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Firstness, Evolution and the Absolute in Peirce's Spinoza

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Abstract

Inspired by Peirce's repeated claim in the final decade of his life that Spinoza was a pragmati(c)ist, this article examines whether or not Peirce also believed that Spinoza's metaphysics leaves room for Firstness. He engaged this issue explicitly in his third "Lecture on Pragmatism" (1903), listing Spinoza's among the metaphysics that include Firstness, Secondness and Thirdness. Moreover, over a decade earlier, in the context of his exploration of hyperbolic geometry and the evolutionary cosmology that he regarded as corresponding to it, Peirce repeatedly (if obliquely) identified Spinoza with the cosmological model that embraces all three of the categories. The article concludes by sketching the ambitious thesis that Spinoza was not only, as is usually held, a necessitarian, but also a Peircean possibilist.

Keywords: Firstness, Geometry, Scholastic Realism, Spinoza

In the final decade of his life, Charles Sanders Peirce repeatedly praised Benedictus Spinoza's pragmati(c)ism, ranking him with such (on Peirce's view) proto-pragmati(c)ists as George Berkeley and Immanuel Kant.¹ This poses something of a dilemma for the scholar who aims to take seriously both Peirce's claim that Spinoza was a pragmati(c)ist, and his claim that pragmatism is distinguished from pragmatism (and other similar positions) by *inter alia* "its strenuous insistence upon the truth of scholastic realism" (CP 5.423).² For Peirce, scholastic realism accepts the reality not only of "Seconds" (existent individuals), but also of "Thirds" (relations, laws) and "Firsts" (vagues, mere possibilities).³ While Spinoza's

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ontology clearly includes Secondness and Thirdness, it is difficult to imagine Firstness playing any role for Spinoza. After all, the universe of Firstness is not the clock universe of mechanistic determinism but the cloud universe of may-bes.⁴ If we are to save Peirce from incoherence, we seem to have three options: (1) accept his attribution of pragmati(cism) to Spinoza, but deny the importance of scholastic realism for pragmatism, (2) deny the attribution of pragmati(cism) to Spinoza, but accept the importance of scholastic realism for pragmatism, or (3) find some means of reconciling Spinozism with Firstness.

This essay has a modest thesis and a more ambitious one. My modest thesis is that, from 1890 through 1903, Peirce himself wrestled with the third option. As I shall show, Peirce repeatedly considered the possibility that Spinoza's ontology includes Firstness. Certainly, he engaged this issue explicitly in his 1903 "Lectures on Pragmatism." There, as we shall see, he at first took the view that Spinoza, Berkeley and Kant—the three figures he most often cited as pragmati(cist) progenitors—all embraced both Firstness and Thirdness in their ontologies. By the next lecture though, he had changed his mind and eliminated Spinoza from the group. However, this was not Peirce's only engagement of the question of Firstness in Spinoza. Over a decade earlier, in the context of his exploration of hyperbolic geometry and the evolutionary cosmology that he regarded as corresponding to it, Peirce had repeatedly (if obliquely) identified Spinoza with the cosmological model that embraces all three of the categories.

Even if this is true, though, what difference does Peirce's reception of Spinoza make? Peirce's thought was not influenced by Spinoza's (nor, obviously, was Spinoza's influenced by Peirce's). Moreover, it is no surprise that Peirce's understanding of Spinoza was a heterodox one; this is true of his understanding of many things. So, why should we care about just what kind of pragmati(cist) Peirce thought Spinoza was? My more ambitious thesis is an answer to this question: we should care about Peirce's account of Spinoza because it is correct. Reading Firstness into Spinoza's ontology sheds new light on the most fundamental aspects of Spinozism. Moreover, understanding Peirce's reception of Spinoza helps us to better understand the character of Peirce's pragmatism by illustrating the importance of Firstness for the mature Peirce. While this essay, therefore, sheds some light on Peircean—and Spinozist!—pragmati(cism), it is not my intention here to offer a positive account of either figure's pragmati(cism).⁵ Rather, I aim to take the sting out of what is perhaps the greatest obstacle to regarding Spinoza as a pragmati(cist)—his purported necessitarianism.

In the sections that follow, I first sketch Peirce's discussions of Spinoza's pragmati(cism) and situate these discussions within Peirce's elaboration of his own pragmatism. I then exposit Peirce's "seven systems of metaphysics" (1903), paying special attention to Spinoza's place within

these seven systems. While Peirce explicitly attributes Firstness to Spinoza's ontology in his discussion of the seven systems, he also indirectly links Spinoza to Firstness through his discussion of Aristotle and evolution. This indirect connection obliges us to glance back to Peirce's work on evolutionary cosmology and non-Euclidean geometry in the 1890s. As we shall see, even in this period, Peirce was obliquely connecting Spinoza to Firstness and evolution through his repeated references to Spinoza's geometrical conception of the absolute. I conclude by sketching the more ambitious of my two theses.

The River of Pragmatism

Although Peirce had throughout his career thought and written a great deal about Spinoza,⁶ it was not until 1904 in a review for the *Nation* of Robert Duff's *Spinoza's Political and Ethical Philosophy*, that he first praised Spinoza's "extraordinary approaches toward pragmatism" (N 3.178). According to Peirce, Duff's book

forces us to acknowledge. . . that Spinoza regarded philosophy from an intensely practical point of view. . . . Of course, [Duff] could not say that Spinoza ever enunciated the principle of pragmatism, which is that even the abstractest of our conceptions has absolutely no meaning otherwise than in so far as it has a conceivable bearing upon human conduct. But he brings before us a Spinoza so far on the road to that opinion that we cannot help guessing that if, instead of dying at the age of forty-four years and three months (all but one day), he had lived to the age at which men commonly come to philosophical maturity, he might very likely have conferred upon philosophy the inestimable advantage of a formulation that vindicates so many judgments of common sense and anthropomorphism. [N 3.178]

It is clear that the formulation that Peirce had in mind is the pragmatic maxim, his doctrine that "every conception is a conception of conceivable practical effects" (CP 5.196).

The following year, in an article on pragmatism for the *Monist*, Peirce again linked Spinoza with pragmatism, this time by emphasizing the scientific cast of thinking that led him (Peirce) to formulate the pragmatic maxim, and listing Spinoza, along with Berkeley and Kant, as a metaphysician whose work similarly recalls "the ways of thinking of the laboratory" (CP 5.412). Circa the same year, in a letter to the Italian pragmatist Mario Calderoni, Peirce wrote that pragmaticism was "not a new way of thinking," but claimed among its early adherents Berkeley, Locke, Spinoza and Kant (CP 8.206). He revisited this theme in 1906, writing that "the rivulets at the head of the river of pragmatism are easily traced back to almost any desired antiquity" (CP 5.11). In the next paragraph, Peirce extended this metaphor. The waters of the "river of pragmatism," argued Peirce, ". . . run, where least one would suspect them,

beneath the dry rubbish-heaps of Spinoza” (CP 5.11).⁷ In 1910, Peirce again referred to Spinoza’s pragmatism, this time in a less ambivalent tone: “[Pragmatism] appears to have been virtually the philosophy of Socrates. But although it is ‘an old way of thinking’, in the sense that it was practiced by Spinoza, Berkeley, and Kant, I am not aware of its having been definitely formulated, whether as a maxim of logical analysis or otherwise, by anybody before my publication of it in 1878” (CP 6.490).

In total, Peirce made six references each to Kant’s and Berkeley’s pragmati(ci)sm and five to Spinoza’s. Although Peirce came to regard Spinoza as a proto-pragmati(ci)st later than he did Berkeley and Kant, there is good reason to believe that, once he was convinced of Spinoza’s pragmati(ci)sm, he regarded him as more of a pragmati(ci)st than Kant, and as no less a one than Berkeley. Despite Kant’s manifest importance for Peirce, Peirce never claimed of Kant as he did of both (and only) Berkeley and Spinoza that he came close to founding pragmatism. Moreover, Peirce’s claims that Berkeley nearly founded pragmatism pre-date his review of Duff, in which he confessed to having newly come to regard Spinoza as a pragmatist. In the same review, he maintained that Spinoza would have founded pragmatism had he lived longer. After this 1904 “turn,” Peirce never again claimed Berkeley as the near-founder of his movement.

With regard to the terminology, three things bear noting. First of all, Peirce did not regard pragmatism to be in opposition to pragmatism. Rather, he made clear that “pragmatism” should still be used loosely to denote the broad movement of which he was a part,⁸ while his own particular doctrine should be referred to as “pragmaticism.” Thus, pragmaticism is a subset of pragmatism. Secondly, even after coining “pragmaticism,” Peirce continued to use both terms to describe his own doctrine such that “pragmatism” became for him an equivocal term denoting sometimes the wider movement and sometimes his own more metaphysical doctrine. Finally, it bears noting that Peirce used both terms to describe Spinoza. Thus, he clearly understood Spinoza to be a forerunner of his own doctrine and not simply of the broad movement. For this reason, those passages in which Peirce describes Spinoza as a pragmatist should not provoke the worry that he was lumping him in with the other more literary, more nominalistic pragmatists. It should also not provoke the worry that, when he calls Spinoza a pragmatist, Peirce is linking him only to his own early doctrine, as articulated in his 1877–78 *Popular Science Monthly* series. Peirce’s position became both more technical and more realist in later years, a fact that he himself noted (CP 8.208). The term “pragmaticism” was one that he uniquely applied to his mature, realist doctrine.

This fact helps to narrow down considerably what Peirce meant when he called Spinoza a pragmaticist. He meant that Spinoza’s philos-

ophy is compatible with a particular theory of meaning that Peirce was at pains to explain, define and prove during the period in which he declared Spinoza a pragmatist. While this theory of meaning is not, on Peirce's view, a metaphysics, or even a philosophy, but is rather a method of thinking—a way of making our ideas clear—Peirce's writings on pragmatism from this period stress that adopting this method of thinking entails accepting certain metaphysical consequences. Indeed, one of the key disagreements that Peirce had with his pragmatist contemporaries concerned what he perceived as their rejection of metaphysics.⁹

It is striking that Peirce was listing Spinoza, Berkeley and Kant as pragmati(c)st predecessors during the same period in which he actively worked to define and prove his doctrine of pragmatism. Although William James credited Peirce with coining the term "pragmatism," it was James who popularized the term in his 1898 lecture at Berkeley, "Philosophical Conceptions and Practical Results." In the years following this address, Peirce was at pains to stake out his position within the pragmatist movement. Peirce's discussions of the pragmati(c)sm of Spinoza, Berkeley and Kant all occurred between 1901 and 1910, and his most detailed elaborations of his own pragmati(c)sm occurred between 1903 and 1907. In 1905, he coined the term "pragmaticism" for his doctrine in order to distinguish it from the loose and "literary" usage, with all of the attendant nominalistic tendencies, that his original coinage "pragmatism" was by then receiving.¹⁰ That is: Peirce was embracing the figures he perceived as pragmati(c)st forebears during the same period in which he was reevaluating his own pragmati(c)sm and his relationship to his pragmatist contemporaries. It is no stretch to guess that it was Peirce's reflections on his own pragmati(c)sm in the first decade of the twentieth century that prompted him to identify Spinoza, Berkeley and Kant as proto-pragmati(c)sts. Thus, the fact that he did so reveals a great deal about Peirce's conception of his own pragmati(c)sm.

What, after all, do these three figures have in common? To be sure, they all developed philosophies that were in some measure responses to Descartes. But then, this is true of most early modern philosophers. The particular nature of their responses, however, has for generations of philosophy undergraduates marked Spinoza, Berkeley and Kant as representatives of the rival schools of continental rationalism, British empiricism and transcendental idealism. What non-trivial character could these philosophers have in common to justify Peirce citing them more than anyone else as pragmati(c)st precursors? As it turns out, they have at least this much in common: for a time at least, Peirce regarded all three of them as espousing metaphysics that embraced both Firstness and Thirdness.

Firstness in Spinoza's Ontology

Peirce's theory of the categories pervades all of his mature work. On Peirce's view, reality has three fundamental aspects, each of which is irreducible to the others. We can discern these aspects through acts of precession or abstraction.¹¹ The triune character of reality is further evidenced by the logic of relations, which shows monadic, dyadic and triadic relations as irreducible to each other, but relations of four or more places as reducible to triadic ones. For Peirce, all of the categories are basic in the sense of being irreducible. They are also ubiquitous in that all of our experiences of reality admit of analysis into Firstness, Secondness and Thirdness. However, there are cases in which one category is more dominant than the others.

The simplest of Peirce's three categories is Firstness, which Peirce described as that "mode of being which consists in its subject's being positively such as it is regardless of aught else. That can only be a possibility" (CP 1.25). By contrast, Secondness refers to "that which is such as it is as being Second to some First, regardless of anything else, and in particular regardless of any *law*, although it may conform to a law. That is to say, it is *reaction* as an element of the Phenomenon" (PPM 167). It is this action and reaction of two things that in fact makes a thing a thing for Peirce. Anything that reacts in this way, Peirce termed a Second. Finally, Thirdness is the category that Peirce reserved for "that which is such as it is as being a Third, or Medium, between a Second and its First. That is to say, it is Representation as an element of the Phenomenon" (CP 5.66). It is whatever mediating principle connects Firsts and Seconds or, indeed, connects two Seconds. Andrew Reynolds offers the helpful example of a series of coin tosses to illustrate the way in which the categories are discernible in our experience of the world: "Think of the coin's two faces (heads, tails) as its firstness, its 'quality.' The actual outcomes of the trials are seconds. The limit to which the ratio of heads to tails converges is the coin's thirdness" (Reynolds 2000, 304 n.31). This example helps us to see the emergence of Secondness from Firstness via Thirdness.

While Peirce limited the realm of existence to Secondness, he regarded all three categories as real. Indeed, in 1903, as he began to work through the character of pragmatism, he lent particular attention to the question of which other philosophers accepted the reality of all three categories.

In the third and fourth of his "Lectures on Pragmatism" of that year Peirce offered a taxonomy of metaphysical systems organized around the question of which ontologies include which of his three categories. Over the course of these, Peirce vacillated on the question of whether or not Spinoza accorded any reality to Firstness. In the third lecture, Peirce explained his three phenomenological categories, and laid out the seven possible combinations that arise from them—i.e., Firstness alone; First-

ness and Secondness; Secondness alone; Secondness and Thirdness; Thirdness alone; Thirdness and Firstness; Firstness, Secondness and Thirdness in combination; no null set. On his view, these seven combinations exhaust all possible ontologies. Citing the principle of parsimony, he began by considering the three simplest ontologies—those that recognize only one mode of being, but dismissed all of these¹² as “having worked themselves out into absurdity” (PPM 172). He moved on to, but similarly rejected, those ontologies that recognize only two modes of being,¹³ ultimately coming to rest with those metaphysical systems that embrace all three categories.

Peirce observed that, among those metaphysics that recognize all three categories, “there are other philosophies which seem to do full justice to Categories Second and Third and to minimize the first, and among these perhaps Spinoza and Kant are to be included” (PPM 172). However, by the next lecture, Peirce had changed his mind. He listed as proponents of the ontology that recognizes only Secondness and Thirdness “Cartesianism of all kinds, Leibnizianism, Spinozism, and the metaphysics of the Physicists of today” (PPM 190), but listed Kantianism and especially Aristotelianism (to which Peirce this time paid particular attention) as among the metaphysical systems that accept the reality of all three categories (PPM 190).

It is worth noting that, in both the third and fourth lectures, Peirce listed Berkeley as accepting Firstness and Thirdness, but rejecting Secondness. Thus, in 1903, Peirce regarded Berkeley and Kant, the other two figures whom he most often cited as pragmati(c)i(st) forebears, as accepting the reality of both Firstness and Thirdness. However, he was of two minds about Spinoza. On the one hand, he described Spinoza, like Kant, as a figure who merely minimizes but does not reject Firstness; on the other hand, he also listed him with the Cartesians, who (according to Peirce) reject Firstness altogether.

These are Peirce's only explicit discussions of Firstness in Spinoza. However, when taken in the context of his remarks elsewhere during the period, Peirce's discussion of Aristotelianism in Lecture Four points to further oblique connections between Spinoza and Firstness. In the late 1890s, Peirce several times identified Aristotle as an evolutionist, maintaining that “Aristotle's philosophy, that dominated the world for so many ages and still in great measure tyrannizes over the thoughts of butchers and bakers that never heard of him—is but a metaphysical evolutionism” (CP 1.173).¹⁴ In 1903, he explicitly linked this with the claim that Aristotle's metaphysics comprises all three categories: “Aristotle, . . . whose system, like all the greatest systems, was evolutionary, recognized besides [existence] an embryonic kind of being, like the being of a tree in its seed, or like the being of a future contingent event, depending on how a man shall decide to act. In a few passages Aristotle seems to have a dim aperçue of a third mode of being in the entelechy. . .” (CP 1.22).¹⁵

Peirce continued by distinguishing between the metaphysics of Aristotle and that of the scholastic realists, who, according to Peirce, attempted “to mould this doctrine of Aristotle into harmony with christian truth” (CP 1.22). Here, as elsewhere, Peirce characterized the scholastic account of Aristotle as having done some violence to his real philosophy. For instance, in a 1901 review for *The Nation* of Josiah Royce’s *Herbert Spencer: An Estimate and Review*, Peirce contrasted “the historical Aristotle and the imaginary Aristotle of the scholastics” (N 3.199), arguing that Aristotle recognized an evolutionary principle in the universe, but that his scholastic interpreters represented him as having rejected such a principle. The following year (a year before his “Lectures on Pragmatism” discussion of the seven systems of metaphysics), in his review of Joachim’s *A Study of the Ethics of Spinoza*, Peirce identified Spinozism as consistent with historical (rather than scholastic) Aristotelianism. According to Peirce,

educated in Holland when he was, the notions of philosophy which Spinoza first received, and which, in the main, form the bed-rock upon which he built, naturally would come, and it is easy to see that they did come, from the Dutch reformed peripatetics of that time. . . . There is no trace in Spinoza of any direct acquaintance with medeëval scholasticism. The Dutch Aristotelians were influenced to a considerable, but limited, extent by scholastics. . . . But the main features of his philosophy are consistent with Aristotelianism slightly modified, and not at all so with the other doctrines which subsequently influenced him. (N 3.77–78)

Thus, Peirce not only identified metaphysical systems that embrace all three categories as fundamentally Aristotelian; he also linked Aristotle’s metaphysics (and, by extension, those metaphysics that embrace Firsts, Seconds and Thirds) with evolutionism.¹⁶ During the same period, he made the difference between real Aristotelianism and the “imaginary” Aristotelianism of the scholastic period to rest in the former’s evolutionism and the latter’s rejection of same. Finally, in a text from the same period, he praised Spinoza’s “slightly modified” Aristotelianism, maintaining that Spinozism shows no trace of influence by the scholastics.

Indeed, as much as ten years earlier, Peirce had already begun to see connections between Spinoza’s metaphysics and Aristotle’s purported evolutionism. In 1891–1893 Peirce engaged in a public dispute with then-*Monist* editor Paul Carus over necessitarianism and chance. Early on in the exchange, Carus invoked Spinoza, only to have Peirce claim Spinoza for his own side of the debate: “Now I understand Spinoza to be a realist” (CP 6.593). For Peirce, Spinoza’s realism is at bottom incompatible with the nominalistic platonism to which he attributed Carus’s necessitarianism. Further down in the same article, Peirce

sketched the results of his studies in the history of philosophy, and his conclusion (from these studies) that “an evolutionary philosophy of some kind must be accepted—including among such philosophies systems like those of Aristotle and of Hegel” (CP 6.604).

So we see that in two nearby passages in the same text Peirce identified himself with both Spinoza's realism and Aristotle's evolutionism, and opposed both to Carus's nominalism and necessitarianism—further evidence that he was beginning to see Spinoza as a member of his own camp, and was doing so in the midst of reflections on chance and evolution.

None of this in itself proves that Peirce regarded Spinoza as an evolutionist or changes the fact that, in Lecture Four, Peirce listed Spinozism with Cartesianism as rejecting Firstness. However, it does show that, in the early 1900s, Peirce's broad conceptions of Spinozism, of evolutionism and of metaphysical systems that embrace Firstness were not so far apart. While Peirce wavered on the question of the role of possibility in Spinoza's ontology, he did not in principle rule it out. And, much of what he was saying and writing during the period reveal a *prima facie* willingness to associate Spinozism with Firstness. And, it is well to remember that it was not until 1904 that Peirce came to regard Spinoza as a pragmati(ci)st. We should thus have been very surprised to see Peirce already in 1903 fully convinced of the compatibility of Spinoza's metaphysics with his own. What is important to note is that, by 1903, Peirce was wrestling with the question of whether or not Spinoza's ontology includes Firstness—and he was doing so despite Spinozists' general acceptance of Spinoza's necessitarianism. Thus, in 1903, Peirce was already going against the grain in Spinoza scholarship by questioning what others did not. Moreover, he was doing so in a way that already nudged Spinoza towards the pragmati(ci)st camp. After all, in the third “Lecture on Pragmatism,” there are only three canonical figures whom Peirce listed as holding metaphysical positions that include both Firstness and Thirdness. These figures are Berkeley, Kant and Spinoza—the very three philosophers that, after 1904, Peirce listed most often as his pragmati(ci)st forebears. This is indicative both of how essential Peirce took the recognition of Firstness and Thirdness to be for pragmati(ci)sm¹⁷ and of his progress toward recognizing Spinoza as a pragmati(ci)st forebear.

Hyperbolic Geometry and Evolutionary Cosmology

While the 1903 lecture series provides the most explicit evidence that Peirce entertained the possibility that Spinoza's ontology includes Firstness, there is good reason to think that Peirce seriously attended to the possibility for much of the 1890s.

Throughout this period and extending into the early 1900s, Peirce was absorbed by issues in non-Euclidean geometry and its implica-

tions for the shape of space and for cosmology. During this time, he engaged in a number of empirical attempts to measure whether space is Euclidean. Cosmologically, he repeatedly linked the three possible geometries of space (Euclidean, Lobachevskian and Riemannian) with three accounts of the development of the universe—each of them with distinct metaphysical implications. Philosophically, he repeatedly expressed the view that metaphysics is modelled on geometry, and that the revolution in geometry portended a similar revolution in metaphysics, a revolution that would ultimately undercut the vestiges of mechanistic determinism.¹⁸ What is germane for our purposes, however, is that, several times over the course of this period, Peirce invoked these intersecting themes in his writings on Spinoza. The manner in which he did so once again suggests that he was ambivalent about Spinoza's metaphysics and cosmology. While there is some indication that, during this period, Peirce sometimes regarded Spinoza's as one of the metaphysics undercut by the non-Euclidean revolution, he also repeatedly hailed him for having developed a conception of the absolute that anticipates the hyperbolic geometry (and, by extension, an evolutionary cosmology). A closer examination of Peirce's research into non-Euclidean geometry, the shape of the universe, and cosmology reveals that he regarded Spinoza as grasping early on a revolutionary geometrical conception that, in its application to space, but especially to time, evinces a commitment to the reality of all three phenomenological categories.

In an incomplete letter to Christine Ladd Franklin dated August 29, 1891, Peirce wrote:

[M]y chief avocation in the last ten years has been to develop my cosmology. This theory is that 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 nothingness 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. (CP 8.317)

Notice that Peirce here uses a geometrical term, "hyperbolic," to capture his evolutionary cosmology. For over a decade, Peirce repeatedly referred to what he regarded as the three possible cosmological models using the explicitly geometrical terms "hyperbolic," "parabolic," and "elliptic." Throughout the same period, he was conducting researches into the shape of space, and whether it is consistent with Euclidean, Riemannian or Lobachevskian geometry.¹⁹ On Peirce's view, Euclidean space is consistent with a parabolic cosmology, Riemannian space with an elliptic cosmology and Lobachevskian space with an hyperbolic cosmology.

The details of why Peirce believed that the shape of time, as it were, maps the shape of space is beyond the scope of this essay. However, it is worth looking at the broad strokes of why he took the view that he did. While Peirce offered a number of explanations, there are two that he discussed most fully. We might term these the Metrical Account and the Predictability Account.

The Metrical Account runs as follows: Let us conceive the geometrical absolute as an infinitely long measuring rod which may be shifted for the purpose of measuring space, but whose origin and terminus remain fixed. If space is hyperbolic (Lobachevskian), then the origin and terminus never meet, if it is parabolic (Euclidean) then they coincide, and if it is elliptic (Riemannian) then they are merely imaginary. But we can conceive the progress of the universe as a kind of journey from the origin to the terminus of the rod. The relative positions of these then describe the beginning and end of the universe.²⁰

By contrast, the Predictability Account is less cosmological than epistemological: Euclidean geometry wrongly treats the question of the areas and angles of plane figures as *a priori* deducible with perfect precision. This gives metaphysicians optimism that the universe *simpliciter* is predictable with precision. If events within the universe are predictable with precision, then determinism is true. But, non-Euclidean geometry provides grounds to doubt that the areas and angles of plane figures are *a priori* deducible with perfect precision; it therefore undercuts metaphysicians' optimism that the universe *simpliciter* is predictable with precision. This raises the possibility that determinism may be incorrect.²¹

Whatever Peirce's reasons for linking his cosmology with developments in geometry, given his remarks on Spinoza's geometrical thinking, it is worth sketching the connections that Peirce drew between geometry and metaphysics, and between the hyperbolic geometry and Spinoza's metaphysics.

The former are central to Peirce's c. 1890 unpublished manuscript, *A Guess at the Riddle*, a work concerned with explaining his three phenomenological categories and showing the necessity of engaging all three in all realms of thought. The manuscript opens with an explanation of the categories, followed by a geometrical analogy intended to make clear the difference between ontologies that see the categories as, variously, coincident or distinct. Here is Peirce's account of the geometrical conception of the absolute:

According to the mathematicians, when we measure along a line, were our yardstick replaced by a yard marked off on an infinitely long rigid bar, then in all the shiftings of it which we make for the purpose of applying it to successive portions of the line to be measured, two points on that bar would remain fixed and unmoved. To that pair of

points, the mathematicians accord the title of the absolute; they are the points that are at an infinite distance one way and the other as measured by that yard. (CP 1.362)²²

These two points, continued Peirce, are analogous to absolute Firstness and absolute Secondness, while “every measurable point on the line is of the nature of a third”²⁴ (CP 1.362). In the metaphysical absolute, “the starting-point of the universe, God the Creator, is the Absolute First; the terminus of the universe, God completely revealed, is the Absolute Second; every state of the universe at a measurable point of time is the third” (CP 1.362). From this, argued Peirce, and from philosophers’ views on whether Absolute Firstness and Absolute Secondness are fictitious, coincident or distinct, three cosmologies emerge.

The first cosmology regards Absolute Firstness and Secondness—by analogy, the two points at the extremes of Peirce’s infinite yardstick—as unreal. This approach, Peirce termed “elliptic.” Elliptic cosmologies accept the reality only of percepts and reject both the origins and the *telos* of those percepts as fictions.²⁴ Peirce in more than one text identified this position with Epicureanism,²⁵ although we might think of Humean and statistical mechanical cosmologies as likewise exemplars of this type.

The second possible cosmology also accepts the reality of percepts but sees these as emerging not randomly but from a real origin. This position is, however, analogous to a parabolic curve in that its origin and terminus are coincident. Parabolic cosmologies hold that the universe’s *telos* just is its origin—that the universe will end as it began. For parabolic thinkers, there is no genuine Firstness, only Secondness and Thirdness. Peirce labelled this position pessimistic.²⁶ However, those infused with Nietzschean *amor fati* would call it optimistic. It is a position with considerable Stoic affinities,²⁷ and one, it is worth observing, that most would identify with Spinoza.

The final cosmology that Peirce laid out is his own. This is the view of those who regard Absolute Firstness and Absolute Secondness as both real and as really divergent from one another. In geometrical terms, the curve described by two points infinitely distant from one another is hyperbolic. On Peirce’s account, if you hold “that the whole universe is approaching in the infinitely distant future a state having a general character different from that toward which we look back in the infinitely distant past, you make the absolute to consist in two distinct real points and are an evolutionist” (CP 1.362).

The link that Peirce drew between the hyperbolic geometry and an evolutionary cosmology that embraces real possibility and change is intimately bound up with his view, expressed in a subsequent passage of the same manuscript, that the revolution in geometry presages a revolution in metaphysics that will mark the demise of mechanistic deter-

minism. On Peirce's account, "metaphysical philosophy may almost be called the child of geometry" (CP 1.400). Following Kant, and citing such figures as Pythagoras and Plato, Peirce argued that metaphysics draws its methodology and some of its most powerful conceptions from geometry. Thus, the nineteenth century rejection of Euclid's parallel postulate and the consequent rise of various non-Euclidean geometries marks the beginning of a new era in metaphysics.

Peirce argued that Euclidean geometry encourages the belief that fundamental questions are soluble by reason alone—that, without ever measuring the angles of a triangle, for instance, it is possible to determine the sum of its angles. A universe in which this is possible is as precise and predictable as the sum of those angles. However, Lobachevsky's and Riemann's combined discoveries showed that the sum of a triangle's angles does not necessarily equal the sum of two right angles. In doing so, they revealed the question of the actual sum of a triangle's angles to be an empirical question subject to measurement. As a long-time professional measurer, Peirce was well aware that measurement is susceptible of greater variation than reason—that, if the angles of a triangle were measured an infinite number of times, their average sum would asymptotically approach 180 degrees, but that the individual measurements would be distributed over a range of numbers only approximating to 180. Absent the parallel postulate and the *a priori* certainty of Euclidean approaches, Peirce saw no good reason to be certain that a triangle's angles sum to precisely 180 degrees.²⁸ And, if not even geometrical facts like this one are susceptible of perfect certainty and precision, then, Peirce reasoned, there is little reason for confidence that empirical questions of causation are susceptible of perfect certainty and precision. This allowed Peirce to carve out a space for chance and vagueness in the physical universe—a space which more easily conformed to an evolving universe characterized by stochastic causation than the static universe of mechanistic determinism. The centrality of this argument for Peirce is revealed by the fact that, in separate texts from 1891, 1892, and 1893, he reiterated the view that metaphysics is modelled on geometry, and that non-Euclidean geometry spells the end of mechanistic determinism.²⁹

In an 1891 article for *The Monist*, entitled "The Architecture of Theories," in a section on the nature of space, Peirce inferred from the revolution in geometry an anti-deterministic revolution in metaphysics. "It is evident," he wrote, ". . . that we can have no reason to think that every phenomenon in all its minutest details is precisely determined by law. That there is an arbitrary element in the universe we see—namely, its variety. This variety must be attributed to spontaneity in some form" (CP 6.30). The following year, in a review for *The Nation* of Lobachevsky's *Geometrical Researches on the Theory of Parallels*, Peirce wrote that Lobachevsky's "overthrow of the axioms of

geometry . . . must lead to a new conception of nature, less mechanical than that which has guided the steps of science since Newton's discovery" (N 1.135–36).³⁰ In a c.1893 unpaginated fragment, Peirce again described metaphysics as aping geometry, arguing that, "seeing how the propositions of geometry flowed demonstratively from a few postulates, men got the notion that the same must be true in philosophy. But of late mathematicians have fully agreed that the axioms of geometry (as they are wrongly called) are not by any means evidently true" (CP 1.130). He continued:

Now what is metaphysics, which has always formed itself after the model of mathematics, to say to this state of things? The mathematical axioms being discredited, are the metaphysical ones to remain unquestioned? I trow not. There is one proposition, now held to be very certain, though denied throughout antiquity, namely that every event is precisely determined by general laws, which evidently never can be rendered probable by observation, and which, if admitted, must, therefore, stand as self-evident. This is a metaphysical postulate closely analogous to the postulates of geometry. Its fate is sealed. The geometrical axioms being exploded, this is for the future untenable. [CP 1.132]

It is clear from these texts that, for Peirce, the non-Euclidean revolution in geometry was part and parcel with a revolution in metaphysics that would mark the demise of strict determinism, and the rise of a metaphysics that embraces chance and possibility. Peirce sustained this view throughout the decade in which he worked most closely on the new geometries. Indeed, it is no exaggeration to say that, for Peirce, to embrace non-Euclidean geometry was, in a way, to embrace objective chance.³¹ It is therefore significant that, throughout this same period, Peirce several times addressed the geometric revolution in his writings on Spinoza, often using the same language as we find throughout the above texts.

Spinoza's Absolute

In his 1891 *Century Dictionary* entry on "Spinozism," Peirce described the *Ethics* as "an exposition of the idea of the absolute." Peirce complained about the *Ethics'* geometrical form of presentation, but continued that

while the form is pseudomathematical, the thought itself is truly mathematical. The main principle is, indeed, an anticipation in a generalized form of the modern geometrical conception of the absolute, especially as this appears in the hyperbolic geometry, where the point and plane manifolds have a correspondence similar to that between Spinoza's worlds of extension and thought. [C 5837]

By 1891, as we have seen, Peirce was thinking of the geometrical absolute in terms of Cayley's infinite measuring rod, and was linking discussions of same with his discussions of the three cosmologies. Thus, Peirce's characterization of the *Ethics* in 1891 as an exposition of the idea of the absolute, and his reference, just following, to the modern geometrical conception of the absolute, point towards the metaphor of the infinite measuring rod to which he repeatedly took recourse throughout the 1890s—a metaphor that he almost always used in conjunction with a discussion of the three possible cosmologies. His claim that Spinoza's conception of the absolute accords, in particular, with that used in the hyperbolic geometry shows that Peirce was already at this time linking Spinoza with an evolutionist cosmology, and with a metaphysics that admits real possibility.

Indeed, in the same year that he published his "Spinozism" entry, Peirce also published "The Architecture of Theories" in *The Monist*. There, as we have seen, he explicitly linked the new geometries with the view that "we can have no reason to think that every phenomenon in all its minutest details is precisely determined by law" (CP 6.30). The year after the "Spinozism" entry, in a review of George Stuart Fullerton's *The Philosophy of Spinoza*, Peirce again discussed Spinoza in connection with the absolute, but this time, it was Spinoza's pantheism and not his parallelism that attracted Peirce's special attention. Peirce began the review with some remarks on the difficulty of understanding Spinoza,³² and then continued that "the service he performed was to render certain conceptions, as that of the Absolute, more sharp and clear than they had before been, but not to prove any truth" (N 1.164–65).

It was not until Peirce's 1894 review of Hale White's translation of the *Ethics* that Peirce for the first time explicitly connected his discussions of the Spinozist absolute with the revolution in geometry that motivated his work of the 1890s. Arguing that the discussion is "eminently pertinent to Spinoza. It is more than pertinent—it is indispensable to the comprehension of him" (N 2.86), Peirce devoted a considerable portion of the review to a consideration of mathematical reasoning. On Peirce's account, both Spinoza and Euclid (after whom, of course, Spinoza modelled his so-called "geometrical form") mistakenly took their own reasonings to be adequately reflected in their formal demonstrations. In reality, though, argued Peirce, "this apparatus [*sic*] of Definitions, Postulates, Axioms, Problems, and Theorems is in geometry itself merely a veil over the living thought. Hence it is that Euclid's manifold slips in logic have scarce cast a shadow of doubt over the substantial truth of his propositions" (N 2.84). Peirce argued that real mathematical thought does not consist of mechanical syllogistic reasoning, but of living acts of choice, of "thinking how things already remarked may be conceived as making a part of a hitherto unremarked system, especially by means of the

introduction of the hypothesis of continuity where no continuity had hitherto been thought of” (N 2.85).

In illustration of this, Peirce cited the example of pre-Euclidean geometers who addressed the question of whether the angles of a triangle add up to exactly 180 degrees using drawings on a plane surface. Since the properties of a triangle depend upon whether it is drawn on a plane or spherical (for instance) surface, this method begs the question. Peirce writes, “Syllogistically, it was illogical. Considered as mathematics, it was merely the ordinary procedure whereby something is added to the original hypothesis. Considered as physics, it was quite unjustifiable to assume that their idea of space corresponded to the space of the real world” (N 2.85). According to Peirce, this act of drawing triangles, and thereby imagining that all triangles are plane figures was a legitimate (and most fruitful) “act of choice”—in a sense, the pre-Euclidean geometers merely designed their experiments so as to isolate certain variables. However, representing their reasoning in the formal structure of “Definitions, Postulates, Axioms, Problems, and Theorems” wrongly casts a particular experiment with a particular empirical scope as necessary reasoning about *a priori* truths. This not only obscures the character and scope of the original “living thought”; it also produces logical errors.

Spinoza’s *Ethics*, continued Peirce,

is likewise drawn up in theorems, with demonstrations which have always furnished a laughing-stock to mathematicians. But you must penetrate beneath these if you would enter the living stream of Spinoza’s thinking. You then find that he is engaged in a somewhat mathematical style in developing a conception of the absolute, strikingly analogous to the metrical absolute of the mathematicians. He thus appears as a mathematical thinker, not in the really futile, formal way in which he and his followers conceived him to be but intrinsically, in a lofty, living, and valuable sense. [N 2.86]

These remarks are extraordinarily rich, especially in light of what Peirce was saying elsewhere during this period about geometry and the absolute. On the one hand, he identified Spinoza with Euclidean, rather than non-Euclidean, geometry. In the context of his other works of the period, this would seem to rank Spinoza among those determinists whose metaphysics are doomed by the non-Euclidean revolution. On the other hand, here as elsewhere,³³ Peirce claimed that Euclid himself knew the limits of “Euclidean” geometry better than his own demonstrations reveal—in this instance, that the sum of the angles of a triangle drawn upon a sphere is greater than the sum of two right angles. On Peirce’s view, Euclid’s demonstrations only scratch the surface of a way of thinking that was already (for Euclid himself) “non-Euclidean.” The world of plane figures that comes down to us in

Euclid's *Elements* is a mathematical idealization that Euclid himself did not regard as capturing all of real space.

And, just as was the case with Euclid (on Peirce's view), Spinoza's geometrical method conceals just how far ahead of his time he was. Peirce's discussion of Spinoza in this connection suggests that he regarded Spinoza's mechanistic-deterministic proofs as obscuring his "post-determinism"—perhaps even his nascent tychism—in the same way that Euclid's proofs obscured the non-Euclidean nature of his thought.³⁴ That Peirce may have had such a thing in mind is suggested by his reference, yet again, to Spinoza's conception of the absolute—a reference made, it is well to remember, in the same year that Peirce was seeking funding to measure space for evidence of whether it is Euclidean, Riemannian or Lobachevskian.

Beneath the formal demonstrations, argued Peirce, Spinoza "is engaged in a somewhat mathematical style in developing a conception of the absolute, strikingly analogous to the metrical absolute of the mathematicians." Just as with Euclid's proof that the sum of the angles of a triangle are equal to two right angles, Spinoza's metaphysics is, for Peirce, a fecund idealization that requires empirical testing. As Peirce put it, "whether or not this ideal absolute which he brings us to conceive has anything at all in the real world corresponding to it, is a problem which simple thinking cannot solve. That must be brought somehow to the bar of experience. . ." (N 2.86).

In the next paragraph, Peirce likened Spinoza to Galileo. This reference, I think, points to the final hint that Peirce regarded Spinozism as consistent with a metaphysics of possibility. Galileo, after all, is the historical figure that Peirce most often mentioned in connection with his discussions of "*il lume naturale*."³⁵ On Peirce's view, our embeddedness in the universe—the fact that human beings have evolved within and with the universe—shines a kind of natural light that informs our guesses about the character of the universe; Peirce regarded these guesses as central to the process of scientific discovery and invention. It is to this brand of retroductive thought that Peirce referred in his comparison of Galileo and Spinoza:

Galileo, seeing that a falling body evidently falls faster and faster, only stops a moment to show that there would be serious difficulties in the way of supposing the velocity to be proportional to the distance fallen from rest, and then at once adopts the correct idea that the incremental velocity is proportional to the time that increment occupied. Spinoza's reasoning is precisely of the same nature. [N 2.86]

According to Peirce, then, Spinoza's method is abductive. That is, it consists of a "guess" guided by "*il lume naturale*," which then needs to be tested empirically. Peirce's claim that Spinoza's thought is mathematical

“in a lofty, living, and valuable sense” reinforces this. In 1902, Peirce declared that “mathematics is the study of what is true of hypothetical states of things” (CP 4.233).³⁶ That he regarded Spinoza’s thought as concerned with hypothetical things—as fundamentally mathematical, and hence abductive—is further evidence that, already in 1894, he was coming to associate Spinoza not with necessity but with possibility. Ten years later, Peirce embraced him for the first time as a fellow pragmati(ci)st.

Conclusion: Spinoza’s Pragmaticist Possibilism

The story that I have been telling here is, to say the least, a complicated one. I began this essay by citing Peirce’s attribution of pragmati(ci)sm to Spinoza, Berkeley and Kant. I argued that one strand of Peirce’s reasons for listing these three unlikely bedfellows as his main philosophical progenitors is his sometimes association of all three with metaphysics that embrace both Firstness and Thirdness. However, these are not the only three figures of whom this claim is true. Notable among these, Peirce identified Aristotle as a philosopher whose metaphysics embraces all three of the Peircean categories—and did so much less ambiguously (and more decisively) than he did either Spinoza or Kant. Aristotle’s importance for Peirce, and Peirce’s association of Aristotle with Firstness is even more clear in his discussions of geometry and cosmology in the 1890s. And yet, while Peirce located Aristotle in the “river of pragmatism,” he did not give him the same pride of place in that river that he did Spinoza, Berkeley and Kant. So, whatever the importance of Firstness and Thirdness for Peirce’s pragmatism, the mere embracing of Firstness and Thirdness does not, on Peirce’s view, make one a pragmaticist. This study, then, is not the end of the story about the importance of Firstness and Thirdness, and of evolutionism in Peirce’s attributions of pragmati(ci)sm to historical philosophers.

What should be clear, however, is that, as complicated as *that* question is, there can be no question that it is one with which Peirce himself wrestled. While we cannot be sure that he was ever finally convinced of Spinoza’s commitment to Firstness and to some brand of evolutionism, there is plenty of evidence that he often saw both of these things in Spinoza, and to a much greater degree than any other Spinoza scholar has ever done.³⁷ What could have led him to take this view?

The particular variety of evolutionary theory upon which Peirce modelled his cosmology was more strongly influenced by Lamarck than by Darwin. Peirce’s preferred evolutionary theory, which he termed “agapasticism,” combines what Peirce regarded as the three main types of evolutionism: Darwinian chance variation, theories that attribute evolution to blind mechanical necessity, and the Lamarckian view that inherited characteristics are acquired by exercise and endeavour. Agapasticism embraces elements of all three, but treats the last of them as

of principal importance. Thus, for Peirce, evolution (whether of a species or of the whole universe) occurs both through chance variation and mechanical necessity, but especially through the effort of individuals and, indeed, of the whole universe.³⁸

Peirce's emphasis on Lamarck over Darwin points to his reason for associating Spinoza with evolutionism. The effort, exercise or endeavour of agapasticism is arguably a great deal like *conatus*, Spinoza's principle that individuals strive to persist. Spinoza's commitment to *conatus* underwrites his criticism of Cartesian mechanics. On Spinoza's account, Descartes was mistaken to regard matter as inert. For Spinoza, matter, like mind, is active; it is in its very essence dynamic. The important role that Spinoza accords to *dunamis* in his physics no doubt influenced Peirce's linking of Spinoza with "historical Aristotelianism." And, since Peirce cites Aristotle's own principle of *dunamis* in support of his attribution to him of evolutionism, so the traces of Aristotelian *dunamis* in Spinoza's principle of *conatus* almost certainly played a role in Peirce's association of Spinozism with hyperbolic cosmologies.

Is *conatus* enough to make Spinoza an evolutionist? I don't think that it is. An unchanging universe with a conative principle is still an unchanging universe—and such a universe is, in Peirce's terminology, parabolic, not hyperbolic. For Spinoza to count as an evolutionist in the Peircean sense, he needs not only a conative principle but genuine Firstness—a principle of possibility that is irreducible to necessity and law. After 1903, Peirce never explicitly stated that he saw Firstness in Spinozism. However, his repeated insistence that the pragmatist must affirm the reality of possibility combined with his references to Spinoza's pragmati(cism) from 1904 onwards give us good reason to believe that Peirce ultimately saw Spinozism as including not only Secondness and Thirdness, but also Firstness.

The ambitious thesis that I mentioned at the outset of this article is that Peirce was right to regard Spinozism in this way. That is, reading Spinozist texts for evidence of Firstness actually teaches us something important and new (and true) about Spinozism. Put bluntly, Spinoza was a possibilist. To say that Spinoza was a possibilist is not to deny that he was a necessitarian. He was a necessitarian in the sense that he recognized necessity as real. However, he was also a possibilist, who regarded possibility as real and as extending beyond actuality—just as Peirce did. The details of Spinoza's possibilism go well beyond the scope of this essay, and will have to wait for another time. However, here is a sketch of how the story goes.

For Spinoza as for Peirce, being is at bottom indeterminate; individual things are not substances. Indeed—and here we glimpse another aspect of Spinoza's pragmati(cism)—they are only individuals to the extent that they have effects. For Spinoza, however, for a thing to have a determinate effect is for other possible effects to be closed off to that

thing. Thus, to be an individual thing, on Spinoza's view, is not to perdure (like a substance) but to have limitations. Unlike Descartes, who regarded finite substances as degenerate versions of the paradigmatic divine substance, Spinoza regarded substance and finite modes as two opposite ends of a continuum. To be a substance, for Spinoza, is to be utterly unlimited—to be pure possibility. By contrast, individual things are individual things because of their limitations. To put the matter in Peircean terms, for Spinoza, substance *qua* substance is a First, whereas substance *qua* finite mode is a Second. To borrow the metaphor of the rod that Peirce himself borrowed from Cayley, substance for Spinoza is the Firstness at the origin of the rod; individual things are the Seconds at the rod's terminus; the infinite modes or common notions that mediate between substance and individual things are the Thirds that mark intermediate points on the rod.⁴⁰ For Spinoza (as for Peirce), substance, common notions and finite modes can only be prescinded from each other; they are just different aspects of the very same reality. In seventeenth century parlance, the distinction between them is only a distinction of reason.

Spinoza's mechanism and his naturalism led him to focus much of his attention on the interaction of Seconds in particular, and thus, on the necessity with which each Second determines the next. However, Seconds are not the whole story for Spinoza. Determinism is not Spinoza's whole metaphysics; it is merely his principle of individuation for things. If, like Leibniz's, Spinoza's universe were only furnished by individual things, then determinism would be everything for him. However, Spinoza's universe contains more than things. Thus, the deterministic universe is just a sub-set of the Spinozist universe *simpliciter*.

All of the passages that are usually adduced in support of the necessitarian, mechanistic-deterministic account of Spinoza confirm this. CM 1,iii: "The Possible and the Contingent are not affections of things [*rerum*]." E1P33: "Things [*res*] could not have been produced by God in any other way or in any other order than is the case." E1P33S1: "I have shown here more clearly than the midday sun that in things [*rebus*] there is absolutely nothing by virtue of which they can be said to be 'contingent' . . . a thing [*res*] is termed 'contingent' for no other reason than the deficiency of our knowledge." These passages all explicitly make reference to things [*res*]. Things are not possible but fully determined. In Spinoza's idiom, this is not a grand metaphysical claim; it simply follows analytically from the definition of "thing."

The traditional view of Spinozism as necessitarian and non-possibilist neglects the distinctive character of Spinoza's determinism. It is not just a theory about efficient causation. For Spinoza, "God is the immanent, not the transitive, cause of all things" (E1P18). To understand Spinoza's ontology, it is crucial to grasp that the immanent causation that he attributes to God is not an internalized version of efficient

causation, but rather a commitment to God's indeterminacy, and the status of modes as non-causal determinations of God. While Spinoza recognizes transeunt, and hence efficient, causation at the modal level, his overarching metaphysics is grounded in indeterminacy. It is thus pragmati(ci)st rather than traditionally determinist.

If reading Spinoza through Peirce helps us to better understand neglected aspects of Spinoza's metaphysics, it also promises to help us better grasp the mature character of Peirce's pragmati(ci)sm. Scholars of Peirce's pragmatism must wrestle with the fact that his clearest expression of that doctrine occurred some twenty-five years before he ever used the word in print. While the 1877–78 *Popular Science Monthly* series is what we usually teach our students about Peirce's pragmatism, the story doesn't end there. It was James's popularization of the doctrine that led Peirce to his fullest reflections on pragmatism. However, his writings on pragmati(ci)sm between 1903 and 1907 rank among his most difficult. This is not helped by the sometimes adversarial tone that Peirce occasionally adopted during this period toward some of his pragmatist contemporaries. However, Peirce's discussions of his own pragmati(ci)sm and his criticisms of other twentieth century pragmatists are not the only clues available to us. During the same period, he offered ostensive definitions of pragmati(ci)sm by pointing to the movement's historical progenitors. By attending more closely to the historical figures whom Peirce identified with pragmati(ci)sm during this period, and to those aspects of these men's thought that most struck Peirce, we stand to learn a great deal about Peirce's mature doctrine. It is time to chart the "river of pragmatism."

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NOTES

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1. The infelicitous term "pragmati(c)ism" is necessitated by Peirce's description of Spinoza (as well as Berkeley and Kant) as both a pragmatist and a pragmaticist, and by Peirce's efforts from 1905-onwards to get clear on pragmatism and pragmaticism. Throughout, I use "pragmatism" and "pragmaticism" where the difference between the two makes a difference, and "pragmati(c)ism" where agnosticism is in order.

2. In accordance with standard practice, here and throughout, CP denotes *Collected Papers of Charles Sanders Peirce*. Likewise, C denotes *The Century Dictionary*, EP denotes *The Essential Peirce*, MS CSP denotes Peirce's unpublished manuscripts housed at Houghton Library at Harvard University (with MS numbers corresponding to Robin's 1967 catalogue of the Peirce papers), N denotes *Charles Sanders Peirce: Contributions to The Nation*, NEM denotes *The New Elements of Mathematics by Charles Sanders Peirce*, PPM denotes *Pragmatism as a Principle and Method of Right Thinking: The 1903 Harvard Lectures on Pragmatism*, and W denotes *Writings of Charles S. Peirce: A Chronological Edition*.

3. On the relationship between Peirce's scholastic realism and his theory of the categories, see Boler, esp. 71–73 and Fisch, esp. 193.

4. Karl Popper characterized Peirce as "the first post-Newtonian physicist and philosopher who. . . dared to adopt the view that to some degree *all clocks are clouds*" (252). By contrast, he classed Spinoza among those philosophers who hold that "all clouds are clocks" (250 and 427n.4).

5. That discussion is part of a larger project. See Dea 2007.

6. See MS CSP 823, 1139, 1573, *1596; W 1.103, 5.30, 5.34, 5.37; N 1.95, 1.139–41, 1.163–65, 1.204, 2.77, 2.83–87, 2.237, 2.258, 3.28, 3.42, 3.76–78, 3.123, 3.131; C 5837; CP 2.38, 2.380, 6.593; NEM III/2, 956; PPM 171, 190. See also Dea 2007, esp. 14–34.

7. It bears observing that Spinoza is not the only target of Peirce's gentle mockery in this passage. He also makes fun of Berkeley's use of tar-water, and of Kant's and Comte's "habit of mingling these sparkling waters [of pragmatism] with a certain mental sedative" (CP 5.11).

8. See, for instance, in his July 23, 1905 letter to William James: "I hope the word 'pragmatism' may be accepted, as I suggest, as the term expressive of these things,—perhaps we cannot be sure just what they are—in which the group of us are in agreement, as to the interpretation of thought" (CP 8.261).

9. See N 1.105–106, N 1.152–53, N 1.152–53, N 3.35, and N 3.49.

10. See CP 5.414 and 6.482.

11. See Misak 20 for a good, brief primer on precission and the categories.

12. Peirce regarded Condillac and the Associationalists as including only Firstness in their ontology, Helmholtz and the Corpuscularians as including only Secondness, and the Hegelians as including only Thirdness (PPM 171–72).

13. Peirce attributed to unnamed "more moderate nominalists" (Ockham, perhaps?) the ontology that accepts Firstness and Secondness but not Thirdness, to "the Berkeleyans" the ontology that accepts Firstness and Thirdness but not Secondness, and to "that singular hodge-podge, the Cartesian metaphysics" the ontology that accepts Secondness and Thirdness but not Firstness (PPM 172).

14. See also his argument at N 3.199 that Aristotle was an evolutionist who "certainly based his central conception on the idea of a plant coming up from

seed, or upon something of the sort. . . . To some of us it appears to be chiefest of the differences between the historical Aristotle and the imaginary Aristotle of the scholastics that the former makes the form to grow out of the matter, and continually to increase in perfection in the passage through the vegetable and animal kingdoms to man.”

15. Note that Peirce did not take Aristotle to embrace all three categories equally. Just as, in the third lecture, Peirce described Kant and Spinoza as doing “full justice to Categories Second and Third” and minimizing Firstness, here he describes Aristotle as doing full justice to Firstness and Secondness and having “a dim aperçue” of Thirdness.

16. The character of Peirce’s evolutionism and his usage of the term “evolution” are complicated questions well beyond the scope of this article. For an excellent treatment of these matters, see Reynolds 2002, 97–109.

17. It is interesting to note that Peirce regarded Berkeley, the figure that he most often cited as a pragmatist predecessor, as denying Secondness. This belies Rosenthal’s claim that all three categories are of equal importance for Peirce (113) and accords with Peirce’s own criticism of Duns Scotus for placing too much emphasis on Secondness (CP 8.208). The importance that Peirce attributed to Firstness and Thirdness is further evidenced by his comparative inattention to Secondness (compared to Firstness and Thirdness) in his fourth Lecture on Pragmatism (PPM 195–203).

18. I use the term “mechanistic determinism” to emphasize the fact that Peirce did not intend to reject all determinism, but only a thoroughgoing determinism that takes all future events to be, in principle, precisely and certainly predictable once their antecedent conditions are given. Despite his emphasis on absolute chance, Peirce was less an indeterminist than a stochastic determinist. It also bears noting that, while Peirce closely connected the development of non-Euclidean geometry with the demise of mechanistic determinism, I am not here claiming that his work in geometry led to his rejection of mechanistic determinism. Against the view that Peirce’s indeterminism emerged sometime between 1884 and the early 1890s, Forster argues that Peirce was “crafting his indeterminism” as early as 1866 (Forster, 57–58).

19. Although he offered *a priori* arguments against the view that space is Euclidean, most notably at CP 1.130–1.131 (1893), CP 5.382 n.1 (1893), CP 6.417–419 (1878) and CP 7.568 (c.1892), Peirce held that the question of the exact curvature of space is an empirical one that must be decided by careful measurement. He himself undertook the project of measuring space and produced initial results that he regarded as consistent with hyperbolic (Lobachevskian) geometry. Around 1894, he unsuccessfully sought funding support to hire a calculator to aid him in this research. See Dipert throughout, but esp. 412.

20. On this argument, see especially CP 6.27–28, CP 1.362, and below.

21. See CP 1.402 for an instance of this argument.

22. See CP 6.27 for a similar account of the absolute from Peirce’s 1891 “The Architecture of Theories.” Reynolds points out that English mathematician Arthur Cayley is the source of Peirce’s conception of the geometrical “absolute” (Reynolds 2002, 115). Peirce discusses Cayley’s metrics at CP 4.142, CP 4.145nP1, CP 5.490 and N 1.138.

23. Notice that, since Thirdness always concerns relations, these points are not absolute, but relative.

24. Here is a helpful account of elliptic cosmologies that Peirce gave in 1905: "Starting-point and stopping-point are not even ideal. Movement of nature recedes from no point, advances towards no point, has no definite tendency, but only flits from position to position" (CP 6.582).

25. See CP 1.362: "If you think the measurable is all there is, and deny it any definite tendency whence or whither, then you are considering the pair of points that makes the absolute to be imaginary and are an Epicurean."

26. "If you hold that there is a definite drift to the course of nature as a whole, but yet believe its absolute end is nothing but the Nirvana from which it set out, you make the two points of the absolute to be coincident, and are a pessimist" (CP 1.362).

27. Consider, for instance, Boethius's implacable wheel as an instance of Stoic parabolic thought.

28. In fact, his view was even more radical than this. According to Dipert, Peirce held that "the hypothesis that space is Euclidean can never be confirmed and hence is a statement which should not be seriously proposed, even for testing" (411).

29. In 1903, Peirce offered a similar argument to the effect that biological evolutionism pronounced the doom of corpuscularianism and its emphasis on efficient causation. See CP 5.64. Given the important link for Peirce between cosmological and biological evolutionism, and given the close historical association between determinism and corpuscularianism, the two arguments were quite possibly linked in Peirce's mind.

30. Later in the same passage, Peirce observes that "one of the remarkable features of geometry is the small number of premises from which galaxies of theorems result; and accordingly it has been an effort of almost all metaphysicians to reduce their first principles to the fewest possible, even if they had to crowd disparate thoughts into one formula. It did not seem to occur to them that since a list of first principles is a work of analysis, it would not be a small number of elementary propositions so much as a large number that would bespeak its thoroughness." Peirce's irritation here with the geometrical mode of demonstration in metaphysics is one that he repeatedly articulated in his account of Spinoza. See for instance N 2.84, N 3.76 and C 5837. In particular, Peirce's metaphor, above, concerning the "outer clothing of geometry" is one that he used more than once in discussing Spinoza. See N 2.84 and N 3.42. Note also that Peirce's discussion, above, of the metaphysician's thinking about substance as copying the geometer's thinking about shapes accords with Spinoza's Ep. 50Ep. 50 (2 June 1674) discussion of determination as negation—a discussion to which Peirce repeatedly referred. See C 5837, CP 2.380, CP 5.221P2, CP 5.294.

31. On this see, Reynolds 2002, 115–17.

32. And on the fact that only a reader "well-versed in modern logic" (N 1.164) has any hope of understanding him—an indication that Peirce was beginning to conceive of himself as grasping Spinoza's hidden real meaning.

33. See, for instance, N 3.111.

34. To be clear, I am not here arguing either that Spinoza recognized the non-Euclidean, empirical character of geometry that so struck Peirce, or that Peirce took Spinoza to have done so. Peirce perceived an analogy between Euclid and non-Euclidean geometry, on the one hand, and Spinoza and a possibilist metaphysics on the other.

35. See CP 1.80, 6.10, 6.477, 6.567. See also Reynolds 2002, 12–13.

36. On Mathematics as hypothetical and abductive in nature, see Dea 2006.

37. A possible exception to this claim is Nesher, 1–40. However, as I argue elsewhere, the brand of evolutionism that Nesher attributes to Spinoza is less robust and less interesting than what Peirce had in mind. See Dea 2007, 190.

38. For a more detailed account of agapasticism, see Peirce’s “Evolutionary Love,” the final instalment in his 1891–93 *Monist* series (CP 6.287 *et passim*), and Reynolds 2002, 106–108.

39. For a discussion on Spinoza’s common notions as Thirds, see Dea 2007, 141–47.

In accordance with standard practice, here and throughout CM denotes *Metaphysical Thoughts* (CM 1/3 is Part 1, Chapter 3) and E denotes the *Ethics* (followed by arabic numeral for part and internal references).