Political Knowledge and Voter Inequality[1]

by

Gábor Tóka

Central European University, Hungary &

University of Oxford, United Kingdom

<gabor.toka@politics.ox.ac.uk> & <tokag@ceu.hu>

Paper presented at a faculty seminar at the Department of Political Science, New York University, on 13 November 2006.

[1] Work for this paper was supported by a Marie Curie Intra-European Fellowship under the Training and Mobility of Researchers Program of the European Union, contract no. 025384. The views expressed are those of the author only.

ABSTRACT

The paper empirically tests the proposition that because of the unequal social distribution of turnout and political knowledge, some groups of citizens may be less successful in expressing their specifically political preferences in the vote than others. Hence, the electoral arena may give different people different degrees of political influence even when the formal equality of all citizens before the law is rigorously upheld in the electoral process. The first part of the paper explores the assumptions behind the proposition itself and the further assumptions that need to be made in order to test it empirically. The second part offers an empirical test. Cross-national post-election survey data from the Comparative Study of Electoral Systems and Larry Bartels' (1996) simulation procedure - now extended to the analysis of multiparty-systems and non-linear information effects on the vote - are utilized to explore the question. The results show that social differences in political knowledge may lead to the hypothesized political inequalities but their size is remarkably modest. The paper ends with a discussion on the causes of the surprisingly egalitarian treatment of all social groups by democratic elections.

It is often argued that the unequal social distribution of politically relevant resources make some groups of citizens less successful than others in expressing their specifically political preferences in the vote (Breton and Breton 1997;Knight and Johnson 1997;Simpson 1997). If this premise holds, then the electoral arena gives different people different degrees of influence in politics even when the formal equality of all citizens before the law is rigorously upheld in the electoral process, and everyone votes. The key question examined here is to what extent this proposition is correct. The first section discusses some conceptual issues and the assumptions that have to be made in order to make the problem empirically tractable at all. The second outlines a possible research design. The third describes the data and the statistical models in the analysis, and the fourth presents the empirical results using publicly available data from dozens of post-election surveys carried out in the framework of the Comparative Study of Electoral Systems project between 1996 and 2005 (CSES 2003, 2006). Section five concludes.

1. The Uncertain Size of a Likely Inequality

Social inequalities almost inevitably translate into unequal political influence (Verba, *et al.* 1995). A cessation of this translation within the electoral arena is required by the "one person – one vote" slogan, which merely popularizes a fundamental norm of modern democracies. It is certainly possible to design such electoral procedures – for instance, compulsory voting with a PR-system applied in a single nationwide electoral district – that make virtually every citizen cast a vote with very nearly equal influence on seat allocation among the competing parties. Yet, this will still not guarantee the complete equality of all, as there is a last obstacle inherent in

choice itself. As Downs (1957: 223) put it, "systematic variations [among voters] in amount of free information received and ability to assimilate may strongly influence the distribution of political power in a democracy".[2]

Obviously, misinformation about true candidate positions may make people vote for a different candidate than the one they would support if they had more accurate knowledge (Norpoth and Buchanan 1992). But extant research shows that even the mere uncertainty about the true traits of candidates may make citizens vote for some other party than the one closest to their ideal point in the space of relevant policy dimensions (Alvarez 1997;Bartels 1986;Palfrey and Poole 1987). It seems logically to follow then that the electoral behavior of the least informed conveys less information about their political preferences than that of the better informed.[3]

Political knowledge, in its turn, is unequally distributed across social groups that have potentially different political preferences (Delli Carpini and Keeter 1996;Moore 1987). This is again inevitable since the minuscule impact of a single vote on the outcome cannot be the sole reason why a rational citizen attends to any political information.[4] Thus, political information level is likely to reflect other factors than the intensity of political preferences. Rather, socio-

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2 Similar remarks literally abound in the literature (Delli Carpini and Keeter 1996;Donohue, et al. 1975;Moore 1987;Page 1978).

3 This paper treats preferences (as opposed to choices) as given. Some may want to counter that some initial preferences may be subject to change under the impact of new information about their incompatibility with other, more strongly felt preferences. However, in the present context, this phenomenon can be conveniently lumped together with the impact of information on the 'objective' congruence between preferences and choice. After all, political attitudes and vote choices can be seen as derived preferences that may be revised when new information reveals their conflict with some other preferences.

4 This problem obviously parallels the paradox of voting (Blais 2000;Mueller 1989).

cultural differences in habitual, expressive and unintended exposure to political information (Fiorina 1990), political interest, or unequal cognitive capability may play a great role in information acquisition (Luskin 1990). As a result, the young, the old, people whose income or education is low, women, racial minorities and manual workers tend to know less about politics than other citizens, and this pattern is remarkably consistent across a wide range of democracies (Tóka 2002).

Apart from the above observations, only three relatively undemanding assumptions must prove true and knowledge-based voter inequality is guaranteed to exist. First, the concept of voter inequality presumes that voting behavior, at least to a degree, is as if it were instrumentally rational and oriented on the achievement of desired political outcomes. Indeed, if votes do not at all signal preferences regarding political outcomes, knowledge differences between groups of voters can merely generate an unequal probability of fully enjoying the expressive benefits of voting. Since these non-political benefits are best conceived as a matter of private consumption, their distribution can hardly raise the issue of political equality. However, even if we see voting as a fundamentally expressive act, it is still plausible that expressive voting behavior, among fully informed voters, coincides with how their instrumentally rational voting behavior would look like. This is plausible since voters' expressive benefits from a vote should be reduced by the knowledge that their votes may – to the infinitesimal extent that a single vote matters at all – be cast against what their instrumentally preferred outcome is (Brennan and Hamlin 1998).

Second, systematic knowledge-based inequalities between more and less informed groups of citizens can only exist if the marginal impact of one unit extra information on vote choice diminishes as knowledge increases. Incidentally, this is explicitly assumed in some of the most

important studies of information effects on the vote (Alvarez 1997;Zaller 1992). Yet even the very opposite could be the case if some antidemocratic mechanisms – like brutal censorship of the press – assured that specific pieces of information become widely available in an inverse proportion to their ability to affect electoral choices. In this unlikely event no such information would ever reach the least informed that can instantaneously alter their vote choice. A unit increase in information level would then have an ever-increasing impact on voting behavior as we move up on the knowledge-ladder in society. Thus, the second assumption behind the concept of knowledge-based voter inequality is that a free press and vigorous competition for public office guarantee that a variety of rival actors make most widely available and easily accessible exactly those pieces of information that influence voting behavior most. If they get their messages through, then out of any two groups that are both entirely homogeneous in terms of fully informed preferences and general level of political information, the one with the higher general level of knowledge is likely to be less susceptible in its electoral choices to random variations in the exact composition of individual group members' stock of information. Electoral choices in the highly informed group will then speak more clearly about underlying preferences than the choices of the less informed group.

Third, inequalities in voters' knowledge would be politically irrelevant if public policy and elected power-holders were not responsive to election outcomes at all. Some responsiveness of this type, of course, is likely to be guaranteed in any democratic system.

All in all, if some fairly standard and modest assumptions about human rationality, political communications and democracy hold, then a rising level of information among voters should usually increase the valid information that vote choices convey about the voters'

underlying preferences regarding political outcomes to an observer lacking extensive information about the composition of each voter's stock of knowledge and how that factors in electoral choices. Of course, neither politicians nor other observers can possibly discount the effect of all the misinformation and misunderstanding that can influence votes. And the less such observers can read into votes, the less likely contenders for elected office respond to popular preferences in the order of their true incidence in – and salience for – the electorate. In other words, we can assume that more citizen knowledge facilitates a better use of the vote by citizens – the meaning of "better" being defined here by the democratic ideal that elected officials should be responsive and accountable to citizens' preferences.

The likely extent of voter inequality is not at all obvious, however. The institutional design of representative democracies makes national elections relatively infrequent and the number of relevant alternatives on the ballot naturally limited. There is therefore relatively little that votes can express about citizens' preferences in the first place. Since this drastically limits how much voters really need to know, party competition can probably guarantee that citizens live in an environment very nearly saturated with handy information shortcuts, functioning mechanisms of delegation, and other ingenious devices that enable even the least resourceful to vote as if they were fully informed (Lupia and McCubbins 1998). As a result, there may be a low ceiling to the knowledge level beyond which additional information will have a sharply diminishing or absolutely no effect on voting behavior (Lupia 1994).

Indeed, the scholarly literature on voting discusses a wide range of devices assisting low information rationality (Popkin 1991). To be sure, not all empirical studies are unambiguously reassuring about the efficiency of these tools (Lau and Redlawsk 2001). But formal models and

laboratory experiments suggest that either blind reliance on retrospective assessments of government performance or taking cues from public opinion polls may enable poorly informed voters to emulate fully informed behavior (McKelvey and Ordeshook 1986, 1990).

True, both deliberative poll results and simulations of information effects imply that election results are, for some of the time, different from what they might be under full information, and hence without knowledge-based voter inequalities (Bartels 1996;Fishkin and Luskin 1999;Sekhon 2004). Probably the information shortcuts that less than fully informed voters can rely on are more or less reliable and abundant depending on the skills of the competing parties, communication patterns within and across particular groups, the institutions of civil society, the media system, the age of democracy, and so forth. All in all, the degree of voter inequality may vary across elections and finding out its typical degree requires an empirical investigation. While unequal capabilities and motivation to engage with politics probably creates inequality of political influence between groups, the extent of these inequalities might be trivial.

2. Research Design

Voter inequalities cannot emerge from just about any temporary differences in information-level between politically relevant groups. Many of the latter surely reflect just passing apathy among some citizens, probably caused by the appalling recent record of their favorite party, or unequal mobilization efforts by the different political camps. The first has nothing to do with political inequalities: this apathy-instilled temporary drop in political involvement is caused by a weakened commitment to a party by its potential voters. The strength of commitment, in its turn, may well be a valid and effective expression of underlying political preferences. Unequal

mobilization, in its turn, may have something to do with inequalities of resource distribution between parties, but not with the possible knowledge-based voter inequalities explored in this paper.

The latter obtain when something else than just differences in underlying political preferences generate persistent group differences in political knowledge.[5] So the first step in any empirical analysis of the problem must be to identify those groups that, because of arguably non-political influences, show below average political knowledge, and at the same time may differ in the distribution of their vote from other groups. They are the only ones who can remain, in one way or another, underrepresented at the polls specifically because of knowledge-based inequalities.

Once relevant groups have been identified, the differences need to be calculated between vote distributions in any given group at the observed information level and those that would obtain under full information. The sum of the absolute differences between the proportions of votes that each individual party obtains in the two situations will be used here as a summary measure of the total information effect on the vote. It is an adapted version of Bartels' (1996) model that allows me to estimate how information effects vary across groups, and thus to give an answer to the question posed by this paper about how closer are the actual votes to fully informed votes in the highly informed groups than among information underdogs.

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5 However, political inequalities emerge only if the political preferences of these groups also differ. Were they identical, we could consider individual-level variation in political involvement a spontaneous social process of delegation and representation through self-selection.

Bartels' model depicts vote choice as a function of interactions between political information level and various possible determinants of vote choice. These possible determinants will henceforth be called type A variables. The model allows the same increase in political information level to have different effects on vote choices depending on the values of the type A variables. The parameter estimates allow simulating expected vote distributions in any group defined in terms of some type A variables under any arbitrarily chosen distribution of political knowledge and turnout. Differences between the present analysis and Bartels' models will be discussed in section three. After calculating the total difference that a change in knowledge level can cause in the percentage distribution of vote across parties within various groups, one can determine whether and to what extent these differences co-vary with the observed information level of the groups in question.

Before turning to the technical description of the model, some broader methodological issues deserve attention. Note first that the focus in this analysis will always be on more egalitarian distributions of knowledge than what was actually observed in the data, and cross-national data are used in the analysis. To allow comparisons across countries at the same level of turnout, and to separate information effects from possible effects of higher turnout, all estimates refer to the highly hypothetical situation of 100 percent electoral participation. The beneficial impact of this choice is that this way we know how the chosen turnout level for the comparisons biases the results. Since political knowledge level has a well established positive impact on turnout (Lassen 2005), the variance of information level – and hence its impact on election outcomes – among actual voters is likely to reach its maximum in exactly this scenario. Thus, at

any lower level turnout we should expect somewhat smaller information effects on election outcomes than those estimated in this paper.

Since a hypothetical turnout level is assumed, the comparisons below are not between observed and simulated election results, but between different simulations. The baseline estimates leave all respondents with their observed information level, but assume that everyone votes, and vote choices are influenced by the model variables exactly the same way both among the actual voters and the actual non-voters. The expected distribution of the vote under these circumstances is compared to other simulated distributions that further assume some changes in the information level of some or all voters. Meanwhile all other assumptions and the respondents' characteristics in terms of type A variables remain the same.

Recall that the question asked here is not whether the gap between observed and simulated election outcomes is bigger than the margin of victory in particular elections in the past.[6] Rather, the question is whether some social groups are systematically more handicapped than others in casting fully informed votes. To see exactly how this can be determined, note that the potential victims of voter inequalities are not so much the poorly informed individuals as such. Rather, the victims are all members of the generally low-information groups, including the highly informed members, provided that they group have a different distribution of fully informed political preferences than the rest of the population.

Therefore, a test of voter inequalities does not require us to estimate how particular individuals would vote if they became fully informed. The simulation of fully informed election

[6] This is not so important anyway since the answer is inherently dependent on how "full" information level is operationalized, and it is unrealistic to believe that a massive change in citizens' information level would not alter the way politicians conduct their business.

results at 100 percent turnout merely requires a model that can isolate any residual association between vote choice and political knowledge from those caused by shared determinants of knowledge and vote choice, i.e. type A variables. One would guess that unanimous support for a single party or candidate rarely characterizes the fully informed voting behavior of a group defined in terms of these variables. This is so because there must be many further individual characteristics of type B that influence vote choice, but do not systematically influence political knowledge. The groups defined in terms of type A characteristics are likely to be heterogeneous with respect to these type B determinants of vote choice, and thus the fully informed voting behavior of individual group members can differ.

However, in order to simulate the fully informed voting behavior of each relevant group as a whole, we need not include any of these type B characteristics in the vote function. In fact, since type B characteristics themselves may change if information level increases, their inclusion in the vote choice model would only create unnecessary complications and imprecision in estimating the net effect of information on the vote. Of course, if interactions between type B characteristics and information level impact vote choices, then these effects will also influence the amount of aggregate change in vote distributions that a change in political information level can cause. But the net impact of all these changes on group-level aggregate vote distributions will already be fully captured through the simulation based on Bartels' (1996) model, at least as long as the variables defining the groups are all included among the type A characteristics that enter the vote function for the simulations.

The most critical assumption in the empirical analysis below is that the socio-demographic variables listed in the Appendix are the only relevant type A variables. Since they

exclude attitudes, at least the traits held constant while fully informed votes are estimated are such that they themselves cannot change because of an increase in information level. Yet it is certainly possible that some relevant type A characteristics – socio-demographic or otherwise – are omitted from the vote choice models estimated in the present analysis. The net bias caused by this omission will inevitable spill over into the simulated vote distributions that are to play critical role in the analysis. On the positive side, this bias has no predictable direction; for instance, there is no way to tell whether this bias leads to an over- or an underestimation of information effects in particular elections. Moreover, if there are many unduly omitted type A variables, then the biases caused by their omission will be randomly distributed and cancel out each other. The more elections and samples are included in the analysis, the more likely this random distribution should be.

The probably most obvious challenge to the validity of the present analysis is that some preferences, which are not perfectly captured by the socio-demographic variables listed in the Appendix, may also influence vote choices and political involvement at the same time. However, there seems to be no cross-contextual evidence that would clearly identify any other shared determinant of vote choices on the one hand, and political knowledge on the other. For instance, there is no reason to believe that a particular political taste – say support for authoritarianism or low inflation or whatever – would consistently and repeatedly lead to below average political information level just like low education and the other type A variables listed in the Appendix do.

Of course, anyone can point at some possible examples. For instance, one may speculate that the weakness of integration in the political community is an important determinant of vote

choices, and, at the same time, a major cause of young people showing below average political knowledge (Franklin 2004). Then, even if the relatively ignorant young voters were to become more knowledgeable, they may not vote the same way as the currently more involved young people do. They will still remain different from the latter with respect to an attitudinal determinant of vote choice. If so, the analysis of this paper is, to that extent, wrong. But this warning is no more valid in this context than in the case of any other empirical analysis. As long as there is no systematic evidence pointing to missing control variables that (1) can demonstrably influence vote choice across a large number of democracies; and (2) are systematically correlated with political knowledge; but (3) nevertheless remain resistant to changes in the examined aspect of political involvement, this epistemological objection boils down to the familiar warning that further research may prove the present findings wrong. That seems to be an acceptable risk for the present analysis – if more type A variables are identified, they can easily be incorporated into the model proposed here, without requiring changes in any other feature of the analysis.

There may be two further sources of measurement error in the simulated vote distributions that this paper relies on. The first can stem from the fact that the simulated vote distributions used in the test are based on survey data and parameter estimates that are subject to sampling error. The second can emerge if the relationships between information level and vote choice are, in some elections, influenced by random, situational shocks, that are, within the present research design, impossible to separate from the effects of systematic voter inequality.[7] For both of these problems, it seems reasonable to assume that in a sufficiently large random sample of elections, the measurement errors caused by these factors are randomly distributed

[7] See Tóka (2002) for a fictitious example.

with no systematic bias with respect to the relevant test results. It is clearly disputable whether the same thing is achieved in a non-random sample of 60 elections, which is what the present analysis relies on. If this is a problem, the way out is to replicate the present analysis on some other sample, and the present paper at least makes a few useful steps in developing an appropriate research design.

3. Data and Models

It follows from the above that the present analysis requires survey data from numerous individual elections, preferably from diverse but democratic political settings. This is achieved here by using post-electoral survey data collected in the framework of the Comparative Study of Electoral Systems project between 1996 and 2005 (CSES 2003, 2006).[8] The data in the present analyses cover 60 elections on five continents.[9] All samples are probabilistic national samples,

[8] The data are made available through the project website at <http://www.cses.org>. The data collection was supported by many different organizations around the world. The CSES Secretariat is supported by the National Science Foundation under Grant Nos.: SBR-9317631 and SES-9977967. Any errors of data handling and interpretation are, of course, mine.

[9] Some of the elections covered by the CSES studies had to be excluded from the analysis because of missing variables. These were Belgium 2003; Chile 1999; Lithuania 1997; Peru 2000; Russia 2000; Slovenia 1996; Thailand 2001; and United States 1996. For the 2002 Portuguese election, data were available in both the CSES1 and the CSES2 data sets, and showed slightly different information effects. While vote functions were estimated separately for the two data sets, the remainder of the analyses reported here always uses averages of the two samples as estimate for that election, giving the CSES1 and CSES2 data equal weight. Technically similarly, countries that show great regional variations in electoral alignments and provided sufficiently big samples for specific regions of interest were split during the estimation of information effects. Thus, estimates for Belgium, Canada, Germany and the UK are always the population-weighted averages for separately derived estimates for two parts of the respective country, i.e. Wallony and Flanders, Quebec and the rest of Canada, the Eastern and Western states of Germany, and Scotland versus England and Wales combined.

and the analysis below uses sample design and demographic weights, whichever was present in the data.

In the first step of the analysis, a cross-nationally comparable measure of political knowledge was constructed, which is described in the Appendix. Suffice to note here that the *Knowledge* variable has a mean of 0.5, a theoretical minimum of 0, a theoretical maximum of 1, a standard deviation of roughly .16, and an approximately bell-shaped distribution within each national sample in the analysis.

In the next step, four vote functions were estimated, and the resulting parameter estimates were used to simulate probabilities of support for each party *j* for every respondent under the observed and a hypothetical equal distribution of political knowledge. These 8 simulations were carried out separately for each of the 60 national samples. The hypothetical situation refers to full information in the electorate, which is defined by *Knowledge*=1 for all respondents. This is the information level that approximately half a percent of the electorate would actually display if we measured *Knowledge* on a scale infinitely sensitive for gradations. While the choice of this threshold for calling one's knowledge perfect, it is at least not an unrealistically high level that no citizen could possibly reach, and it is already higher than the highest value actually recorded on the *Knowledge* variable.

Just like the choice of this definition of full information, the four estimated models also follow Bartels (1996) in depicting vote choice as a series of interactions between socio-demographic variables on the one hand, and political knowledge level (i.e. the INFO variable) on the other. The general form of the four models is shown in the equation below.

$$Vote = fn\left(\begin{array}{l} a + b_1 X_1 Knowledge + b_2 X_2 Knowledge + ... + b_k X_k Knowledge + \\ + b_{k+1} X_1 \left(1 - Knowledge\right) + b_{k+2} X_2 \left(1 - Knowledge\right) + ... + b_{2k} X_k \left(1 - Knowledge\right) + \\ + b_{2k+1} X_1 Knowledge^2 + b_{2k+2} X_2 Knowledge^2 + ... + b_{2k+k} X_k Knowledge^2 + \\ + b_{3k+1} X_1 \left(1 - Knowledge^2\right) + b_{3k+2} X_2 \left(1 - Knowledge^2\right) + ... + b_{3k+k} X_k \left(1 - Knowledge^2\right) + \\ + b_{4k+1} Knowledge + b_{4k+2} Knowledge^2 \end{array}\right)$$

Note that for simplicity, the equation omits indexing for party *j*, which would be necessary for all terms given that a separate function needs to be estimated for all but one party in any electoral choice set. The *fn* linking function can be linear as in Delli Carpini and Keeter (1996), probit as in Bartels (1996), logistic as in Althaus (1998), or assume any number of other functional forms that are appropriate given the distributional properties of the dependent variable and its expected relationship with the independent variables. In the present analysis, discriminant analysis will be used to estimate the equations and thus to provide the linking function.[10] The models include a constant *a,* which applies for everyone and is related to the overall probability of support for given parties in the active electorate. The $X_1, X_2, \ldots X_k$ factors are type A variables, i.e. various exogenous determinants of political preferences and political knowledge like sex, age, etc. They are listed in the Appendix. The b_1, b_1 … b_{4k+2} parameters are estimated on the basis of the survey data at hand.

10 Multinomial probit would be an impractical choice given that in some elections as many as nine or ten categories are distinguished on the dependent variable and that the independent variables are strongly correlated. The only gain offered by multinomial regression over discriminant analysis would be that the former would allow an estimation of the standard errors for individual parameters and predicted scores. However, these gains would be irrelevant for the present purposes. Therefore, the choice was ultimately motivated by convenience, above all the convenient generation of predicted vote probabilities for cases excluded at the parameter estimation stage by the discriminant analysis module in the SPSS packages.

Crucially, the $b_{wk+i}X_i Knowledge$ and $b_{wk+i}X_i Knowledge^2$ terms (where *w*=0, 1, 2, 3) describe the impact of the i_{th} sociodemographic variable on the dependent variable for a fully informed respondent. The $b_{wk+i}X_i\left(1-Knowledge\right)$ terms, in turn, describe the same effects for a fully uninformed respondent, for whom *Knowledge*=0. The $b_{4k+1}Knowledge$ and $b_{4k+2}Knowledge^2$ terms are basically adjustments to the constant *a,* and depend on the respondents' political information level. Since every respondent with a, let's say, .4 information level can be conceived as the combination of a 40 percent fully informed and a 60 percent fully uninformed respondent, the equation gives a rich characterization of how information level influences the voting behavior of each respondent in the given national samples. Thus, it can be used to simulate what election outcomes would obtain if everyone in the electorate became fully informed (cf. Bartels 1996). As Sturgis (2003) showed, these estimates of possible knowledge-induced change show a reasonable degree of correspondence to the actual changes that occur in the political opinions of the respondents when they attend a deliberative poll after an initial survey. As Sekhon (2004) demonstrated, the size of information effects can be somewhat inflated when no adjustment is made for overdispersed data. Yet, this is not a major concern here given that the question asked here is about relative differences between social groups, rather than the absolute size and significance of information effects on election outcomes.

Note that the model above slightly deviates from that of Bartels' in a couple of ways. First, the list of socio-demographic variables are different partly because of limited data availability and partly because the estimates refer to a more diverse set of elections. Second, Bartels' (1996) analysis assumed that information level has a linear effect – if any – on the way

the sociodemographic variables influence VOTE. The assumption of linear information effects is parsimonious and consistent with the inherently probabilistic nature of vote choice and information-processing, but probably unrealistic. Therefore, the equation above allows for all sorts of non-linear information effects through the inclusion of the interactions between the socio-demographic variables on the one hand, and $Knowledge^2$ and $(1- Knowledge^2)$ on the other.

Third, results will be presented below for four different models rather than just one, because model fit statistics do not give unambiguous answer about which, if any, is the best choice for each and every one of the 60 elections in the analysis (data not shown for reasons of space). Two of the four models only allowed for linear interaction between *Knowledge* and the socio-demographic variables, i.e. they constrained all parameters from b_{2k+1} to b_{4k+2} except b_{4k+1} to be zero. For both alternatives, one model forced the simultaneous entry of all predictor variables in the estimated vote choice model, whether or not they had a significant effect, provided that they passed the 0.001 tolerance level for colinearity. The final variant – estimated both with and without non-linear information effects – relied on a stepwise entry of predictors. While stepwise variable-entry is widely considered bad practice in statistical modeling, it could be argued that in a simulation exercise it offers a superior solution to the alternative, which allows all sorts of statistically insignificant effects spill over in the simulation results. Therefore, given the strong correlations between the independent variables and that the latter – since they are causally very distant predictors of the dependent variables – often show just very weak association with the dependent variable, I decided to present the results obtained with stepwise models too.

Next, the mean probability of support for each party *j* was compared in 90 social groups in 60 different elections under the observed and the hypothetical information levels under each of the four models.[11] These groups were defined in terms of sex (male or female), age (five categories), education (less than secondary/high school education, secondary/high school education, college or university) and income (lowest two quintiles, middle quintile, top two quintiles).[12] The absolute differences in the mean probability of support for each party under the observed and the hypothetical information distribution were summed up to derive a summary measure of information effects on vote distributions for the whole party system. This yielded four estimates of information effects on vote distributions in the maximum 90 groups in the 60 national samples.[13] The remainder of the empirical analysis is the analysis of the relationship between the observed information level of each group and the simulated information effects on the vote in the same group.

4. Empirical Analysis

While the road leading to the analysis has been rich in assumptions and complex variable construction procedures, the analysis itself is fairly simple and involves Pearson correlations and OLS-regressions at most. The key variables here are the four different estimates of

[11] Since the number of respondents within each group rapidly diminishes as more and more demographic breakdowns are employed, only the variables showing the strongest effects on information level were taken into account.

[12] These four variables were used to define the groups in the final stage of the analysis because of all the socio-demographic variables that entered the vote functions they showed the strongest and most consistent impact on political knowledge across the 60 elections.

[13] Some combination of age, sex, income and education proved actually non-existent in some samples. Therefore the number of groups distinguished is lower than 90 in those samples, and the total number of groups in the analysis is not 5400 but 4974.

Group_Swing, i.e. the information effects on the vote in up to 90 socio-demographic groups in each of 60 post-election survey samples, and *Group_Info*, i.e. the observed mean of the *Knowledge* variable in the same groups. As explained above, the estimates about individual elections and parties are likely to be polluted with some random measurement error of unknown size beyond the usual sampling error. Thus, only the general trends are worth looking at.

Table 1 shows the mean and standard deviation of the estimated difference between vote distributions at the observed information level and under full information across the 4974 groups in the analysis. Note that in this and every subsequent table, groups are weighted by their relative weighted size within election studies, and each election has an equal weight irrespectively of survey sample size or the number of socio-demographic groups with a positive frequency in the respective election study.[14]

Table 1: Descriptive statistics about information effects at the level of socio-demographic groups (weighted N=4974)

Model characteristics		***Statistics on variable Group_Swing***	
Nonlinear effects	***Variable entry***	***Mean***	***Std. Deviation***
Disallowed	All simultaneously	0.26	0.14
Allowed	All simultaneously	0.40	0.20
Disallowed	Stepwise	0.18	0.11
Allowed	Stepwise	0.22	0.15

The differences between vote distributions at the observed and fully information level are remarkably large. Depending on the model, they average between .18 and .40 – i.e. a 18 to 40 percent swing of the vote may occur at the group level if, all of a sudden, everyone became fully

informed but nothing else changed in this world. Of course, some of these information effects cancel out each other as the voice of many different social groups get aggregated into an election outcome: the parties that benefit from information effects in one group lose votes due to the same effects in other groups. Yet, as Table 2 shows, at the national level the expected information effect on the vote is still very high, between .16 and .29, i.e. 16 to 29 percent of the popular vote. Clearly, the typical situation in a democratic election is that the information in the electorate is not simply sporadic, but it is also biased in favor of some competitors. Thus, the mere aggregation of choices at the collective level does not cancel out the impact of all decision errors visible at the individual and group levels (Althaus 1998, 2003).

The figures in Table 2 are much higher than Bartels' estimates for information effects on the two-party vote in US presidential elections between 1972 and 1992. Yet, this comes hardly as a surprise. The more fragmented choice set we look at, the greater the information effects should be if they are merely defined as the choice of one party instead of the other. The fact that some of the present estimates also allow for non-linear information effects, and take the possible choices of non-voters also into account must also increase the estimated information effects compared to Bartels' study. Also, since much the same set of socio-demographic variables is used to model vote for each country, the models that force the entry of all interactions with knowledge level inevitably allow many statistically insignificant and potentially irrelevant effects on the vote to spill over into the estimated information effects. This must explain why the two stepwise entry models produce far more moderate estimates. Finally, the age of the party system and the

[14] The minimum and maximum values are always 0 and 1, but are of no substantive interest here since some of the groups contain less than one case with the sample design/demographic weights taken into account.

capacity of political communications to supply nearly every voter with powerful information shortcuts must also reduce the size of information effects in US elections – indeed the estimates for the US are consistently among the lowest, and even those for Mexico 2000, the only non-US election for which estimates were published in the previous literature (see Sekhon 2004), are also far below the present sample averages (data not shown).

Table 2: Descriptive statistics about information effects on election outcomes at the national level (N=60 elections)

Model characteristics		***Statistics on variable National_Swing***	
Nonlinear effects	***Variable entry***	***Mean***	***Std. Deviation***
Disallowed	All simultaneously	0.19	0.08
Allowed	All simultaneously	0.29	0.12
Disallowed	Stepwise	0.16	0.08
Allowed	Stepwise	0.20	0.11

Therefore, the relatively large information effects observed in this comparative study are not really surprising, but the estimates are likely inflated by methodological artifacts. This bias, however, should impact all groups equally, and is thus unlikely to influence what the results of interest are in the present context. These are summarized in Table 3, which presents OLS regressions of *Group_Swing* on the mean knowledge level of the socio-demographic group, i.e. the *Group_Info* variable. The only other variable that enters the analysis is *National_Swing* – information effects should be greater for every group when they are generally high in an election.

Whichever of the four models are used to simulate the *Group_Swing* variable, the coefficient showing its dependence on *Group_Info* is highly significant and negative. Moreover, the coefficient is always of a similar size around -.3. In fact, the only statistically significant

difference in the coefficient is between the first and the fourth panel of Table 3, while the -.32, -.29 and -.27 estimates obtained under the last three models of vote choice are not distinguishable from each other.

Table 3: Regression of information effects on the level of socio-demographic groups (weighted N=4974)

The characteristics of the model generating the Group_Swing variable:			**OLS-regression model with *Group_Swing* as the dependent variable:**				
Nonlinear effects	***Variable entry***		**b**	**s.e.**	**beta**	**T-value**	**R-square**
Disallowed	All simultaneously	(Constant)	0.29	0.01		21.75	0.26
		Group_Info	-0.37	0.02	-0.18	-15.15	
		National_Swing	0.85	0.02	0.48	39.24	
Allowed	All simultaneously	(Constant)	0.33	0.02		17.79	0.26
		Group_Info	-0.32	0.03	-0.12	-9.47	
		National_Swing	0.82	0.02	0.50	40.55	
Disallowed	Stepwise	(Constant)	0.18	0.01		21.49	0.52
		Group_Info	-0.29	0.02	-0.18	-18.67	
		National_Swing	0.94	0.01	0.70	71.56	
Allowed	Stepwise	(Constant)	0.18	0.01		15.90	0.47
		Group_Info	-0.27	0.02	-0.13	-12.62	
		National_Swing	0.91	0.01	0.67	64.57	

The first implication is that for the less informed groups there is a bigger gap between observed and fully informed voting behavior than for the more informed groups. If fully informed choices are better decisions than less informed choices are – as section one pointed out, expressive voting may raise question marks about this – then this finding means that unequal information turns into unequal political influence in the electoral arena. To interpret the parameter of interest, remember that the standard deviation of the underlying normal variable of

political information is set at 1/6, and note that the metric of the *Group_Swing* variable retains the metric of vote probabilities. Thus, a socio-demographic group with a mean information level one standard deviation below the national mean would record a roughly 30/6=5 percent bigger information effect on the vote than the average citizen. In other words, if an average social group, for which *Group_Info*=.5, returns, in a typical election, a vote distribution that is about 20 percent different than its fully informed vote distribution – and Table 2 suggests that this is probably a reasonable estimate –, then a disadvantaged group with *Group_Info*=.33 will return in the same election a vote distribution that is 25 percent different from its fully informed vote.

However, one has to note that it is quite unusual that a social group would be a whole standard deviation less knowledgeable than the population mean. With the groups weighted by their relative size, the standard deviation of the *Group_Info* variable is .07, i.e. less than half the standard deviation of the normalized knowledge variable is at the individual level. That is to say that the social groups for which *Group_Info* is .33 or less fall more than two standard deviations below the average information level of the 90 social groups. In other words, these groups contain less than 2.5 percent of the eligible voters, and thus it makes virtually no difference in the election outcome if they are 5 percent further away from casting a fully informed vote than the average citizen is.

A final noteworthy result in Table 3 is that the impact of *National_Swing* is clearly much bigger on *Group_Swing* than that of *Group_Info*. This, in its turn, suggests that the gap between observed and fully informed voting behavior is far more dependent on how close the election outcome in general approximates the fully informed outcome in the given election than on the information level of the group in question. In other words, whether a group comes close to

producing a fully informed distribution of vote choices depends more on the socio-political context than on the relative knowledge level of the group itself.

5. Discussion

In recent years, the problem of voter inequality attracted considerable attention among political theorists (Offe 1997;Simpson 1997). Some proposed radical measures to combat it like granting special veto rights to disadvantaged groups, government support for civic associationalism and weighted representation (Knight and Johnson 1997), while others pointed at a wide range of potential victims (Breton and Breton 1997). Yet, the scholarly literature on voting has rarely elaborated on voter inequality and for most of the time probably deemed it an inevitable consequence either of democratic elections themselves or of the complex social environment in which they occur (Berelson, et al. 1954;Converse 1987, 1990;Downs 1957;Smith 1989). The more recent literature is dominated by a tide of ingenious works on how and why relatively uninformed citizens may be able to emulate the choices of political sophisticates, or at least to make very good use of the little information they have (Lupia 1994;McKelvey and Ordeshook 1986, 1990;Popkin 1991;Sniderman, et al. 1990).

The present evidence suggests that the socially unequal distribution of political knowledge does introduce a systematic bias into the electoral arena. The chronically lesser informed social groups show a significantly bigger gap between their fully informed and observed voting behavior than the better informed groups. Indeed, if the information level of citizens were both higher and more equal, systematically different election results may obtain –

presumably forcing political parties to adjust their offering to the behavior of a different electorate.

Yet the magnitude of the political inequalities generated by unequal knowledge are surprisingly small – and definitely quite small compared to how far any social group is likely to be from behaving as if they were fully informed. Apart from lottery games, elections may still be the most egalitarian collective decision-making mechanism ever invented. There seem to be three main reasons for this.

The first two are relatively straightforward and well-known from previous research as well, yet their implication for how egalitarian elections can really be deserves more attention than it received so far. First, political knowledge shows a modestly strong relationship with the socio-political characteristics of the individual (see Tóka 2002, Table 1). Therefore, the knowledge level of social groups does not differ dramatically. Second, the determinants of vote choice and political knowledge overlap only weakly. Hence the groups that differ in their political knowledge level are fairly evenly distributed among the electorates of the different parties.

Third, information effects work very much like Russian roulette. It is nearly random which groups and parties they put at a disadvantage in a given election. No doubt, the central tendency is that the difference between observed and fully informed behavior tends to decrease with actual political information level. However, even this relationship is weak, stochastic and may break down in some national elections. The frequency of such breakdowns can be assessed by replicating Table 3 for every party system separately. The relevant coefficient, showing the impact of group information level on the net effect of information on party switches appears to

be positive – depending on the vote choice model that was used to estimate information effects – in 13 to 20 out of 60 times, and statistically significantly so in about half of these cases (data not shown). In other words, somewhere between one-quarter and one-third of the political contexts covered by this analysis the generally better informed groups were a bit more likely to vote in a seemingly uninformed way than the generally less knowledgeable groups. It would seem then that situational effects of information on election outcomes may often the reverse of the usual relationship between group information level and the probability of voting as if one were fully informed.

What distinguishes these situational effects from the kind of voter inequality that has been discussed in this paper is that they do not systematically discriminate between social groups. Rather, anyone can fall victim to the inequalities of the political influence temporarily induced by them. While these situational effects probably increase the absolute difference between fully informed and actual votes in the electorate, at the same time they weaken the systematic relationship between sociodemographic status and fully informed votes. Briefly, the victims of information-induced inequalities change constantly, and they are not always the low-information groups.

Rather, it is the electorate as a whole that systematically shows a big gap between fully informed and observed behavior. The systematic variations across social groups are pale in comparison. Overall, then, the electoral arena may be a nearly, though not perfectly, neutral arena for aggregating political preferences in an electorate characterized by unequal knowledge. However, while it can produce nearly fully informed collective outcomes in some elections, this analysis suggests that for most of the time it falls far short of that ideal objective of democracy.

APPENDIX: Variables and Coding

1. Variables used in building the vote functions

The *X* variables that entered the vote functions directly and/or in interactions with political knowledge and its squared value were as follows:

AGE: the age of the respondent in years;

AGESQ: age squared;

DEVOUT: a measure averaging the within-country standardized scores of the frequency of church attendance (from 1=never to 6=weekly) and subjective religiosity (from 1=has no religious beliefs to 4=very religious), with missing values on both input variables replaced by the sample mean.

EDUCATION LOW: coded 1 for primary education or less and 0 otherwise;

EDUCATION HIGH: coded 1 for university education or more and 0 otherwise;

FARM JOB: coded 1 for agricultural occupation and 0 otherwise;

FEMALE: coded 1 for women and 0 otherwise;

INCOME: personal income, divided into quintiles (from 1=lowest to 5=highest) by election;

MANUAL WORK: coded 1 for nonagricultural manual workers and 0 otherwise;

MINORITY 1: coded 1 for Asians in Australia; Belorussian-speakers in Belarus; American Indians, Blacks, and Mulatto in Brazil; French-speakers in Flanders and Dutch-speakers in Wallony in Belgium; Moslems and Turkish or Pomak ethnicity in Bulgaria; English-speakers or English/Scottish/Welsh/Irish/British ethnicity in Quebec; French-speakers or French ethnicity in the rest of Canada; residents of Moravia in the Czech Republic; non-

Catholics in Chile; Moslems in France; Swedish-speakers in Finland; Catholics in either part of Germany; Christians in Hong Kong; Roma in Hungary; Protestants in Ireland; in Israel for respondents whose or themselves were born in North Africa, Ethiopia or Asia; Christians in South Korea; people of Polish ethnicity in Lithuania; natives in Mexico; Catholics in the Netherlands; Maori people in New Zealand; Tagalog in the Philippines; people of African or Asian racial origin in Portugal; ethnic Hungarians in Romania; anyone who is not a Russian-speakers or of Russian ethnicity in Russia; Croatian, Serb or "Moslem" ethnicity in Slovenia; Catalan-speakers in Spain; Catholics in Switzerland; mainland Chinese in Taiwan; African-Americans in the US; ethnic Russians in the Ukraine; people of Asian or African origin in England and Wales; and 0 otherwise.

MINORITY 2: coded 1 for Catholics in Australia; Polish-speakers, Polish ethnic origin, and Catholics in Belarus; Catholics in English-speaking provinces of Canada; Buddhists in Taiwan; people of Russian ethnicity in Lithuania; Catholics in New Zealand; Cebuano in the Philippines; Moslems in Russia and Thailand; Italian-speakers or ethnics in Switzerland; Catholics and Jews in the US; residents of three Western regions in the Ukraine; and 0 otherwise.

RURAL RESIDENCE: coded 1 for residents in rural areas and 0 otherwise.

VOTE: For concurrent elections of two different houses of parliament or legislature and president, the vote choice variable measured vote in whichever of these elections is more important for government formation in the given country: e.g. presidential vote choice in the US, but party list vote in the lower house elections in Romania. Parties and presidential candidates with less than 30 (unweighted) voters in the data set were

collapsed into a single 'other candidates' category. If the frequency of this other category still remained below 30, then these respondents were entirely excluded from the analysis. Nonvoters were assigned a missing value on the VOTE variable but were not excluded from the analysis afterwards.

Note that missing values on all socio-demographic variables were mean-substituted.

2. Variables used in constructing the socio-demographic groups that are the units of analysis in Table 1 and 3

AGE 5: coded 1 for 30 years old and younger; 2 for the 31–40 years old; 3 for the 41–50 years old; 4 for the 51–60 years old; 5 for 61 years and older.

EDUC 3: coded 0 for less than completed secondary education, 2 for a college degree or higher, and 1 otherwise.

GENDER: coded 1 for women and 0 otherwise.

INCOME 3: personal income, coded 0 for respondents in the bottom two quintiles, 2 for the top two income quintiles, and 1 otherwise.

3. Variables in Tables 1-3

GROUP_INFO: the mean value of variable *Knowledge* in the 90 demographic groups in each election, which were defined with the help of the variables listed above.

GROUP_SWING: the equivalent of NATIONAL-SWING on the level of the 90 demographic groups. The computation is identical to that of NATIONAL-SWING except that the values are calculated for each group separately.

NATIONAL_SWING: system level estimate of change in election outcome under each of four different models of vote choice. The variable is simply half the sum of absolute differences in the mean probability of support for each party under the observed and the hypothetical information distribution under a particular model.

3. The construction of the *Knowledge* variable

The individual-level knowledge measure used in the vote functions is based on how the respondents placed various political parties on eleven-point scales running from "left" to "right". In brief, it was first determined how much political knowledge different responses to these questions implied, and then the knowledge variable summed up the "truth-values" of all responses given by the respondents regarding all the parties they were asked about. The number of parties that the respondents placed on the left-right scale ranged from three in Britain, for instance,[15] to nine in the Dutch data in the CSES 2 data set. For Japan, a progressive-conservative scale was used instead of left-right.

I reckon that different respondents probably have different "anchor points" on the same scale. For instance, a left-wing respondent may place left-wing parties closer, and right-wing parties further away from the perceived mid-point of the left-right scale than a right-wing respondents does. Similarly, two equally highly informed respondents may give more or less widely scattered responses about the position of different parties on the same scale depending on minor differences in how they interpret the endpoints of the issue scales, or whether they think that the parties in their country generally offer too little choice or ways too polarized positions on

relevant issues. How far someone places a party on a scale from what seems to be the best response category may say something about how knowledgeable the respondent is, but also speaks about the political views of the person. There appears to be no way of telling apart the valid information about knowledge from the information about political views.

Given that the ultimate purpose of the analysis is an analysis of the direction of relationships between political knowledge and voting preferences, it was deemed more important to minimize the systematic error variance on the knowledge variable than to minimize its random error variance. Thus, the absolute party placements on the left-right scale were replaced with relative placements involving pairs of parties, and all responses regarding each pairs were recoded into just four categories: (1) party A is to the left of party B; (2) party A is to the right of party B; (3) party A and party B have the same position; or (4) the respondent did not answer the question, or responded with a "do not know". This simplification of the responses most probably involved the loss of some valuable information about political knowledge, but almost certainly made the resulting knowledge variable less polluted with systematic biases towards a specific political perspective.

The crux of the matter is defining what really is a knowledgeable answer regarding these relative party placements. Obviously, in everyday political discourse left-right placements are eminently disputable questions, so we should not believe that there is a single right answer to the respective questionnaire items and that all other responses are simply and equally wrong. Rather, the truth-value of each answer is a matter of degree. The solution adopted here allows for the possibility that "do not know" or missing answers to such questions may not always represent

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[15] The placements of the Scottish Nationalist Party and Plaid Cymru were ignored

less knowledge than some other responses do (see Berinsky 2002; Mondak and Davis 2001; Mondak and Canache 2004). But more importantly, the "truth-value" of each relative party placement is determined by how much more likely a maximally informed respondent than a maximally uninformed respondent was to give that response. This can be estimated by regressing relative party placements on other available indicators of political knowledge in the CSES surveys. These included country-specific questions about lexical political knowledge and – in the CSES 1 surveys – name recognition of candidates running for election in the respondent's electoral district.

The simultaneous dependence of both knowledge and party sympathies on socio-demographic background may create spurious correlations between these simple knowledge variables and certain patterns of relative party placements on the left-right, which really reflect just a particular political perspective shared by individuals who, because of their socio-demographic background, are likely to score high on lexical knowledge variables. To filter out these spurious correlations from the process of determining the "truth-value" of each relative party placement, the multinomial logit analyses that were carried out for each pairwise comparison of parties on the left-right scale included among the independent variables age, gender, income and education (for their coding see above).

The results of these regressions are of no substantive interest here and cannot be reported for sheer reasons of space, given the large number of national samples and pairwise comparisons between parties for which the regression analyses had to be carried out separately. The relevant yield of these analyses was the predicted probability of each of the four response categories for

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because these were only available for small regional subsets of the UK sample.

two fictitious respondents: both exactly matching the national sample mean on the socio-demographic variables, but one showing the highest, and the other the lowest possible level of knowledge. Then, the truth-value of each response category was determined as the difference between its predicted probability for the maximally involved and the maximally uninvolved respondent.

Suppose now, for instance, that the fictitious Superinvolved respondent had a predicted probability of .2, .2, .4 and .2 to place party A to the left of Party B, to the right of Party B, to the same place as Party B, or fail to place at least one of the two parties on the left-right scale, respectively, while the same probabilities for the fictitious Superuninvolved respondent were .0, .3, .4 and .3, respectively. The modal answer for both – with a probability of .4 – is that the two parties have the same position. Maybe in some objective sense – such as in expert judgments – this is the "correct" answer to this particular placement question. However, since this answer is equally frequently given by both people who are likely to be highly informed and those who are mostly likely uninformed, we cannot guess from these answers whether the person who gave it is from among the first or the second group. Thus, the contribution to such an answer to a good knowledge scale is exactly zero.

In contrast, the Superinvolved respondent has a twenty, while the Superuninvolved a zero percent probability to place Party A to the left of Party B. Clearly, this is a minority opinion, but the view of a sophisticated minority. Maybe it reflects some relatively new information, or a very subtle reading of the leaves, possibly relying on different left-right semantics than what is most common in the electorate. Either way, if someone gives this answer, our best guess is that the person is probably rather knowledgeable. So, in constructing the knowledge scale, respondents

should be given a plus .2 (.2 minus .0) score for this answer. Similarly, they should be given a negative -.1 score for either not placing both parties on the scale, or for placing Party A to the right of Party B, because these answers are ten percentage point more likely for a Superuninvolved than for a Superinvolved respondent.

This method of determining the relative truth-value of the responses has numerous advantages. It even allows for the possibility – however unlikely that is – that for some parties "do not know" may be the most informed response that any citizen can possibly give regarding their position on certain issues. In yet other instances there may be several equally good answers to the same party placement question, and if so, then this method is capable of discovering that. No matter how small a minority gives an answer, it can qualify as the best possible answer according to this method, provided that the probability difference between the Superinvolved and Superuninvolved respondents is higher for offering this response than for any other. The method gives a natural weighting of party pairs and scales for the building of the knowledge scale that can vary across countries as it seems appropriate, and which uses the same metric across the whole universe of between party comparisons and response categories. Summing up the respective "truth-value" of the individual responses is straightforward and yields a very nearly normal distribution of scores within most national samples in the CSES data set. To standardize the distribution across countries, the resulting knowledge variable was converted into normal scores constrained to fall in the 0 to 1 range, with a mean of approximately .5 and a standard deviation of approximately .16. This rescaling completed the construction of the individual level political knowledge that was then used in the simulation of aggregate-level information effects on election outcomes as described above.

References

Althaus, Scott L. 1998. "Information Effects in Collective Preferences." *American Political Science Review* 92: 545-558.

Althaus, Scott L. 2003. *Collective Preferences in Democratic Politics: Opinion Surveys and the Will of the People*. Cambridge: Cambridge University Press.

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

Bartels, Larry M. 1986. "Issue Voting Under Uncertainty: An Empirical Test." *American Journal of Political Science* 30 (4): 709-728.

Bartels, Larry M. 1996. "Uninformed Votes: Information Effects in Presidential Elections." *American Journal of Political Science* 40: 194-230.

Berelson, Bernard R., Paul F. Lazarsfeld, and William N. McPhee. 1954. *Voting: A Study of Public Opinion Formation in a Presidential Campaign*. Chicago, IL: The University of Chicago Press.

Blais, André. 2000. *To Vote or Note To Vote? The Merits and Limits of Rational Choice Theory*. Pittsburgh, PA: University of Pittsburgh Press.

Brennan, Geoffrey, and Alan Hamlin. 1998. "Expressive Voting and Electoral Equilibrium." *Public Choice* 95: 149-175.

Breton, Albert, and Margot Breton. 1997. "Democracy and Empowerment." In *Understanding Democracy: Economic and Political Perspectives*, edited by Albert Breton, Gianluigi Galotti, Pierre Salmon and Ronald Wintrobe. Cambridge: Cambridge University Press, pp. 176-195.

Converse, Philip E. 1987. "Changing Conceptions of Public Opinion in the Political Process." *Public Opinion Quarterly* 51: 512-524.

Converse, Philip E. 1990. "Popular Representation and the Distribution of Information." In *Information and Democratic Processes*, edited by John A. Ferejohn and James H. Kuklinski. Urbana, IL: University of Illinois Press, pp. 369-387.

CSES. 2003. "Comparative Study of Electoral Systems Module 1 Full Release." Data set, 4 August 2003. Ann Arbor, MI: University of Michigan, Center for Political Studies.

CSES. 2006. "Comparative Study of Electoral Systems Module 2 Fourth Advance Release." Dataset. 10 April 2006. Ann Arbor, MI: University of Michigan, Center for Political Studies.

Delli Carpini, Michael X., and Scott Keeter. 1996. *What Americans Know About Politics and Why It Matters*. New Haven, CT: Yale University Press.

Donohue, George A., Philip J. Tichenor, and Clarice N. Olien. 1975. "Mass Media and the Knowledge Gap: A Hypothesis Reconsidered." *Communication Research* 2: 3-23.

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

Fiorina, Morris P. 1990. "Information and Rationality in Elections." In *Information and Democratic Processes*, edited by John A. Ferejohn and James H. Kuklinski. Urbana, IL: University of Illinois Press, pp. 329-342.

Fishkin, James S., and Robert C. Luskin. 1999. "Bringing Deliberation to the Democratic Dialogue." In *The Poll with a Human Face: The National Issues Convention Experiment*

in Political Communication, edited by Maxwell E. McCombs and Amy Reynolds. Mahwah, NJ: Lawrence Erlbaum Associates, pp. 3-38.
Franklin, Mark N. 2004. *The Dynamics of Voter Turnout in Established Democracies Since 1945*. New York: Cambridge University Press.
Knight, Jack, and James Johnson. 1997. "What Sort of Equality Does Deliberative Democracy Require?" In *Deliberative Democracy: Essays on Reason and Politics*, edited by James Bohman and William Rehg. Cambridge, MA: The MIT Press, pp. 279-320.
Lassen, David Dreyer. 2005. "The Effect of Information on Voter Turnout: Evidence from a Natural Experiment." *American Journal of Political Science* 49 (1): 103-118.
Lau, Richard R., and David P. Redlawsk. 2001. "Advantages and Disadvantages of Cognitive Heuristics in Political Decision Making." *American Journal of Political Science* 45: 951-971.
Lupia, Arthur. 1994. "Shortcuts versus Encyclopedias: Information and Voting Behavior in California Insurance Reform Elections." *American Political Science Review* 88: 63-76.
Lupia, Arthur, and Mathew D. McCubbins. 1998. *The Democratic Dilemma: Can Citizens Learn What They Need to Know?* Cambridge: Cambridge University Press.
Luskin, Robert C. 1990. "Explaining Political Sophistication." *Political Behavior* 12 (4): 331-361.
McKelvey, Richard D., and Peter C. Ordeshook. 1986. "Information, Electoral Equilibria, and the Democratic Ideal." *The Journal of Politics* 48: 909-937.
McKelvey, Richard D., and Peter C. Ordeshook. 1990. "Information and Elections: Retrospective Voting and Rational Expectations." In *Information and Democratic Processes*, edited by John A. Ferejohn and James H. Kuklinski. Urbana, IL: University of Illinois Press, pp. 281-312.
Moore, David. 1987. "Political Campaigns and the Knowledge-Gap Hypothesis." *Public Opinion Quarterly* 51: 186-200.
Mueller, Dennis C. 1989. *Public Choice II*. Cambridge: Cambridge University Press.
Norpoth, Helmut, and Bruce Buchanan. 1992. "Wanted: The Education President. Issue Trespassing by Political Candidates." *Public Opinion Quarterly* 56: 87-99.
Offe, Claus. 1997. "Micro-aspects of Democratic Theory: What Makes for the Deliberative Competence of Citizens?" In *Democracy's Victory and Crisis. Nobel Symposium No. 93*, edited by Axel Hadenius. Cambridge: Cambridge University Press, pp. 81-104.
Page, Benjamin I. 1978. *Choices and Echoes in Presidential Elections*. Chicago, IL: Chicago University Press.
Palfrey, Thomas R., and Keith T. Poole. 1987. "The Relationship between Information, Ideology and Voting Behavior." *American Journal of Political Science* 31: 511-530.
Popkin, Samuel L. 1991. *The Reasoning Voter: Communication and Persuasion in Presidential Campaigns*. Chicago, IL: University of Chicago Press.
Sekhon, Jasjeet. 2004. "The Varying Role of Voter Information across Democratic Societies." APSA Political Methodology Section working paper. Available from http://polmeth.wustl.edu/workingpapers.php?year=2004 accessed on 18 January 2005.
Simpson, Miles. 1997. "Informational Inequality and Democracy in the New World Order." In *Inequality, Democracy, and Economic Development*, edited by Manus I. Midlarsky. Cambridge: Cambridge University Press, pp. 156-176.

Smith, Eric R. A. N. 1989. *The Unchanging American Voter*. Berkeley, CA: The University of California Press.
Sniderman, Paul M., James M. Glaser, and Robert Griffin. 1990. "Information and Electoral Choice." In *Information and Democratic Processes*, edited by John A. Ferejohn and James H. Kuklinski. Urbana, IL: University of Illinois Press, pp. 117-135.
Tóka, Gábor. 2002. "Voter Inequality, Turnout and Information Effects in a Cross-National Perspective." Helen Kellogg Institute Working Paper Series No. 297. Notre Dame, IN: The Helen Kellogg Institute for International Studies at the University of Notre Dame.
Verba, Sidney, Kay Schlozman, and Henry Brady. 1995. *Voice and Equality: Civic Voluntarism in American Politics*. Cambridge, MA: Harvard University Press.
Zaller, John. 1992. *The Nature and Origins of Mass Opinion*. New York: Cambridge University Press.