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## THE CONTINUITY OF THE INFINITE SEMIOSIS AND THE FALLIBILISM OF INQUIRY IN C. S. PEIRCE

Continuity is one of the widest and most pervasive theme in the history of philosophy, dating from the Greeks – for which, it must be remembered, infinity is a form of imperfection – to Leibniz, whose speculation about infinitesimals gives rise to modern mathematics.

C. S. Peirce, the founder of semiotics and pragmatism, the “American Leibniz”, as he has been called for his wide-spread interests – ranging from mathematics to logic, from geodesy to linguistics, from astronomy to phenomenology – built his whole philosophy on the concept of continuity.<sup>1</sup> His studies are in fact based on a complex ontological and gnoseological theory that leads into a *synechistic* cosmology, as he says, that is a cosmology built on the principle of continuity whose primary foundation is infinitesimal mathematics. Ivo Ibrì has inquired in profoundness the “architectural metaphysics” of Peirce’s philosophy in his pivotal *Kòsmos Noetòs* (Ibrì, 2015), posing at the center of his own research exactly the notions of objective idealism, synechism, schotistic realism and ontologic cosmology, to which Peirce devoted his entire existence *via* the analysis of the signs.<sup>2</sup> On this path I will proceed, insisting – on the basis of Ibrì’s suggestions – on the whole of Peirce’s philosophy, that cannot be divided with an axe, logic on [the](#) one side, metaphysics on the other.

Peirce as a mathematician devoted himself to set theory, infinitesimals, probability, topology, algebra, abstract geometry, and statistics. For some authors he anticipated non-standard analysis, and he even gave the first axiomatization of arithmetics, some years before Dedekind. For this reason, I will start in my comment beginning with a writing full of mathematical and scientific argumentations, where Peirce turns his reflections towards *synechism*, the theory that everything in the cosmos appears under the aspect of continuity, or is *suneches* (the greek word for “continuous”). In *The Collected Papers* the manuscript bears the title of “Fallibilism, continuity and evolution” (CP 1.141-179). Peirce starts discussing fallibilism: “All positive reasoning is of the nature of judging the

<sup>1</sup> See infra the quotation from CP 1.163.

<sup>2</sup> See also, on all these topics: Ibrì, 2013 and 2014.

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proportion of something in a whole collection by the proportion found in a sample. Accordingly, there are three things to which we can never hope to attain by reasoning, namely, absolute certainty, absolute exactitude, absolute universality” (CP 1.141). Fallibilism amounts to this principle: we can never be certain of the exactitude of any law, of any representation, or of any sign, because when we reason from a sample, as in any true induction or abduction, in any *ampliative* reasoning, we can never be absolutely sure whether the sample is or is not exactly like the unsampled part of the collection; we just make a probable inference, grounded upon the faith, or the hope, as Peirce says (cf. CP 2.655), that we, or the community which we belong to, will attain, in the long run, the truth. As the author humouristically writes: “People say: ‘Such a thing is as certain as that the sun will rise tomorrow!’ I like that phrase for its great moderation because it is infinitely far from certain that the sun will rise tomorrow” (CP 1.150).

Fallibilism is very close to the semiotic conception that Peirce elaborated in the first thirty years of his life, in particular to the idea of infinite *semiosis*: e.g., an action, or influence which involves a cooperation of three subjects — a sign, an object and an interpretant — “this tri-relative influence not being in any way resolvable into actions between pairs” (CP 5.484). Pairs like, for example, the Saussurian *signifiant/signifié*. The meaning, in Peirce’s philosophy, is something definitely more complex than the Saussurian *signifié* (that is simply a mental picture): it is itself a representation which represents the relate as a representation of the same correlate which this mediating representation itself represents, and may be called the “*interpretant*”. To this Interpretant the torch of truth is handed along; and as representation, it has its interpretant again. (cf. CP 1.339). Here infinity, continuity, and fallibilism happily meet: the *signification* process – that is, the process of knowledge – is an unending process of translation in which meaning resides in the in-between, in the referring, in the vague area of transit. Vague because never precisely achieved.<sup>3</sup> Meaning, and eventually also the meaning of reality, is not a thing, a *res*, but, as Peirce puts it, is an indefinitely future event, the “normal product of mental action, not the incognizable cause of it” (EP 1:64). This means that any truth we gain, any theory we are leading to, is fallible, uncertain and inexact, dragged as it is in the infinite chain of semiosis. Nevertheless, we cannot but maintain it,

<sup>3</sup> On the logic of vagueness, Peirce wrote some dense pages; see “Issues of Pragmaticism”, in EP 2: 346-359, and my comment in Fabbrichesi, 2004.

because we have the hope, as I said before, that the community of inquirers will confirm it; that in the long run it will be considered true as we are now considering it. We make thus a gesture of projection in the future of our actual belief, that marks its truth, whereas also accepts its liability to errors. Peirce elsewhere calls this process “mellonization”, from the ~~greek~~-Greek *mellon*, that means “what has to come” (CP 8.284). Reality has then to be intended as a “habit of expectation” (CP 2.86 and Ivi).

In other words, fallibilism is the doctrine for which “no matter how completely we may believe that some claim we make about reality is true, it remains radically subject to errors” (CP 1.145)-, because it remains subject to the infinite chain of interpretants to which the torch of truth is handed down, whose direction we cannot anticipate in any way or sense.

-As a matter of fact, Peirce is trying to tell us something more, something that, I think, enlarges the traditional interpretation of the principle – adopted nowadays by many contemporary philosophers of science — and addresses it to some wider ‘metaphysics’ or cosmologic theory. Further on in the same writing, we can read:

“But in order really to see all there is in the doctrine of fallibilism, it is necessary to introduce the idea of continuity, or unbrokenness. This is the leading idea of the differential calculus and of all the useful branches of mathematics; it plays a great part in all scientific thought, and the greater the more scientific that thought is; and it is the master key which adepts tell us unlocks the arcana of philosophy” (CP 1.163).

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Fallibilism, continuity and infinity are strictly interlaced. Take for example a line: now the points on that line form a continuous series. If I take any two points on that line, however close together, there are other points lying between them. Thus, the idea of continuity involves the idea of infinity, or better, the idea of infinitesimal quantities. Continuity has to be interpreted as “fluidity, the merging of part into part” (CP 6.164), or of a sign into another sign for the Interpretant, in an infinite, vague and fallible semiotic chain.

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A comparison with mathematics is at this point necessary. Let’s go to another important essay, that found publication in “The Monist” in 1892, *The Law of Mind*. Here Peirce asked:

“How can a past idea be present? Not vicariously. Then, only by direct perception. In other words, to be present, it must be *ipso facto* present. That is, it cannot be wholly past; it can only be going, infinitesimally past, less past than any assignable past date. We are thus brought to the conclusion that the present is connected with the past by a series of real infinitesimal steps” (EP 1:314).

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How must then continuity be interpreted? Kant – goes on Peirce in this article – confounds it with infinite divisibility, saying that the essential character of the series is that between any two members of it a third can always be found (but there may be gaps in the series, objects Peirce); Aristotle defines it as “something which contains its own limits, that is, that “contains the end point belonging to every endless series of points which it contains” (W1: 321) (Information of the quotation is missing). Continuity is then a form of contiguity for Aristotle. Cantor and Dedekind define a continuous series as one which is concatenated and perfect: concatenated because, given any two points and any finite distance, it is possible to proceed from the first point to the second through a succession of points of the series each at a distance from the preceding one less than the given distance; perfect because it contains every point such that there is no distance so small that this point has not an infinity of points of the series within that distance of it (Cf. EP 1:320).

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Peirce was eventually leading to combine, as he said, the *aristotelicity* and the *kanticity* of the definition: he used a famous example to make himself understood, the one referring to a surface, part red and part blue: so on it every point is either red or blue, and of course, no part can be both red and blue. What then is the color of the boundary line between the red and the blue? A line is not double and has not different strips of color. It is all red or all blue or all both at once or all neither. It is plainly as much either one as it is the other. We must therefore say that is both or neither. “It seems to me therefore —[Peirce concludes —that the proper answer is that the boundary is both red and blue] —the distinction between them vanishing at this point” (W 1:203-4). So for any instant of time: it is half-past and half to come, it can only be, so to speak, in the making and in transit. Continuity is, for Peirce, this transition, the merging of parts, the erasure of the borders, or the unbrokenness of the whole.

Having this in mind, we can now return to our first manuscript. In its conclusions Peirce ventures upon another challenging philosophical problem: we always assume the continuity of ideas and of feelings, from which we derive the presumed continuity of time and space. But how can a mind act upon another mind? How can one particle of matter act upon another at a distance from it? “Nominalists – and surely many scientists – tell us this is an ultimate fact – it cannot be explained” (CP 1.170), but to assume something inexplicable blocks the road to inquiry. So,

“[...] if we adopt the theory of continuity we escape this illogical situation. We may then say that one portion of mind acts upon another, because it is in a measure immediately present to that other; just as we suppose that the infinitesimally past is in a measure present. And in like manner we may suppose that one portion of matter acts upon another because it is in a measure in the same place.” (Ivi).

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In another passage, and conclusively, in my opinion, the author wrote: “A thing may be said to be wherever it acts; but the notion that a particle is absolutely present in one part of space and absolutely absent from all the rest of space is devoid of all foundation” (CP 1.38). A thing is wherever it acts, where it has effects of some sort (referring to the pragmatic maxim); that means it is no more a substance, a singular thing, but a sign in a pragmatic context. There is a “thing” wherever something *functions* as a thing, *acts* as a *sign* of a thing. This is highly anti-nominalistic because nominalism means considering facts as singularities that simply happen here and now, in front of us, as ultimate inexplicable realities. But Peirce, and Ivi follows him on this side, was a ‘radical’ realist. For him just generals (that means signs of every sort) are real.

This apparent paradox simply disappears if we follow the law of continuity. In its perspective, for example, mind and matter are not of a disparate nature. The maxim of continuity will say: this disparateness is a mere question of degree. Either mind is a peculiar kind of matter, or else matter is a peculiar sort of mind. There is no sense, either, to support idealism or materialism, because they are two aspects, two different degrees of a continuous reality.

Synechism denotes then this elasticity, this wavering or oscillation from two to one and from one to two. Hence, it would be a mistake to conceive of the psychical and the

physical aspects of matter as two aspects absolutely distinct. Viewing a thing from the outside, considering its relation of action and reaction with other things, it appears as matter. Viewing it from the inside, looking at its immediate character as feeling, it appears as consciousness.

“

When a thing is in such a relation to the individual mind that that mind cognizes it, it is in the mind; and its being so in the mind will not in the least diminish its external existence: For we do not think of the mind as a receptacle, which if a thing is in, it ceases to be out of. To make a distinction between the true conception of a thing and the thing itself is only to regard one and the same thing from two different points of view”  
(W 2:471),

as if we regarded night and day from different points of view by living in Europe or in Australia. They are not to be considered two discrete phenomena, but an indivisible unit, a simple whole which has just several, different profiles.

-As you can see, continuity and fallibilism are strictly connected, because “fallibilism is the doctrine that our knowledge is never absolute but always swims, as it were, in a continuum of uncertainty and of indeterminacy. Now the doctrine of continuity is that all things so swim in continua”, as the blue-red surface showed very well. “For where is continuity, the exact ascertainment of real quantities is too obviously impossible” (CP 1.171-2).

-We are ready now to move on to a second manuscript, very important in this regard: it bears a strange title – “Immortality in the light of synechism”<sup>4</sup> — that testifies of the metaphysical interests of our author. Again, continuous (synechistic) is just a synonym for indefinite and vague (fallibilistic). But that does not mean weak.

“There is a famous saying of Parmenides, ‘esti gar einai meden d’ouk estin’, ‘being is, and not being is nothing’, This sounds plausible; yet synechism flatly denies it, declaring that being is a matter of more or less, so as to merge insensibly into nothing [...]-[...] Synechism, even in its less stalwart forms, can never abide dualism, properly so called. It does not wish to exterminate the conception of twoness, nor can any

<sup>4</sup> It comes from MS 886 of the Robin Catalogue, 1893, unpublished by the author.

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of these philosophical cranks who preach crusades against this or that fundamental conception find the slightest comfort in this doctrine. But dualism in its broadest legitimate meaning as the philosophy which performs its analyses with an axe, leaving, as the ultimate elements, unrelated chunks of being, this is most hostile to synechism. In particular, the synechist will not admit that physical and psychical phenomena are entirely distinct [...] but will insist that all phenomena are of one character, though some are more mental and spontaneous, others more material and regular” (EP 2:2).

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The quotation is concluded by a reference to the community of consciousnesses, for which your neighbors are in a measure yourself and there is no personal identity; and with a much stronger reference to life after death, because the carnal consciousness is just a small part of man and there is a strict connection between life and death, as there is between being awake and sleeping. In this way synechism destroys two metaphysical (and scientific, as well) pillars: substantialism and dualism. Synechism abides the idea that the world is composed of discrete substances (because everything swims in a continuum and a thing may be said to be wherever it acts) and that all phenomena can be distinguished either in a *physical* or in a *psychical* way, can be located either inside or outside the mind. If we say: *matter*, we are speaking about it, we are making a speech about it; and if we talk about something, we are making a reference to something *other* than our rational talk, whose ‘external’ nature we substitute by words or signs. Against the principle of non-contradiction, we have a *monism* split into *dualism*, or a dualism given in a strict unity.

In some definitions for the “Century Dictionary” Peirce shows better what he means by the idea that continuity cannot be thought as infinite divisibility. In fact, “breaking grains of sand more and more will only make the sand more broken. It will not weld the grains into unbroken continuity” (CP 6.171). Think of the series of rational fractional values that is infinitely divisible but is not by anybody regarded as continuous. Even better, we can say that a truly continuous line contains no points, or we must say that the principle of the excluded middle does not hold for these points. But the principle of excluded middle applies only to individuals, and the points are not concrete individuals, but mere possibilities (and potentiality is no individuality). “Hence a point or indivisible

place really does not exist unless there actually be something there to mark it, which, if there is, interrupts the continuity” (ivi). Therefore, continuity must not be thought as infinite divisibility, because a continuum cannot be composed of ~~non-non~~-continuous, namely discrete parts. “A true continuum is something whose possibilities of determination no ~~moltitudine~~-multitude of individuals can exhaust” (CP 6.170). It is just the relation of parts of an unbroken space or time, and that implies that a line, for example, contains no points until the continuity is broken by marking the points. “In accordance with this it seems necessary to say that a continuum, where it is continuous and unbroken, contains no definite parts; that its parts are created in the act of defining them and the precise definition of them breaks the continuity” (CP 6.168). In the calculus and theory of functions, for example, it is assumed that between any two rational points there are other rational points and that for every convergent series of such fractions (such as 3.1, 3.14, 3.141, 3.1415, etc.) there is just one limiting point; and such a collection of points is called continuous.

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Finally, synechism guides of course also signs’ evolution, and the process of inquiry. “The general motive is to avoid the hypothesis that this or that is inexplicable. For the synechist ~~mantains~~maintains that the only possible justification for so much as entertaining a hypothesis is that it affords an explanation of the phenomena. Now, to suppose a thing inexplicable is not only to fail to explain it, and so to make an unjustifiable hypothesis, but much worse, it is to set up a barrier across the road of science” (CP 6.171). To be sure, the synechist cannot deny that there is an element of the inexplicable and ultimate, because it is directly forced upon him – all the phenomena that astonish us with a surprising, or shocking character — nor does he abstain from generalizing from this experience – the shocking character becoming the regular, rational element, pure chance becoming a law of nature, because “continuity is nothing but perfect generality of a law of relationship” (CP 1.172). So, the synechist cannot be satisfied with the hypothesis that any given law is absolutely accurate: this is not, upon synechistic principles, a question to be asked, for example, whether the three angles of a triangle amount precisely to two right angles, but only whether the sum is greater or less.

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“In short, synechism amounts to the principle that inexplicabilities are not to be considered possible explications; that whatever is supposed to be ultimate is supposed to be inexplicable; that continuity is the absence

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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” (CP 6.174).

We have now our three terms well structured: any thought-sign refers to another thought-sign in an everlasting chain, in which there are no definite parts, because every interpretation blurs into another without interruption, as every interruption in this continuous line can be seen as an inexplicability and inexplicabilities cannot be accepted as possible explanations. Everything can be more and more interpreted, and this interpretation is- absolutely uncertain or fallible in every single passage; yet, certain on the whole, even though this whole is never gained in a finite number of experiences, and is something for ever **exceedent excess**. Infinity and fallibilism are strictly connected; and continuity is the only justification of the infinite and fallible; because continuity is the absence of ultimate parts, of discrete substances; continuity is unbrokenness, fluidity, merging of parts, generality, and so again, the inexplicability of every single element *quatale*.

Peirce thought that singularity is the real abstraction, and the form under which alone anything can be understood is the form of generality, which is the same as continuity: something that no multitude of individuals can exhaust, something that exceeds any single definition. As the continuum is not composed of ultimate parts, neither cognizability is composed of ultimate explications, nor semiosis of a limited number of signs. It seems then as if Peirce is telling us that the only possible explication of knowledge is that any single explication cannot be the final one, that *this very* explication cannot be final; the clearest way of defending hypotheses, of declaring their certainty, is to accept their intrinsic uncertainty and vagueness<sup>5</sup>. But this is not a contradiction, because the synechist has abandoned the Parmenidean principle and recognized that every being is just a matter of degrees, of more or less, or, let us try and say it better, of an infinite trespassing on the threshold, in which the distinction between One and the Other (the blue and the red) vanishes and they become a *Pairedness*<sup>6</sup> continually switching between the limit's discontinuity and the trespassing's continuity.

<sup>5</sup> “It is easy to be certain. One has only to be sufficiently vague” (CP 4.237).

<sup>6</sup> “But the boundary between the black and the white is neither black, nor white, nor neither, nor both. It is the pairedness of the two. It is for the white the active Secondness of the black; for the black the active Secondness of the white” (CP 6.203).

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