Electing a Districtless Congress

A national congress or assembly should represent all the people. In the US Congress, representatives are elected district by district. In the House there is one congressman from every district. They serve their constituents in that district primarily and secondarily the nation at large. Similarly, in the Senate there are two senators from each state who serve the interests of their constituents in that state. So each American votes for only three national representatives - one congressman and two senators – and is primarily represented by three national representatives. A true national congress would be one in which all representatives were elected by all citizens. All citizens would get to vote for all representatives. It would be districtless.

The general theory of social choice allows citizens the chance to vote in non-traditional ways. For instance, rather than voting for one of the candidates who are running as is done in US elections (plurality voting), the different candidates can be ranked or ordered either numerically or non-numerically. Social choice allows for the amalgamation of these individual rank orderings into one overall socvial ordering. Range Voting (RV) is a method of assigning numerical rankings to each candidate by each voter. For example, each voter could rank each candidate from 1 to 10 or from 1 to 100. Then the numerical rankings can be added together for each candidate and the one with the highest tally declared the winner. In the election of a President, for example, the overall ranking would be superfluous. We would only be interested in the one candidate with the top ranking. Note that with RV we have not only an ordering of candidates but also a representation of preference intensity which is a measure of the distance between two candidates on a preference scale. Not only can we say that A is preferred to B but by *how much*.

Kenneth Arrow in his book *Social Choice and Individual Values* sets up a model in which a set of individual rankings can be transformed into a social ranking. However, in the election of a President there is no need for a complete social ranking. Similarly, in the election of a national assembly or congress, there is no need for a complete ranking of all possible assemblies. Of all possible national assemblies we only want to know that one that is most preferred by the electorate. A complete ranking is not necessary. Therefore, Arrow's model is inherently flawed and his result that social choice is impossible is also at least for political applications. Yes, it's impossible if you accept Arrow's model, but Arrow's model does not represent reality at least as it's applied to politics. There are primarily two kinds of political elections: the election of a President and the election of a national assembly. In neither of these is a complete ranking necessary. Therefore, Arrow's model is incorrect. The same holds true for economic applications since we are only interested in the optimum economic allocations at any given time and not in the sub-optimum ones.

In general in order to elect a congress each voter would have to consider and rank each possible congress. Let's say there are m possible congressional seats and n candidates. Then there are a total number of combinations equaling n things taken m at a time which is the following:

$$n!/m!(n-m)!$$

This, in general, would be too high a number for each individual voter to consider. But there is a reasonable shortcut which would make it practical. Let the individual voter rank order or numerically order ala RV all the candidates. Then each individual would just present an ordered list of all the candidates as his vote. This list would then be translated into an ordering of all possible congresses or assemblies by electoral software. Someone might object that even this would be impractical since an individual might have to rank order hundreds of candidates. Even this procedure could be shortened by an individual's plugging in different parts of the ranking suggested by trusted experts and/or political parties. Therefore, it might only be necessary for each individual to list in order her preferences as to political parties and software would do the rest. These are just some of the ways in which the voter's "work" could be ameliorated.

Let's consider a particular voter's ranking of individual candidates. Obviously, her first choice for a congress would be the top m candidates in her ranking with m being the number of seats available. So the first through m^{th} ranked candidates would be her first choice for a congress. Let's assume she ranks all candidates RV style. Then each has a numerical ranking. Let's assume the ranking is from 1 to 1000, for example. The second choice for a congress would be to remove the mth ranked candidate from the first choice congress and to replace it with the $(m+1)^{th}$ ranked candidate. The third ranked congress would be found by replacing the mth individually ranked candidate with the $(m+2)^{th}$ ranked candidate. The fourth ranked congress would be computed by either removing the $(m-1)^{th}$ and m^{th} ranked candidates from the first ranked congress and replacing them with the $(m+1)^{th}$ and $(m+2)^{th}$ ranked candidates or replacing the mth ranked candidate with the $(m+3)^{th}$ individually ranked candidate. If these two alternativesfor a congress have associated RV values, they can be ordered by choosing the higher ranked one to be the one that minimizes the sum of the range values for the congress as a whole. Proceeding in this way the next highest ranked congress would be the one that minimizes the sum of the ranks of the individual candidates in that congress.

For example, let's assume a congress of 50 seats with 100 candidates, and individual voter A has ranked the candidates with the *numerical* values 1,2,3 … Each candidate is given a numerical value corresponding to his rank in the list. Note that this is not in general true. The numerical values could be anything. Also in RV the highest numerical value is usually given to the most preferred candidate. In this example we give the lowest. So A has a list of candidates with numerical values 1, 2, … 50 … 51, 52 … 100. Her first choice for a congress would be those candidates ranked 1, …, 50. Her second choice would be 1, …, 49, 51. Third choice: 1, …, 49, 52. Fourth choice: 1, …, 49, 53. Fifth choice: 1, …, 49, 54. This would be tied with 1, …, 48, 51, 52 since $1 + 2 + … + 49 + 54 = 1 + 2 + … + 48 + 51 + 52$. Each congress in the list can be given a numerical ranking equal to the sum of the rankings of the candidates, and then the individual congressional rankings can be summed to get the overall social ranking with the congress getting the minimal numerical score being the winner.

This method allows a complex social ordering to be gotten from individual orderings in such a way as to decrease the work load for the individual voter, and to make electing a districtless congress practical.