ABSTRACTS

C5.10 Philosophy of the Humanities and the Social Sciences

The Diffusion of Scientific Theories: Network Topologies and the Role of the Translator

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How are scientific theories developed and how do they spread across scientific communities? We address those two questions by applying network analysis to a case of theory development and diffusion. We conceptualize a scientific theory as an ‘innovation’ that is invented by one or more ‘innovators’, which is or is not adopted by other actors in a network and argue that a theory has to be conceptually translated before it can be taken up, in and across (preexisting) scientific communities. Our case study is the theory of games developed by John von Neumann and Oskar Morgenstern in 1944. Departing from the observation that the adoption of game theory has increased disproportionally only from the 1970s on, we trace its initial spread across economics, philosophy, and the behavioral and social sciences at large. By developing a measure for diffusion of scientific theories and apply it to a data set of more than 4000 publications, we construct a co-citation network of what we identify as seminal works that have contributed to the dissemination of game theory. We show that game theory was collaboratively developed and further modified between the 1940s and the 1960s by a small group of outstanding scholars from distinct disciplines that we identify as translators, before it spread to the social and behavioral sciences at large. We identify these translators using an innovative brokerage algorithm. The topology of this networks sheds light on how scientific theories become developed, adopted, and further modified within and across scientific communities. We thereby make a general case for the fruitfulness of network analysis in the philosophy of (social) science.

A Model-Based Approach to Shared Agency

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This paper argues for a new kind of methodologically naturalistic approach to the meta-theoretical status of philosophical studies of shared agency as a form of model-construction. The account sheds new light on the relationship between conceptual analysis and empirical theorizing in the domain of shared agency. The account grants an important kind of autonomy to conceptual analysis as a form of modeling that draws on causal and normative roles that are implicit in our ordinary framework of agency. The account also
ensures that philosophical studies of shared agency can (at least in principle) contribute to a substantive understanding of the social world by means of the formulation of suitable theoretical hypotheses (Giere 1988) that bridge the gap between the model and the real world. The importance of interdisciplinary research in formulating suitable theoretical hypotheses is emphasized. Ultimately, the feasibility of philosophical models of shared agency is adjudicated on the basis of their capacity to produce correct predictions and explanations of occurrences in the social world.

Raimo Tuomela’s (2007; 2013) I-mode/we-mode account is discussed as an example of a philosophical account of shared agency that is amenable to a reconstruction in model-based terms. The degrees of idealization and abstraction, as well as the fictitious features of the account, are shown to provide a compelling case for a model-based interpretation of Tuomela’s account. However, the theoretical status of an account is taken to depend in part on the attitudes of the scientist or philosopher towards her theoretical constructs (Giere 2001), and this leaves open the possibility of alternative meta-theoretical reconstructions of the I-mode/we- mode distinction. However, it is argued that the model-based approach provides at least two distinctive benefits on philosophical and scientific discourse over the nature of the I-mode/we-mode distinction. First, the model-based approach provides at least two distinctive benefits on philosophical and scientific discourse over the nature of the I-mode/we-mode distinction. First, the model-based reconstruction makes it possible to coordinate philosophical models of shared agency with theoretical models in other disciplines, such as models of team reasoning in economics and game theory (e.g. Bacharach 1999). Second, the model-based reconstruction provides a feasible division of labor between philosophers and empirical scientists who conduct research on the cognitive mechanisms underlying the I-mode/we-mode distinction (e.g. Gallotti and Frith 2013).

Team reasoning, framing and Frege cases

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Proponents of team reasoning argue that it matters how agents “frame” or conceive of their decision problems. Team reasoning is a mode of practical reasoning that agents engage in when they frame a coordination problem as being a problem for them all together. It is practical reasoning in response to the question ‘What should we do?’ rather than the more familiar ‘What should I do?’ The answer is an “action profile” that includes the actions or choices of all team members, which maximises the chances of achieving the team’s goal. According to Pacherie (2011, 2013), several agents’ intentions to their part of an action profile form a “shared intention” if these are the outcome of team reasoning. (“Shared intention” is a socio-psychological causal antecedent that makes a joint action intentionally joint.) I argue that Pacherie’s account faces a dilemma. If Pacherie allows that agents frame the goal of the team in different ways (e.g. “that we catch the prey that rustle the leaves” versus “that we catch the prey that casts the shadow”), then the account fails to rule out cases where agents falsely believe that there is no single goal that each reasons is the best choice for all. Such cases are characterised by a form of mutual exploitation rather than by team agency. On the other hand, if Pacherie takes the framing
of the goal to be fixed, then she fails to accommodate clear cases of intentional joint action where agents represent the single goal of the team using different sensory modalities (suppose I'm blind and you are deaf). I argue that Pacherie can avoid both horns of the dilemma by introducing an extra condition: each participant must believe that there is a single goal that each reasons is the best choice for all.