



PEIRCE'S "FUNDAMENTAL ABDUCTION": HOW CREATIVITY ENTAILS COSMOLOGY

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Abstract: *The aim of the present paper is to explore the connection between Peirce's theory of abduction and his cosmology, showing how his metaphysical and cosmological thoughts are required by his logical theory of abduction. To reach this goal, I first consider by and large the specific issue at stake – that is creativity – and then I briefly touch upon creativity's implications to both Peirce's "popular" theory of abduction, and his "unpopular" cosmology. Second, I tackle abduction and creativity with special reference to Peirce's description of *lume naturale* and hope, and third I show how a critical account of abduction and creativity leads us toward cosmology and metaphysics. As a result, we will see how abduction and creativity involve a cosmology and need to be sustained by Synechism, in order to be fully comprehended and explained.*

Keywords: Peirce. Abduction. Hope. Creativity. Cosmology.

A "ABDUÇÃO FUNDAMENTAL" DE PEIRCE: COMO A CRIATIVIDADE SE VINCULA À COSMOLOGIA

Resumo: O objetivo do presente artigo é explorar a conexão entre a teoria da abdução de Peirce e sua cosmologia, demonstrando como seus pensamentos metafísicos e cosmológicos são necessários para sua teoria lógica da abdução. Para alcançar este objetivo, considero em primeiro lugar, de um modo geral, a questão específica em jogo – que é a criatividade – e então abordo de passagem as implicações da criatividade tanto para a teoria "popular" da abdução de Peirce, quanto para sua cosmologia "impopular". Em segundo lugar, abordo a abdução e a criatividade com especial referência à descrição, por Peirce, do *lume naturale* e da esperança. Finalmente, demonstro como um relato crítico sobre a abdução e a criatividade nos conduz em direção à cosmologia e à metafísica. Como resultado, verificaremos como a abdução e a criatividade envolvem uma cosmologia, e como precisam ser apoiadas pelo Sinequismo, para que possam ser totalmente compreendidas e explicadas.

Palavras-Chave: Peirce. Abdução. Esperança. Criatividade. Cosmologia.

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1 For a new inquiry of creativity

1.1 Its need

Creativity has always represented a challenging topic in the history of thought, artistic, scientific and philosophic. On the whole, this is probably due to the fact that, as Whitehead¹ said: “reason is the organ of emphasis upon novelty” (Whitehead 1929, 26). Indeed, we could say that mankind has always dealt with creativity, as if it was the distinctive feature of its species. Additionally, from the 60’s onwards, the more the fields of advertisement, media, new media have increased, the more the interest in this issue has been refreshed. Yet, its pivotal character is nowadays even more prominent because of the financial turmoil and global, or at least European, crisis. Why? As Maddalena and Zalamea have recently suggested: “Perhaps due to the period of international crisis, appeals to creativity multiplied in any field. Sure enough, when the status quo cannot grant welfare conditions anymore, something new is needed” (MADDALENA; ZALAMEA 2013, p. 6). Therefore it is urgent either to take into consideration those thinkers who are committed to creativity, or to cast new light on those creative processes, logic and cognitive, that – as abduction – only can guide men in discovering new ideas.

But what does it mean to commit to creativity, from a philosophical point of view? From a pragmatist standpoint, even when we consider creativity and crisis, we don’t aim at finding some as rapid as limited, practical, solutions. Indeed, according to Peirce, “the purport of any concept is its conceived bearing upon our conduct” (CP 5.460, 1905), and this maxim entails also that there isn’t any conduct or conceived bearing upon our conduct apart from concepts. Accordingly, to give a worthy contribution to these topics connected to creativity, we need first and foremost to explore the concept of creativity, what creativity actually means. With this regard, Peirce exactly defines pragmatism as a «theory of logical analysis, or true definition» (CP: 6.490, c.1910). So, by assuming this as the general claim and pragmatic method of the present paper, let me ask: how does Peirce speak of creativity? How does he analyze it? To what extent?

1.2 Creativity between logic and cosmology

Besides Peirce’s own creative mind, his contribution concerning creativity comes especially from two different fields. As Sara Barrena² pointed out, we can describe and understand creativity or *via* abduction or *via* evolution. From one side, dealing with abduction we can trace and comprehend how a logical process allows novelty, that is how we can come to new ideas; from the other, dealing with Peirce’s cosmology we can see how novelty is encompassed in his conception of an evolving universe. In other words, Peirce’s efforts on creativity are to be found either in logic or in cosmology.

And this coupling is to be carefully considered, insofar as we can see here together, almost paradoxically, the highest and the lowest arguments among Peirce’s ones, in terms of notoriety and influence. Abductions usually considered – as Fisch

¹ Alfred North Whitehead (1861-1947): mathematician, logician, philosopher and educator. Though Peirce and Whitehead never met each other, on the one hand they both built a system on a logic and mathematical foundation (MURPHEY 1961, p. 295); on the other, they brought about what has been called a “renaissance of speculative philosophy” (cf. James Bradley, 2003), in strict connection with an inquiry on the fields of experience. Thus, I referred to Whitehead not only because of his insightful words, but because his way of thinking is very close to Peirce’s approach.

²For instance, cf. Barrena, 2007.

states – “his major single discovery” (FISCH 1981, p. 20), as it is testified by the numerous critical studies on it, as well as the various attempts to apply abduction to different issues and fields, from cognitive sciences to law. Cosmology, on the contrary, is probably the most controversial topic of Peirce’s philosophy. With this regard, many general questions remain still unanswered, or – better yet – problematic. For instance, as Short provokingly asked: “Did Peirce have a cosmology?” (SHORT, 2010), or – we can add – “Was it a coherent one?” Also: “Is cosmology merely an intermediate attempt, somehow “misleading”, in order to gain a true and deep understanding of Peirce’s philosophy?” These questions don’t represent my perspective on the subject, rather: they simply exhibit how far from being widely accepted is Peirce’s cosmological thought.

Being so, in order to understand creativity in more depth, through Peirce’s account of it, I want to focus neither only on abduction – as many did before me³ –, nor on an apology of Peirce’s cosmology. Rather, I would like to answer the following questions: Is there any (strong) implication between creative thought and creative metaphysics? In other words, among abduction and Peirce’s cosmology? More particularly, in this paper the goal is to understand whether or not we can accept and fully comprehend *abduction* without any reference to metaphysics, and – particularly – to metaphysics inasmuch as it is conceived as cosmology.

2 The logic of discovery: abduction and its hope

“Apagagé”, “conjecture”, “hypothesis”, “presumption”, “retroduction”, and the more notorious “abduction” [...] under all these labels Peirce aims at illuminating that unique and irreducible process that leads men in the adventure of discovery. Somehow, he borrows it from Aristotle, by offering and developing a new interpretation of a passage from *Prior Analytics* (Book 2, Ch. 25), in accordance with an interpretation for the first time suggested by the Italian philosopher Giulio Pace, in the XVI century. Surely, many are the facets of this pivotal notion, and different are the phases in which we can distinguish Peirce’s conceptions of abduction. For the present purpose, it can be sufficient to say that, on the whole, abduction is “a kind of reasoning” (EP2: 205, 1903), a “logical operation”, a “weak one” (EP2: 216, 1903), but with its own degree of validity and consistency, as well as deduction and induction have their own. Indeed, abduction definitely is presented as an autonomous and irreducible process, even compared with the latter. Specifically, and to adopt one of the latest formulation of it, abduction, or retroduction, “turns back and leads from the consequent of an admitted consequence, to its antecedent” (MS: 857). Why is creative then? Let us better understand what means to go from consequent to antecedent by reading how Peirce introduces abduction itself. He sees abduction as the only real creative way of reasoning because:

Abduction is the process of forming an explanatory hypothesis. It is the only logical operation which introduces any new idea; for induction does nothing but determine a value and deduction merely evolves the necessary consequences of a pure hypothesis. (EP2: 216, 1903).

³ Among others, cf. especially Goudge, 1950; Fann, 1970; Anderson, 1986; Nubiola, 2005.

Thus, on the one hand abduction represents a creative inference, it consists in “forming an explanatory hypothesis”, and so it introduces a new idea, which neither induction nor deduction does. With this regard, according to the author, not only abduction differs from deduction and induction; these latter kinds of reasoning both require abduction. Indeed, Peirce adds:

Its only justification is that from its suggestions deduction can draw a prediction which can be tested by induction and that, if we are ever to learn anything or to understand phenomena at all, it must be by abduction that this is to be brought about. (EP2: 216, 1903).

So, on the one hand abduction is creative because is the only way in which, according to Peirce, a new idea can enter into the world, on the other it claim as particular, logic status for itself. Abduction is not a non-logical, mysterious method. But it isn't just that. As cited, abduction doesn't merely come to form a hypothesis, but an *explanatory* one. That means, the creative power of abduction, of new ideas, is to be explicative of facts. In this way abduction, differently from induction and deduction, is points to a logical operation with a distinctive appeal and reference to phenomena. As the author states: “Abduction consists in studying facts and devising a theory to explain them. It's the only justification is that if we are ever to understand things at all, it must be in that way” (EP2: 205, 1903).

Therefore, abduction should be understood not only as a creative mode of thought, involved and testified by sciences, nor as an interesting concept of aesthetics; its role is pivotal even in our daily life: “if we are ever to understand things at all, it must be in that way”. From another point of view, it is true that sciences progress by virtue of abductive reasoning and that abduction provides an explanatory hypothesis for scientific inquiry. For instance, this feature is so important for the author that he goes so far as to say: “A man must be downright crazy to deny that science has made many true discoveries. But every single item of scientific theory which stands established today has been due to abduction”. (EP2: 216-217, 1903). All the same, abduction's soundness and power go beyond any scientific application and confirmation. With this regard for instance, around 1902, the author wrote:

Presumption, or, more precisely, *abduction* [...] is the only kind of reasoning which supplies new ideas, the only kind which is, in this sense, synthetic. [...] Its only justification is that its method is the only way in which there can be any hope of attaining a rational explanation. (CP: 2.776-777).

Yet, in 1865, Peirce already exemplifies this “universal” validity and involvement of abduction, by stressing upon abduction's implication with facts. He states:

Yet it is hypotheses with which we must start; the baby when he lies turning his fingers before his eyes is making a hypothesis as to the connection of what he sees and what he feels. Hypotheses give us our facts. Induction extends our knowledge. Deduction makes it distinct. (W1: 283, 1865).

Thus, after this very brief survey on abduction's function, we can affirm that abduction lies at the very bottom of man's rationality, considered in all its generality and its broadest sense. It is such that Peirce defines pragmatism exactly as “the logic of abduction” (EP2: 226-241, 1903). Accordingly, this salience of abduction in

explaining man's rationality renders rationality and mankind itself as fully creative. More particularly, that means on the one hand that in the process of knowledge and understanding imagination plays a guiding role (as Anderson, Barrena and Kaag have showed⁴), on the other that every logic and scientific discovery, as well as every genuinely daily-life discovery, is colored and led by a sentiment⁵, indicated before as a "hope of attaining a rational explanation".

But why does Peirce speak of hope? What is the need of involving hope in a rational, inferential process? The answer to those questions is indeed quite simple: to justify abduction, or – better yet, since “no reason whatsoever can be given for it, as far as I can discover” (EP2: 216, 1903) – hope takes into account and illustrates that peculiar tendency of abductive reasoning to *guess* right. As I mentioned before, abduction provides hypotheses, explanatory hypotheses of facts, that surprisingly work well, or quite well. Better than one might think, one could say. As Peirce states, our “faculty of divining the ways of Nature [...] is not strong enough to be often right than wrong, but strong enough not be overwhelmingly more often wrong than right” (EP2: 217, 1903).

From another point of view, we could regard hope as an answer to the following question: how does abduction work? Or, more precisely: How come that abduction works? Peirce's answer, besides hope, relies on “insight”, or on “instinct”, or “*lumen naturale*”, borrowing in this case a term from Galileo Galilei. As Giovanni Maddalena (cf. MADDALENA, 2003) has showed, Peirce changes his mind many times and there is a *quasi*-evolution with regard to these concepts. He goes from indicating an irrational hope to the quote-unquote “rational instinct”, to find reason of our *lucky guessing*. In any case, the plausibility of abduction is based on, or sustained by, an extra-logical element, which connotes the logic process and make it start: without any insight, or hope, the abductive reasoning wouldn't even begin. Moreover, for Peirce this sentiment, this hope, is so essential that he comes to conceive it as the more fundamental abduction. As he says in *On the Logic of Drawing History from Ancient Documents, Especially from Testimonies* (1901):

I now proceed to consider what principles should guide us in abduction, or the process of choosing a hypothesis. Underlying all such principles there is a *fundamental and primary abduction, a hypothesis which we must embrace at the outset, however destitute of evidentiary support it may be. That hypothesis is that the fact in*

⁴Cf. Anderson, 1987; Barrena, 2007; Kaag, 2014.

⁵ From this point of view, cf. also “The doctrine of chances” (W3: 285, 1878): “It may seem strange that I should put forward three sentiments, namely, interest in an indefinite community, recognition of the possibility of this interest being made supreme, and hope in the unlimited continuance of intellectual activity, as indispensable requirements of logic. Yet, when we consider that logic depends on a mere struggle to escape doubt, which, as it terminates in action, must begin in emotion, and that, furthermore, the only cause of our planting ourselves on reason is that other methods of escaping doubt fail on account of the social impulse, why should we wonder to find social sentiment presupposed in reasoning? As for the other two sentiments which I find necessary, they are so only as supports and accessories of that. It interests me to notice that these three sentiments seem to be pretty much the same as that famous trio of Charity, Faith, and Hope, which, in the estimation of St. Paul, are the finest and greatest of spiritual gifts. Neither Old nor New Testament is a text-book of the logic of science, but the latter is certainly the highest existing authority in regard to the dispositions of heart which a man ought to have”.

hand admit of rationalization, and of rationalization by us. That we must hope they do, for the same reason that a general who has to capture a position, or see his country ruined, must go on the hypothesis that there is some way in which he can and shell capture it. We must be animated by that hope concerning the problem we have in hand, whether we extend it to a general postulate covering all facts, or not. Now, that the matter of no new truth can come from induction or from deduction, we have seen. It can only come from abduction; and abduction is, after all, nothing but guessing. [...] Animated by that hope, we are to proceed to the construction of a hypothesis. (EP2: 106-7, 1901, it. mine)

It is worthwhile to note here that 1) he associates this fundamental and primary abduction with hope itself, a hope which accompanies not only scientific inquiries, but all kind of human practice, all kind of man's creative thinking⁶, 2) that abduction, and consequently creativity, is not comprehensible apart from an account of this fundamental process, or essential primary abduction.

Therefore, let me consider more closely the content of this primary abduction⁷. Peirce states that its content is that "the fact in hand admit rationalization, and of rationalization by us". Consequently, we have to admit that we stare here at a circle, not vicious, but however a circle. How come that we rationalize? How come that abduction works? So far, the answer seems to be: we can rationalize – or, we should say: abduction works – because, if and only if, we infer first of all that facts can be rationalized. At the same time, and this is the last consideration we can draw from the passage above quoted, we are pushed toward metaphysics. Why? Let me explain and develop this passage in the third part of the present paper.

3 Abduction and cosmology: for a full account of creativity

With regard to abductions, we can sum up the results of the path taken so far as follows: 1) abduction "works", 2) following Peirce, we can abductively infer that facts admit to be rationalized by us, 3) This primary abduction implies a specific metaphysics, which leads us to admit a peculiar affinity between human thinking and nature. Let me make this last point better emerge. As the author elsewhere specifies: "It is somehow more than a mere figure of speech to say that nature fecundates the mind of man with ideas which, when those ideas grow up, will resemble their father, Nature" (CP 5.591, 1903). This connection, from my perspective, illuminates also why Peirce grants his preference to Galileo's *lume naturale*. In other words, *lume naturale* provides him a way of addressing the unity between nature and mind. Let me read how the author himself suggests this connection:

In this way, general considerations concerning the universe, strictly philosophical considerations, all but demonstrate that if the universe conforms, with any approach to accuracy, to certain highly pervasive

⁶ With this regard, the affinity between hope and expectation is to note. See for instance CP 6.393, 1902: "The principle of sufficient reason may very well be understood to express our *natural expectation or hope* to find each unexpected phenomenon to be subject to reason and so intelligible" (italics mine). Also, cf. CP 7.369: "It is possible that something may interfere to falsify my expectation; but still experience assures us that such expectations are reasonably sure".

⁷ Relevant to the issue of primary abduction, even though from another perspective, is Eco's reflection upon "primary iconism". (cf. Eco 2007, 513-536).

laws, and if man's mind has been developed under the influence of those laws, it is to be expected that he should have a natural light, or light of nature, or instinctive insight, or genius, tending to make him guess those laws aright, or nearly aright. (CP 5.604, 1903)

As we have read, not only we can notice the root of Peirce's original realism⁸, but we are also directed toward a more metaphysical inquiry, concerning nature and universe. With this regard, which constitutes the claim of my article, it's impressive how Peirce describes the same path, from the scientific inquiry of discovery to metaphysics, talking about his own biographical route. In 1898 he explains:

But I am quite sure that, as far as I personally am concerned, if I had not been moved by any consideration which touched me more nearly than such a vast and shadowy hope can do, I never should have been moved to do all the hard work I have done for the last fifteen years in trying to reason this matter out. I must confess that for me a living motive must have smaller dimensions than that very general hope. But I am a physicist and a chemist, and as such eager to push investigation in the direction of a better acquaintance with the minute anatomy and physiology of matter. What led me into these metaphysical speculations, to which I had not before been inclined [...] was my asking myself, how are we ever going to find out anything more than we now do [know] about molecules and atoms? How shall we lay out a broad plan for any further advance? (RLT: 238)

As we can see, here is repeated, with different words and with a personal tinge, the same path we followed so far. "How are we going to find out anything more than we now know about molecules?" This is a possible instance of "How comes that abduction works? Second, "How shall we lay out a broad plan for any further advance?" – this kind of questions led him toward metaphysics, he himself said. Therefore, how we should intend nature, in order to grant science a further advance; in order to conceive a broad plan of further advance? Peirce's commitments to metaphysics are based on this level of interrogation.

Thus, it is now more manifest the double-bind which connects abduction to metaphysics. On the one hand, abduction and its hope are *based on* a specific metaphysics, according to which things are rationalizable by us; on the other, *retroductively*, abduction comes to infer that the universe (and nature) are of a certain kind, are organized in a specific way. To mark the point, how could abduction work, if – for instance – the universe increased only by chance?

We can understand in more depth the difference by saying that on the one hand abduction can be sustained only in a synechistic perspective, on the other that abduction implies a specific cosmology. More particularly, this is the reason why Peirce, by considering the same connection from the opposite point of view, comes to state: "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" (CP: 6.397, 1878). In other words, if abduction is sustainable only within a certain metaphysical perspective, at the same time we should admit that the cosmological issue is determinant in the theory of reasoning itself.

In the light of this distinction and specification, it is now more understandable why I mentioned in particular cosmology, and not merely metaphysics, at the

⁸ Cf. Maddalena, 2005.

beginning of my paper. I want now to focus on this implication between cosmology and abduction, before connecting these results with the initial claims.

Indeed, to be precise, we should recognize not only that a cosmology is, generally speaking, required by abduction. If we examine Peirce's own cosmology, we can see how it exactly corresponds to his conception of abduction and its implications. As a brief but efficacious instance, let us consider abduction, deduction and induction, by comparing them with Peirce's cosmological statements contained in *Evolutionary Love* (1893). As it is notorious, in this article Peirce draws a distinction among three different ways of conceiving the universe's development and evolution. They are Tychism (from the greek *tyche*), Ananchism, and Agapism. The first one only based on *tyche*, or chance; the second on necessity; and the third, agapism, is founded on *love*. Moreover, Agapism is introduced by Peirce as the cosmological theory which "*synechism* calls for" (EP1: 354). Moreover, in distinguishing agapism from tychism and ananchism, Peirce specifies that agapism does not exclude either tychism and ananchism. Rather, it encompasses them, exhibiting their limits and validities from its broader standpoint.

With this regard, we can trace more than an analogy between this agapastic cosmology and the analysis of induction, deduction and abduction. Indeed, induction is exactly conceived as the method of probability (cf. "The Probability of Induction", and "Deduction, Induction and Hypothesis"), and it calls for *tyche*; deduction represents the "necessary reasoning" (EP2: 205, 1903); and abduction shows that circularity – above mentioned – which reflects the same movement, the same circularity, that Peirce points out for *love* (EP1: 355, 1893). Furthermore, Peirce describes agapism as follows: "the agapastic development of thought should, if it exists, be distinguished by its purposive character, this purpose being the development of an idea. We should have a direct, agapic or sympatethic comprehension and recognition of it, by virtue of the continuity of thought" (EP1: 369, 1893).

Therefore, if abduction requires cosmology, and if Peirce's agapism expresses the progress of an evolutionary cosmos which reflects, and can sustain, the logic of abduction itself; we can now connect these results with the specific topic of creativity. On one side, this strong involvement of cosmology and logics entails that there isn't any possibility of a creative inference without (a concept of) creative, evolutionary world. And so the main two sources of Peirce's contribution to creativity – abduction and cosmology – cannot be considered as separated.

On the other, a conclusion in particular has to be drawn from the last part of the paper. If at the very outset I referred to how popular creativity is today, for instance due to the economical crisis, after the path followed we can understand how, to cope with this situation, it is not anymore sufficient to put emphasis on men's creative processes or skills. We should come up to elaborate our conception of the universe, or at least start to question the one that we tacitly and implicitly assumed, today. Only in this way we will be able to sustain and provide a coherent thought of radical creativity. With this regard, and to open toward further investigations, it is remarkable that Peirce himself begins talking about the economical century and the gospel of Greed, in *Evolutionary love*.

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