New Work on

Induction & Abduction

SEP 29-30, 2021 Zoom-Workshop

New Work on Induction and Abduction

Workshop Details

- Date: September 29–30, 2021
- Venue: Online (Zoom; for details please contact the organisers)
- Funding: German Research Foundation (DFG), research unit: *Inductive Metaphysics* FOR 2495. The goal of the research unit is to establish how empirical sources and inductive forms of inference play a role in metaphysical research.
- Organisation: Christian J. Feldbacher-Escamilla (University of Cologne) & Oliver R. Scholz (WWU Münster) & Gerhard Schurz (University of Düsseldorf) & Ansgar Seide (WWU Münster) & Maria Sekatskaya (University of Düsseldorf)
- Contact: christian.feldbacher-escamilla@hhu.de
- Website: http://dclps.phil.hhu.de/inab/

Speakers

- Atocha Aliseda Llera (Mexico City)
- Alexandros Apostolidis (Athens)
- Stephen Biggs (Iowa)
- Elke Brendel (Bonn)
- Adam Carter (Glasgow)
- Igor Douven (Paris)
- Christian J. Feldbacher-Escamilla (Cologne)
- Ilkka Niiniluoto (Helsinki)
- John Norton (Pittsburgh)

Speakers (continued)

- Stathis Psillos (Athens)
- Oliver R. Scholz (Münster)
- Gerhard Schurz (Düsseldorf)
- Ansgar Seide (Münster)
- Chrysovalantis Stergiou (Athens)
- Paul Thorn (Düsseldorf)
- Jessica Wilson (Toronto)

Aims & Scope

This workshop aims at bringing together scholars from the field of inductive and abductive reasoning. It will focus on discussing the following four recent monographs: Igor Douven's "The theory and Practice of Abduction" (forthcoming), Ilkka Niiniluotto's "Truth-Seeking by Abduction" (2018), John Norton's "The Material Theory of Induction" (2021), and Gerhard Schurz' "Hume's Problem Solved" (2019). Each of these monographs will be discussed in form of a comprehensive comment as well as replies and reflections by the authors. We will also host specialist presentations from leading scholars in this field of research.

Schedule Day 1: September 29, 2021 (CET)

09:00 — 09:40	Oliver R. Scholz & Ansgar Seide: *Introduction & Induction, Abduction and Inductive Metaphysics. Historical Background and Systematic Perspectives*
09:40 — 10:10	Discussion
10:10 — 10:30	Break
10:30 — 11:10	Elke Brendel: *Commentary talk on Gerhard Schurz' "Hume's Problem Solved": Justifying Induction vs Justifying Deduction*
11:10 — 11:40	Focus Discussion
11:40 — 12:00	Break
12:00 — 12:30	Gerhard Schurz: *Replies & Reflections*
12:30 — 13:00	General Discussion
13:00 — 15:00	Lunch Break
15:00 — 15:40	Adam Carter: *Abduction, Scepticism, and Indirect Realism*
15:40 — 16:10	Discussion
16:10 — 16:30	Break
16:30 — 17:10	Stathis Psillos & Chrysovalantis Stergiou: *Commentary talk on John Norton's "The Material Theory of Induction"*
17:10 — 17:40	Focus Discussion
17:40 — 18:00	Break
18:00 — 18:30	John Norton: *Replies & Reflections*
18:30 — 19:00	General Discussion

Schedule Day 2: September 30, 2021 (CET)

09:00 — 09:40	Christian J. Feldbacher-Escamilla & Gerhard Schurz: *Epistemic Engineering: The interplay of meta-induction and abduction in the justification of laws of nature*
09:40 — 10:10	Discussion
10:10 — 10:30	Break
10:30 — 11:10	Paul D. Thorn: *Commentary talk on Igor Douven's "The Theory and Practice of Abduction": Abduction, Induction, and Direct Inference*
11:10 — 11:40	Focus Discussion
11:40 — 12:00	Break
12:00 — 12:30	Igor Douven: *Replies & Reflections*
12:30 — 13:00	General Discussion
13:00 — 14:00	Lunch Break
14:00 — 14:40	Alexandros Apostolidis & Stathis Psillos: *Why Formal Abduction is not IBE*
14:40 — 15:00	Discussion
15:00 — 15:10	Break
15:10 — 15:50	Stephen Biggs & Jessica Wilson: *Does Anti-Exceptionalism about Logic Entail that Logic is Justified A Posteriori?*
15:50 — 16:20	Discussion
16:20 — 16:40	Break
16:40 — 17:20	Atocha Aliseda Llera: *Commentary talk on Ilkka Niiniluoto's "Truth-Seeking by Abduction": Truth-Seeking by Abduction: A Rule for Progress in Science?*
17:20 — 17:50	Focus Discussion
17:50 — 18:00	Break
18:00 — 18:30	Ilkka Niiniluoto: *Replies & Reflections*
18:30 — 19:00	General Discussion
19:00	Closing

Abstracts

Atocha Aliseda Llera (Mexico City):
Truth-Seeking by Abduction: A Rule for Progress in Science?

In this talk I will first place the book *Truth-Seeking by Abduction* (2018) by Ilkka Niiniluoto in the context of research on scientific change in a post-Kuhn era in the philosophy of science. I will then question the author about his own view on the relationship of his early work on scientific progress and this book. I will then concentrate on chapter 8 *abduction and truthlikeness*; and in particular review his notion of abductive belief revision. I will compare it to mine and to Schurz's operations for theory change. I will then present an example of this book concerning a contemporary debate about dark mater (p. 147) and reworked it as a case of existential abduction and ask Niiniluoto to comment on this proposal.

Alexandros Apostolidis (Athens) & Stathis Psillos (Athens):
Why Formal Abduction is not IBE

In the recent literature, several models have been proposed to formalize the selective part of the abductive process, the well-known Inference to the Best Explanation [IBE]. The vast majority of these models follow the two versions of AKM[1] scheme, that is, *explanatory abduction* and *minimal abduction.*

The main thesis of this presentation is that the models that implement explanatory or minimal abduction, fail to formalize IBE. Two methods are internally equivalent, if they are intertranslatable. That is, they are internally equivalent only if the elements of the first method can be mapped onto those of the second and vice versa. On the other hand, two methods are externally equivalent, if, when facing the same problems, they arrive at the same solutions.

[1] Gabbay and Woods use this term to refer to the abductive scheme proposed, among others, by Aliseda, Kuipers, Kowalski, Magnani and Meheus.

AKM models are not internally equivalent with IBE, as their criteria for determining the best explanation are different. According to the explanatory abduction, explanation α (or solution α), alongside background knowledge Θ and observation φ, must meet the requirements of *Inference, Consistency, Explanation* and perhaps the requirement of *Minimality*. On the other hand, the preferential search for the best explanation can be determined by the evaluation of the competent hypotheses according to virtues such as consilience, consistency, parsimony, unification, ad hocness, mechanism etc.

AKM models are not externally equivalent with IBE, as there exists at least one class of abductive problems where they end up with different solutions. We share Okasha, Psillos and Lipton's view, which says that among the several species of IBE syllogisms, the most central seems to be the one which evaluates the causal history of each potential explanation. More specifically, if the relevant notion of explanation used in IBE syllogisms is causal, then IBE becomes Inference to the Best Causal Explanation [IBCE]. We follow the path of Scriven and Schaffer who argue that there are cases where two or more distinct events $c_1, c_2, \ldots$ jointly cause an effect e. *Simultaneous overdetermination* (or *symmetric redundancy*) occurs when $c_1, c_2, \ldots$ bring about e simultaneously. Cases of simultaneous overdetermination are not rare, as there are plenty of examples from both scientific research and everyday life. We argue that the AKM models that formalize explanatory abduction, while they can cope with cases of causal overdetermination, they are not good candidates for formalizing IBCE as they end up with a, probably infinite, set of equally good solutions. On the other hand, the AKM models that formalize explanatory abduction fail to formalize IBCE as they reject every complex explanation.

Hence, IBE and the AKM models are neither internally nor externally equivalent.

Stephen Biggs (Iowa) & Jessica Wilson (Toronto):
Does Anti-Exceptionalism about Logic Entail that Logic is Justified A Posteriori?

The dispute between exceptionalists and anti-exceptionalists about logic is often framed as centrally about whether the justification of logical theories is or is not a priori (Hjortland 2017). Such a characterization plausibly reflects the commonly accepted supposition that abduction is an a posteriori mode of inference, coupled with the usual anti-exceptionalist thesis that logical theories, like scientific theories, are justified via abduction. In past work, however (Biggs and Wilson 2017, 2018, 2020), we have argued that abduction is an a priori mode of inference. Here we consider the import of the a priority of abduction on the proper understanding of anti-exceptionalism about logic, offering a construal of this view on which the justificatory status of logic turns not on the role played by abduction per se, but rather on the justificatory status of the (a priori or a posteriori) data on which abduction operates. Since (see Priest 2016) at least some anti-exceptionalists allow that the goings-on playing the role of data may be a priori, anti-exceptionalism is compatible with logic's being justified a priori. We close by offering an alternative characterization of what generally distinguishes exceptionalists from anti-exceptionalists about logic.

Elke Brendel (Bonn):
Commentary talk on Gerhard Schurz' "Hume's Problem Solved": Justifying Induction vs Justifying Deduction

Gerhard Schurz' book 'Hume's Problem Solved' is a highly important and original attempt to resolve Hume's famous problem of *justifying induction* in a way that is neither too strong nor circular and does not result in skepticism or dogmatism. In my critical remark, I will focus on Gerhard Schurz' argument that there is a crucial difference between justifying induction and justifying deduction. For Schurz, unlike induction, higher-order justification for *deductive* reasoning is unproblematic. I will argue against Schurz'

view that classical deductive logic is basic and needs no justification. In particular, I will show that the semantics of many non-classical logics cannot be translated by semantic axioms within a classical system in a satisfiable way. I will finally argue for a version of (deductive) logical nihilism and instrumentalist logical pluralism for which an *optimality justification* in terms of the success rate of achieving certain instrumental goals, is just as important as for inductive reasoning.

Adam Carter (Glasgow):
Abduction, Scepticism, and Indirect Realism

Moore and Russell thought that perceptual knowledge of the external world is based on abductive inference from information about our experience. Sosa maintains that this 'indirect realist' strategy has no prospects of working. Vogel disagrees and thinks it can and does work perfectly well. My aim will be to adjudicate this dispute in favour of Sosa's pessimistic answer, and in doing so, to better uncover some of the advantages of externalist foundationalism.

Christian J. Feldbacher-Escamilla (Cologne) & Gerhard Schurz (Düsseldorf):
Epistemic Engineering: The interplay of meta-induction and abduction in the justification of laws of nature

Meta-induction is a prediction method that allows overcoming the problem of induction by, first, re-engineering the fundamental epistemic goal of the justification of induction from reliability justifications to optimality justifications; and, second, by employing the past track record of induction to provide a non-circular a posteriori justification of induction as an optimal choice for

making a prediction (cf. Schurz 2019 and Feldbacher-Escamilla forthcoming). This main line of reasoning was recently contested by the claim that such an approach can serve only as a justification of predicting a single (the next) event, but not for justifying induction as a general prediction method (cf., e.g., Sterkenburg 2022).

In this talk, we argue that the objection can be addressed by the help of a principle of cognitive coherence and a weak inductive uniformity assumption. Whereas the former principle seems to be fundamental, we argue that the latter can be justified by the help of abductive reasoning. We indicate how abductive reasoning can be justified in a "meta-abductive" way and outline what effect such an approach has for the justification of laws of nature.

Stathis Psillos (Athens) & Chrysovalantis Stergiou (Athens): ***Commentary talk on John Norton's "The Material Theory of Induction": Food nourishes, Fire burns, Water drowns. . . : material induction and the uniformity of nature***

In this talk we discuss Norton's views of induction as presented in his lately published book, *The Material Theory of Induction*. The author argues that there are no universal principles or warranted rules of induction. Inductive inferences are material, warranted by local background facts. But universal principles, such as the principle of uniformity of nature, may not differ from local facts but with respect to their generality. Hence, similar to the way local facts warrant material inductions, universal principles may warrant inductive rules. In addition, the relation between universal principles and local facts may presuppose a rudimentary form of induction by enumeration, as Mill (1843) has pointed out: universal principles are inductively supported by local facts of lower generality and they support local facts – they are in a relation of mutual support. Finally, we discuss Norton's solution of the problem of infinite regress as emerges when Hume's problem of induction is transferred to material inductions. We point out that the self-supported schema suggested by Norton in order to avoid regress is just an alternative along with the classical solutions of admitting self-warranted facts or

rudimentary rules of induction. Moreover, we find that a justification of Norton's schema in terms of scientific practice is no more appealing than Mill's plea to human practice for establishing the rudimentary nature of induction by enumeration.

Oliver R. Scholz (Münster) & Ansgar Seide (Münster):
Induction, Abduction and Inductive Metaphysics. Historical Background and Systematic Perspectives

The main purpose of this introductory talk is to relate the topic of the workshop, induction and abduction, to the overall theme of our research group, the programme of inductive metaphysics. In the first part of the talk, we give an overview of inductive metaphysics.

In particular, we distinguish between inductive metaphysics on the one hand as a methodological or metametaphysical research programme in metaphysics, and on the other hand as a historical movement in the 19th and early 20th century. The second part of the talk is devoted to the programme of inductive metaphysics and its requirement of an account of induction and abduction. In the third part, we present two examples of the use of induction and abduction in inductive metaphysics, namely Wilhelm Wundt's introduction of the metaphysical concept of causality and Erich Becher's argument for the existence of real physical objects.

Paul Thorn (Düsseldorf):

Commentary talk on Igor Douven's "The Theory and Practice of Abduction": Abduction, Induction, and Direct Inference

This talk considers some ways by which one form of non-deductive inference might depend on another. As illustrations, I consider grounds for thinking (1) that induction is dependent on abduction, (2) that abduction is dependent on induction, and (3) that induction is dependent on direct inference. Particular attention is paid to assessing relevant aspects of the defense of abduction presented in Igor Douven's book, the Art of Abduction, and, in particular, to the reasons given for thinking that abduction is not dependent on induction. I argue for 3 points: (1) the prima facie considerations raised by Douven against Fumerton's view that abduction is dependent on induction are inconclusive, (2) one of the critical pieces of evidence that Douven provides for the claim that abduction is ecologically rational is not convincing, and (3) Douven's approach to justifying abduction will have to recognize a dependence on direct inference as the basis for justifying belief in the conclusions of abductive inferences.