Rousseau's General Will: A Condorcetian Perspective

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*W*e identify three basic elements of Rousseau's theory of the general will: (1) there is a common good; (2) citizens are not always accurate in their judgments about what is in the common good; and (3) when citizens strive to identify the common good and vote in accordance with their perceptions of it, the vote of the Assembly of the People can be taken to be the most reliable means for ascertaining the common good. We then show that Condorcet's (1785) model of collective judgment shares these assumptions with Rousseau and that understanding the implications of Condorcet's (1785) "jury theorem" enables us to clarify many of the most obscure aspects of Rousseau's treatment of the general will, including his discussion of the debilitating effects of factions and his confidence in the ability of the Assembly of the People to discern the general will by means of voting.

Rousseau's seminal contributions to democratic theory are his views on the development of the social contract and his notion of the "general will." Although the "general will" has been given various interpretations, there has been little understanding of how, in practice, political institutions might ascertain the general will for the purpose of effectuating public policy.

We illuminate the logic underlying Rousseau's notion of the general will by making use of long-neglected ideas of Rousseau's contemporary, Condorcet, especially those about the judgmental competence of individuals and groups. We also present some new results about the linkages between (individual and collective) preferences and (individual and collective) judgments about the nature of the public good. In the process, we show how

some of the most obscure passages in Rousseau can be clarified by referring to results about features of majority rule first demonstrated by Condorcet some decades after *Of the Social Contract* was published. In particular, we examine the relationship between the general will and the will of all, the likelihood that the general will will err, and the subordination of individual opinions to the collective judgment. Our aim is to understand how collective decision-making processes may be appropriately used to ascertain the general will.

Almost no scholars dealing with Rousseau mention Condorcet (for important exceptions see Barry 1964, 1965, and Baker 1980), and even those who mention him customarily cite not his 1785 essay on voting but other works dealing with quite different topics (see, e.g., Ellenburg 1976,

46, 84, 85). A leading interpretation of Rousseau's general will, made famous by Runciman and Sen (1965), interprets it in the context of a prisoner's dilemma game, and treats it as a problem of reconciling conflicting individual preferences rather than as a problem of developing a reliable judgment of what is in the collective interest. We view our approach, with its focus on social judgments, as complementary to that of Runciman and Sen, and providing a needed corrective to a current focus, in social choice theory, on treating all value questions in democratic theory as if they could be reduced to some aspect of the problem of aggregation of preferences.

Rousseau's General Will

The general will can only direct the forces of the State in keeping with the end for which it was instituted, which is the common good; for if the opposition of private interests has made the establishment of societies necessary, the harmony of these same interests has made it possible. That which is common to these different interests forms the social bond; and if there were not some point in which all interests agree, no society could exist. Now it is only on this common interest that the society should be governed. (Rousseau 1984, 66 [3.1])

In this quote from Book 3 of *Of the Social Contract*, Rousseau recognizes that people differ in their interests but asserts that there is a common (or public) interest on which all humankind can agree in principle—even though not all would wish to pursue it: "Indeed, each individual may, as a man, have a particular will contrary to, or divergent from, the general will which he has as a citizen. His private interest may speak to him quite differently from the common interest; his absolute and naturally independent existence may make him regard what he owes to the common cause as a gratuitous contribution, the loss of which will be less harmful

to others than will the payment of it be onerous to him" (p. 53 [1.7]).

How is the general will to be ascertained? Rousseau's answer is, by voting: "The voice of the greater number always obliges all the others" (p. 328 [4.2]). However, the vote is not to be an aggregation of self-interested preferences. Rather, "when a law is proposed in the Assembly of the People, what is asked of them is not precisely whether they approve the proposition or reject it; but whether or not it conforms to the general will which is their own: each in giving his vote states his opinion on that question, and from the counting of the voting is taken the declaration of the general will" (p. 329 [4.2]).

This passage in Rousseau is often misunderstood. It represents an understanding of the process of voting not as a means of combining divergent interests but rather as a process that searches for "truth." Somewhere in the course of the development of capitalism, what we may think of as an essentially religious idea of voting—a search for God's mandate as revealed through man's finite cognitions (still present in some contemporary religious groups, e.g., the Bruderhof Commune [Zablocki 1971]) was replaced with a much more individual interest-based notion (Riley 1986).[1] Contemporary social welfare economics, beginning with Arrow's work (1963), has focused entirely on voting as a means of preference aggregation. The notion of voting as a process that can be thought of as a direct search for the common good—indeed, the very notion that there can be a common good that is something other than some form of summation or reconciliation of the *preferences* of individuals—has been lost.

There is another important implication of this quote about the nature of voting in the Assembly of the People, namely, that even those individuals whose vote is based on their perception of the common

good may err in that perception:[2] "When the opinion contrary to mine prevails, that only proves that I was mistaken, and that what I had considered to be the general will was not" (Rousseau 1984, 329 [4.2]).

Because the voters who seek the general will are fallible in their judgments, the collective judgment can also sometimes be wrong: "The general will is always upright and always tends toward the public utility, but it does not follow that the deliberations of the people always have the same rectitude. One wishes always his own good but does not always discern it. The people is never corrupted, though often deceived, and then only does it seem to will that which is bad" (p. 75 [2.3]).[3]

Nonetheless, Rousseau expects the vote of the popular assembly (i.e., its "declaration of the general will") to coincide with the general will under reasonable conditions: "If, when an adequately informed people deliberate, the citizens having no communication among themselves, . . . the general will would always result" (p. 75 [2.3]).

We should also note that Rousseau, in the passage quoted directly above, sees the "deliberative process" as one taking place within individuals rather than in terms of a process of group debate. Thus, each voter is seen as seeking to reach an individual and independent judgment about alternatives.

There are three elements of Rousseau's theory of the general will that we wish to single out:

1. There is a common good.[4]
2. Citizens are not always accurate in their judgments about what is in the common good.[5]
3. When citizens strive to identify this common good and vote in accordance with their perceptions of it, the vote of the Assembly of the People can be taken to be the most reliable means for ascertaining the common good.[6]

Condorcet's Jury Theorem as a Formalization of Rousseau's General Will

Rousseau has long been acknowledged as one of the great political philosophers. In contrast, Rousseau's contemporary, Condorcet, languished long in obscurity until his idea of the "paradox of cyclical majorities" was rediscovered by Black (1950, 1958) and helped lay the foundation for modern social choice theory (see, e.g., Arrow 1963; Farquharson 1969; Plott 1976; Riker 1964; Sen 1966; and a host of others). However, the idea for which Condorcet is now most famous, the paradox of cyclical majorities, was actually only an incidental by-product of the problem on which he was working, which was the problem of ascertaining how groups could best make choices that were collectively optimal (Black 1958; Grofman, Owen, and Feld 1983; Pinkham and Urken 1982; Young 1986).

Two hundred years ago Condorcet (1785) recognized that majorities of individuals are likely to be more often correct than individuals. Whether understood by the participants or not, this is one fact that makes democracy "work." Condorcet's result, however, was lost for most of the next two hundred years (Black 1958) and even today is nowhere near as well known as it deserves to be (Barry 1965; Grofman 1975; Grofman and Owen 1986a, 1986b; Miller 1986). The Condorcet jury theorem (Black 1958; Condorcet 1785; Grofman 1975) says that if each individual is somewhat more likely than not to make the "better" choice between some pair of alternatives (along some specified evaluative dimension) and each individual has the same probability of being correct in this choice, then (with each voter voting independently) the probability of the group majority being correct increases as the number of individuals increases, towards a limiting

value of 1. Moreover, even if individuals have varying competence—where by *competence* we mean the individual probabilities of making the "correct" (dichotomous) choice (i.e., the choice that has the higher value along the specified evaluative dimension)—then so long as the *average* competence is greater than .5, the probability of the group majority being correct still increases to 1 as the group gets large (see Grofman, Owen, and Feld 1983).[7]

We can provide a statement of Condorcet's jury theorem in a form in which its resemblance to Rousseau's theory of the "general will" will be readily apparent. We assume that

1. There is a common good and a set of alternatives that more or less share in its virtues. Thus, alternatives can in principle be evaluated with respect to the underlying normative dimension of consonance with the public interest (general will), and this evaluative dimension permits us, in principle, to rank-order alternatives.
2. With respect to choice between any pair of alternatives, each citizen *i* has a probability p_i $(0 \leqslant p_i \leqslant 1)$ of choosing that alternative which is more in the public interest (closer to the general will).
3. A group of size N chooses between any two alternatives by means of a majority vote in which each voter is polled about his or her independently reached choice, without any group deliberation.

Though Rousseau was not at all a formal mathematical thinker, and despite the fact that some of the basic probabilistic ideas needed to make sense of the Condorcet jury theorem were still in a very preliminary stage of development in the 1750s, we believe that the Condorcet jury theorem accurately captures the basic ideas underlying Rousseau's notion of the general will. It seems virtually certain that ideas similar to those later to be formally developed by Condorcet were "in the wind," and influenced both Rousseau and, later, Condorcet; and there certainly were various social and intellectual linkages between Rousseau and Condorcet. One connection is via the *Encyclopédie* project, in which Diderot and D'Alembert were involved. Condorcet became a close friend of the mathematician and philosopher D'Alembert, whose notion of the pursuit of the common good anticipated that of Condorcet; Rousseau, as a close friend of Diderot, may have learned of these ideas.[8]

There are five key points in understanding the relationship between the ideas of Rousseau and those of Condorcet: *First*, the Condorcet jury theorem is based on a notion of common judgment, not separate individual preferences. It thus permits us to understand better how Rousseau's distinction between the general will and the "will of all" can be implemented in a voting assembly. In Rousseau's own language, "There is often a great difference between the will of all and the general will. The latter regards only the common interest; the other regards private interests and is only the sum of particular wills."

Second, the Condorcet jury theorem permits us to understand how the majority can be a representation of the general will (when its members act in judgment of the common good and not in terms of their particularized self-interests) without the majority will being *identical to* the general will. The Condorcet jury theorem states the "limit result" that as the group size grows large, if the average citizen is more likely than not to judge correctly which of any pair of alternatives is more nearly in the public interest, the majority vote of the group will be *almost certain to be correct* in its judgment *of the public interest*.[9]

Nonetheless, the general will may err, or—in Rousseau's terminology—"the

characteristics" of the general will "may not reside in the majority" (1984, 102 [4.3]). However, even for average group competence $\bar{p}$ near .5, the expected judgmental accuracy of large assemblies is considerable.[10] For example, even if $\bar{p}$ is only .51, a 399-member assembly has a competence of .66, while if $\bar{p} = .55$, a 399-member assembly has a competence of .98. For a reasonable level of $\bar{p}$ (e.g., $\bar{p} = .6$), even relatively small assemblies (of size greater than 41) have a group competence level P_N above .9 (see Grofman 1975; Miller 1986). For $p = .7$, an assembly of only size 11 will have a group competence level of above .9.

Third, knowledge of the Condorcet jury theorem (and recent extensions, e.g., Miller 1986; Owen 1986) helps us better understand the logic undergirding another somewhat puzzling passage in Rousseau:

> But when factions are formed, partial associations at the expense of the whole, the will of each of these associations becomes general with regard to its members and particular with regard to the state: one is then able to say that there are no longer as many voters as there are men, but only as many as there are associations . . . and [this] yield[s] *a less general result.* Finally, when one of these associations is so large that it overcomes the rest, . . . then there no longer is a general will, and the opinion which dominates is only a private opinion. (1984, 27 [2.3], emphasis ours)

We translate this remark of Rousseau in Condorcetian terms as an observation about factions reducing the *effective* size of the assembly. As the *effective* size of the assembly is reduced—because people vote as a herd (part of a faction) not as separately thinking and independently acting individuals—the Condorcet jury theorem tells us, group accuracy will be reduced. Indeed, at the extreme, if there is a majority faction, this faction is equivalent to a single voice deciding things; thus the benefits of large numbers are lost completely.[11] More generally, if individual choices are positively correlated with one another beyond the correlation to be expected from similarities in competence alone, group accuracy will be reduced (Owen 1986; Shapley and Grofman 1984).

Fourth, a focus on the judgmental basis of voting allows us to provide a mathematical foundation for Rousseau's observation that "the closer opinions approach unanimity, the more dominant is the general will" (1984, 322 [4.2]).

Using the Condorcetian probability framework, it can be shown that the more votes there are on the majority side, the more likely is the group majority to be correct.[12]

Fifth, a probabilistic approach to group judgment allows us better to understand Rousseau's views as to when supermajoritarian decision rules are called for: "The more important and serious the deliberations, the closer the prevailing opinion should approach unanimity; [on the other hand,] in decisions that must be resolved immediately, a majority of one vote should suffice" (p. 103 [4.2]).

If certain kinds of decisions are more subject to error than others (or are simply more important than others so that we wish to have a higher level of confidence that the group vote is an accurate expression of the general will), we might wish to require more than a bare majority vote, since this will reduce the error level since it can be shown that the more votes there are in favor, the more likely is the group judgment to be correct (Grofman 1978; Nitzan and Paroush 1985; cf. Buchanan and Tullock 1962; Rae 1969).[13]

Our emphasis has been on how individual judgments about what is in the public interest aggregate to indicate the general will. We believe that this approach captures the central notion of Rousseau's concept of the general will. However, Rousseau recognized that individuals were not always so nobly motivated and that they sometimes expressed their personal preferences, rather than seeking the general will (see n. 5). He also noted that the general will could some-

times emerge as the residue from the canceling out of individual self-interest in the process of aggregation: "The [general will] looks only to the common interest. The [will of all] looks only to private interest and is only the sum of particular wills: but take away from these same wills the pluses and minuses which cancel each other out and the general will remains as the sum of the differences" (1984, 76 [2.3]).

While this language has proved incomprehensible or nonsensical to some (e.g., Plamenatz quoted in Gildin 1983, p. 55), Gildin (1983, 55–57) provides a simple illustration of what Rousseau almost certainly meant. In Gildin's illustration of a Common's Dilemma, each fisherman would like to fish above the limit set by long-run social advantage, since, ceteris paribus, the few fish netted will not be sufficient to drive the fish population to extinction; yet if each fisherman "cheats," all will suffer (cf. Goodin 1982). Clearly, each fisherman wishes the rule to be one where *all other* fishermen must obey the limit. If we subtract out these egocentric peculiarities, the "common" preference is for a ban on fishing above the socially optimal limit for *all* fishermen (see Gildin 1983; cf. Runciman and Sen 1965).

However, as is clear from many passages from him, Rousseau believed that the most certain route to finding the general will was one in which individuals were primarily oriented toward the general will rather than to their own narrow self-interest.

Conclusions

We hope that our reconstruction of Rousseau's theory can lead to a broader understanding of democracy as a means to collective ends, rather than as just as a means for aggregating narrow interests residing in, and confined to, individuals. While it is often assumed that democracy

should be based upon individuals following their own self-interests, Rousseau's and Condorcet's contributions suggest that democracy "works" better when individuals try to see beyond their narrow self-interests to the collective good. Democracy may require a certain amount of shared collective consciousness to achieve competent collective judgments; consequently, polities that lack such consciousness may not function well as democracies.[14]

Even while many politicians and researchers recognize that voters often vote to further the collective rather than their individual interests, other researchers and theorists (especially those working in a social choice framework) tend to overlook the importance of these collective orientations. Politicians obviously recognize that appeals to "right," "good," and "fair" policies have some political appeal. Similarly, empirical research consistently shows that norms of citizen duty are one of the main determinants of whether citizens vote at all. However, theorists of democracy may fail to recognize that even relatively small amounts of collective orientation (i.e., only slightly more than none), especially in the context of negatively correlated individual interests, can aggregate to collective decisions with a high probability of serving the public good. That small differences in each individual's amount of collective orientation can make large differences in the likely ability of the electorate as a whole to make collectively beneficial judgments is one of the clear implications of the Condorcet jury theorem. Thus, it may not matter that individuals are not very "sociotropic" in their voting, as long as there are *some* elements of sociotropic voting present in a significant number of voters (cf. Miller 1986).[15]

We see Rousseau as a propounder of enlightened democracy, not dehumanized collectivism.[16] For Rousseau, as for Condorcet, the process of voting is a means

whereby the common good can be identified and implemented, albeit imperfectly.[17] In voting, however, social judgments, not individual preferences, are to be the basis of voter choice.[18] Democracy as a process for making good decisions based upon the aggregation of individual judgments has only recently begun to receive the attention that it deserves (Grofman and Owen 1986a, 1986b; Miller 1986; Nitzan and Paroush 1985; Pinkham and Urken 1982; Young 1986).[19] We hope our reinterpretation of Rousseau's views may encourage others to pursue the topic of collective judgments in terms of both descriptive and normative theory of democratic behavior.[20]

Notes

This research was begun while Grofman was a fellow at the Center for Advanced Study in the Behavioral Sciences, Stanford. We are indebted to the staff of the Word Processing Center, School of Social Sciences, UCI for typing and table preparation and to Dorothy Gormick for bibliographic assistance.

1. Riley (1986, ix) characterizes his book as "a study of the transformation of a theological idea, the general will of God to save all men, into a political one, the general will of the citizen to place common good of the city above his particular will as a private self, and thereby to 'save the polity.'"

2. Compare this idea with that of the "impartial spectator" that, according to Adam Smith in his *Theory of Moral Sentiments* (1971, 171) is contained within each of us and would be "forced" to agree on what is right. Such intuitionist notions of moral judgment are common in the seventeenth and eighteenth centuries.

3. We have omitted the continuation of this quote, which indicates what happens when the assembly is divided into factions. We will return to this problem later.

4. "If there were not some point in which all interests agree, no society could exist" (Rousseau 1984, 66 [2.1]).

5. Moreover, individuals may falter in their allegiance to the common good over self-interest: "If it is not impossible that a private will will agree at some point with the general, it is at least impossible that this agreement should be lasting and constant; for the private will naturally tends to preferences, and the general will to equality" (Rousseau 1984, 68 [2.1]).

6. Thus, from the vote of the Assembly "is taken the declaration of the general will" (Rousseau 1984, 329 [4.2]).

7. Let P_N be the majority judgmental accuracy of a group of size N ($m = (N + 1)/2$, if we assume, for convenience, N odd), i.e., let P_N be the probability that the group majority will, in a pairwise comparison, pick the alternative that is better with respect to the common interest. Let $\bar{p}$ be the average accuracy level of voters. Then, if voter choices are mutually independent,

$$P_N \approx \sum_{h=m}^{N} \binom{N}{h} (\bar{p})^h (1 - \bar{p})^{N-h}$$

and if $\bar{p} > .5$,

$$\lim_{N \to \infty} P_N \to 1.$$

If $\bar{p} < .5$,

$$\lim_{N \to \infty} P_N \to 0,$$

while if $\bar{p} = .5$, then, not so intuitively,

$$1 - e^{1/2} < \lim_{N \to \infty} P_N < e^{-1/2}$$

(Grofman, Owen, and Feld 1983).

8. In his *Encyclopédie* essays on natural rights and on the ancient Greeks, Diderot himself deals with the conflict between individual wills and the general will (see Riley 1986, 203–05). We are not, however, aware of any mention of Rousseau by Condorcet in his 1785 essay.

9. Grofman (1975) characterizes this aspect of the Condorcet jury theorem as "vox populi, vox dei," i.e., the voice of the people approaches infallibility.

10. The calculations below are based on a normal approximation to the situation in which all group members have identical accuracy levels. However, for $m > 10$ or so, distributional effects of competence are minimal, and the results given above may be used even for extreme cases (e.g., ones where some members of the group have $p_i = 0$ or 1). Grofman, Owen, and Feld (1983) and Grofman, Feld, and Owen (1982) give precise bounds.

11. See n. 10.

12. To look at the differing competences of group judgments with differing margins of votes, we make use of the formula for the ratio of the probability of the correct choice by a group majority of size $m + k$ to the probability of an incorrect choice by a group majority of that same size, where m is a simple majority ($= (N + 1)/2$ if N odd), and $\bar{p}$ is mean group competence. We have

$$\frac{(\bar{p})^{m+k} (1 - \bar{p})^{N-m-k}}{(\bar{p})^{N-m-k} (1 - \bar{p})^{m+k}} = \frac{\bar{p}^{(2m+2k-N)}}{(1 - \bar{p})^{N-2m-2k}} .$$

It is apparent that the above expression increases with k.

It should be clear that no single will can ever be expected to divine the general will reliably (i.e., more formally, we would not expect any p_i to equal 1). Furthermore it is likely that any long-lasting faction, even if a majority, will turn away from a search for the common good to a concern for the private good of its own members (see n. 5; cf. *Federalist Papers*, no. 10).

13. If we insist on a supermajority, of course, then we must risk deadlock; e.g., if juries require unanimity, this opens the possibility of hung juries (see Grofman 1979, 1981; cf. Buchanan and Tullock 1962).

14. Thomas Schwartz (personal communication, March 1985) has proposed that "Rousseau and other radical democrats want to have a society without politics." In one sense, this is correct; but we prefer to stress the way in which, for Rousseau, politics in effect becomes redefined as the search for the general will.

15. Compare the view of Tocqueville: "Not only is common opinion the only guide which private judgment retains among a democratic people, but amongst such a people it possesses a power infinitely beyond what it has elsewhere. At periods of equality men have no faith in one another, by reason of their common resemblance; but this very resemblance gives them almost unbounded confidence in the judgment of the public; for it would not seem probable, as they are all endowed with equal means of judging, but that the greater truth should go with the greater number" (1945, 2:11).

16. Some of the same language we have cited to show how the majority will can become the general will if citizens strive to identify the common good and vote in accordance with their perceptions of it, other authors interpret to mean that Rousseau takes the position that individuals do not count, only society matters. For example, Peter Drucker contends that Rousseau believes that

> whatever human existence there is; whatever freedom, rights and duties the individual has; whatever meaning there is in individual life—all is determined by society according to society's objective need of survival. The individual, in other words, is not autonomous. He is determined by society. He is free only in matters that do not matter. He has rights only because society concedes them. He has a will only if he wills what society needs. His life has meaning only insofar as it relates to the social meaning and as it fulfills itself in fulfilling the objective goal of society. There is, in short, no human existence, there is only social existence. There is no individual, there is only the citizen. (1971, 51).

This seems far too extreme a reading of Rousseau. Certainly, the language in Rousseau about the "general will" is susceptible to a much more straightforward interpretation. Rousseau merely sees a public interest that is the proper concern of citizens acting in the legislative arena but does not make the extravagant claim that the legislative arena is the sole, or even the superordinate, arena (see Riley 1986, 248-50; cf. Cobban 1964).

17. The clause "albeit imperfectly" is a critical one. It is sometimes claimed that Arrow's theorem demonstrates the inherent impossibility of there being such a thing as a general will: "The theorem provides an unambiguous answer to the question 'Is there a foolproof way to derive complete and transitive social preference relations?' The answer is no. This clearly negative result casts doubts on all assertions that there is a 'general will,' a 'social contract,' a 'social good,' a 'will of the people,' a 'people's government,' a 'people's voice,' a 'social benefit,' and so forth" (Feldman 1980, 191). We believe this (common) view of what Arrow's theorem allegedly demonstrates about democratic theory is simply wrong. Our position, like Rousseau's, is that the general will may exist but that the outcome of any voting process is but an imperfect reflection of it.

18. As previously noted, we believe that the Condorcetian perspective on social judgments provides a useful corrective to the standard emphasis of economists on social welfare as the aggregation of *individual preferences* (cf. Dummett 1984, 170; Grofman, Owen, and Feld 1983; Lehrer and Wagner 1981; Margolis 1982, 66-69; Nurmi 1984). We also believe that the educative role of politicians in the political process must also be acknowledged (cf. Kelly 1987; Shklar 1969, 186-87). Similarly, accounts of political actors as vote maximizers neglect the role of politicians as innovators of organizational solutions to common problems (Glazer and McMillan 1987).

19. As we have seen, Condorcet, who was concerned with the search for the public good, is remembered only for his analysis of the effects of combining individual *preferences* in such a fashion as to give rise to intransitivities (the paradox of cyclical majorities).

20. One such application might be the analysis of judicial decision making. Clearly, Supreme Court justices are not supposed to be reconciling competing personal preferences for policy when they vote; rather they are seeking to arrive at a judgment of what the Constitution—or some statute—means (in the given context). Thus, to use terminology from early U.S. (and Continental) political thought, Supreme Court justices are to exercise "judgment," not "will" (Chamberlin n.d.). Whether such distinction is meaningful and, even if meaningful, whether human beings can be expected to restrain their will and exercise only their judgment are questions relevant to the present debate over the proper role of evaluation of judicial philosophies as a factor in shaping Senate nonconfirmation of U.S. Supreme Court justices such as Robert Bork.

References

Arrow, Kenneth J. 1963. *Social Choice and Individual Values*. New York: Wiley.

Baker, Michael. 1980. *Condorcet*. Chicago: University of Chicago Press.

Barry, Brian. 1964. The Public Interest. *Proceedings of the Aristotelian Society* 38:9-14.

Barry, Brian. 1965. *Political Argument*. London: Routledge & Kegan Paul.

Black, Duncan. 1950. The Unity of Political and Economic Science. *Economic Journal* 60:506-14.

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

Buchanan, James M., and Gordon Tullock. 1962. *The Calculus of Consent*. Ann Arbor: University of Michigan Press.

Chamberlin, John. N.d. Assessing the Power of the Supreme Court. In *The "Federalist Papers" and the New Institutionalism*, ed. Bernard Grofman and Donald Wittman. New York: Agathon. Forthcoming.

Cobban, Alfred. 1964. *Rousseau and the Modern State*. 2d ed. London: Allen & Unwin.

Condorcet, Marquis de. 1785. *Essai sur l'application de l'analyse à la probabilité des decisions rendues à la pluralité des voix*. Paris.

Drucker, Peter F. 1971. *Men, Ideas, and Politics*. New York: Harper & Row.

Dummett, Michael. 1984. *Voting Procedures*. Oxford: Oxford University Press.

Ellenburg, Stepeh. 1976. *Rousseau's Political Philosophy*. Ithaca, NY: Cornell University Press.

Farquharson, Robin. 1969. *Theory of Voting*. New Haven: Yale University Press.

Feldman, Allan. 1980. *Welfare Economics and Social Choice Theory*. Boston: Martinus Nijhoff.

Gilden, Hilail. 1983. *Rousseau's Social Contract: The Design of the Argument*. Chicago: University of Chicago Press.

Glazer, Amihai, and Henry McMillan. 1987. Legislation and the Cost of Making Proposals. University of California, Irvine. Photo-offset.

Goodin, Robert. 1982. *Political Theory and Public Policy*. Chicago: University of Chicago Press.

Grofman, Bernard. 1975. A Comment on Democratic Theory: A Preliminary Mathematical Model. *Public Choice* 21:99-104.

Grofman, Bernard. 1978. Judgmental Competence of Individuals and Groups in a Dichotomous Choice Situation: Is a Majority of Heads Better Than One? *Journal of Mathematical Sociology* 6:47-60.

Grofman, Bernard. 1979. A Preliminary Model of Jury Decision Making as a Function of Jury Size, Effective Jury Decision Rule, and Mean Juror Judgmental Competence. In *Frontiers of Economics*, vol. 3, ed. Gordon Tullock. Blacksburg, VA: Center for Study of Public Choice.

Grofman, Bernard. 1981. Mathematical Models of Jury/Juror Decision Making. In *Perspectives in Law and Psychology*. Vol. 2, *The Jury, Judicial, and Trial Processes*, ed. Bruce D. Sales. New York: Plenum.

Grofman, Bernard, Scott L. Feld, and Guillermo Owen. 1982. Evaluating the Competence of Experts, Pooling Individual Judgments into a Collective Choice, and Delegating Decision Responsibility to Subgroups. In *Dependence and Inequality*, ed. Felix Geyer and Hans van der Zouwen. New York: Pergamon.

Grofman, Bernard, and Guillermo Owen. 1986a. Condorcet Models: Avenues for Future Research. In *Information Pooling and Group Decision Making*, ed. authors. Greenwich, CT: JAI.

Grofman, Bernard, and Guillermo Owen, eds. 1986b. *Information Pooling and Group Decision Making*. Greenwich, CT: JAI.

Grofman, Bernard, Guillermo Owen, and Scott L. Feld. 1983. Thirteen Theorems in Search of the Truth. *Theory and Decision* 15:261-78.

Kelly, Christopher. 1987. To Persuade without Convincing: The Language of Rousseau's Legislator. *American Journal of Political Science* 31:321-35.

Lehrer, Keith, and Carl Wagner. 1981. *Rational Consensus in Science and Society*. Dordrecht: D. Reidel.

Margolis, Howard. 1982. *Selfishness, Altruism, and Rationality: A Theory of Social Choice*. Chicago: University of Chicago Press.

Miller, Nicholas. 1986. Information, Electorates, and Democracy: Some Extensions and Interpretations of the Condorcet Jury Theorem. In *Information Pooling and Group Decision Making*, ed. Bernard Grofman and Guillermo Owen. Greenwich, CT: JAI.

Nitzan, Shmuel, and Jacob Paroush. 1985. *Collective Decision Making: An Economic Approach*. New York: Cambridge University Press.

Nurmi, Hannu. 1984. Social Choice Theory and Democracy: A Comparison of Two Recent Views. *European Journal of Political Research* 12:325-33.

Owen, Guillermo. 1986. "Fair" Indirect Majority Rules. In *Information Pooling and Group Decision Making*, ed. Bernard Grofman and Guillermo Owen. Westport, CT: JAI.

Pinkham, Roger S., and Arnold B. Urken. 1982. Competence and the Choice of a Voting System. Stevens Institute of Technology. Typescript.

Plott, Charles R. 1976. Axiomatic Social Choice Theory: An Overview and Interpretation. *American Journal of Political Science* 20:511-96.

Rae, Douglas. 1969. Decision Rules and Individual Values in Constitutional Choice. *American Political Science Review* 63:40-56.

Riker, William. 1964. Voting and the Summation of Preferences. *American Political Science Review* 58:341-49.

Riley, Patrick. 1986. *The General Will before Rousseau.* Princeton: Princeton University Press.

Rousseau, Jean-Jacques. 1984. *Of the Social Contract.* Trans. Charles M. Sherover. New York: Harper & Row.

Runciman, W. G., and Amartya K. Sen. 1965. Games, Justice, and the General Will. *Mind* 74: 554–62.

Sen, Amartya K. 1966. A Possibility Theorem on Majority Decisions. *Econometrica* 34:491–99.

Shapley, Lloyd S., and Bernard Grofman. 1984. Optimizing Group Judgmental Accuracy in the Presence of Interdependencies. *Public Choice* 43: 329–43.

Shklar, Judith. 1969. *Men and Citizens: A Study of Rousseau's Social Theory.* Oxford: Cambridge University Press.

Smith, Adam. 1971. *The Theory of Moral Sentiments.* New York: Garland.

Tocqueville, Alexis de. 1945. *Democracy in America.* New York: Random House Vintage.

Young, H. Peyton. 1986. Optimal Ranking and Choice from Pairwise Comparisons. In *Information Pooling and Group Decision Making,* ed. Bernard Grofman and Guillermo Owen. Westport, CT: JAI.

Zablocki, Benjamin. 1971. *The Joyful Community.* New York: Pelican.

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