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Karl-Dieter Crisman* (karl.crisman@gordon.edu). *Symmetry in Voting Theory: The Borda-Kemeny Spectrum and Beyond*. Preliminary report.

One natural criterion for fairness in the theory of voting and choice is ‘reversal symmetry’ – the idea that if all voters reverse their rankings completely, the outcome ranking should likewise be reversed. This makes particular sense in the context of so-called *social preference functions*, whose output is one or more complete rankings of candidates.

Just as the symmetric group naturally encodes permutational symmetry, adding reversal symmetry can be represented by the symmetries of the *permutahedron* (and its representation theory). The Borda Count and Kemeny Rule both have reversal symmetry, and using the permutahedron, one can show that the one-parameter family of choice procedures they determine is maximally symmetric in several nice ways.

In this talk, we will explain the results leading to this Borda-Kemeny family in some detail, and will give some interesting examples that show why this family is useful to study. We also will give simple examples of how to extend these methods to choice situations with other symmetries – for instance, ways of seating people at a table using the *cyclic-order* graph. (Received September 19, 2011)