MIHAI UŢĂ, CRIZA TEORIEI CUNOAŞTERII (1928), Traducere din limba franceză de Maria Michiduţă, Ediţie critică, studiu introductiv, note şi comentarii de Adrian Michiduţă, Craiova, Aius, 2017, 232 p., ISBN 978-606-562-648-5
[MIHAI UŢĂ, The crisis of the theory of knowledge]

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ABSTRACT

The review of the Romanian philosopher's book (*The crisis of the theory of knowledge*) presented in France and led by Edmond Goblot (1928) is made on the occasion of the translation of the book into Romanian by Maria Michiduţă and its publishing by Adrian Michiduţă. The volume is interesting because it is a rare piece of criticism between the habitual presentations of theories of different thinkers as such, and certainly because of the ideas it provides for our present understanding of the history and argumentation of the points of view related to knowledge. The form is interesting too, pushing us to think to the present viability of metaphysical language when we discuss the problems of science: because metaphysics is the quest for and the arrival to the "last and eternal principles" and this perspective is rather extremist and intolerant with opposite views.

Anyway, the book of Mihai Uţă – a "singular endeavour in the Romanian spiritualist atmosphere of the time"[2] – was a development of modern rationalist, constructivist, positivist, implicit sociologist of knowledge view about the "pragmatic" turn of the French epistemology, and the review emphasises the logic of arguments unfolded in an unembarrassed analysis of a complex and difficult philosophy (Émile Boutroux, Henri Poincaré, Ernst Mach, Henri Bergson).

KEYWORDS: knowledge, rationalism, empiricism, causality, science, positivism, finality, epistemology, sociology of science, French pragmatism, spiritualism.

1. Instead of introduction: Goblot

The young Romanian Mihai Uţă (1902-1964) has published in 1928 the volume *La crise de la théorie du savoir* [*The crisis of the theory of knowledge*], dedicated to the philosopher who led his thesis of *docteur ès lettres*, accepted and published in the same year, the interesting figure of the French philosophy: Edmond Goblot (1858-1935).

This one – after following also four years of medical sciences courses – has written in his *Traité de logique* (1918) et *Le système des sciences: le vrai, l'intelligible et le réel* (1922) that our reason is what gives us the knowledge of the world through its own deductive *construction* of propositions, based on *rules of content* – i.e. previously admitted propositions, they themselves demonstrated or grounded in definitions and postulates as conventions – and that the logical forms (the syllogism, for example) are only aides of or means of control or, indeed, forms certifying the inner *constructivist power of reason*; somehow as Descartes had pointed – as it was reminded by Emile Boutroux who wrote the preface of the *Traité* – that the method of reason is different from "simple" logic. This meant that the real logic of science is richer than the classic syllogism of deduction (from the general to particular): it develops from specific cases and arrives to general statements. For this reason, somehow it seems that the syllogism does not lead to anything new, and at the same time that only this spontaneous constructive power of reason allows and directs to the

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[2] Ana Bazac, review article of Mihai Uţă, *La théorie du savoir dans la philosophie d'Auguste Comte*, Paris, Félix Alcan, 1928, on the occasion of its translation into Romanian, 2012, in *Noema*, XI, 2013, pp. 453-462 [in Romanian].

understanding of the *other*/*different*, starting from *other*/*different*: because without this constructive power, the humans would arrive only to the same, starting from the same.

For this reason and in this view, in logic the judgement is anterior to the concept, while this one is expanding and changing because the knowing process has led to new/different qualities/properties of denoted things. These new qualities cannot be the result of a classical implication where the conclusion is contained within the premises: on the contrary, they are the result of a complex constructive power making non-conformist conjectures between different cognisance: somehow again, *as if* the conjectures would be direct observations of empirical facts. Or, these empirical facts are only the ground on which the constructive power of reason is developing: a ground perceived through senses and transmitted by these senses as "copies" of the real. The problem is, however, how to understand these copies, so how to arrive to something more than these copies. The first moment of the constructive power of reason is, thus, that of *induction* where one gathers and interprets the copies, and induces a general. This general is related to other generals resulted from absolutely different inductions (and, thus, facts), and then different *demonstrations* linking, separating and again uniting the different generals and the different inductions arrive to new knowledge.

A goal and at the same time concept of reason is that of *causality*. It is not a simple induction – and less it is the result of empirical observations – but a conclusion of complex rational demonstrations. The form of this concept of reason is "the mechanism", i.e. the logical chain of cause-effect, with all its feedbacks (effect-cause), and reason/sciences tend to understand just the complex *determinism* manifesting through the unfolding of causal processes. As a result, the logic of sciences is not that based on the principle of identity, but that based on the *principle of determination*. And – a bold interference within the discussions of the time – *finality* as such is a concept describing the patterns of cause-effect chains and the necessity of these chains and patterns (but this happens only in the sciences of life (and in living phenomena) *as if* the present situation would be the result of a future, not yet produced phenomenon. Goblot was a modern rationalist, he did not describe finality as transcendent, but as *immanent*. For this reason, he was not in the grace of the mainstream spiritualist philosophy[3] which blamed him also because he did not conceive of truth as outside the world, but as a result of man's construction in its interaction with the world.

Goblot's conclusion was that science alone may transpose the consistence of the rationalist approach, because it uses "all the means of knowledge"[4], including by putting philosophical questions – while philosophy is, according to its methods and object – "scientific".

2. The tenets assumed by Mihai Uţă

I mentioned these ideas of Goblot in order to better understand Mihai Uţă's universe of thinking, as well as those of the philosophers analysed by Mihai Uţă in this book. Indeed, the Romanian has adhered to the French rationalism, positivism, progressivism and epistemology[5] which competed, in the 19th and first half 20th centuries, with the spiritualist mainstream that,

[3] See Gaston Rabeau's review of Goblot's *Le système des sciences*, in *Revue des Sciences Religieuses*, Volume 4, No. 3, 1924, pp. 536-539.
[4] Goblot, *Le système des sciences*, Paris, Librairie Armand Colin, 1922, p. 255.
[5] Mihai Uţă has written some books about Auguste Comte: his main and secondary theses for doctorship, *La théorie du savoir dans la philosophie d'Auguste Comte*, Paris, Félix Alcan, 1928, and *Les lois des trois états dans la philosophie d'Auguste Comte*, Paris, Félix Alcan, 1928; *Auguste Comte and aesthetics*, in Romanian, 1929; *The French Positivism*, in Romanian, book article in *Istoria filosofiei moderne de la Kant la evoluționismul francez, vol. II, Omagiu profesorului Ion Petrovici*, 1938, pp. 449-486 [*History of modern philosophy from Kant to the English evolutionism, In honour of Professor Ion Petrovici*].

however, was rather a powerful and institutionalised *mot d'ordre* but not quite dominant in the French philosophy[6], and especially not having the mystic accent from the Romanian spiritualism of the first half of the 20th century. This "French" air of Mihai Uţă was, perhaps, the reason he was not accepted as titular Professor at the University of Iaşi where he was only a substitute from 1930 to 1938[7].

It's interesting, in this respect, the analysis he did about Émile Meyerson's philosophy[8] (1859-1933). Mihai Uţă has retained some important features in Meyerson's works. One was that the French was a constructivist for whom the laws of science were made by raison and were not things in nature, operating on phenomena. Only as such things would the laws be metaphysical entities. On the contrary, the laws express what occurs in nature when some conditions are met. As a result, positivism has transformed the sciences into "a veritable metaphysics of the scientific laws"[9]. In other words, the scientific research "rationalizes the real" through a "cascade" of reasoning which move around the principle of identity (thus opposite to Goblot), but this principle is only synthetic (in Kant's term, as a necessary connection between the changing real and the immovable concept), not analytic, concerning the logical indestructibility of the object. Thus, another aspect in Meyerson's works is the coincidence of lawfulness (*légalité*) and causality in the understanding of nature. Actually, these two concepts substantiate the identity of cause and effect, ideas put by the human reason in nature, and identity as the only means of science to foreknowledge. But causality is only a particular case of identity, identity or law applied to time. And thus, finally, identity – the end of science – is the reduction of the real which is diverse. Science is more limited than the real: the first is rationalised, logical, clear; the real is irrational – that is, unclear, unexplained – and this is both the irrational of the object and of the subject. But, though some ones tend to consider these two irrational as identical, in fact they are not. And nor the distinction between what is rational and what is not rational, form the standpoint of science/in science: because there is an *evolution* from the former irrational to rationalisation that is always historical.

3. Intelligibility of the world and mechanism: complementariness of extreme means of knowledge

In his book from 1928, Mihai Uţă has described the effort of science to make the world *intelligible*. The means was and is the development of the concept and logic of *causality*. The subjective vectors of intelligibility were considered in two extreme views: in *rationalism*, one thought that only reason contains the germs of intelligibility, while in *empiricism* – that the senses would underpin the intelligibility. In the first, the deductive movement – from general principles existing in the human reason to particular and individual facts/knowledge – supposes not only that the world is intelligible because reason is which simplifies it (by conceiving the principles which are simple and deducing with their help simple regularities) but also that the deduction and

[6] It's Dominique Janicaud, *Une généalogie du spiritualisme français. Aux sources du bergsonisme : Ravaisson et la métaphysique*, La Haye, Martinus Nijhoff, 1969, p. 3, standpoint, opposite to that of Louis Althusser, *Pour Marx*, Paris, Fr. Maspero, 1965, p. 16, both quoted in Jordi Riba, *La morale anomique de Jean-Marie Guyau*, Paris, L'Harmattan, 1999, pp. 35-36.

[7] Biographical information from the introductory study of Adrian Michiduţă at the collection of Mihai Uţă's philosophical articles, in the first re-publication of Mihai Uţă after his passing in oblivion in the 40-50s. This collection has the name of one study, *Dialectica existenţei*, Ediţie critică, text stabilit, studiu introductiv, note şi bibliografie de Adrian Michiduţă, Craiova, Aius, 2010 (the study is from 1937).

[8] The article is from 1930, in *Dialectica existenţei*, pp. 134-139.

[9] Meyerson, *De l'explication dans les sciences*, I, Paris, 1921, p. 30, quoted by Uţă, *op. cit*., p. 135.

intelligibility are possible because the world is "like a mechanism", based on intertwining of causes and effects.

The mechanism means the logic of causality and interdependences. And if so, the negation of "mechanism" is the negation of intelligibility. Even the finalist explanation is only a not yet clear knowledge of causal chains and is only temporary[10]. And – what is important – empiricism too is based on the supposition of mechanism, that was not considered as an *a priori* made by reason but as a consequence of the ascension from the information given by senses to general concepts/theories.

Mihai Uţă insists that empiricism and rationalism are *complementary*[11] and that only historically the first was a reaction against rationalism, but since this one was the rationalism of theology, empiricism was a reaction only against this type of rationalism. The modern science is already based on a new type of rationalism, that of evolutionism[12]. It is an evolutionary rationalism. Kant was that who demonstrated the logical fusion of reason and sensitivity, while Comte did it from sociological standpoint. They have substantiated the modern view of sciences where rationalism and empiricism are united, because separately neither one of them is satisfactorily confirmed experimentally.

4. The pragmatist critique of science as crisis of the theory of knowledge

Science is evolving, it criticises its theories in order to realise a scientific knowledge of the world. In a moment or another, science is not the master of absolute truth, but it is the only human endeavour that has the means to provide verified truths. For this reason, the criticism of (as opposition to) science can be made only from the standpoint of a knowledge using scientific means. Philosophy may do this, but a philosophy which does not explains reason with scientific means is not a philosophy that can criticise science verisimilarly.

However, both the rise and the criticism of science took place in contradictory historical conditions where the first phase of modern science – phase based on the research of the inorganic and generating the spring of physics, chemistry and mathematics – *seemed* to both conceive in an absolute manner the laws of nature and to reduce life (and man) to inanimate laws. And when the biological sciences and sociology began to rise, they have reacted against the mathematisation of the lifeless matter and were helped by pragmatism. But *pragmatism* substitutes the rationalist conception of truth with a biological conception; science has, thus, only a system of hypotheses and rules of action, and does not arrive to (though historical) demonstrated truths. But this is the "death of science"[13], since the scientific verification of truth and the rational and theoretic value of science is substituted with practical and biological value.

[10] But this means, I dare to add, that the determinist and finalist explanations are *complementary*, since they both aim to disclosing the constitutive relations of the world. And in the explanation of the living, their opposition is all the more harmful. This type of complementariness is as of the (theories of) truth-correspondence and truth-logical consistence.

[11] This is because empiricism was an exaggeration: the truth was for it as only what is given in experience, and nothing more. Historically, there were also charlatans who were "empiricists", but theoretically, the above exaggeration puts the problem of under-determination, as well as that of a checked definition of concepts "experience" and "phenomena". And since this checked definition involves non-empirical theorization – accepted by a certain scientific community – it results that empiricism supposes tacit rationalist suppositions. However, rationalism too is guilty of circular reasoning since it proves oneself with experience. Their complementariness is once more demonstrated in the "existential, not simply theoretical, character of knowledge", see Bas van Fraassen, "La fin de l'empirisme?" *Revue Philosophique de Louvain*. Quatrième série, tome 98, n°3, 2000, pp. 449-479 (477).

[12] Mihai Uţă, *Criza teoriei cunoaşterii*, p. 31.

[13] Idem, p. 43.

Therefore, the crisis of the theory of knowledge would consist in the aggressive offensive of "pragmatist" views in both society and philosophy/theory of knowledge. Why would this offensive signal a crisis of knowledge?

4.1. The principles of reason, science as ordered knowledge and their refuse by pragmatists

The intelligibility science aims at supposes to find the place of phenomena scientifically researched in the general *order* of acquaintances. This order means relations of *determination* between its elements/acquaintances. How can one arrive to these relations and order? Obviously, Mihai Uţă was not interested here about logic or psychology (logical and psychological analysis), but about epistemology, i.e. the specific relations between reality and knowledge/reason. Well, and after the first phase of trial and error in these relations, and also after the confrontation of knowledge (reason, concepts) with reality and the demonstration of matching and efficiency of some inferences and reasoning, these ones became "the principles" of reason, found following the experiences and the evaluation of results of preceding reactions. These principles are *patterns* of relations between reason and reality, stored in memory and "governing" the complex concatenations of phenomena/information/concepts.

As a consequence, these principles – as determinism, causality, identity, truth – are "principles of reason", *as if* reason alone, without any contact with reality, would arrive at them. Anyway, a) they are conceived of by reason and b) once realised, they belong to reason. And just this ordered and rational knowledge as correspondence of reality and reason, just truth as irrepressible result of this correspondence and rule of reason were opposed by many, including by the pragmatists of the last decades of the 19th century and the first ones of the 20th century.

Mihai Uţă did not make a sociological analysis of the significances of ideas of pragmatism. He only described its epistemological supply. But showing that *pragmatism* has opposed to the logic, determinism, necessity (dialectic of possibility and necessity), identity and order created by reason and the scientific knowledge – in the name of spontaneity of nature – and that it has preferred *intuition* instead of reason[14], considering intuition not in the trail of Kant (as a general grasping of the real[15] – which in fact is the logic resulted in immemorial experiences and stored in the human memory as "patterns", and awakened by/with the first experiences of the little child – and thus an *a priori* that is not "instead of logical knowing" but only a condition of intelligibility) but simply as a better means to know than the "rigid" science; by showing that for pragmatism a disorderly knowledge would be better than a "clearly expressed and well determined"[16] one, that the principles of reason would be only conventions assuring the logical coherence of the discourse and not the veracity of acquaintances[17], that thus the intellectual knowledge would be not true or false, but simply useful or harmful; by showing that for pragmatism "truth does not derive from the nature

[14] Intuition – a direct and immediate knowledge, outside logical laws, confuse and vague, Mihai Uţă, *Criza teoriei cunoaşterii*, p. 215.
[15] Or as the ancient *nous* – faculty of grasping the whole of things and leading to/generating a general wisdom/quality to be wise – and thus different from *dianoia*, thinking, the reason's application of logic in order to make things intelligible –.
[16] Mihai Uţă, *Criza teoriei cunoaşterii*, p. 216.
[17] But certainly, the principles of logic are "conventions" "used by the thinking as if it would own them *a priori*", p. 220. However, as he has said many times, these conventions are both the historical "compacting" of the human experiences/mind in heir/its relation with the world and the individual logical reactions to the world.

of knowledge"[18] but it is an accidental and conventional property/name we attach to a useful cognisance; by showing that for pragmatism, for the same problem in the same historical moment there would be many truths, Mihai Uţă has characterised pragmatism as an "opportunistic conception that radically overthrows the order of philosophical problems put in the theory of knowledge"[19]. Therefore, by showing that pragmatism was a removal from the holistic (and anti-extremist) position of the main positivist theory of Auguste Comte[20] – holism that has constituted through the taking into account of the social as means, intermediation and domain of knowledge – Mihai Uţă has made an (only allusive) sociological criticism of the pragmatist tendency of philosophy.

4.2. Pragmatism as a reaction against the classical rationalism, and Mihai Uţă's anti-pragmatist critique of the classical rationalism

Mihai Uţă knew and assumed the relativity and even plurality of truth. He did this because he has assumed the *historical* character of knowing. Consequently, he did not protest against the idea of contextual historicity of truth – he stated that science is certainly "approximate", it approaching progressively to the understanding of things – but against the methodological destruction, by pragmatists, of the idea of truth as such as a means and criterion of knowledge.

Pragmatism was a reaction against the classical rationalism, but Mihai Uţă has opposed too the classical rationalism (of Descartes), because this one has derived the universality and objectivity of knowledge from the clarity of logical principles. On the contrary, Mihai Uţă said that the *modern rationalism linked to the modern science well after Newton was at the same time constructivist and empiricist*. a) The scientific law, describing the conditions of possibility of things, is "only the logically necessary consequence of a hypothesis or principle, consequence that can be but an experimental ascertainment, i.e. a truth whose necessity cannot be conceived of by the spirit"[21]; or "the law is not the cause of facts it explains, but only the sum of conditions of possibility of facts"[22]; "Taken in isolate manner, the law does not make any sense, because it acquire a specific sense only when we look at it in relation with a logical system it belongs to"[23]. b) "To scientifically explain means to determine, to find the sufficient conditions whose realisation makes that a certain phenomenon to necessarily produce"[24]. c) "To determine means to establish relations, to logically clarify different aspects of a thing"[25]. d) "So, to explain means to make clear that which is given to us in an obscure state, to make explicit that which is given to us in an implicit state"[26]. e) "Therefore, intelligibility is not something already made, something implicit contained within the

[18] We must not forget that Mihai Uţă was a constructivist, he never spoke about truth as an objective external factor (as Heidegger, for example), thus nor about truth as a copy, but about truth as a construction of reason in its relations with the world (p. 217).
[19] P. 217.
[20] Mihai Uţă has demonstrated that Comte had two kinds of theory of science: one – positivist – leading to the understanding of knowledge as historical, complex, constructive but at the same time constituted from and within the data of the world given by experience, thus possible to progress – and another one spiritualist, in *La théorie du savoir dans la philosophie d'Auguste Comte*, 1928.
[21] Mihai Uţă, *Criza teoriei cunoaşterii*, p. 217.
[22] P. 218.
[23] Ibidem.
[24] Ibidem.
[25] Ibidem.
[26] Ibidem.

notions forming the laws, but derives from the reciprocal confrontation of laws, in other words, from the organisation of acquaintances in a system"[27].

"Intelligibility is not a spontaneous creation of reason, on the contrary, necessity is only the result of the conditional form we give to our propositions, the intelligible being only the result of determination of acquaintances one from another"[28]. From all of these quotes, it results that the pejorative sense of positivism was given not by the 19th century scientific researchers and philosophers of science, but by the outside critiques of science. Even the exaggerated declarations about the gradual possibility of the solving of the so many problems science became aware of should be (and should have been) taken as they are, declarations emphasising the modern scientific optimism, and not consequences of the epistemological analyses made by scientists or philosophers as Comte.

4.3. Decomposition of knowledge at psychological, logical and sociological level

The constructivism of modern epistemology – obviously, never ignoring the external basis of acquaintances – means that knowledge is (the result of) an act of *thinking*, that makes explicit a something implicit given by intuition contemplating the world through senses.

At *psychological* level, we know how the psychological facts and processes have their roots in the physical world[29]: because, indeed, the psychological facts take place only when some physical conditions are met. At this level, by receiving information about physical objects, the psychological processes work and consciousness modifies: and "every modification of the consciousness is a cognisance"[30]. However, at this level, the cognisance is only a subjective reaction.

It is, obviously, *intertwined* with the *logical* level, but in order to understand them we have to analyse them separately. Only at the logical level can we grasp the effort of reason that "transposes the facts from the psychological domain to the logical one"[31]. Only at this level the facts are discriminated, classified, related, "measured", clarified.

At psychological level, knowledge is subjective, intuitive, individual; at logical level, knowledge is objective, universal and rational. At this level the "clear and distinct" knowledge, thought according to the principles of identity and contradiction[32], is constituted.

The interdependence (intertwining) of the psychological and logical levels takes place through the "logical" *condition* of the transformation of subjective knowledge into a rational one: this condition is expressivity, language. The subjective knowledge is felt (and intuited); the rational one is expressed. But, involving the language, Mihai Uţă has once more underlined the distinction between the classical and modern scientific rationalism: if the former has derived the "clear and distinct" knowledge from logic, the latter shows that knowledge *is* not objective, universal and rational, but only *becomes* objective, universal and rational through *social* relations. The objectivity, universality and rationality of knowledge are a "sociological exigency"[33].

[27] Ibidem.
[28] Ibidem.
[29] P. 219.
[30] P. 220.
[31] P. 221.
[32] Mihai Uţă has mentioned only the principles of identity and contradiction. As we know, the "post-modern" science and epistemology have much discussed the principle of excluded middle / the third excluded principle: the present tendency is to transform it into the third included principle. However, at the logical level of thinking, even the third included principle supposes the third excluded principle, it is a limit case of this one.
[33] Mihai Uţă, *Criza teoriei cunoaşterii*, p. 222.

Constructivism means that the *social* reasons transform the logical patterns of thinking into objective and universal means of inter-subjective understanding. The psychological data are only instantaneous *images* of things – because between them there is no a direct relation – confusing, subjective, indefinable and inexpressible. Not they are expressing reality, but the *concepts* resulted through logical and, inherently, sociological confrontations: "abstract unities in a concrete multiplicity"[34].

4.4. Mihai Uţă's modern holistic constructivism

The tone of the author is dry and precise, because he offers critiques and arguments to those who reduce knowledge to subjective images and intuitions, to those who reduces knowledge to logic, to those who despise science and its rigour, and to all of them since they ignore the social bounds and condition of both the psychical and the logical. Mihai Uţă's position was, thus, non-conformist and, unfortunately for him, uncomfortable. Actually, this position is non-conformist and uncomfortable for its bearers even today. However, just his holistic, integrative, evolutionist epistemology as well as his passionate support for science and rationalism, are making Mihai Uţă a more modern thinker than his age: a critique of extreme/reductive theories and a bold proponent of original solutions. His insistence on *causality* – instead of interpretation and subjective images – is very important nowadays when the scientific "fashion" is rather "how" than "why", rather "neutral" description than demonstrable conjectures, rather contempt towards truth than quest for it, rather value relativism than epistemological criteria, rather selected information within the paradigms of the day, and fear of "fake" information exterior to these paradigms, than daring to demonstrate all the way one's own theories: and when not causes and their intertwining are the ends of researchers, but rather information. His love for science is a good model against the old and present anti-scientism.

By being the critical supporter of rationalism and confidence in science, Mihai Uţă was an idealist of knowledge. He loved the specific criterion of knowing, *truth*, technically/epistemologically demonstrable and remaining, with the entire relative and historical character of acquaintances, the bearer of stability and firmness. Actually, just this criterion distinguishes the *scientific* outlook from theories infinitely turning around interpretations and giving interpretations.

5. French roots of modern constructivism and holism, but at the same time of pragmatism

By moving in an unembarrassed manner in the modern philosophy, Mihai Uţă has aimed at showing the constitution of pragmatic ideas in the "continental" non Anglo-Saxon thinking. His tableau suggested that the post-Kantian inherent constructivism developed in the atmosphere of 19th century spring of sciences has led to both an integrative view of the former extremist classical rationalism and empiricism, and to a spiritualist reaction challenging a coherent image about he human knowledge.

In order to reveal the post Cartesian and even post Auguste Comte epistemology, Mihai Uţă has chosen to analyse the *theory of knowledge* at Émile Boutroux, Henri Poincaré, Ernst Mach and Henri Bergson.

[34] P. 223.

5.1. Émile Boutroux

In a rapid overview, let us retain that Émile Boutroux (1845-1921), a *constructivist*, has insisted on both the complexity of the real – far richer than the scientific laws and their interdependence, because it lays under the sign of the possible, while the laws under the sign of the necessary – and the *contingent* character of scientific laws[35]. This character was deduced from the annulling of causality – as concept reflecting the necessary relations between things, observed by humans – and its reduction to finality.

The problem for many philosophers is that, though ontology is intertwining with epistemology, each of them has its own autonomy, this meaning the legitimacy of different standpoints or rather aspects of reality highlighted by the concepts used by them. Boutroux's reasoning was that the scientific laws are contingent because they give us a contingent Being (the Being being the finality of existence/possible and of laws), and thus they have no value when they claim to describing causal/necessary relations. But, said Mihai Uţă, this discussion around the "necessary existence, the deriving of Being from the possible" is vain, a "fictitious metaphysics, a simple quarrel of words, because, in order to assure for itself a solid basis, science has no need to demonstrate the necessity of existence in general. The domain of science is experience, and in experience the problem of the possible is put in a quite different manner. For experience, everything which is given is Being, a realised possible, because the pure possible does not exist"[36].

Actually, showed Mihai Uţă, in science the Being determines the possible, and not vice versa. The possible in science is the unforeseen, and the task of science is just to determine the possible.

But from the indisputable truth that reality is richer than that from the scientific laws – it is richer, I add, than our knowledge about it – Émile Boutroux has inferred that the laws, in their historical development, are not even able to describe/give precise and real facts. But if so, does this contingency not leave room for the same legitimacy of anti-scientific manners to express reality?

Therefore, constructivism as such can lead to both epistemological optimism, and pessimism. However, being aware of its relative character, and on the basis of demonstration of determinism, science/the scientific control of reality gives us the only firm and consistent reality we know. This one cannot be equated with religion.

Paradoxically, though Boutroux was the supporter of finalism, he considered that randomness and discontinuity is the source of existence. He certainly understood the novel character of life – towards the inorganic –, its discontinuity as organisation, creation and individualisation (and not as simple combination); he marvellously depicted, before Nicolai Hartmann, that the existence is formed by levels of reality/worlds when every one has its relative autonomy but when (a very actual idea in biology) the superior ones can even influence the inferior ones; but did he not arrive to this entire understanding just with the help of the scientific acquaintances capable to show regularities and cause-effect relations?

Opposite to Boutroux who opposed causality and finality and for whom finality, and not causality, was the main and original explaining principle of the above-mentioned autonomy (and of causality), Mihai Uţă considered that causality and finality are not contradictory and the latter is a derivative of the former[37].

[35] Mihai Uţă has analysed Boutroux's *De la Contingence des Lois de la Nature* (1874) and *De l'Idée de Loi Naturelle dans la Science et la Philosophie Contemporaines* (1895).
[36] Mihai Uţă, *Criza teoriei cunoaşterii*, p. 50.
[37] Idem, p. 76.

But before Boutroux, Comte – who discussed too the problem of causality (in fact, he substituted the notion *cause* with *law*) and finality and who considered in his doctrine that causality explains the *mechanism* of nature – has arrived, toward the end of his *Cours de philosophie positive* (1830-1842)[38], to a certain conciliation of the two, which, however, was not subordinated to the causal analysis of facts, but to a certain conciliation of science and religion.

Mihai Uţă reminds two other philosophers who played around causality and finality. Hippolyte Taine (1828-1893) – who was an active supporter of positivism and causal explanation of mechanism – sang the universal determinism and the historical and sociological approach of the human creation; Jules Lachelier (1832-1918) arrived to finalism and to "spiritualist realism".

In short, from Kant and constructivism (where the scientific laws are models), one might arrive either to a "probabilistic" view about reality since this one is given only through constructed images (and which science covers only partially), or to a constructed from above reality, including from a spiritual entity; either to an optimistic outlook about the gradual development of science, or to a pessimistic view where the determinism "disclosed" by science is weaker than the subjective impressions and intuitions. But these extremist viewpoints are important just in order to not repeat them, but to erect a scientific, integrated and consistent view about reality. The above extremes are just the "pragmatist" leaning of the constructivist philosophy. And though Mihai Uţă critiques this leaning from the point of view of scientific optimism and realism/modern rationalism, we have to be circumspect towards him, as towards the philosophers he analyses. Actually, from a phrase as "not the fact is transforming after the indications of theory, but theory corrects itself and adapts to facts"[39], we must not become partisans of either a spiritualist constructivism or a naïve objective realism, but simply to understand that in the former it is not about the real fact that transforms but about the fact as it is presented in theory, certainly transforming itself as the theory transforms; and that in the latter it's true that theory corrects itself etc., and it adapts to both facts from theories and real facts – since these ones are those which we aim at –: we must be careful about the meanings and universes of discourse we discuss.

5.2. Henri Poincaré

The well-known mathematician and theoretical physicist Henri Poincaré (1854-1912) inherently could be but a *conventionalist*: namely, that not only is science with its truths the result of the human reason (this is constructivism) but also that the scientific principles are conventions, valid in virtue of their "universal" acceptance because of their usefulness and convenience

By describing his theory, Mihai Uţă has shown that mathematics as such was the ground of his conventionalism, and that through this theory, with all its elements, he approached to pragmatism[40].

Émile Boutroux has pointed the elements through the instrumentality of which this philosophy was modern, in accord with the level of sciences and even preceding the existing level of philosophy. These elements were[41]: the focus on *language* as carrier of conventions and system of signs and rules according to both the (constructed) object of science and the subject, and the appropriateness of language, carefully prepared by scientists. The concepts/instruments of language used by mathematics were the mathematical reasoning, mathematical size, space and force.

[38] And: only toward the end, and only because of some personal concussions. Because in his famous theory of the three states, he considered that the theological state of humanity is the primitive one, while the positive/scientific is the last.
[39] Mihai Uţă, *Criza teoriei cunoaşterii*, p. 87.
[40] Idem, pp. 131-133.
[41] Émile Boutroux, *Nouvelles études d'histoire de la philosophie, Paris*, Alcan, 1927, p. 47.

But Mihai Uţă has highlighted these concepts – actually, more[42] – in a more ordered way. First, they are *hypotheses* – and not mathematical objects: neither innate and timeless, nor empirically generated in our consciousness by the external world – constructed in the way they are because they are *efficient*. They are certainly specific languages, chosen in virtue of their convenience and covering concepts as conventions which are "disguised definitions". As a result, they are neither true, nor false. They are not first principles from which mathematics derives logical consequences. They are only instruments of the two mathematical operations: that to establish a particular proposition starting from a general one and that to establish a general proposition starting from a particular one. In fact, mathematics integrates these operations.

Concretely, the genuine mathematical demonstration is prolific, because its conclusion is richer than its premises, while the mathematical verification is sterile, because its conclusion translates its premises in a different language (through syllogism). The mathematical demonstration is creative, because it arrives at general conclusions starting from particular cases. This demonstration is inductive, called by Poincaré reasoning through recurrence: after a finite number of cases, the conclusion is general, for an infinite number of cases.

Ultimately, experience is the source of acquaintances, but it alone does not give the science. Science transforms experience into scientific cognisance through generalisation. We arrive at the reasoning through recurrence and a generalisation by a specific "flair" we have, by *intuition*. We do not only reason, first we make *analogies*: because we have the intuition they can be made.

Intuition, called in mathematics by Poincaré, *mathematical spirit*, is that which grasps the fundamental element in two different theories or sizes, fundamental element that allows their comparing and generalisation. Intuition is that which supposes that the world is simple or simplifiable through intellectual operations, and that the world is unitary allowing generalisation: and, finally, that through all these operations science is possible[43], leading to harmony[44] and evolution, perfecting of science.

Intuition has played a bivalent role in science (mathematics). Some ones said that it would be the sign of the fact that mathematics would describe sensible representations of objects (for this reason, for example, the non-Euclidian geometry would not be valid, because it is not intuitive). Poincaré has shown that the logically conceivable theoretical representations involve intuition/imagination too – an intuition as above-explained, remaining in the field of non-sensible abstractions – and that in this sense, "the forms", the mathematical relations evolve, develop, change in a perfect legitimate way.

Science means focuses on and developments of new aspects. In this process, the only (relative) invariability is that of the scientific laws in the world we discuss about/our world.

Therefore: constructivism, evolutionism, laws, mathematics. The pragmatic view of (not only) Poincaré was the inherent development of epistemology against the commonsensical empiricism of the proof given by experience and the old rationalism where the proof was intrinsic. His conventionalism implies, however, a danger: "from conventions we may arrive at the arbitrary character of science"[45]. Nevertheless, Poincaré has criticised the Bergson type pragmatism that was opposed to facts and laws. The mathematician showed that only the language we express a fact is conventional, the fact as such being always an ascertainment, and the scientific fact being only a translation of the brute fact. In their turn, the laws are approximate and hypothetical, they evolve

[42] Measure, representative and geometrical space, number, (physical) continuum, mathematical continuum, number, mathematical spirit, intuition.
[43] Henri Poincaré, *La Science et l'Hypothèse* (1902), *La Valeur de la Science* (1905)
[44] Émile Boutroux, *Nouvelles études d'histoire de la philosophie*, pp. 69-70.
[45] Mihai Uţă, *Criza teoriei cunoaşterii*, p.120.

and have an increasing degree of probability. However, from this, pragmatism (see Boutroux) has arrived at the contingency of the laws of nature. Poincaré said that, on the contrary, determinism is the consequence of probability, and that only determinism – a belief – allows generalisation.

In other words, in Poincaré there were pragmatic features, but at the same time a tendency to preserve – with pragmatic arguments, however – realism. The objectivity of science is, thus, the result of universal communication and agreement, social facts *par excellence.*

5. 3. Ernst Mach

The Austrian physicist and philosopher Ernst Mach (1838-1916) was a different example of pragmatic excesses, than the former ones who illustrated these excesses starting from an intellectualist view, while Mach was the representative of an excessive empiricist or even biologist standpoint. The former thinkers have arrived – not as excesses, but as pragmatic turn – at *constructivism* and *conventionalism* from the analysis of sciences and their elements; Mach has arrived to the same conclusions from his ultimate explaining factors of the world, the sensations.

Obviously, Mach's position proved *reductionism*. His theory of knowledge was, as Mihai Uţă said, an "application" of biology and biological evolutionism[46]. While the former thinkers have arrived to and legitimised finalism by emphasising the formative role of the superior levels of reality over the inferior ones, Mach has reduced the peculiarity of superior levels to the inferior one[47].

Certainly, one cannot ignore that the empiricist viewpoint – of Herbert Spencer (1820-1903), reminded by Mihai Uţă[48] as a precursor of Mach – has founded the evolutionist approach of knowledge. The sensible experience – and ancestral, in its compacting within the collective memory of humankind – as basis of knowledge has played the same role as Kant's *a priori* intuitions; as the experience has led Kant to the transcendental view, it led Spencer and Mach to evolutionism[49].

The sensible experience is, for Mach, the basis of knowledge, because it shows that the perceptions of the world are reduced to a *complex of sensations*. This complex is always changing, and in order to fix the stable, humans gave names to some complexes/aspects.

The names designate ideas which are only our imagination that the names/the stable would generate our sensations, instead of being only their results. Consequently, the external world as such, or as things – in the vulgar thinking – is/are imaginations; and Kant's thing-in-itself (the real complex and never fully understood thing/world) would be only a continuation of the vulgar thinking[50].

Thus, the notions are "heuristic fictions"[51], including the self: the phenomenon – in its Greek/Kantian meaning) is more real than the thing. The sensations are "functional relations" seen from outside as bodies. Not the bodies challenge new sensations, but these ones arrange themselves in complexes, forming the bodies.

For this reason, there is any difference between the physical and the psychical. In fact, our image about the world reflects/corresponds to our sense organs which have formed so as to adapt to

[46] Idem, p. 134.
[47] A.B.: as Spencer did, opposite to Darwin.
[48] Mihai Uţă was a rare promoter – actually, he was a pioneer – of comparative analysis of philosophy and science (at least, in Romania). His entire tackling of the problem of crisis of knowledge trough comparing and critiquing very recent, for him, thinkers, was an example of not partisanship, but rather of lucidity.
[49] Mihai Uţă, *Criza teoriei cunoaşterii*, p. 136.
[50] Ernst Mach, *Erkenntnis und Irrtum*, Vorwort, Leipzig, 1906, p. 10, quoted by Mihai Uţă, p. 137 [*Knowledge and error*].
[51] A.B., as in Hans Vaihinger, *Die Philosophie des Als Ob* (1911) (*The philosophy of 'as if'*).

the conditions of life. "If you will modify the eyes of humans, you will modify even their Weltanschauung"[52].

Science is the development of vulgar thinking: this one has practical ends, while science has developed toward the creation of its own intellectual ends; it is not only an adaptation of ideas to facts – as in the vulgar thinking – but also, and especially, a mutual suitability of ideas. This adaptation of ideas between themselves is the basis of scientific intelligibility, systematisation and foresight.

Consequently, the concepts developed by science are different from the concepts created by the vulgar thinking. Thus, the *physiological* space is the frame where our perceptions are lain, while the *geometrical* space is that where we perceive and reason on bodies; the later space is the result of abstracting, generalisation and idealisation, and is a *convention* – as in Poincaré – without any connections with the sensible experience; or the *psychological* – perceived – time, different from the *mathematical* – measured, conventional – time.

Since the human experience is a system of biological reactions, its representation is their ideal sketch, realised through selection and having material signs in order to be useful/economic for us. Hence, the representations are individual and ultimately biological, while the concepts and scientific laws are social products of the collective consciousness, made with the help of the discursive thinking, the only one allowing the above-mentioned abstracting, generalisation and idealisation.

Science focuses on some important aspects – not on details – and their interdependence. In order to analyse them, science makes *thought experiments* – different from the *sensible experience* of the vulgar level – and arriving to hypotheses which are mental completing of that which cannot be established through the immediate observation. The hypothesis is made through analogies, beyond those possible in the direct experience, but abstract and resulting from *induction*.

Only from induction, though this one is *complete* – with all the elements of the compared groups existing in each of them – or *incomplete*: because Mach adopts J.S. Mill's opinion (also referred to by Goblot) that deduction does not give anything new[53].

As a result, science only translates some representations in concepts, the criteria of the appraisal of representation, concepts and laws have nothing to do with truth or error, because they are only different languages, used in virtue of their efficiency and convenience. The scientific ideas correct themselves, "adapt" in order to annul the contradictions between them in the system they belong to.

Since sensations are always changing, what is stable and what science searches is the r*elations* between them. Between these relations, some ones are stable, as the relations of time, space and causality, but science tend to depart from the vulgar representations of time, space and cause, and measure them – and some times substituting causality with functions – emphasising the universal determinism and the particular correspondence of phenomena to laws (*légalité*). Anyway, the idea of causality is an abstraction, a convention, science applies and emphasises in order to make the world simpler, or the expression of knowledge simpler (in actual words, more elegant), more ordered, more systematised, more economical.

Therefore, with many important ideas helping the development of sciences in the 20th century[54], Mach was – inherently – limited to think that "in all the intellectual operations, the

[52] Ernst Mach, *Populär-wissenschaftliche Vorlesungen*, Leipzig, 1897, p. 93, quoted by Mihai Uţă, p. 142 [*Popular scientific lectures*].
[53] Mihai Uţă, *Criza teoriei cunoaşterii*, p.156, made this comparison; see J. S. Mill, *A System of Logic* Ratiocinative And Inductive (1843), Book II, Chapter 3, § 2; § 8, note.

scientist can produce nothing in a necessary way. All the rational constructions are only conjectures made by us in order to better organise our biological needs"[55]. In fact, Mach confounds the problem of the value of truth with the ways one arrive to it. For this reason, truth has no value. Empiricism can lead to excesses, as rationalism may do.

Henri Bergson (1859-1941)

Because Henri Bergson will be analysed in a special work, here is worth to mention that Mihai Uţă has emphasised that the French philosopher has opposed science from the standpoint of *metaphysics*, and the concepts made by the human intelligence from the viewpoint of *life* and *intuition*. For Bergson, the new philosophy (metaphysics) must unite science and metaphysics[56], but not by deriving from the former (the scientific experience) its meanings, but by being itself an immediate and living experience, "an integral" one.

At least today we know that we must refuse the simplistic positivist view – as, once more, it was depicted by its critiques, rather than by its supporters – but Bergson did not opposed to a simplistic positivism, but to science as such. "For Bergson, to know" – said Mihai Uţă – "is to feel, not to think, to contemplate the thing in itself, and not to conceive it in its relations with the other ones". For Bergson, science is not true, but only useful, the only true knowledge is the philosophical one. But "metaphysics as science of the absolute is only romanticism, a philosophy of the unknowable. We may say that Auguste Comte is right against Bergson. In relation with the modern rationalism, Bergson is twofold guilty: when he transforms the theory of knowledge into a branch of biology, and when he transforms philosophy in a science of the unknowable"[57].

6. Instead of conclusions

Therefore, the analysis of the above thinkers – working in both a post-Kantian epoch when knowledge became ordinarily conceived of as a construction of reason and not as a copy of the reality which would have given the truth of acquaintances, and in an epoch of fulminating development of sciences – was made by Mihai Uţă in order to not transform science into an arbitrary endeavour; but to preserve it as the proof of the real determinism. The enemy of this intention and belief was "pragmatism", the ideology of ever relativistic and subjective character of science.

Mihai Uţă proved to be very modern when analysing the contemporary science (especially in the parts dedicated to Poincaré and Mach), perhaps more competent than many mainstream Romanian philosophers of time.

His topic was difficult and he realised his task in a brilliant and genuine manner. His support for positivism was constructed not in a dogmatic manner, he criticised and surpassed the time and philosophy of Auguste Comte: he was the partisan of the modern science (we must not forget, Einstein type science) and he thought that philosophy must discuss the really new and not yet

[54] See "The universe is as a machine where the movement of some parts is determined by the movement of other par, but where the movement of the machine as a whole is determined by anything, Ernst Mach, *Die Geschichte und die Wurzel des Satzes von der Erhaltung der Arbeit* (1871), p. 36, quoted by Mihai Uţă, Criza teoriei cunoașterii, p. 172 [The history and root of the sentence of the conservation of work].
[55] Mihai Uţă, *Criza teoriei cunoaşterii*, p.156.
[56] Henri Bergson, Essai sur les données immédiates de la conscience (1888).
[57] Mihai Uţă, *Criza teoriei cunoaşterii*, p. 212.

solved problems posed by this science, and not to oppose them a nostalgic dream of metaphysics as the first and ultimate solution.

Holism and the relative character of knowledge is not lack of criteria; truth is a criterion – relative, historical – and we must use it, critically, rationally *all the way*. Holism means just to take into account the plural truth of parts and the whole. To focus on groups – if we borrow mathematics' definition – or to focus intentionally as every act of consciousness and knowing (this meaning the bracketing of the exterior to intention) does not mean the ignorance of the whole.

For Mihai Uţă, the *possible* (an "evil genius"[58]) must not be the adverse of the *criteria* of truth: the possible is only a fountain of problems and solutions, not the substitute of truth, nor of the scientific criteria. The fact that the unknown is huger than the known does not substitute the rationalist criteria of analysis. On the contrary, this rationalist analysis and these rationalist criteria must be developed *all the way*.

Mihai Uţă has described clearly the logic of the evolution of the modern epistemological propositions. And in these many pages, this logic is cogent (inherent) in the evolution of thinking. In fact, just this logic has led to the crisis of the theory of knowledge. The crisis of the theory of knowledge does not consist in the simple appearance of many correct and novel ideas as the pragmatic tendency brought them, but in the fact that these ideas could be seen in a dogmatic manner – yes, the dogmatism of the newest theories/novelty does not defend from dogmatism – as absolute, absolutely opposed to the obvious determinism in the scientific research. The crisis consists in the interpretation of the scientific knowledge as equivalent and even subordinated to religion. The crisis consists in the transformation of the assumed relative character of science in a decree of the lack of importance of the scientific demarche and of truth. The crisis consists in the questioning of the rational following of the logic of causes for arriving to truth. The crisis consists in the consideration of non-rationalist manners of tackling reality as the only legitimate means to resist.

Just this irrational perspective has led to the accepting, by intellectuals, of solutions with tragic results. If the value of truth-good-beautiful is not universal – and history proved that it is not – intellectuals might interpret and assume any solutions for humans: and the *anti* truth-good-beautiful was and is more than possible, probable.

In a fine and even timid manner, Mihai Uţă has warned this from the perspective of the enlightenment rationalism and science promoting evolution and pluralism under the sign of truth-good-beautiful.

Therefore, the epistemological discussion and criticism is not a dry and far away from life occupation.

[58] Idem, p.133.