ALEXANDRU BOBOC, *PHILOSOPHY AND SCIENCE IN THE ERA OF LATE MODERNITY: PHILOSOPHICAL RECONSTRUCTIONS UNDER THE INFLUENCE OF THE MODERN SCIENTIFIC SPIRIT*

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Ana BAZAC[1]
ana_bazac@hotmail.com

ABSTRACT:

The review of Alexandru Boboc's book relating the late 19th century science and its philosophy is an occasion to highlight some features of the scientific and philosophical atmosphere and theories of the time. These atmosphere and theories point the dialectic of continuity and discontinuity between the early modern and 19th century's philosophical tradition and the development of the philosophy of the 20th century.

KEYWORDS: the second half of the 19th century, science, philosophy, realism, idealism, methods, laws, Positivism, the German Neo-Criticism, the Anglo-Saxon Neo-Hegelianism, empirio-criticism, H. Spencer, H. Helmholtz, Fr. A. Lange, É. Boutroux, H. Lotze, Th. Fechner, W. Wundt, E. Mach.

I

The volume reviewed here has an extreme importance for the understanding of the philosophy of late modernity, and especially of the relations between the development of science in the 19th century and the philosophical reverberations of the constitution of Western civilisation "as we know it", toward the last decades of the same century.

The 19th century witnessed the ascent of Western capitalism as the winner of the bourgeois and bourgeois-democratic revolutions, then the only dominant social system in the world. Its unsolvable social contradictions, explained by Marx, took place, however, when there were not yet objective conditions to surpass them, and obviously nor subjective ones. Indeed, both the system (its productive relations) and the productive forces – and especially technology and science whose advancement has manifested in a geometrical proportion towards the era of the early

[1] Prof. univ. dr. (Universitatea Politehnica din București), DLMFS.

modernity – were only in a stage of rise, probing that they were superior to the anterior level of civilisation and constituting their reserves for the last one. This incompatible situation has generated the main colours of the official *Weltanschauung* and philosophical currents: a mixture of (scientific and technological, therefore) epistemological optimism with pessimism, of confidence in the power of quantity and measurement brought by the new science, and the desire to grasp the non-quantifiable phenomena of life and human psyche and to give all encompassing explanatory principles of the entire reality.

In fact, the second half of the 19th century rather is contrasting to the first one. There, the rationalist traditions of the classical modern philosophy have expanded in the form of French Positivism: the new social system was only at its beginning and the euphoria of the revolutionary spirit – including in the ideology of Napoleonic era – could be inertial. But later and especially after the defeat of the 1848 revolutions and of the Paris Commune[2], those traditions were abandoned and an offensive of agnosticism and irrationalism has begun.

In the late 19th century the mainstream philosophy seemed to experience a *crisis of growth*, pendant of the stabilisation and strengthening of the social system. The watchwords of this philosophy were order and necessity surrounding an unpredictable but striking human self, and its ability was not to grasp transitions and their inherent crises of old configurations and birth of new ones, but rather to re-think philosophical themes in the light given by both the anterior great creations marked by the universality and topicality specific just to the epochs of rupture, and the scientific spirit of the time, as if this spirit would have been specific to a "quiet epoch".

But let's proceed: just in order to see the relationship between that period's thinking and its later mirror, the 20th century philosophy.

The book is a revisited version of that published in 1976 and covers a hiatus already naturalised in the Romanian philosophy of jumping from Feuerbach, Comte and J. St. Mill directly to the first decades of the 20th century philosophy. This is the reason it treats – from the main currents of this period named by the book: *positivism* (H. Taine in France, Herbert Spencer in England, Ch. Wright in USA, and E. Mach and R. Avenarius in

[2] The underlining of these events (p. 15) is already a sign of courage in the present "neutralist" and "an-ideological" post-1989 violent neo-conservative revolution era.

Germany); the German and French *Neo-Criticism* (H. Helmholtz, Fr. A. Lange, O. Liebmann, Fr. Paulsen, Joh. Volkelt, Ch. Renouvier); *Neo-Hegelianism* (A. Vera, B. Spaventa, Fr. De Sanctis, J. H. Stirling, Ed. Caird, Th. H. Green, Fr. H. Bradley, J. Royce, W. T. Harris, B. Bosanquet); the French *Neo-spiritualism* (F. Ravaisson, A. Fouillée, J.-M. Guyau, É. Boutroux); the German *Neo-Romantic Idealism* ("the philosophy of life" of Fr. Nietzsche and W. Dilthey, and "the inductive metaphysic" of H. Lotze, G. Th. Fechner, W. Wundt, Ed. Von Hartmann); "the immanent philosophy" (W. Schuppe, R. Schuber-Soldern, Th. Ziehen); H. Vaihinger's "fictionalism"; *Neo-realism* (F. Brentano, A. Meinong, Joh. Rehmke, H. Driesch, Th. Lipps, C. Stumpf, A. Riehl, O. Külpe, G. E. Moore, B. Russell; the beginning of *Personalism* (W. Stern, Ch. Renouvier, G. E. Howeson, B. Parker Browne, E. Brightman, M. Calinks); the beginning of *Neo-Thomism* (J. Mercier, M. de Wulf) – the English *Positivism* (H. Spencer), *Neo-Criticism*, the Anglo-Saxon *Neo-Hegelianism*, the French *Neo-Spiritualism*, the *neo-romantic* German *Idealism* (Lotze, Fechner, Wundt, Ed. Von Harmann), and the German *Empirio-criticism* (E. Laas, E. Mach, R. Avenarius). Concerning the last item, it is clear that the author has discussed the *Positivism* (where the positive knowledge is the result of sensory experience of the natural phenomena), using the word (empirio-criticism) coined by Avenarius for philosophy as "science of experience".

The choice of these schools was not random. Already the first pages warn about the lack of H. Taine and E. Renan, of the *Neapolitan Hegelianism* (A. Vera, B. Spaventa, Fr. de Sanctis), the American *Theist Evolutionism* (A. Winchell, J. Mc. Cosh, J. Fiske), the Saint-Louis School from America (H. C. Brockmeyer, W. T. Harris), the American *Personalism* (G. H. Howeson, B. P. Bowne), Charles Wright's *Positivism*, the *Pragmatism* of Ch. S. Peirce, F. C. S. Schiller, W. James, the French *Conventionalism* (H. Poincaré, P. Duhem), the *Empirio-criticism* of K. Parsons, J. Petzoldt, the Energetism of W. Ostwald, the *Neo-vitalism* of H. Driesch, the "philosophy of life" (Fr. Nietzsche, W. Dielthey), the "*immanent philosophy*" (W. Schuppe, R. Schubert-Soldern), H. Vaihinger's "*fictionalism*", the German (F. Brentano, A. Meinong, Joh. Rehmke, Th, Lipps, C. Stumpf) and English (B. Russell, G. E. Moore) *Neo-Realism*, the *Neo-Kantian* "*critical realism*" (A. Riehl, O. Külpe), the beginning of the *Neo-Kantian* logicist one (H. Cohen, P. Natorp) and axiologist (W.

Windelband, H. Rickert) *idealism*, the beginning of *Neo-Thomism* (J. Mercier, M. de Wulf) and *Neo-Scholasticism* (A. Trendelenburg) "and others" (p. 12). The list of these thinkers who are missing is given in accordance of an impeccable *scientific spirit*: the *reasons of choice of the object of analysis must be known* by the readers, as they must know the larger environment of this object. And these reasons consist of not only the inherently limited space required by the didactic end, and the assumed focus on limited topics[3] in the frame of specialised knowledge, but also because some of the thinkers from this list have rather a historical import while the others pertain to different philosophical eras: to the first half of the 19th century or already to the 20th one.

The main reason, however, is that the chosen philosophical schools have a bunch of significances which are missing or much weaker at the philosophers which are exterior to the choice of the author. The *chosen* noteworthy philosophical schools may contour a systematic perspective, but they are the topics focused on in the book because of two aspects: *one* appears in comparing the main characteristics of these philosophical schools and, on the other hand, the philosophical tendencies in the science of the second half of the 19th century. While *science – that became a profession only in the 19th century, the "scientist" substituting the term of "natural philosopher" – has continued and developed rationalism, dialectic and humanism*, scientists as Ernst Haeckel (1834-1919) being a notable representative of the spontaneous materialism (p. 16), the philosophical schools *did away with them*. This fact has contrasted also, can we observe, with the diffusion of the *common* scientific, rationalist and humanist Western manner of thinking. See, for example, the picture sketched by Stefan Zweig's *The World of Yesterday* (1942).

But this parallel gait of science and philosophy has led to the *rupture* between them. As we know, metaphysics has constructed rationally the world searching for and arriving to the first principles, i.e. the deepest explanation of things. But the explosion of science and its fragmenting in the late 19th century has shown that: 1) there is no "the deepest explanation"/the final deepest explanation, and 2) the metaphysical reconstruction of the world is neither sufficient nor "explanation", because

[3] In the tradition of speaking about philosophy only in its Western accredited areas (German, French and English).

the too general/abstract representation covers the colours of the world. Or just these colours ought to be explained, has science insisted.

As a result, philosophy has contained contrary tendencies: the cult of (positive) facts and the aspiration to understand the fluidity of life and feelings; or differently put, on the one hand, the development of Kantianism and on the other, the resumption of the Romantic propensity toward the irrational and the individual/the random.

The *other* aspect appears in comparing the chosen philosophical schools with the philosophy of the first half of the 19th century – and they are more *discontinuous* towards that, whilst announcing new themes which will be developed within and as the philosophy of the 20th century. In this respect, once more appears that the philosophy of the chosen period was not simply an epigone of the big philosophical constructs of the anterior epochs. In fact, it could not be, since it was contemporary with the *qualitative* spring of science whose great representatives – Charles Darwin (1809-1882); Dmitri Mendeleev (1834-1907); Karl Weierstrass (1815-1897), mathematician; James Clerk Maxwell (1831-1879), mathematical physicist; Henri Becquerel (1852-1908), physicist, discoverer of radioactivity; Gregor Mendel (1822-1884), founder of genetics; Louis Pasteur (1822-1895), chemist and microbiologist; Robert Koch (1843-1910), founder of modern bacteriology and one of the first microbiologists; Wilhelm Röntgen (1845-1923), physicist; Ludwig Boltzmann (1844-1906), physicist; Ernst Haeckel (1834-1919), biologist; Heinrich Hertz (1857-94), physicist; Justus von Liebig (1803-1873), founder of organic chemistry; Lord Kelvin (1824-1907), mathematical physicist; Gottlob Frege (1848-1925), mathematician, logician and philosopher; to name only few of them, perhaps the most known – have *prepared* just the revolutionary change from the beginning of the 20th century. And though one celebrates this revolutionary change – the shifts of paradigms, the most notable being from the Newtonian ones to those of Einstein – one cannot neglect that *it is the result of the epochal and founding theories and discoveries made in the late 19th century*. Even the notion of "crisis of physics" as opposition between the Newtonian and Einstein principles appeared after the demonstration of relativity and quantum physics, in the 20th century, but it was prepared in the last

decade(s) of the former[4]. In fact, in almost all the scientific branches these last decades have witnessed revolutionary theories, and revolutionary suggestions which were to be transformed into scientific theories in the next century: all of them demonstrating that the *critical* spirit of science has some independence from its metaphysical entourage and at the same time – a certain influence, though not always explicit, on the philosophical constructions.

But the analysis of the book emphasises the complex philosophy-science relations through the medium of the internal logic, the development of philosophical tools – concepts, theories, arguments, reasons – and the dialogue of the chosen philosophies. The focus on this inner development underlines the new ways to problematise/re-structure the old and new philosophical topics, but also the conscious and unconscious laceration between the speculative tendencies and the reactive and realistic ones, let say, critical, arising from the modern rationalist, Kantian and Hegelian tradition. This laceration has led to both theosophical speculative and sceptical idealist moments/excessive views through the lens of psychology and irrationalism/anti-dialectical ones, and realist approaches.

From a standpoint, just this apparent difference between the science and the philosophy of the epoch justifies its image and characterisation of being an epoch of *transition*: its main philosophical schools being rather a change towards the former modern traditions, and at the same time the grounding for the notable philosophical novelties of the 20th century. However, from another one, the above characterisation is rather metaphoric: because au fond every epoch is a transition; and while the science of the epoch was quite revolutionary – as the science of the 20th century was to be – and not at all a "normal science", to use Kuhn's formula, the chosen philosophical schools have showed rather an *inertial force*, a "lagging behind" towards the scientific spirit of the time. The epoch proves to be *contradictory*: but, with all the real influence of the scientific spirit, the philosophical one was stronger, it structured the dominant worldview – philosophy is not simply a worldview, let remember Heidegger's punctuating, however, I underline, it decisively configures it – and thus it gave the pattern of people's judgements about the world. In this respect, philosophy was closer to life than science. And from this respect

[4] Helge Kragh, A Sense of Crisis: Physics in the *fin-de-siècle* Era/The "new physics", in Michael Saler (Ed.), *The Fin-de-Siècle World*, Abingdon, New York, Routledge, 2014, pp. 441-455.

too, the focus on this contradictory epoch of science and philosophy shows what does philosophical responsibility mean.

But the understanding of these contradictory situations of science and philosophy does not take place outside/without the historical framing: which the book masterly makes. Just the historical analysis makes us to observe that the described philosophy is, on the one hand, a "philosophy of crisis", i.e. through the limits of Positivism, and the irrationalism and theism of other currents, and on the other hand, "the philosophy of crisis", namely the grasping of the limits which claim different approaches (p. 20). In fact, even the confrontation with the science of the epoch is part of this framing. Then, the book does not stop on the internal contradictions of the philosophical systems, but shows just the *problems and concepts* developed by them. And this: also in relation with those of science.

Therefore, we may consider that there was a double putting on the test by the epoch: of philosophy and of science. And their influence on the epoch was, as above mentioned, double too. More: since the science of the 20th century was a development of many scientific ideas created before – and even the absolutely new, discontinuous theories were somehow a dialogue with the science of the last decades of the 19th century –, the philosophy of the 20th century was – letting aside the schools begun during the 19h century *la belle époque* – both a reply to some former philosophical ideas and a desire to forget other ones. Finally, since the science of the late 19th century was "classic" if we give to this last word the meaning of being excellent, superior, and *modern* from the standpoint of being up-to-date, the main philosophical schools were only *modern*. And this labelling does not minimise them.

II

From the interesting philosophical analysis, I *chose* some concepts and aspects which point the above remarks.

1. The difference between the *positive spirit of science* and its *philosophical interpretation as Positivism*. The former means: 1) research of facts and starting from facts and not from prejudices/the scientific theories must be criticised, falsified with facts, and 2) only the scientific analysis of facts leads to the grasping of laws and tendencies "governing" them, i. e. to theories valid until further falsifications. Then the scientific theories are scientific tools, as experiments and measurement are. While

Positivism means: a) the rejection of general theories, b) the reduction of philosophy to a methodical assembling of the data given by science, c) the understanding of science as description of directly observed facts, without leading to a larger explanation (p. 25).

Positivism was a subjective idealism, where the objects of perceptions are absolutely variable and one knows only perceptions. As a result, it has opposed to both objectivism (everything being relative perceptions) and constructivism of thinking (if this one is only an assembly of perceptive data). But thus, Positivism "has opposed to the dialectical spirit of modern science" (p. 26) that considered both the objective character of the world and the complex psychological and theoretical mediation and construction of knowledge.

2. The "evolutionist Positivism" of Herbert Spencer (1820-1903). In fact, his system of 'synthetic philosophy' had mixed characteristics:

a) it was *positivist* in the sense that the knowledge of phenomena was the result of sensuous experiences – of the individual on the basis of 'the experience of the species', the knowledge acquired unconsciously that had a role of *a priori* for the individual – and which the sciences can research until the emphasising of laws; and since the laws might be understood in every domain studied by sciences, philosophy was the unification of their results through the form of the reduction of laws to only one, the law of *evolution* from simple and homogenous to differentiated complex structures; but this law was conceived of in a mechanical way, as governing a necessary unidirectional movement leading to a final stage of equilibrium (quite opposed to Darwin's endless evolution on the basis of random conditions);

b) it was a *residual/transfigured realism*, in that it considered that reality exists before any knowledge about it, but that the things as appear to us are not the copy of reality, and the *relative* cognisance given by science has as basis the Absolute/Unknowable (as a kind of Kantian *thing in itself*);

c) Spencer aimed at reconcile science and religion, considering *both* of them as giving only symbols of the real, and not its knowledge; but thus he was a religious agnostic, opposing to the anthropomorphic and traditional religions; at the same time, he thought that religions bring to people some indispensable notions.

3. The strong relation between the German Neo-Criticism (Hermann Helmholtz (1821-1894) and Friedrich A. Lange (1826-1875) and physiology. Helmholtz was, as we know, a noted physicist and physiologist

and he developed Johannes Müller's physiology of the senses (1830-1840) until philosophically interpreting these ones as the signs – and not the copies – of the world; but signs have as cause of excitations of the sense organs the external world, and thus both causality and the lawfulness expressed by the signs are *a priori* laws. And whilst science is focusing on the laws of the physical world, philosophy studies the activity of the human spirit, i.e. the knowledge. Lange has criticised "materialism" (i.e. in fact the vulgar, mechanistic one) insisting on the psycho-physiological organisation of man as a species that gives images of unknown objects; the reason of our organisation being unknowable as the thing in itself is.

Au fond, today this *mixture* (of Kantianism and the progress of science) does not seem odd: on the one hand, its aim was to understand knowledge and, obviously, the world that is always as it appears to us. It did no deny the external world – since man with his carnal physiology is part of this –, it only tried to grasp the constitution for us of this world. From a philosophical standpoint, it was a historical (inherently limited) moment of constructivism (with all its possible idealistic nuances), and from the viewpoint of the history of science it drew attention on the tendency of modern fragmented sciences to exaggerate one or another of their conquests considering them as philosophically ultimate explanation.

4. The Anglo-Saxon Neo-Hegelianism rejecting the empiricist English tradition and considering reality as a phenomenon of relations between ideas (Green, 1886-1882) or, on the contrary, the result of experiences through sensations (Bradley, 1846-1924), but separating the empiricist psychology from logic and metaphysics: it has differentiated between Appearance (phenomena having human value, namely being partial expressions of reality) and the whole reality, the Absolute. Appearance is only a form/an expression of the Absolute, and thus the former (with its relations) is the object of sciences, while the latter – of philosophy.

5. The French Neo-Spiritualism started from the "critique of science" thus founding the French epistemology. In this school, Émile Boutroux (1845-1921) has developed – as Comte did before – the thesis of *discontinuity* of the empirical domains and their knowledge: as one cannot derive the laws of the concrete sciences from the laws of the abstract ones – every empirical domain having its own principles – as reality as such cannot be deduced from the laws discovered by sciences. Reality, has insisted

Boutroux, is based on *freedom*, and not on the necessity possible to be grasped in the forms of scientific laws. For this reason, the real is richer than the possible, and has a degree of irreducible *contingency*. The real reduced to the possible given by sciences is only ideal. However, the real world is not chaotic but simple and harmonious: as a complex of storeys somehow superposed: the inferior ones not necessarily being related to the superior ones, while these ones do not derive analytically from the inferior ones because they comprise new and irreducible elements. Every storey may perfect or decay in its own limits and thus the inferior ones are ordered by abstract laws, while the superior ones – by *creation*[5].

The study of the scientific (logical, mathematical, mechanical, physical, chemical, psychological and sociological) laws as such, forms of the natural law, leads to the emphasis of the difference between necessity (caught by the laws understood as methods) and the more complex and "indeterminist" determinism, which science cannot unite. Therefore, the laws of science prove a *subjective contingency*: that demonstrates a continuation of *constructivism* and of aspects of Positivism, but also the innovation of *functionalism* of the laws as methods. The distinction between the two forms of subjective contingency (as action of the laws, as if these ones would be natural, and as the understanding of the laws) shows an *esprit de finesse* absolutely beneficial to epistemology.

6. In the framework of the German neo-romantic Idealism and its *inductive metaphysics*, the well-known scientists of their epoch – Hermann Lotze (1817-1881), Theodor Fechner (1801-1887) and especially Wilhelm Wundt (1832-1920) – also have raised coherent philosophical theories that tried to conflate the modern *Naturwissenschaften* and the traditional, dominant and assumed spiritualism. As a physician and naturalist and leading contributor to the constitution of the scientific psychology, Lotze has considered a mechanics of the soul – the "local signs" as psychical affections influenced by the external signals – and of natural causal and mutual *relations* (of action and suffering) that would have confirmed the final order of the divine substance. The physician, physicist (then meaning also chemist) Theodor Fechner was a founder of experimental psychology and of *psychophysics* – studying the soul-body relations from the standpoint of physical methods and of physiology and anatomy of the nervous system

[5] Thus Boutroux has prepared Bergson.

–. For him too, the mechanical causality from nature did not exclude the final order created by divinity.

But the physician, physiologist and the recognised founder of experimental psychology Wilhelm Wundt has distanced from his forerunners' metaphysical conclusion above: the scientific study of the human psychology has led him to conceive the order of the world as constructed by man/by its *reason*[6] and, concretely, being the result of the totality of volitional actions. What do people *represent* about the world is the consequence of their multiple and concatenated wills, and thus the *unit of will* is the basis of the world[7]. The will as such follows and operates with transcendental (cosmological, psychological and ontological) ideas.

The system of sciences and philosophy is significant for Wundt's "scientific philosophy": sciences are at the basis of philosophy, and this one has the goal to unite the cognisance made by sciences in a system without contradictions and to reduce the methods and suppositions of sciences to their principles[8]. Thus, the division of sciences in formal or mathematical sciences and "the real sciences" which tackle the objects of experience from the standpoints of their objects and their contents (these *real* sciences being the *natural* ones and the sciences *of the spirit*) is followed by philosophy that is divided too (in the science of knowledge – approaching the genesis of the contents of science – and the science of principles, studying the systematic relations between the different principles of sciences). The science of knowledge and the formal logic constitute the *logic in narrow sense* as research of the genesis of the scientific concepts on the basis of the general laws of thinking, the logic itself being an extension of psychology. While in this entire system one needs and there is a place for the *philosophy of biology* – being a transition to the philosophy of the sciences of the spirit – and the *philosophical psychology* allowing the transition to ethics, aesthetics and the philosophy of religion.

Wundt has thus constructed an "encyclopaedia of philosophical sciences" "not a speculative one as in Hegel but constructed in the rigorous spirit of the modern science, aimed at the cult of theory as such but basing on facts, on the research of the dynamics of the history and social life. Though… (its psychologist idealism), the famous psychologist of Leipzig

[6] Here – the influence of Kant.
[7] And here: the influence of Schopenhauer.
[8] We do not ignore the assumption of positivism.

supplies a rare example of theoretical super-production and renewal of ideas…" (p. 222).

7. In order to better understand *positivism* – through its form of *empirio-criticism* – the book analyses the theories of its modern precursors, Berkeley (1685-1753) and Hume (1711-1776). They both have founded the theory of knowledge as autonomous philosophical discipline, but both – being empiricist – have reduced the logic to its sensorial basis. Consequently, they understood *knowledge as only a psychological process* and thus were sceptical concerning certainty. In front of the negation of general abstract ideas – only words with general significances existing – and the reduction of particular objects to complexes of sensations, by Berkeley, and of the subordination of ideas towards the always subjective impressions/perceptions (every idea being a copy of similar perceptions and the result of habits) as well as of the fictive character of the concepts of metaphysics, by Hume, it would be useful to quote Hegel's remark[9] about the idealistic and sceptical end of their philosophy: "Thought generally is simple, universal self-identity, but in the form of negative movement, whereby the determinate abrogates itself. This movement of Being-for-self is now an essential moment of thought, while hitherto it was outside it; and thus grasping itself as movement in itself, thought is self-consciousness - at first indeed formal, as individual self-consciousness. Such a form it has in scepticism, but this distinction marks it off from the older scepticism, that now the certainty of reality is made the starting point. With the ancients, on the contrary, scepticism is the return into individual consciousness in such a way that to it this consciousness is not the truth, in other words that scepticism does not give expression to the results arrived at, and attains no positive significance. But since in the modern world this absolute substantiality, this unity of implicitude and self-consciousness is fundamental - that is, this faith in reality generally - scepticism has here the form of idealism, i.e., of expressing self-consciousness or certainty of self as all reality and truth. The crudest form of this idealism is when self-consciousness, as individual or formal, does not proceed further than to say: All objects are our conceptions. We find this subjective idealism in Berkeley, and another form of the same in Hume"[10].

[9] Cited by Boboc, pp. 244-245.

[10] *Lectures on the History of Philosophy* (1805-1806), Part Three: Modern philosophy, Chapter II – Transition period, A. Idealism and Scepticism, https://www.marxists.org/reference/archive/hegel/works/hp/hpconten.htm.

Concerning the Ernst Mach's (1838-1916) theory of elements, everything – including the abstract concepts as space and time, or colours, sounds, pressures, heat etc. – is a *sum of sensorial states*. And since atoms cannot be perceived with our senses, they do not exist: only the *elemental qualities* (colours, sounds etc.) perceived through our sensations do, the world being our sensations. The objects – including our self and the abstract concepts as images of the world – are *complexes* of elements/sensations. And by concluding that "not the bodies create sensations, but the complexes of sensations (the complexes of elements) constitute the bodies…because all of the bodies are only abstract symbols for the complexes of sensations (complexes of elements)" (E. Mach, *Beiträge zur Analyse der Empfindungen*, G. Fischer, 1886, p. 20, quoted by Boboc, p. 256), Mach has created a ground for Einstein's theory of relativity and quantum physics where the phenomena are depending on the observers/points of reference/the movement of the objects, and one measures only effects. But while in Einstein this fact does not lead to the dissolving of concepts/theories – however relative/historical are they and were they conceived of by the creator of the new physics – or to the cancellation of determinism, as relative/indeterminist it is, for Mach it rather does, with all the *functionality* of concepts as "economical symbolisation of the world of experience" (Mach, *op. cit*., p. 143, in Boboc, *ibidem*).

Actually, the huge problem of the relation between existence/an objective reality and its appearance for us/a reality with determinations, including through concepts/theories, was solved by Mach in his theory of knowledge where *knowledge was feeling/sensations* and thus as there could not be any law in this world of absolutely variable feelings and sensations, as their result could not give laws and certainty. Science was then only an activity of putting order into the scientific facts, i.e. of tackling them with the biggest "economy of thinking" by *describing* them with the help of abstract concepts which are only idealisations. Nevertheless, as Mach himself showed, his conception was not similar but different from that of Berkeley's subjective idealism: corresponding to the sensations through which man is aware of the world, the elements – the physical characteristics of the world – do exist and there is only a functionalist approach of both the sensations through which the elements appear as the copies and bricks of

the world, and the elements. Still these ones are by far more important than the scientific theories, while these theories are the only ones that matter. Thus, Mach was empiricist in his theory of knowledge and positivist in his rejection of philosophy.

III

A. Of course there is an *objective* reality, independent from us, but this reality has *determinations*/names/"a face" *only as we know it/according of our knowledge of it*. As we know, the first imperative of philosophy was to describe reality and this led to *naïve realism*, to the "description" of the constituents or ultimate bricks of the existence. The conclusion, but also the basic presupposition of naïve realism was – and it pertains also to the common realism – that the existence has an absolutely objective character. The second stage of philosophy was the focus on the process of knowledge, when this process was conceived of as absolutely subjective, independent from reality. In fact, this one seemed to not be important, only the subjective ways of thinking had an illuminating force for the understanding of man and its environment. But – and here it is not about an imitation of Hegel – the change of this pattern of thinking reality and knowledge as mutually independent took place when Kant's constructivism appeared and the world became *mediated* by our knowledge of it. Thus, though this was a third moment in the history of philosophy, in fact it was only about a second moment: that of the change of the former pattern of *mutually independent reality and knowledge* to the new pattern of the *mediated reality*.

This pattern does not mean that a) there would not be reality (that the existence would be only a subjective appearance), b) nor that it cannot be known. Certainly, the thinkers had seen things unilaterally, they had different reductionist approaches, they reciprocally criticised these different reductionisms (even in ways reducing again the complexity), but all these attempts were and are only *historical*. And today Kant's constructivism – where the objective reality (the *thing in itself*) is not denied, but the things as we tackle and know them are never this ultimate reality and thus the objective reality is for us only in a *mediated* countenance – does no longer appear incorrect (if obviously the historical, post-Kantian exaggerations are removed).

Its validity is even more stronger so as one focuses on the other huge problem of philosophy: the *subject-object relation* /: 1) the concrete

ways the world as it is becomes understood by us (or the concrete ways the objective world becomes subjective) and 2) the concrete ways the sensations, perceptions, representations, feelings, and ideas[11] work *in* and *on/through* the subjective process of understanding the world. This other huge problem was tackled, as it already was shown, by many of the thinkers discussed in this book.

B. Therefore, not only the thinkers analysed in section 6. but almost all of those focused on in this book have been deeply involved in the research of one of the fundamental philosophical and scientific question: the mind-body relations / the consciousness-physical world relations / the object-subject relations. Marked by the advancement of biological sciences in general, these thinkers had to answer to the unilateral tendencies existing traditionally in philosophy (and in fact both the different forms of monism have been unilateral solutions, their reductionism being historical, i.e. inherent – while dualism itself *could not see the transition from the material stratum of reality to the immaterial one*, being only a metaphysical (somehow metaphorical), and not scientific, solution –), as well as to the modern scientists' fear of philosophy/rejection of philosophical and ideological conclusions. For this reason, their profound ("organic", though rather negative) connection between science and philosophy was the normal standpoint of the great series of philosophies in the world.

At the same time, their contradictory position from the philosophical and ideological point of view as well as their contradictory position between science/scientific spirit and the philosophical and ideological suppositions, have led to a *mixture* of and *oscillation* between the former and the latter. As well as: to an oscillation between Positivism and its power of experience, and anti-Positivism's leaning to metaphysics.

However, what is the main characteristic of most of thinkers discussed in the book is their *rejection of the naïve realism* and *assumption of constructivism*. Letting aside the ideological motif – a *certain* fear of materialism, leading to the inertia of metaphysical treatments of things – this process of rejection of the naïve realism and assumption of constructivism was part of the historical *parting from the pattern of reciprocal independence of object and subject specific to the mechanistic moment of the modern thinking*. And at the same time, constructivism was

[11] Thus, both world 2 and world 3, using Popper's concepts.

approached through its relations with science. And if the level of sciences in those times did not allow but the putting of the issue – the physical-psychical relation – and the inherent insistence on the material basis of consciousness (thus, yes, Positivism supposes materialism), *neither today*, with all the progress of atomic and quantum, bio-molecular, genetic, epigenetic, psychic, social, cultural mechanisms, *we do not (yet) see the transition from the material level of the brain and the non-material level of consciousness, or the constitution (not the origin) of the last*. We simply study these two levels somehow separately, as being done/as two levels of reality.

C. Therefore, when we remember these thinkers we have to not only dispatching them in the archive of philosophy as metaphysics, but rather to understand their struggle to capture the above mentioned questions. And this: also because in this way and concerning the same questions, we understand the problem of late modernity's separation between science and philosophy, the philosophical progress and, at a great extent, the manner this progress took place in the second half of the 20th century until today: of suggesting, putting questions and shedding light on different aspects[12], and having the same difficulty in front of the theoretical integration of different levels of reality/or our different perspectives as the late 19th century thinkers had in front of the development of the modern science.

Their idealist conception of the world arose from the mainstream philosophical tradition, from the dominant ideological worldview, but also from their social condition of pertaining to the bureaucratic layers always subjected to the rulers. Nevertheless, the realist basis of their idealism was related to their attempt to modernise philosophy, to integrate it with science, or to integrate the new sciences in the idealistic scheme of philosophy.

Obviously, my review did not analyse/critique the theories, as well as I only have *selected* and sketched some aspects, and did not develop the richness of the philosophical ideas of both the thinkers from the book and

[12] See for example, Torin Alter, Sven Walter, *Phenomenal Concepts and Phenomenal Knowledge: New Essays on Consciousness and Physicalism*, Oxford University Press, 2008; Jeelou Liu and John Perry (Eds.), *Consciousneess and the Self: New Essays*, Cambridge, New York, Cambridge University Press, 2012; Cyriel M.A. Pennartz, *The Brain's Representational Power: On Consciousness and the Integration of Modalities*, The MIT Press, 2015; Dana H. Ballard, *Brain Computation as Hierarchical Abstraction*, (Computational Neuroscience), The MIT Press, 2015.

the commentaries of Alexandru Boboc, even though some of the latter are no longer/not quite appropriate and reclaim a different interpretation (transmitted here). But I hope one could grasp that the thinkers were pioneers at least of the topical research: of consciousness, of the problems of methodology of science, and of the science-philosophy relations. Thus, to remember these forgotten precursors of the present research is quite pragmatic.

The last words are about the author. Academician Alexandru Boboc, my Professor, is the best Romanian connoisseur of the history of philosophy, both from the standpoint of the amplitude of this history (especially the modern philosophy, namely at least from the 16th to the 20th /21st centuries) and the depth of the analysis. The capacity to emphasise ideas and relationships between different entities of the world 3, to outline perspectives through which one better grasps the life of mankind and its ideas entitles Professor Boboc to be a leading Romanian philosopher of our time.

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