

Towards a Practical Realist Philosophy of Science

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Abstract: *Both traditional scientific realism and empiricism, together with the idea that the development of science lies in constantly discovering new facts about the world and, by creating theories, connecting these facts in a logical manner; achieving a more complete and exact knowledge, so to speak, approaching the waiting truth or its “surrogate” – empirical adequacy –, have receded from the treatment of science, although they are not entirely gone. The post-Kuhnian philosophy of science, practised under different names, mainly those of qualified realism (such as ‘critical’, ‘constructive’, ‘experimental’, ‘non-representative’, ‘referential’, ‘naturalistic’, but also the ones referring directly to practice – ‘pragmatic’ and ‘practical realism’), tends to be practice-based one way or the other. It seems appropriate to speak about practical realist philosophy of science. However, the notion ‘practical realist philosophy of science’ should be specified. In this paper the following questions are briefly discussed: (1) Sami Pihlström has shown that pragmatist philosophy of science can be interpreted as a variety of realism – pragmatic realism. Are there any reasons to differentiate ‘pragmatic realism’ from ‘practical realism’? It is emphasised that the roots of practical realism can be found in Marx’s conception of practice; (2) Joseph Rouse is developing practice-based philosophy of science as a radical philosophical naturalism. Are there any reasons to differentiate practical realism from Rouse’s conception? (3) Ilkka Niiniluoto’s ‘critical scientific realism’ also seems to be close to practical realism, though he is known as a defender of the standard scientific realist correspondent theory of truth. What is actually the point of the criticism of classical correspondence in practical realism? 4) Nicholas Maxwell is known as a critic of so-called ‘standard empiricism’ associated with ‘the philosophy of knowledge’ and proponent of ‘aim-oriented empiricism’*

and, more generally, of 'aim-oriented rationalism' associated with 'the philosophy of wisdom'. Perhaps this conception can actually be also seen as a 'practical realist philosophy of science'?

Keywords: *empiricism, Kantianism, Marxism, metaphysics, naturalism, philosophy of science, practice, pragmatism, scientific realism*

Introduction

In a sense this paper can be regarded as a continuation of the presentation at the 22nd Baltic Conference on the History of Science in Vilnius (Vihalemm, 2006). That was a reflection, focusing on the conception of the practical nature of science, on the development of philosophy of science in Estonia. Estonian philosophy of science was born in Soviet times – that is, in abnormal conditions when the Soviet-style Marxist philosophy was compulsory. However, in the field of philosophy of science it was possible to almost ignore the official dogmatised Marxism. Besides practising 'Foreword Marxism' (i.e. being a Marxist-Leninist only declaratively, presenting the obligatory viewpoints in the foreword and concluding remarks, but practising substantially, so to speak, normal research), one could also proceed genuinely from Marx's ideas, especially and first of all from the conception of practice (though consistent proceeding from this conception was actually considered heresy). The conception of practice (although mainly not in association with Marx) can be seen as the origin of several approaches also in contemporary philosophy of science in which the practical, being simultaneously social and historical, nature of science is acknowledged, empiricism criticised and scientific realism defended.

Both traditional scientific realism and empiricism, together with the idea that the development of science lies in constantly discovering new facts about the world and, by creating theories, connecting these facts in a logical manner, achieving a more complete and exact knowledge, so to speak, approaching the waiting truth or its "surrogate" – empirical adequacy –, have receded from the treatment of science, although are not entirely gone. The post-Kuhnian philosophy of science, practised under different names, mainly those of qualified realism (such as 'critical', 'constructive', 'experimental', 'non-representative', 'referential', 'naturalistic', but also the ones referring directly to practice – 'pragmatic' and 'practical realism'), tends to be practice-based one way or the other. It seems appropriate to speak about practical realist philosophy of science.

However, the notion 'practical realist philosophy of science' should be specified. In my earlier papers I have characterised 'practical realism' by five main theses. I would point these out here as well:

- (1) science does not represent the world 'as it really is' from a god's eye point of view;
- (2) the fact that the world is not accessible independently of theories – or, to be more precise, paradigms (practices) – developed by scientists does not mean that Putnam's internal realism (or social constructivism) is acceptable;
- (3) science as a theoretical activity is only one aspect of it (of science) as a practical activity whose main form is scientific experiment which in its turn takes place in the real world, being a purposeful and critically theory-guided constructive, manipulative, material interference with nature;
- (4) science as practice is also a social-historical activity which means, among other things, that scientific practice includes a normative aspect, too, and that means, in its turn, that the world as it is actually accessible to science is not free from norms either;
- (5) though neither naïve nor metaphysical, it is certainly realism as it claims that what is 'given' in the form of scientific practice is an aspect of the real world.

In this paper I will briefly and provisionally discuss the following points:

Sami Pihlström has shown (1996; 2008) that pragmatist philosophy of science can be interpreted as a variety of realism – pragmatic realism. Are there any reasons to differentiate 'pragmatic realism' from 'practical realism'?

Joseph Rouse (1987; 1996; 2002; 2003) is developing practice-based philosophy of science as a radical philosophical naturalism. Are there any reasons to differentiate 'practical realism' from Rouse's conception or naturalism in general (cf., e.g., Giere's naturalism)?

Ilkka Niiniluoto's (1999) 'critical scientific realism' also seems to be close to 'practical realism', though he is known as a defender of the standard scientific realist correspondent theory of truth. What is actually the point of the criticism of classical correspondence in practical realism?

Nicholas Maxwell is known as a critic of so-called 'standard empiricism' associated with 'the philosophy of knowledge' and proponent of 'aim-oriented empiricism' and, more generally, of 'aim-oriented rationalism' associated with 'the philosophy of wisdom' (Maxwell, 1998; 2001; 2004; 2007). Perhaps this conception can actually be also seen as a 'practical realist philosophy of science'?

First of all I will try to comment on Sami Pihlström's analysis of pragmatic realism from the viewpoint of practical realism.

‘Pragmatic’ or ‘practical’ realism?

Naturally the issue whether there are any reasons to differentiate ‘pragmatic realism’ from ‘practical realism’ does not raise much interest when reduced to purely terminological difference, but this is what should be studied – whether it is really so. True, terminologically speaking I prefer ‘practical realism’, because ‘pragmatic’ – as is known, was once noted by the founder of pragmatist philosophy, Peirce himself – is associated with a vulgarised meaning, which refers to orienting solely on the expediency, to the practical consequences or concerns in the narrower sense, ignoring so to speak higher principles or theoretical aims and considerations, etc. Besides, the term ‘pragmatic’ is not appropriate for naming a variety of realism, because pragmatism in philosophy of science is often identified also with instrumentalism, understood (although incorrectly) as a denial of scientific realism. Coming back to Peirce as the founder of pragmatist philosophy of science once more, then Pihlström, for example, characterises Peirce as “a precursor of scientific realism” and even that in “an important sense, Peirce is a classic of what is today known as scientific realism” (Pihlström, 2008, p. 30), admitting, on the other hand that “Peirce was [...] also a speculative metaphysician” (Pihlström, 2008, p. 29) and that “widely different interpretations [of his views] can be defended, the tension between realism and idealism remained, in any event, a real tension for him [...]. As we have seen, his definition of ‘reality’ or ‘the real’ was in one sense realistic but, in an idealistic fashion, he seems to have identified the real and the knowable.” (Pihlström, 1996, p. 62)

The essential question is how is practice understood? And then also, of course, how is realism understood in the realist philosophy of science? Or rather, whether and, if so, then how is it considered possible to recognise realism proceeding from practice, and moreover – even emphasise it? Pihlström’s analysis indicates, and I agree with him, that pragmatist philosophy of science – it has to be emphasised – *can* be interpreted as a variety of realism, pragmatic realism. However, it is not obvious that pragmatist philosophy of science as a philosophy proceeding from the understanding of science as practice *is* a variety of realism at all. According to Pihlström, “[t]he only thing that is clear is that pragmatism, as such, is no enemy of (moderate) scientific realism” (Pihlström, 2008, p. 59). And he hopes that there is a “need to see [...] the realism issue as a genuinely pragmatic, and even pragmatist, one” (Pihlström, 2008, p. 61). For instance, Putnam’s ‘internal realism’, which he also called ‘pragmatic realism’ belongs, however, to the tradition of Kantianism; that is, it is actually not realism at all (and above I have excluded Putnam’s ‘internal realism’ from the ‘practical realism’ as I see it) as it scarcely succeeds in avoiding conceptual idealism without a rational reconstruction. I

agree with Ilkka Niiniluoto's criticism of internal realism and his reconstruction of this view as 'critical scientific realism' (see Niiniluoto, 1999, ch. 7) which in its turn belongs, I think, to the conception that one might call 'practical realism' in the philosophy of science as it can be interpreted in the context where the practical nature of science is stressed. (But the relationship between Niiniluoto's 'critical scientific realism' and 'practical realism' needs yet to be clarified; I shall return to this issue below). Pihlström also writes, "[i]t is not easy to say, after all, whether Putnam thinks that the world 'objectively' or 'mind-independently' exists" (Pihlström, 1996, p. 29). But one cannot speak of a position as realist in philosophy of science without accepting this thesis and – it should be added also, I would like to emphasise – interpreting it materialistically in the sense that this position excludes not only subjective idealism, but objective idealism and dualism as well. So, the expression 'practical realism' is actually synonymous with 'practical materialism' (and perhaps also with 'practical naturalism').

According to practical realism (or practical materialism), consciousness, thought, mind or spirit cannot exist before or independently of the social-historical practice and this practice cannot be "outside" of objective reality. Practice-based approach criticises, of course, the naïve, or non-critical realism and metaphysical realism, because in the case of these it is claimed to be possible to somehow "see" the world "outside" of practice. The practice-based approach also accentuates the difficulties in traditional comprehension of knowledge, language and the truth. These difficulties arise from knowledge being seen – one could say, non-naturalistically – in an abstract manner as only the content of concepts and truthful statements expressed in language, unrelated to practice, in which knowledge and language are formed in reality, whereas what this knowledge or truthful content of linguistic expressions is, how it is found or how, if at all, it is connected with reality (language and the knowledge somehow contained in it are as if outside the real world) remains unexplained.

Practical realism proceeds from the notion that knowledge cannot be understood as a representation of a world independent of the cognitive subject and neither can the cognitive subject be comprehended independently of the cognisable world. The knowledge, as well as the cognitive subject and the cognisable world are formed in practice. To speak about the world outside practice means to speak about something indefinable or illusory. It is only through the means of practice that the objective world can really exist for humans. Knowledge must therefore be regarded as understanding how the world is formed in practice, how it becomes defined. From the viewpoint of traditional realism it may seem as giving up realism and cognisability of the world, accepting Kant's viewpoint, according to which an objective world independent of the subject remains a

‘thing-in-itself’; the only world accessible to knowledge is the empirical one formed by the subject in cognition. But the position of practice is, in principle, different from that of Kant. Proceeding from practice helps to explain that in reality, the objective world cannot be for knowledge an ungraspable ‘thing-in-itself’, but appears as a ‘thing for us’. The notion ‘thing-in-itself’ is an empty abstraction where the inexhaustible objective world has been made indefinable by excluding any contact with the subject.

Karl Marx on practice

Speaking about practice it is still necessary to emphasise that although pragmatism is practice-based philosophy by name already, it is neither the first nor the only discipline of philosophy that sees practice as the basic concept of philosophy. Practice is the starting and base conception of Karl Marx’s philosophy. Up to now the most significant works in this relation are *Theses on Feuerbach* (Marx, 1845) and *The German Ideology* (Marx & Engels, 1845). For instance, Sidney Hook, one of the developers of pragmatism, who calls it experimental naturalism, has also found that Marx’s critical theses about Ludwig Feuerbach – Hook has provided a thorough analysis of these in his *From Hegel to Marx: Studies in the Intellectual Development of Karl Marx* (Hook, 1976) – contain an important turning point in the history of philosophy.¹ In the first thesis, Marx writes,

The main defect of all hitherto-existing materialism – that of Feuerbach included – is that the Object [der Gegenstand], actuality, sensuousness, are conceived only in the form of the object [Objekts], or of contemplation [Anschauung], but not as human sensuous activity, practice [Praxis], not subjectively. Hence it happened that the active side, in opposition to materialism, was developed by idealism – but only abstractly, since, of course, idealism does not know real, sensuous activity as such. Feuerbach wants sensuous objects [Objekte], differentiated from thought-objects, but he does not conceive human activity itself as objective [gegenständliche] activity. In The Essence of Christianity [Das Wesen des Christenthums], he therefore regards the theoretical attitude as the only genuinely human attitude, while practice is conceived and defined only in its dirty-Jewish form of appearance [Erscheinungsform]... (Marx, 1845)

¹ See Hook, 1976, p. 273: “I believe that Marx’s critical theses on Feuerbach represent *in nuce* a turning point in the history of philosophy.”

In the second thesis:

*The question whether objective truth can be attributed to human thinking is not a question of theory but is a **practical** question. Man must prove the truth, i.e., the reality and power, the this-sidedness [Diesseitigkeit] of his thinking, in practice. The dispute over the reality or non-reality of thinking which is isolated from practice is a purely scholastic question. (Marx, 1845)*

At the same time Marx also criticises the abstract, individual-based understanding of human being, and emphasises that in reality, it is the ensemble of the social relations. “All social life”, he writes in his eighth thesis, “is essentially *practical*. All mysteries which lead theory to mysticism find their rational solution in human practice and in the comprehension of this practice” (Marx, 1845). This kind of social practice is historical by its nature. Speaking about history, *The German Ideology* first and foremost emphasises that “[o]ne can look at history from two sides and divide it into the history of nature and the history of men. The two sides are, however, inseparable; the history of nature and the history of men are dependent on each other so long as men exist.” (Marx & Engels, 1845) Further, human history is defined as

nothing but the succession of the separate generations, each of which exploits the materials, the capital funds, the productive forces handed down to it by all preceding generations, and thus, on the one hand, continues the traditional activity in completely changed circumstances and, on the other, modifies the old circumstances with a completely changed activity (Marx & Engels, 1845).

The difference between understanding Marxist and pragmatist practice is mainly seen in the fact that the first emphasises the social and historical character of human activity – even in case of an individual –, as conveyed by material and intellectual culture; pragmatism, however, usually concentrates on activity – even in case of social activity – from the viewpoint of an individual.

Like in terms of pragmatism, which Pihlström has characterised very well, the relationship between practice and realism has been understood differently, Marx’s approach on practice and also his realism or, to be more exact, materialism, have also been perceived in quite different ways. Unfortunately, an important disturbing issue still lies in the fact that Marx’s approach on practice is often perceived not in the context of serious philosophy, but rather an ideological basis of a failed political doctrine.

Practical realism and naturalism

Indeed, as was mentioned already, practical realism can be regarded also as a kind of naturalism. Pihlström has said the same concerning pragmatic realism. And above I referred to Sidney Hook, who has written that he regarded “the philosophy of experimental naturalism [...] as a continuation of what is soundest and most fruitful in Marx’s philosophical outlook upon the world” (Hook, 1976, p. 1). But this is, of course, so to speak, practice-based naturalism, not some kind of biological or reductionistic approach. It is an anti-metaphysical approach in the sense that it rejects any attempts to accept something like ‘first philosophy’, metaphysical foundations, THE ONTOLOGY I appreciate Joseph Rouse’s practice-based philosophy of science and in this connection his radical philosophical naturalism as well (Rouse, 1987; 1996; 2002; 2003). It seems to me that it corresponds, in principle, with the ideas of practical realism.

Rouse – and also, e.g., Giere – have referred to Kuhn as advocating actually, though not explicitly, a ‘naturalised’ philosophy of science (Giere, 1988, p. 33), but have emphasised also that his ideas should be developed further in this direction of naturalised and practice-based account of science, “further [...] than he himself would be happy with” (Rouse, 1987, p. 27). As for Kuhn himself there is reason to speak about the wrong turn in the development of his thought:

Kuhn [...] started out with a strong naturalistic streak [...] in order to build his accounts of scientific change and the nature of observation and scientific thought. But by the 1970s Kuhn’s work had taken on a much more purely philosophical, a priori, tone. [...] I suggest, nonetheless, that Kuhn’s most valuable contribution is to be found in The Structure of Scientific Revolutions and not in his later work, and that the naturalistic direction of the former [...] deserve[s] further study. (Bird, 2002, p. 443).

According to Pihlström, too,

It was Kuhn in particular, I suggest, who smuggled pragmatist ideas into the philosophy of science, making possible a (Deweyan-like) historicist pragmatic naturalism [...] In the field today, thinkers like Rouse carry this task forward, usually without explicitly linking their views with the pragmatist tradition. This makes Rouse’s take on Kuhn somewhat unpragmatist [...], which is unfortunate [...] (Pihlström, 2008, p. 60).

Maybe, however, there is no need to interpret and develop Kuhn's approach further along the pragmatist line, but do so along the practical realist naturalist line? As Pihlström (2008, p. 56) also concedes, "Rouse may have his own reasons for *not* wanting to label his position 'pragmatist' at all." It seems to me that it would be appropriate to label his position as 'practical realist'.

Practical realism and critical scientific realism

As said above, I agree with Ilkka Niiniluoto's criticism of Putnam's internal realism. There is an essential difference between internal realism and practical realism (or Niiniluoto's critical scientific realism), as the former belongs to the tradition of Kantianism and cannot actually be qualified as realism at all. It is acknowledged that the scientific account of the world is mediated by our practical and theoretical activity, which means, indeed, that our descriptions of the world, our 'world-versions' are always relative to us. This does not imply, however, that the world itself (we can call it *THE WORLD*) is relative to us in the sense that our 'world-versions' cannot be versions of *THE WORLD* (see Niiniluoto, 1999, pp. 218–226). Our scientific 'world-versions', although they represent the world through conceptual frameworks or, more precisely, through paradigms in the Kuhnian sense, interpreted in its turn as practices, still do tell us something about *THE WORLD*, as do theories we have constructed, which, in their theoretical models, contain experimentally substantiated idealisations, since theoretical models are similar to the real systems in specified respects and to specified degrees (see Giere, 1988, p. 81). As Niiniluoto (1999, p. 216) writes, "Conceptual frameworks are selected on the basis of our cognitive and practical purposes, and they can always be improved and made descriptively more complete". If we use the cookie-cutter metaphor we can say, "A cake [*THE WORLD*] can be sliced into pieces in a potentially infinite number of ways, and the resulting slices [say, natural kinds and laws of nature identified by us] are human constructions made out of the parts [unidentified (complex, inexhaustible) objects, their properties and relations] of the cake" (Niiniluoto, 1999, p. 222).

However, from the practical realist view, Niiniluoto's approach which is language- and logic-centred, seems to be too abstract as the context of practice is not thematised in it; more precisely: Niiniluoto's scientific realism is not based on the conception of practice, though a few arguments from practice, referring to Marx (1845) and Engels (1886) are used (see Niiniluoto, 1999, pp. 39, 275). His critical scientific realism shares the standard scientific realist correspondent

theory of truth according to which “[t]ruth is a semantical relation between language and reality. Its meaning is given by a modern (Tarskian) version of the correspondent theory, and its best indicator is given by systematic enquiry using the methods of science” (Niiniluoto, 1999, p. 10). Niiniluoto emphasises that this thesis separates the semantic realists from all kinds of pragmatists, who replace this realist account of truth with some epistemic surrogate (Niiniluoto, 1999, pp. 11–12). This standard realist understanding of knowledge, the world and their relations outside practice should be revised, I think.

I cannot speak for pragmatists, but in practical realism, “truth” can be interpreted in a deflationary way and this interpretation is compatible with semantic realism. I agree with Joseph Rouse (1987, p. 147) that reasons for accepting deflation should be “perhaps somewhat different from those of most deflationists”. He writes,

If I think that there are no substantive issues concerning truth, it is because I see the issues situated on the right side of the Tarski equivalence instead of the left. There are no fundamental philosophical issues peculiar to the concept of truth, for they are the same issues that arise concerning how things have any determinations at all. What is it for snow to be white? [Standard] [r]ealists think that things have such determinations independent of our practices, desires, and beliefs. [...] I think that what there is cannot be entirely separated from who we are and what we do. (Rouse, 1987, pp. 147–148)

Niiniluoto also emphasises that it is important to make a distinction between unidentified and identified objects. THE WORLD contains unidentified objects which are identifiable, but not “‘self-identifying objects’ in the bad metaphysical sense [...]: they are potentially identifiable by us [see the cookie-cutter metaphor above, again]” (Niiniluoto, 1999, p. 221).

In order to better understand the practical realist account of truth and reality it is appropriate to quote Rouse (1987) again. It seems to me that Niiniluoto could agree with that. Rouse writes,

[t]he predicate ‘true’ can be applied only to sentences in language. [...] [A language] connects assertions with truth conditions but does not determine whether those conditions obtain. Similarly, what exists depends upon the field of meaningful interaction and interpretation within which things can be encountered. This configuration of practices (including, of course, linguistic practice) allows things to show themselves as they are in a variety of respects. [...] The

recognition that the possible ways a thing can be depends upon the configuration of practices within which they become manifest should therefore not reinforce the realist's fear that we are being described as 'world makers'. The language we speak does not determine which of its sentences are true. The practices that constitute our 'world' likewise do not determine which things exist, with what properties. (Rouse, 1987, pp. 160–161).

Actually Niiniluoto (1999, p. 275) also refers to Engels' often-quoted statement on practice as the criterion of truth which is relevant here:

If we are able to prove the correctness of our conception of a natural process by making it ourselves, bringing it into being out of its conditions and making it serve our own purposes into the bargain, then there is an end to the Kantian ungraspable 'thing-in-itself'. The chemical substances produced in the bodies of plants and animals remained just such 'things-in-themselves' until organic chemistry began to produce them one after another; whereupon the 'thing-in-itself' became a thing for us... (Engels, 1886)

Uncompromisingly against standard empiricism: how does it concern metaphysics?

In my opinion also the above-mentioned Nicholas Maxwell's approach on science (Maxwell, 1998; 2001; 2004; 2007) can be, and is, interesting to be viewed within the framework of practical realism. Maxwell proceeds from science as practice in the sense that he intends to make explicit presuppositions, aims and methods which are implicit in scientific practice and thanks to which its – as an aim-oriented rational action – progress has actually been achieved. He also argues that

the current deep division of Sociology of Science and Philosophy of Science would entirely disappear; these two disciplines, still at loggerheads with one another, would become one and the same [methodological] discipline [called, as was said here in Introduction, 'aim-oriented empiricism' and, more generally, 'aim-oriented rationalism']. The current dispute between Sociology and Philosophy of Science is a symptom of the deep malaise from which the whole academic inquiry [where the philosophy of knowledge is dominant]

suffers, in seeking knowledge rather than promote wisdom by cooperatively rational means [which presupposes the philosophy of wisdom]. (Maxwell, 2007, p. 9)

Maxwell does not explicitly speak about practice-based philosophy of science, bearing in mind the practical realist philosophy of science, nor does he refer to the authors that can be considered practical realists, but the coincidences of his views with practical realism in several important points are very obvious. When we look at the five previously mentioned points characterising practical realism (see Introduction), then Maxwell clearly acknowledges points 1 and 2; he does not explicitly emphasise point 3 and thus does not proceed explicitly from practice in his approach, although, speaking about science in terms of his ‘aim-oriented empiricism’ he does, of course, refer to and presume the experimental basis of science, the character of science as a purposeful and critically theory-guided practical activity. Points 4 and 5 are obviously, again, very important for him. Unfortunately, considerations of space prevent me to dwell on Maxwell’s ideas and their connection with practical realism a little more thoroughly in this paper. I will here very briefly touch upon only his uncompromising criticism of standard empiricism, asking whether this criticism needs to be associated in a sense, specified by Maxwell, with metaphysical considerations.

First of all I would like to emphasise that Maxwell’s criticism of standard empiricism meets with approval in practical realism. However, in practical realism the question does not arise – as Maxwell actually puts it – in the form of a dilemma: either standard empiricism, or a metaphysically oriented conception.² Maxwell argues that “science makes a metaphysical assumption, using ‘metaphysical’ in exactly the standard way it has come to be understood in philosophy of science, after Karl Popper. A proposition is metaphysical if it is empirically unfalsifiable.” (Maxwell, 2009, p. 108) Sure, that is correct if we understand the question in such a standard philosophy of science context in which science is regarded as a system of statements created for a scientific representation of the world, whereas the only link between the world and its

² To prevent misunderstandings it is important to note that Maxwell is bearing in mind metaphysical component in science itself, i.e. he does not contrast here metaphysics to science, but sees that correctly identified scientific method contains implicitly also a component which qualifies from the viewpoint of standard empiricism as a metaphysical one. Maxwell writes, “According to standard empiricism, the critical study of the aims and methods of science — the philosophy of science — is to be sharply distinguished from science itself, just because ideas as to what the aims and methods of science ought to be are not, in any straightforward sense, empirically testable theories.” (Maxwell, 2007, p. 258)

representation seems to be sense experience.³ In the context of practical realist philosophy of science, however,

[t]he question is not how we get from a linguistic representation of the world to the world represented. We are already engaged with the world in practical activity, and the world simply is what we are involved with. The question of access to the world, to which the appeal to observation was a response, never arises. The important categories for characterizing the ways the world becomes manifest to us are therefore not the observable and unobservable. We must ask instead about what is available to be used, what we have to take account of in using it, and what we are aiming toward as a goal. (Rouse, 1987, p. 143)

Therefore in the context of practical realist philosophy of science, where science is not construed abstractly as a system of knowledge, but as a practical activity, the abovementioned dilemma – empiricism or acceptance of metaphysics as part of scientific knowledge – never arises either.

The empiricism/metaphysics problem seems to be rooted in the traditions of the Cartesian conception of mind, together with his dualism, and the Humean conception of experience. When one clearly gives up these traditions, there will be no getting stuck in Kantian dualism of the empirical world of phenomena (observables), and the world regarded from the transcendental (metaphysical) perspective as the transcendent world of noumena (unobservables). According to practical realism, as shown above, there is one real world which is complex, inexhaustible, and can manifest itself in practice in a potentially infinite number of ways, i.e. in principle there can be an infinite number of real ‘world-versions’.

Maxwell also criticises the Cartesian–Humean–Kantian traditions and emphasises that there is one real world: “The very distinction between ‘the physical universe’ and ‘the world of human experience’ is, as it were, an artefact of our understanding rather than something that exists in reality” (Maxwell, 2007, p. 282). Maxwell (2001) deals especially with “the human world/physical universe problem” which is, as the author emphasises, “*the* fundamental problem of philosophy” (Maxwell, 2001, p. 18). Here we can see an analogy with “the great basic question of all philosophy” formulated by Engels in the Marxist practice-based philosophy as the question of the relations of thinking and being, examined from two, so to speak, ontological and epistemological aspects, while accepting also that the “most telling refutation of [...] all [...] philosophical crotchets is practice” (Engels, 1886, ch. 2).

³ Cf. Quine, 1975, p. 75: “Whatever evidence there is for science is sensory evidence.”

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