects routinely choose to play the lottery to which they had previously assigned a lower cash value.

7. This particular anomaly may have occurred because respondents make the mistake of flipping the poles of the thermometer scale around, assigning low scores to candidates they like and high scores to those they do not.

8. According to Raiffa (1968), subjects in laboratory experiments often corrected intransitivities in their preference orderings after the problem was pointed out to them. Brady and Ansolabahere (1989) report similar findings.

9. About one in five respondents in our survey reported that they had already voted, either by casting an absentee ballot or by going to an “early voting” polling place.

10. We asked respondents to describe their views on political issues as conservative, moderate, or liberal, and, if conservative or liberal, whether they were strongly or moderately so. As expected, McClintock supporters were on the whole more conservative than Schwarzenegger supporters, and Schwarzenegger supporters more conservative than supporters of Davis and Bustamante. Although most observers of California politics characterized Davis as more centrist than Bustamante, we found that Davis supporters were actually slightly more liberal on average than Bustamante supporters, although the difference was too small to be statistically significant.

11. For Davis supporters, abstaining in the replacement election makes sense only if they were indifferent among all the candidates running. Although we do not know for sure, we suspect that the decision of some Davis supporters to abstain was encouraged by a stratagem proffered early on in the campaign by many leading Democrats as to how best to counter recall efforts. They urged leading Democratic politicians to refrain from running in the replacement election, for Democratic voters to abstain in it, and to thus concentrate all efforts on an all-or-nothing defense of Davis in the recall (Hasen 2004). This might have been a good strategy, but the fact that a prominent Democrat (Bustamante) did become a candidate in the replacement election undermines the rationale that Davis supporters had for abstaining.

12. This is fewer than the theoretical maximum. With four alternatives, there are 111 possible distinct orderings (allowing for indifference as well as preference) consistent with transitivity.

13. Will did not advocate complete adherence to Burkean principle, which in our view would have dictated abstaining in the replacement election as well. In the same article he also advised conservatives to vote for an appropriate candidate in the replacement election, given the possibility that Davis would fail to survive the recall.

References

Abramson, Paul, John Aldrich, Paul Paolino, and David Rohde. 1992. "Sophisticated Voting in the 1988 Presidential Primaries." *American Political Science Review* 86:55-69.

Abramson, Paul, John Aldrich, Paul Paolino, and David Rohde. 1995. "Third-Party and Independent Candidates in American Politics: Wallace, Anderson, and Perot." *Political Science Quarterly* 110:349-67.

Alvarez, R. Michael. 1997. *Information and Elections*. Ann Arbor: University of Michigan Press.

Alvarez, R. Michael, John Brehm, and Catherine Wilson. 2003. "Uncertainty and American Public Opinion." In Burden, Barry (ed.), *Uncertainty in American Politics*. Cambridge, U.K.: Cambridge University Press.

Alvarez, R. Michael, Melanie Goodrich, Thad Hall, D. Roderick Kiewiet, and Sarah Sled. 2004. "The Complexity of the California Recall Election." *Political Science* 37:23-26.

Bartels, Larry. 1988. *Presidential Primaries and the Dynamics of Public Choice*. Princeton: Princeton University Press.

Brady, Henry, and Stephen Ansolabehere. 1989. "The Nature of Utility Functions in Mass Publics." *American Political Science Review* 83:143-63.

Booth, William. 2003. "Poll Places Bustamante in Lead to Succeed Davis." *Washington Post*, p. A03, August 15.

Bowler, Shaun. 2004. "Recall Elections: The Politics of Spite?" Manuscript, University of California—Riverside.

Burden, Barry. 2003. "Minor Parties in the 2000 Presidential Election." In Herbert Weisberg and Clyde Wilcox (eds.) *Models of Voting in Presidential Elections*. Stanford: Stanford University Press.

Cain, Bruce. 1978. "Strategic Voting in Britain." *American Journal of Political Science* 22:639-55.

Cho, Sungdai, and Jae-Woo Hong. 2000. "Does Incumbency Matter? Strategic Voting Among Third Party Supporters in US Presidential Elections (1992 and 1996)." Paper delivered at the Annual Meeting of the Midwestern Political Science Association, Chicago, IL.

Converse, Philip. 1964. "The Nature of Belief Systems in Mass Publics." In David Apter (ed.), *Ideology and Discontent*. New York: The Free Press.

Cox, James, and David Grether. 1996. "The Preference Reversal Phenomenon: Response Mode, Markets, and Incentives." *Economic Theory* 7:381-405.

Delli Carpini, Michael, and Scott Keeter. 1996. *What Americans Know about Politics and Why it Matters*. New Haven: Yale University Press.

Delsohn, Gary. 2003. "Davis to Challenge Recall Law." *Sacramento Bee*, August 4.

Dennis, Brent. 2003. "A Survey of Preference Elicitation." Manuscript, Computer Science Department, North Carolina State University.

Downs, Anthony. 1957. *An Economic Theory of Democracy*. New York: Harper.

Droop, Henry. 1871. "On the Political and Social Effects of Different Methods of Electing Representatives." *Papers, Juridicial Society* (London) 3:469-507.

Duverger, Maurice, 1964. *Political Parties. Their Organization and Activity in the Modern State*. London: Methuen, 2nd revised English edition.

Ferejohn, John, and Morris Fiorina. 1975. "Closeness Counts Only in Horseshoes and Dancing." *American Political Science Review* 69:920-5.

Finnegan, Michael. 2003. "Majority Now Favors Recall: Schwarzenegger Leads Rivals." *Los Angeles Times*, October 1.

Grafstein, Robert. 2003. "Strategic Voting in Presidential Primaries: Problems of Explanation and Interpretation." *Political Research Quarterly* 56:513-20.

Green, Donald, and Ian Shapiro. 1994. *Pathologies of Rational Choice Theory: A Critique of Applications in Political Science*. New Haven: Yale University Press.

Hansen, John Mark. 1998. "Individuals, Institutions, and Public Preferences over Public Finance." *American Political Science Review* 92:513-31.

Hasen, Rick. 2003. "135 Candidates, Duverger's Law, and the Rationality of McClintock's and Bustamante's Candidacies." <http://electionlawblog.org/archives/000027.html>.

Hoffman, Allison. 2003. "Partial Hand-Count of Ballots Reveals Few Irregularities." *Los Angeles Times*. October 16, p. B-4.

Jackman, Simon. 2000. "Post-Election Survey." Manuscript, Stanford University.

Macrae, C. Neil, and Galen Bodenhausen. 2000. "Social Cognition: Thinking Categorically about Others." *Annual Review of Psychology* 51:93-120.

McGuire, William. 2000. *Constructing Social Psychology: Creative and Critical Aspects*. Cambridge, UK: Cambridge University Press.

Meehl, Paul. 1997. "The Selfish Voter Paradox and the Thrown-Away Vote Argument." *American Political Science Review* 71:11-30.

Miller, John. 2003. "Peaking Tom." *National Review Online*, August 28.

Munro, William Bennet. 1912. *The Initiative, Referendum, and Recall*. New York: D. Appleton and Company.

Ordeshook, Peter, and Langche Zeng. 1997. Rational Voters and Strategic Voting: Evidence from the 1968, 1980 and 1992 Elections. *Journal of Theoretical Politics* 9:167-87.

Palfrey, Thomas. 1989. "A Mathematical Proof of Duverger's Law." In Peter Ordeshook (ed.), *Models of Strategic Choice in Politics*. Ann Arbor: University of Michigan Press.

Radcliff, Benjamin. 1993. "The Structure of Voter Preferences." *Journal of Politics* 55:714-19.

Raiffa, Howard. 1968. *Decision Analysis: Introductory Lectures on Choices under Uncertainty*. Reading, MA: Addison-Wesley.

Riker, William. 1980. "Implications from the Disequilibrium of Majority Rule for the Study of Institutions." *American Political Science Review* 74:432-46.

Riker, William. 1982. "The Two-Party System and Duverger's Law: An Essay on the History of Political Science." *American Political Science Review* 76:753-66.

Riker, William, and Peter Ordeshook. 1968. "A Theory of the Calculus of Voting." *American Political Science Review* 62:25-42.

Rosenstone, Steven, Roy Behr, and Edward Lazarus. 1996. *Third Parties in America: Citizen Response to Major Party Failure*. Princeton: Princeton University Press.

Sears, David, and Jack Citrin. 1985. *Tax Revolt: Something for Nothing in California*. Cambridge, MA: Harvard University Press.

Shaw, Deron, Mark McKenzie, and Jeffrey Underwood. 2005. "Strategic Voting in the California Recall Election." *American Politics Research* 32:216-45.

Sinclair, Betsy. 2004. "The British Paradox: Strategic Voting and the Failure of Du-verger's Law." Manuscript, California Institute of Technology.

Sych, Lawrence. 1996. "State Recall Elections: What Explains Their Outcomes?" *Comparative State Politics* 17:7-25.

Weisberg, Herbert, and Arthur Miller. 1980. "Evaluation of the Feeling Thermometer: A Report to the National Election Study Board Based on Data from the 1979 Pilot Study." Manuscript, University of Michigan.

Whalen, Bill. 2003. "Bustamante Goes Boom." *The Weekly Standard*, October 1.

Will, George. 2003. "California to Recall and Ruin." *Sacramento Bee*, August 12.

Appendix 1

This survey was implemented by Interviewing Services of America (ISA), using list-assisted random-digit dialing (RDD) survey methodologies and trained interviewers. A Spanish-language version of the questionnaire was available, and nine respondents were interviewed in Spanish.

The sample is comprised of 1500 California adults who reported that they were registered to vote. To obtain the 1500 completed interviews, ISA utilized a list of 20,765 California residential telephone numbers. Using the standard American Association for Public Opinion Research (AAPOR) guidelines, the cooperation rate for eligible respondents, i.e., those who reported they were registered was 54.5%, which is high by contemporary standards. The two standard response rate estimates for RDD telephone surveys, RR1 and RR2, were 9.8% and 10.5%, respectively. These low response rates can be attributed to several sources, the largest being the 7443 telephone numbers that were never resolved, either because no one ever answered despite repeated callbacks (4976), because the number was sampled but never dialed (2058), or for other reasons. Removing these 7443 numbers of unknown eligibility from the computation produces response rates of 19.3% and 20.5% for RR1 and RR2, respectively. Another 5540 numbers were ineligible because they had been disconnected (2924), were business numbers (978), or faxes and modems (959). There were also 4835 unsuccessful contact attempts, which includes calls picked up by answering machines (2665), or attempts by the interviewers to call back later but which never yielded an interview (2170).

Table A1 lists responses to the vote questions and some key demographic characteristics from our survey (the first column), and compares these figures to those obtained from the final *Los Angeles Times* pre-election poll, the *Los Angeles Times* Exit Poll conducted on election day, and the official returns reported by the California Secretary of State. The *Times* pre-election poll contains a large over-sample of Latino and other minority group respondents, but the entries reported in the rest of the cells are based upon a re-weighted

sample intended to reflect major demographic characteristics of the California electorate. The *Times* Exit Poll data were weighted to match the official returns.

Table A1 about here

Looking first at the voting figures, we see that respondents in our survey registered a slightly higher “yes” vote on the recall than did the other polls and, as shown in the official returns column, than what turned out to be the case. Our survey and the *Times* pre-election phone poll also under-estimated Schwarzenegger’s vote share and over-estimated McClintock’s, but again, not by very much. The large over-sample of Latinos and other minorities in the *Times* phone poll means that its race and ethnicity figures are not comparable to ours. Compared to the *Times* exit poll, however, our sample contained a larger percentage of Latinos and a smaller percentage of whites. The educational attainment of respondents in our survey was also somewhat less than of respondents in the two *Los Angeles Times* polls, and a slightly smaller percentage of respondents indicated that they or someone else in their household belonged to a labor union. In general, then, the discrepancies between our survey, the Los Angeles Times polls, and the official returns are minor. It thus appears that respondents in our survey were statistically a good representative sample of the California electorate in October 2003.

Table A1 Comparison of Sample Surveys and Official Returns

	Recall Survey (Sept. 23-Oct. 2)	<i>LA Times</i> Poll* (Sept. 25-9)	<i>LA Times</i> Exit Poll** (Oct. 3)	Official Returns (Sec. of State)
Yes on Recall	57.4	56.0	55.5	55.4
Schwarzenegger	44.8	44.4	49.0	48.6
Bustamante	32.3	35.6	32.0	31.5
McClintock	15.4	16.7	13.0	13.5
White	62.9	51.7	73.0	—
Latino	15.3	27.8	11.0	—
Asian	6.1	11.2	6.0	—
Black	4.4	6.3	5.0	—
Union Household	26.5	27.8	30.0	—
High School Grad or Less	20.9	19.8	15.0	—
Some College	28.9	32.4	26.0	—
College Grad or More	50.3	47.7	59.0	—

* This poll contained a large over-sample of minority respondents. Entries in this column other than those for race and ethnicity are based on observations that were weighted so as to approximate actual population characteristics.

** These data were weighted so as to match official vote returns.