

COST Action IC1205 on Computational Social Choice: STSM Report

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During my stay in Auckland we studied axiomatic properties of multi-winner election rules. Throughout the first week, we focused on identifying new interesting properties of multi-winner election rules. We analyzed different types of monotonicity and consistency. We initiated our study on distance rationalization of multiwinner election rules: we identified a collection of consensus classes and distances that can be used for distance rationalization. We obtained preliminary results; in particular we have found, under certain assumptions, distance rationalization for the top- k -counting rules.

We have shown that multiwinner election rules can be viewed as methods of apportionment. In the apportionment problem we are given a set of p political parties $\mathcal{P} = \{P_1, P_2, \dots, P_p\}$. For each i , $1 \leq i \leq p$, by v_i we denote the number of votes that the party P_i receives in the election. Given the size of the parliament k , we look for an allocation of the parliamentary seats to the political parties. A multiwinner election rule \mathcal{R} can be, in a natural way, used to find solutions for instances of the apportionment problem. For each party P_i we can introduce the set of k candidates C_i and the set of v_i voters N_i . Intuitively, C_i is the set of members of P_i and N_i is the set of voters who decided to vote for P_i (Each voter from N_i approves of all candidates from C_i and no other candidates). The election rule \mathcal{R} is used to find the winning committee of k candidates. From the winning committee S we can extract the distribution of the parliamentary seats among the parties in the following way: a party P_i gets as many seats as the number of candidates in $S \cap C_i$. Our findings suggest that Proportional Approval Voting is the only OWA-based rule that guarantees proportional apportionment of parliamentary seats among parties and that the Monroe system can be viewed as an extension of the Hamilton method to the case of open parliamentary lists.

During the second part of the visit we worked on the manuscript that provides a Young-style axiomatic characterization of committee scoring rules, analogs of the scoring rules for the multiwinner elections. Our findings suggest that committee scoring rules can be characterized by the set of four standard axioms: anonymity, neutrality, consistency and continuity, and by two axioms typical for multiwinner rules: committee neutrality and committee dominance. During this visit we advanced our works on the existing manuscript.