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Inductive Social Metaphysics—A Defence of Inference to the Best Explanation in the Metaphysics of Social Reality: Comments on Katherine Hawley

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Abstract How is metaphysics related to the empirical sciences? Should metaphysics in general be guided by the sources, methods and results of the sciences? And what about the special case of the metaphysics of the social world: should it likewise be guided by the sources, methods and results of the social sciences? In her paper "Social Science as a Guide to Social Metaphysics?", K. Hawley raises the question: If we are sympathetic to the project of naturalising metaphysics, how should we approach the metaphysics of the social world? She proceeds by discussing three approaches to social metaphysics: (SM-1) inference to the best explanation (IBE) from current social science, (SM-2) descriptive conceptual analysis, and (SM-3) normative, especially 'ameliorative' projects. At the end of her discussion, she reaches a rather pessimistic conclusion, especially as regards the IBE approach: "a number of phenomena indicate that the prospects for securely basing social metaphysics via inference to the best explanation from social science are currently faint. […] We need to look elsewhere if we are to develop a metaphysics of the social world." In my comments on her paper, I try to re-animate the program of an inductive metaphysics by defending the idea that the method of inference to the best explanation (IBE method) should be the central method of justification for metaphysics in general and for social metaphysics in particular.

Keywords Meta-metaphysics · Social metaphysics · Inference to the best explanation · Scientific realism

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1 Metaphysics and the Sciences

How is metaphysics related to the empirical sciences? Should it in general be guided by the sources, methods and results of the sciences? And what about the special case of the metaphysics of the social world: should it likewise be guided by the sources, methods and results of the social sciences?

As Katherine Hawley reminds us in her paper "Social Science as a Guide to Social Metaphysics?", debates about the epistemic and methodological relationships between metaphysics and science, traditionally, focussed on the natural sciences, especially contemporary fundamental physics (including special relativity theory, general relativity theory, quantum mechanics and quantum field theory). Accordingly, it has often been asked:

> (Q) Can and should the natural sciences (especially fundamental physics) serve as a guide to metaphysics or, at least, to the metaphysics of nature?

In earlier papers (Hawley 2006, 2010), Hawley made important contributions to this meta-metaphysical discussion linking it to recent debates about scientific realism (Laudan 1981; Psillos 1999). As she points out, one attractive option in the field is "to see the naturalising metaphysician of the natural sciences as a kind of scientific realist, who uses inference to the best explanation to move from the empirical success of a scientific theory to the accuracy of the metaphysical picture embedded in the theory" (2018, see also Hawley 2006).

In the case of the *metaphysics of natural reality*, she has come to a moderately optimistic conclusion: "Science can be a guide to metaphysics, but it is not an infallible guide." (Hawley 2006, 468) In her meta-critique of Ladyman and Ross's (2007) influential critique[1] of standard or mainstream analytic metaphysics, she insisted that

> the actual work of many contemporary metaphysicians provides conceptual resources and tools which can be of great use to anyone who is attempting – admirably – to draw metaphysical conclusions from the detailed study of current science. (Hawley 2010, 179)

2 Turning to Social Metaphysics

In her paper "Social Science as a Guide to Social Metaphysics?", Hawley now raises what seems to be an exactly parallel question for the *metaphysics of social reality*:

> (Q*) If we are sympathetic to the project of naturalising metaphysics, how should we approach the metaphysics of the social world? (Hawley 2018)

[1] Ladyman, Ross et al. argue that standard analytic (or 'neo-scholastic') metaphysics is based on inadequate sources and methods such as (i) philosophers' armchair intuitions, (ii) uncritical common sense or (iii) out of date and simplified accounts of scientific results. For these and other reasons, analytic metaphysics "should be discontinued" (Ladyman and Ross 2007, vii). Instead Ladyman and Ross favor "a radically naturalistic metaphysics" in the sense of a self-conscious defence of scientism in metaphysics, i.e., "a metaphysics that is motivated *exclusively* by attempts to unify hypotheses and theories that are taken seriously by contemporary science" (Ladyman and Ross 2007, 1, my emphasis). As they emphasize time and again, according to them "*no* alternative kind of metaphysics can be regarded as a legitimate part of our collective attempt to model the structure of objective reality" (Ladyman and Ross 2007, 1, my emphasis). I think these challenges are to be taken very seriously by anyone concerned with metaphysics and its methodology.

Metaphysicians of the social world are prone to ask questions such as (cf. Schmitt (ed.) 2003; Scholz 2008):

> (SM-Q 1) What (irreducibly) social entities (objects, properties, relations etc.) are there?
> (SM-Q 2) How do social entities ontologically depend on non-social entities? How are social facts metaphysically grounded in non-social facts? How does social reality fit into the natural world? How is it possible that social facts and institutions emerge in a physical world?
> (SM-Q 3) How do social entities (e.g., groups or institutions) persist through time?

If we are sympathetic to the project of naturalising metaphysics, how should we approach these and related questions? Hawley proceeds by discussing three possible approaches to social metaphysics:

> (SM-1) inference to the best explanation (IBE) from current social science,
> (SM-2) descriptive conceptual analysis (and the consulting of so-called intuitions), and
> (SM-3) normative, 'ameliorative' projects (cf. Haslanger 2012, 366f., 376, 385f.).

In the case of the *metaphysics of social reality*, she reaches a rather pessimistic conclusion, especially as regards the IBE approach:

> a number of phenomena indicate that the prospects for securely basing social metaphysics via inference to the best explanation from social science are currently faint. (Hawley 2018)

Among these alleged 'phenomena' she mentions (a) "a much wider internal divergence of methodologies, presuppositions, schools of thought" (Hawley 2018), (b) an inability "to generate successful novel predictions" (2018) and (c) the lack of "social scientific equivalents of the 'marvels of technology' which are, for many, a key impetus for scientific realism" (2018). Against the background of these dire straits, she draws the following conclusion:

> […] these features present a huge challenge to anyone hoping to extract a metaphysics of the social world from the social sciences by following the example of scientific realist philosophers of physics. We need to look elsewhere if we are to develop a metaphysics of the social world. (Hawley 2018)

3 Preview

In what follows, I will mainly focus on approach (SM-1), i.e. IBE from current social science, while commenting only briefly on (SM-2) and (SM-3). Whereas I concede that conceptual and ameliorative analyses may play important preparatory, especially clarificatory, diagnostic and heuristic roles in social metaphysics, I want to defend the idea that the method of inference to the best explanation (IBE method) should be the central method of justification for metaphysics in general and for social metaphysics in particular.

In arguing for an application of the IBE method to metaphysics, I hope to detach the relevance of this method from the narrow context of the scientific realism issue. We need not extrapolate our best metaphysics of the social world from the social sciences by strictly mimicking the procedure of scientific realist philosophers of natural science. Instead of

seeing the naturalising metaphysician of the sciences "as a kind of scientific realist, who uses inference to the best explanation to move from the empirical success of a scientific theory to the accuracy of the metaphysical picture embedded in the theory" (Hawley 2018), I suggest to look upon the metaphysician as a critical realist who uses the IBE method to move from a body of well-established empirical evidence to the truth or, at least, significant objective probability of a metaphysical hypothesis that best explains the totality of the currently available evidence.[2]

Since the IBE method is an inductive method involving inductive inferences in the broad sense of non-demonstrative ampliative reasoning, what I am defending here is a form of *inductive metaphysics* in the spirit of a metaphysical research program that was pursued from late 19th to early 20th century but has since been largely forgotten.[3] Hence my title: *Inductive Social Metaphysics*.[4]

4 Meta-Metaphysics

Before addressing the above-mentioned issues, we have to step back a bit. The paper under discussion, "Social Science as a Guide to Social Metaphysics?", is a contribution to *meta-metaphysics* which, in turn, is an important branch of *metaphilosophy*.

Meta-metaphysics is concerned with fundamental questions pertaining to (a) the logic and semantics, (b) the epistemology, and (c) the methodology of metaphysics (Manley 2009, 1; cf. Tahko 2015, 5). Last but not least, meta-metaphysics is an "inquiry into the possibility or impossibility of metaphysics" (Ladyman and Ross 2007, 6). While, in the tradition of Logical Empiricism and early Analytic Philosophy, there has been a lot of discussion on logical and semantic issues, the epistemology and methodology of metaphysics are still insufficiently explored. To my mind, the permanent crisis of metaphysics is mainly due to the fact that its standard epistemologies are deeply flawed. Most importantly, there is, to the best of my knowledge, still no detailed, thorough and adequate investigation into the methodology of metaphysics.[5]

Now, what are the most urgent tasks of meta-metaphysics today? Among its central questions are:

[2] For an application of the IBE method to the tasks of interpretation in the 'interpreting disciplines' (including most social sciences and humanities) see Scholz (2015).

[3] In the Anglo-Saxon world, it is hardly mentioned at all, with the exception of a few remarks by Father Copleston in Volume VII, Chapter XX of his monumental *A History of Philosophy* (Copleston 1963, 374ff.). The basic idea of Inductive Metaphysics, that metaphysicians should make use of a posteriori sources of justification and inductive methods, goes back to Gustav Theodor Fechner (1801–1887), Rudolf Hermann Lotze (1817–1881) and Eduard von Hartmann (1842–1906). Later on, Wilhelm Wundt (1832–1920), Gerardus Heymans (1857–1930), Oswald Külpe (1862–1915), Erich Becher (1882–1929) and Aloys Wenzl (1887–1967) sought to employ a posteriori sources of justification and inductive methods more consistently and more rigorously than their predecessors. Concise statements of the basic ideas and the methodological program can be found in Becher (1921), 318–328 and especially in Becher (1926).

[4] If I had chosen to borrow from Charles S. Peirce's terminology of "abductory induction", "abductive inference" and "abduction" (cp. Peirce 1931–1958, 5.180–5.212, Buchler 1940, 150–156), I might also have used the term "abductive metaphysics".

[5] To be sure, White (1987) examined a representative sample of classical metaphysicians and suggested some interesting diagnoses. Nolan (2016) provides a brief critical survey of methods employed in mainstream analytic metaphysics.

(MM-Q1) Do metaphysical hypotheses and theories provide knowledge or at least justified beliefs?
(MM-Q2) Could metaphysics be a science? How do metaphysical inquiry and metaphysical theory building proceed? Are there reliable methods for metaphysical inquiry and metaphysical theory building?
(MM-Q3) Is explanation among the aims of metaphysical theories? If yes, what form do explanations in metaphysics take? Do explanations in metaphysics differ in kind from explanations in science?
(MM-Q4) How can metaphysical hypotheses and theories be epistemically justified? On what epistemic sources can we draw when we are trying to test and justify our metaphysical hypotheses and theories? Are there reliable criteria of rational theory choice for metaphysical theories?

In what follows I will focus on the pertinent questions about explanation (MM-Q3) and justification (MM-Q4) in metaphysics.

5 Explanations in Philosophy and Metaphysics

Arguably, one of the most urgent tasks of metaphilosophy is the development of a theory of *explanation (and understanding) in philosophy* (Nozick 1981; Scholz 1999; Swoyer 2007, 127f., 2007, 16ff.); and one of the most urgent desiderata of meta-metaphysics is the development of a theory of *explanation (and understanding) in metaphysics* (for discussion see Capitan and Merrill (eds.) 1966; Hochberg 1970; Swoyer 1999, 2007; Burger 2000).

While it seems pretty clear that we offer and consume explanations in everyday life and in the natural and social sciences (cf. the surveys in Schurz (ed.) 1988; Salmon 1990, 1998; Schurz 2014, ch. 6), it is a matter of some debate whether there are also explanations in philosophy, especially in metaphysics (Persson 2011; Brinck et al. 2011). To be sure, there have been serious attempts to develop an account of philosophical explanations. Robert Nozick's proposal is still a good point of departure. In the metaphilosophical introduction to his book *Philosophical Explanations*, Nozick contrasted two modes of philosophy: (i) philosophy that seeks arguments and proofs, and (ii) philosophy that rather seeks explanations. Nozick emphatically recommended the explanatory mode of philosophy: "Various philosophical things need to be explained; a philosophical theory is introduced to explain them, to render them coherent." (Nozick 1981, 8)

Whatever else they may be, explanations are, in the first place, answers to questions (Bromberger 1962, 1966, 1992). As Plato and Aristotle emphasized, philosophy begins in wonder, i.e., with a problem, or a predicament of puzzlement. The same may be said for science.[6] Whereas scientists typically ask why-questions (why did event e occur? why does the general phenomenon φ hold?), philosophical problems typically are problems of "understanding how something is or can be possible" (Nozick 1981, 8). According to Nozick, the form of a prototypical philosophical question is: "how is one thing possible, given (or supposing) certain other things?" (Nozick 1981, 9). Schematically:

[6] Philosophy and science, in their beginnings, were hardly distinguishable as they were united in their revolution against myth, epic and other forms of non-committal storytelling.

(Q-Phil) How is p possible, given r_1, …, r_n?[7]

In each case, a proposition p is held true[8] although there is a tension between p and other propositions r_1, …, r_n that are also assumed. (Following Nozick, we may term the r_i *apparent excluders* of p.)[9]

While various models of explanation have been proposed and discussed for the scientific explanation of singular events and general phenomena, most importantly, nomological models, causal models, mechanistic models, pragmatic models and unification models (cf. Salmon 1998), the most promising framework for philosophical, and especially metaphysical, explanations seems to be some sort of unification model.

6 Realist and Anti-realist Programs in Metaphysics

A second reminder before we can begin to address (MM-Q4) and defend the IBE method in metaphysics, i.e. apply the old idea of justifying a hypothesis or a theory by explanatory considerations to the special case of metaphysical hypotheses and theories.

It is of vital importance to remember that metaphysical questions have been raised and answered with different aims and pretensions. Metaphysics has a long and winded history; nevertheless, we may discern *two major research programs in the history of metaphysics* (Loux 2006, 1–16). They differ mainly with respect to what they claim to achieve; this, in turn, has consequences for issues of justification.

The *Realist Research Program in Metaphysics (R-M)* starting with some of the Pre-Socratics, Plato and foremost Aristotle claims to identify and analyze the deepest and most general structures of the world taken as reality-in-itself. Its leading questions include: What (categories of) beings are there? How are they related to each other? What grounds what in reality? (Schaffer 2009) Traditionally, Realist metaphysicians made use of various methods, most notably, the axiomatic-deductive method (the ancients; Spinoza; and many others), the method of doubt (Descartes), and the method of intuition and deduction (Descartes). The declared aim of the Realist metaphysician is to understand the world, i.e. to grasp the deepest and most general structures of the world or reality-in-itself.

The *Conceptual Framework Research Program in Metaphysics (CF-M)* starting with Kant and his followers has suspected the Realist program of being viciously dogmatic and presumptuous.[10] Accordingly, the Conceptual Schemers, as we may call them, restrict the task of metaphysics to the more modest one of identifying and analyzing the most general features of our thought and knowledge, of the conceptual frameworks or conceptual schemes as they say. In this research program, the leading questions are: What conceptual framework is necessary in order to think about the world and gain knowledge of it? While

[7] Indeed, many, if not all, philosophical problems can be formulated in this way. Consider, e.g., the problem of free will (how is it possible for us to have free will at time t, supposing all actions are determined by the state of the universe before t and the natural laws?), the problem of skepticism (how is it possible that we know anything, given the skeptical hypotheses the skeptic makes salient?) or the problem of theodicy (how is grave evil possible, supposing the existence of an omnipotent, omniscient and morally perfect God?).

[8] (Q-Phil) presupposes that p is possible. To be sure, discussion may reveal that this presupposition is controversial or even false. In this case, the question should be withdrawn (Nozick 1981, 9).

[9] It should be clear, though, that philosophers are also asking what-questions and why-questions (Scholz 1999) such as "What is justice?", "What is knowledge?" etc. and "Why is knowledge more valuable than true belief?" or "Why is there something rather than nothing?".

[10] In view of this critical attitude, the Kantian program has also been called *Critical Metaphysics*.

Kant advocated the so-called transcendental method, more recent Kantians make use of conceptual analysis and transcendental arguments. The requisite cognitive aim of metaphysics is the more modest one of understanding our conceptual system.[11]

Today, the majority of analytic metaphysicians seem again to pursue the Realist project; i.e., they aim at disclosing the deep structure of reality. Nevertheless, there is a considerable pluralism of attitudes and approaches within analytic metaphysics (broadly construed) ranging from pessimist attitudes such as (i) skepticism about metaphysical knowledge and (ii) ontological deflationism (cf. Manley 2009) to more optimistic approaches such as (iii) metaphysics guided by conceptual analysis and philosophers' intuitions about possible cases (Jackson 1998, Braddon-Mitchell and Nola (eds.) 2009) and (iv) science-driven metaphysics (sometimes called 'naturalistic' metaphysics) including Ladyman and Ross's radically naturalistic or scientific metaphysics (Ladyman and Ross 2007; Ladyman 2012; Ross et al. 2013; French 2014).[12]

7 Metaphysics and the Limits of Conceptual Analysis

There are at least four rather different conceptions of conceptual analysis: (CA 1) classical analysis and reductive definition in terms of necessary and sufficient conditions; (CA 2) connective elucidation and therapeutic analysis (Strawson 1992, 19–21); (CA 3) explication in the service of science (Carnap 1950, ch. 1; Quine 1960, 258–266); (CA 4) explication in the service of social critique with a view on normative aims such as moral and political amelioration (Haslanger 2012, Hawley 2018).

As mentioned before, I am willing to concede that conceptual and ameliorative analyses may play important preparatory, especially clarificatory, diagnostic and heuristic roles in metaphysics and, in particular, in social metaphysics. But, in metaphysics as in science, we cannot be content with conceptual analysis of whatever sort.

In addition, we need a method for critically checking the metaphysical hypotheses and theories that may be suggested by the results of conceptual analysis, critical reflection and empirical evidence. In short, we need a method for testing and justifying our metaphysical theories.

8 A Neglected Alternative: Inductive Metaphysics: Beyond Aprioristic Metaphysics and Uncritical Scientism

Against this background, I can now begin to defend the IBE method in the context of a broadly empirical-inductive approach to metaphysics. The main ideas of the program of inductive metaphysics are:

[11] In the history of metaphysics, (CF-M) has received, at least, two rather different interpretations: (a) one that emphasizes modesty and metaphysical agnosticism, (b) another that emphasizes radical anti-realist (or 'idealist') consequences. This point might be relevant for our topic, social metaphysics and its relation to the social sciences. My guess is that many social scientists and philosophers of social science see themselves in the broadly Kantian traditions, or even in the radical constructivist camp. In Germany, sociology emerged in a broadly neo-Kantian climate. Many social scientists simply assumed that their object of knowledge is not just there to be investigated, but has to be somehow constructed. Other traditions (e.g., the French and German tradition of so-called moral statistics) may have been importantly different in this respect.

[12] A note on terminology: In the context of this paper, I prefer "science-driven" or "science-guided" to "naturalistic", since the latter might suggest "guided solely by the *natural* sciences".

(IM-Object) Metaphysics is the attempt to understand total reality ("das Gesamtwirkliche"), i.e. reality-in-itself as a whole (Becher 1921, 322f.; Becher 1926, 5f.).
(IM-Methods) Metaphysics may and should make use of the inductive methods and inductive forms of inference that have been employed successfully in the empirical sciences.
(IM-Sources of Justification) Metaphysics may and should make use of the accepted empirical sources of justification and knowledge.[13]
(IM-Science) In particular, metaphysics may and should build on the (admittedly provisional) results of the empirical sciences.
(IM-Fallibilism) The sources and methods of metaphysics are fallible.
(IM-Revisability) Even our best metaphysical theories at the present time t may be in need of revision at a later time t'.

Metaphysics, or the attempt to understand total reality, is not and—as we will see in a moment—cannot be merely a conjunction or summary of the results of physics and the special sciences (including the social sciences). Metaphysicians raise additional questions and problems. In answering these questions, they may introduce additional concepts (e.g. "supervenience", "grounding", etc.) and postulate additional kinds of entities (e.g., monads, tropes, etc.). In addition, they investigate the relations of the constituents of reality to total reality.

We can see this more clearly when we look at the three major stages of human inquiry: (a) pre-scientific 'common sense' world pictures, i.e., pre-scientific attempts to explain and understand the world; (b) scientific theories and scientific attempts to explain and understand the world; (c) philosophical theories including metaphysical attempts to explain and understand the world. There is a role for philosophy (including metaphysics) to play in addition to the preparatory functions of conceptual analysis. In this connection, I want to formulate three reasons for critical reflection and two principles of rationality that may be specific to philosophy:

(R 1) There are tensions within our pre-scientific world pictures.
(R 2) There are tensions between our pre-scientific world pictures and current science.
(R 3) There are tensions within current science.

On occasion, these tensions may be inconsistencies; in other cases, there may be weaker forms of incoherence, e.g., the existence of isolated sub-systems in our belief system. Philosophers, we hope, are good at identifying such tensions though not always successful in resolving them. In the role of a philosopher, especially when struggling with (R 1) to (R 3), we seem to follow special principles of rationality such as:

(Phil-Rat-1) While doing philosophy it is not rational to uncritically accept the verdicts of pre-scientific common sense (although there may be a *weak* presumption in favour of pre-scientific common sense).
(Phil-Rat-2) While doing philosophy it is not rational to uncritically accept the verdicts of science (although there may be a *strong* presumption in favour of the approximate truth of mature science).

[13] Accordingly, metaphysical beliefs need not be wholly justified a priori though it may eventually turn out that some a priori presumptions cannot be avoided. In any case, the radical apriorism of much of traditional metaphysics is to be given up.

Thus, while paying serious attention to the sciences, philosophers should reject Uncritical Scientism:

(U-S) Science is the only source of insight and understanding

and its maxim

(U-S-Maxim) Simply (=uncritically) accept the verdicts of science.

At least in the case of unresolved tensions of type (R 3), we cannot reasonably follow (U-S-Maxim).

9 Arguments from Explanation

As several metaphysicians have suggested, arguments from explanation could and should be used to justify metaphysical theories and to choose between competing metaphysical systems (Swoyer 1983, 1999, 2007; Armstrong 2010, 59). The IBE method advises us to reason from the judgment that one hypothesis provides the best explanation of the explanandum to the conclusion that this explanatory hypothesis is (probably) true.[14] In the history of metaphysics, we can find a lot of reasonings that are most naturally construed as arguments from explanation, applying the IBE method to metaphysical questions.[15]

10 The Prospects for a Social Metaphysics

Against this background, let us take stock. As Hawley emphasized, one option in the current debate is "to see the naturalising metaphysician of the natural sciences as a kind of scientific realist, who uses inference to the best explanation to move from the empirical success of a scientific theory to the accuracy of the metaphysical picture embedded in the theory" (2018). Naturally, the question arose: "Can this picture accommodate social metaphysics?" (2018). As mentioned at the beginning, Hawley's answer is skeptical; therefore, she recommends "to look elsewhere if we are to develop a metaphysics of the social world" (2018).

Her main reason for skepticism is that there is a well-known challenge to scientific realism that can, arguably, be answered in the case of the natural sciences (and hence for the metaphysics of the natural world), but not in the case of the social sciences (and thus for the metaphysics of the social world). This challenge derives from the history of science: Larry Laudan and others have pointed to historical cases where scientific theories where successful for some time, even though we now judge them to be metaphysically misguided (Laudan 1981). Realists replied by restricting the use of IBE to 'mature' sciences with novel predictive success (e.g., Psillos 1999).

But, of course, these requirements, even if adequate for fundamental physics, are far too demanding for the general case. In the first place, there are successful sciences that do not

[14] Whereas Peirce used the terms "retroduction" and "abduction" (cf. Peirce 1931–1958, 5.180–5.212, Buchler 1940, 150–156), Gilbert Harman introduced the term "inference to the best explanation" (Harman 1965). For current discussions see Thagard (1978), Lipton (2004), Schurz (2008), Bartelborth (1996, 2012) and Scholz (2015).

[15] As Erich Becher and Chris Swoyer pointed out, traditional metaphysicians, unfortunately, construed their reasonings as inferences to the *only* possible explanation (cp. Becher 1926, 11, 13, 15; Swoyer 2007, 106).

aim at predictions at all (Hoyningen-Huene 2013, sec. 3.3). Secondly, coming to the social sciences and the humanities, there are well-known arguments that suggest that reliable long-term predictions concerning human affairs (including social phenomena) are impossible in principle (Hoyningen-Huene 2013, 78f.).

A better answer to the threat of pessimistic (meta-)inductions might be that the pessimistic prospect is part of the human condition. We simply have to live with the danger that our metaphysical theories—like our scientific theories—contain some terms that may turn out to be non-referring and some claims that turn out to be false. In the spirit of inductive metaphysics, we should comment on this fate by acknowledging that, if science is fallible, metaphysics should be expected to be vulnerable to the same, or even to a greater, degree.[16]

Nevertheless, metaphysical pictures—including metaphysical pictures of social reality—can be *improved*. Although one may justly suspect that, up to now, there has been more metaphysics-driven social science than there has been science-guided social metaphysics, we may do better if we pursue social metaphysics in the spirit of inductive metaphysics. Take for example the social ontologies of Gilbert (1989), Searle (1995, 2010) or Tuomela (2007). While it may be true that they arrived at their ontologies by reflection on concepts, common sense and 'intuitions', it is by no means clear that they do not rely on hidden empirical assumptions that may turn out to be ill-founded. Progress can be achieved by making explicit these empirical assumptions and testing them in the usual inductive and abductive ways.[17]

Should we, as philosophers and metaphysicians, then finally leave our beloved armchair? Yes, indeed, but not in order to move all to the physics lab, rather we should learn from and exchange ideas with scientists from both the natural and the social sciences. Social metaphysics is best guided by both (fallible) philosophy *and* the (fallible) sciences.

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References

Armstrong, D. (2010). *Sketch for a systematic metaphysics*. Oxford: Clarendon Press.
Bartelborth, T. (1996). *Begründungsstrategien*. Berlin: Akademie Verlag.
Bartelborth, T. (2012). *Die erkenntnistheoretischen Grundlagen induktiven Schließens*. E-Book http://nbn-resolving.de/urn:nbn:de:bsz:15-qucosa-84565.
Becher, E. (1921). *Geisteswissenschaften und Naturwissenschaften. Untersuchungen zur Theorie und Einteilung der Realwissenschaften*. München: Duncker & Humblot.
Becher, E. (1926). *Metaphysik und Naturwissenschaften. Eine wissenschaftstheoretische Untersuchung ihres Verhältnisses*. München: Duncker & Humblot.
Braddon-Mitchell, D., & Nola, R. (Eds.). (2009). *Conceptual analysis and philosophical naturalism*. Cambridge: MIT Press.

[16] Indeed, the greatest mistake in the epistemology and methodology of metaphysics has been to expect a higher degree of certainty from metaphysical theories than from empirical science. There are many historical causes of and reasons for this mistake that deserve close inspection and scrutiny, but I cannot go into these matters here.

[17] For interesting recent case studies and discussion see Guala (2007, 2016), Fagan (2011) and Guala and Hindriks (2015).

Brinck, I., Hermerén, G., Persson, J. & Sahlin, N.-E. (2011). Why metaphysicians do not explain. In A. Reboul (Ed.), *Philosophical papers dedicated to Kevin Mulligan*. Genève. http://www.philosophie.ch/kevin/festschrift/.
Bromberger, S. (1962). An approach to explanation. In R. J. Butler (Ed.), *Analytical philosophy: Second series* (pp. 72–105). Oxford: Basil Blackwell.
Bromberger, S. (1966). Why-questions. In R. G. Colodny (Ed.), *Mind and cosmos* (pp. 86–111). Pittsburgh: University of Pittsburgh Press.
Bromberger, S. (1992). *On what we know we don't know: Explanation, theory, linguistics, and how questions shape them*. Chicago: The University of Chicago Press.
Buchler, J. (Ed.). (1940). *The philosophy of Peirce: Selected writings*. London: Routledge & Kegan Paul.
Burger, P. (2000). Was ist eine ontologische Erklärung? *Metaphysica, 1,* 45–72.
Capitan, W. H., & Merrill, D. D. (Eds.). (1966). *Metaphysics and explanation*. Pittsburgh: University of Pittsburgh Press.
Carnap, R. (1950, 1962). *Logical foundations of probability*. Chicago: University of Chicago Press.
Copleston, F. (1963). *A history of philosophy. Volume VII: Fichte to Nietzsche*. London: Burns and Oates Limited.
Fagan, M. B. (2011). Is there collective scientific knowledge? Arguments from explanation. *The Philosophical Quarterly, 61,* 247–269.
French, S. (2014). *The structure of the world: Metaphysics and representation*. Oxford: Oxford University Press.
Gilbert, M. (1989). *On social facts*. London: Routledge.
Guala, F. (2007). The philosophy of social science: Metaphysical and empirical. *Philosophy Compass, 2*(6), 954–980.
Guala, F. (2016). *Understanding institutions: The science and philosophy of living together*. Princeton: Princeton University Press.
Guala, F., & Hindriks, F. (2015). A unified social ontology. *The Philosophical Quarterly, 65,* 177–201.
Harman, G. (1965). The inference to the best explanation. *Philosophical Review, 74,* 88–95.
Haslanger, S. (2012). *Resisting reality: Social construction and social critique*. Oxford: Oxford University Press.
Hawley, K. (2006). Science as a guide to metaphysics? *Synthese, 149,* 451–470.
Hawley, K. (2010). Contribution to a book symposium on] James Ladyman, Don Ross: Every thing must go: Metaphysics naturalized [2007]. *Metascience, 19,* 174–179.
Hawley, K. (2018). Social science as a guide to social metaphysics? *Journal for General Philosophy of Science*. https://doi.org/10.1007/s10838-017-9389-5.
Hochberg, H. (1970). Metaphysical explanation. *Metaphilosophy, 1,* 139–166.
Hoyningen-Huene, P. (2013, 2015). *Systematicity. The nature of science*. Oxford: Oxford University Press.
Jackson, F. (1998). *From metaphysics to ethics: A defence of conceptual analysis*. Oxford: Clarendon Press.
Ladyman, J. (2012). Science, metaphysics, and method. *Philosophical Studies, 160,* 31–51.
Ladyman, J., & Ross, D. (2007). *Every thing must go: Metaphysics naturalized*. Oxford: Oxford University Press.
Laudan, L. (1981). A confutation of convergent realism. *Philosophy of Science, 48,* 19–49.
Lipton, P. (2004). *Inference to the best explanation* (2nd ed.). London: Routledge.
Loux, M. J. (2006). *Metaphysics: A contemporary introduction*. London: Routledge.
Manley, D. (2009). Introduction: A guided tour to metametaphysics. In D. J. Chalmers, D. Manley, & R. Wasserman (Eds.), *Metametaphysics: New essays on the foundations of ontology* (pp. 1–37). Oxford: Clarendon Press.
Nolan, D. (2016). Method in analytic metaphysics. In H. Cappelen et al. (Eds.), *The Oxford handbook of philosophical methodology* (pp. 159–178). Oxford: Oxford University Press.
Nozick, R. (1981). *Philosophical explanations*. Cambridge: The Belknap Press of Harvard University Press.
Peirce, C. S. (1931–1958). *Collected Papers*. In C. Hartshorne, P. Weiss & A. W. Burks (Eds.). Cambridge: Harvard University Press.
Persson, J. (2011). Explanation in metaphysics? *Metaphysica, 12,* 165–181.
Psillos, S. (1999). *Scientific realism: How science tracks truth*. London: Routledge.
Quine, W. V. (1960). *Word and object*. Cambridge: MIT Press.
Ross, D., Ladyman, J., & Kincaid, H. (Eds.). (2013). *Scientific metaphysics*. Oxford: Oxford University Press.
Salmon, W. C. (1990). *Four decades of scientific explanation*. Minneapolis: University of Minnesota Press.
Salmon, W. C. (1998). *Causality and explanation*. Oxford: Oxford University Press.
Schaffer, J. (2009). On what grounds what. In D. J. Chalmers, D. Manley, David, & R. Wasserman (Eds.), *Metametaphysics: New essays on the foundations of ontology* (pp. 347–383). Oxford: Clarendon Press.

Schmitt, F. F. (Ed.). (2003). *Socializing metaphysics: The nature of social reality*. Lanham: Rowman & Littlefield.
Scholz, O. R. (1999). Was heißt: etwas in der Philosophie verstehen? In R. Raatzsch (Ed.), *Philosophieren über Philosophie (Leipziger Schriften zur Philosophie 10)* (pp. 75–95). Leipzig: Leipziger Universitätsverlag.
Scholz, O. R. (2008). Sozialontologie. In S. Gosepath, W. Hinsch, & B. Roessler (Eds.), *Handbuch der Politischen Philosophie und Sozialphilosophie: N–Z* (Vol. 2, pp. 1129–1134). Berlin: Walter de Gruyter.
Scholz, O. R. (2015). Texte interpretieren: Daten, Hypothesen und Methoden. In J. Borkowski, S. Descher, F. Ferder, & P. D. Heine (Eds.), *Literatur interpretieren: Interdisziplinäre Beiträge zu Theorie und Praxis* (pp. 147–171). Münster: Mentis.
Schurz, G. (Ed.). (1988). *Erklären und Verstehen in der Wissenschaft*. München: R. Oldenbourg.
Schurz, G. (2008). Patterns of abduction. *Synthese, 164,* 201–234.
Schurz, G. (2014). *Philosophy of science: A unified approach*. New York: Routledge.
Searle, J. R. (1995). *The construction of social reality*. New York: The Free Press.
Searle, J. R. (2010). *Making the social world: The structure of human civilization*. Oxford: Oxford University Press.
Strawson, P. F. (1992). *Analysis and metaphysics: An introduction to philosophy*. Oxford: Oxford University Press.
Swoyer, C. (1983). Realism and explanation. *Philosophical Inquiry, 5,* 14–28.
Swoyer, C. (1999). How ontology might be possible: Explanation and inference in metaphysics. *Midwest Studies in Philosophy, 23,* 100–131.
Swoyer, C. (2007). Abstract entities. In T. Sider et al. (Eds.), *Contemporary debates in metaphysics* (pp. 11–31). Malden: Blackwell.
Tahko, T. E. (2015). *An introduction to metametaphysics*. Cambridge: Cambridge University Press.
Thagard, P. (1978). The best explanation: Criteria for theory choice. *The Journal of Philosophy, 75,* 76–92.
Tuomela, R. (2007). *The philosophy of sociality*. Oxford: Oxford University Press.
White, A. R. (1987). *Methods of metaphysics*. London: Croom Helm.