

responding aggressively to terrorist acts by systematically destroying the governments of those countries that give terrorists safe havens, and by killing, capturing, perhaps torturing, and ultimately executing convicted terrorists, predictably will reduce their exposure to al-Qaeda terrorism.

Nations that fail to do so increasingly will find that al-Qaeda diverts its acts to their territories. Bali is an excellent recent example of this diversionary phenomenon, a direct consequence of the unwillingness of the Indonesian government to root out and destroy al-Qaeda terrorist cells located within its territory. Germany, Italy, France, Spain, Belgium, the Netherlands, Canada and Australia predictably will follow the Bali example unless their governments find the will to adopt the Anglo-Saxon response model and to devote significant resources and resolve to dealing with the issue of asymmetric war.

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ALTERNATIVE VOTING METHODS

In the British Parliament, and for elections to the national parliaments in almost all of Britain's larger former colonies, including Canada, India, the U.S., and until

recently, New Zealand, most members have been elected from single seat constituencies under *plurality* voting. This method is known more commonly in Great Britain as *first-past-the-post* voting, because the election outcome is determined solely by the order of finish in terms of total votes received.

In contrast, throughout most of the rest of the world, elections to national parliaments are conducted using some form of proportional representation (PR), with the most common form of PR being *list PR*, in which political parties offer a list of candidates and winners are chosen in order of sequence from each of these lists (roughly) in proportion to the share of the vote received by each party. (For a listing of the electoral rules used for the various national parliaments, see Reynolds and Reilly, 1997: 139-142.) Although, in the past several years, with devolution, even the United Kingdom has chosen to use list PR methods for the election of its regional assemblies; and while the "Good Friday" accord provides that Northern Ireland use the *single transferable vote (STV)* form of PR (the form that has historically been used for parliamentary elections in Ireland as well as Northern Ireland), in the U.S. and elsewhere, the term *alternative voting method* is still most commonly used to refer to election methods other than simple plurality.

However, the degree of contrast between plurality and other methods depends upon the classification criteria of which we make use. While there is a long history of the study of election rules and their impact, the modern era can perhaps best be dated from the 1967 publication of Douglas Rae's seminal work, *The Political Consequences of Electoral Laws* (Rae, 1967). Other important work includes Taagepera and Shugart, *Seats and Votes* (1989), Lijphart, *Electoral Systems and Party Systems: A Study of Twenty-Seven Democracies* (1994), and Cox, *Making Votes Count* (1997). As perusal of the above works will demonstrate, there are a number of different aspects of electoral laws that are of relevance to Public Choice theory, and there are also a number of different dimensions along which electoral systems can be classified.

Perhaps the most important division is between majoritarian and minoritarian methods. Plurality is a *majoritarian method*, i.e., a majority of the voters, if they can agree on what ballot to submit, can determine the outcome of the election. Other majoritarian methods include the *alternative vote* (which is the application of the PR method the single transferable vote to a single-seat constituency), the *Coombs rule*, various forms of *runoff methods*, *approval voting*, and the *Borda rule*. *Minoritarian methods*, such as list PR, have the property that a minority of the voters can elect at least one candidate of their choice even over the opposition of the majority. Of necessity, minoritarian

methods must be implemented in constituencies that elect more than a single candidate; but multi-seat constituencies (a.k.a. *multimember districts*) may also be used with majoritarian voting schemes such as *bloc voting* (the use of plurality in a multi-member constituency).

One natural way to think about plurality is in terms of the opposition between it and alternative methods that are of the minoritarian form. Those who advocate minoritarian methods most commonly argue for their use in terms of proportionality of vote share and seat share, since majoritarian methods such as plurality tend to lead to an overrepresentation of candidates favored by the majority/plurality bloc relative to that bloc's share of the electorate. For example, in the United States, in the second half of the 20th century, for two-party competition in the plurality based elections to the U.S. House of Representatives, the *swing ratio* (electoral responsiveness) has been estimated by various authors as falling between 1.5 and 2, i.e., for every percentage point of vote share above 50% it receives, the largest party will gain an additional 1.5% to 2% of House seats over a bare majority. Moreover, especially when we have party competition involving more than two parties, unlike what can be expected under most minoritarian methods, plurality can be expected to severely underrepresent the smaller parties relative to their vote share. For example, in the general election of 2001, the Liberal Party in Great Britain received 18.2% of the votes but less than 8% of the seats in the British House of Commons. Indeed, in multiparty settings, plurality may even result in outcomes in which the relationship between party vote share and party seat share is not monotonic.

Simple minoritarian methods, such as the *d'Hondt* form of list PR *cumulative voting*, and the *single non-transferable vote*, a.k.a. *SNIV* (*limited voting* in a multi-seat district in which voters are allowed only one vote), have the property that, if there are M winners to be chosen, any cohesive bloc of size slightly larger than $1/(M+1)$ can guarantee electing a candidate of choice. When the *limited voting* rule used has more than one vote per voter but fewer votes per voter than there are seats to be filled, the size of the minority bloc needed to assure victory for at least one of its preferred candidates will be somewhere in between $1/(M+1)$ and $1/2$. The properties of this class of rules were first systematically investigated by the 19th century mathematician Charles L. Dodgson (better known as Lewis Carroll).

From the perspective of the minimum vote share needed to guarantee a seat (known in the electoral systems literature as the *threshold of exclusion*), plurality can be taken to be a limiting case ($M=1$) of both list PR and of limited voting. If we require vote allocations to be made in integer

units, plurality can also be viewed as a limiting case ($M=1$) of cumulative voting. But a limitation to integer allocations is not always found. For example, as cumulative voting was used in Illinois for elections to the lower chamber of the state legislature for most of the 20th century, voters had three votes to elect three candidates but, if they chose not to give one vote to each of three different candidates, they could choose to divide their vote either by cumulating all three votes on a single candidate or by splitting their vote among two candidates (one and a half votes to each).

In the past several decades, as a result of concerns over minority representation, both limited voting and (to a lesser extent) cumulative voting have been used for local elections in a number of southern jurisdictions in the U.S. as a (consent) remedy for a claimed violation of a federal anti-discrimination statute, Section 2 of the Voting Rights Act of 1965 (as amended in 1982). Authors such as Lani Guinier have advocated limited voting, as well as other minoritarian methods such as cumulative voting and STV, as mechanisms to improve the representation of both racial and partisan minorities over what is found under plurality or bloc voting.

A division that crosscuts the distinction between majoritarian and minoritarian methods is that between schemes that require voters to provide information only in the form of one or more X's on the ballot and those that require voters to rank order all (or at least some) of the candidates, or that require cardinal rankings. Both plurality in a single seat constituency and list PR in a multi-seat constituency are alike in that they require the voter to cast but a single X — for a candidate in the case of plurality, for a political party in the case of list PR. Similarly, both the Borda method in a single seat constituency and the single transferable vote in a multi-seat constituency require voters to provide a rank ordering of alternatives. However, the only method of which I am aware that requires voters to provide cardinal-level information about preferences, namely cumulative voting, is a minoritarian method. There are obvious advantages, especially in less developed democracies, for using "simple" methods.

In addition to looking at the amount of information about voter preferences provided in the ballot or the expected proportionality of electoral system results, there are other useful ways to determine the degree to which two different electoral systems are similar to one another. One of these is the extent to which an electoral system provides options to voters to choose among candidates as well as among parties (which affects the cohesiveness of political parties); another is in terms of the incentives for localism/particularism each system provides (which is relevant

to understanding parliamentary budget choices: see e.g., the discussion of SNTV in Grofman et al., 1999). Each of these two methods of classification yield different conclusions about which alternative methods are most like plurality.

In the usual classification according to proportionality, STV and list PR are on one end of the continuum (most proportional) while bloc vote plurality is at the other end (least proportional), with SNTV toward the proportionality end, but not quite at the extreme because failure to run the optimum number of candidates can reduce that method's proportionality. However, if we classify systems according to the degree to which they are likely to give rise to strong and disciplined political parties, then, *ceteris paribus*, list PR is at one end, but now STV or SNTV may look a lot more like some instantiations of plurality (e.g., that in the U.S., with party primaries) than does list PR. Both STV and SNTV allow for intra-party competition when a party nominates more candidates within a constituency than its voting strength in the electorate will permit success to, and this normally gives rise to party factionalism. Moreover, under closed list PR, the party apparatus has control over candidate placement (and thus likelihood of electoral success) which gives the party a lot of clout in disciplining errant legislators by holding over them the threat of denying them renomination (or at least placing them so low on the list that their chances of victory are much reduced).

Similarly, if we classify systems according to the degree to which they foster localistically oriented representatives, then STV may look a lot more like plurality than it does list PR. In both STV in multi-seat elections and plurality in single member districts, running on the stronger party label may help, but it is not the whole story, and it is the local preferences among candidates that may prove decisive. If the success of a candidate depends on having enough personal support among voters in the local constituency this can be expected to sensitize the candidate to local concerns (see discussion in Bowler and Grofman, 2001).

We now turn from comparisons of plurality with minoritarian methods to comparisons of plurality with other majoritarian methods, focusing our attention on elections in constituencies that elect a single winner. Proportionality is usually the chief touchstone against which plurality elections are measured when we compare them to elections under minoritarian methods. When we compare plurality to other methods that may be used in single seat elections, then, from this perspective, the likelihood that a voting rule will select the *Condorcet winner*, a.k.a. the *majority winner* when there is one (i.e., that candidate, if any, who can receive a majority in paired contest against each and every

other alternative) becomes one natural standard of comparison. Measured against that standard, picking the Condorcet winner when one exists, plurality is generally found to be wanting.

For example, had the plurality rules in each state been replaced with the *alternative vote* (relabelled by its advocates in the U.S. as the *instant runoff*) then, *ceteris paribus*, we would have had a different outcome in the 2000 U.S. presidential election. Since most Nader supporters in Florida had Gore as their second choice, when the rank ordered ballots under the alternative vote would have been reallocated after Nader was eliminated from consideration, Gore would have been elected. Gore was the Condorcet winner in 2000 in Florida, and in the nation as a whole. *Ceteris paribus*, other runoff variants also would have increased the likelihood that the Condorcet winner, Gore, would have been chosen in Florida. In particular, if our concern is to increase the likelihood of picking a Condorcet winner when one exists (and, in real world elections, it is very likely that such an alternative will exist), then another form of runoff, the *Coombs rule*, has much to recommend it. The Coombs rule is almost the same as the alternative vote. The difference is that, that, when we eliminate candidates who have not received sufficient support, under the alternative vote, we drop the candidate with the fewest first place votes, while under Coombs, we drop the candidate with the most last place votes. It can be shown that, when voters have single peaked preferences (see Black's single-peakedness condition, this volume) the alternative vote will always select the Condorcet winner when there are four or fewer candidates; however, when preferences are single-peaked the Coombs rule will always select the Condorcet winner.

Of course, when we change electoral rules, we also can effect the number of parties/candidates who will choose to run. Thus, *ceteris paribus*, comparisons about outcomes under different voting rules must always be interpreted with care. Still, advocates of the use of the alternative vote (or of the Coombs rule) can plausibly argue that, unlike plurality, each permits supporters of minor parties to show support for their first place choice, without (significantly) increasing the likelihood that the major party candidate they least prefer will be elected.

However, not all supporters of rules such as the alternative vote would endorse choice of the Condorcet winner under all circumstances. From a political perspective, opponents of plurality are often most concerned about not inadvertently allowing an extremist candidate to emerge, in a crowded and competitive field, as the plurality winner. In a choice between two candidates with roughly equal and substantial levels of first place support, and a third candidate with little first place support who is the second choice of

most voters and thus a Condorcet winner, some who would generally be skeptical about plurality might still argue that, in this instance, the Condorcet candidate might be politically weak/unprepared for a leadership role and that it would actually be better to pick one of the candidates with substantial first place strength.

No discussion of alternative voting rules would be complete without at least some mention of both approval voting and the Borda rule. While each can be used to select more than one alternative, we will confine ourselves here to their use to select a single alternative.

Approval voting, is a rule under which voters indicate support for up to $k - 1$ of the k alternatives: voters support those choices whose evaluations rise above some personally chosen threshold, so that the alternatives supported can be thought of as those of whom the voter is prepared to "approve." The alternative with the most approval votes is then chosen. This method has had an effective advocate in the political scientist Steven Brams, and largely due to his efforts it has been adopted for use in several professional organizations. Approval voting has much to recommend it, especially in terms of simplicity. For example, I view it as the ideal rule for a group of friends to use to decide which restaurant to go to. When used in elections in which the stakes are high(er), however, it creates incentives for voters to cast truncated ballots, making it look much like plurality than might otherwise appear to be the case.

The Borda rule is a member of the general class of positional methods known as *scoring rules*. Under the Borda rule, voters rank order the alternatives. If, for each voter, we assign to each alternative, i , one vote for each alternative that is ranked lower than alternative i by that voter, and then sum this tally across the set of voters, we get alternative i 's *Borda score*. We then pick the alternative with the highest Borda score. The Borda winner and the Condorcet winner can both be thought of as mechanisms for selecting candidates who rank reasonably high, on average, in the preference orderings of most voters. While it is easy to construct examples in which the Borda winner and the Condorcet winner do not coincide, in practice, in most real-world political settings, they are likely to be the same. Moreover, if we are prepared to require votes to provide rankings, then the Borda rule has a number of desirable properties.

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ALTRUISM

Altruism is something of a puzzle to economists. While in theory the elements of the utility function are left unspecified, it is generally assumed that private goods consumed by the individual himself are the most important components. If not, then it becomes difficult to make falsifiable predictions and so scientific advance becomes impeded. Nonetheless, we observe that people do have altruistic elements in their behavior, and so the problem is to explain these elements and incorporate them in utility functions in ways that preserve testability. In this entry, I will mainly analyze altruistic acts towards non-relatives, with a brief discussion of altruism towards kin.

Altruism is said to exist when one individual's utility function contains elements of both the individual's own consumption (C_x) and also consumption of another individual (C_y):

$$U_x = U_x(C_x, C_y), \text{ with } \partial U_x / \partial C_i > 0, i = x, y. \\ (\text{Spite exists when } \partial U_x / \partial C_y < 0.)$$

The best general introduction to the public choice analysis of altruism is Tullock (1997). Tullock summarizes and extends many of the arguments here, and has a discussion of additional elements of redistribution as well. He points out that the major motive for redistribution is that the recipients desire to receive payments and have the political power to do so. This is obviously not related to altruism. The second most significant motive is altruism — a desire to help the poor. Third is envy, which is related to spite, as defined above. (Tullock, 1997, p. 6). He also indicates that insurance provides one non-altruistic motive for redistribution (p. 12).

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