Social Epistemology and Joint Action in Science

Peter Brössel & Anna-Maria Eder & Christian J. Feldbacher & Cédric Paternotte & Paul Thorn

University of Salzburg, September 4, 2014, 09:00–13:00

Workshop aims & scope. Already from the beginning on as formal disciplines, the demarcation between formal philosophy of science and formal epistemology was never very strict. Although the former was and is mainly concerned with the construction, justification, and growth of scientific knowledge, whereby the latter deals more generally with problems settled around the broad notion of knowledge, both disciplines aim at normative models of rational belief and by this meet very often on the same formal grounds. This linkage can also be observed easily by considering current philosophy of science conferences' agendas, where especially the number of contributions out of social epistemology is heavily increasing. Within this workshop some of the links between these two disciplines are considered in detail and discussed to some extent.

Programme Summary. One way of joint action in science consists in overcoming disagreements about the validity of statements by aggregating the single points of view to a joint one. Within this workshop the general conditions for such a joint action will be discussed by providing (i) some desiderata for- and consequences of an optimal aggregation method, followed by (ii) the presentation of a fine-grained way of aggregating single points of view to a joint one, and (iii) combine (i) and (ii) for an optimization of joint action in science. In (iv) the investigation is expanded to differences and bridge principles between quantitative (as used in (i)–(iii)) and qualitative modes of belief.

Paul Thorn will present a meta-inductivist solution to Hume's problem of induction within the so-called best-alternative approach on induction. Meta-induction is a specific method of strategy selection which is to be shown optimal (not maximal and of course also not success-determined, hence only best amongst the available alternatives) in the long run within a prediction setting. This new approach to the traditional problem of induction bears also a number of implications for

problems in social epistemology. Amongst others, Thorn will show by means of simulations which conclusions one might draw for epistemological group performance evaluation.

In the second talk Anna-Maria Eder argues that standard monistic Bayesian approaches to cases of so-called doxastic disagreement, i.e. disagreement amongst epistemic agents in their evaluation of the validity or probability of some proposition, are philosophically inappropriate. She will show then that in pluralistic Bayesianism by keeping confirmation commitments and the grasped evidence separated, an aggregation and revision of epistemic belief states in light of disagreement becomes philosophically more appropriate.

The third talk will be given by Peter Brössel and Christian J. Feldbacher. They show how the meta-inductive approach—presented by Thorn—and pluralistic Bayesianism—as presented by Eder—can be combined in order to make the latter position even more stronger in solving problems of joint action in science.

In the fourth talk Cédric Paternotte expands the investigation of the first three talks by addressing the problem of bridging quantitative modes of belief to qualitative ones and vice versa. Besides results of formal investigations in this field he will also present some results about the influence of pragmatic factors as, e.g., the degree of publicity of events or the number of supporters of a specific thesis.

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Schedule

- 09:00 Workshop Opening: Synopsis
- 09:10 Paul Thorn: *Wise Crowds, Clever Meta-Inductivists*
- 10:00 Anna-Maria Eder: *Disagreement and Division of Labour*
- 10:50 Coffe Break
- 11:05 Peter Brössel & Christian J. Feldbacher: *The Veritistic Value of Social Practices in Science: Peer Disagreement*
- 11:55 Cédric Paternotte: *Common Belief: Plain and Probabilistic*
- 12:45 Workshop Closing

Abstracts

Peter Brössel & Christian J. Feldbacher: The Veritistic Value of Social Practices in Science: Peer Disagreement

The veritistic value of an agent's credences depends on the difference between agent's credences in a proposition and the proposition's truth value. The less difference the higher the agent's veritistic value. There is manifold of a priori arguments that an individual scientist's credences should obey the probability calculus and that they should be updated by what is called strict conditionalization; this maximizes the expected gain in veritistic value.

Something similar holds for social practices in science: the aim of these social practices is to increase the (expected) veritistic value of the scientists' credences. In this talk we want to investigate how the various social practices suggested in connection with peers disagreement fare with respect to this aim.

Anna-Maria Eder: Disagreement and Division of Labour

Scientists specialise in order to divide up their labour and so pursue their epistemic endeavours more efficiently. In so doing, they often rely on the testimony of fellow scientists. Such testimony may concern the collection and interpretation of data, or the assessment of the data's relevance for the hypotheses under consideration. Scientists trust the results of their colleagues and consider the results to be relevant for their own epistemic states. The questions then arise: What should scientists do when they disagree with each other? Are they required to resolve their disagreement? If so, how should they resolve their disagreement?

I shall argue that standard Bayesian approaches to answering the latter question are philosophically inappropriate. This is—roughly—due to the fact that they presuppose that agents' epistemic states are best represented by the agents' credence functions alone. I will suggest a new approach to the revision of epistemic states in light of disagreement that is philosophically more appropriate. It presupposes that agents' epistemic states are best represented by the agents' reasoning commitments and the evidence available to them. In my talk I shall provide reasons for favouring the new approach. Some of these reasons are given from the perspective of traditional individual epistemology. They concern the representation of epistemic states in

general. Other reasons are given from the perspective of formal and non-formal social epistemology. They concern, among other things, the division of labour among scientists.

Cédric Paternotte: Common Belief: Plain and Probabilistic

Recent analyses of common knowledge, building on Lewis' seminal approach, have emphasised that it is not based on knowledge but on credence (probabilistic belief) – so that common knowledge is equivalent to high-degree common belief. But can we determine what degree of common belief is high enough to warrant common knowledge? Answering this question may appear to necessitate a formalization of inductive reasoning (that would establish when we treat strong beliefs as knowledge), which is notoriously lacking. I explore another option, based on recent parallels built between plain and probabilistic individual beliefs (Lin & Kelly 2012, Leitgeb 2013). I apply such approaches to cases of interactive epistemology in order to determine how common knowledge is affected by factors such as the degree of publicity of events from which it may originate, and by the number of agents who witness it. I then discuss the differences between the plain/probabilistic belief parallels in the individual and in the collective cases.

Paul Thorn: Wise Crowds, Clever Meta-Inductivists

Much recent discussion, along with formal and empirical work, on the Wisdom of Crowds has extolled the virtue of diverse and independent judgment as essential to the maintenance of 'wise crowds'. In other words, communication and imitation among members of a group may have the negative effect of decreasing the aggregate wisdom of the group. In contrast, it is demonstrable that certain meta-inductive methods provide optimal means for predicting unknown events. Such meta-inductive methods are essentially imitative, where the predictions of other agents are imitated to the extent that those agents have proven successful in the past. Despite the (self-serving) optimality of meta-inductive methods, their imitative nature may undermine the 'wisdom of the crowd' inasmuch as these methods recommend that agents imitate the predictions of other agents. In this talk, I present selected results from Thorn and Schurz (2012), illustrating the effect on a group's performance that may result from having members of a group adopt meta-inductive methods. I then expand on Thorn and Schurz (2012) by considering three simple mea-

sures by which meta-inductive prediction methods may improve their own performance, while simultaneously mitigating their negative impact on group performance. The effects of adopting these maneuvers are investigated using computer simulations.

Speakers

Peter Brössel (University of Bochum, Germany)
Assistant Professor at the Department of Philosophy and *Center for Mind, Brain, and Cognitive Evolution*, Ruhr-University Bochum. Before Peter went to Bochum he was assistant professor for philosophy at the University of Mainz and doctoral research fellow at the *Formal Epistemology Research Group* in Konstanz. He also was visiting fellow/researcher at the Universities of Tilburg (2013), Aberdeen (2011), Leuven (2010), and California at Berkeley (2009). His main area of research is within philosophy of science and formal epistemology. Recent papers are: "How To Resolve Doxastic Disagreement" (Synthese, 191, 2014, together with Anna-Maria Eder), "Assessing Theories: The Coherentist Approach" (Erkenntnis, forthcoming), and "Bayesian Confirmation Theory: A Means With No End" (British Journal for the Philosophy of Science, forthcoming, together with Franz Huber). In 2012 Peter got the *Best Dissertation Award for the best PhD-thesis in Philosophy* at the University of Konstanz. He is also *Rudolf Carnap Essay Prize* awardee for a paper published in Abstracta (4, 2008).
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Anna-Maria Eder (University of Duisburg-Essen, Germany)
Research Fellow in the Project *A Study in Explanatory Power* at the University of Duisburg-Essen. Before her fellowship at the University of Duisburg-Essen, Anna-Maria was a graduate student in Philosophy at the University of Konstanz and a visiting graduate student at the Munich Center for Mathematical Philosophy. During her PhD studies she also was fellow/visiting fellow at the Universities of Leuven and California at Berkeley. Her area of research focuses on topics in epistemology – amongst others: epistemic normativity, justification and evidential support – and the philosophy of science – amongst others: the clarification of scientific concepts, the aims of inquiry, the relationship between confirmation and rational belief, and between explanation and understanding. Her recent publications are in the intersection of

traditional and formal epistemology: One on epistemic disagreement ("How to Resolve Doxastic Disagreement", Synthese, 191, 2014, together with Peter Broessel) and another on epistemic consequentialism and evidential support ("Evidential Support and Instrumental Rationality", Philosophy and Phenomenological Research, 87, 2013, together with Peter Broessel and Franz Huber).
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Research Fellow and DOC-scholar (Austrian Academy of Sciences) at the Duesseldorf Center for Logic and Philosophy of Science (DCLPS) at the University of Duesseldorf. Visiting fellow at the Munich Center for Mathematical Philosophy (MCMP, LMU Munich) and the University of Leeds (2012). Christian's area of research focuses on philosophy of science (analogical reasoning and concept formation, and the problem of induction) and social epistemology (tesimony, judgement aggregation). Recent publications: "Analogies in Scientific Explanations: Concept Formation by Analogies in Cultural Evolutionary Theory" (in: "Systematic Approaches to Argument by Analogy", ed. by Ribeiro, Henrique, Springer, 2014) and "Meta-Induction and the Wisdom of Crowds: Comment on Paul Thorn and Gerhard Schurz" (Analyse & Kritik, 2012).
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Cédric Paternotte (LMU Munich, MCMP, Germany)
Postdoctoral fellow at the LMU Munich, Munich Center for Mathematical Philosophy (MCMP). Cédric's research interests pertain to the philosophy of groups and sociality in general, more specifically to definitions of cooperation and collective action, rational explanations of cooperation, epistemic aspects of cooperation, collective reasoning, psychological factors of cooperation, and group selection and adaptation. Before he went to Munich, Cédric held positions at the Universities of Bristol and Paris (CNRS). He was also research grant awardee of the University Paris 7 (2003 - 2006). Recent publications: "Minimal Cooperation" (Philosophy of the Social Sciences, 2013), and "Theory

Choice, Good Sense and Social Consensus" (Erkenntnis, 2013, together with M. Ivanova et al.).
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Paul Thorn (University of Duesseldorf, DCLPS, Germany)
Postdoctoral Researcher, University of Duesseldorf and Duesseldorf Center for Logic and Philosophy of Science (DCLPS). Paul's area of specialization is within epistemology, philosophy of probability, and logic. Before he came to Duesseldorf, Paul was assistant professor of philosophy at the New College of Florida (2008-2009) and pre-doctoral researcher in the research group "Philosophy, Probability, and Modeling" at the University of Konstanz. Paul was advocate of the year at the University of Arizona, Graduate Student Association, in 2006 and 2007. Recent publications are: "Defeasible Conditionalization" (Journal of Philosophical Logic, 43, 2014), and "A Utility Based Evaluation of Logico-Probabilistic Systems" (Studia Logica, forthcoming, together with Gerhard Schurz). Further information about Paul is to be found at his website.
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