

PEIRCE'S EARLY LOGIC, METAPHYSICS AND THE PROGRESS OF SCIENCE
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ABSTRACT:

Charles S. Peirce (1839-1914) wrote extensively on the logic of science between 1865 and 1866; thus, this early period of his career provides a window into the development of his logical-metaphysical views and their connection with the progress of science. In this paper, I examine Peirce's early unpsychological view of logic and his arguments for its advantages for the progress of science, with the purpose of exploring the connection between his logic and his metaphysics. I argue that his unpsychological view of logic serves as a source for three of his most important metaphysical views: (1) semiotics (theory of signs), (2) realism, and (3) three-world ontology. I divided this paper into two parts: First, I explain Peirce's definition of logic; second, I analyze Peirce's unpsychological interpretation of the Kantian conception of logic, its advantages for science, and its metaphysical consequences.

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1. WHAT IS LOGIC?

The purpose of Peirce's 1865 Harvard University lectures, "The Logic of Science," was to determine two main issues: (1) "The degree and character of the certainty of scientific ratiocination;"³ and (2) "The degree and character of the certainty of scientific primitive

principles.”⁴ In other words, Peirce was interested in discerning the powers of science, its method, and principles. He begins by examining a general view of logic, since he believed the progress of science is dependent on a correct understanding and use of logic “in the same way that the Reform of Ramus, the Reform of Kant, and all the reforms of science have been logical reforms.”⁵ In addition, regressions and impediments in science are the result of an improper conception of logic: “The one great source of error in all attempts to make a Logic of Science has been utter misconceptions of the nature and definition of logic.”⁶ In his first lecture, therefore, he addresses the question: “What is Logic?”

In search for the best definition of logic, Peirce begins with a brief survey of the history of philosophy, examining the conception of logic of the following philosophers: Aristotle, St. Augustine, Hobbes, Cicero, Mill, Kant, and De Morgan. He divides them into two main categories: (1) psychological logic and (2) unpsychological logic.⁷ After a detailed account of the advantages and disadvantages of the different historical conceptions of logic, he concludes that Kant’s theory of logic is the most accurate: Logic is “the science of the necessary laws of Understanding and Reason – or what is the same – the science of the sheer Form of thought in general.”⁸ However, even Kant’s definition is problematic, insofar as it is ambiguous and straddles the fence between a psychological and unpsychological view of logic.⁹

1.1 Psychological vs. Unpsychological Views of Logic

Peirce defends an unpsychological interpretation of the Kantian definition of logic.¹⁰ First, however, we should be clear about the difference between a psychological and an unpsychological view of logic. Let me begin with Peirce’s example: (1) “All conquerors are butchers.” (2) “Napoleon is a conqueror.” (3) “[Therefore,] Napoleon is a butcher.”¹¹ I will refer to this syllogism as S1. S1 has a particular logical character, and everyone who reads it will think

of the same logical character. Moreover, even though everyone who reads and thinks about S1 will have different thought events, if they understand S1 properly, they will all arrive at the same logical character essential to S1. Furthermore, if I were to read S1 at two different times, I would also have two distinct thought events, but if I understood S1 correctly both times, then the character of the logical form of the syllogism would be the same. I will refer to the logical character inherent in S1 as L1. The question that interests Peirce is the following: Does L1 pertain to thought alone?¹² In other words, is L1 something that can be found only in thought, or is it something that can inhere in non-psychological entities?

Peirce's view is that L1 does not inhere only in thought; instead, it also inheres in S1, hence an unpsychological view of logic. He further argues that the syllogism is the "continual determinator of this form [the logical character or L1]."¹³ He defends the unpsychological view, then, by showing that the logical form can also inhere in the syllogism itself, independent of its being thought. He argues, "Now a continual determinator of a form is that in which the form inheres by the definition of the relation of *substantia et accidens*. Hence, this logical character belongs to what is written on the board [S1] at least as much as to our thought."¹⁴ However, is a logical form inherent in a syllogism the same as a logical form when a syllogism is thought and understood *as* a logical form? Even if we were to concede to Peirce that a logical form has some form of existence in a syllogism independent of its being thought, the idea that it is as "as much" being or the "the same" being as when it is thought is not so obvious. Does not a logical form, such as L1, exist most properly when it is understood and thought *as* a logical form? The proponents of the psychological view may argue that the logical form exists in the syllogism only in potentiality and not in actuality; it exists in actuality only when it is thought. Consequently, I define the unpsychological view of logic as the view that holds that logical

forms can exist independently of thought. Furthermore, I define the psychological view of logic as the view that holds that logical forms exist only as part of thought and cannot exist independently of thought. Peirce explains the difference as follows:

The psychological view is that these forms are only realized in thought, and that language is essential to thought. The unpsychological view is that they are forms of all symbols whether internal or external but that they only are by virtue of possible thought.¹⁵

Why is this difference important?

2. PEIRCE'S DEFENSE OF THE UNPSYCHOLOGICAL VIEW OF LOGIC

2.1 Refutation to Objections: Semeiotics and Realism

Peirce considers three objections to his argument in support of the unpsychological view of logic. The first objection states that if the syllogism were erased and later written down again, the logical character would remain the same. In this case, the continual determinant of the form is not the written syllogism but rather memory. As a result, the logical character of the syllogism does inhere in thought after all. Peirce agrees with this argument and all of its consequences; however, he replies, "It does not touch my point which was that the logical character does not belong to thought, *peculiarly*."¹⁶ In other words, the objection does not demonstrate that thought is a *necessary* condition for the existence of a logical form.

The second objection states that even though the written syllogism participates in a particular logical character, "it only has it because it can be understood and thought."¹⁷ Again, Peirce admits that on one interpretation, this claim is true, namely, if we take "understood and thought" to mean in potentiality and not actuality. Nevertheless, if understood in this way, it is not a successful objection to his view. He argues that the form of the logical character of a syllogism can inhere in both thought and a syllogism (independent of thought); however, because of the nature of a logical form, for it to inhere in anything, it must be something that potentially

can be thought and understood.¹⁸ Thus, for Peirce, it is correct to say that being potentially thought and understood (not actually thought and understood) is a necessary condition for the existence of a logical form. Consequently, a logical form can inhere in a syllogism, whether it is ever actually thought or not. He says, “Form is as much determined by the *subject* or *I* as it is by the *object* or *IT*.”¹⁹

The third objection states that the view that the logical form inheres essentially in thought means *thought in general* and not of this or that particular thought.²⁰ A form that pertains to thought in particular is one that is original and unique, and thus cannot be grasped by *others*. In contrast, a form that pertains to thought in general is one that can be grasped by all those who participate in thought. Peirce’s response is that this clarification does not represent an objection to his view, since it does not claim that the logical character of the form belongs *essentially* and only to thought, which is what he rejects.

We can understand how a logical form inheres in thought, since a conscious mind that thinks of a logical form has it as its object; therefore, it exists insofar as it is thought. However, outside this kind of contemplation, what could possibly give sustain a logical form? The view that Peirce defends is one in which the form of the logical character inheres properly to what he calls *symbols*. Thus, as long as the form of any logical character can be represented by an object with a set of symbols, it will inhere in that object. He argues that since all thoughts are symbols, the form of any logical character can inhere in thoughts. However, he also argues that since a syllogism is also a set of symbols, the form of the logical character can also inhere in the syllogism itself (just as properly).

This view has three important metaphysical consequences: First, it establishes symbols as a preeminent metaphysical principle, so that the building blocks of all meaning, even that derived

from thought, is based on symbols; second, it requires us to understand thought as a process of *interpretation* of symbols; and third it presents a *realist* view of reality in which logical forms have a reality independent thought.

2.2. *Three Advantages for Science: More Realism and A Three-world Ontology*

Peirce claims that the unpsychological conception of logic has at least three important advantages for science. The first advantage concerns the method of defining scientific terms. Peirce argues that the unpsychological definition of logic is more philosophically perfect than the psychological definition, since it is based on symbols rather than on thought. The notion of symbols is broader and encompasses the notion of thought, since all thoughts are symbols but not all symbols are thoughts. Since logic is based on symbols, the psychological definition of logic is incomplete and misses part of its essence. Thus, Peirce explains, “In the same way, logic needs no distinction between the symbol and the thought; for every thought is a symbol and the laws of the logic are true of all symbols.”²¹

The second advantage of the unpsychological view of logic is that it offers us “a most convenient means for exploding false notions of the subject.”²² According to a psychological definition of logic, psychological elements are essential, even for the form of a logical character. Thus, logical truths would depend on these *subjective* psychological elements. Peirce uses Mill’s definition to illustrate what he means: “Take for example, Mr. Mill’s definition of logic: ‘It is the science of the operations of the understanding which are subservient to the estimation of evidence.’”²³ This conception of logic leads to the pernicious view that the laws of logic are simply something one ought to follow as statements of debt and not laws that one must follow as statements of fact. If this conception were true, then it would also be true that there could be possible worlds in which the laws of logic would not apply. In some realm of reality, therefore,

“it would be possible that it is not true that A is not not-A,”²⁴ hence, rejecting the principle of identity. Therefore, the idea that the laws of logic can be broken and that logical truths do not apply in all possible worlds will be sure to spring from the psychological view of logic. In short, this is the consequence of having the laws of logic apply to thought alone.

In response to this absurd consequence, Peirce reminds us of the purpose of logic: “Why ought we to be logical?”²⁵ We ought to be logical “because we wish our thoughts to be representations or symbols of fact.”²⁶ The idea, then, is that logic “applies to thoughts only in so far as the latter is a symbol. *It is to symbols, therefore, that it primarily applies.*”²⁷ By having symbols take the fundamental place of thought, Peirce extends the scope of the applicability of the laws of logic to all possible worlds, even worlds that are actually *unthinkable*. Thus, in all possible worlds, as long as something could be symbolized, the laws of logic apply. This view also moves Peirce’s metaphysics toward an objective-realist position, since the truths of the laws of logic are displaced from a subjective domain (i.e., thought) to an objective domain (i.e., symbols). Thus, the unpsychological view of logic “extends its validity [beyond the thinking-subject] to all subjects of argumentation whatever.”²⁸

“The third advantage of the unpsychological view [as a foundation for science] is that it points to a direct and secure manner of investigating the subject.”²⁹ Recall that since the psychological view of logic claims that the formal, logical character inheres essentially in thought, then the discovery of this form requires introspection and access to unmixed thought. Peirce states, “The psychologists are continually asking do we think thus and so or not, and they find this a very difficult question to answer because these thoughts which they speak of, if not fictitious, are, at least, not in the mind in that unmixed state in which they talk of them.”³⁰ What does Peirce mean? Peirce argues that we do *not* have the power of introspection of the internal

world, thus we cannot grasp unadulterated internal thoughts (i.e. thoughts that are purely internal) and not mixed external/internal thoughts.³¹ “It appears, therefore, that there is no reason for supposing a power of introspection; and, consequently, the only way of investigating a psychological question is by inference from external facts.”³² Why does Peirce believe that we lack the power of introspection?³³

Peirce’s argument begins by introducing the idea that reality is constituted of three worlds, which are present in all of our experiences. Modern philosophy has drawn one main division between the internal world or the world that belongs to the mind and the external or the world that belongs to space. Peirce notes that some philosophers consider these two worlds as “two separate experiences, as distinct as two chambers.”³⁴ For Peirce, however, this division of the internal and external world is faulty; instead, he argues:

Under all circumstances we have outward and inward feelings at once; that is to say we have a mixed feeling [hence, there is no opportunity for an unmixed feeling]. We cannot then separate this feeling into two parts one of which is in space and the other which is not. Feeling is all connected with space if any of it is.³⁵

According to Peirce, then, the division between the external and internal world, as two separate worlds, is badly drawn. A better division, Peirce believes, is the one between *the world of mediate self* and *the world of immediate self*.³⁶

The world of mediate self is the world that we know through a unity of an act of judgment, such as an inference of some kind. The mediate self, then, is a product of a thought process; it requires bringing a plurality of experiences within a unity of judgment. Therefore, all judgments, comparisons or reflections, no matter how simple, belongs to the mediate world. The immediate self is the self of pure feeling, of the present, of the now. This world of immediate feeling or raw sensation is spontaneous and *not* reflective; as a consequence it lacks judgment or thought.³⁷ In a world of immediate self, the feelings and the space (i.e. the external world) are

inseparable, since to distinguish them would constitute a form reflective judgment which would usher us to the world of mediate self. Peirce explains: “we do not distinguish what is within from what is without immediately; for this distinction implies an act of comparison of the product which we must know before we can judge that the inner is not the outer.... The representation of the distinction between the two is a judgment.”³⁸ Thus, Peirce considers the distinction between immediate and mediate self to represent a more accurate distinction of reality than the distinction between the inner and the outer world. What is important for our purposes is that if the inner and outer worlds are superposed throughout, then the psychological conception of logic will make a poor foundation for the advancement of an objective science, since it will not have a secure way of investigating the subject and hence the logical character of the laws of logic. The problem for the psychological view of logic, then, is evident: If the form of logic inheres *only* in thought and not in external objects, and we do not have the power of introspection, then the form of logic cannot be objectively investigated. Peirce notes that this is not a problem for his view of unpsychological logic: “But if the view I have taken is correct, then these forms [the laws of logic] may just as well be studied in the sensible representation as [in] the mental.”³⁹

Finally, Peirce introduces the idea of a third world, namely, the world of the “Universal mind; a preexistent, archetypal Idea.”⁴⁰ This conception of Peirce’s requires us to study his ontology. Even at this early stage, Peirce clearly believed that real generals or universals required a *subsistent* ontological status in any conception of logic, particularly an unpsychological conception of logic. We should not lose sight of the fact that Peirce’s purpose in elaborating a conception of logic is to construct a solid foundation for scientific inquiry. Peirce’s ontology is somewhat full, since it allows one to make distinctions between existent things, state of affairs or facts, and real things, which are neither facts nor existent. He explains:

Arithmetic, the law of number, *was* before anything to be numbered or any mind to number had been created. It *was* though it did not *exist*. It was [neither a fact nor] a thought, but it was an unuttered word.⁴¹

Peirce uses the Greek word “LOGOS” to describe this archetypal Idea. He emphasizes his view by contrasting it with Hegel’s idea that “logic is the science of the pure idea.”⁴² Thus, for Peirce, the laws of logic have a reality that is neither existent nor a fact (in the strict sense). Peirce’s third world pushes his metaphysics, at this early stage, further from metaphysical nominalism to metaphysical realism. Granting the laws of logic an ontological status, albeit a somewhat weaker or different form of reality when compared to existence, makes them independent of the mind and, more importantly, a significant part of what *determines our experience*.

In short, Peirce’s conception of logic needs to be understood within a context of three worlds. These three worlds are involved in all of our experiences: “All three are coëxistensive and contain every experience.”⁴³ The claim that these worlds are coëxistensive is a powerful and significant claim. It means that they are the conditions of possibility of all experience. It also means that every experience is determined by Peirce’s three worlds. How can this be? “In the first place, it is a determination of an object external to ourselves – we feel that it is so because it is extended in space. Thereby, it is in the external world. In the second place, it is a determination of our own soul, it is *our* experience; we feel that it is because it last in time. ... [Third,] we feel an experience to be a determination of such an archetypal LOGOS, by virtue of its // *depth of tone* // logical intension//, and thereby it is in the *logical world*”⁴⁴

3. CONCLUSION

In this essay, I presented Peirce’s early conception of logic and demonstrated how several of his important metaphysical doctrines, which are more fully developed in his later writings, begin to emerge as a result of his view of logic. Specifically, I have focused on three of his

doctrines: (1) semiotics, (2) realism, and (3) three-world ontology. These doctrines and the reasons why he adopts them appear robustly in Peirce's early writings. Moreover, a clear connection between Peirce's logic and metaphysics can be delineated with his concern for the progress of science. In a Peircean spirit, my intention in this investigation has been to present a piecemeal view of Peirce's logic, representing only a small part of his life-long logical investigations. I hope that this inquiry will form a part of a community of inquiries that will present the bigger picture and the evolutionary view of his logical thought and metaphysical view.

¹ For instance, in the spring of 1865, he delivered a series of eleven lectures at Harvard University entitled "On the Logic of Science," and in 1866, he delivered the *Lowell Lectures* at Harvard University entitled "The Logic of Science or Induction and Hypothesis."

² See Peirce's 1865 Harvard Lectures, "On the Logic of Science" *Writings of Charles Sanders Peirce: A Chronological Edition*, (henceforth *W*) eds. Max Fisch et al. vols.1-6 (1857-1890) (Bloomington: Indiana University Press, 1982-).

³ C.S. Peirce, *W*, vol. 1, 162.

⁴ C.S. Peirce, *W*, vol. 1, 163.

⁵ C. S. Peirce, *W*, vol. 1, 162.

⁶ C.S. Peirce, *W*, vol. 1, 163.

⁷ "those which do not and those which do give to logic a psychological or human character." C.S. Peirce, *W*, vol. 1, 163.

⁸ C.S. Peirce, *W*, vol. 1, 164.

⁹ He says, "Observe the two branches of this statement the former more psychological and the latter scarcely at all so." C.S. Peirce, *W*, vol. 1, 164.

¹⁰ "But I will go a step further and say that we ought to adopt a thoroughly unpsychological view of logic, and that we may do so without entirely overturning established ideas." C.S. Peirce, *W*, vol. 1, 164.

¹¹ C.S. Peirce, *W*, vol. 1, 164.

¹² “Now is the logical character a form of thought only?” C.S. Peirce, *W*, vol. 1, 165.

¹³ C.S. Peirce, *W*, vol. 1, 165.

¹⁴ C.S. Peirce, *W*, vol. 1, 165.

¹⁵ Peirce also says: “In short, I say that the logical form is already realized in the symbol itself; the psychologists say that it is only realized when the symbol is understood.” C.S. Peirce, *W*, vol. 1, 165-6.

¹⁶ C.S. Peirce, *W*, vol. 1, 165.

¹⁷ C.S. Peirce, *W*, vol. 1, 165.

¹⁸ Peirce uses an awkward statement to state this view. He says, “There is no form which could not be unless the mind could think it.” C.S. Peirce, *W*, vol. 1, 165.

¹⁹ C.S. Peirce, *W*, vol. 1, 165.

²⁰ Peirce also says, “This thought in general is in fact the genus of thought, and hence an abstraction not capable of being thought in its generality.” C.S. Peirce, *W*, vol. 1, 165.

²¹ C.S. Peirce, *W*, vol. 1, 166.

²² C.S. Peirce, *W*, vol. 1, 166.

²³ C.S. Peirce, *W*, vol. 1, 166.

²⁴ C.S. Peirce, *W*, vol. 1, 166.

²⁵ C.S. Peirce, *W*, vol. 1, 166.

²⁶ C.S. Peirce, *W*, vol. 1, 166.

²⁷ C.S. Peirce, *W*, vol. 1, 167.

²⁸ C.S. Peirce, *W*, vol. 1, 167.

²⁹ C.S. Peirce, *W*, vol. 1, 167.

³⁰ C.S. Peirce, *W*, vol. 1, 167.

³¹ Peirce is providing an argument of a view that he will publish three years later in “Questions Concerning Certain Faculties Claimed for Man,” C.S. Peirce, *W*, vol. 2, 193. Originally published in *Journal of Speculative Philosophy* 2 (1868) 103-14.

³² C.S. Peirce, *W*, vol. 2, 207.

³³ I find his explanation in his 1865 Harvard Lecture to be more insightful than his explanation in his later publication, “Questions Concerning Certain Faculties Claimed for Man.”

³⁴ C.S. Peirce, *W*, vol. 1, 167. For instance, this view is characteristic of Cartesian philosophy, giving rise to the epistemological problem of the existence of the external world.

³⁵ C.S. Peirce, *W*, vol. 1, 167.

³⁶ Although Peirce here does not cite Kant in this context, he is clearly working with the Kantian distinction between judgments and intuition.

³⁷ Peirce says, “The world of feeling [then] is not a world of self but of *instances* [my emphasis] of self.” C.S. Peirce, *W*, vol. 1, 167.

³⁸ C.S. Peirce, *W*, vol. 1, 167-8.

³⁹ C.S. Peirce, *W*, vol. 1, 167.

⁴⁰ C.S. Peirce, *W*, vol. 1, 169.

⁴¹ C.S. Peirce, *W*, vol. 1, 169.

⁴² C.S. Peirce, *W*, vol. 1, 169.

⁴³ C.S. Peirce, *W*, vol. 1, 169.

⁴⁴ C.S. Peirce, *W*, vol. 1, 169.