Two Tutorials on Judgment Aggregation

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A growing literature in philosophy, economics and political science discusses the problem of judgment aggregation: How can a group of individuals make consistent collective judgments (true/false) on some logically connected propositions based on the group members' individual judgments on these propositions? To illustrate, suppose a three-member expert committee has to reach collective judgments on three propositions of the form p, $p \rightarrow q$ and q (e.g., "CO_2 emissions are above a given threshold", "If emissions are above this threshold, then there will be global warming", "There will be global warming"). It is now possible that each committee member holds individually consistent judgments, and yet the majority judgments are inconsistent. This may happen, for instance, when one committee member judges p to be true but $p \rightarrow q$ and q to be false, a second judges $p \rightarrow q$ to be true but p and q to be false, and a third judges all three propositions to be true. Then p and $p \rightarrow q$ are each judged to be true by a majority, and yet q is judged to be false, an inconsistent collective set of judgments. Although this example – a so-called 'discursive dilemma' – shows that 'propositionwise majority voting' fails to ensure collective consistency, it leaves open the question of whether other plausible aggregation rules might perform better. The theory of judgment aggregation addresses this question. In the two tutorials, I will give a brief introduction to this theory, its central concepts and results, and some of its applications.

Tutorial 1. Judgment aggregation: model

In this tutorial, I will introduce the basic model of judgment aggregation and show how the 'discursive dilemma' problem introduced above can be generalized. In particular, I will give a brief overview of some key impossibility theorems that have been proved in the recent literature on judgment aggregation and discuss their interpretation. I will also suggest that the impossibility results provide us with a useful conceptual framework for characterizing different ways in which consistent judgment aggregation is possible.

Tutorial 2. Judgment aggregation: applications

In this tutorial, I will illustrate that the model of judgment aggregation can represent a wide variety of collective decision problems. This generality stems from the fact that the propositions on which judgments are to be formed can be specified in many different ways. To illustrate, I will show that the familiar problem of preference aggregation can be embedded into the judgment aggregation model and that Kenneth Arrow's classic impossibility theorem can be derived under this embedding. I will also briefly discuss an application of the model to the aggregation of causal judgments in an expert committee, where each set of judgments is represented as a Bayesian network. Finally, I will make some remarks on relations with earlier models of social choice.

In the two tutorials, I will draw on joint work I have done with Philip Pettit, Franz Dietrich and Richard Bradley as well as other contributions to the literature. For an online bibliography, see http://personal.lse.ac.uk/LIST/doctrinalparadox.htm.