

## HINTS TOWARD COSMOLOGY: THE NEED FOR COSMOLOGY IN PEIRCE'S PHILOSOPHY

### SUGERENCIAS EN TORNO A LA COSMOLOGÍA: LA NECESIDAD DE LA COSMOLOGÍA EN LA FILOSOFÍA DE PEIRCE

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*Resumen:* El objetivo del presente artículo es hacer patente la necesidad de una cosmología en el pensamiento de Peirce. Para alcanzar dicho objetivo me propongo clarificar en primer lugar la definición de cosmología de Peirce y su lugar en la clasificación de las ciencias. Luego me propongo arrojar luz sobre la implicación de la cosmología en la concepción de la metafísica y de la lógica de Peirce, y elucidar estas conexiones a la vista de su "Synechism". Finalmente, a partir de los resultados obtenidos, intento aportar una descripción sumaria de la cosmología de Peirce, distinta de su interpretación habitual.

*Palabras clave:* cosmología, cosmogonía, universo, metafísica, lógica, sinejismo, categorías.

*Abstract:* The aim of the present paper is to show the need for cosmology in Peirce's thought. To reach this goal, I first clarify Peirce's definition of cosmology and its place in the classification of the sciences. Then, I shed slight on the entailment of cosmology in Peirce's understanding of metaphysics and of logic, and I elucidate these connections in view of

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Synechism. Finally, in the light of the results achieved through the analysis, I provide a summarily description of Peirce's cosmology, far from the common interpretation of it.

*Keywords:* cosmology, cosmogony, universe, metaphysics, logic, synchism, categories.

## §1. INTRODUCTION

From the 50ies onwards, many have tackled Peirce's cosmology (*Cfr.* especially Gallie (1952), Turley (1977), Esposito (1980), Hausman (1993), Reynolds (2002))<sup>1</sup>, every time wrestling with this so-called “black sheep” or “white elephant” (Gallie, 1952: 216) of Peirce's thought. There are at least three reasons why this epithet of “black sheep” has been attributed to Peirce's cosmology: first of all it is due to the constitutive complexity of Peirce's cosmological thought – the latter being usually identified with Peirce's writings from 1883/84 to 1898–, second for the lack of consistency with the rest of Peirce's writings, and third because such a deep metaphysical and speculative thought does not easily go with “the positivistic temper of philosophy throughout the first half of the twentieth century” (Reynolds, 2002: 1). Indeed, in accordance with this philosophical tendency, in the past century Peirce's cosmology has been often set aside by his scholarship, in favor of logic and semiotics. For these reasons, Hookway wrote in 1985 that “Peirce's cosmology has not received any fully adequate treatment in the secondary literature” (Hookway, 1985: 291, fn), in like manner Andrew Reynolds expressed the same opinion in 2002 (Reynolds, 2002: 1), and we can reaffirm it also today.<sup>2</sup>

Moreover, in line with Gallie and the “anti-cosmological/speculative” trend, recently has been even pointed out that Peirce did not have any proper cosmolo-

<sup>1</sup> But also Goudge (1950), Murphey (1961), Sini (1981), Hookway (1985), Fabbrichesi (1986), Apel (1987), Corrington (1993), Sheriff (1994), Rosenthal (1994), Anderson (1995), Parker (1998), Ventimiglia (2008), Short (2010a), Short (2010b), Dilworth (2011), Guardiano (2011).

<sup>2</sup> Although Reynolds's book did provide an analysis of Peirce's cosmological writings deeper than the previous ones, I do not fully agree with his view of cosmology as Peirce's “scientific metaphysics,” because the meaning and the concept itself of “scientific metaphysics” is highly problematic, as it has been illustrated by Nubiola (2014).



gy. Indeed, in 2010 Thomas Short maintained that Peirce did not have any cosmology at all, but only a “*program* of cosmological inquiry” (Short, 2010: 522) [italics mine], consisting in explaining “the laws of nature as having evolved from chaos” (Short, 2010: 521). A program that, according to Short, was in any case intended to fail. I do not want to discuss in detail Short’s arguments; what I want to put into question here is the assumption entailed in this radical thesis, one that stands also apart from his arguments. The assumption I am referring to is what cosmology is. Can we assume that Peirce’s cosmology corresponds to an explanation of “the laws of nature as having evolved from chaos?” Although this definition of Peirce’s cosmology is often given for granted, it is appropriate to make us sure of its adequacy, in order to reach a full and accurate understanding of Peirce’s cosmological thought. In other words, in order to understand whether or not Peirce really had a cosmology, to explain it and to evaluate its consistency, we should first of all understand what cosmology means according to Peirce.

Accordingly, the first hint toward Peirce’s cosmology will be an appropriate definition of cosmology, and to this aim the first part of the paper is devoted. More specifically, the definition of cosmology will represent the *first* hint toward cosmology because, as the author says, “without a definition of course all the reasoning [...] is fallacious” (Cfr. *MS* 178 D, 1884)<sup>3</sup>. Furthermore, I do not want to reach a general definition of cosmology, one either commonly used today or at Peirce’s time, but I will refer to Peirce’s own definition. In fact, among the numerous entries of the *Century Dictionary* that Peirce wrote between 1883 and 1909, also ‘cosmology’ was under his responsibility. Only carrying out the analysis of Peirce’s definition of cosmology and its place within Peirce’s numerous classifications of the sciences, we will be able to understand what cosmology means according to Peirce, and whether his cosmological thought is limited to the essays he wrote between 1883/4 and 1898, namely from the lecture “Design and Chance” (1884) to the lecture series “Reasoning and the Logic of Things” (1898).

<sup>3</sup> “*MS*” stands for “manuscript”. Indeed, Peirce’s manuscripts, with over 100.000 unpublished pages, form a vast bibliographic resource. They are numbered according to the catalogue provided by Richard Robin.



## §2. COSMOLOGY: ITS DEFINITION AND PLACE WITHIN THE CLASSIFICATION OF THE SCIENCES

On pages 1288-89 of the *Century Dictionary* we can read the definition as follows:

Cosmology [...] 1. The general science or theory of the cosmos or material universe, of its parts, elements, and laws; the general discussion and coordination of the results of special sciences. [...] 2. That branch of metaphysics which is concerned with the a priori discussion of the ultimate philosophical problems relating to the world as it exists in time and space, and to the order of nature. (Whitney, 1889-1891: 1288-89)

From this we see that according to Peirce cosmology is to be understood, on the one hand, as the “general science of the cosmos or material universe,” which coordinates the results of special sciences; on the other hand, more specifically, Peirce defines cosmology as the branch of metaphysics which addresses ultimate philosophical problems “relating to the world as it exists in space and time, and to the order of nature.”

In addition, a few lines below this definition, Peirce emphasizes a difference that is very useful for the present concern. He distinguishes *cosmogony* from *cosmology* in this way: “*Cosmogony* treats of the way in which the world or the universe came to be; *cosmology*, of its general theory, of its structure and parts, as it is found existing” (Whitney, 1889-1891: 1289). In this sense, cosmology consists of the general theory and structure of the universe, and cosmogony is only a part of this, and not equivalent to cosmology; as is also confirmed by the Greek etymology of the words (“cosmology:” κόσμος+λογία, meaning the treatise of the world, and “cosmogony:” κόσμος+γόνος, meaning the creation or origin of the world). Acknowledging this difference prevents us from confusing cosmogony with cosmology, and helps us avoid reducing cosmology to cosmogony. Indeed, if apply this differentiation to Peirce’s work, we should notice that he employs both terms, and that their distinction makes his general, philosophical aims clearer. For instance, in “The Architecture of Theories” the author speaks



of his work as a “Cosmogonic Philosophy” (Peirce, 2010: 110)<sup>4</sup>, and presents cosmogony as a feasible path for reaching a cosmology. In other words, he aims at achieving an account of the universe’s structure and parts by sketching out the universe’s coming to be. Moreover, with regard to this cosmogonic program, he adds: “that idea has been worked out by me with elaboration. *It accounts for the main features of the universe as we know it*” (Peirce, 1891, *W*8.110) [italics mine].

Accordingly, at least until 1891, Peirce had as his goal to build a *cosmology* (that is, to account for the main features of the universe) by formulating a *cosmogony* (that is, by studying how the universe came to be), as he also confirmed in a letter to Christine Ladd-Franklin in August 1891 (Peirce, *CP* 8.317-18). And how about Peirce’s mature thought? Is there any evidence of a cosmological thought in the later writings? Before analyzing this aspect of Peirce’s philosophy, it is remarkable to note that it is now clearer, by means of this distinction between cosmology and cosmogony, that the achievement of a successful cosmology does not merely consist in an explanation of how the world came to be, but rather corresponds to an exhaustive answer to the question: “Which are the existing universe’s structure and parts?” Besides, the meaning of cosmology can be further clarified by touching on its place within the classification of sciences.

Peirce was one of the most prominent contributors in elaborating a classification of the sciences between 19th and 20th centuries. Between 1889 and 1903, numerous versions of classifications can be found in his writings, with slightly different characteristics. In all of them cosmology belongs to metaphysics: it is a branch of metaphysics. More specifically, referring to “An Outline Classification of the Sciences” (Peirce, 1998: 258-262, 1903)<sup>5</sup>, cosmology does not appear as one of the principal branch of metaphysics, but can be considered under the branch “physical metaphysics.” In classifying metaphysics, the author says:

Metaphysics may be divided into, i, General Metaphysics, or Ontology; ii, Psychological, or Religious, Metaphysics, concerned chiefly with the questions of 1, God,

<sup>4</sup> I refer to the eight volume of the *Writings of Charles S. Peirce: A Chronological Edition*, from now referred to as *W*, followed by page number.

<sup>5</sup> This is the second volume of *The Essential Peirce: Selected Philosophical Writings*. From now on referred to as *EP* 1 or 2, followed by page number.



2, Freedom, 3, Immortality; and iii, Physical Metaphysics, which discusses the real nature of time, space, laws of nature, matter, etc. (Peirce, *EP* 2.260)<sup>6</sup>

From this presentation, cosmology should pertain to “physical metaphysics,” the latter being defined as that branch of metaphysics “which discusses the real nature of time, space, laws of nature, etc.” Effectively, the following year, in “Reason’s Conscience,” Peirce distinguishes three special branches within *Physical Metaphysics*, and they are indicated as 1) Cosmology, 2) The Doctrine of Time and Space, 3) The Doctrine of Matter (Peirce, 1976: 189). So, cosmology is described as a branch of physical metaphysics, or –better yet– of “mathematical metaphysics,” as he specifies in 1898, because it is grounded in “minute diagrammatic reasoning” (Peirce, 1992: 267).<sup>7</sup> But what is its specific subject, being it distinct from the doctrine of time and space, and from the doctrine of matter? If we consider the entry of the dictionary along with this latter classification, we will say that cosmology aims to discover and account for the general structure and laws of the universe, and expresses them with the degree of generality required by all metaphysics. Accordingly, cosmology is still a branch of metaphysics, on which also the doctrine of time, space and matter depend, and not of general physics.

Thus, the first hints toward Peirce’s cosmology are already present in his definition of cosmology and the place it occupies in the classifications of the sciences. On the one hand, according to Peirce, cosmology concerns “the general theory of the universe, its structure and parts, as it is found existing,” as it is manifest considering its difference from cosmogony. As a consequence, this also means that we are at least legitimated to seek other traces of Peirce’s cosmological thought beyond his *cosmogonic* period, that is later than 1898. On the other hand, the fact cosmology appears in Peirce’s classifications of the sciences testifies not only to the relevance it had for Peirce, but especially the *speculative* nature of cosmology in his view. In fact, cosmology is not a part of general physics, but pertains to metaphysics, to the branch of “physical metaphysics,” that has the same generality of a metaphysical investigation, and has the universe its proper subject of investigation.

<sup>6</sup> Common abbreviation for Peirce (1931-35, 1958).

<sup>7</sup> From now on referred to as *RLT*, which stands for *Reasoning and the Logic of Things: The Cambridge Conferences Lectures* of 1898.



Nonetheless, to what extent is cosmology relevant in Peirce's thought, besides the formal place it occupies in the classifications of the sciences? Given that cosmology is under the label of metaphysics, in the next part I will examine closer the relation between metaphysics and cosmology, according to Peirce.

### §3. PEIRCE'S PRAGMATICISTIC METAPHYSICS: THE IMPORTANCE OF COSMOLOGY

Peirce does not only provide a definition and a classification of cosmology in his writings. According to him cosmology plays a pivotal role in his conception of pragmatism. This is partly due to the fact that cosmology is probably the branch to which he was committed the most. In 1898 the author asserted that he came to the study of philosophy "not for its teaching about God, Freedom, and Immortality, but intensely curious about Cosmology and Psychology" (Peirce, 1898, *CP* 4.2). Moreover, Peirce himself admitted that was the weakest in psychology, and more at home in Cosmology (Peirce, 1898, *RLT* 268).

Anyway, over and above these elements, for him cosmology represents the line of demarcation between a 'bad' metaphysics and a 'good' one. Peirce asserts this in "What Pragmatism Is," an essay written in 1905: "instead of merely jeering at metaphysics, like other prope-positivists, whether by long drawn-out parodies or otherwise, the pragmaticist extracts from it a precious essence, which will serve to give life and light to cosmology and physics" (Peirce, *EP* 2.339). And this emphasis upon cosmology is to be read not only as the difference between a good metaphysics and a bad one, but also as one of the main characteristic features of Peirce's philosophy, compared with the other pragmatists. Indeed, it is remarkable that also Alfred North Whitehead, one of the very few who dared to build a cosmology in the 20th century, whose philosophy have impressive similarities with Peirce's one,<sup>8</sup> makes the same point by distinguishing his philosophy from

<sup>8</sup> To get an idea of the similarity between Peirce's and Whitehead's thoughts, it is sufficient to consider some quotations by people who work with them or was coeval to them. The first quote I report is about a brief episode recalled by Charles Hartshorne, who was collecting Peirce's papers while was Whitehead's assistant at Harvard. He states: "Whitehead came up once at my request and I showed him an essay which had some rather abstruse things to say about geometry. I knew that Whitehead was a geometrician. Whitehead read it and said that it was interesting, but that some of it was too technical and, he thought, ought to be cut. So we did omit some passages. Whitehead read several



James and Schiller's thoughts, that is from pragmatism as he knew it. As Charles Morris recalls: "I would like to record two points Whitehead made in a conversation with me in October 1933. The first was that he thought his philosophy embodied all the main insights of pragmatism. The second was his belief that the pragmatic movement could be greatly strengthened if it explicitly developed a cosmology. His opinion was that his own cosmology seemed to be the sort of thing that was needed" (Morris, 1970: 138-9, fn 25). Thus, though Whitehead ignored it, Peirce already did what he wanted to do.

In this way, cosmology has to be considered as a distinctive feature of Peirce's pragmaticist metaphysics. However, at times, the difference between metaphysics and cosmology can vanish away. On the one hand, the higher degree of generality that belongs to cosmology, and its distinction from a doctrine of time, space, and matter, makes it fade into metaphysics (conceived as general ontology); on the other, Peirce often defines and describes metaphysics (and sometimes philosophy itself) in a way very similar to his descriptions of cosmology. For instance, he asserts that philosophy "seeks to explain the universe at large" (Peirce, 1890, W 8.19), or that metaphysics "has to account for the whole universe of being" (Peirce, 1898, CP 6.214).

In reflecting on to these statements, one could read them as very general definitions of metaphysics, and then construe cosmology as the branch of metaphysics

pages in which Peirce sounded rather like Whitehead talking for instance about the 'irrevocable past' and the 'indeterminate future,' and Whitehead said to me, 'I hope you will testify that this is the first time I have seen this.' When I told him that I could find some of his characteristic ideas in Peirce he said, 'Then I say he's a great man. I'm bound to'" (Lieb, & Hartshorne, 1970: 153). The second one is a statement of Henry S. Leonard, written when Whitehead was still alive: "One cannot close [his review of Peirce's Collected Papers] without remarking on the vast number of startling similarities that are to be found when one compares the work of Peirce with that of Whitehead. Certain differences of style and of method are outstanding. But the number of the common doctrines, both general and special, is beyond what might be expected. Both thinkers break into new paths of thought, but it largely seems like the common exploration of one new path" (Leonard, 1937: 121). On the whole, their philosophies have many tenets in common. Apart from the connections between philosophy and mathematics, generally speaking the common tenets are: 1. The rational structure of the universe, 2. Realism, 3. Speculative Reason, 4. The concept of Relation, 5. The creativity of Mind and cosmos. For a detailed analysis of some of these resemblances (and differences), see especially Reese (1952), Stearns (1952), Kultgen (1960), Lowe (1964), Platt (1968), Nubiola (2008), Rodriguez (2011), Bradley (2012), Brioschi (2015), Henning (2015). [See also Nubiola's paper in this same issue. Note of the editors].





ics that is committed only to the physical account of the universe, but even this interpretation would be inconsistent with Peirce's philosophy. In fact, according to Peirce, cosmology "deeply concerns both physicist and psychist" (Peirce, 1898, *RLT* 267). This assertion, which at first glance seems contradictory and confusing, reflects neither inconsistency, nor hesitancy in Peirce's thought. Rather, it discloses his profound conception of cosmology and his non-reductive understanding of the physical universe. To understand this, it is necessary to consider that Peirce's cosmology is grounded upon two assumptions: one methodological, and the other theoretical. From a methodological perspective, to reach a successful formulation of the very general laws of the universe, his cosmological thought primarily needs to provide a general explanation of them, and of the general fact of law. But what does it mean to provide an explanation of law? According to Peirce: "Law [...] requires to be explained, and like everything which is to be explained must be explained by something else" (Peirce, *CP* 6.613). Therefore cosmology, in order to explain law in general, brings to light the relation of law with something that comes before it, by means of which only we can give reason to law. But the priority of this 'something else' that explains law, is not to be conceived in a chronological sense. It stands instead for a logical pre-eminence. It is this logical pre-eminence that is assumed as a method for every kind of explanation, and metaphysical inquiry. Peirce goes so far as to say that "evolution is the postulate of logic, itself; for what is an *explanation* but the adoption of a simpler supposition to account for a complex state of things" (Peirce, 1883-1884, *W* 4.547). As a consequence, to build a cosmology means to find and explain the general laws of nature by referring them to preexistent elements that are simpler and more general than law. In other words, cosmology, or physical metaphysics, does not consist in mere observation, consideration and organization of physical laws: all that would not be enough to account for law themselves. This is the reason why, for instance, at the basis of Peirce's *cosmological* thought we find as central the triad 'Mind, Matter and Evolution' (Peirce, 1891, *W*8. 110). This triad indicates the essential factors needed to explain the formation of laws. It also leads us toward Peirce's second basic assumption, the theoretical one, concerning the meaning of the physical universe. Indeed, actually what does he actually mean by physical universe? How is it characterized?

First of all, according to the author the "primordial element of the universe" is "the principle of growth" (Peirce, 1892, *W*8.155), which represents, together with



the variety of the universe, with law (which on its turn requires to be explained) and feeling, the evidence for believing in the existence of real chance (Peirce, *CP* 6.613). Accordingly, his interpretation of the universe is diametrically opposed to any necessitarianist or materialistic one, because the principle of growth stands above mechanical laws (Peirce, 1892, *W* 8.155; Peirce, 1890, *W* 8.18). Roughly speaking, Peirce does not understand the universe as a realm of inert matter determined in mechanistic way. His conception of the physical universe is a universe where freedom and spontaneity find their places, and by attributing these characters to the *physical* universe, Peirce modifies the meaning that we usually attribute to it. This renewed concept of physical universe embraces also, in a sense, what we call 'the psychical,' not because the universe is understood as an undifferentiated matter, but because there is no more a substantial difference in the characters of its parts. As the author states in "Immortality in the Light of Synechism": "all phenomena are of one character, though some are more mental and spontaneous, other more material and regular" (Peirce, 1893, *EP* 2.2). Accordingly, Peirce's physical universe is not opposed to mind, as Descartes and the European rationalism assumed: the *physical* universe encompasses mind, feelings, etc.

As it is well known, this peculiarity of his thought is expressed by the doctrine of 'objective idealism,' which asserts: "matter is effete mind" (Peirce, 1890, *W* 8.106). In this way, we find here another hint toward cosmology, namely its intimate connection to metaphysics. Leaving aside a specific discussion on objective idealism, which is far beyond the aims of the present article; from this, we can finally understand why the interconnection between cosmology and metaphysics is intricate, complex, and sometimes obscure. If cosmology tackles the metaphysical study of the physical universe, and if the physical universe is no longer Cartesian, then cosmology will develop into metaphysics, and the scope of metaphysics will tend to be the same as that of cosmology. But is this a vicious circle, or rather does it lead to a profounder understanding of Peirce's thought?

In order to give a clear answer to this question, it is necessary to briefly touch upon the relationship subsisting between cosmology and logic. In fact, taking it into account can offer us another precious hint toward a correct comprehension of Peirce's cosmology. More broadly, a brief analysis upon Peirce's concept of logic helps us gain further clarification in the matter of the connection between cosmology and pragmatism, and understand the need for cosmology in Peirce's thought.



## §4. COSMOLOGY AND LOGIC: VICIOUS OR VIRTUOUS CIRCLE?

The relationship between cosmology and logic shows some resemblances with the one just examined, even though the roles and places of metaphysics and logic are undoubtedly different. According to Peirce “the ideas of philosophy must be drawn from logic, as Kant draws his categories” (Peirce, 1890, *W* 8.17), and the same can be said for cosmology. In particular, he pinpoints that “Logic teaches that Chance, Law, and Continuity must be the great elements of the explanation of the universe” (Peirce, 1890, *W* 8.21). All the same, Peirce reveals that logic needs properly a cosmology, for the good of its own validity and efficacy. He states: “What sort of a conception we ought to have of the universe, how to think of the *ensemble* of things, is a fundamental problem in the theory of reasoning” (Peirce, 1978, *W* 3.307). We can see here a sort of double bind, the drawing of a circle that, again, is not necessarily vicious but can be virtuous: cosmology depends on logic and logic requires cosmology. How can it be? The question brings to the surface a problem that becomes even more compelling if we consider that Peirce comes so far as to say that “the process of nature and the process of thought are at one” (Peirce, 1890, *W* 8.17) or –better yet– that “the process of nature and the process of reason are one” (Peirce, *CP* 6.581). Again, as in the case of metaphysics, we find here a peculiar commixture and inter-dependence between logic and cosmology, insomuch as Peirce identifies the two processes (of nature and reason).

Thus, even more so, after these precise and keen statements, it seems to be too hard to sustain that Peirce was either just partially interested in cosmology, or merely confused about its relationship with metaphysics and logic. I have undertaken the analysis of those apparently enigmatic, or contradictory, connections to underline exactly that they are so evident that probably are not simple mistakes or indecisions of thought; rather, they are symptoms of something else, something which for sure challenges our common mindset. As it can happen if you enter in the semi-dark room and notice something near to you, you immediately get an idea or make a guess about what the object could be. Then, the more you come close to the object, the more you discover additional profiles of the object: each of them represents a hint toward the object itself, because it can confirm or contradict the hypothesis you had on it. If the guess is erroneous, what happens is that the hints and data you are collecting seem to be contradictory



and paradoxical. The same can be referred to the path followed so far. We might say that Peirce's consideration of cosmology, in its connection with metaphysics and logic, was ultimately confused, or we can see these connections as an invitation to better grasp the object that faces us: Peirce's philosophy in his complexity.

## §5. THE KEYSTONE OF SYNECHISM

How can we explain the complicated relations between metaphysics and cosmology, logic and cosmology? As suggested in the previous paragraph, these connections become clear as soon as we examine them in the light of Peirce's philosophy on the whole. In particular, in the light of *synechism*, the characteristic and original dimension that his thought introduces into the history of philosophy. But what is *synechism*? As Peirce explains referring to the etymology of *synechism*:

The word *synechism* is the English form of the Greek {*synechismos*}, from {*syn-echés*}, continuous. For two centuries we have been affixing -ist and -ism to words, in order to note sects which exalt the importance of those elements which the stem-words signify (Peirce, 1893, *EP* 2.1).

Better yet, as Peirce defines in Baldwin's *Dictionary of Philosophy and Psychology*, *synechism* is “[t]hat tendency of philosophical thought which insists upon the idea of continuity as of prime importance in philosophy and, in particular, upon the necessity of hypotheses involving true continuity” (Peirce, 1902, *CP* 6.169). Accordingly, the idea of continuity is pivotal in Peirce's philosophy, so that it is defined by him as “the keystone of the arch” (Peirce, 1900, *CP* 8.257), the keystone of his entire philosophy. Furthermore, we can easily understand what the *primacy* of continuity means, when we compare Peirce's philosophy to other philosophical perspectives. Roughly speaking, as Peirce pointed out, if “materialism is the doctrine that the matter is everything, idealism the doctrine that ideas are everything, dualism the philosophy which splits everything into two,” then *synechism* is “the tendency to regard everything as continuous” (Peirce, *EP* 2.1). Moreover, according to Peirce this strong philosophical hypothesis is what actually allows us to understand many facts and theories that otherwise would remain unclear. As Peirce himself states:



I have thus developed as well as I could in a little space the *synechistic* philosophy [...]. I think that I have succeeded in making it clear that this doctrine gives room for explanation of many facts which without it are absolutely and hopelessly inexplicable; and further that it carries along with it the following doctrines: 1<sup>st</sup>, a logical realism of the most pronounced type; 2<sup>nd</sup>, object idealism; 3<sup>rd</sup>, tychism, with its consequent thoroughgoing evolutionism (Peirce, 1892, *W* 8.154).

Referring to the passage just quoted, we can consider also the peculiar connections between cosmology, metaphysics and logic, as some of those “facts which without synechism are absolutely and hopelessly inexplicable.” In other words, in the light of synechism the apparent contradictory connections between cosmology and metaphysics, cosmology and logic, find a clarification and finally an explanation, that is –to quote a previous Peirce’s assertion– “the adoption of a simpler supposition to account for a complex state of things” (Peirce, 1883-1884, *W* 4.547). Indeed, on the one hand the commixture between cosmology and metaphysics becomes clear only once one takes into account objective idealism, which on its turn is comprehensible exclusively in a philosophy with a very strong idea of continuity. On the other hand, by taking into account synechism it is possible to understand why “the process of nature and the process of thought are at one”, or –in other words– why cosmology and logic say the same. Namely, only because the subjects these disciplines investigates are not opposed nor separated. The logic of reasoning and of the universe are different expressions of a unique logic of events. Thus, the above mentioned “circle” between metaphysics and logic and cosmology is not at all vicious, nor represents an inconsistency of Peirce’s work: both these relations, incomprehensible –for instance– in a Cartesian perspective are demanded by synechism.

Furthermore, it is worthwhile to note that even though the connections between cosmology and metaphysics and logic are rooted in synechism, synechism is not “an ultimate and absolute metaphysical doctrine.” Rather, Peirce conceives it as a “regulative principle of logic” (Peirce, 1902, *CP* 6.172), the only one that does not “set up a barrier across the road of science” (Peirce, 1902, *CP* 6.171).

A clear and brief example of what means that synechism is a principle of logic, one that does not block the road of inquiry (Peirce, c. 1897, *CP* 1.170) and is required by the continuous progress of science, is the following one. Peirce states:



So the synechist will not believe that some things are conscious and some unconscious, unless by consciousness be meant a certain grade of feeling. He will rather ask what are the circumstances which raise this grade; nor will he consider that a chemical formula for protoplasm would be a sufficient answer. In short, synechism amounts to the principle that inexplicabilities are not to be considered as possible explanations; that whatever is supposed to be ultimate is supposed to be inexplicable; that continuity is the absence of ultimate parts in that which is divisible; and that the form under which alone anything can be understood is the form of generality, which is the same thing as continuity. (Peirce, *CP* 6.173)

And the same can be said for cosmology: on the one hand Peirce's cosmology is needed by his pragmatic and synechistic conception of metaphysics and logic. On the other hand, as it is for synechism, the type of cosmology that Peirce aims to build does not represent an absolute metaphysical doctrine. Accordingly, the description that Peirce does of his synechistic view is helpful also to understand what we should seek as his proper cosmology: a theory confirmed and required by the discoveries of sciences, not an ultimate metaphysical standpoint. This then represents another hint toward Peirce's cosmological thought: his cosmology is not at all limited to an hypothetical reconstruction or narration of the origin of the universe. It stands for the metaphysical description of the universe structure, laws and parts required by his logic of discovery.

Thus, so far we have analyzed Peirce's definition of cosmology and to what extent Peirce's metaphysics, as well as logic, needs it. From this perspective, we can finally analyzing Peirce's mature thought in order to seek other traces of his interest in cosmology and, more specifically, his conception and description of cosmology beyond the formulation of his *cosmogony*.

## §6. BEYOND COSMOGONY: PEIRCE'S CATEGORIES AND HIS LATE COSMOLOGY

As it is stated in the first part of the article, for the sake of clarity we need to distinguish cosmology from cosmogony. Also, it was indicated that Peirce's cosmological thought is limited to the period between 1883-1898, that is to the period devoted to building a cosmogony. Accordingly, it is now relevant first to report the main features of Peirce's cosmogony, and second to investigate Peirce's



thought after 1898, seeking some evidence for his cosmology or some traces of its new formulation.

In order to give a synthetic overview of his cosmogony, I will especially refer to his writings and manuscripts between the 1880s and the 1890s. On the whole, Peirce maintains that “philosophy requires a thorough-going evolutionism or none” (Peirce, 1891, *CP* 6.14), so the development of the universe is an evolutionary one,<sup>9</sup> and follows an hyperbolic trajectory. Peirce explains:

The evolution of the world is *hyperbolic*, that is, proceeds from one state of things in the infinite past, to a different state of things in the infinite future. The state of things in the infinite past is chaos, *tohu bohu*, the nothing-ness of which consists in the total absence of regularity. The state of things in the infinite future is death, the nothingness of which consists in the complete triumph of law and absence of all spontaneity. Between these, we have on our side a state of things in which there is some absolute spontaneity counter to all law, and some degree of conformity to law, which is constantly on the increase owing to the growth of habit (Peirce, 1871, *CP* 8.37).

In particular, if we focus on Peirce's view of the cosmogony, the first moment of the universe is “the germinal nothing, in which the whole universe is involved or foreshadowed. As such, it is absolutely undefined and unlimited possibility-boundless possibility. There is no compulsion and no law. It is “boundless freedom” (Peirce, *CP* 6.217). From this zero point of the universe, according to Peirce, there proceeds a state of definite qualities. As Peirce describes in “The Logic of Continuity”, “the very first and most fundamental element that we have to assume is Freedom, or Chance, or Spontaneity, by virtue of which the general vague nothing-in-particular-ness that preceded the chaos took a thousand definite qualities” (Peirce, 1898, *RLT* 260)<sup>10</sup>. From another perspective, this first

<sup>9</sup> It is worthwhile to note that laws within the universe are also subject to evolution. Indeed, Peirce's cosmogony aims especially at their explanation. On this point, among others, see Turley (1977: 64-66).

<sup>10</sup> With regard to this primordial stage of the universe, it is useful to consider Peirce's clarification in “Man's Glassy Essence”: “I long ago showed that real existence, or thing-ness, consists in regularities. So, that primeval chaos in which there was no regularity was mere nothing, from a physical aspect. Yet it was not a blank zero; for there was an intensity of consciousness there in comparison with





phase corresponds to what Peirce calls the First Category, the category of Freedom and Spontaneity. From nothing-ness to a world of pure qualities; from “the womb of indeterminacy” (Peirce, 1887-1888, *EP* 1.278) to a state of determined potentiality:<sup>11</sup> this is the first phase of the universe, and chance is the only agent here at work<sup>12</sup>.

“The *second* element we have to assume –Peirce continues– is that there could be accidental reactions between those qualities. But these reactions we must think of as *events*. Not that *Time* was. But still, they had all the here-and-nowness of events” (Peirce, 1898, *RLT* 260). Even in this case, the description recalls the characteristics of Secondness, and so we can understand the second phase, the second “flash” of the universe (Peirce, 1888, *EP* 1.278), as the appearance of Secondness.

After this “existing universe with all its arbitrary Secondness” (Peirce, 1898, *RLT* 258) comes to the fore, Thirdness begins to appear. Peirce states: “then there would have come other successions ever more and more closely connected, the habits and the tendency to take them ever strengthening themselves, until the events would have been brought together into something like a continuous flow” (Peirce, 1887-1888, *EP* 1.278). Another way to describe the appearance of Thirdness is the following one. In Peirce’s own words:

Pairs of states will also begin to take habits, and thus each state having different habits with reference to the different other states, will give rise to bundles of habits, which will be substances. Some of these states will chance to take habits of persistency, and will get to be less and less liable to disappear; while those that fail to take such habits will fall out of existence. [...] In fact, habits, from the mode of their formation necessarily consist in the permanence of some relation, and therefore on this theory, each law of nature would consist in some permanence, such as the permanence of mass, momentum, and energy (Peirce, 1887-1888, *EP* 1.279).

From this, we can see how Peirce tries to explain the origin of the universe according to his triad of categories, in a perspective that we might define a “tri-

which all that we ever feel is but as the struggling of a molecule or two to throw off a little of the force of law to an endless and innumerable diversity of chance utterly unlimited” (Peirce, 1892, *EP* 1.348).

<sup>11</sup> Peirce defines it also as “Platonic world” (Peirce, 1898, *RLT* 260).

<sup>12</sup> *Cfr.* Peirce, 1898, *RLT* 261: “Thus, when I speak of chance, I only employ a mathematical term to express with accuracy the characteristic of freedom or spontaneity.”





chotomic cosmo-genesis.” Peirce’s cosmology develops indeed on the basis of his three categories, each representing a stage of the development of the universe: from the zero point of nothingness appears Firstness, then Secondness, and finally Thirdness. “Chance is First, Law is Second, the tendency to take habits is Third. Mind is First, Matter is Second, Evolution is Third” (Peirce, 1891, *W* 8.110). In the last part of “The Architecture of Theories”, Peirce offers a brief description of these three phases:

It would suppose that in the beginning, –infinitely remote–, there was a chaos of unpersonalised feeling, which being without connection or regularity would properly be without existence. This feeling, sporting here and there in pure arbitrariness, would have started the germ of a generalising tendency. Its other sportings would be evanescent, but this would have a growing virtue. Thus, the tendency to habit would be started; and from this with the other principles of evolution all the regularities of the universe would be evolved (Peirce, 1887-1888, *EP* 1.297).

Now that I have introduced the main characteristics of Peirce’s *cosmogony*, we can easily identify a difficulty, already intrinsic to this cosmogonical perspective. Generally speaking, cosmogony investigates the origin of the universe. In this case, we face a genetic description of the origin of the universe: Peirce describes a sequence of flashes, moments or stages, that he defines as the beginning of the universe. However, this interpretation of Peirce’s cosmology has a great deficiency. We tend to consider the phases mentioned as chronologically ordered, while in fact they are not. Indeed, according to Peirce, even time takes its origin from these moments. If so, how can we conceive of this “vague and figurative” (Peirce, 1887-1888, *EP* 1.279) theory of the origin of the universe? How can we understand it while avoiding regarding it as a genetic process? A first answer comes from the eight lecture of the *Cambridge Conferences* (1898), where Peirce adopts the notorious example of a blackboard, which offers a diagrammatic support to his view of cosmology and helps understand the relation among categories not from a chronological perspective, but from a logical one<sup>13</sup>.

<sup>13</sup> Indeed Peirce states that the clean blackboard is “a sort of Diagram of the original vague potentiality, or at any rate of some early stage of its determination” (Peirce, 1898, *RLT* 261). The blackboard is “nothing-ness,” a continuum of qualities, but only insofar as is purely undetermined, purely general,



Nonetheless, and although his purpose remains to conceive categories as logical moments, insofar as Peirce is committed to building a cosmogony (i.e., until the end of 1890s), he adopts categories at times as progressive phases of the development of the universe, and at other times as different but correlated structures of the universe. For instance, in the before mentioned “The Architecture of Theories”, he still associates each category with a specific era of the universe. The first category concerns the origin of the world; the second category concerns the end of things; the third category concerns the process mediating the origin and the end of the universe (Peirce, 1891, *EP* 1.296). And this cosmo-genetical view of the universe exactly corresponds to Peirce’s view of cosmology before 1900: that is, to an interpretation of cosmology in terms of cosmogony.

Then, from 1900 onwards, Peirce began to dismiss his evolutionary cosmogony, and did not return to it. At the same time, he did not abandon his idea of cosmology, which remains, as indicated in paragraph 1, at the very heart of his pragmatism. As the Harvard Lectures on phenomenology testified to (1903), Peirce appeals to categories, defining them “important metaphysico-cosmical elements” (Peirce, 1903, *EP* 2.164), and stresses once more the peculiar coincidence between metaphysics and cosmology, as well as the multifaceted nature of his categories. Furthermore, in a way very close to the description of “The Architecture of Theories,” in 1908 Peirce still continues to construe categories

the pure realm of potentiality. Nothing exists in it, but everything is, potentially. Firstness is the whiteness of the chalk-mark, or better yet whiteness per se. It is “a springing up of something new,” and it is “essentially indifferent as to continuity.” Indeed, it “lends itself readily to generalization but is not in itself general” (Peirce, 1898, *RLT* 262). Secondness is the “boundary between the black and white,” an irreducible duality. For its essence, “the limit between the whiteness and blackness is essentially discontinuous, or antigeneral. It is insistently this here” (Peirce, 1898, *RLT* 262). The universe seems therefore to pass from a state of vague potentiality to that of definiteness, but the process is not yet complete. Peirce states that “we see the original generality like the ovum of the universe segmented by this mark. [...] No further progress beyond this can be made, until a mark will stay for a little while; that is, until some beginning of a habit has been established by virtue of which the accident acquires some incipient staying quality, some tendency toward consistency” (Peirce, 1898, *RLT* 262). A habit that begins to be established corresponds to a mark that starts to stay. In this way, a tendency to generalization develops, and we can refer to this as Thirdness. “This habit is a generalizing tendency, and as such a generalization, and as such a general, and as such a continuum or continuity” (Peirce, 1898, *RLT* 262). Thirdness is not the original continuity, though it must have its origin in it, because continuity is always “inherent in potentiality” (Peirce, 1898, *RLT* 262).



as modes of being (Peirce, 1908, *CP* 6.342-343). According to the analysis of these late writings, the universe consists of a) Firstness, conceived of as mere potentiality, feelings or “atmospheric possibilities;” b) Secondness as actuality and existence, c) Thirdness as reason and rational connected-ness. Thus, again Peirce sustains them as the constitutive elements of the universe, and so we can interpret these metaphysico-cosmical categories as components of Peirce’s cosmology.

In this way, following the hints collected in the present paper, we can reasonably conclude that Peirce’s cosmological thought was never dismissed by him, even after the so-called “cosmological period.” Moreover, the tripartition of the universe, and therefore the irreducibility of categories, is so emphasized by Peirce that he goes so far as to say, in “A Neglected Argument for the Reality of God,” that the universe is not one, but rather that there are three universes of experience, corresponding to the three categories, described in the same way as in the previous citations. The character of each universe of experience is absolutely unique when compared with the others; however, they are not isolated universes. They are connected. The Third Universe (of Thirdness) consists indeed in “the active power to establish connections between different objects, especially between objects in different Universes” (Peirce, 1908, *EP* 2.435). By virtue of these connections, it becomes clear that Peirce’s cosmology still endorses continuity, as well as the irreducible categories. However, the latter are no longer described as different, chronological moments in the genesis of the universe, but as the perpetual, constituent, factors of it. At all times they are present in the universe, different from each other in mode and function, and encompassing all the dimensions of the universe. This hypothesis echoes Peirce’s “guess at the secret of the sphinx” as he says that “three elements are active in the world, first, chance; second, law; and third, habit-taking” (Peirce, 1887-1888, *EP* 1.277). On the whole, if we have understood the categories well, we can conclude that Peirce’s cosmology envisions a dynamical world, where both potentiality and actuality find their places, as well as regularity and reason, the latter being presented by Peirce as the “power to establish connections.” Reason represents the medium between potentiality and actuality, pure qualities and mere facts, feelings and brute reactions.

To conclude, by collecting all the hints, the overall picture of Peirce’s cosmology is now clearer. Peirce’s definition of cosmology, and the place it occupies in his classifications of the sciences, helps us clarify what the meaning of cosmology



is according to Peirce. In particular, the difference between cosmology and cosmogony broaden our common understanding of Peirce's cosmological thought. After this clarification, the analysis of the connections between cosmology and metaphysics and logic, makes emerge the methodological relevance cosmology has in Peirce' thought. Furthermore, the examination of synechism reveals even more Peirce's need for cosmology, and at the same time emphasizes the originality of Peirce's conception of it. Finally, such a considerable importance pushes the present investigation toward Peirce's mature thought, with some relevant results. Indeed, in the late writings the subject of cosmology is still present, no more in the shape of cosmogony, but renewed in the light of his categories and a logical understanding of it.

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