1. Introduction

Howard Sankey’s paper has two main parts. First, he tries to refute the challenge posed by semantic incommensurability to scientific realism. His basic assumption is that conceptual change leading to incommensurability supposedly precludes the comparability of theories due to the presumed fact that incommensurable theories refer to different things. Sankey’s counter strategy is to reinstate continuity of reference, thereby limiting the potentially damaging consequences of conceptual change. He accepts that theory change can involve meaning change, but argues that this is compatible with continuity of reference, which is sufficient to disarm the threat posed to realism by incommensurability. He identifies Feyerabend and Kuhn’s mistake as relying on a description theory of reference that implies that conceptual change leads to the discontinuity of reference. However, replacing the (incorrect) description theory of reference by a (much more correct) causal-descriptive theory, continuity of reference can be reinstated despite conceptual change as mere sense variation. Second, Sankey addresses the specific challenge presented to scientific realism by a neo-Kantian interpretation of Kuhn’s idea of incommensurability.

Sankey’s counter strategy mainly consists in attempting to show that the neo-Kantian position he envisages is fundamentally incoherent, and as such, is incapable of challenging realism. We raise objections to Sankey’s analysis. The result is certainly not that realism is wrong. It will only be that Sankey’s response to the threat incommensurability poses to scientific realism is inadequate due to inaccurate assumptions about its implications for theory comparison. By the same token, his particular attack on anti-realism is largely ineffectual because it rests on inappropriate assumptions about anti-realism. Our diagnosis for these failures is, once again, meta-incommensurability.

2. Incommensurability and theory comparison

This section examines whether Sankey’s strategy successfully defuses the threat to scientific realism posed by incommensurability. According to Sankey, “the incommensurability thesis is controversial because it throws doubt upon the rationality of scientific theory choice, as well as the progressive character of scientific theory change” (Sankey, 2009, Sect. 1). Moreover: “the claim that scientific theories are incommensurable suggests that the content...
of theories may not be directly compared. But if the content of theories may not be compared, no comparative test of predictive consequences may be undertaken’ (ibid.). So the threat to scientific realism posed by incommensurability that Sankey’s strategy aims to defuse is based on the supposition that incommensurability challenges the rationality of theory comparison by precluding the possibility of comparing the content of scientific theories. The problem that incommensurability purportedly poses arises because ‘In order for there to be an increase in truth known about a shared field of investigation, successive theories must refer to a common domain of entities’ (ibid., Sect. 3). Conversely, ‘if later theories do not refer to the same entities that earlier theories in the same domain referred to, then it is not possible for later theories to increase the truth known about the same entities as those referred to by earlier theories’ (ibid.). Sankey’s strategy uses a causal-descriptive theory of reference to show that the content of theories can indeed be compared, even in the face of meaning variance, thereby undermining this supposed threat to scientific realism from incommensurability: ‘In sum, provided reference is constant between theories no problem arises for the realistic account of progress’ (ibid.; our emphasis).

First, we need to determine what Sankey means by comparing ‘the content of theories’ (ibid., Sect. 1). Sankey says the following: semantic variance does not entail incomparability of content.

Theories whose terms share reference may agree or disagree with respect to specific assertions even if the terms differ in sense . . . Co-reference of constituent terms is all that is needed for assertions to agree or disagree . . . overlap of extension suffices for comparability. (ibid., Sect. 4; our emphasis)

This suggests that by ‘content comparison’, Sankey means a comparison of the particular assertions (or predictions) that can be made on the basis of the theories. This interpretation coheres with Sankey’s claim that incommensurability implies that there can be ‘no comparative test of predictive consequences’ (ibid., Sect. 1; our emphasis). In other words, it is a necessary condition for such content comparison that the terms employed by the theories can be used to refer to some of the same objects. In fact, this condition is not only necessary but also sufficient, as the ‘provided only’ in the following quote implies: ‘Scientific theories may be compared with respect to content, provided only that the terms employed by the theories have the same or overlapping reference’ (ibid., Sect. 4; our emphasis).

Has Sankey correctly identified the threat that incommensurability poses to scientific realism? Has Sankey successfully shown that reference is constant between theories; that is, that later theories ‘refer to the same entities as earlier theories referred to’ (ibid.; our emphasis)? Unfortunately, the answer to both questions is no. The idea that incommensurability means, or implies, that theories are rationally incomparable is mistaken. Moreover, Sankey’s argument is invalid because he equates reference between terms stating theories and reference of terms employed by theories making specific assertions (predictions). In other words, there is a difference between reference to kinds by terms used in stating theories, and reference to specific samples of those kinds by the same terms in specific predictions of those theories.

To see precisely where Sankey goes wrong, it is helpful to distinguish Feyerabend and Kuhn’s views. Did Feyerabend or Kuhn suggest that if two theories are incommensurable, then their ‘content’ cannot be (rationally) compared? We begin with Feyerabend.

2.1. Feyerabend on crucial experiments between incommensurable theories

‘Incommensurability’ was used by Feyerabend to mean conceptual incompatibility: The main concepts of one theory can neither be defined on the basis of the primitive descriptive terms of the other theory, nor related to them via correct empirical statements (Feyerabend, 1962, pp. 74, 90; cf. Oberheim, 2005).

Feyerabend restricted his discussion to ‘general theories, or non-instantial theories’ (ibid., p. 28).² He provides only three examples of pairs of incommensurable scientific theories: the impetus theory of motion and Newtonian mechanics, phenomenological and statistical thermodynamics, and Newtonian and relativistic mechanics. In the accompanying footnote, he explained that such non-instantial theories differ from mere empirical generalizations of the form ‘All A’s are B’s’ with regard to how they are tested. Empirical generalizations are ‘tested by inspection of instances (the A’s)’, whereas in order to test ‘non-instantial’ theories, empirical generalizations of the form all A’s are B’s must first be derived from the theories with the help of suitable boundary conditions. Feyerabend emphasized that whereas mere empirical generalizations there is a direct relation between the general statement and the particular instances that can be used to test it, in the case of non-instantial theories, such an immediate relation between the form [of the theory] and the test procedures does not obtain’ (ibid., p. 28). In other words, the theories by themselves do not make any specific assertions that are testable. But general empirical statements can be derived from them (with the help of suitable boundary conditions), which can then be tested by inspecting specific instances. Can the specific assertions derived from two non-instantial incommensurable theories be used to compare (test) them according to Feyerabend?

In fact, that was exactly Feyerabend’s main conclusion. In 1962, he explicitly and repeatedly claimed that there can be such comparison of incommensurable theories. He even claimed that incommensurable theories are ‘empirically indistinguishable’ within a certain limited domain D’ (ibid., p. 59). Within D’, the two incommensurable theories make the same quantitative predictions, despite the fact that these theories use conceptually incompatible concepts (ibid., pp. 55–56, 58, 59, 66, 67, 75, 80, 81; cf. Oberheim, 2006, pp. 144 ff.). What about outside domain D’? Can specific assertions derive (with suitable initial conditions) from two incommensurable theories be used to stage a crucial experiment? In 1962, Feyerabend explicitly argued that indeed there can be such ‘crucial experiments’ between incommensurable theories, developing an example of a crucial experiment between classical and statistical thermodynamics: Einstein’s prediction and Perrin’s subsequent experimental verification of the statistical behavior of Brownian motion (Feyerabend, 1962, pp. 65 ff.; cf. Sirtes & Oberheim, 2006). So whereas Sankey claims incommensurability precludes (rational) content comparison, Feyerabend explicitly claimed that there can be ‘crucial experiments’ on the basis of conflicting predictions, despite meaning variance.

There is one passage in Feyerabend (1962) that seems to suggest that incommensurability implies content incomparability. On the penultimate page, he wrote: ‘Now incommensurable theories may not possess any comparable consequences, observational or

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¹ There may be a somewhat irritating consequence for the realist here. If all theories whose terms have overlapping reference and support correct claims qualify as approximating truth (by being rationally comparable with respect to their content), then every competing theory would be approximately true (though to different degrees). Yet, correctly referring specific assertions can be derived, for example, from Creationism (‘That is a tiger’ pointing to a tiger), or from Thales’ theory that everything is water (‘That is water’ pointing to water), or even from the theory that the whole world is made of cheese, so these theories too would then approximate truth.

² He also calls them ‘universal theories’ or ‘fundamental theories’. This marks one of the most significant differences between Feyerabend and Kuhn on incommensurability. Kuhn applied the term much more widely to scientific theories (cf. Oberheim & Hoyningen-Huene, 2009, Sect. 4).
otherwise. Hence, there may not exist any possibility of finding a **characterization** of the observations which are supposed to **confirm** two incommensurable theories’ (ibid., p. 94; our emphasis). This may appear to support Sankey’s claim that incommensurability suggests that theories cannot be compared with regard to content. However, three sentences after that quote, Feyerabend wrote ‘we must carefully distinguish between the causes of the production of a certain observational sentence . . . on the one side, and the **meaning** of the sentence produced’ (ibid., p. 94; original emphasis).

This distinction, which is the basis of Feyerabend’s pragmatic (or ‘causal’) theory of observation (ibid., pp. 34 ff.), relieves the apparent tension between the passages we discussed. Here is how. Feyerabend used a contextual theory of meaning (and not a descriptive theory of reference) to develop the notion of incommensurability. For example, ‘Two fundamental theories are incommensurable because the meanings of their terms are determined by the theoretical principles that govern their use, and these principles are qualitatively incompatible’ (ibid., p. 56). Feyerabend argued that if specific assertions (observational or otherwise) are deduced from theories, then the meanings of the terms as used in those assertions are determined by the theoretical principles governing their use according to that theory (ibid., pp. 77, 79, 94). So if a sentence is deduced from a theory and then used to test that theory, then the meanings of its terms will be determined by that theory. If exactly the same sentence can be deduced from two incommensurable theories, then the terms of that sentence will have different meanings, depending on which theory is used to interpret it. So, to use Feyerabend’s example, a sentence such as ‘That ball will move 5cm into the soft wax’ can be derived (given suitable auxiliary hypotheses) from both impetus theory and Newtonian mechanics (ibid., pp. 54 ff.). If the experimental result matches those predictions, then it confirms both theories, despite the fact that the meaning of the produced sentence (the experiment) that counts concerning testing a theory, not its **semantic** interpretation (ibid., pp. 94–95). So in Feyerabend’s claim that incommensurable theories possess no common observable consequences, he means **deductive** consequences, which are indeed lacking due to meaning variance. Even so, one and the same observation may be used to **confirm** two incommensurable theories, even though there is no common **characterization** of that observation, because using a theory’s predictions need not involve the meanings of the terms in the sentences used to test it: ‘the criterion of predictive success . . . is seen not at all to involve reference to meanings’ (ibid., p. 94). So Sankey’s main point against the threat incommensurability supposedly poses to realism—that incommensurability theories may indeed be rationally compared on the basis of their specific assertions despite meaning variance—was Feyerabend’s main conclusion back in 1962.

### 2.2. Kuhn on incommensurability and theory comparison

Now to Kuhn. Did he suggest that if two theories are incommensurable, then they cannot be ‘rationally compared’, or that their ‘contents’ cannot be compared? Kuhn repeatedly emphasized that incommensurability neither means nor implies incomparability; nor does it make science irrational (e.g. Kuhn, 2000, pp. 189, 197; cf. Hoyningen-Huene, 1993, pp. 218 ff.). According to Kuhn, the empirical consequences of incommensurable theories can indeed be used to compare them (Kuhn, 1970, pp. 169, 206). Many of the theories’ predictions may be formulated entirely commensurably. For instance, despite the incommensurability of the Ptolemaic and Copernican theories, predictions of planetary positions may be immediately juxtaposed and used for comparing predictions made by the theories. Or take phlogiston theory:

In certain types of situations, the referents of the concepts **oxygen** and **hydrogen** can be identified with the help of concepts in the older lexicon, as dephlogisticated air and phlogiston, respectively. Although these identifications by no means capture the concepts of hydrogen and oxygen for someone familiar only with phlogiston theory, empirical assertions about the appropriate class of situations can now be compared. (Hoyningen-Huene, 1993, p. 220)

Kuhn does not deny the possibility of (rational) content comparison of incommensurable theories. He only denies a complete ‘point-by-point comparison’, that is, a comparison of every empirical prediction of one theory with a corresponding empirical prediction by the other (cf. ibid., p. 221, this provides for the possibility of ‘Kuhn-loss’). But this is a far cry from denying the possibility of any content comparison. For Kuhn, scientific revolutions are in fact not at all completely discontinuous with respect to empirical content: ‘the new paradigm must promise to preserve a relatively large part of the concrete problem-solving ability that has accrued to science through its predecessor’ (Kuhn, 1970, p. 169).

To summarize, neither Feyerabend nor Kuhn suggested that incommensurability precludes (rational) content comparison. In fact, they both unequivocally and explicitly stated that incommensurable theories can be rationally compared on the basis of their empirical predictions. The threat that incommensurability poses to realism is not based on the impossibility of comparing the content of theories, and consequently Sankey’s strategy to defuse it by showing that incommensurable theories can be compared with regard to content is off target.

### 2.3. Ontological replacement

In order to begin to appreciate the genuine threat that incommensurability poses to realism (at least according to Kuhn and Feyerabend), let us begin by inspecting Sankey’s argument more closely. As we have seen, Sankey argues that in order to support scientific realist notions of approximating truth, ‘theories must refer to a common domain of entities’ (Sankey, 2009, Sect. 3). He then argues that despite meaning variance, ‘specific assertions’ (or ‘predictions’) can be used to compare theories, as long as ‘the terms employed by theories’ (ibid., Sects. 1, 4) refer to some of the same entities. He concludes that ‘reference is constant between theories’ (ibid., Sect. 3), in other words, that theories refer to the same entities. But there is an equivocation here. Sankey equates between the claim that the terms employed by theories can be used to refer to some of the same entities in predictions, and the claim that theories themselves refer to the same entities. The former does not imply the latter. For example, some specific assertions about dephlogisticated air actually referred to specific samples of oxygen. So there is indeed, in this sense, some referential continuity between the terms that are employed by theories when used in specific assertions. But this is not the case for the terms as used to state the theories themselves. Terms used in stating theories do not refer to some samples (specifically), but to kinds (generally). Phlogiston was supposed to be a special kind of stuff that exists inside everything that is combustible, which comes out in burning. The term ‘phlogiston’, as used to state this theory, was supposed to...
refer to a natural kind, just as the term oxygen is supposed to refer to a natural kind. So just because the terms can be used to refer to some of the same things in specific assertions used to test those theories, it does not follow that the terms as used to state the theories refer to the same kinds.

This brings us to the genuine challenge that incommensurability poses to realism: the history of science as ontological replacement. According to Kuhn, scientists experience, interact with, and investigate kinds (Kuhn, 2000, pp. 229 ff.). Theories use terms that refer to kinds, which are used to state laws and theories (ibid., p. 230). And Kuhn is very clear about this: ‘to the extent that I am concerned with language and with meanings at all... it is with the meanings of a restricted class of terms. Roughly speaking, they are taxonomic terms or kinds terms’ (ibid., p. 92). Kuhn claims that in scientific revolutions, the old kinds are replaced by new kinds, breaking the ‘no-overlap principle’, which precludes cross-classification of objects into different kinds within a theory’s taxonomy: no two kind terms may overlap in their referents unless they are related as species to genus (ibid., pp. 92–96). Incommensurable theories cross-classify the same individual members into mutually exclusive sets of kinds. A kind from one taxonomy is mutually exclusive with another if it cannot be introduced into it because the objects to which it refers would then be subject to different sets of natural laws. This would result in conflicting expectations about the same objects, loss of logical relations between statements made with those concepts, and ultimately incoherence (ibid., pp. 232, 238). According to Kuhn, it is a historical fact that it is not the case that incommensurable theories refer to the same kinds. There is ontological replacement through revolution. And this is what fuels the challenge to realism.

Sankey seems to recognize that incommensurability is not supposed to be merely about meaning variance, nor about referential continuity between specific assertions that refer to specific samples or members of a kind, but rather to reference by theories to the kinds themselves; and he also seems to recognize that this is how incommensurability threatens realism:

Kuhn later restricted reference change to ‘redistribution’ of members among central ‘taxonomic categories’ (Kuhn, 2000, p. 30). But if reference is not preserved between theories, then it cannot be assumed... that the transition between theories is progressive in the realist sense. (Sankey, 2009, Sect. 4)

So according to Kuhn, in revolutions, the members are redistributed into different mutually exclusive taxonomic categories (kinds), and as theories use terms that refer to those categories, there is no referential continuity between theories. If Sankey wants to defuse the threat that incommensurability poses to realism, he has to confront that threat, and show how a realist notion of approximating truth can make sense given referential discontinuity between incommensurable theories regarding the kinds to which they refer.

3. Neo-Kantianism

Sankey’s criticism of neo-Kantian positions revolves around the distinction between the world-in-itself and a phenomenal world for very good reasons. Ever since the inception of Kant’s position, the distinction and the two items involved have been critically discussed. However, we think Sankey seriously misconstrues the issues.

Let’s start with Sankey’s understanding of the concept of the world-in-itself. He writes: ‘[t]he world-in-itself is the objective reality that exists independently of human cognition’ (ibid., Sect. 6). This may not be literally false, but it is certainly highly misleading. The expression ‘objective reality’ is an expression embedded in a realist worldview, where it functions well (but perhaps only there). For instance, in this worldview the domain of ‘subjective feelings’ is a good prima facie candidate for a contrast to objective reality because, due to its ‘subjectivity’ or ‘privacy’, it lacks the epistemic control by others to which, due to its public character, objective reality is at least potentially subjected. However, ideas like these and similar ones associated with ‘objective reality’ have nothing to do with what is meant by the world-in-itself. The world-in-itself (even the term ‘world’ here may already be misleading) is probably better described as the ‘purely object-sided’.

By identifying the world-in-itself with objective reality, Sankey seems to try to force the concept of the world-in-itself into his realist framework, thereby distorting its meaning.

Correspondingly, Sankey also misconceives of what is meant by a ‘phenomenal world’. Whereas he accepts the metaphysical character of the claim that the world-in-itself exists, he denies this status regarding a phenomenal world: ‘The claim that phenomenal worlds exist is a psychological hypothesis about the nature of human mental experience, rather than a metaphysical thesis’ (ibid., Sect. 8; our emphasis). Although this is very far off the mark, we can understand how Sankey is misled into believing it. In Hoyningen-Huene (1993), a fundamental assumption of Kuhn’s theory is called the ‘plurality-of-phenomenal-worlds thesis’ (ibid., p. 36). Clearly, this articulates an existence claim, namely, that several phenomenal worlds exist. To realists, this existence claim cannot possibly mean ‘real worlds’, because according to their convictions, there simply and unambiguously is only one. So the thesis must mean something else, the obvious candidate being ‘world experience’.

Under this reading, the thesis becomes intelligible to the realist, even if it is not necessarily credible. There are different types of world experience. Understood in this way, the thesis is then indeed an existence claim, and a thesis about ‘human mental experience, rather than a metaphysical thesis’.

But phenomenal worlds are supposed to be real worlds. To make this thesis a little more digestible, restrict it first to the singular and turn it around: The real world is a phenomenal world. Now the thesis is certainly metaphysical because it articulates a claim about what the real world is (whose existence is of course undisputed). To claim that the real world is a phenomenal world

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5 Or to take an example of complete referential overlap of specific assertions: historically, both wave and particle theories of light referred to the same specific instances of light in assertions used to test their comparative merits, and yet ontologically, they characterized light as two different kinds.

6 Incidentally, even this Kuhn quote cited by Sankey himself clearly implies that these categories are used to refer to some of the same members, and thus that comparison of content of incommensurable theories is possible.

7 In addition, he has to confront what we take to be the main conceptual challenges to explicating the meaning of an approach to truth by a sequence of theories (or ‘convergent realism’). First, an appropriate search space of theories has to be defined such that the true theory is a limit of a sequence of theories from this space (imagine a nineteenth-century physicist setting up a search space: would it even contain quantum theory or relativity theory?). Second, an appropriate notion of distance in this search space has to be defined. Third, a method of identifying a diminishing distance between known theories from the search space and the unknown true theory has to be established (note that the Cauchy convergence criterion won’t do as only a finite number of potentially converging theories is available). Fourth, one needs a criterion that enables distinguishing convergence to the true theory from convergence to a theory that is fundamentally false (but much better than any known theories) on the basis of a finite number of theories in the sequence. In other words, in order to defend convergent realism we must be able to exclude the following possibility: that our current theories become empirically more and more accurate, that they indeed converge, but that they converge to an ontologically radically false theory that represents a local minimum regarding empirical error.

8 The terms ‘object-sided’ and ‘subject-sided’ were introduced as terms not already laden with a particular metaphysical position: They are meant to be neutral with respect to realism or antirealism; cf. Hoyningen-Huene (1993), pp. 33 ff., 62–66, 267–271, and Hoyningen-Huene et al. (1996), p. 139.
is to say, contrary to common sense, the real world is not only made up of purely object-sided factors (as the realist has it), but also of genetically subject-sided contributions. (‘Genetically’ here does not refer to biological genetics, but to the origin of these contributions. They come from the epistemological subject.) If these genetically subject-sided contributions are the same for all human subjects, the phenomenal world to whose constitution they contribute is uniquely determined: it is the same for all human beings. This was Kant’s position. What this position primarily urges is an altered understanding of reality; one contrary to common sense. Reality is not just purely object-sided, existing ‘independently of human cognitive activity’ (Sankey, 2009, Sect. 3), but also contains (contrary to what we experience and therefore contrary to common sense) genetically subject-sided contributions that are universal among human beings. An individual has nothing particular to contribute, so the position is not subjective idealism.10 In this modified sense of reality, there is also only one real world, and it is as real as ever. Perhaps a metaphor with colors is helpful. It makes sense to say that the color of a car is an objective property of that car. Assume, just for the moment, that the theory that colors are secondary qualities, that is, that they are not inherent properties of physical objects themselves (purely object-sided), but the result of an interaction between certain stimuli and the sensory apparatus (all necessary neuro-processing included). Given that the sensory apparatus of two observers is (roughly) the same, we can assume that the same stimuli will produce the same colors. In addition, the presumed fact that colors are secondary qualities does not make them less ‘real’ or less ‘objective’ in the usual sense of these terms: objects are colored, we can inter-subjectively know colors. They are subject to laws. We can manipulate them. They have effects on us, and so on. Roughly, if all properties of the real world were like colors, then the real world would be a phenomenal world.

Now we have to go one step further, to several phenomenal worlds. Formally speaking, they can easily be generated by a variation of Kant’s model: let the genetically subject-sided contributions vary from group to group and you end up with various group-specific phenomenal worlds.11 But does this make sense? Isn’t it complete nonsense to speak of several real worlds? Shouldn’t we at least now give up the equation ‘real world equals phenomenal world’? No, we shouldn’t, say Kuhn and Feyerabend, because the history of science makes the most sense if we assume that the real world we have access to is not fixed once and for all. This hypothesis is the result of an inference to the best explanation that is, of course, very hard to swallow (and controversial), because it is a slap in the face of our common sense understanding of reality.12 The main point is this: In exactly the same way as we form our beliefs about what is real, other communities form theirs, yet they come to different results—and no mistakes have been committed.13 To call the resulting metaphysics ‘bizarre’ as Devitt does with Sankey citing him apparently approvingly (Sankey, 2009, Sect. 8), is correct from the commonsense point of view, yet this is no argument against, or criticism of, it. As an attempt at an argument, it begs the question, as the antirealist position was explicitly designed to be in blatant opposition to common sense and realism.

A last point regarding phenomenal worlds deserves mentioning. Sankey is afraid that phenomenal worlds ‘are the subjective possession of individual human minds’, and that ‘[t]he only way to avoid the irreducible subjectivity of phenomenal worlds is to appeal to the role of the world-in-itself as an external factor that imposes constraints on the formation of phenomenal worlds’ (ibid.). Sankey ignores here a potential second source for avoiding individual solipsism, namely that the genetically subject-sided contributions are shared by a group, or even by all human beings. An antirealist position that claims genetically subject-sided contributions are part of reality is not ipso facto subjective idealist.

With the two basic concepts in place, we can now address what Sankey sees as ‘a fundamental incoherence of the (neo-)Kantian position ‘with regard to the world-in-itself’ (ibid.).13 On the one hand, the world-in-itself is claimed to be unknowable. On the other hand, according to Sankey this claim implies that the world-in-itself exists, that it is known to exist, and that it is known ‘of the world-in-itself that it is unknowable’ (ibid.). This apparent incoherence can be dissolved. First, it is somewhat misleading to state that (neo-)Kantians claim to know that the world-in-itself exists. The status of the sentence ‘the world-in-itself exists’ is not a knowledge claim, but a (philosophical) postulate (or hypothesis). Given a certain analysis of experience, some philosophers and scientists feel forced to postulate the existence of the world-in-itself. Otherwise, they think that sense cannot be made of experience, that is, that we cannot explain why experience is the way it actually is.14 Thus, the postulate of the existence of the world-in-itself is possibly best construed as the result of a (controversial) inference to the best explanation. Perhaps an analogy to electrodynamics in the second half of the nineteenth century helps. Physicists at that time postulated the existence of an electromagnetic ether because it seemed essential in order to make sense of the propagation of electromagnetic waves. As in the case of the world-in-itself, the hypothesis of the existence of the ether is the result of an inference to the best explanation, and it would therefore be a little odd to say that physicists ‘knew’ that the ether existed. Second, at least parts of the irritation about the apparent incoherence of the unknowable world-in-itself that bothers Sankey may now be dissolved by a more careful phrasing of this

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9 We are not defending Kant’s position, but only trying to make it intelligible. Kant’s strongest arguments were based on his contemporaneous science, especially a realist understanding of Euclidean geometry as a demonstrative science of real space. Since the end of the nineteenth century, this understanding of geometry is obsolete and corresponding, the arguments relying on it have collapsed. And, if anyone is interested, we are also not wedded to any anti-realist position either. We analyze them because we think they’re interesting and in general underrated.

10 In fact, the situation is somewhat more complicated; see the attempt at clarification in Hoyningen-Huene (2000a), p. 44 n. 2.

11 Kuhn struggled to articulate this point (all italics ours): ‘the historian of science may be tempted to exclaim that when paradigms change, the world itself changes with them’ (Kuhn, 1970, p. 111); ‘though the world does not change with a change of paradigm, the scientist afterward works in a different world’ (ibid., p. 121); ‘a sense that I am unable to explicate further, the proponents of competing paradigms practice their trades in different worlds’ (ibid., p. 150).

12 We are aware that this short sketch of antirealism is unlikely to produce new converts. Only the historical material itself is convincing. PHH tried to tease out the plausibility of world change for the chemical revolution, see Hoyningen-Huene (2000b), pp. 112–114.

13 Sankey conjectures that ‘The underlying problem with the Kantian position derives from its relation to epistemological scepticism. In the attempt to avoid the sceptical denial of knowledge, the Kantian postulates the existence of a world that is epistemically accessible [the phenomenal world. PHH & EO?]’ (Sankey, 2009, Sect. 8; cf. Devitt, 2001). Historically, this seems incorrect. In Kant himself, the only attempt to ward off sceptical doubts concern Hume’s theory of causality. Kant’s introduction of the phenomenal world has not been to express a concept of cause for the existence of synthetic judgments a priori in mathematics and in pure natural science. (We wish to thank Michael Friedman for reinforcing this point in the discussion of Sankey’s paper at the Fleck–Kuhn conference at Munster in July 2008.)

14 In 1946, Einstein described his mature philosophy as like that of Kant, but without fixed categories, and used the term ‘incommensurable’ to characterize the relation between universal theories, cf. Oberheim (2006), 163–165; Oberheim & Hoyningen-Huene, 2009, Sect. 3.2.3.
hypothesis. Postulating the existence of the world-in-itself with certain properties is not incompatible with the idea that one does not have epistemic access to this world-in-itself beyond what one has postulated. What exactly the content of the postulate is and whether or not such a postulated entity can indeed fulfill the epistemic roles for which it was designed are, of course, different—and ever since their inception, highly controversial—questions.15

Be that as it may, the arguments between a realist position and a neo-Kantian position—whatever their details—tend to be very tricky. In our review of Sankey’s The incommensurability thesis (Sankey, 1994), co-authored with Hanne Andersen (Hoyningen-Huene et al., 1996), we objected to Sankey’s approach (as he correctly writes), that the referential response is based on realist metaphysical assumptions which are themselves called into question by incommensurability … Hoyningen-Huene et al. object that the assumption that theories may refer to mind-independent objects begs the question against anti-realist proponents of incommensurability. (Sankey, 2009, Sect. 7)

Sankey does not attempt to directly refute this objection, for instance by attacking it as incorrect.16 Instead, he launches a tu quoque argument against the anti-realists that boils down to the following: You object that I base my position on certain metaphysical assumptions, but you also (English for ‘tu quoque’) base your position on metaphysical assumptions, so you are not justified in criticising my doing the same.17 Sankey also formulates his argument elegantly as a dilemma for the anti-realist:

Either the incommensurability thesis is based on Kantian anti-realist metaphysical assumptions, or it is not based on Kantian anti-realist metaphysical assumptions. In the former case, it is not possible for incommensurability to pose a challenge to realism, since it rests on anti-realist assumptions of a kind rejected by realism. In the latter case, the referential response may be upheld, since theories may refer to mind-independent objects. (Ibid., Sect. 7)

Our response to this dilemma is that its first alternative must be rejected because the anti-realist’s incommensurability thesis is indeed not based on Kantian anti-realist metaphysical assumptions. The second alternative applies. Sankey infers from the supposition that the incommensurability thesis is not based on Kantian anti-realist metaphysical assumptions that ‘theories may refer to mind-independent objects’. However, Sankey ignores the possibility that incommensurability and anti-realist metaphysics are indeed closely connected without incommensurability being based on anti-realist metaphysics. The directionality of the relationship is just the reverse. For Feyrabend and Kuhn, incommensurability is not based upon anti-realist metaphysics, but rather it resulted from analysis of the historical phenomenon of incommensurability, which in turn resulted in doubts about realism, and increased the plausibility of some sort of neo-Kantian metaphysics.18 Again, the argument can be construed as an inference to the best explanation: given the phenomenon of incommensurability as apparent in the historical record, its best explanation consists in the assumption of a neo-Kantian metaphysics. If this is the correct relation between incommensurability and anti-realist metaphysics, then Sankey’s inference from ‘incommensurability is not based on anti-realist assumptions’ to ‘perimeter of theories to refer to mind-independent objects’ is invalid. Incommensurability does cast serious doubt on realist metaphysics and the possibility that theories refer to mind-independent objects. Sankey’s tu quoque argument doesn’t work.19 We therefore repeat our objection that Sankey’s assumption that theories may refer to mind-independent objects begs the question in this discussion, and thus has no argumentative force.

Finally, regarding the world-in-itself, Sankey claims that ‘any … causal interaction between ourselves and the world-in-itself would provide a basis for us to enter into epistemic and intentional relations with that world’ (Ibid., Sect. 8). No doubt, this is plausible. Yet, this is not really an argument for realism, as Sankey seems to assume. It is precisely at this point at which the realist and the non-realist disagree regarding how far these ‘epistemic and intentional relations with that world’ lead us. Do they lead us to approximately true knowledge about that world? Or do we remain stuck with a certain perspective on that world that is conditioned by our biological, historical and cultural heritages, and that at best provides us with a series of working models that indeed progress in quality, but which we cannot justifiably interpret realistically?

Sankey’s ultimate weapon against anti-realism (and skepticism) is common sense (Ibid.). (Here he follows Michael Devitt and G. E. Moore). But to us, to try to use this weapon as an argument is quite astounding. To put the point succinctly, the development of modern science can be seen as a long struggle against common sense. Didn’t common sense tell us that apart from the motions of stellar objects, all motions come to an end? That the Sun, the Moon and the stars move around us? That there is a clear sense of upwards and downwards? That the Earth is flat? That the Earth is not moving? That space is absolute and unmovable? That the colors of things are as real as their size? That biological species are fixed? That solid matter is impenetrable? That every piece of paper has two sides? That simultaneity is an absolute concept? That wave phenomena need a medium for their existence? That our mind is transparent to us? That human beings are either male or female? That I know as a matter of course where the borders of my body are? That talk of a curvature of space is nonsense? That homosexuality is unnatural? That an entity is either a particle or a wave but not both? That every event has a cause? And so on. Given this history of the relation of common sense to science, we don’t really see why we should particularly trust common sense in philosophy. With the acceptance of the Copernican theory of the solar system and of Newton’s dynamics, central commonsensical elements of the Aristotelian picture of the world have been abandoned—for very good reasons. Given that philosophical questions are typically at least as remote from everyday experiences as

15 The hypothesis of the existence of an epistemically inaccessible world-in-itself was designed to solve certain problems, but also generates a host of new ones (as expected of any philosophical hypothesis of some depth). Many self-proclaimed (neo-)Kantians, and philosophers of different persuasions, were deeply uncomfortable with this hypothesis and wanted to modify, or do away with, it.

16 Sankey (2009, Sect. 8) seems to support starting with realist metaphysical assumptions and then building on them, as he uses a quotation from Devitt (2001, p. 149) which ends with a resolute ‘put metaphysics first’; cf. Devitt’s Maxim 3: ‘Settle the realism issue before any epistemic or semantic issue’ (Devitt, 1984, p. 4).

17 Sankey’s move is somewhat ironic, because the possibility of such tu quoque arguments is part and parcel of our diagnosis of meta-incommensurability (Hoyningen-Huene, Oberheim & Andersen, 1996, pp. 138–141) and (Oberheim & Hoyningen-Huene, 1997, pp. 454–459). Sankey is quite critical of it (Sankey, 1997, pp. 437–441; 2008, pp. 73–77); as is Michael Devitt, a fellow realist (Devitt, 2001).18

18 Sankey appears ambiguous about the relation between incommensurability and anti-realism. At one place, he puts it very similarly to the dilemma: ‘Hoyningen-Huene et al. take the incommensurability thesis to rest on a Kantian metaphysics which is at odds with realism’ (Sankey, 2009, Sect. 8, our emphasis). Elsewhere, Sankey gets the relation right: ‘Hoyningen-Huene et al. object that the referential response is based on [sic! PHH & EO] realist metaphysical assumptions which are themselves called into question by incommensurability’ (Ibid., Sect. 7, our emphasis).

19 PHH recently sketched how a non-question-begging argumentative dialogue about the possible metaphysical implications of incommensurability could be conducted (Hoyningen-Huene, 2008a, pp. 45–46).
scientific questions, and assuming that common sense is mainly successful in everyday practical matters, it would seem to follow that common sense has no particularly firm credentials in philosophy.

4. Conclusion: meta-incommensurability

We think that it is fair to say that our (very friendly) exchange on the subjects of this reply with Howard Sankey, which we carried out over the last dozen years, was an absolute failure with respect to reaching an agreement about basic philosophical issues. We couldn’t convince him. He couldn’t convince us. How come? Of course, philosophical explanations are easily at hand: stupidity, bad education, stubbornness, laziness, lack of good will, lack of rigor, and so on, are candidates that may be evenly or unevenly distributed over the parties involved. Would that be a plausible explanation? Regarding Sankey, we refuse to accept such explanations because they lack empirical support. There is an alternative, philosophical explanation: meta-incommensurability.20

Meta-incommensurability claims that typically philosophical concepts involved in a controversial debate about fundamental questions are not used in the same sense by the opposing parties, and they may not have the same reference. Sankey is quite willing to accept this fact, yet he strongly doubts its philosophical significance:

While such discrepancy of use may create temporary confusion, the semantic adjustment required is routine; adopting a metalinguistic mode of discourse, one either explicates the meaning of a mentioned term or else specifies its reference. In short, I can see no basis in the semantic variation of philosophical terms for a crippling meta-level incommensurability between realist and non-realist. (Sankey, 1997, p. 438, our emphasis)

We particularly disagree with Sankey that ‘the semantic adjustment required is routine’. On the one hand, the explication of fundamental concepts used in one’s own philosophical position may be very difficult because they may seem completely natural, familiar, unquestioned and self-evident. There are elements in these concepts that we take completely for granted such that we are hardly aware of them. In addition, we may quickly run out of vocabulary when we try to explicate familiar concepts like time, space, consciousness, value, and so on. On the other hand, concepts used in one’s own philosophical position may be unfamiliar because they are philosophical constructions designed to describe what cannot be readily expressed in familiar language—for instance, because they may contradict assumptions presupposed in everyday language. Take, from our point of view, the terms ‘subject-sided’ and ‘object-sided’. Use and explication of such concepts often resembles a struggle with language, and it is. Fundamental concepts used by one’s opponents may be very hard to understand because they may incorporate parts of a position that one has not yet understood or one finds utterly implausible (‘bizarre’). In addition, the attempt at describing them in one’s own language is threatened by massive distortion because their content may be radically incompatible with one’s position. Take, from Sankey’s point of view (in fact, our view of Sankey’s point of view), the terms ‘world-in-itself’ and ‘phenomenal world’. If our analysis is correct, Sankey approaches these concepts from realist presuppositions and therefore distorts them. That’s a clear case of meta-incommensurability.

We are curious to see how Howard will disagree.

References


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