
Restoring the Ontology of Objects: In Search for A New Objectivity¹

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Abstract

The paper intends to show that an ‘illegal’ reference to an ‘object’ is hidden behind even the most ‘steadfast’ of critical positions. A further issue to discuss is that such an implicit objectivism serves as an incentive to the criticism itself. We are faced with a kind of vicious circle: the prohibition on metaphysics (this being a characteristic feature of post-Kantian thought) results from certain metaphysical premises which cannot be revised simply because metaphysics is prohibited.

This situation, however, is not quite hopeless since the need for ‘things’ implicit in ‘postmodern’ thought (as I am going to argue in the first part of the paper) forces it to break this ‘vicious circle’ and to revise the ontological dispositions that divorced ‘reality’ from ‘construction’. Is the ‘new objectivity’ about to give rise to a different kind of epistemology in which whoever wants to ‘imitate’ must know both an ‘archetype’ and a ‘demiurgic art’?

The reality-construction debates in the *post...* age

It would appear that ‘postmodern’ thought has inherited some ‘modern’ problems. One of these is a need to choose between two mutually exclusive regions of being. These alternative regions are ontological reality and epistemological reality. The point is that only the first of these is entitled to be ‘reality’ in the true sense. In regard to the second, in post-Kantian thought it acquires the slightly doubtful status of ‘construction’ that is a structure of human intellect.

The confrontation between reality and construction is becoming more dramatic in proportion as the epistemological project is going bankrupt. The ‘epistemological project’ could be a title for the various attempts philosophy has made in order to find *epistemological arguments* for knowledge or, more precisely, for science that was accepted as a standard of rational knowledge in general. Under this ‘project’ philosophy intended

to argue for an objectivity of ‘subjective reality’ without resort to an ‘object’ (to the structure of the cognizable thing), because any appeal to an ‘object’ was treated as transcending our (subjective) experience and, therefore, as invalid. Thus, critical philosophy tried to avoid dogmatics: from metaphysics of substance it turned to the theory of subject (Gaidenko 2001, 321). Now it was looking for foundations of scientific reliability in the structure of the cognizing subject—‘not in the world but in the word’. The problem, however, is that after decades spent in this search it has become clear that a positive definition of true science has never been found (Porus 2002, 107–111; Stengers 2000b, 31–37).

On the contrary, philosophy of science discovered a quite interesting fact: ‘in order to succeed (...) in making us accept what he proposes as “objective” knowledge, a scientist cannot be content with what the philosopher thinks of as “objective”’ (Stengers 2000b, 34). Historical reconstruction of science undertaken by philosophers along with historians showed that a real ‘production of objectivity’ had little in common with the model procedures rationalists prescribed to scientists (Stengers 2000b, 31–37). The next step might have been expected: if epistemological ‘reality’ did not provide support to scientific ‘objectivity’, if universal criteria separating science from ‘opinion’ could not be found, then there was no longer any difference between science and opinion (see about that Stengers 2000a, 43). This means then that the obligation of a ‘construction’ (the same being the case with science) is to the irreducible variety of empirical and historical subjects (society) but not to the identity of transcendental subjects. A ‘construction’ now becomes ‘social’ and acquires a sense that is quite undesirable to science (and to rationality in general). Not only does that science not represent the structure of object (naïve realism was left in pre-Kantian thought), but it represents not even the structure of transcendental subjectivity. It expresses intentions, spirits, fantasies, social relations, interests and complexes.²

So, the epistemological ‘project’ started on a merry note, but finished on a sad one. It passed all the way from epistemological absolutism to epistemological relativism and did not agree to any compromise. It turned out to be impossible to keep the *social nature* of knowledge along with *socio-cultural conditionality* of knowledge (both of them emphasize that

science is being produced by humans and is being carried out in culture but not in a vacuum) while defending itself against the *socio-cultural determinacy* of knowledge. The latter devoured the first two and stated the idea that 'social factors led the very logic of science and of its development'.³

'Can the sociology of knowledge investigate and explain the *very content* and *nature* (italics supplied) of scientific knowledge?'—D. Bloor, the author of the 'strong program', asks. He also provides the answer: 'Yes. There are no limitations which lie in the absolute or transcendent character of scientific knowledge itself' (Bloor 1976, 1). In order to avoid misunderstandings social constructionists emphasize the following point: a construction concerns precisely the *very content* and *nature* of scientific knowledge but not of the cultural-historical mounting into which transcendent knowledge would be reset.

It is clear, however, that in such a case *the very logic* of science is highly questioned. If laws of thought are conventional and the principles of the convention are settled within a historical tradition, then these laws can only be considered as 'laws' symbolically. As for the traditional way pre-critical philosophy used to save the *logic* of knowledge (namely, focusing on a 'thing', or on an *object* of knowledge that would secure such logic), this can no longer be used because critical philosophy must not fall into objectivism. And if internalism, defending the logic of science, could save, if only indirectly, the common basis of this logic—an object (Kant, for example, supposes that the unity of judgments we observe allow us to make at least an assumption concerning a common ground of this unity—an object, Kant, B: 849), then externalism seems to give no chance to an object.

Here is how A. Pickering, the author of one of the first books on the social construction of scientific facts, clarifies the basic thought of his book *Constructing Quarks* (Pickering 1984): 'I would never say that *Constructing Quarks* is about "the idea of quarks" (that as any human idea has its own history and social life, O. S). (...) My idea is that if one comes at the world in a certain way (...) one can elicit certain phenomena that can be construed as evidence for quarks' (cited from Hacking 1999, 30).

Therefore, it means that any physical law is the effect of the social state of affairs but not of the world's state. It means finally that 'reality'

'is the *consequence* of scientific work (considered as social practice, O. S.) rather than its cause' (Hacking 1999, 81).

'Reality' is now declared to be socially constructed. This situation is not only an uneasy one for scientists who are used to thinking that they 'discover the truth about the world' but it is also problematic for philosophy itself. Let us take up the issue of 'science wars' for example. This area of polemics is quite interesting because it reveals an absurdity of the critical tradition itself, the tradition that has gone too far with its neglect of things. Just as the simple-hearted boy who had never studied court etiquette said outright that the emperor was naked, the 'naïve realists' who did not sacrifice common sense to the sophisticated history of thought frankly asked: 'where has reality disappeared?' And in spite of the fact that constructionists blamed their opponents for naivety and, consequently, for the absence of serious argumentation, I suppose, that 'simple-hearted' realists impelled some constructionists at least to rethink their concepts.⁴

The position of scientists and all those who still 'believe in reality' is the following. Scientific progress as well as the failures of science are both predetermined by the state of the world and, thus the route science has followed up to now is inevitable and not contingent. 'Why did the European scientific community become convinced of the truth of Newtonian mechanics sometime between 1700 and 1750? Undoubtedly a variety of historical, sociological, ideological, and political factors must play a part in this explanation—one must explain, for example, why Newtonian mechanics was accepted quickly in England but more slowly in France—but certainly *some* part of the explanation (and a rather important part at that) must be that the planets and comets really do move (to a very high degree of approximation, though not exactly) as predicted by Newtonian mechanics' (Bricmont & Sokal 2001, 40).

The constructionists' position is the opposite one: revealing ways and means by which one or another scientific result is produced and accepted by the scientific community, constructionists argue that this result depends on a variety of contingencies but not on the nature of things (see the analysis of that in Hacking 1999).

But then what about the stability of some scientific results which everybody can observe? As I. Hacking writes: 'there is a more ordinary,

and more important fact about the Second Law or Maxwell's Equation: they are not going to go away (...) The early years of the twentieth century witnessed many profound changes in physics (...) and it made them [philosophers of science, O. S.] to think that science is essentially unstable (...) Between 1962 (...) and the late 1980s, the problem for philosophers of science was to understand revolution. Now the problem is to understand stability' (Hacking 1999, 85).

Constructionism has something to offer. Yes, society provides us with a lot of stuff to which sociologists can refer when they want to explain why science is unstable. But just as Kant proceeds from the assumption that besides an empirical subject there is a transcendental one (responsible for the unity of knowledge) some constructionists likewise try to discover necessary and universal mechanisms in a collective of subjects. These mechanisms would, probably, explain stability and 'resistance' of scientific practices and their results.

First of all, these social constructionists think, it is necessary to stop *reductio ad absurdum*. It is highly problematic to draw 'reality' from all the variety of social, cultural and psychological circumstances because they are infinitely numerous and the line of references would go on endlessly. But there is an alternative. It would be both essential and sufficient to reduce sociological data to the certain regularities—'interests', 'structures', 'institutes' or whatever, and thus to define the common principles or laws that operate in society. Starting from these, sociologists can build explanatory theories (Bloor 1976, 3). In this way the sociology of science would gain the desired rigor, and the stable social practices (especially, scientific ones) would obtain the desired explanation. Science is a part of society, and as for the latter it lives and develops according to *objective* laws.

In this regard, the realists (and also some sociologists from the constructionist camp, e.g., see Latour 2000) justly point out that the *objectivity* of the social order is hardly more preferable than the *objectivity* of the order of nature. Why do sociologists think that 'the natural sciences form some kind of ideology or religion, while (...) knowledge of the social world is truly scientific and explains (or will someday explain) why natural scientists believe what they do' (Bricmont & Sokal 2001, 42)? Why are sociologists of science deeply convinced of T. Kuhn's '*paradigmes*',

M. Foucault's '*epistemes*', L. Fleck's 'thought-collectives' as *really* existent, while on the other hand considering quarks and DNA as socially secured illusions? It is easy to see that social constructionists are creating a kind of fundamentalism. Unmasking 'imaginary' natural facts, they believe that they come to the level of ultimate reality which is contained in 'real' facts of culture (society) and which can serve as a source of explanation (see Latour 2000). A physical reductionism is replaced here with its mirror image—with a cultural (social) reductionism.

The other difficulty that is also essential for social constructionists in my opinion is the following. Whether sociology of science explains the stability of scientific practices through the 'objectivity' of social order or emphasizes the 'subjectivity' and variability of science and its results through reference to cultural 'contingencies', in both cases it reproduces the critical philosophy's statement that knowledge of the world is the result of a subject's spontaneous activity (even if the subject is collective). But then, how does this 'classical' point of view (even 'old-fashioned' according to Hacking 1999, 49) conform to being 'postmodern' as contemporary thought claims to be? According to this claim, to be 'postmodern' is (in addition if not first of all) to be practically oriented. As to the 'practice turn' it implies that philosophy no longer deals with a 'Cartesian' or 'transcendental' subject, but henceforth has to do with a practical *bodily* subject which interacts with 'things'. It is now the task of philosophy to take account of such interaction, i.e. to take account of the 'material conditions of human ideas and theories'. As the authors of the recent collection of articles, *The Practice Turn in Contemporary Theory*, write, 'practice approaches oppose (...) intellectualism, representationalism, individualism (...), and many strains of humanism and poststructuralism'. Practice, they declare, is a reference point for a study of nature and culture, and 'nexuses of practices *are mediated by artifacts, hybrids, and natural objects*' (italics supplied) (Schatzki, Knorr Cetina & Savigny 2001, 1–2).

Practices would, probably, be a good choice for philosophy which wishes to distance itself from its 'classical' (or 'modern') predecessor if it were not that *artifacts, natural objects* and other *things* have been forbidden by the constructionists! How can constructionism attain artifacts and natural objects with which a subject interacts, attain 'material conditions

of human ideas and theories' if it is situated within the epistemological circle beyond which critical philosophy cannot go? As a direct heir of criticism, constructionism has not to do with interaction between 'ideas' and 'things'; it has to do only with interaction between 'ideas' and 'ideas', 'constructions' and 'constructions'. And in so far as 'constructions' are historical, conventional and therefore, 'subjective', it has to do with interaction between some of the projections of human needs, spirits or interests on passive, senseless, and mute reality (Stengers 2000a) and other similar projections.

If constructionists want to be consecutive 'postmodern' thinkers and agree to allow 'things' to participate in human constructions, then should they share the realists' belief that *nature itself* dictates the difference between traditional cosmology and Newtonian mechanics, that 'the planets and comets really do move as predicted by the latter'? Should they next admit that the epistemologists' failure does not mean that 'everything is allowed'? Epistemologists have not uncovered the secret that would help to separate 'science' from 'opinion', but it is not necessary to deny the existence of such a 'secret' at all (Stengers 2000a, 43). The epistemologists' failure marks just a need to look for it 'not in the word but in the world' (see Latour 'Stengers' Shibboleth' in Stengers 1997). To put it another way, if an *epistemological* difference between 'science' and 'opinion' does not exist, then what about an *ontological* difference? What if matters stand better with it?

It would not have been surprising if it had been A. Sokal or some other member of the 'naïve' realists' camp who had made this declaration. The point, however, is that sociologists and historians of science who are adherents of constructionist strategies, are speaking in these terms (see also Haraway 2003; Latour 1999; Law 1993; Pickering 1995). A fact that is to say the least a little strange.

Can it be considered as an attempt to restore the *ontological argument* to knowledge, the argument that was long ago recognized as being incompatible with the very logic of science? If so, then should this 'ontological argument' destroy sociology of science based on the idea that the world 'in itself' that is not refracted through the prism of social relations, is an absurdity? Should it overthrow the first condition of the disciplinary

rigor and purity as, for example, H. Collins puts it: sociologists have to concentrate on social causes and not to admit ‘explanations from nature’ to their concepts (Collins 2001, 188–189)?

The situation seems to be hopeless. Contemporary constructionism has a need for ‘things’, it refers to interaction between subject and artifacts / natural objects, and at the same time it cannot let ‘things’ in without destroying its own theoretical basis.

Persistent ontology

The irony, however, is that the question about whether ‘objects’ should be admitted to constructionist theories or not is superfluous because ‘objects’ have never left these theories. They have never left the epistemological house. Or, to put it somewhat differently, every time epistemology solemnly pushed ontology out through the front door, ontology quietly returned home through the back entrance. An ‘illegal’ reference to an ‘object’ was always hidden behind even the most ‘steadfast’ critical position. And what is even more interesting, the strategy of criticism *per se* was inspired by certain ontological dispositions. One can agree with Heidegger, who writes about the modern invention called a ‘theory of knowledge’ that ‘all of these determining-certifying troubles are nothing else but merely an outcome of an interpretation of being as an object and representation’ (Heidegger 1993, 179).

As for the dogmatic premises of Kant’s criticism, they have been analyzed in dozens of philosophical investigations (e.g. Heidegger 1951; Lossky 1991, 106–146). My point is to trace how ‘objects’ determine the current trajectories of critical thought. Let us consider one of the instances of implicit objectivism that, I think, one can find in the so-called ‘scientific revolutions argument’.

This argument (almost as old as philosophy itself as I am going to show below) appeared in the course of debates between instrumentalists and scientific realists in the 1970s. Realists were representatives of the ‘ontologists’ and argued for an ontological weight of scientific terms and theories (the best or true of them), thus, connected with ‘reality’ in itself.

Instrumentalists, the same 'epistemologists', followed criticism (in its relativist mode) and argued that our ideas and theories were no more than the instruments by means of which we adapted ourselves to the (unknown) world. There was no way, they supposed, to speak about these theories in terms of 'truth' or 'falsity' if 'truth' or 'falsity' implied a correspondence between theories and objective reality or the lack of such a correspondence. In order to strengthen this point of view instrumentalists referred to scientific revolutions. 'Even the firmest beliefs in the truth of scientific theories collapse,—they said,—when the time of radical conceptual shifts in science is coming' (see Porus 2002, 223), 'history of science does not allow us to forget about that even the most fundamental theories will not forever be in use (...) history teaches us that current theories will also be disproved some day as it is often the case' (Leplin 1982; Worall 1982; both cited from Porus 2002).

Like Kant, who considered a unity of human judgments as an indirect testimony for their truth (i.e. for their concordance with an 'object'), instrumentalists found variability of judgments to be a testimony for their inadequacy (or for the lack of concordance with 'object'). Knowledge, they say, does not correspond to the world because there are many knowledges, one replacing the other. There would be a better chance to speak about its truth if it were only one knowledge, the Knowledge. As soon as you observe radical shifts on the side of scientific theories you get serious reasons for feeling doubts about the knowledge-reality tie.

One can see, however, that a variability of knowledge can serve as an argument against scientific realism only on the territory of a certain ontology. If the ontological premise is that the world (or an 'object') is invariable, that an impassable, non-filled gap lies between appearance and reality, and that words can only copy the world or at best construct its imaginary analogue, then (for those who share the idea of 'objectivity') epistemological variability becomes a problem and marks an arbitrariness of subject which is incompatible with the necessity of being.

Instrumentalists emphasize that they would never insist that our knowledge is *false* (because 'falsity' presupposes the vicinity of 'truth' which they deny). They insist that knowledge is just in itself, exists for itself, in its own room. And the variability of knowledge (or incommensurability

of knowledges) indirectly supports this point of view because it ruins the opposite idea of correspondence between knowledge and reality.

But the point is that as soon as we refuse the idea of non-historical object 'that is waiting outside to be discovered' (see Latour 'Stengers' Shibboleth' in Stengers 1997) the variability of knowledge ceases to be a problem. If *correspondence* means a connection and relationship between knowledge and things, then the very changes on the side of scientific theories are not entirely arbitrary. Or vice versa: if scientific theories change, then what about the idea that this change is due to reality itself? But the latter assumption implies that the Earth was actually the fixed centre of the universe up to 1543, that microbes actually did not exist before 1864 (Latour 1988; 1999) etc. These assumptions appear to be ridiculous for those who adduce a variability of knowledge as an argument against realism. Obviously, they adhere to a secret knowledge which claims that the world is invariable and stable, always equal to itself, that laws of nature are eternal and independent of our theoretical positions and of history. And, obviously, this secret knowledge is so attractive that they want to save it at any price: they give up science and declare it to be just a product of human intellect that is not connected with reality. Theories do change: therefore they do not represent the (invariable!) world adequately. But an anti-metaphysical position forbids any non-critical assumptions about the world whatever they are.

Strictly speaking, consecutive instrumentalists can deduce neither positive nor negative ontology from the observable fact of a variability of knowledge. But even in such a case the very prohibition on metaphysics has a certain ontological weight—it is based on a certain *adequate* knowledge about 'reality' that is unknowable, about a 'subject' that is a version of isolated and self-dependent substance and so on (Lossky 1991, 56). It is really difficult not to agree with I. Stengers who says: 'critical consciousness admits so many things without criticizing them' (Stengers 2002, 74, transl. by Latour from Latour 2003).

The arguments by S. Fish, the social constructionist, can also be evidence of how certain ontological expectations influence the trajectories of subjectivism. In his response to A. Sokal S. Fish writes: 'of course the world is real and independent of our observations but the accounts of the world are produced by observers and are therefore relative to their capacities

(...) It is not the world or its properties but the vocabularies in whose terms we know them that are socially constructed—fashioned by human beings—*which is why* (italics supplied) our understanding of those properties is continually changing' (Fish 1996). This means that *our understanding* of the world is not of the same kidney as the world. The latter, as we know, is different. Our knowledge is changeable because it is only *our* knowledge, if it were reality or its adequate representation, it would not change. But how does Fish happen to know that the world and its properties are invariable?

An *invalid* (as criticism and subjectivism put it) assumption concerning an 'object' nevertheless underlies the opposition between invariable nature and historically-culturally determined science. The same assumption ultimately determines the haughty position hermeneutics takes regarding the natural sciences: objects of the natural sciences do not contain anything that could be a subject matter for hermeneutics—no goal, no sense, no values, and no history. However, this nihilistic objectivism is all the same objectivism because it non-critically assumes a certain (albeit negative) ontology.

Another kind of implicit objectivism is contained in the 'strong program', which tries to determine itself from the ideal of 'objectivity' which, in its turn, is derived from how 'objects' behave. 'Social scientists have been paralyzed by a "physics envy". They have imagined that the great superiority of natural scientists resided in their dealing with objects that they have fully mastered and dominated' (Latour 2000, 114). According to D. Bloor, in order to obtain a scientific character, sociology of science should respond to a definite standard of objectivity while this standard turns out to be, again, tightly connected with such characteristics of the 'object' as invariability, non-historicity, independence from subjectivity and full determinacy. 'The order of sociological things' to which the 'strong program' refers (Bloor 1976, 1–19) is preset and has a strong likeness with the order of causes and effects that sociological theory has to discover (there are a lot of works that investigate critically the 'strong program's' objectivism, e.g., see Latour 2000; Law 1993). It seems that here again we are faced with how a critical thought exceeds its own bounds, because ontological dispositions, again, feed epistemological projects.

It seems that we are not going too far in generalizing the above as follows: the very prohibition on metaphysics in European thought results from certain metaphysical premises that can never be revised just because metaphysics is prohibited. The situation is paradoxical but not quite hopeless as far as the following moral can be drawn from it. If references to an 'object' are unavoidable then probably, it is time to stop fearing metaphysics and considering it as a kind of intellectual disease. Maybe it is time to take ontology seriously and to revise the ontological concepts owing to which 'construction' and 'reality' have become divorced from each other. As long as philosophy disregarded 'objects' it was expending all of its energies in a search for a type of subject that would alone bear the whole weight of being. In the XXth century, philosophy proclaimed a search for a 'new kind of subject' (Foucault 1987, 250) which has led to culture- or socio-centrism, the latest result of critical thought for today. But now we can see attempts (some of them—a remarkable fact!—come from sociology of science) to counterbalance such an 'ontology of subject' by an 'ontology of nature' in its ancient sense of *natural philosophy*.⁵ Restoring the 'ontology of object', a contemporary thought is looking for 'a new type of objectivity'⁶ in which a connection between subjectivity and truth would be re-established through the different understanding of an 'object'.

In conclusion I would like to refer to some of Proclus' thoughts. For him, one of the greatest world's dialecticians, the relationship between words and things was never in doubt. Let us recall the sophists' arguments as presented in Plato's *Cratylus* (Plat. *Crat.* 384d). Hermogenes states that the name of a thing is given arbitrarily, since the purpose of naming is subordinate to social circumstances and is secured in the end by arrangement and conventions. If a change of names exists (and it exists),—Hermogenes thinks,—then names are randomly stated symbols of things, neither true, nor false (doesn't this conclusion remind you of something?). Hermogenes,—says Proclus, when he interprets Plato's *Cratylus* (Procl. *In Crat.* 10 23–29),—thinks that if the names we give to things change, then these names are arbitrary. Change does exist; therefore, names are randomly stated symbols. As for me,—proceeds Proclus,—I conclude otherwise. If names are randomly stated symbols of things; *then we have no need for changing them* (Procl. *In Crat.* 10 23–29).

For Proclus a change of names is not evidence of their ‘subjectivity’ (in the sense of their disconnection from things). On the contrary, it is evidence of their deeply intimate connection with things. Here the point is that the name of a thing is not a means to know this thing (as if it were fully *out*) but it is an *organon* of the meonic life of a thing. Consequently, things announce themselves to ‘subjectivity’ and (at the same time!) they have a need for subjective naming that is ‘a mapping of a new design onto a surface of *eidōs*’ (see Losev 1993, 159; English translation by an unknown (?) author from A. F. Losev’s home page: <http://vt.fermentas.lt/philos/kosmos/>). Not only the change of names owes to things, but things, too, owe their multiple profiles to a multiplicity of names. Thus, all names are simultaneously of nature (φύσει) and of culture (θεσει) and naming is a demiurgical construction of the noetical paradigm. Therefore, whoever wants to ‘imitate’ must know both an ‘archetype’ and a ‘demiurgic art’ (Procl. *In Crat.* 8 24–25 and Losev’s comments in Losev 1993, 398–399).

Notes

- 1 The original version of this paper (‘Can one do without ontology? On some aspects of STS philosophy’) was presented at the 4th Annual Conference ‘Critical Issues in Science and Technology Studies’, IAS–STS, in Graz in March 2005.
- 2 It should be mentioned that not all sociologists of science agreed with such a state of chaos. Some of them tried to find something stable in society itself—necessary ‘structures’, ‘laws’ etc. on which reliable knowledge could be built. See below about that.
- 3 I take this typology from the works by Helen Mamchur, the Russian philosopher of science. She points to ‘the three types and levels of the influence society and culture have upon science, which vary in character and extent’. H. Mamchur, N. Ovchinnikov, and A. Ogurtsov, *Otechestvennaja filosofija nauki: predvaritel’nye itogi* [The Russian Philosophy of Science: Preliminary Results], Moskva: ROS-SPEN, 1997, 306–316.
- 4 Of course, the modern realists (such as A. Sokal or J. Bricmont) did not invent fundamentally new arguments for realism. But the modern constructionists’ point of view is not highly original either. It has many parallels in the history of thought down to sophists’ relativism. ‘Science wars’ at the end of the XXth century are one of the examples of how ‘eternal questions’ come up in various epochs.

- 5 I use the terminology of Piama Gaidenko, the brilliant Russian philosopher of science, who distinguishes between ‘ontology of subject’ or ‘ontology of history’ and ‘ontology of substance’ or ‘ontology of nature’ (Gaidenko 2003, 12).
- 6 ‘Another definition of what is an object is called on (...) once sociologists have passed the trial by fire of trying to explain in social terms the substance of what is not social (...)’ (Latour 2000, 113).

References

- Bloor, David (1976), ‘The strong programme in the sociology of knowledge’, in David Bloor, *Knowledge and Social Imagery*, London: Routledge, 1–19.
- Bricmont, Jean and Alan Sokal (2001), ‘Science and sociology of science: beyond war and peace’, in J. Labinger and H. Collins (Eds.), *The One Culture: A Conversation about Science*, Chicago: University of Chicago Press, 27–47.
- Collins, Harry (2001), ‘One more round with relativism’, in J. Labinger and H. Collins (Eds.), *The One Culture: A Conversation about Science*, Chicago: The University of Chicago Press, 184–195.
- Fish, Stanley (1996), ‘Professor Sokal’s Bad Joke’, *The New York Times*, May 21.
- Foucault, Michel (1987), *Jenseits von Strukturalismus und Hermeneutik*, Frankfurt am Main: Suhrkamp.
- Gaidenko, Piama (2001), *Istoria novoevropskoj filosofii v ee svjazi s naukoj* [The History of Modern Philosophy in Its Connection with Science], Moskva: Per Se.
- Gaidenko, Piama (2003), *Nauchnaja ratsional’nost’ I filofsokij razum* [Scientific Rationality and Philosophical Mind], Moskva: Progress-Traditsija.
- Hacking, Ian (1999), *The Social Construction of What?*, Cambridge, MA / London: Harvard University Press.
- Haraway, Donna (2003), ‘Cyborgs to companion species: reconfiguring kinship in technoscience’, in Don Ihde and Evan Selinger (Eds.), *Chasing Technoscience: Matrix for Materiality*, Bloomington / Indianapolis: Indiana University Press, 58–82.
- Heidegger, Martin (1951), *Kant und das Problem der Metaphysik*, Frankfurt am Main: Klostermann.
- Heidegger, Martin (1993), ‘Preodolenie metaphisiki’ [The overcoming of metaphysics] in Martin Heidegger, *Vremja I Bytie: Stat’i I Vystuplenija* [Time and Being: Articles and Papers], Moskva: “Respublika”, 177–192.
- Kant, Immanuel (Ausgabe B von 1887), *Kritik der reinen Vernunft*.

- Latour, Bruno (1988), *The Pasteurization of France* (transl. by A. Sheridan and J. Law), Cambridge: MA.: Harvard University Press.
- Latour, Bruno (1999), *Pandora's Hope: Essays on the Reality of Science Studies*, Cambridge, MA: Harvard University Press.
- Latour, Bruno (2000), 'When things strike back: a possible contribution of 'Science Studies' to the social sciences', *British Journal of Sociology* 51 (1): 107–123.
- Latour, Bruno (2003), 'What is given in experience? A review of Isabelle Stengers penser avec Whitehead: Une libre et sauvage création de concepts', Bruno Latour's Web Site: <http://www.ensmp.fr/~latour/articles/index.html>.
- Law, John (1993), *Organizing Modernity: Social Order and Social Theory*, Cambridge: Blackwell.
- Leplin, Jarrett (1982), 'The historical objection of scientific realism', in Peter D. Asquith, and Thomas Nickles (Eds.), *Proceeding of the Biennial Meeting of The Philosophy of Science Association* 1, 88–97.
- Losev, Alexej (1993), 'Antichnyj kosmos i sovremennaja nauka' [Classic cosmos and contemporary science] (originally: Moscow, 1927), in Alexej Losev, *Bytie, Imja, Kosmos* [Being, Name, Cosmos], Moskva: Mysl', 61–612.
- Lossky, Nikolay (1991), 'Obosnovanie intuitivizma' (the reprint of 1904), [English transl. *The Intuitive Basis of Knowledge*, London 1919], in Nikoay Lossky, *Izbrannoe* [Selected Works], Moskva: "Pravda", 313–334.
- Mamchur, H., N. Ovchinnikov, and A. Ogurtsov (1997), *Otecbestvennaja filosofija nauki: predvaritel'nye itogi* [The Russian Philosophy of Science: Preliminary Results], Moskva: ROSSPEN, 306–316.
- Pickering, Andrew (1984), *Constructing Quarks: A Sociological History of Particle Physics*, Edinburgh: Edinburgh University Press.
- Pickering, Andrew (1995), *The Mangle of Practice: Time, Agency and Science*, Chicago: University of Chicago Press.
- Porus, Vladimir (2002), *Rational'nost'. Nauka.Kul'tura* [Rationality. Science.Culture], Moskva.
- Proclus Diadochus, *In Platonis Cratylum commentaria* (Bibliotheca Scriptorum Graecorum et Romanorum Teubneriana), G. Pasquali (Ed.), Leipzig: Teubner, 1908 [Reprint Stuttgart: Teubner, 1994].
- Schatzki T.R., K. Knorr Cetina, and E. von Savigny (Eds.) (2001), *The Practice Turn in Contemporary Theory*, London: Routledge.
- Stengers, Isabelle (1997), *Power and Invention*, Minneapolis: University of Minnesota Press.

- Stengers, Isabelle (2000a), 'Another look: relearning to laugh', *Hypatia* 15 (4): 41–54.
- Stengers, Isabelle (2000b), *The Invention of Modern Science*, translated by Daniel W. Smith, Minneapolis: University of Minnesota Press (*L'Invention des sciences modernes*, Paris: 1993).
- Stengers, Isabelle (2002), *Penser avec Whitehead: Une libre et sauvage création de concepts*, Paris: Gallimard.
- Worall, John (1982), 'Scientific realism and scientific change', *Phil. Quart.* 32 (128): 201–231.