# PEIRCE'S SEMEIOTIC REALISM

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By SCOTT METZGER, B.A., M.A.

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Lay Abstract

I integrate Charles Peirce's theory of signs and meaning with his writings on reality and continuity to develop a novel interpretation of his philosophical system, which I refer to as Semeiotic Realism. I situate Peirce's contributions to these topics in the larger context of the history of philosophy and sign theory, with emphasis on his critique of nominalism, a philosophical theory that presents a major problem Peirce must overcome. In chapter one, I uncover the roots of Peirce's general theory of signs in his writings on logic and inference. Chapter two incorporates Peirce's theory of signs with his realism and shows how it leads to a critique of nominalism. In the final chapter, I introduce Peirce's theory of continuity and show how it informs a devastating new critique of nominalism.

Abstract

I integrate Charles Peirce's theory of signs with his realism and synechism to develop a novel interpretation of his philosophical system, which I refer to as Semeiotic Realism. I argue that Peirce's Semeiotic Realism makes a devastating critique of Ockham's nominalism, particularly his theory of conceptual signs. Semeiotic Realism is the doctrine that signs are real relations existing independently of particular thoughts and therefore have a generality irreducible to any discrete number of singular cognitive acts.

Chapter One introduces Peirce's theory of signs. I argue that Peirce arrives at his triadic sign relation to ground an anti-psychologistic theory of logic. I establish the connection between sign relations and the structure of inference, tracing this connection back to Greek thinking about the *semeĩon* and outlining its consequences for Peirce's theories of categories and inquiry.

Chapter Two disentangles the nominalism-realism controversy from the problem of universals. I show that the nominalist's position about universals results from their logical analysis of terms. These terms are conceptual signs that stand for their objects only relative to singular cognitive acts. For the nominalist, reality is exhausted by existing particulars outside the mind and since signs only have mind-dependent being they are not real. To address this problem, I clarify Peircean reality and use his mature theory of semiotic interpretation to explain how signs have a reality irreducible to singular cognitive acts.

Chapter Three introduces Peircean continuity, explaining how it informs his mature critique of nominalism, his method for analyzing propositions as sign relations, and his theory of sign inference. Continuity underpins his analysis of propositions into continuous relations. These relations precede the subjects they relate, which makes relations themselves out to be the elementary units of logic. The chapter concludes by introducing Peirce's existential graphs to model and diagram sign inferences *as* continuous transformations.

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List of Abbreviations

| | |
|---|---|
| CP x.y | *Collected Papers of Charles Sanders Peirce*, volume x, paragraph y. |
| EP x:y | *The Essential Peirce: Selected Philosophical Writings*, volume x, page y. |
| NEM x:y | *The New Elements of Mathematics by Charles S. Peirce*, volume x, page y. |
| SS x | *Semiotic and Significs: The Correspondence between C. S. Peirce and Victoria Lady Welby*, page x. |
| W x:y | *Writings of Charles S. Peirce: A Chronological Edition*, volume x, page y. |
| R/L x | *Charles S Peirce Papers*, Houghton Library, Harvard University. Reference is to the system of categorization in Richard Robin's *Annotated Catalogue of the Papers of Charles S. Peirce,* R x refers to manuscript x in the Robin Catalogue. L x refers to letters and correspondences. |
| SWS x | *Selected Writings on Semiotics: 1894-1912*, edited by Francesco Bellucci, page x |
| RLT x | *Reasoning and the Logic of Things: The Cambridge Conference Lectures of 1898*, edited by Kenneth Laine Ketner, page x. |
| LoF x/y: z | *Logic of the Future: Writings on Existential Graphs*, edited by Ahti-Veikko Pietarinen, volume x, part y, page z. |

Declaration of Academic Achievement

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

# Introduction:

## The Backwoodsman

> *'Semiotics' itself, in one version or another, has been declared moribund or dead by persons seemingly unable to distinguish ephemeral Parisian fads from enduring pre-Socratic practices.*
>
> —Thomas Sebeok, *Global Semiotics*.

Semiotics, or the study of signs and meaning, is not usually considered part of philosophy in the English-speaking world even though many philosophical problems seem to turn on the nature of signs, if not directly, then indirectly.[1] This divergence is largely due to two factors. On the one hand, semioticians like Thomas Sebeok have made it their mission to carve out a new disciplinary space for semiotics distinct from philosophy. Although they are indebted to philosophy in some respects (such as the formal study of sign relations and their history), on his account semioticians are primarily interested in a different set of problems, namely, applying semiotic analysis to uncover codes in the cultural and biological spheres. Sebeok envisions a global semiotics: not just a multi-cultural or global enterprise but one that studies sign systems of every variety, from the evolving cosmos to plant and animal life, humanity, technology and beyond. This ideal has yet to be realized.

On the other hand, semiotics is often mistakenly associated with the *semiology* of the Swiss linguist Ferdinand de Saussure, who powerfully influenced subsequent movements like structuralism, post-modernism, and deconstructionism. These "ephemeral Parisian fads" had their heyday in the 1950s and 60s but have since then been "drooping toward extinction."[2] Today, they have largely been relegated to the toolboxes of English professors, who utilize them as critical frameworks to aid in the interpretation of texts. These theories are not unimportant, but they are anomalies when set against the backdrop of a semiotic tradition that has its origin in ancient Greek medical practice and Aristotelian logic.

I will not concern myself with global semiotics or semiology. One aim of this dissertation is to show the fundamental role that signs play throughout the history of philosophy more generally and in the philosophy of Charles Sanders Peirce in particular. I am interested in developing a philosophical semiotics—a semeiotic realism—that respects its logical ancestry and can be invoked in the argument against nominalism.

Semiotic, or σημειωτική (*semeiotike*), is not a new word. It was coined by John Locke in the final moments of his *Essay* as the name for a new logic that would aid in human understanding.[3] Σημειωτική (*semeiotike*) has its root in the Greek *σημεῖον* (*semeῖon* or sign), which was never originally a word (*ὀνόματα* or *ὀnomata*) or symbol (*σύμβολο* or *sýmvolo*). To

[1] Nathan Houser, "Semiotics and Philosophy," *American Journal of Semiotics* 36, no. 1 (2020): 135-64; Umberto Eco, *Semiotics and the Philosophy of Language* (Bloomington: Indiana University Press, 1986), 14-15.
[2] Thomas Sebeok, *Global Semiotics* (Bloomington: Indiana University Press, 2001), 6.
[3] John Locke, *An Essay Concerning Human Understanding* (1689; Indianapolis, IN: Hackett, 1996), 336.

the philosophers and physicians of antiquity, the *σημεῖον* (*semeῖon*) was a part of the natural (rather than cultural) world and in the most general sense provides the basis for an *inference* from the known to the unknown. Sweat is a sign that our skin is porous, and a black boil in your armpit is a sign of the bubonic plague. Signs are different from symbols because of their role in inference and their dependence on natural connections with their objects. Symbols are matters of culture and they signify their objects by convention.

Locke does not use this distinction between signs and symbols, and like some of the medieval thinkers before him, he seems to have a broad notion of sign in mind. This is evident by his insistence that the most usual kind of sign is a word—something the thinkers of antiquity never maintained.[4] For Locke, semiotics is another word for logic, "the business whereof, is to consider the nature of signs, the mind makes use of for the understanding of things, or conveying its knowledge to others." [5]

Locke thinks that words are signs of ideas in the mind and semiotics studies the logic of the signs that we use to communicate our ideas to one another. Locke does not say much about what this new logic would look like, although he seems to suggest that it is integral to his philosophy of human understanding. While he distorts the ancient distinction between signs and symbols, he is right to emphasize the close connection between semiotics and logic (a connection that will crystalize as my argument unfolds).

Locke's proposal to cultivate a doctrine of signs was largely neglected by his contemporaries. It lay dormant for about two centuries until Charles Peirce revitalized it in a series of lectures at Harvard in 1865. In these lectures Peirce was chiefly concerned with developing an anti-psychologistic theory of logic. Asking what logic is, he uncovered Locke's suggestion that it is part and parcel with the doctrine of signs. Ultimately dissatisfied with Locke's definition (especially his emphasis on words and ideas), but taking Locke as his starting point, Peirce began to clarify the precise meaning of signs in general, extending the scope of semiotics far beyond its limitations to nature as in antiquity and to ideas as in Locke.

This is why Peirce is often considered the father of modern semiotics. He was by no means the first to treat signs in a philosophical context, but he was the first to undertake a formal study and classification of the varieties of sign relations in general, to integrate the fruits of those investigations with logic, and to explicate their consequences for metaphysics.

Peirce was aware of his foundational role in the study of signs and meaning. In 1907 he wrote that "I am, as far as I know, a pioneer, or rather a backwoodsman, in the work of clearing and opening up what I call *semiotic,* that is, the doctrine of the essential nature and fundamental varieties of possible semiosis; and I find the field too vast, the labor too great, for a first-comer."[6] As a backwoodsman and pioneer, Peirce was "obliged to confine [himself] to the most important questions."[7] He considered himself an underlabourer (as did Locke), whose primary task was to clear the ground of brush and bramble so that a vast field of signification may take root and

[4] Locke, *Essay*, 336.
[5] Ibid.
[6] EP2: 413.
[7] EP2: 413.

begin to grow—it would fall to future investigators to ensure that these fields continue to flourish.

Of all the "most important questions," the first was to clarify the meaning of signs in general. What is a sign? "We are in the situation of a zoologist who wants to know what ought to be the meaning of 'fish' in order to make fishes one of the great classes of vertebrates," Peirce tells Victoria Welby in 1904.[8] He is not interested in the way that signs have been defined but in how they *ought* to be defined so that we can acknowledge their rightful status as the medium through which we understand reality.

Signs are more than their physical embodiments, or what Peirce calls their replicas. Everyone remembers the distinction between spoken signs, written signs, and mental or conceptual signs. But that is not what interests Peirce. He wants to know what signs are in general apart from these manifestations and what their essential function is. In Chapter 1, we will learn that a sign is not a thing but a relation that obtains between a sign vehicle, the object that it stands for, and the interpretant that it determines. The "essential function of a sign is to render inefficient relations efficient," Peirce writes.[9] And "a sign is something by knowing which we know something more."[10] By treating sweat as a sign, for instance, we come to know something more, namely, that skin is porous. Similarly, by treating the proposition that "Socrates is a man" as a sign, we can infer that he is mortal. But these are replicas of more general sign types—variations of the formal relation: object-sign-interpretant.

Peirce's search for a proper definition of the sign was ultimately motivated by his aim to develop an anti-psychologistic theory of logic. He did not want logic to depend on thought *as such* and circumvents such psychologistic presuppositions by making logical relations and inference depend on more general semiotic relations—relations that hold independently of particular acts of thinking and are in no way reducible to them. In this way a formal account of sign relations of the sort Peirce envisions cannot reduce sign-action to singular cognitive acts, for if it did it would turn out to be a form of psychologism ill-equipped to ground the relations of logic in general.

The most important problem when it comes to defining the sign therefore concerns the ontological status of signs. Are signs merely *ens rationis*, that is beings of the mind completely divorced from external reality? If not, then in what sense are they real mind-independent relations? Nominalists, above all William Ockham, maintain that signs are *merely* beings of the mind, that is, relations of reason that have no mind-independent reality. Written and spoken signs are subordinated to the intentions of the soul, or what Ockham calls conceptual signs. Written and spoken signs signify secondarily (and by convention) what these conceptual signs signify primarily (and by nature). Importantly, conceptual signs themselves are relegated to singular cognitive acts in which individual concepts function as signs that signify their objects. Signs are therefore solely creatures of the mind. Generality is a figment on this picture, as there are no semiotic relations apart from their occurrence in singular acts of thinking. Signs are not real because they have no being apart from cognition, although some signs (*absolute categorematic*

[8] SS: 31.
[9] Ibid.
[10] Ibid.

*signs*, we will see) *do* signify real objects or existing particulars. But reality is reserved only for these existing particulars and in no way extends to the signs of these objects in our minds.

I don't think this is the right way to understand the nature of signs. But I think that Peirce must overcome this view to ground his anti-psychologistic theory of *logic, considered as semeiotic*. Ockham's nominalism therefore presents a problem for Peirce. For the backwoodsman to clear the ground for his general theory of signs he needs to uproot the nominalist dogma that signs are mere figments and clarify the precise sense in which they are general relations that have a reality irreducible to singular cognitive acts.

My chief aim in this dissertation is to present Peirce's *Semeiotic Realism* as the right answer to the problem raised by Ockham's semiotic nominalism and to trace out its consequences for logic and metaphysics. What is Peirce's Semeiotic Realism? The only reference to Semeiotic Realism that I can find in Peirce scholarship comes from Nathan Houser, who deploys it as the name for the Peircean theory that he endorses. According to Houser, Peirce's Semeiotic Realism is epitomized in the view that

> signs have a reality that is not reducible to their physical embodiment and sign action (semiosis) involves formal or final causation and is not deterministic. The nominalism of Ockham is rejected and replaced with a metaphysical realism which does not equate reality with existence and which acknowledges the reality of generals and laws.[11]

For Houser, "semiotic realism reopens avenues of understanding that nominalist empiricism closed," and he advocates for a paradigm shift that would replace nominalism with this more rigorous understanding of signs and meaning.[12] I think that Houser is exactly right and that he has identified the pulse of Peirce's daunting philosophical system. However, Houser's characterization of Peirce's Semeiotic Realism is limited to a brief treatment in a single article and we therefore still lack a systematic study of Peirce's commitment to the reality of semiotic relations.

Taking Houser's characterization as my inspiration and starting point, I present what I take to be the central features of Peirce's Semeiotic Realism and explicate his plan for defeating nominalism. To this end, I integrate three fundamental aspects of Peirce's philosophical system: 1) his general theory of signs and its application to logic; 2) his commitment to scholastic realism and his critique of philosophical nominalism; and 3) his theory of continuity or synechism. Semeiotic Realism is what you get when you properly understand the connections among these different dimensions of Peirce's philosophy.

I argue that Peirce's Semeiotic Realism offers a devastating critique of Ockham's nominalism, particularly his theory of conceptual signs, which maintains that signs are not real because they are *merely* beings of the mind. At its core, Peirce's Semeiotic Realism is the doctrine that signs are not merely mental, fictive, or imaginary but are real relations existing independently of particular thoughts, and therefore have a generality that cannot be exhausted by

[11] Houser, "Semiotics and Philosophy," 153.
[12] Ibid.

any discrete number of singular cognitive acts. My argument unfolds in three stages, each incorporating a new dimension of Peirce's Semeiotic Realism.

Chapter 1 introduces Peirce's theory of signs and considers his place in the history of semiotics. I argue against the received interpretation that Peirce takes his triadic sign relation (object-sign-interpretant) from the Augustinian *signum*. Instead, I investigate Peirce's early 1865-66 lectures at Harvard and the Lowell Institute, arguing that Peirce formulates his triadic sign relation independently as the ground of his anti-psychologistic theory of logic. Following Francesco Bellucci, I establish the connection between sign relations and the structure of inference, tracing this connection back to the Greek *σημεῖον* (*semeῖon*). I show that the premises of an argument function as a sign that secures the basis for an inference to the conclusion, allowing us to classify the different forms of inference (abduction, deduction, and induction) in terms of a more basic sign relation. These forms of sign inference underpin Peirce's pragmatist theory of inquiry and are the means through which a community of inquirers approximate reality in the long run.

Chapter 2 disentangles the nominalism-realism controversy from the problem of universals. I draw on contemporary medieval scholarship to show that the nominalist's position about universals (like their position about relations) results from their way of analyzing terms, which bottoms out in categorematic terms that signify the individuals of the nominalist's ontology. These terms are conceptual signs (intentions of the soul) and they stand for their objects *within* singular cognitive acts. For the nominalist, reality is exhausted by existing particulars outside of the mind. Since signs only have mind-dependent being within cognitive acts, they are not real. To address this problem, I substantiate the relationship between Peirce's scholastic realism and his theory of signs, arguing that reality is independent of particular thoughts but not of thought-in-general. By evoking Peirce's mature trichotomy of interpretants I show that signs have a reality independent of singular cognitive acts. Finally, I draw on Peirce's logic of signs (defended in Chapter 1) to challenge the method of logical analysis that Ockham's nominalism relies on.

Chapter 3 introduces Peirce's theory of continuity, explaining how it informs his mature critique of nominalism, his method for analyzing propositions as sign relations, and his theory of sign inference. I explain Peirce's view that generality is another name for continuity and show how from this vantage nominalism becomes a philosophy of discontinuity. I show that Peirce's theory of continuity underpins his analysis of propositions into continuous relations. Whereas the nominalist believes that propositions decompose into discrete terms that signify existing particulars, Peircean analysis abstracts away the subjects of propositions, leaving only the form of a relation between potential subjects. Relations are shown to precede the subjects being related, making relations themselves the elementary units of logic and the fabric of reality. Finally, I argue that Peirce's logic, considered as semeiotic, requires a diagrammatic notation for representing logical inference. The chapter concludes by introducing Peirce's existential graphs as a method to model and diagram sign inferences *as* continuous transformations, providing iconic moving pictures of the process of investigation—a diagrammatic method indispensable to understanding the evolving universe.

I present Peirce's Semeiotic Realism chronologically to give a sense of the development of his thought on these matters. I chart a course from the origins of Peirce's theory of signs in his

early logic lectures of 1865 and 1866 to his notorious "New List of Categories" in 1867 to his early scholastic realism spanning the years 1868–71 to the logic of continuity offered in his 1898 Cambridge Conference Lectures and beyond to consider his mature writings on the existential graphs and his correspondence with Victoria Welby. While I largely stick to this chronological development, the nature of the investigation sometimes requires me to jump between writings of different dates to address certain issues as they arise. These jumps are necessary since Peirce never published a book detailing his philosophical system. He was more of a scientist than a philosopher and a perfectionist and fallibilist at that, constantly refining his views and approaching them from different angles (sometimes many angles at once). If his Logic Notebook is any indication, Peirce was the kind of thinker who used writing to clarify his conceptions. Each page exhibits a train of thought, an experiment, an attempt to work through a problem. As a result, we only have fragments of Semeiotic Realism scattered throughout his published and unpublished writings—flickers in the dark. I hope to glue these fragments together to create a mosaic of Peirce's Semeiotic Realism.

Before we embark on this inquiry, I must enter a confession and an explanation.

First, the confession. You might be surprised to learn how little I talk about pragmatism in this dissertation. Isn't Charles Peirce the founder of pragmatism? Indeed. How does his pragmatism fit into my mosaic of Semeiotic Realism? I don't emphasize Peirce's pragmatism because so much has been written about it already. I want to present a different version of Peirce, one that takes his Semeiotic as the point of departure. I should say that Peirce's pragmatism, or his *pragmaticism* as he preferred to call it, is entirely consistent with what I am calling his Semeiotic Realism. Just because I don't emphasize the connections doesn't mean they don't exist. A good reason for delaying an investigation into these connections is that we are still waiting on the third volume of Ahti Veikko Pietarinen's *Logic of the Future*, which will publish (for the first time) Peirce's mature writings on pragmaticism and the existential graphs.

From the perspective of Semeiotic Realism, pragmaticism is a method for transforming and interpreting signs. In its simplest form, pragmaticism is the view that every categorical proposition ("Socrates is a man," "this diamond is hard," etc.) is *virtually* the antecedent of a hypothetical proposition ("if Socrates is a man, then he mortal," "if this diamond is hard, then it will not scratch") such that every proposition is a sign that provides the basis for an inference to a further sign. The logic of investigation that Peirce champions in his pragmaticist tracts utilizes three distinct forms of inference and we will see that all inference and reasoning involves the interpretation of signs. I begin to develop this view at the end of Chapter 1 though I reserve a thorough investigation of it for a future project. For now, suffice it to say that Peirce describes himself as a "convinced Pragmaticist in Semeiotic."[13]

Now for the explanation. You may wonder why I insist on using Peirce's peculiar spelling "sem*e*iotic" even though Peirce himself is not consistent in this use. Is this just another of Peirce's bizarre neologisms? Well, yes. But what is the extra "e" supposed to represent? Sometimes scholars write it this way to distinguish Peircean Semeiotic as a philosophical theory from contemporary Semiotics as the interdisciplinary study of sign systems. But Peirce prefers

[13] SS: 78

this spelling because it evokes both the Greek *σημεῖον* (*semeῖon* or sign) and the Italian *seme* (seed). In a draft of a letter intended for Welby, Peirce writes that

> the word *seme*, Greek *σημεῖον* … is probably not in the English Dict'y. But it is a good word, brief, general, and unmistakable,—unless one were to mistake it for Italian.
>
> Ma se le mie parole esser den seme
>
> that will only make them better σημεῖα.[14]

Semeiotic therefore has a double meaning: the *σημεῖον* (*semeῖon*) hints at the inferential character of all sign action, while the *seme* captures the lifeforce of the sign as the source of signification and understanding: to give birth and to grow and to scatter the *semen* of meaning. I reserve this spelling for Peirce's *Semeiotic Realism*—always with both senses of the word in mind.

[14] SS: 194. "But if my words be seed that may bear fruit of infamy to the traitor whom I gnaw, speaking and weeping shalt thou see together" (Dante's *Inferno* XXXIII 7–9). See also Francesco Bellucci, "Inferences from Signs: Peirce and the Recovery of the *σημεῖον,*" *Transactions of the Charles S. Peirce Society* 52, no. 2 (2016), 280.

# Chapter One

## The Roots of Peirce's General Theory of Signs

### 1. Introduction

Explaining Peirce's Semeiotic Realism requires an investigation into his general theory of signs. My aim in this chapter is to explore this theory's origins and philosophical merits. How does Peirce's semeiotic relate to prior discussions of signs, and why does Peirce insist on incorporating a general theory of signs in his writings on the nature of cognition and logic? In the scholarly literature concerning the roots of Peirce's theory there are primarily two competing views: (1) John Deely's hypothesis that Peirce is returning to the Latin tradition to recover Augustine's general notion of *signum*; and (2) Francesco Bellucci's view that Peirce looks instead to the ancient Greek roots of the sign (*σημεῖον* or *semeῖon*), according to which signs provide the basis for an inference from the known to the unknown.[1] Broadly framed, the disagreement concerns which notion of sign Peirce is *recovering* from his predecessors. Deely argues that Peirce reaches back to the Latin tradition to recover the *signum*, subsuming natural signs and conventional symbols under a more general triadic relation. Bellucci contends that Peirce reaches further back into Greek tradition to recover the *σημεῖον* (*semeῖon*) from ancient theories of logic and medicine. I argue that Deely's hypothesis falls short and that Bellucci's view correctly identifies the origins of Peirce's theory. While Peirce has a general view of signs (even wider in scope than that suggested by the Latin *signum*), his semiotic investigations *begin* with the recovery and development of the Greek theory of the *σημεῖον* (*semeῖon*), which came about because of his early studies of logic.

The aim of this chapter is to understand Peirce's motivation for offering a general theory of signs. This requires an investigation of the history of some of the semiotic problems with which he was grappling. However, the primary focus is Peirce's philosophical development. I defend the thesis that Peirce needed to give an account of representation, including a formal definition of the sign relation, because of his view that the forms of inference (deduction, induction, and hypothesis) are varieties of a more general semiotic relation (object-sign-interpretant).

We will see that Peirce clarifies his formal definition of the sign relation as he works through a series of logical problems in his early lectures at Harvard in 1865 and at the Lowell Institute in 1866. What he accomplishes in these early lectures is what Murray Murphey and Francesco Bellucci call "the reduction of illation to sign relation,"[2] that is, the view that illation (or the act of drawing an inference) is reducible to a semiotic process: in an argument the premise is a sign of the conclusion. I show that such a reduction requires a formal definition of the sign relation and that Peirce himself was aware of this because he understood logic to be a species of a more general science of representation. The roots of Peirce's *general* theory of signs stem from his early view of sign inference and his anti-psychologistic conception of logic. His effort to construct an anti-psychologistic theory of logic is the primary motivation that leads him

[1] Francesco Bellucci, "Inferences from Signs: Peirce and the Recovery of the *σημεῖον,*" *Transactions of the Charles S. Peirce Society* 52, no. 2 (2016), 260. John Deely, *Four Ages of Understanding* (Toronto: University of Toronto Press, 2001), 611.
[2] Murray Murphey, *The Development of Peirce's Philosophy* (1961; Indianapolis: Hackett, 1993), 63.

to conceive logic as a theory of signs. The laws of inference in no way depend on thought *as such* but rather on general semiotic relations that obtain between premise and conclusion. To this end Peirce must both offer a formal definition of semiotic relations and show how that general model can be used to understand the logical structure of inference. What is most striking about this discovery is not only that Peirce comes to this view of signs through the Greek tradition of reflection on the *σημεῖον* (*semeῖon*) rather than the Latin tradition and its *signum*, but also that he had a theory of signs prior to his 1867 theory of the categories.[3] This casts doubt on the view, widely held, that it is Peirce's categorical deduction that opens the path to a general theory of signs. If Bellucci and Murphey are right (and I believe they are), we require a semiotic account of the forms of inference if we are to deduce the categories at all.

I begin by treating Deely's hypothesis, examining the history of the sign in ancient and medieval philosophy. I argue that while Peirce's tripartite semiotic relation resembles the Latin *signum*, he does not recover it directly from his Latin predecessors, arriving at it independently through his own logical investigations. The flaw in Deely's account of the history of ancient semiotics is to focus on the distinction between natural and conventional signs and not on the role of the *σημεῖον* (*semeῖon*) in inference (this is because like others, Deely thinks of semiotics as primarily related to the philosophy of language, which is not wrong, but neglects the more interesting relationship between semiotics and logic). By re-examining ancient semiotics, I show that the *σημεῖον* (*semeῖon*) is closely tied to inferential processes from the very beginning: the ancient Greek doctors utilized sign-inference to treat their patients; Aristotle had a theory of sign inference; and the Stoics, Epicureans, and Skeptics were all aware of the close affinity between signs and logic. Following Bellucci, I argue that Peirce's main contribution to the history of semiotics is the reduction of illation to the sign relation, which he recovers from ancient semiotics, transforming the study of logic and reasoning into a study of semiotic relations. Peirce, we will see, takes this transformation further than anyone before him, developing a full-blown semiotics of investigation—one that treats abduction, induction, and deduction as variations of more general semiotic processes. The logic of signs developed in this chapter will be welded with Peirce's theory of reality in Chapter 2 and his theory of continuity in Chapter 3, completing a systematic account of Peirce's Semeiotic Realism and its anti-nominalistic implications.

## Part One

## Deely's Hypothesis

### 2. The Representative Relation from Augustine to Poinsot

In his reconstruction of the history of semiotics, John Deely argues that Peirce ushers in a new age of philosophical understanding when he *recovers* the notion of *signum* from the Middle Ages and develops the scholastic understanding of sign relations as a theory of the "action proper to signs."[4] As Deely puts it, Peirce's "whole life became one long meditation on the nature and action of signs, one long investigation of the question first left hanging in the air by Augustine."[5]

[3] Bellucci, "Inferences from Signs", 277.
[4] Deely, *Four Ages*, 643.
[5] Deely, *Four Ages,* 612.

On Deely's view, Peirce picks up on a line of speculation that began in what Deely calls the Latin age of philosophy, with a proposal implied by Augustine's definition of the *signum*.

On Deely's picture, the primary advance in semiotics from antiquity to the Middle Ages is to bring into focus the ontological status of sign relations in general. "With Augustine we encounter for the first time the general idea of the sign [*signum*] as applicable equally to natural phenomena like clouds and cultural phenomena like words or buttons."[6] Augustine's definition of *signum* proposes that there is a general notion of signifying activity that subsumes Aristotle's division between natural signs and conventional symbols.[7]

Nowhere in antiquity do we find a general account of signifying relations. According to Deely, the ancients had "no general notion of sign bridging nature and culture," but only "a specific notion of sign, determinately restricted to phenomena of nature and to health and disease in the body" (a claim that I challenge in Part Two).[8] They distinguished between *natural signs,* which signify by a physical connection between two things (e.g., smoke is a sign of fire), and *conventional symbols,* which signify by a conventional connection between two things (e.g., a name stands for its bearer, a cross for Christianity, a swastika for Nazism, etc.). However, importantly, only the former were denominated *signs*. The ancients, that is, associate the *σημεῖον* (*semeῖon*) with natural signs, therefore closely aligning them with relations of cause and effect in the natural world. Fire causes smoke, and smoke is a sign of fire. The bubonic plague causes black boils to grow in the armpit and so black boils are a sign of the bubonic plague. The effect is a sign of the cause, and we infer the cause from its effect. In this way, the ancients predominantly treat signs as creatures of natural phenomena, as a symptom is a sign of a disease. The *signs* of the natural world are distinct from the *symbols* of the cultural world.[9] For the ancients, signs are not symbols and symbols are not signs.

The ancients did not consider, as Augustine did, whether there was a more basic semiotic relation that precedes the distinction between cultural symbols (*σύμβολον* or *sýmvolon*) and the names that make up human languages (*ὀνόματα* or *ὀnomata*) on the one hand, and natural signs (*σημεῖον* or *semeῖon*) on the other.[10] In *On Interpretation,* Aristotle writes that "spoken sounds are *symbols* [*σύμβολον* or *sýmvolon*] of affections of the soul" and that they are "significant *by convention*" because "nothing is a name *by nature.*"[11] In *Prior Analytics* he says "that which coexists with something else, or before or after whose happening something else has happened,

[6] Deely, *Four Ages,* 215.
[7] Aristotle, *On Interpretation*, 16a20-29; Deely, *Four Ages,* 215.
[8] Deely, *Four Ages*, 216.
[9] While the connection between signs and nature points to a strong affinity between natural signs and cause-and-effect relations in most cases, this affinity is somewhat muddied by Aristotle's insistence that the premise of an argument affords a sign of the conclusion. We will dig deeper into this subtle discrepancy as the chapter unfolds. But there seems to be an important difference between natural signs and logical signs. While the natural signs are typically associated with a cause and effect, that is not necessarily the case in logical contexts, where, for example, the premise is a sign of the conclusion, securing the basis for an inference from one to the other.
[10] This is a common view held among historians of semiotics. See: Deely, *Four Ages*, 215 and Umberto Eco *et al*, "Latratus Canis or: The Dog's Barking," in John Deely *et al*, *Frontiers in Semiotics* (Bloomington: Indiana University Press, 1986), 65.
[11] Aristotle, *On Interpretation,* 16a20,27; my emphasis.

is a sign (*σημεῖον* or *semeῖon*) of that something's happening, having happened, or being."[12] His definition of the sign here excludes words, or symbols, so we can discriminate between signs and symbols. Symbols (*σύμβολον* or *sýmvolon*) and names (ὀνόματα or *ὀnomata*) are a matter of convention and inhabit the cultural sphere while signs (*σημεῖον* or *semeῖon*) are understood in a narrower sense as features of the natural world: natural phenomena like smoke as a sign of fire or a symptom as a sign of a disease.

Augustine writes in *De doctrina Christiana* that a sign is "a thing of which itself makes some other thing come to mind, besides the impression that it presents to the senses."[13] In other words, a sign is a thing that functions to bring something else to mind, so that when we consider a sign we are considering a *relation* between a sign, the thing it is a sign of, and an interpreting mind. Given this broad definition of the signifying relation we can understand conventional symbols and natural signs as different species of the genus *signum.* A word stands for something to the mind of the interpreter and smoke indicates the presence of fire: both are different species of signs under Augustine's new definition. The achievement of Augustine's *signum* is, then, to have brought the Aristotelian *σύμβολον* (*sýmvolon*) and *σημεῖον* (*semeῖon*) together under a single genus.

Augustine's broad notion of *signum* is for Deely only a proposal, though one that launches "a line of speculation that was both the first of the Latin initiatives in philosophy and the one that took the whole of the Latin Age to reach maturity."[14] On Deely's reconstruction, the development of Scholastic philosophy can be understood as trying to answer the following question, which he takes Augustine's understanding of the *signum* to propose:

> Does the sign indeed have a general mode of being that transcends and unites through the action of signs the otherwise distinct realms of nature and culture, and if so, how is such a mode of being even possible in the first place?[15]

The path to an answer is difficult to navigate. It heads straight through the forest of nominalism and the dense thicket of late-Scholastic realism (the neglected and immensely technical terrain that bridges Ockham and Descartes in our textbook view of the history of Western philosophy).

The details of this story do not concern us at present, but as a cursory sketch to motivate *our* inquiry suffice it to say that on Deely's picture the Latin age ends with two alternative conceptions of the sign:

> On one side stand those who think that the general notion of sign is an empty name, a *flatus vocis*, a nominalism, no more than a "relation of reason," an *ens rationis.* On the other side are those who are able to ground the general notion in

[12] Aristotle, *Prior Analytics*, 70a9, in *Aristotle I,* trans. H. P. Cooke and Hugh Tredennick (Cambridge, MA: Harvard University Press, 1983), 525.
[13] Augustine, *De Doctrina Christiana* (Oxford: Clarendon, 1995)*,* Book II, section 1.
[14] Deely, *Four Ages*, 215
[15] Deely, *Four Ages*, 369.

> an understanding of relation as unique, suprasubjective mode of being, a veritable dual citizen of the order of *ens reale* and *ens rationis* alike.[16]

The first conception is plagued by the problems of nominalism (which I review in Chapter 2), while the second is the realist view of signs that culminates in John Poinsot's *Tractatus de signis* (1632). In this work he responds to Augustine's proposal by explaining the distinctive being of signs as an ontological relation, by which he means a relation that is indifferent "to the distinction between mind-independent and mind-dependent being," namely, a "relation *secundum esse*" or "a relation as such according to the way it has being."[17] As Deely later remarks, "any division of sign proposed must first be understood in the light of what it is that is being divided."[18] If we distinguish between two different kinds of signs, say between natural signs like smoke and conventional signs like words, then we must first understand the sign as a relation in general, prior to its being divided and further classified.

Poinsot conceives of the sign not as a feature of the natural world (as, according to Deely, the thinkers of antiquity did) but as an ontological relation: "that which represents something other than itself to a knowing power."[19] Poinsot's understanding of the sign relation echoes Augustine's *signum* but extends it by clarifying the precise type of relation that all signs share. Poinsot considers the sign to be a relation involving a sign-vehicle, an object, and a cognitive power. He adds that "the rationale of a sign formally speaking" consists "in a relation according to the way relation has being [i.e., an ontological relation]."[20] The sign, as an ontological relation, is "something that exists toward another." [21] In other words, a sign mediates between a cognitive power and an object, as when I interpret smoke as a sign of fire. Such a sign has both a mind-independent (*ens reale*) and a mind-dependent (*ens rationis*) being.[22] For example, smoke and fire are connected mind-independently, while the relation of the sign (smoke) to a cognitive power is, in part, mind-dependent.

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[16] Deely, *Four Ages,* xxxi.

[17] Deely, *Four Ages*, 230. In his *Tractatus*, Poinsot is interested in the different understandings of relation, as initially presented by Aristotle, and elaborated by his medieval interpreters. There are firstly relations of mind-independent being, such as transcendental relations (that apply to more than one category or accident) and categorical relations (that apply to only one category). These relations hold whether we think them or not and are distinct from mind-dependent relations, called objective relations, which have their being only insofar as they are thought (e.g., a logical relation). An ontological relation is distinct from each of these insofar as it is indifferent to mind-independent and mind-dependent being, concerning only how a relation has being, irrespective of whether that being is dependent on or independent from the mind. We will see that, for Poinsot, the proper being of a sign consists in an ontological relation understood through a *process of leading*—the sign's power to stand for its object and present that object to a cognitive power (whether that sign is natural, cultural, instrumental, or formal). Poinsot organizes his *Tractatus* in such a way that he first considers the meaning of mind-dependent and mind-independent being in the category of relation. This sets the stage for Book II, which concerns his account of "the sign in its proper being." Confirming, first, that the sign is of the order of relation, the next task is to ascertain what type of relation the sign is. Poinsot maintains that it must be an ontological, not a categorical relation, "because we are discussing the sign in general, as it includes equally the natural and the social sign…. And for this reason, the rationale *common* to signs cannot be that of categorical being, nor of categorical relation." Poinsot, *Tractatus*, 118.

[18] Deely, *Four Ages*, 668.

[19] John Poinsot, *Tractatus de Signis*, trans. John Deely (1632; Indianapolis, IN: St Augustine's Press, 2013), 116.

[20] Poinsot, *Tractatus*, 119.

[21] Poinsot, *Tractatus,* 118.

[22] Poinsot, *Tractatus,* 118.

That is what Deely means when he calls a sign so conceived a "veritable dual citizen of the order of *ens reale* and *ens rationis* alike."[23] If we conceive of the sign the way Poinsot does, as an ontological relation, then our view of signs is already set against the nominalists, who thought that sign relations were merely relations of reason holding in an individual mind.[24] The semeiotic realist's rejoinder, as we will see in Chapter 2, is that a sign stands for its object to *any* cognitive power that *would* interpret it as such. The sign is not dependent on any particular mind or group of minds but on mind in general (and so includes, under the purview of mind-dependent being, any virtual mind that *would* interpret it).

Poinsot's view of the sign as an ontological relation highlights the difference between *representation* and *signification*, which Deely takes to be crucial to a general notion of *signum*:

> Representation is involved in the being proper to a sign as the foundation for the relation of signification, but the signification itself always and necessarily consists in the relation as such, which is over and above that characteristic of a material being or psychological state of an organism upon which the relation itself is founded.[25]

Here we glimpse the difference between the *sign*, taken as a pure triadic relation (a *representative* relation that grounds signifying activity of many kinds), and *signification* as that which results from a given act of interpretation. One can conceive of the sign as a triadic relation but one must not confuse the sign *as such* with the *sign-vehicle*, the material that serves as the vehicle for signification in a particular semiotic relation:

> Those "things" or perceived objects which we call signs, such as traffic lights, barber poles, words, and so on, are not, technically speaking, *signs* but the *vehicles* of signification. The actual *signification itself* consists in the relations between the vehicles and the knowability of their objective content….
>
> The being in which the sign, properly and formally speaking, consists is never some object as such, nor is it any subjectivity as such … [but] is rather each strand in the network of real and unreal relations in function of which whatever objects appear exist as objects (as nodes or termini in the network of relations) in the first place.[26]

The sign, for Poinsot, belongs to the category of relation (specifically *ontological relation*). The sign's being consists of the relation between its object and a cognitive power. This relation is not merely in the interpreter's mind because as a relation of *leading* it has both a mind-dependent and mind-independent being. It is important not to confuse the sign-vehicle (as one of the relata of the triadic relation) with the sign relation. We need to understand the sign as a relation prior to dividing the sign into its various components (sign-vehicle, object, interpreter) or into different types (natural, conventional, formal, instrumental, and so on).

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[23] Deely, *Four Ages,* xxxi.
[24] In chapter two I explore the relation between semiotic and nominalism in greater detail.
[25] Deely, *Four Ages,* 431.
[26] Deely, *Four Ages,* 434.

On Deely's picture, with Poinsot the Latin age of philosophy reaches its final form. Looking back on the history of philosophy from our position today, Poinsot is for Deely the first to defend a completely general theory of signs—he is a proto-semeiotic realist. Had Poinsot's *Tractatus* received the attention Deely feels it deserved from his contemporaries we might see Peirce merely as a secondary thinker in the history of semiotics and not as the primary figure who ushers in a new age of semiotic understanding.

But Poinsot's work was overshadowed by Descartes, who made a point of turning away from scholasticism and beginning philosophy anew. For Deely the early-modern period of philosophy is a detour and a backwater. Unaware of Poinsot's elucidation of the sign relation, Descartes and Locke reduced the sign (properly a triadic relation) to the mere sign-vehicle (instead of talking about signs as relations, they talk about *particular* sign-vehicles), and this led them down "the way of ideas" to the dead end of nominalism.[27]

### 3. Peirce Recovers the *Signum*

I have laid down some of the key moves that Deely makes in *Four Ages of Understanding* to set the stage for his account of Peirce's recovery of the Latin *signum.* For Deely, while the Greeks restricted the sign to the phenomena of the natural world, the Latins theorized the *signum* as an ontologically neutral triadic relation that could include any content, natural, conventional, and so on, thereby initiating a major development in the history of semiotics. I also hinted that for Deely the early modern period lost sight of this Latin development and became bewitched by nominalism (a philosophical view that, in one form at least, denies the mind-independent reality of relations). The early modern philosophers spoke more of ideas than of signs because they took the object that a sign stands for to be an idea in the mind.[28] Meaning therefore involves a dyadic relation modeled after the way in which a sign stands for an idea. Although Locke concludes his *Essay Concerning Humane Understanding* by acknowledging the need for a general theory of signs, he does not provide a detailed account of what such a theory might look like.[29] For Deely, it is Peirce, more than two centuries later, who answers Locke's call by unearthing the *signum* from his Latin predecessors.

What I am calling "Deely's hypothesis" is that the origin of Peirce's theory of signs is found in his recovery of the Latin *signum* as a pure triadic sign relation. For Deely, Peirce recognizes the "bankruptcy of the modern effort" to treat the objects that signs stand for as mere ideas in a particular mind.[30] Unlike the canonical modern philosophers, Peirce had studied the logical works of their Medieval predecessors and was aware of the Latin theory of signs as relations. According to Deely, while Peirce never read Poinsot he independently reasoned from the same sources that Poinsot did to similar conclusions concerning the being of sign-relations in general, namely, "that the sign consists not in a type of sensible thing but in a pure relation, irreducibly triadic, indifferent to the physical status of its object and to the source of its

[27] Deely, *Four Ages,* 639. It is not my business to justify the details of Deely's sketch of modernity but only to relate enough of Deely's history so that we can understand his account of Peirce as recovering and developing the *signum*.
[28] Deely, *Four Ages,* 639.
[29] Locke, *Essay*, 336-37.
[30] Deely, *Four Ages, xxxi,* 639.

immediate provenance, nature or mind."[31] Deely's main claim is that "Peirce did not merely recover the Latin *signum*" but that he "proceeded to develop it beyond anything to be found in the greatest of the Latin authors."[32] He adds that Peirce "did not have to work his way to the arduous conclusion that the general notion of sign is no mere nominalism" since that was already *"*the point at which the Latins had enabled his semiotic to begin."[33] Hence for Peirce, "the overcoming of the divide between nature and culture in the being of the sign was the point of departure, not the point of arrival."[34]

Deely's hypothesis is that Peirce was able to recover two Latin achievements that had been lost to the modern age and use them as a starting point for his inquiry into the action of signs. The first lesson Peirce learned from the Latins is that sign relations are not merely relations of reason (contrary to nominalism), having a being that is both mind-dependent and mind-independent. The second is that there is a more basic semiotic relation that precedes the division into natural and conventional signs.

There is some truth to Deely's hypothesis. Peirce was well-versed in Medieval philosophy. To claim that his doctrine of signs was not influenced by Scholasticism, at least in some respect, would be wrong.[35] Max Fisch tells us that Peirce purchased the works of Duns Scotus in 1867. In 1868 "he compiled a 'Catalogue of Books on Mediaeval Logic which are available in Cambridge,'" and there were "more of them in his own library than at Harvard or anywhere else."[36] Peirce also refers many times to the influence that the Scholastics had on his thinking throughout his published and unpublished writings. Here is one example:

> From Kant, I was led to an admiring study of Locke, Berkeley, and Hume, and to that of Aristotle's Organon, Metaphysics, and psychological treatises, and somewhat later derived the greatest advantage from a deeply pondering perusal of some of the works of medieval thinkers, St. Augustine, Abelard, and John of Salisbury, with related fragments from St. Thomas Aquinas, most especially from John of Duns, the Scot (Duns being the name of a then not unimportant place in East Lothian), and from William of Ockham.[37]

In their essay on the "Common Sources for the Semiotic of Charles Peirce and John Poinsot," Deely and Mauricio Beuchot note that "between 1867 and 1871, and thence until 1883, we find Peirce drawing substantively from the *Cursus Philosophicus Conimbricensis* of 1607, that is, the course developed by the Jesuit professors of the Colegio Real of Coimbra, Portugal, between 1591 and 1606."[38] This course was redacted by the Jesuit professor Pedro da Fonseca, who

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[31] Deely, *Four Ages,* 614. See also John Deely and Mauricio Beuchot, "Common Sources for the Semiotic of Charles Peirce and John Poinsot," *Review of Metaphysics* 48, no. 3 (1995): 549-55.
[32] Deely, *Four Ages*, 637.
[33] Deely, *Four Ages*, 637.
[34] Deely, *Four Ages,* 637.
[35] Remember that I am presently interested in the origin of Peirce's theory and whether it can be traced to the Latin *Signum* or to the Greek *σημεῖον* (*semeῖon*).
[36] *W2:* xxiv.
[37] EP2: 423-24 (1907). Another good example is found in Peirce's 14 March, 1909 letter to Victoria Welby (*SS*: 114-17).
[38] Deely and Beuchot, "Common Sources," 552.

devoted a chapter to signs.[39] While Peirce drew on these sources secondarily, Poinsot himself encountered them directly as an undergraduate student and would later draw on Fonseca when formulating his *Tractatus de signis*. As Deely and Beuchot remark, "Poinsot, the great semiotician of the end of the sixteenth and beginning of the seventeenth century, and Peirce, the great semiotician of the end of the nineteenth and beginning of the twentieth century, were both under the tutelage of Fonseca as well as Aquinas, Scotus, and Ockham."[40]

Deely presumes that under this "tutelage" Peirce encountered the crystalizing theme of Mediaeval semiotics, that the sign is a triadic relation. My brief survey of Deely's reconstruction of the history of semiotics shows that while there was disagreement about whether signs had a mind-dependent or mind-independent being (or some combination of both) it was common among the Scholastics to treat the sign as a triadic relation involving a sign-vehicle, an object, and an interpreting mind. We saw this already in Augustine's definition of a sign as "a thing of which itself makes some other thing come to mind."[41] We saw this view reach its maturity with Poinsot's definition of the sign as "that which represents something other than itself to a knowing power."[42] Similar formulations are found between Augustine and Poinsot. For example, Deely examines Roger Bacon's view that a sign is that which "offered to sense or to understanding, designates something to the understanding itself."[43] He notes that Duns Scotus thought that "to signify is to represent something to the understanding,"[44] and claims that Fonesca, following Scotus, thought that the sign functions "to represent something to a cognoscitive faculty."[45] While there are technical differences between these definitions, each involves an irreducibly triadic relation. The sign in general, as a representing relation, always involves three relata: a sign, an object, and an interpreting mind.

If we were to consider Peirce's theory of signs from a bird's-eye point of view, we would notice that at the basis of this theory is a triadic sign relation *resembling* the one we find in Medieval philosophy, and from this comparison we might be led to think that since there is a resemblance Peirce must be recovering this view from some of the Medieval works we know he read.

Peirce offers many slightly different definitions of the basic semiotic relation throughout his writings but what is common to all of them is a triadic relation involving a sign which stands for its object to what Peirce calls an interpretant. *Sign*, *object* and *interpretant* are three relata of an irreducibly tripartite relation and when we consider the sign in general we consider the relation, not the "sign" (that is, the sign vehicle) by itself.[46] Thus, significance, or meaning, for

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[39] See Deely, *Four Ages*, 422-30 for a discussion of Fonesca.
[40] Deely and Beuchot, "Common Sources," 552.
[41] Augustine, *De Doctrina Christiana* (Oxford: Clarendon, 1995), Book II, Section 1.
[42] Poinsot, *Tractatus*, 116.
[43] Roger Bacon, *De Signis,* in Deely, *Four Ages,* 372.
[44] Duns Scotus, *Super libros Elenchorum,* in Deely and Beuchot, "Common Sources," 553.
[45] Fonesca, *Institutionum dialecticarum libri octo*, in Deely and Beuchot, "Common Sources," 552.
[46] Any general account of the history of semiotics would be incomplete if it did not mention Ferdinand de Saussure. Peirce's account of the sign as a triadic relation is what principally distinguishes Peircean *semeiotic* from the *semiology* of Saussure, who thought that a sign was composed of a signifier and a signified. There is no evidence that Peirce was aware of Saussure's work. Peirce's semeiotic realism was developed independently from the French tradition, and the tradition stemming from Saussure does not concern me here. See T. L. Short, *Peirce's Theory of Signs* (Cambridge: Cambridge University Press, 2007), 16-21.

Peirce is not exhausted by a direct "standing for" relation between a sign and an object (whether external or an idea), but always involves a tripartite relation: both a "standing for" and a "standing to." We can say that the sign mediates between an object and an interpretant, or that the sign stands for its object and addresses its interpretant, or that the interpretant is a further representation which represents the sign as a sign of its object. While Peirce's theory of signs underwent thorough development throughout his lifetime, T. L. Short notes that this is Peirce's "unchanging conception of a sign" and that this formal scheme "unites his earlier and his later semeiotic."[47]

Deely's thinks Peirce comes to this triadic view of signs from the Latin *signum,* and we have seen that Peirce certainly read works articulating such a view of signs. However, in his account of the antecedents of Peirce's theory of signs, Short notes that Peirce made no reference "to the most notable anticipation of his views, which occurred in a brief though influential passage in St. Augustine's *De doctrina Christiana*."[48] Short's claim is not directed against Deely, although it can be read that way. What is in dispute is not whether Peirce held a triadic view of signs that resembles the Latin *signum* in its mature form as a pure relation—this much seems plausible—but whether Peirce recovers this notion directly from the schoolmen in his early writings.

On Deely's account it is Peirce's 1867 "On a New List of Categories" that opens a path to the recovery of a general notion of *signum*. Deely goes so far as to say that the year 1867 marks the beginning of the postmodern age of philosophy and that Peirce's categorical investigation leads him to a broad view of representation as a triadic relation.[49] In this article, which Peirce considered one of his "strongest philosophical works," he provides his first published argument for a new list of categories. [50]

The article is dense and difficult. As Murray Murphey puts it, "certainly of all of Peirce's published papers there is none which is so cryptic in its statement of essentials, so ambiguous in its definition of terms, so obscure in its formulation of the central doctrine, or so important in its content."[51] Peirce takes himself to be following and extending Kant in offering a transcendental deduction of his categories. By utilizing a method of *prescission*, which he adopts from the Medieval method of *abstraction*, Peirce introduces three categories passing between *being* and *substance*:

**BEING,**

Quality (Reference to a Ground),

Relation (Reference to a Correlate),

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[47] Short, *Peirce's Theory of Signs,* 30.
[48] Short, *Peirce's Theory of Signs*, 23. The passage from Augustine here referred to is the one discussed above.
[49] Deely, *Four Ages,* 637. Not post-modern in the sense of "post-modernism," the view associated with literary criticism, defended by Lyotard and others. Rather "post-modern" just in the sense of coming after modernity (the "Descartes to Kant" trajectory).
[50] EP1: 1
[51] Murphey, *Development*, 66.

Representation (Reference to an Interpretant),

**SUBSTANCE.**[52]

Peirce will later drop "being" and "substance" from his scheme, leaving only the three categories: Firstness (quality), Secondness (relation), and Thirdness (representation).

Deely claims that

> Peirce's categorial scheme is neither a scheme designed to express exclusively what is there in the objective world prior to the scheme and independently of it, as Aristotle's was, nor is it a scheme designed to express exclusively necessary aspects of the mind's own working in developing discursively the content of experience, as Kant's was. Peirce's scheme is designed to express the mixture and interweave of mind-dependent and mind-independent relations which constitute human experience in its totality as a network of sign relations, a semiotic web (or semiosic web). This web is a living tissue of relations.[53]

What is important to note here is the role that Thirdness plays in representation, and particularly, how the category of Thirdness furnishes a clear understanding of representation as involving a triadic relation.

In 1867 Peirce calls the interpretant a "mediating representation" because it "fulfils the office of an interpreter, who says that a foreigner says the same thing which he himself says."[54] Peirce goes on to claim that "representation" must be understood in an "extended sense":

> In this sense, a word represents a thing to the conception in the mind of the hearer, a portrait represents the person for whom it is intended to the conception of recognition, a weathercock represents the direction of the wind to the conception of him who understands it, a barrister represents his client to the judge and jury whom he influences.[55]

The examples Peirce provides can be understood as replicas of a general triadic relation, since a view of representation as a triadic relation explains each of the examples in the above-quoted passage. In each of the examples the representative relation involves a sign that stands for an object to an interpretant such that the interpretant is brought into connexion with its object through the mediating sign. Words involve triadic sign-relations, but so do portraits and weathercocks. Peirce does not mention this here but in each of his examples of representation the

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[52] EP1: 6. Peirce spends time at the beginning of the article distinguishing *precision* from *discrimination* and *dissociation. Precision* is "that which arises from *attention to* one element and *neglect of* the other." He further writes that "discrimination has to do merely with the essences of terms, and only draws a distinction in meaning. Dissociation is that separation which, in the absence of a constant association, is permitted by the law of association of images. It is the consciousness of one thing, without the necessary simultaneous consciousness of the other. Abstraction, or precision, therefore, supposes a greater separation than discrimination, but a less separation than dissociation." (EP1: 2-3).
[53] Deely, *Four Ages,* 662.
[54] EP1: 5.
[55] EP1: 5.

sign stands for its object to an interpretant in a slightly different respect or capacity (upon a slightly different ground). The word, we might say, is a *symbol* of its object and signifies conventionally, while the interpretant takes the portrait as a *likeness* of its object, and a weathercock *indicates* the direction of the wind, depending on a natural connexion between sign and object. When Peirce says that we need to treat representation in an "extended sense" he means that our view of representation must account for all these different types of signs: icons (portraits), indexes (weathercocks), and symbols (words). While these three types of sign stand for their objects in different respects, they nonetheless depend on the same tripartite relation.[56]

For Deely, Peirce's 1867 definition of representation accomplishes precisely what Augustine's new definition of *signum* had done centuries earlier when he proposed that there was a more basic sign relation that comes prior to the distinction between natural and conventional signs. In the same way that, for Deely, Augustine's *signum* (especially as elucidated in Poinsot) subsumes the distinction from antiquity between natural signs and conventional symbols, so Peirce's broader notion of representation, rooted in the category of Thirdness, shows that all types of signs are grounded in a triadic relation: signs, in general, involve all three categories of being.

Deely cites the following definition of the sign from a manuscript dated 1897, which he takes to provide an even clearer account of the triadic sign-relation:

> A sign, or ***representamen,*** is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the ***interpretant*** of the first sign. The sign stands for something, its ***object***. It stands for that object, not in all respects, but in reference to a sort of idea, which I have sometimes called the ***ground*** of the representamen.[57]

We seem to encounter here in Peirce what we saw earlier in Poinsot, namely, that there is a necessary difference between representation (as a *summum genus,* a tripartite relation, or the condition of the possibility of signification) on the one hand, and signification (as the meaning of a particular sign) on the other. There is a difference, then, between the representing relation in general, which for Peirce always involves object-sign-interpretant, and the particular sign-vehicles that we may encounter in our day-to-day lives (portraits, weathercocks, words, and so on) and interpret as signs. The different signs we encounter can all be understood as partaking in this more general triadic relation.

## 4. The Development of Peirce's Representative Relation

Is Deely right that the category of Thirdness (representation) clears the way for the recovery of the *signum*? Or did Peirce already have a general theory of signs prior to his "On New List of Categories" in 1867? If he did, what were his motivations for offering one?

[56] Peirce classifies the different types of signs (icons, indexes, and symbols) in the following pages of his "New List." An even clearer account can be found in his 1894 manuscript, "What is a Sign?" (EP2: 4-10).
[57] CP 2.228.

We must remember that Peirce considered himself a logician first and foremost; and that "only after his death did he begin to be called a philosopher."[58] He was elected to the American Academy of Arts and Sciences in 1867, and to the National Academy of Sciences in 1877, on the merits of his logical work.[59] He wished to be remembered as a logician above all else.[60]

On Peirce's view, as with Locke and the logicians of antiquity, logic is not distinguished from the doctrine of signs. Max Fisch writes that by 1865 Peirce conceived of logic as a "branch of semeiotic, the general theory of signs" and that "for some time to come logicians were likely to be the chief cultivators of the general theory of signs."[61] Peirce, Fisch writes, "devoted more labor to the classification of signs than to any other single field of research."[62]

In a childhood story he loved to tell, Peirce writes about his first encounter with logic, when he was 12 years old. His older brother Jem had just purchased the textbooks for his junior year at Harvard, among them a copy of Archbishop Richard Whatley's *Elements of Logic*.[63] In 1908, Peirce tells the story to Victoria Welby:

> I smiled at your speaking of my having been "kindly interested" in your work, as if it were … a *deviation* from my ordinary line of attention. Know that from the day when at the age of 12 or 13 I took up, in my elder brother's room a copy of Whatley's "*Logic*," and asked him what logic was, and getting some simple answer, flung myself on the floor and buried myself in it, it has never been in my power to study anything … except as a study of semeiotic.[64]

Logic and signs occupied Peirce's attention from the beginning until the very end of his philosophical investigations. In a chilling letter to Welby from 11 October 1909—two years before Welby's death in 1912, and five before Peirce's in 1914—he wrote:

> The truth is there are great obstacles to my writing. In the first place I am 70 years old and can perceive that my powers of mind are beginning to fail, and I feel it is my most sacred of all duties to write that book which shall show that many powerful minds have held views apparently the most antipodal upon subjects of the highest concern to all men, merely because they have all alike missed that point of view which would have reconciled them all in one truth.… Since Kant, the majority of logicians clearly sharing his opinion that the principles of reasoning had already been thoroughly investigated—a most superficial and fatal opinion—instead of studying their proper subject have either turned to a barren *Erkenntnisslehre* or to a study of the psychology of thought or to the attempt—like Mill—to found logic on a baseless system of metaphysics, or to the ridiculous

[58] W1: xxi.
[59] W1: xxii
[60] Ibid.
[61] Ibid.
[62] W1: xxii
[63] It's worth noting that the final chapter of the Archbishops's textbook concerns the nominalism-realism controversy—Peirce would have first learned of this controversy (which would occupy his attention for the entirety of his philosophical career) when he was just 12 years old!
[64] SS*:* 85.

> trifling of some other of the English logicians; and I feel that I am in possession of truth which must be put into writing before my powers quite fail.[65]

Peirce, of course, never finished this book, and his powers failed in 1914. However, the general truth that Peirce was struggling to articulate concerned the relation between signs and logic, a problem which, as we have seen, he was in one way or another grappling with since he was a boy.

In fact, the account of representation that Peirce gives in his 1867 "On a New List" is the *result* of a series of logical investigations that he presented in his lectures at Harvard in 1865 and at the Lowell Institute in 1866. Most striking is that a careful examination of these early writings suggests that Peirce had a general theory of representation *prior to* his published deduction of the categories in 1867. Extending this line of thinking, we notice that contra Deely, Peirce does not arrive at his tripartite view of representation from having thought about the *signum*, but rather that he was led to a triadic view of representation for reasons independent of the categories and having to do with grounding the different types of logical inference: deduction, induction, and hypothesis. I will save my discussion of the relation between semeiotic and inference for Part Two as it is Bellucci who takes us in the direction of a proper understanding of Peirce's theory of sign inference. But I close this section on "Deely's hypothesis" by noting the few passages where Peirce offers an extended account of representation in his early writings prior to 1867. Nowhere in this work do we find a reference to the *signum* at all. What we do find, however, is that Peirce is led to articulate a general theory of representation, first, because of his thoroughgoing anti-psychologism; and second, to clarify the reduction of illation to the tripartite sign relation (which is the primary investigation of the second part of this chapter).

According to Short, Peirce was led to a triadic view of representation by his study of the *Critique of Pure Reason*, and in particular as a result of his reflections on Kant's concept of representation (*Vorstellung*).[66] However, Peirce would have learned about the word "semiotic" from Locke (who coined the term in the last paragraph of his *Essay*), and his study of the Kantian *Vorstellung* was an attempt to clarify the notion of representation in order to bring it into the jurisdiction of logic.

He first gestures at representation as a *triadic* relation in 1865 during his Harvard lecture on "Forms of Induction and Hypothesis." There we see Peirce distinguish his view of representation from Kant's *Vorstellung*, which he worries restricts representation to the mental domain. He offers in its place a broad definition of representation, one that foreshadows the examples (quoted above) he will give in his 1867 "New List:"

> I however would limit the term [representation or *Vorstellung*] neither to that which is mediate nor to that which is mental, but would use it in its broad, usual, and etymological sense for *anything which is supposed to stand for another and which might express that other to a mind which truly could understand it.* Thus

[65] SS: 133-34.
[66] Short, *Peirce's Theory of Signs*, 28-29.

> our whole world—that which we can comprehend—is a world of representations.[67]

Here we see Peirce's tripartite view of representation first coming into focus. On this account, smoke does not just stand for fire, it expresses this "standing for" *to* a mind that understands it. This view of representation, as involving a "standing for" and a "standing to," not only explains what is going on in the particular case of smoke and fire but, being general, explains the relation involved in *any* representation or sign that we might encounter (portraits, weathercocks, and words among them). Short notes that Peirce's claim that our world is a "world of representations" comes closer to Kant than he may have thought, and that nowadays this view is associated with a kind of semiotic idealism.[68] But setting this point aside, Short does not expand on Peirce's reasons for defining representation in the first place, moving from this early account in 1865 to Peirce's clarification in the 1866 Lowell lectures.[69] Between these two early accounts of representation there is a third, found in Peirce's unfinished draft, "Logic of Sciences" (1865). There he proposes his first *formal* definition of representation, one that further clarifies the "standing for" and "standing to" relations that we find in the "broad, usual, and etymological" definition offered in the Harvard lectures. Peirce seems to require such a clarification primarily because he believes that logic would benefit from a thorough study of signs. I maintain that Peirce's primary reason for clarifying what is meant by representation is to further his aim of constructing a thoroughly anti-psychologistic theory of logic, and that we must approach his clarifications with this aim in mind.

In his first Harvard lecture of 1865, Peirce proposed to define logic in anti-psychologistic terms as an objective symbolistic, or a *species* of the general science of representation.[70] It is clear that Peirce is drawing inspiration from Locke, who concludes his *Essay* by proposing a third branch (in addition to *physica* and *practica*) to the science of human understanding: "σημειωτική, or the doctrine of signs."[71] Σημειωτική (*Semeiotike*) is, for Locke, another word for logic, "the business whereof, is to consider the nature of [the] signs, the mind makes use of for the understanding of things, or conveying its knowledge to others."[72] Locke suggests that σημειωτική (*semeiotike*) would "afford us another sort of logic and critic, than what we have hitherto been acquainted with."[73] Reflecting on this passage, Peirce writes:

> A first approximation to a definition, then, will be that logic is the science of representations in general, whether mental or material. This definition coincides with Locke's. It is however too wide for logic does not treat of all kinds of representations.[74]

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[67] W1: 257; my emphasis.
[68] Short, *Peirce's Theory of Signs*, 29.
[69] Short, *Peirce's Theory of Signs*, 29; W1: 466. We will encounter this 1866 clarification shortly.
[70] Francesco Bellucci, *Peirce's Speculative Grammar* (New York: Routledge, 2018), 18.
[71] Locke, *Essay,* 336.
[72] Locke, *Essay*, 336-37.
[73] Locke, *Essay*, 337.
[74] W1: 169.

Logic, he is saying, does not treat copies (icons) or signs (indexes) but only *symbols*.[75] For Peirce, logic is *specifically* "the science of the conditions which enable symbols in general to refer to objects."[76] Logic is "symbolistic" because it primarily studies symbols and "objective" because it studies the relation to their objects. Hence Peirce's early name for logic: objective symbolistic. As Fisch puts it, on Peirce's early account, "logic is at most but a third part of a third part—that is, a ninth part—of semeiotic [or the general theory of representation]."[77]

As a species of the general science of representation, logic depends on a general definition of representation—the *summum genus* of which it is a species.[78] We must, that is, understand what representation amounts to in general *prior to* providing a classification of the particular sort of representations with which logic deals. If we answer the question "what is logic?" by saying it is "a species of the general doctrine of signs that studies the relation between symbols and their objects," then the more pressing question is immediately broached: "what, then, is a sign?" This is not to say that logical research cannot proceed without first appreciating the semiotic nature of logic. But Peirce thought the primary logical task is to provide a classification of the forms of inference, and that classification itself, is aided by our understanding of signs in general. In order to classify the forms of inference as variations of a more general semiotic relation, it is necessary to first understand what, precisely, that general relation is.[79]

In "Logic of Sciences," Peirce begins to refine the broad and etymological definition of representation that he deploys in "Forms of Induction and Hypothesis" to bring the term further into the service of logic. He makes an important discovery with respect to what I have been calling the "standing to" relation. We have seen that in Medieval philosophy the sign, or representation, *stands to* the understanding or to a mind that comprehends it. But Peirce is careful to note that representation is *not* "peculiar to the mind."[80] A representation does not depend on a *particular* mind to make it one, and to think otherwise is "not fully [to] understand

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[75] In Peirce's early writings he divides representations into copies, signs, and symbols. This is a little confusing, as he will eventually call representation a sign relation. Copies become icons, signs become indexes, while symbols remain symbols. The pragmatic maxim is helpful here. The difference between "copy" and "icon" or "sign" and "index" are merely verbal, since their practical effects remain the same.

[76] W1: 175.

[77] W1: xxxiii. See also Max Fisch, *Peirce, Semeiotic, and Pragmatism* (Bloomington: Indiana University Press, 1986), 323, 338-39.

[78] W1: 326.

[79] In the 1860s, Peirce's Semeiotic was divided into three subfields: Speculative Grammar, Logical Critic, and Speculative Rhetoric. *Formal* logic occupied the second branch, which studies the criticism of arguments. Importantly, logic was then only one part of the general science of representation, dealing only with the relation between symbols and their objects. Speculative Grammar, the first branch, studies signs as signs—apart from their objects and their interpretants. And so, Speculative Grammar tells us about the nature of signs in general, the fruits of that labour being implemented into the classification of inference in Critic. Rhetoric, then, dealt with the relation between signs and their interpretants. By the 1900s, however, Logic is no longer considered part of Semeiotic, but is synonymous with the general science of Semeiotic itself—logic now comprising all three branches of Semeiotic. So, when I say that logic requires a general notion of sign in order to classify arguments as signs, I mean that Logic, as a subfield of Semeiotic, is informed by the fruits of Speculative Grammar. This is not to say that Speculative Grammar presupposes Logical Critic. It is only to say that inquiry in these three subfields proceeds in tandem, and advancements in one field lead to possible advancements in the others.

[80] ibid

what representation is."[81] Peirce writes that "an Aztec inscription which no one can read, a natural face upon a rock which no one has seen or shall see, is still a representation."[82] A representation does not need to be interpreted by a mind for it to be a representation: *being interpretable* will suffice.[83] As Peirce will later note, even a jacquard loom is interpreting signs, though it does not have a mind or understanding of its own: the card inserted into the loom is a representation that stands *for* a pattern *to* the machine, and the machine interprets the sign by weaving a tapestry resembling the pattern represented by the card.[84]

Peirce provides his first formal definition of representation in 1865, and the account he gives marks an important step along the way to a general theory of signs:

> Representation implies first an *object* represented; 2nd a mind or rather abstracting from the personal element, a representation (itself or other) to which it addresses itself. I call this the *subject*. 3rd a *Ground* or Reason which determines it to represent that object to that subject.… Hence representation has three marks only namely—
>
> 1 Reference to an Object
>
> 2 Reference to a Ground
>
> 3 Reference to a Subject.[85]

Initially, a representation was conceived as standing for an object to a *mind* that comprehends it. Here, however, we observe the same scheme but with a more precise account of what each relation involves. Representation is a tripartite relation that involves reference to an object, a ground, and a subject: "Representation is the character of standing to a subject for an object upon some ground."[86] The object remains unchanged from previous iterations of Peirce's explanation, but now we understand the reference to a "ground" as determining the respect or capacity in which a particular representation stands to its subject for its object (as a copy (icon), a sign (index), or a symbol in Peirce's early parlance). This is what James Jakób Liska calls the *presentative condition* of representation: "the ground, as the presentation of the object, thus serves as the *basis* upon which the sign can represent its object."[87] For example, a portrait of Napoleon represents Napoleon himself in the capacity of a likeness. The ground of the portrait is a likeness, which, shared by the portrait and Napoleon, provides the basis of *this* representation (the respect or capacity in which the representation represents its object to its subject).[88]

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[81] ibid
[82] ibid
[83] Max Fisch, *Peirce, Semeiotic, and Pragmatism*, 359.
[84] CP 5.473.
[85] W1: 327.
[86] W1: 330.
[87] James Jakób Liska, *A General Introduction to the Semeiotic of Charles Sanders Peirce* (Indianapolis: Indiana University Press, 1996), 18.
[88] There is disagreement in the secondary scholarship as to what we should make of the "ground" (see Liska, *General Introduction*, 117-18 for a survey). It is not my business to address this scholarship directly, as it is Peirce's

What is most important to our inquiry, however, is that the representation is no longer conceived as standing to the mind of an interpreter, but rather to a *subject* which is itself a representation. The importance Peirce attached to abstracting away the "personal element" typically understood as bound up with the "standing to" relation should not be understated. Peirce realizes that the relation of a representation to a mind will not suffice for a definition of representation because some representations do not need to address a mind to be representations. As Fisch puts it, "a sign does not cease to be a sign when no interpreter is present. So we may drop the interpreter also from our definition [of sign or representation]."[89] To do so, we must sharpen our terminology and abstract away the personal element. But why does Peirce make this move? On the one hand, it is because, as we have seen, representations do not need to address an actual mind for them to be representations. However, I suspect that Peirce defines the sign in this manner (as not requiring an actual interpreter) because of his budding anti-psychologism.

The primary theme of Peirce's 1865 Harvard lectures is to develop a thoroughgoing anti-psychologism in logic.[90] We must remember that it is in this context—of grounding the different

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new notion of the "Subject" that is most important to my argument. However, I will say that Deely's understanding of this "ground" is quite different from Liska and the other Peirceans he discusses. Deely claims that it would be incorrect to think of this "ground" as a "basis" or "foundation" (the Latin *fundamentum)*. He takes Peirce to mean the "extrinsic formal specification whereby the foundation of a relation gives rise to its relation as terminating at this rather than that aspect of an object signified." *Four Ages*, 642. However, as Vincent Colapietro and Short both suggest, Peirce stops talking about "ground" with respect to signs and representation after 1867 (apart from an anomalous passage from 1897 (CP 2.228, quoted above)). Vincent Colapietro, "The Ground of Semiosis," in *Peirce's Doctrine of Signs,* ed. Vincent Colapietro and Thomas Olshewsky (New York: Mouton de Gruyter, 1996), 132. According to Short and Colapietro, in his mature view of signs Peirce replaces "ground" with a "sign's relation to its object" and argues that a sign can stand for its object as an icon, index, or symbol. As Colapietro puts it: "the classification of signs based on their relation to an object does in a nuanced way what the notion of ground attempted to do, albeit in all too crude a manner." "Ground," 132. I will say in passing that I believe Peirce had a more nuanced view (of the sort Colapietro and Short attribute to Peirce's maturity) already in 1865. I have described the "ground" as the respect or capacity in which a representation stands to a subject for its object. Peirce himself notes, already in 1865, that there are three different marks of the ground, three different ways in which a representation can stand for its object: as copy, sign, or symbol (W1: 327-28; 332-34). The account provided in 1865 already points to the more nuanced account he will come to in his mature view.

[89] Fisch, *Peirce, Semeiotic, and Pragmatism*, 359.

[90] W1: 164. A reader may wonder about my seemingly anachronistic use of the term "anti-psychologism". According to Martin Kusch, that term did not see widespread use until the 1880s, when it became the cornerstone of debates in German academic philosophy instigated by Frege and Husserl (Martin Kusch, *Psychologism: A case study in the sociology of philosophical knowledge* (New York, NY: Routledge, 1995), 1). But as Peirce points out in his 1865 lectures, the tendency to treat logic from a psychological perspective stretches back to the time of Cicero and maybe even to Aristotle (W1: 163). When Peirce sets out to define logic in these early lectures, he calls his view of logic "unpsychological" as a way of differentiating his understanding of logic from his predecessors. Logic, Peirce says, "has nothing at all to do with operations of the understanding, acts of the mind, or facts of the intellect" (W1: 164), a view echoed in Kusch's gloss of Susan Haack's description that anti-pyschologism is the view that "logic has nothing to do with mental processes at all" (Kusch, *Psychologism*, 10). In fact, in 1865 Peirce began to draft a book with the tentative title "An Unpsychological View of Logic". I use the term "anti-psychologism" synonymously with Peirce's "Unpsychological" to suggest a theory of logic free from psychologistic implications. Peirce, it seems, did not land on the same designation commonly used in the German context, but his early work in the 1860s *is* a kind of proto-anti-psychologism. This broaches another problem, however, because Kusch only mentions Peirce one time in his book, and when he does, he follows Haack in designating Peirce a "weak Psychologist" who thought that "logic is prescriptive of how we should think" (Kusch, *Psychologism*, 10). While it is true that Peirce thought logic is a normative science, focused primarily on the laws that govern human thought (studying how we ought to think, and not describing how we do think), I believe it is a mistake to call this a form of

forms of inference without recourse to psychology—that Peirce begins to refine his account of representation. He rails against J. S. Mill, Joseph Duval-Jouve, Karl Kraus, and Augustus De Morgan for supporting a psychologistic account of logic: "logic has nothing at all to do with operations of the understanding, acts of the mind, or facts of the intellect."[91] At this point in the lecture he writes the following syllogism on the blackboard:

> All conquerors are butchers,
> Napoleon was a conqueror,
> ∴ Napoleon was a butcher.

He notes that his thought while writing out the syllogism was different from each of his audience members' thoughts while reading it. He claims that the syllogism would remain valid even if he were to erase it from the blackboard. Its validity does not depend on its being thought, spoken, or written down: "the thoughts were many, but this form was one."[92] As Peirce explains:

> The psychological view is that these forms [of inference] 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. In short*, I say that the logical form is already realized in the symbol itself; the psychologists that it is only realized when the symbol is understood*.[93]

These psychologists think that the forms of inference are only realized in thought, and by this they mean *actual thoughts*. By contrast, Peirce explains that the relations of logic are more general than their internal (mental) and external (written or spoken) manifestations. Symbols are *general relations* that have a reality irreducible to their actual manifestations. They are general forms of relation with the possibility of becoming actualized in thoughts, on blackboards, or during lectures, though they represent these relations whether or not they are thought, written, or spoken. It is not requisite for a sign to be interpreted, only that it be interpretable. The form of the relation remains whether the representation is re-*presented* to an actual mind or not. As Bellucci puts it, Peirce's logic "is only concerned with the objective features of thought, and the objective features of thought are those that characterize its logical form. Now, the logical form is already realized in the symbol that expresses the thought. … [U]nder the anti-psychologistic approach there ought to be no difference between the symbol and the thought embodied in the

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psychologism. I repeat that Peirce is very clear that logic "has nothing at all to do with operations of the understanding, acts of the mind, or facts of the intellect" (W1: 164), which sounds more like what Haack and Kusch call "anti-psychologism". We will see that logical relations are semiotic relations, and that semiotic relations partake in general forms that are realized in the symbols themselves. When we reason, we reason *in* these forms—the forms, so to speak, are not in us. If logic is prescriptive of how we ought to think, it only means that we ought think in these forms, since these forms have a reality independent from singular acts of thinking. "The thoughts were many, but this form was one", Peirce says in 1865 (W1: 165) and the "only point upon which attention is to be centered is the form of relations", he reaffirms in 1906 (SWS: 314). I wonder if Kusch's reliance on Haack's, I think misleading, designation of Peirce as a "weak psychologist" kept him from fully appreciating Peirce's early contributions to anti-psychologism, but this topic would require a paper-length treatment in its own right.

[91] Ibid.

[92] W1: 165.

[93] W1: 165-66; my emphasis.

symbol; 'for every thought is a symbol and the laws of logic are true of all symbols.'"[94] A syllogism is an example of such a symbol: anyone who sufficiently considers the premises should be led to the conclusion. The relation between the premise and the conclusion holds whether anyone thinks it or writes it down, being already contained in the symbol itself.

On Peirce's view, logic is an objective symbolistic:[95] "the science of the conditions which enable symbols in general to refer to objects."[96] Logic is a species of "the science of representation in general, whether mental or material."[97] But as a species of the general science of representation, it still depends on a definition of representation—the *summum genus* of which it is a species.[98] We must, that is, understand representation in general *prior to* providing an account of the sort of representations that logic deals.

Now, if logic is to remain thoroughly anti-psychologistic, the account of representation on which it depends cannot treat of representation in psychologistic terms. Representation is the tripartite relation in which a sign stands to a subject for an object upon a ground. Actually being realized or actually being understood are not conditions of representation. This, I believe, is why Peirce begins to conceive of the "standing to" relation as standing to a *possible subject* rather than to a *mind*, which might leave the impression that we mean a *particular* mind. For if representation were to be peculiar to individual minds, then logic (being a science of representation) would be psychologistic after all. The shift from "mind" to "subject" in Peirce's definition of representation is a terminological clarification meant to mitigate our tendency to treat representations as mere creatures of individual *minds*. In fact, even "subject" is terminologically inadequate, and Peirce will replace it with his own neologism, the *interpretant*—a word too ugly to be confused with minds or interpreters.

Peirce is clear at the outset of his "Logic of the Sciences" that "every representation has its logical relations whether it is actually thought or not."[99] This stands shoulder to shoulder with his view that the forms of inference (deduction, induction, and hypothesis) are forms of representation "by virtue of possible thought."[100] Peirce's formal definition of representation—the *summum genus* of which logic is a species—treats it as a tripartite relation. Just as an Aztec inscription is still a representation even though no one interprets it, the premises of a syllogism are still signs of the conclusion even if the syllogism is erased from the blackboard or if no particular person thinks it. Logic requires a general theory of representation, and that theory cannot treat representation as peculiar to the mind but must be general enough to account for possible or virtual thought.

The formal account of representation he offers in 1865 marks a decisive moment for Peirce, as it is then, and not in his 1867 "New List," that he clarifies his *formal* definition of representation. This use of the term "subject" was short-lived, however. Before the end of his Lowell Lectures of 1866, Peirce sharpens his terminology once more, arriving at his final

[94] Bellucci, *Peirce's Speculative Grammar*, 18; W1: 166.
[95] W1: xxxiii.
[96] W1: 175.
[97] W1: 169.
[98] W1: 326.
[99] W1: 322.
[100] W1: 164.

designation of the "standing to" relation, namely, the *interpretant.* As we have seen, for the Peirce of 1865-66 logic deals primarily with symbols and as he reminds us again in his seventh Lowell lecture, symbols "are a sort of representation:"[101]

> Now a representation is something which stands for something. I will not undertake to analyze, this evening, this conception of *standing for* something—but, it is sufficiently plain that it involves the standing *to* something *for* something. A thing cannot stand for something without standing *to* something *for* that something.…We usually say that the word *homme* stands to a Frenchman for *man.* It would be a little more precise to say that it stands *to* the Frenchman's mind—to his memory. It is still more accurate to say that it addresses a particular remembrance or image in that memory. And what *image*, what remembrance? Plainly, the one which is the mental equivalent of the word *homme*—in short, its interpretant. Whatever a word [or symbol] addresses then or *stands to*, is its interpretant or identified symbol.[102]

We should not dwell on the particular example here. Peirce notes that this is only a "metaphorical argument" for the interpretant, meant to show that the interpretant fulfils the role of a translator—it represents that a sign represents its object. Peirce moves from the Frenchman to the Frenchman's mind or memory to a further representation, or interpretant, in that mind. He uses this example to demonstrate the process of abstracting the interpreter, the personal element, so that a sign simply stands to an interpretant, or a second representation, whose function is to represent that a sign represents its object.

In his ninth Lowell lecture, Peirce clarifies that an interpretant is "a representation which represents that something is a representation of something else of which it is itself a representation."[103] In Short's helpful clarification, "the interpretant, then, is a second representation of the same thing."[104] A particular sign stands to an interpretant for an object. Having been addressed by the sign, the interpretant represents that sign as a representation of its object, that is, interprets the sign as a sign of its object. In this way, the interpretant is itself a representation of the object because it is in the same relation to that object as the sign is to that object.

Consider the following case: an X-ray reveals black spots on the President's lungs. Of what are these spots a sign? What do they indicate? There are several possible interpretants of this sign. To the inexperienced interpreter, the black spots might indicate some malfunction of the x-ray machine, but to an experienced doctor the spots indicate that there is cancer in the lungs. In this case, the interpretant represents the dots as a sign of cancer, but notice that the

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[101] W1: 466.
[102] W1: 466.
[103] W1: 474. A reader may worry that Peirce is welcoming an infinite regress here: the interpretant is itself a sign that determines a further interpretant, and so on *ad infinitum*. This worry is not unfounded. Indeed, Short notes that the threat of regress here is a major problem that the mature Peirce must overcome (Short, *Peirce's Theory of Signs*, 35-36). I flag this worry now, but I will not attempt to overcome it until Chapter 3, since it is Peirce's theory of continuity that ultimately puts this worry to rest.
[104] Short, *Peirce's Theory of Signs*, 29-30.

interpretants are not interpret*ers*, not minds, but representations, and as representations these two alternative interpretants do not actually need to be thought. As Fisch puts it:

> How extremely rare it is for an ill human being or other animal to be observed at all by a trained and skilled diagnostician, and how much escapes even the most skilled! But the symptoms and other signs are there, and so are the interpretants to which they *would* lead an ideally qualified interpreter. The thought is "there," though there be no thinker of it.[105]

The idea is that the interpretant is a real relation enjoying a kind of virtual or possible reality independent of its actually being thought.

While an analysis of symptoms is helpful for understanding the nature of the interpretant, Peirce's account holds just as well in the context of logic, which is precisely the context in which he brings it up. His motivation for conceiving the interpretant as he does accords with the view I began to sketch above: *if* we understand logic to be a species of semeiotic and our aim is to ground the forms of logical inference without any appeal to psychology, *then* logical investigations must begin with an account of representation that does not assume interpretation by an actual mind. It is because Peirce was interested in developing an anti-psychologistic theory of logic that he was led to his view of representation, and we have seen that he had a working definition of representation prior to his 1867 formal deduction of the categories. It was not, therefore, this deduction that led Peirce to a triadic theory of representation, as Deely's account suggests. Rather, the *discovery* of the categories provided support to the view of representation that Peirce was *already* refining.

## 5. Initial Doubts about Deely's Hypothesis

My account of the development of Peirce's early view of representation casts doubt on Deely's hypothesis that Peirce recovers the Latin *signum.* It is true that Peirce thinks of representation in a way similar to the Latin thinkers, but we have seen that he does not pick this up directly from them, as Deely claims. Rather, Peirce comes to this triadic account of representation from a different angle: with the aim of understanding logic as a species of semeiotic. He does not directly refer to the Latin *signum* anywhere in these early formulations of representation. Even more striking, Peirce is led to sharpen the "standing to" relation involved with representation as a result of his anti-psychologistic commitments in logic. He refines his terminology by abstracting the element of "standing to" a mind or the understanding which, we have seen, is typical of the *signum.* It is one thing to say that Peirce's view of representation resembles the Latin *signum* theory in some respects, and quite another to say that he is getting his view directly from these Latin thinkers. While the former is plausible, the latter claim does not withstand scrutiny of Peirce's writings predating 1867 (the writings that lead up to his "New List").

But if Peirce is not getting this notion of representation from the Schoolmen directly, where does he get it from? I have suggested that the answer is to be found in his early logical investigations: investigations that draw from Locke and Kant. But those investigations are bound

[105] Fisch, *Peirce, Semeiotic, and Pragmatism*, 360.

up with a rigorous study of the Aristotelian syllogism, and at the end of *Prior Analytics*, Aristotle begins to theorize the role of the *σημεῖον* (*semeῖon*) in drawing inferences from the three syllogistic figures. Bellucci's hypothesis is that it is Aristotle who inspires Peirce to conceive of structure of inference in terms of semiotic. If this view is correct (and I believe it is), then we have reason to think not only that Peirce had a theory of signs prior to the deduction of the categories, but that the view of inference from signs which Peirce recovers from Aristotle supplies the forms of argumentation necessary to reason about the categories.

## Part Two

## Bellucci's Hypothesis

### 6. The Story So Far

So far, I have been investigating the origins of Peirce's *general* theory of signs to see if there is any connection to the Latin theory of the *signum*. I have been searching for the first instances where Peirce provides a definition of representation with the aim of understanding the context in which this general account was initially raised. Why is it that Peirce is led to offer a formal definition of representation? While Deely claims that the 1867 "New List" marks the beginning of Peirce's general theory of signs, we have found that Peirce already has a general account of representation in 1865 and that he does not recover this account directly from his Latin predecessors but formulates it independently because he takes logic to be a species of semeiotic.

The theory of representation that Peirce formulates resembles the *signum* theory but there is no direct line that leads from the latter to the former. What makes Peirce's theory of signs general is that the sign relation is broad enough to explain *anything* which might be taken as a sign: the same tripartite relation explains the signifying activity involved in portraits, weathercocks, words, and inference. It is this general account of the signifying relation that has led many to understand Peirce as offering the broadest possible account of signs: everything is a sign, all thought is in signs, and "the universe is perfused with signs, if it is not composed exclusively of signs."[106] Deely's view is closely associated with this perspective, as it is the general account of the representative relation which bears resemblance to Poinsot's account of the sign as an ontological relation: in both cases, the relation theorized subsumes the distinction from antiquity between natural signs and conventional symbols.

Such a broad understanding of Peirce's theory of signs is certainly warranted, especially from the perspective of his mature thought. In 1907, for example, Peirce clarifies what a general definition of the sign relation ought to cover, suggesting that it ought to be wide enough to account for *any possible* sign:

> Now how would you define a *sign*, reader? I do not ask how the word is ordinarily used. I want such a definition as a zoologist would give of a fish, or a chemist of a fatty body, or of an aromatic body,—an analysis of the essential

[106] CP 5.448. Fisch holds this position, see *Peirce, Semeiotic and Pragmatism,* 356. It is also the position from which modern semiotics stems. Thomas Sebeok, for example, shows how nearly anything can be understood through semiotic relations of the sort Peirce envisioned. *Global Semiotics*, 1-31.

> nature of a sign, if the word is to be used as applicable to everything which the most general science of semeiotic must regard as its business to study; be it of the nature of a significant quality, or something that once uttered is gone forever, or an enduring pattern, like our sole definite article; whether it professes to stand for a possibility, for a single thing or event, or for a type of things or of truths; whether it is connected with the thing, be it truth or fiction, that it represents, by imitating it, or by being an effect of its object, or by a convention or habit; whether it appeals merely to feeling, like a tone of voice, or to action, or to thought; whether it makes its appeal by sympathy, by emphasis, or by familiarity; whether it is a single word, or a sentence, or is Gibbon's *Decline and Fall;* whether it is interrogatory, imperative, or assertory; whether it is of the nature of a jest, or is sealed and attested, or relies upon artistic force; and I do not stop here because the varieties of signs are by any means exhausted. Such is the definitum which I seek to fit with a rational, comprehensive, scientific, structural definition,—such as one might give of "loom," "marriage," "musical cadence"; aiming, however, let me repeat, less at what the definitum conventionally does mean, than at what it were best, in reason, that it should mean.[107]

From the vantage of this later passage, it is clear how extensive Peirce believed a general theory of signs should be. Semeiotic extends over logic, the philosophy of language, communication, and all forms of natural signification. The definition that Peirce toys with from 1865-67 is an embryonic account of the all-encompassing definition he seeks in 1907. The triadic account of representation, already found in his 1865 "Logic of the Sciences," can account for the varieties of sign just mentioned, but while Peirce's early account of representation was already *general*, he was not then interested in the potentially wide application of his account of representation but only with its narrow application to his anti-psychologistic program for logic. After deducing the third category of representation in "A New List," Peirce tells us that he will proceed to "show how the three conceptions of reference to a ground, reference to an object, and reference to an interpretant are the fundamental ones of at least one universal science, that of logic."[108] While the theory of representation Peirce provides in 1865-67 has far-reaching applications, it is its specific application to logic that initially interested him. In what follows, I investigate this connection with an emphasis on the application of representation to inference.

## 7. Challenging Deely's Account of the Σ*ημεῖον*

Francesco Bellucci disagrees with Deely's claim that Peirce recovers the Latin *signum* from Augustine. On Bellucci's alternative, Peirce recovers and reconceptualizes a narrower notion of sign inference from antiquity, namely, the Greek *σημεῖον* (*semeῖon*).

To appreciate Bellucci's hypothesis, we first need to challenge Deely's account of semiotics in antiquity. Recall that on Deely's reconstruction, the Greeks believed that only natural signs were signs (*σημεῖον* or *semeῖon*), and that these were distinct from the symbols that made up language (*ὀνόματα* or *ὀnomata*). This point is crucial, as it is in the theory of the *signum* that the sign is first conceived as a relation, indeed one sufficiently general to subsume the

[107] EP2: 402-03.
[108] W2: 56.

*σημεῖον* (*semeῖon*) and the *ὀνόματα* (*ὀnomata*). Deely's account of the key semiotic advance from antiquity to the middle ages, as involving the transfer of the sign from natural phenomena to the category of relation, is not wrong but it leaves out the specific sense in which the *σημεῖον* (*semeῖon*) is relevant to logic, a sense preserved in Peirce's logic of signs. Umberto Eco advocates a position similar to Deely's, though Eco begins to point us in the right direction:

> one must realize that Greek semiotics, from the *corpus Hippocratum* up to the Stoics, made a clearcut distinction between a theory of verbal language (*onomata)* and a theory of signs *(semeia).* Signs are natural events acting as symptoms or indices, and they entertain with that which they point to a relation based upon the mechanism of inference ("if such a symptom, then such a sickness"; "if smoke, then burning"). Words stand in a quite different relation with what they designate or point to, as with the "passions of the soul" which they signify. … It was Augustine who first proposed a "general semiotics"—that is, a general 'science' or 'doctrine' of signs, where sign becomes the genus of which words (*onomata*) and natural symptoms (*semeia*) are alike equally species.[109]

The ancients had no general theory of signs. For them, signs were simply more phenomena of the natural world. However, in ancient debates about signs, what is at stake is not their status as natural phenomena but *the kinds of inferences that we can draw from them*.[110]

As Bellucci notes, the *σημεῖον* (*semeῖon*) is not just "a natural event or phenomenon that serves as the basis of an inference" (as Deely suggests) but, more generally, it is "a fact that makes us know another fact."[111] James Allen writes that "the idea of inference from signs was well entrenched in the ancient Greek world."[112] He identifies the common theme that "*signs or tokens must be used to discover or make clear what is unknown*."[113] Barry Allen finds this account in Alcmaeon of Croton, for example, who proclaims that while "the gods have certainty concerning non-evident matters," it is "given to men to conjecture from signs."[114] On B. Allen's account, Alcmaeon realized the sign's ability to provide a passage from the visible to the invisible: "with an instrumental use of perception, seeking perceptible signs of unperceived causes, knowledge can colonize beyond perception."[115]

In a similar vein, ancient doctors like Hippocrates and his followers made use of symptoms in the diagnosis of diseases: an experienced doctor will learn to take a given symptom as a sign of malady. Natural sign relations support an *inference* from the symptom (as something visible) to the underlying disease by way of the natural connection between the two. Sebeok

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[109] Umberto Eco *et al*, "Latratus Canis or: The Dog's Barking," in John Deely *et al*, *Frontiers in Semiotics* (Bloomington: Indiana University Press, 1986), 65.
[110] James Allen, *Inference from Signs: Ancient Debates about the Nature of Evidence* (Oxford: Oxford University Press, 2001).
[111] Bellucci, "Inference from Signs," 260.
[112] J. Allen, *Inference from Signs*, 1.
[113] J. Allen, *Inference from Signs*, 1; my emphasis.
[114] Barry Allen, *Empiricisms* (New York: Oxford University Press, 2021), 17. We encounter a funny coincidence. But let this be a lesson in signs: here, the scholarly convention of using the author's *surname* to refer to them leads to ambiguity. "Allen" would refer to both Barry and James. "James Allen" and "Barry Allen" *indicate* two particular men. To clarify my signs: I will use always use "J. Allen" to refer to James, and "B. Allen" to refer to Barry.
[115] B. Allen, *Empiricisms*, 17.

writes that "symptoms are promptings of the body crying out for an explanation—for the construction, by the self, of a coherent and intelligible pattern."[116]

Here is Hippocrates, describing the usefulness of symptoms for diagnosing "internal diseases": "What escapes our vision we must grasp by mental sight, and the physician, being unable to see the nature of the disease nor to be told of it, must have recourse to reasoning from the symptoms with which he is presented."[117] The physician reasons *from* a symptom *to* an explanation of the disease: "By weighing up the significance of these various signs it is possible to deduce of what disease they are the result, what has happened in the past and to prognosticate the future course of the malady."[118] Ogden and Richards note that a symptom is a sign that refers to something else and is interpreted as so referring by a person.[119] There should be no surprise, then, that we find triadic relations implicit in ancient medical symptomology, where the physician treats a symptom as a sign that indicates a disease.

This view of signs is in keeping with the cursory definition that Peirce provides to Welby in 1904, when he says that "a sign is something by knowing which, we know something more."[120] If experienced physicians properly identify a given symptom as a sign of a given disease, then they have come to know something more by virtue of the inference that they draw from the sign.

The *σημεῖον* (*semeῖon*) has always been closely associated with inference. It is that which provides the basis for an inference from *x* to *y.* It should be no surprise, then, that while Peirce is formulating the sign as a representative *relation*, his logic of signs draws from the inferential nature of the *σημεῖον* (*semeῖon*) as theorized in Greek logic and medicine. To support this view, and to correct Deely's thin account of the *σημεῖον* (*semeῖon*), I will further examine the use of signs in both ancient medical practice and logic.

## 8. Sign Inference in Ancient Medicine

There were three prominent schools of medicine in late antiquity, namely, the Empiricists, the Rationalists, and the Methodists.[121] The key differences in their approach to medicine result from different understandings of what symptoms amount to, that is, the value that the physician, as an interpreter of signs, gives to the symptom.

The Rationalists did not believe that a visible symptom could immediately tell the physician what the disease is, to say nothing of the proper course of treatment. As Frede says, the visible symptom is indicative of something hidden (a hidden cause), and *indication,* for the Rationalist, is a rational inference that moves from the visible to the hidden: reason grasps "a relation between a manifest and a non-manifest state."[122] Once reasoning yields the underlying cause (the specific disease), knowledge of that non-manifest state will then indicate what sort of

[116] Sebeok, *Global Semiotics*, 49.
[117] *Hippocratic Writings*, trans. J. Chadwick, W. N. Mann *et al* (New York: Penguin, 1978), 260.
[118] *Hippocratic Writings*, 263.
[119] Charles Ogden and I. A. Richards, *The Meaning of Meaning* (New York: Harcourt Brace Jovanovich., 1989), 21.
[120] Peirce to Welby, October 12, 1904, *SS*: 31-32.
[121] Michael Frede, "The Method of the So-Called Methodical School of Medicine," in *Science and Speculation*, ed. Jonathan Barnes (Cambridge: Cambridge University Press, 1982), 1.
[122] Frede, "The So-called Method," 6.

treatment is appropriate. Therefore, there are two *indicative* inferences for the medical Rationalist: the inference from the manifest to the non-manifest (from sign to symptom), and the inference from the non-manifest cause to the treatment. The physician notices that the patient's voice is muffled; reason suggests that an unobservable tumour is exerting pressure on the voice box; the physician reaches for her scalpel. Reason alone dictates the moves. As Frede claims, "it is the distinctively Rationalist position that *reason* can grasp such relations," namely, those between the manifest and non-manifest and subsequently between the non-manifest and the treatment.[123]

Furthermore, for the Rationalist the inference from the manifest to the non-manifest is typically dictated by some prior hypothesis about the body, which allows the physician "to identify the pathological condition of the body underlying the observable symptoms of the disease."[124] As B. Allen puts it, "rational signs owe their putative significance to hypothetical theories on the cause of disease."[125]

The Empiricists were opposed to the hypothetical thinking of the Rationalists and instead let experience—comprised of observation and memory—dictate their diagnosis and treatment of diseases.[126] The Empiricist observes a given symptom as *conjoined* with some malady, and through repeated observations (stored in memory) develops expectations that associate certain symptoms with different diseases. They do the same for treatment, that is, noting a number of treatments for various diseases, making observations about the results, and assimilating those results (via memory) into theorems about the proper treatments for diseases.[127] Wesley Smith writes that Empiricists reject "the search into causes of health and disease [the Rationalist approach] by saying that immediate causes [are] obvious and that hidden causes [are] not discoverable."[128] B. Allen adds that the Empiricists disregard the *rational sign* and "rely instead on signs correlated with regularities of medical experience."[129] These signs, B. Allen notes, are not a "flight into the hypothetical," but are "varieties of memory," that is, experienced associations, inductions and analogies.[130]

The heart of the Empiricist understanding of signs is to hold that symptoms are commemorative signs, or *hypomnēstikon*.[131] Their primary role, as Frede notes, is not just to make us "recall", but also to "suggest," in the way that smoke is a sign that suggests there is, or has been, fire.[132] B. Allen and Frede both note that what is unique about *hypomnēstikon* is that

[123] Frede, "The So-called Method," 6; my emphasis.
[124] Michael Frede, "The Empiricist Attitude towards Reason and Theory" *Apeiron* 21, no. 2 (1988), 81.
[125] B. Allen, *Empiricisms*, 22-23.
[126] B. Allen, Empiricisms, 23. "Empiricists often refer to perception and memory as the two 'faculties' they are willing to rely on" (Frede, "Empiricist Attitude," 87).
[127] For more information about the nuances of the ancient medical tradition, see especially Allen, *Empricisms*, 22-25; Frede, "The So-Called Method" and "Empiricist Attitude"; Wesley D. Smith, *The Hippocratic Tradition* (Ithica, NY: Cornell University Press, 1979), 207; and Fridolph Kudlein, "Endeixis as a Scientific Term," in *Galen's Method of Healing*, ed. Richard Durling and Fridolph Kudlein (New York: Brill: 1991).
[128] Smith, *Hippocratic Tradition*, 207.
[129] Allen, *Empiricisms,* 23.
[130] Allen, *Empiricisms*, 23.
[131] Allen, *Empiricisms,* 24.
[132] Frede, "Empiricist Attitude," 87.

*inference is not involved*.[133] Frede claims that "commemorative signs owe their name exactly to the fact that they are supposed not to involve an inference by reason, but rather are a matter of suggestion by memory on the basis of experience."[134] So the Empiricist observes some association between a treatment and successful relief from a disease and if that association persists across a number of cases the *memory* of these associations will *suggest* a conjunction between the symptom and the treatment. Interestingly, the move is not an inference from a set of particulars ("treatment *x* cured ailment *y* in cases *a, b,* and *c*") to a generality holding for all cases ("treatment *x* is the cure for ailment *y*), but rather is solely an affair of memory and observation. For the Empiricist, neither reason nor inference play a role in the interpretation of signs.

The difference between the Rationalist and Empiricist conception of signs amounts to the difference between what Sextus Empiricus classifies as commemorative and demonstrative signs. Indeed, J. Allen claims that these two types of signs have their source in ancient medicine (Sextus *Empiric*us himself was an *empiricist* physician).[135] Commemorative signs are signs which, as we have seen, act "by the law of association, reminding us that in past experience two phenomena were conjoined, as smoke with fire, a scar with a wound, a stab to the heart with subsequent death."[136] This, as I have shown, is the Empiricist view of symptoms. For a commemorative sign like smoke to induce a recollection of fire, both phenomena (smoke and fire) need to have been experienced in conjunction in the past. It is *only* because of this previously experienced association that when I see smoke billowing on the horizon I am caused to recall fire and to interpret the smoke as a sign that there is or has been fire.

The Rationalists, as we have seen, believed that signs are demonstrative, not merely commemorative. R. D. Hicks provides the following account of their demonstrative signs: "When one of the two phenomena assumed to be the thing signified never has occurred in actual experience, but belongs wholly, by its own nature, to the region of the unknown, the dogmatists [i.e., Rationalist physicians] nevertheless maintained that, if certain conditions were fulfilled, its existence was indicated and demonstrated by the other phenomenon, which they called the sign."[137] For the Rationalist, it is the power of signs to be a basis for inference that leads us from something manifest to something non-manifest. There is no requirement that both phenomena (the sign and the signified) have been previously associated in experience. Medicine is not an affair of memory and experience exclusively, for the Rationalist, but one of indication and demonstration, allowing a role for inference that Empiricists abolish.

The dispute between Rationalist and Empiricist physicians was ultimately one about the method of treatment, which is not the treatment itself, Frede warns, but "the way one comes to think, or arrives at the conclusion, that a certain treatment is the right treatment."[138] Whether one is a Rationalist or an Empiricist, it is evident that one must pass through signs of *some kind* to arrive at a proper treatment. The key difference between their *methods of treatment* boils down to the power they attribute to the function of signs, with the Rationalists endowing signs with the power to move (by rational inference) from the manifest to the non-manifest, while the

[133] Allen, *Empiricisms*, 24.
[134] Frede, "Empiricist Attitude," 88.
[135] James Allen, *Inference from Signs*, 88.
[136] R. D. Hicks, *Stoic and Epicurean* (New York: Charles Scribner's Sons, 1910), 391.
[137] Hicks, *Stoic and Epicurean*, 392.
[138] Frede, "The So-called Method," 1.

Empiricists eschew that supposed power and restrict the sign to associations grounded in experience (signs of constant conjunction). It is precisely because commemorative signs afford no passage to the non-manifest that the Empiricist denies the reality of hidden causes. The Empiricist's view that commemorative signs are the *only* signs physicians should depend on restricts their conception of disease to what can be gleaned through commemorative signs. In similar fashion, Sextus Empiricus's skepticism about demonstrative signs not only denies the significative power Rationalists attribute to them, but in doing so denies the possibility of inferring the non-manifest altogether. Thus, in ancient medicine we catch the first glimpse of a trend that will become more significant as our inquiry continues, namely, that our view of signs, broadly construed, shapes the view of reality that we are driven to accept.

## 9. The Logical Σ*ημεῖον*

This sketch of ancient medicine shows that while the medical *σημεῖον* (*semeῖon*) is restricted to natural phenomena such as symptoms, there was a debate about what kinds of inferences (in the case of Rationalism) or suggestions (in the case of Empiricism) could be drawn from them. The association of the *σημεῖον* (*semeῖon*) with inference extends ancient medical practice. Myles Burnyeat gives the following definition of the general character of the *σημεῖον* (*semeῖon*): "For *X* to be a sign or evidence of *Y* requires (i) that *X* should be *evident* or manifest to us in some appropriate way, (ii) that it should be evidence *of* something else in that *Y* can be inferred from it."[139] He adds that a technical analysis of the *σημεῖον* (*semeῖon*) would need to "explain the relationship between *X* and *Y* which sustains and justifies the inferring of the second from the first."[140] If we emphasize the technical aspect of the *σημεῖον* (*semeῖon*), we can understand why signs are of interest, not just to the physician, but to the logician too.

Gérard Deledalle writes that "when one reads Aristotle, the Stoics, the Epicureans, and the Skeptics, one is first of all struck by the fact that they do not separate logic from semiotics."[141] James Allen's study of sign inference in antiquity confirms this observation.[142] Phillip De Lacy writes that "Epicureans and Stoics built their logic on inference from signs; and their divergent treatment of signs reveals the fundamental difference between the two systems of philosophy."[143] In ancient theories of *logic,* Bellucci writes, the *σημεῖον* (*semeῖon*) is construed as a "proposition or propositional content that is used as a premise in a valid argument, or as the antecedent of a true conditional."[144] The premise is a *sign* of the conclusion, as an antecedent is a *sign* of the consequent. Sextus attributes the following definition of the sign to the Stoics: "a sign is a leading proposition in a sound conditional, capable of uncovering the finisher."[145] A few lines later Sextus explains that for Stoics the semiotic structure of the conditional explains the relation between premise and conclusion in a demonstrative argument: "Demonstration is agreed to belong to the genus sign. For it is capable of showing the conclusion, and *the conjunction of*

[139] Myles Burnyeat, "The Origins of Non-Deductive Inference," in Jonathan Barnes, *Science and Speculation* (Cambridge: Cambridge University Press, 1982), 194.
[140] Burnyeat, "Origins," 194.
[141] Gérard Deledalle, *Charles S. Peirce's Philosophy of Signs* (Bloomington: Indiana University Press, 2000), 78.
[142] See J. Allen, *Inference from Signs*, 1-11.
[143] Philodemus, *On Methods of Inference: A Study of Ancient Empiricism*, trans. Phillip and Estelle De Lacy (Philadelphia: American Philological Associations, 1941), 157.
[144] Bellucci, "Inferences from Signs," 260.
[145] Sextus Empiricus, *Against the Logicians*, trans. R. Bett (Cambridge: Cambridge University Press, 2005), 137.

*its premises will be a sign of the conclusion being so*."[146] In the same way that an antecedent is a sign of the consequent, the premises of an argument form a sign of the conclusion. In both cases the character of the *σημεῖον* (*semeῖon*) is the same: each involves inferential activity. When Bellucci claims that Peirce is recovering the *σημεῖον* (*semeῖon*) in his early logical investigations, he means the *σημεῖον* (*semeῖon*) in this precise logical sense.

While Peirce did not thoroughly study Stoic and Epicurean theories of sign inference until the 1880s when, as a lecturer at Johns Hopkins, he supervised his student Allan Marquand's work on Philodemus' logic of signs, he would have encountered these same themes in Aristotle's *Prior Analytics* as early as 1865.[147] Indeed, we will see that even before the quarrels between Stoics, Epicureans, and Skeptics, Aristotle had already laid the ground for a logic of signs. Peirce, Bellucci shows, began to cultivate that ground in his early lectures at Harvard and the Lowell Institute.

## 10. Interlude: From Kant to Aristotle

To understand why Peirce is led to a recovery of the *σημεῖον* (*semeῖon*), we need to be clear about what led him to Aristotle in the first place. In *The Development of Peirce's Philosophy*, Murray Murphey argues that the young Peirce began his logical investigations because he realized that the validity of Kant's deduction of the categories depends on a correct account of the logical forms of judgment.[148] Peirce, he says, tells us just this in an early draft of "A New List," where he writes "Kant first formed a table of the various logical divisions of judgment, *and then* deduced his categories directly from these.… Its defect is that it affords no warrant for the correctness of the preliminary table, and does not display that correct reference to the unity of consistency which alone gives validity to the categories."[149]

Peirce's aim to establish the correctness of this preliminary table is what, on Murphey's account, led him to study logic. Naturally, you would think this led Peirce to study the proposition, as the logical form of a judgment involves the proposition and for Kant "thought at all is thought in propositions."[150] However, Murphey explains that for Peirce, "the proper object of logic was the syllogism" and "the study of the syllogism ought to precede the study of the proposition since the only differences among propositions that are logically significant are those which affect their role as components of syllogisms."[151] Propositions cannot be studied in isolation, and their logical significance depends on the role they play in syllogistic reasoning. The propositions "all men are mortal" and "Socrates is a man" are only logically significant insofar as they secure the basis for inferring the further proposition that "Socrates is mortal." "If in fact the significance of propositional form depends upon its use in inference," Murphey writes,

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[146] Sextus Empiricus, *Against the Logicians*, 143; my emphasis.
[147] Peirce's 1865 lectures at Harvard are full of references to Aristotle. Peirce begins his second lecture by stating that his solution to certain logical problems arises "directly out of the Aristotelic doctrine" (W1: 176). When it came time for his Lowell Lectures the following year, Peirce prepared a "Memoranda Concerning the Aristotelean Syllogism" to be distributed to the attendees. This is all evidence that Peirce had a sophisticated understanding of Aristotle in the mid 1860s.
[148] Murphey, *Development,* 55.
[149] In Murphey, *Development*, 55-56; my emphasis.
[150] Murphey, *Development*, 56.
[151] Ibid.

"then the correctness of *this* classification depends upon the further premisses that all thought is inference and that these particular forms are necessary for inference."[152]

Thus, Peirce moves from Kant to Aristotle.[153] He now knows that if the aim is to deduce the categories, the first step is to secure the correctness of the preliminary table of logical forms. To do so, however, one must turn to an analysis of the syllogism rather than to the proposition. So Peirce is led to a study of the great inceptor of syllogistic, Aristotle, and in the course of this study Peirce recovers the inferential character of the *σημεῖον* (*semeĩon*).

## 11. The Three Forms of Inference

Murphey claims that Peirce's study of Aristotle yields two conclusions. The first is that Aristotle's three syllogistic figures "must involve three distinct forms of inference," and that these inferential forms are distinguished by the position the middle term occupies in the premises.[154] In his second Harvard lecture of 1865 Peirce writes, "Syllogisms of the first figure, are characterized by having the middle term subject of one premiss and predicate of the other. Those of the second figure, have the middle for the predicate of both premisses. Those of the third figure, have the middle for the subject of both premisses."[155] The following tables provide a visual representation of the key differences between each figure. Let *P* represent the major term; *S*, the minor term; and *M*, the middle term:

| 1st Figure | Subject | Predicate |
|---|---|---|
| Premise | S | M |
| Premise | M | P |
| Conclusion | S | P |

| 2nd Figure | Subject | Predicate |
|---|---|---|
| Premise | S | M |
| Premise | P | M |
| Conclusion | S | P |

| 3rd Figure | Subject | Predicate |
|---|---|---|
| Premise | M | S |
| Premise | M | P |
| Conclusion | S | P |

Bellucci shows that if we suspend the requirement of deductive validity, we are well on our way to understanding the second and third figures as inversions of the first, each offering a distinct, non-demonstrative form of inference.[156] For Peirce, Aristotle's first figure has the form of a deductive inference, the second a hypothetical inference, and the third an inductive inference.

A syllogism in the first figure is a form of necessary or demonstrative reasoning because it deduces a *result* from a *rule* and a *case:*

> All conquerors are butchers,
> Napoleon is a conqueror,
> ∴ Napoleon is a butcher.

[152] Ibid.
[153] I am leaving out some detail here as it is not my business to explain why Peirce thought there was a mistake in Kant's "mistaken subtlety of the four syllogistic figures." Murphey explains Peirce's subtle argument; see *Development*, 55-66, and Bellucci, "Inferences from Signs," 265-66.
[154] Murphey, *Development*, 63.
[155] W1: 179-80.
[156] Bellucci, "Inferences from Signs," 267.

| **1st Figure →** | **Deduction** | Subject | Predicate |
|---|---|---|---|
| Premise | Rule | M | P |
| | | All conquerors | are butchers. |
| Premise | Case | S | M |
| | | Napoleon | is a conqueror |
| Conclusion | Result | S | P |
| | | Napoleon | is a butcher |

A syllogism in the second figure has the form of a hypothetical inference because it infers a *case* from a *rule* and a *result*:

All conquerors are butchers,
Napoleon is a butcher,
∴ Napoleon is a conqueror.

| **2nd Figure →** | **Hypothesis** | Subject | Predicate |
|---|---|---|---|
| Premise | Rule | P | M |
| | | All conquerors | are butchers |
| Premise | Result | S | M |
| | | Napoleon | is a butcher |
| Conclusion | Case | S | P |
| | | Napoleon | is a conqueror |

A syllogism in the third figure has the form of an inductive inference because it infers a *rule* from a *result* and *case*:

Napoleon is a conqueror,
Napoleon is a butcher,
∴ Conquerors are butchers.

| **3rd Figure →** | **Induction** | Subject | Predicate |
|---|---|---|---|
| Premise | Case | M | S |
| | | Napoleon | is a conqueror |
| Premise | Result | M | P |
| | | Napoleon | is a butcher |
| Conclusion | Rule | S | P |
| | | Conquerors | are butchers |

The second and third figures are inversions of the first figure, even though each figure is a distinct form of inference depending on the position that the middle term occupies in the

premises.[157] The first figure is demonstrative: if the premises are true, the conclusion follows by necessity. However, the second and third figures are non-demonstrative: the premises only afford *probable* inferences to the conclusions. The validity of these three forms of inference does not concern us. All that matters is that each figure embodies a distinct form of inference whether formally valid or not. Aristotle clearly understood induction to be a non-demonstrative inference in the third figure, and says as much in *Prior Analytics*.[158] While Aristotle does not explicitly identify inference from the second figure as hypothetical, Peirce believes that hypothetical inference in the second figure is implied by Aristotle's theory and that Aristotle knew this, though what remains of his writings does not make it explicit.[159]

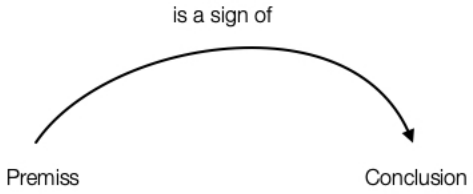
## 12. The Reduction of Illation to Sign Relation

Now that we are familiar with Peirce's interpretation of the syllogistic figures, each as affording a unique form of inference, we may wonder what this discovery has to do with signs. Murphey claims that the second discovery Peirce made during his study of Aristotle is that illation is reducible to the sign relation.[160] As a first step to clarifying this reduction, it is helpful to dwell on the meaning of "illation." The word has its roots in the Latin "illatio," which involves "a bringing in" and so is closely related to "inferre" ("to bear"), or "inference."[161] "Illation," therefore, involves the action of drawing an inference: *the bringing in* of a conclusion as the result of a process of reasoning. In the fourth Lowell Lecture of 1866, Peirce acknowledges that "inference" and "illation" are equivalent terms that describe the same process, even though there have been differing opinions about what that process involves.[162] As Peirce put it in 1880, "the general type of inference is P ∴ C, where ∴ is the sign of illation."[163] This sign of illation indicates that a transformation takes place whereby the premise(s) lead to the conclusion. P transforms into C. Murphey and Bellucci argue that Peirce recognized early on that we can understand the process of illative transformation in terms of a semiotic relation.

What does it mean for illation to be reduced to a more basic semiotic relation? In a famous passage in his Logic Notebook on November 14, 1865, Peirce writes that "[t]here is no difference logically between hypotheticals and categoricals. The subject is a sign of the predicate, the antecedent of the consequent; and this is the only point that concerns logic."[164] Peirce later reflects that "the relation between subject and predicate, or antecedent and consequent, is essentially the same as that between premiss and conclusion."[165] Peirce must have

[157] Peirce lays out the exact arguments for the inversions that I represent in these tables in his second Harvard lecture of 1865 (W1: 175-89), and in his "Memoranda Concerning the Aristotelian Syllogism," which he privately printed and distributed in 1866 (W1: 505-14.). Bellucci offers a nice treatment of Peirce's argument; "Inferences from Signs," 266-71.
[158] Aristotle, *Prior Analytics,* 68b8.
[159] Bellucci, "Inferences from Signs," 269. Peirce sometimes calls hypothesis "retroduction," inspired by Aristotle's use of "reduction"; see *Prior Analytics*, 63b20.
[160] Murphey, *Development*, 63.
[161] Walter Skeat, *Etymological Dictionary of the English Language* (Oxford: Oxford University Press, 1956), 287.
[162] W1: 409.
[163] CP 3.162.
[164] W1: 337.
[165] CP 4.3; Murphey, *Development*, 63. It is unclear whether Peirce had read Sextus by then, but his account of sign inference is very close to the one Sextus ascribes to the Stoics (but is more likely traced back to the rationalist

realized this soon after his entry in the Logic Notebook (1865), since in the "New List" (1867) he claims that "in an argument, the premisses form a representation of the conclusion."[166] The general idea is that, just as the antecedent is a sign of the consequent, the conjoined premises are a sign of the conclusion. When the premises are considered *as such*, illation involves a semiotic process where one sign (the premise) transforms into another (the conclusion) on the ground of a leading principle of inference, which governs the transformation. The reduction of illation to the sign relation shows that, in an argument, *the premise is a sign of the conclusion.*




We have already seen that from 1865-67 Peirce conceived of logic as an objective symbolistic. As such, formal logic is considered a species of the science of representation. I argued that Peirce was led to give a formal definition of representation because he understood logic to depend on semeiotic. Now the premise is a sign of the conclusion and Peirce tells us that inference is a process of symbolization.[167] An inference in any of the three figures is reducible to sign action.

Murphey writes that "the reduction of illation in general to signhood shows that these forms [of inference] are but varieties of a single yet more basic relation."[168] Bellucci adds that the significance of the reduction is "to frame the central question of logic—is there any essential difference between forms of inference?—in semiotic terms, and thus to transform the classification of arguments into a classification of signs."[169] In 1866, Peirce wrote in his logic notebook that "an argument is a total symbol considered as such."[170] As a symbol, an argument should conform to the triadic sign relation. The reduction of illation to the sign relation does not simply show that the premise is a sign of the conclusion, but that the premise is a sign of its conclusion to an interpretant upon some ground. By treating an argument as a symbolic whole, we can distinguish the different forms of inference by the grounds upon which the premise functions as a sign of its conclusion. The three syllogistic figures can be understood as so many varieties of semiosis, all partaking in the general semiotic structure of object-sign-interpretant.

However, there are at least two ways to understand the connection between the structure of inference and the representative relation. I have argued elsewhere that the difference comes down to the perspective that we take when we treat an argument as a sign relation.[171] From the

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Hippocrates). J. Allen, *Inference from Signs*, 87-139). Whether Peirce had read Sextus in 1865 or not, he would find all he needs to initiate his theory of sign inference in Aristotle.

[166] W2: 58.

[167] W1: 280.

[168] Murphey, *Development,* 63-64.

[169] Bellucci, "Inferences from Signs, 266.

[170] W1: 347. I elaborate on this notion in more detail in Chapter 2, where I discuss Peirce's distinctions of term, proposition, and argument.

[171] Scott Metzger, "Reducing Illation to Sign Relation: The Roots of Peirce's General Theory of Signs," *Transactions of the Charles S Peirce Society* 59, no. 1 (2023): 10-36.

perspective of the reasoner drawing an inference, the premise is a sign that consists in the determination of its conclusion, which is (from this perspective) an interpretant.[172] The whole process is governed by the leading principle, which Peirce says is a "judgment that, if *such* propositions as the premises are true, then a proposition related to them, as the conclusion is, must be, or is likely to be, true."[173] The reduction of illation to the sign relation shows that the whole process of inference (the assent to a conclusion from the premises and a leading principle) can be understood in terms of a *total symbol*. From this point of view, illation is the semiosis in which the premises form a representation of the conclusion through the determination of an interpretant on the ground of a leading principle. The sign of illation (∴) indicates that such a tri-relational determination, or process of transformation, has taken place: P ∴ C, where C is the interpretant of P on the ground of a leading principle, L. From this perspective, the conclusion of the inference is the interpretant.

However, when it comes to classifying arguments as signs we require a different understanding of the connection between premise, conclusion, and the triadic sign relation. From this classificatory perspective, the leading principle itself fulfils the role of the interpretant. Indeed, the leading principle is a *further* judgment that says, "if the premises are true, then the conclusion must (in the case of deduction) or likely will (in the case of induction and hypothesis) follow." In this way, the leading principle is also an interpretant that represents that the premises are signs of their conclusions, which are now (for the purpose of classification) treated as the *object* of the sign relation. In the remainder of this chapter I treat the connection primarily from this second *classificatory* perspective, but these perspectives are complementary, exhibiting the depth of Peirce's logic of signs.

When *classifying* an argument, we treat the premise as a sign of the conclusion (the object) to an interpretant (leading principle) that represents the relation between the premises and the conclusion as obtaining upon a semiotic ground. The interpretant, then, brings the sign into relation with its object (in this case, bringing the premise into semiotic relation with the conclusion). Before examining the semiotic grounds of sign inference in each figure, however, I turn to Aristotle's logic of signs. Peirce's classification of sign inference is an improvement on Aristotle's, as Peirce clarifies the semiotic grounds of inductive and hypothetical sign inferences.

## 13. The Roots of Peirce's Reduction in Aristotle's Doctrine of Signs

On Bellucci's view, the reduction of illation to a sign relation comes directly from Peirce's reading of Aristotle.[174] Peirce recovers the *σημεῖον* (*semeῖon*) from the *Prior Analytics*. In the final chapter of the work, Aristotle claims that the *σημεῖον* (*semeῖon*) is a "demonstrative premiss which is necessary or generally accepted. That which coexists with something else, or before or after whose happening something else has happened, is a sign [*σημεῖον*] of that something's having happened or being."[175] Aristotle is articulating what Burnyeat calls the general character of the *σημεῖον* (*semeῖon*) as providing the basis for inference from the known to

[172] W1: 478.
[173] W2: 23.
[174] Bellucci, "Inferences from Signs," 272.
[175] Aristotle, *Prior Analytics*, 70a9.

the unknown. However, Aristotle develops this account only to prepare the ground for a more technical analysis of the *σημεῖον* (*semeĩon*), combining sign-inference with syllogistic reasoning.

Strikingly, Aristotle tells us that "a sign can be taken in *three ways*—in just as many ways as there are of taking the middle term in the several figures: either as in the first figure or as in the second or as in the third."[176] Deledalle writes that "the demonstrative force resides in the 'sense' of the sign according to the place occupied by the middle term in the figures."[177] I take him to mean that the strength of the sign-inference depends on whether the syllogism is deductive, hypothetical, or inductive because, as Peirce has shown, the difference between these figures depends on the position of the middle term. In effect, Aristotle provides a semiotic reconstruction of deductive, hypothetical, and inductive inferences. If signs can be taken in each of the three figures, Aristotle has provided the springboard for Peirce's reduction of illation to sign relation. In the following tables I transpose Aristotle's examples into the Peircean framework I used above.

First, Aristotle describes a sign-inference in the first figure.[178] Here, of course, we have a deductive inference from signs:

| **1st Figure** | | Subject | Predicate |
|---|---|---|---|
| Premise (is a sign of) | Case | S | M |
| | | This woman | has milk |
| Enthymeme | Rule | M | P |
| | | Women with milk | are pregnant |
| (the) Conclusion | Result | S | P |
| | | This woman | is pregnant |

Next, he describes a sign-inference in the second figure. This is a hypothetical inference from signs because the middle term occupies the predicate position of both premises:

| **2nd Figure** | | Subject | Predicate |
|---|---|---|---|
| Premise (is a sign of) | Result | S | M |
| | | This woman | is sallow |
| Enthymeme | Rule | P | M |
| | | Pregnant women | are sallow |
| (the) Conclusion | Case | S | P |
| | | This woman | is pregnant |

Finally, he describes a sign-inference in the third figure. This is an inductive inference from signs because the middle term occupies the subject position of both premises:

[176] Aristotle, *Prior Analytics*, 70a12.
[177] Deledalle, *Peirce's Philosophy of Signs*, 78.
[178] Aristotle, *Prior Analytics*, 70a15.

| **3rd Figure** | | Subject | Predicate |
|---|---|---|---|
| Premise (is a sign of) | Case | M | S |
| | | Pittacus | is wise |
| Enthymeme | Result | M | P |
| | | Pittacus | is good |
| (the) Conclusion | Rule | S | P |
| | | The wise | are good |

For Aristotle, the premise can be either a *necessary* or *probable* sign of its conclusion.[179] If a sign is a premise in the first figure, it is a necessary sign of its conclusion. However, if a sign is the premise of a syllogism in the second or third figure, it is only a probable sign of its conclusion. Aristotle classifies signs in the first figure as τεκμήρια (*tekmeria* or indexes) because deductive reasoning is demonstrative and a true premise necessarily *indicates* the conclusion. Aristotle calls the probable signs of the second and third figures σημεῖα (*semeῖa*), since these premises cannot *certainly* be signs of their conclusions.[180] Peirce, we will see, agrees that the argumentative force of the first figure is stronger than that of the second and third, but he provides his own classification of the semiotic grounds governing inference in each figure, further clarifying the σημεῖα (*semeῖa*) of the second and third figures.

J. Allen notes that while Aristotle was "obviously not the first to use sign inferences or speak of signs," he "was the first to cast a theoretical eye on the subject."[181] He takes Aristotle's most important contribution to be "the distinction between signs and demonstrations," that is, between the σημεῖα (*semeῖa*) of the second and third and the τεκμήρια (*tekmeria*) of the first figure. [182] This is a remarkable discovery because Aristotle first recognizes the *σημεῖον* (*semeῖon*) as providing a basis for inference, then notices that sign-inference can be taken in each figure, and finally proceeds to classify two different types of sign-inference: demonstrative *indexes* (τεκμήρια or *tekmeria*) of the first figure and probable *signs* (σημεῖα or *semeῖa*) of the second and third.

Perhaps even more important is Aristotle's claim that "truth can be found in all signs."[183] While there is a sense in which σημεῖα (*semeῖa*) are weaker than τεκμήρια (*tekmeria*), inferences from the σημεῖα (*semeῖa*) of the second and third figures can still provide a basis for probable knowledge. Aristotle is not asking that we disregard the weaker signs of the second and third figure in preference to those of the first. Rather, as Bellucci and Burnyeat both suggest, for Aristotle "each sign inference is conducive to truth in its own way."[184] Burnyeat, for instance, takes Aristotle's doctrine of sign-inference from the second and third figures to initiate the study of non-deductive reasoning. The distinction in Aristotle between demonstrative indexes and

[179] Deledalle, *Peirce's Philosophy of Signs*, 78.
[180] Aristotle, *Prior Analytics*, 70b1-6.
[181] J. Allen, *Inference from Signs*, 8. The place of signs in ancient medicine shows that Aristotle was not the first to think of sign-inference.
[182] J. Allen, *Inference from Signs*, 8.
[183] Aristotle, *Prior Analytics*, 70a38-9.
[184] Bellucci, "Inferences from Signs," 272; Burnyeat, "Origins," 193-239.

probable signs distinguishes formal deductive logic from what we might call the logic of science. However, these different forms of reasoning share a semiotic genus because inference from any figure, whether demonstrative or probable (formal or scientific), involves the general inferential character of the *σημεῖον* (*semeῖon*).

Logicians of Peirce's time seem to have missed this reduction of illation to semiosis because, as Peirce tells us, they think that "scientific induction is without the province of logic."[185] Recognizing that an inductive inference is similar to a deductive inference in the sense that both afford signs of their conclusions is the first step in bringing scientific inference back into the province of logic. Once we recognize that these distinct forms of inference share a more basic sign relation, we can seek the grounds of validity for scientific inferences through the consideration of signs.

While Murphey notes the importance of the reduction of illation to the sign relation, he does not explain the origin of this reduction in Peirce's writings. Bellucci's work presents a convincing argument that Peirce is led to this reduction because of his reading of Aristotle. Bellucci writes that the final chapter (the one I just analyzed) of the *Prior Analytics* "showed Peirce the *possibility* of a syllogistic reconstruction of non-syllogistic inferences: Aristotle taught Peirce to regard the premise of an argument as affording a *σημεῖον* (*semeῖon*) of the conclusion, and to consider the three syllogistic figures as three different signs based on three different semiotic principles."[186] Indeed, Peirce himself claims that his logical discoveries of 1865 arose "directly out of the Aristotelic doctrine."[187]

In his first Harvard lecture of 1865, Peirce defines logic as an objective symbolistic, a species of the general science of representation, or semeiotic. In the second lecture, he gives his argument for deduction,[188] hypothesis,[189] and induction[190] as three distinct forms of inference, each corresponding to one of Aristotle's syllogistic figures. Having shown the forms of inference to be distinct (based on the position of the middle term in their respective figures), he proceeds to elucidate the rationale governing each form of inference in terms of a unique semiotic ground: "as the three kinds of reasoning are entirely distinct," Peirce writes, "each must have a different ground of possibility."[191] These grounds relate to the "symbolization of objects," with each form of inference symbolizing its object in a different respect or capacity or upon a different ground.[192] To properly divide the symbols of logic, Peirce tells us, the "symbols should be considered in regard to their reference to objects" and "this reference should be considered in respect to its ground."[193] We must classify the varieties of inference by the ground of the relation between the premise and the conclusion. Aristotle, we saw, thought the premises of the first figure are signs of their conclusion on the ground of a τεκμήριον (*tekmerion*), and that the premises of the second and third figure are signs of their conclusions on the ground of a weaker,

[185] W1: 175.
[186] Bellucci, "Inferences from Signs," 272.
[187] W1: 176.
[188] Ibid.
[189] W1: 180
[190] W1: 177-79.
[191] W1: 183.
[192] Ibid.
[193] W1: 330.

merely probable *σημεῖον* (*semeῖon*). Peirce, we will see, offers a more fine-grained clarification of the respect or capacity in which a premise functions as a sign of its conclusion in each figure.

## 14. The Grounds of Sign Inference in Each Figure

Peirce thought that a sign could stand for its object in at least three different ways: as an icon, an index, or a symbol. While the general sign relation remains the same across cases (object-sign-interpretant), we saw that the difference between a portrait, a weathercock, and a word is the ground upon which they act as signs. The portrait is a sign of Napoleon to an interpretant on the ground of an icon or likeness, the weathercock is a sign of the direction of the wind to an interpretant on the ground of an index, the weathercock's direction being an effect of the wind's direction, and a word is a sign of its object to an interpretant on the conventional ground of a symbol. In a similar way, while inference of any kind can be understood through a more basic sign relation (the premise is a sign of the conclusion), each of the three figures expresses a distinct form of inference and the differences among them concern the grounds on which they act as signs.

In the "New List," Peirce provides his clearest account of the reduction of illation to a sign relation: "In an argument, the premises form a representation of the conclusion, because they indicate the interpretant of the argument, or representation representing it to represent its object."[194] The interpretant of the argument represents the premises as signs of the conclusion, that is, represents the inferential relation that obtains between the premise and the conclusion such that the former leads to the latter. Peirce goes on to clarify the grounds on which the premises act as signs: "the premisses may afford a likeness, index, or symbol of the conclusion."[195] Here we encounter three different grounds of inference: inference on the basis of a likeness, an index, and a symbol. Peirce already expressed this view in his ninth Lowell lecture, where he wrote that an argument can be "divided into three species according as this representation is a likeness, index, or symbol."[196] There he adds that "these three species are the same as Hypothesis, Induction, and Deduction," respectively.[197] An argument, considered as a symbol, partakes in a tripartite sign relation, and the three varieties of sign inference—deduction, induction, and hypothesis—are distinguished by the ground upon which the argument functions as a sign (in the capacity of a likeness, an index, or a symbol).

These three different kinds of sign inference correspond to the three Aristotelian figures. As Bellucci puts it:

> Corresponding to Aristotle's τεκμήριον, or sign constructed in the first figure (this woman has milk) Peirce has deduction, whose principle is that the premise is a symbol of the conclusion. Corresponding to Aristotle's σημεῖα in the second figure (this woman is sallow) and third figure (Pittacus is wise) Peirce has

[194] W2: 58.
[195] Ibid.
[196] W1: 485.
[197]Ibid.

> hypothesis and induction, in which the premise is an icon and an index of the conclusion, respectively.[198]

According to Bellucci, Peirce arrives at these principles of inference by generalizing the leading principle of the deductive syllogism: *nota notae est nota rei ipsius*, or "the predicate of the predicate is the predicate of the subject."[199] Without this rule, Peirce says, "there could be no deduction."[200] And indeed, Aristotle relies on it: "When you predicate this thing or that of another thing as of a subject, the predicates then of the predicate will also hold of the subject."[201] We know that Socrates is mortal because he is a man, and this because of the rule that whatever is a man is a mortal. Since mortality is a predicate of man, it must also be a predicate of Socrates, who is a man. Therefore, the *nota notae* principle provides a ground for the transformation of the premises into the conclusion in deductive reasoning.

But if we take the reduction of illation to a sign relation seriously, then the *nota notae* principle must itself be generalized in terms of semeiotic. This is exactly what Peirce does. Bellucci draws attention to a letter Peirce sent to W. S. Jevons in 1870, where Peirce is recounting his main logical discovery from the "New List," what I have been calling the reduction of illation to a sign relation:

> In a former paper I have endeavored to prove that all inference proceeds by the substitution of one sign for another *on the principle that a sign of a sign is a sign*, and that reasoning differs according to the different kinds of signs with which it deals, and that signs are of three kinds.[202]

In Peirce's parlance, the *nota notae* principle is that "the sign of a sign of anything, X, is itself a sign of the very same X."[203] Since there are three different kinds of signs corresponding to three different kinds of inference, the principles of these forms of inference must depend on the variety of sign-action involved in each inference. While a sign of a sign is a sign, a sign can more specifically be a sign of a sign either iconically, indexically, or symbolically. So there must be three principles or grounds for the semiotic relation between a premise and its conclusion —the principle or ground of an iconic relation, an indexical relation, and a symbolic relation.

Indeed, in the "New List" Peirce explains that "in hypothesis, something *like* the conclusion is proved, that is the premises form a likeness of the conclusion."[204] Consider the following argument:

> Light gives certain fringes,
> Ether waves give certain fringes,
> Therefore, light is ether waves.[205]

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[198] Bellucci, "Inferences from Signs," 277.
[199] CP 2.590
[200] W1: 290.
[201] Aristotle, *Categories,* 1b10.
[202] W2: 446; my emphasis.
[203] L: 385
[204] W2: 58.
[205] W1: 180.

The premises combine to establish the probable conclusion that "light is ether waves" because both light and ether waves create fringes. These fringes represent, or are iconic of, the general character of both light and ether waves. Two different subjects, "light" and "ether waves," are related by the resemblance shared by their predicate (the general character of the predicate is an icon of the subject), and this suggests that the subjects themselves *might* be alike, given they both create fringes. So, we can infer the conclusion because of the *likeness* established by the collated premises. The combined premises establish a likeness among the subjects, supporting an inference to the probable conclusion that light is ether waves. The conclusion ("light is ether waves") is an icon of the premises since we substitute the general character of the predicate from premise two ("gives certain fringes") for the subject it represents ("ether waves"). So, premise one tells us something about the general character of light—that it gives fringes. Premise two tells us that ether waves also share this general character, which allows us to substitute "give certain fringes" with "ether waves" in the conclusion, "light is ether waves". The illative transformation of a hypothesis is governed by a likeness shared by the premises and transferred over into the conclusion. The premises afford an *icon* of the conclusion because an icon is precisely the sort of sign that signifies by likeness (the portrait of Napoleon is an *icon* of Napoleon just as the syllogistic premises in the above argument form an icon of the conclusion). The semiotic ground of hypothesis is an iconic sign relation—an icon furnishes the relation among the premises and also between the premises and the conclusion.

With induction, the samples drawn from a collection are indexes of the whole collection making the premises an index of the conclusion.[206] Consider the following induction:

> Neat and deer are herbivores,
> Neat and deer are cloven-footed,
> Therefore, cloven-footed animals are herbivores.[207]

Here, "neat" and "deer" are samples of the collection of herbivores. They are also samples of the collection of cloven-footed animals. The premises combine to form an *index* of the conclusion that "cloven-footed animals are herbivores." Here, the fact that neat and deer are both herbivores and cloven-footed *indicates* something about the general character of all cloven-footed animals, namely that they are herbivores. We begin with some samples, in this case, a deer and a neat. We notice that each is both cloven-footed and a herbivore and this supports a probable inference to the conclusion that, generally, cloven-footed animals are herbivores. The samples combine to form an index of the general rule supplied in the conclusion.[208] With induction, the illative

[206] W2: 58.
[207] W1: 176.
[208] A reader may worry that when Peirce says that in induction the premises form an index of the conclusion, he is implying that there is some sort of causal relationship between the premises and the conclusion. After all, in the quintessential example of an index, the weathervane, the interpretant is determined by a real physical connection between the weathervane (sign) and the wind (object). But isn't this disanalogous with induction? If a sample of marbles from a bag are all blue, their blueness isn't caused by the (possible) fact that all marbles in the bag are blue in the same way that a weathervane moves with the wind. This worry stems from equivocating natural signs and indexes. Natural signs (which have a causal nature) tend to be indexes, but crucially, not all indexes are natural signs (it just happens that the most common example of an index (weathervane) is a natural sign). Indexicality, as a feature of signs, is more general than natural signs. For example, in chapter two and three we will learn that the subject of a proposition is an index—it is an index because it denotes a particular object and picks it out from among

transformation of the argument is governed by an indexical ground.[209] As with hypothesis, inductive premises afford a *probable* sign of their conclusion, but unlike hypothesis, induction functions via indexical signs rather than icons.

Finally, "in deductive argument, the conclusion is represented by the premises as by a general sign under which it is contained."[210] Deduction is governed by a symbolic ground. "The symbol of a symbol is itself a symbol of the same object," Peirce writes.[211] As Bellucci puts it, in the classic syllogism (Socrates is a man, therefore he is mortal) "the symbol (mortal) of a symbol (man) is itself a symbol of the same object (Socrates)."[212]

An argument, considered as a total symbol, partakes in a tripartite sign relation, and the three varieties of sign inference—deduction, induction, and hypothesis—are distinguished by the ground upon which the argument functions as a sign (in the capacity of a likeness (hypothesis), an index (induction), or a symbol (deduction). Hence, the classification of the forms of inference is a classification of semiotic relations—we distinguish the different forms of inference according to the sign type that furnishes the relation between the premises and the conclusion.

With deduction in the first figure, for example, we take the *rule* (all men are mortal) and the *case* (Socrates is a man) to form a *symbol* of the *result*, that Socrates is mortal. With induction in the third figure, we take the *case* (neat and deer are cloven-footed) and the *result* (neat and deer are herbivores) to be a *probable index* of the general *rule* that cloven-footed animals are herbivores. Finally, with hypothesis in the second figure, we take the *rule* (ether waves make fringes) and the *result* (light makes these fringes) to be a *probable icon* of the *case* that light is ether waves. Each form of inference affords a sign of its conclusion upon a slightly different ground: deduction via symbols, induction via indexes, and hypothesis via icons.

By 1867 Peirce had a more precise classification of sign inference than anything found in the Aristotelian doctrine. Bellucci is right that Aristotle had shown Peirce the possibility of a semiotic reconstruction of the three syllogistic figures. But while Aristotle distinguished demonstrative signs (τεκμήριον or *tekmerion*) of the first figure from the probable signs (σημεῖα or *semeĩa*) of the second and third, the significance of Peirce's objective symbolistic is to have further classified the modes of inference in the second and third figures, thereby establishing the logico-semiotic forms of induction and hypothesis. Where Aristotle saw two types of sign relations sufficient to account for three forms of inference, Peirce recognized that there had to be

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a continuous system of possible subjects. The subject is not a natural sign, but it is an index by virtue of the fact that the subject points to or picks out an object. Indexicality, therefore, involves this more general notion of "pointing to". The premises of an inductive argument combine to indicate a general rule. And so, when Peirce speaks of the index in a logical context, it is not bound by the causal relations of natural signs. One of the upshots of Peirce's general theory of signs is that it overcomes the traditional distinction between natural and conventional signification (the distinction we find in Aristotle's "On Interpretation"). This is what I take to be Deely's main point in suggesting that, like Augustine and Poinsot, Peirce theorizes the general nature of a sign so that it is indifferent to natural and conventional signification. Natural and conventional signs are subsumed as varieties of the more general division among icons, indexes, and symbols. Natural signs tend to be indices, but not all indices are natural signs.

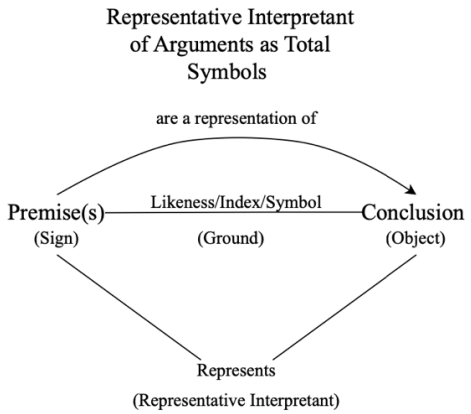
[209] Interestingly, where Aristotle says that deduction is an index, Peirce uses index as the ground for induction because a random sample is an index of the whole.

[210] W2: 58.

[211] W1: 186.

[212] Bellucci, "Inferences from Signs," 273.

three. The salient differences between the forms of inference are found in the semiotic principles grounding the relation between the premises and the conclusion. The premises are a sign of the conclusion to an interpretant and the interpretant represents the ground of the relation between the premises and the conclusion via icons (hypothesis), indexes (induction), and symbols (deduction).




## 15. The Roots of Peirce's *General* Theory of Signs

In Bellucci's summary, Peirce's logical investigations from 1865-67 show that "there are three different leading principles of inference that are three species of the genus representation."[213] Bellucci shows that Peirce is led to this view by Aristotle's semiotic reconstruction of the three figures. However, to understand inference in this way requires, as I showed, that Peirce provide an account of the sign-relation in general, which he offered in his formal tripartite definition of representation from the 1865 "Logic of Sciences," where he pursues his anti-psychologistic program for logic.

Aristotle is clear that the *σημεῖον* (*semeῖon*) is a *premise*, either demonstrative or probable, and Bellucci shows that for Peirce the *σημεῖον* (*semeῖon*) (as a premise) signifies its conclusion in three ways (as a hypothesis qua icon, an induction qua index, or a deduction qua symbol). The sign, we have seen, is one relatum of the tripartite relation: object-sign-interpretant. The argument as a whole takes the premise as a *σημεῖον* (*semeῖon*) of the conclusion to an interpretant, or a second representation that represents the *σημεῖον* (*semeῖon*) as a representation of the conclusion upon the ground of an icon, index, or symbol. The *σημεῖον* (*semeῖon*) is, therefore, only one part of the larger symbol, albeit one that can be taken three ways.

The roots of Peirce's general theory of signs are interwoven with both the theory of sign inference that he recovers from the *σημεῖον* (*semeῖon*) and the broader aim to place his objective symbolistic on an anti-psychologistic footing. The tripartite account of representation that he provides in 1865 clarifies how an argument functions as a sign. Since that relation holds in

[213] Bellucci, "Inferences from Signs," 277.

general, it also ensures that the forms of sign inference hold independently of any actual thoughts—the forms of inference are preserved in the structure of the argumentative sign itself, and that structure is irreducible to particular acts of thinking. *The thoughts are many, but the form is one*. The structure of inference (the relation between premise and conclusion) is reducible to the general structure of the signifying relation.

I return to Peirce's theory of sign inference and develop it in more detail in chapters 2 and 3, as it becomes more forceful once it meets with Peirce's ideas on realism and continuity. Presently I wish only to claim that there is evidence that the theory of sign inference that Peirce retrieves from Aristotle and subsequently develops feeds into his later theory of inquiry. Peirce, as far as I am aware, never turns away from a semeiotic account of hypothesis, deduction, and induction—that cable holds steady throughout his philosophical development. These forms of inference always play a fundamental role in his philosophical system. However, he does eventually turn away from the symbolization of inference via symbolic, iconic, and indexical sign substitutions, choosing instead to model inference using continuous iconic transformations via the existential graphs (Chapter 3).

In the final years of his life, Peirce was in ill-health, destitute, withering away in a farmhouse in Pennsylvania. Even still, he worked tirelessly to complete the book in which he hoped to offer a complete account of logic considered as semeiotic. Ahti-Veikko Pietarinen has proposed that Peirce's late writings on the existential graphs support a logic of the future, and other members of the Peirceana circle have been working hard to bring Peirce's late unpublished writings into print. There is no doubt that it was Peirce's initial view of logic as objective symbolistic in 1865-67 that stimulated his lifelong devotion to the cultivation of a general theory of signs and particularly that theory's application to logic. That interest was stimulated by Aristotle, Locke, and Kant, not by Augustine.

## Part Three

## Conclusions and Upshots

### 16. The Disagreement with Deely

I have been trying to explain Peirce's motivation for developing a general theory of signs. While Deely's hypothesis that Peirce recovers the *signum* from medieval scholasticism seems plausible, a careful reading of Peirce's early work shows that he was led to his formal definition of the sign relation because he understood the correct idea of representation to be essential to the anti-psychologistic view of logic he favoured. Murray Murphey shows that the upshot of Peirce's early logical investigations is to reduce illation to a sign relation—all inference is semiosis. Bellucci adds that this reduction "plainly reflects the Greek notion of *σημεῖον*, not the Latin, post-Augustinian notion of *signum*."[214] But the *σημεῖον* (*semeῖon*) (as the basis for an inference from *x* to *y*) is not limited to Aristotle's work in logic any more than the *signum* is to Augustine's theology. As a general notion, the *σημεῖον* (*semeῖon*) was always closely associated with inferential processes, especially in ancient Greek medicine.

[214] Bellucci, "Inferences from Signs," 277.

In his first Cambridge Conference lecture of 1898, Peirce reminds his audience that "above all Aristotle was an Asclepiades, that is to say he belonged to a line every man of whom since the heroic age had, as a child received his training in the dissecting-room."[215] Σημεῖα (*Semeĩa*) abound in the dissecting-room! They play a fundamental role in ancient medical practice. It is no surprise then that Aristotle, who was supposed to have had medical training, would incorporate a theory of signs into his theory of logic, which is precisely the study of inference from signs. While Aristotle was the first to develop a formal logic of signs, the close relation between logical inference and σημεῖα (*semeĩa*) persists through ancient theories of logic. Yet we saw that Peirce initially learns about "semiotic" from another physician, Locke, from whom he learns that "semiotic" is another word for logic, but he fears that Locke's definition is too wide. It was Aristotle's reconstruction of the three syllogistic figures as forms of σημεῖα (*semeĩa*) and τεκμήρια (*tekmeria*) that suggested to Peirce a way to clarify what varieties of semiotic relation are relevant to a theory of logic, thereby narrowing Locke's broad definition by considering the relations between symbols and their objects. Setting the question of "recovery" aside, Peirce is ultimately driven to a logic of signs because he wanted an anti-psychologistic theory of logic, one rooted in general semiotic relations irreducible to actual thoughts or mental processes.

However, this reduction of illation to a sign relation requires a formal definition of representation. Deely is right, therefore, to point out that "any division of sign proposed must first be understood in the light of what it is that is being divided."[216] Since the reduction of illation to a sign relation is meant to show that there are three forms of inference distinguished by the semiotic grounds on which they depend, then to make sense of such a reduction at all we must first understand precisely what a sign is. I believe that Peirce recognized this, which is why he was constantly refining his formal definition of representation as he worked through the problems confronting his objective symbolistic in those early lectures.

In an undated manuscript, likely from 1906, Peirce makes clear how important a proper definition of the sign is to logical analysis. He suggests, again, that a logic of signs offers an alternative to psychologistic logic:

> Logic ought, as far as possible, to be conducted by means of logical analysis. Whatever truth cannot be reached by logical analysis of ordinary experience is not, properly speaking, a truth of logic. We ought therefore to dismiss from logic every character of the human mind which cannot be analyzed into forms of relation. In particular, we should have nothing to say in logic about consciousness, which is an extremely vague term but chiefly signifies the general tinge of one's working life, about which we can only say that it is probably different in different persons, while logic must be the same for all persons. Since we are not to speak of consciousness at all, we are not to speak of thinking and other modifications of consciousness.
>
> *The most fundamental problem of logic is to form a definition of a sign. For all logical operations can be conducted in signs. Indeed, they cannot be*

[215] RLT: 106.
[216] Deely, *Four Ages*, 668. It was precisely this point that led Poinsot to consider the being of signs in general.

> *conducted otherwise, for all logical meditation has the form of dialogue, and all thoughts,—intellectual thoughts,—have strictly all the features of signs.*
>
> In answer to this it may be urged that logic is not concerned with all kinds of signs. For example, a command signalled from the flag-ship of a squadron is hardly open to logical criticism, as a command. Nor is a piece of concerted music subject to logic exactly. But the reply is obvious. *As long as every logical relation is a relation of signs, it is necessary in order to understand logic to understand the general structure of a sign*; and if it is only a special kind of signs that are subject to logic, we must either seek a more extended notion of logic or else must add to our study of the sign a study of the nature of the limitation which is required to bring other signs within the jurisdiction of logic.[217]

While logic may deal only with particular varieties of signs, the logician must ultimately study signs more generally, if only to determine which varieties fall within the jurisdiction of logic and which fall without. If the reduction of illation to a sign relation shows that the relation between premise and conclusion is at its core a semiotic one, then the classification of inferences *is* a classification of signs, and the logician must study all signs to clarify those relevant to inference. Logic cannot be understood apart from signs, and that is why logical analysis requires a proper understanding of the general structure of a sign. Indeed, in his 1894 article "What is a Sign?," Peirce begins by explaining why he is asking the question in the first place: "This is a most necessary question, since all reasoning is an interpretation of signs of some kind. But it is also a very difficult question, calling for deep reflection."[218] While these explicit claims come from Peirce's mature writings, the important question of the general structure of the sign relation was already at the forefront of his mind in 1865.

In an unfinished outline for an intended book called *Teleological Logic*—begun May 14, 1865, exactly two years before the publication of the "New List of Categories" on May 14, 1867—Peirce sketches the proposed order of the first chapter:

> Logic is objective symbolistic.
>
> Symbolistic is the semiotic of symbols.
>
> Objective symbolistic is that branch of symbolistic which considers relations to objects.
>
> Semiotic is the science of representations.
>
> Representation is anything which is or is represented to stand for another and by which that other may be stood for by something which may stand for the representation.[219]

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[217] R 803. Published for the first time in Charles Peirce and Francesco Bellucci, *Charles Peirce: Selected Writings on Semiotics, 1894-1912* (Berlin: De Grutyer Mouton, 2020), 314; my emphasis.
[218] EP2: 4.
[219] W1: 303.

Peirce's sketch gives us a glimpse into his thought process. The aim is to define logic, which he does in terms of objective symbolistic, expressing his idea that logic studies the ways that symbols stand for their objects, which they do on three different grounds, relating to the different forms of inference recovered from Aristotle. He recognizes that since logic deals with these symbolic relations, it must be a species of a more general science of representation and gives his triadic definition of that concept. While Peirce does not explicitly state that the general structure of the sign is fundamental to the study of logic, his outline suggests that any attempt to define the domain of logic will require us to define the sign relation. There is no way around this because logical relations are semiotic relations, which makes inference semiosis.

Therefore, to understand the reduction of illation to sign relation as affording three distinct forms of sign-inference (as Bellucci shows), we must first understand the structure of the sign relation: a sign stands for its object to an interpretant upon some ground. Arguments in each figure are varieties of this more basic relation.

The view of representation that Peirce refines from 1865-67 emerges in tandem with his classification of the forms of inference. Contra Deely, the theory of signs that Peirce arrives at is not simply taken over from medieval scholasticism. Peirce's account resembles the scholastic theory, but after a deep and difficult reflection on the science of reasoning he comes to the view that a sign is a tripartite relation. The question, "what is logic?", always involves the further question, "what is a sign?"

On Deely's picture, one upshot of Peirce's theory of signs is that, like the *signum*, it subsumes the distinction between natural signs and conventional symbols. Peirce's view, we have seen, certainly does that, since the signifying qualities of weathercocks, sweat, and smoke can be understood through the same triadic relation as words and swastikas. But for Peirce this is a secondary upshot. The more significant one is to have shown, via the reduction of illation to the sign relation, that deduction, induction, and hypothesis are three varieties of a more basic semiotic relation, thereby completing the generalization that Aristotle initiated in *Prior Analytics*. If Peirce is right about this, then all three forms of inference fall within the jurisdiction of logic and are governed by an understanding of the sign relation in general. The philosophical significance of Peirce's Semeiotic is thus bound up with this second, more forceful and original upshot.

## 17. The Fibers of Semeiotic:

## An Implication for the Theory of Inquiry

Peirce's broad aim in 1865-67—and one of the crucial aims of his philosophical work at large—was to deepen our understanding of scientific reasoning (induction and hypothesis). By showing that the forms of inference are different varieties of the genus of representation he made a decisive step in that direction. While the Aristotelian distinction between demonstrative and probable signs revealed the different degrees of certainty that can be reached through different varieties of sign inference, the fact that inference of any kind, whether scientific (induction and hypothesis) or deductive, involves a more basic sign relation suffices to bring scientific reasoning back into the province of logic. Peirce's logic of signs must account for all of these varieties of inference.

Once we realize that the different forms of inference share a basic semiotic form, we arrive at the view that reasoning often utilizes all three forms of inference to draw conclusions. As Aristotle said, "truth can be found in all signs."[220] When Peirce goes on to elaborate what he calls the logic of investigation in his famous 1877-78 *Illustrations* series, he shows that the method of scientific investigation necessarily utilizes all three forms of inference, unfolding in abductive, deductive, and inductive inferences. [221]

Mats Bergman observes that during the middle years of Peirce's intellectual development (namely, 1870-90) "there is ominous silence on the semiotic front."[222] Peirce does not talk about signs at all in his famous papers on pragmatism and the logic of science. I share Fisch's view that Peirce does not address the technical semiotic dimension of his logic of investigation in 1877–78 because of the venue where these articles were published, *Popular Science Monthly.*[223] Readers of this magazine would not be familiar with or perhaps even interested in semiotic problems, which made it necessary for Peirce to discuss inference without speaking of signs. But this does not mean the principles of sign inference that he theorizes in the early logic lectures are not implied in the account Peirce provides in 1877–78.

The account of deduction, induction, and hypothesis in the final article of the *Illustrations* series mirrors almost exactly the account Peirce offered in 1865. There he classifies the different forms of inference in terms of *rule, case*, and *result*:

Deduction

Rule.—All the beans from this bag are white.

Case.—These beans are from this bag.

Result.—These beans are white.

Induction

Case.—These beans are from this bag.

Result.—These beans are white.

Rule.—All the beans in this bag are white.

Hypothesis

Rule.—All the beans in this bag are white.

[220] Aristotle, *Prior Analytics*, 70a38.
[221] This series of articles includes Peirce's two most famous essays, "The Fixation of Belief" and "How to Make our Ideas Clear." See also, *Nathan Haydon The Continuity of Explanation: Peircean Pragmatism, Reason, and Developing Reasonable Behavior* for a rich discussion of the continuity binding the process of investigation.
[222] Mats Bergman, "Peirce's Derivations of the Interpretant," *Semiotica* 144 (2003), 1.
[223] Fisch, *Peirce, Semeiotic, and Pragmatism,* 327-28.

> Result.—These beans are white.
>
> Case.—These beans are from this bag.[224]

Peirce does not make the further claim that inferences drawn by deduction are from symbols, by induction are indices, and by hypothesis are icons, though that does not mean the semiotic form of these inferences is not implicit. One upshot of the account Bellucci and I propose of Peirce's early logical investigations is to appreciate the way in which scientific investigation, utilizing all three forms of inference, is necessarily semiotic. When inquirers propose a hypothesis, deduce the conceivable practical effects, and then test the hypothesis by induction, they are interpreting icons, indices, and symbols. The semiotic forms of inference are thus implicit in Peirce's *Illustrations* series. We can therefore understand why in his later work Peirce describes the method of scientific investigation as a "method of transforming signs."[225]

In "Some Consequences of Four Incapacities" (1868) Peirce writes:

> Philosophy ought to imitate the successful sciences in its methods, so far as to proceed only from tangible premisses which can be subjected to careful scrutiny, and to trust *rather to the multitude and variety of its arguments* than to the conclusiveness of any one. Its reasoning should not form a chain which is no stronger than its weakest link, *but a cable whose fibers may be ever so slender, provided they are sufficiently numerous and intimately connected.*[226]

Peirce does not just mean that we should consider a multitude of different arguments, but that we must utilize a *variety* of arguments, that is, a variety of forms of inference, and not rely solely on induction, deduction, or hypothesis. It is only when we mix these forms together that our reasoning becomes a cable interwoven with distinct forms of inference.

Peirce already had a firm grip on this semiotic cable in 1865. In his tenth Harvard Lecture, where after providing the semiotic grounds for each form of inference he comments on their strength:

> We have in order of strength Deduction, Induction, Hypothesis. Deduction, in fact, is the only demonstration; yet no one thinks of questioning a good induction, while hypothesis is proverbially dangerous.... *Yet it is hypotheses with which we must start*; the baby when he lies turning his fingers before his eyes is making a hypothesis as to the connection of what he sees and what he feels. *Hypotheses give us our facts. Induction extends our knowledge. Deduction makes it distinct.*[227]

The degree of strength found in any one form of inference is outmatched by the strength of all three working together. Indeed, explanation requires that we utilize all three forms of inference. We begin by positing a hypothesis meant to explain a surprising phenomenon. Next, we deduce what consequences would follow from accepting our hypothesis. Finally, we test whether those

[224] EP1: 188.
[225] CP 5.553.
[226] W2: 213; my emphasis.
[227] W1: 283.

consequences bear out via induction. If our inductive samples tend to support our hypothesis in the long run, we have reason to continue affirming it (these samples being indications that our hypothesis holds). If induction gives us reason to doubt our hypothesis, we begin anew, updating our hypothesis, deducing new consequences, and taking more inductions. We can always make a further induction, take another sample, and so inquiry unfolds in a continuous process of inference that tends in the long run toward truth and reality.

We must not forget that the fibers of inference necessarily interweave with fibers of signs. As Peirce writes in 1894:

> In all reasoning, we have to use a mixture of likenesses, indices, and symbols. We cannot dispense with any of them. The complex whole may be called a symbol; for its symbolic, living character is the prevailing one.… Now we may liken the indices we use in reasoning to the hard parts of the body, and the likenesses we use to the blood: the one holds us stiffly up to the realities, the other with its swift changes supplies the nutriment for the main body of thought.… [An argument] is not a dead thing, but carries the mind from one point to another. The art of reasoning is the art of marshalling such signs, and of finding out the truth.[228]

Peirce suggests that we abandon the metaphor that takes inference to be a deductive chain no stronger than its weakest link and instead fashion a cable whose fibres involve all the varieties of sign inference—a semiotic cable interwoven with icons, indexes, and symbols. This, I believe, is the same cable that *would* carry the community of inquirers to reality in the long run (Chapter 2 develops this interpretation). To establish this conclusion, however, we need to recognize that the physiological process of habit formation is pragmatically indistinguishable from the logical process of drawing an inference.

In "Some Consequences" Peirce writes:

> [It] is a matter of constant experience, that if a man is made to believe in the premises, in the sense that he will act from them and will say that they are true, under favorable conditions he will also be ready to act from the conclusion and to say that that is true. Something, therefore, takes place within the organism which is equivalent to the syllogistic process.[229]

An argument carries the mind from the premises to the conclusion on the ground of a semeiotic relation. The forms of sign inference we utilize in reasoning model the thought process that the inquirer goes through in drawing an inference. We saw that a consequence of Peirce's anti-psychologism is that the forms of inference have a reality independent of particular thoughts. We think *in* signs, but the signs are not *in* us.[230] At the end of "Some Consequences" Peirce tells us that "the mind is a sign developing according to the laws of inference."[231] He then asks what the

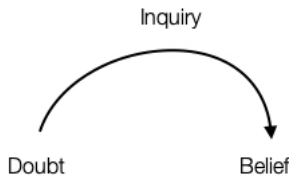
[228] EP2: 10.
[229] W2: 214.
[230] W2: 207.
[231] W2: 240.

difference is between a man and a sign. While there is a material difference, Peirce writes that the "sign which man uses *is* the man himself."

> For, as the fact that every thought is a sign, taken in conjunction with the fact that life is a train of thought, proves that man is a sign; so, that every thought is an *external* sign, proves that man is an external sign. That is to say, the man and the external sign are identical, in the same sense in which the words *homo* and *man* are identical.[232]

Life is a train of thought, and every thought is a sign. As Liska writes, "In the process of inquiry we find the movement toward the determination of signs … whose effects create in us certain habits of interpretation and action, habits which culminate in a general 'concrete reasonableness.'"[233]

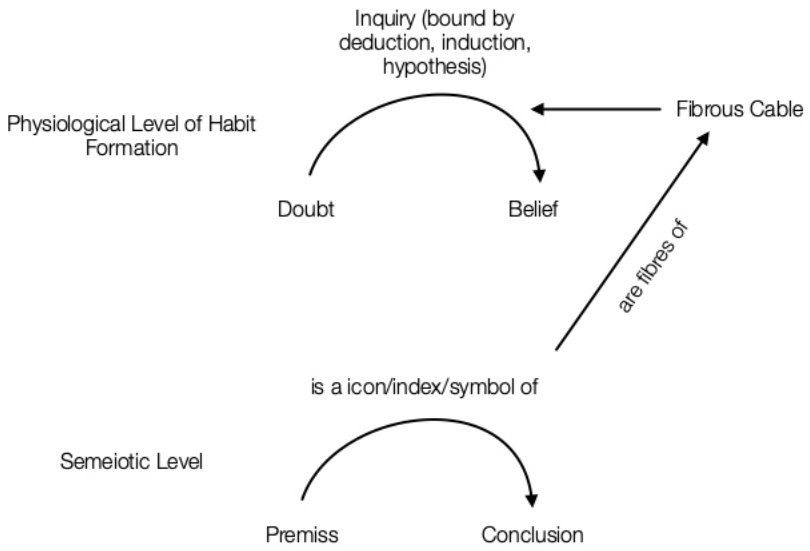
In "The Fixation of Belief," Peirce argues that "the object of reasoning is to find out, from the consideration of what we already know, something else which we do not know."[234] This plainly resembles the *σημεῖον* (*semeῖon*) as that which provides the basis for an inference from the known to the unknown.[235] Peirce adds that inquiry functions as the passage from doubt to belief.[236] He claims that "doubt is an uneasy and dissatisfied state from which we struggle to free ourselves and pass into the state of belief"—a belief being "a calm and satisfactory state which we do not wish to avoid, or to change to a belief in anything else."[237] He further writes that insofar as doubt is unsatisfactory it irritates us—"stimulates us to inquire until it [the doubt] is destroyed [and replaced by belief]."[238]




Peirce notes that "this transition is subject to some rules which all minds are alike bound by."[239] If all thought is *in* signs, and reasoning can take three semiotic forms (deduction, induction, and hypothesis), then these binding rules must be the semiotic principles governing inference in each figure. If we take seriously Peirce's point that there is no significant difference between the man

[232] W2: 241.
[233] Liska, *General Introduction*, 107.
[234] W3: 244.
[235] It is ironic that Peirce's view that inference moves from the known to the unknown is closer to the ancient Greek Rationalist doctors than to their Empiricist opponents, who eschew inference in favour of associative suggestion. I am not saying that Peirce is a rationalist. Only that his understanding of sign-inference is closer to the Rationalist than Empiricist doctors. As we will see, this is no doubt because the Empiricist's "association" (signs of constant conjunction) is an early form of what will eventually be called "nominalism."
[236] W3: 247.
[237] Ibid.
[238] Ibid.
[239] W3: 246.

and the sign, then the process of determination involved in the passage from doubt to belief is identical to the process involved when drawing a sign inference.




If, as Fisch maintains, the whole *Illustration Series* "is thought out within the framework of the doctrine of signs," it makes sense to think carefully about the relationship between the semiotic forms of inference that Bellucci recovers from Peirce's early writings and their connection to his theory of inquiry. [240] I have proposed a path that leads from the reduction of illation to a sign relation in 1865 to the reduction of thought-processes to sign-processes in 1868 and then to the view that these processes are implicit in the account of habit formation offered in 1877 and 1878, especially when we understand inquiry as bound by rules of inference. I do not claim to have exhausted the connection between sign-inference and Peirce's theory of inquiry but only to have explained one way that we might think about it. The relationship between the representative relation and inference extends to Peirce's pragmatist logic of investigation.

## 18. Circumventing the Categorical Edifice

The development that I have been tracing through Murphey and Bellucci of Peirce's general theory of signs leads to the discovery that Peirce "must already know an important semiotic doctrine when he enters the categorical edifice [in 1867]."[241] We saw that on Deely's account, it is the formal deduction of the categories that enables a proper account of the sign as a tripartite relation. For Deely, May 14, 1867 marks the initiation of a new age of human understanding.

The view that Peirce's theory of signs begins with an account of the categories is not peculiar to Deely, as most accounts of Peirce's Semeiotic begin with this argument. For example, when Fisch describes Peirce's first published theory of signs in the "New List," he makes it seem as though the categories supply Peirce with the framework for his theory of signs:

[240] Fisch, *Peirce, Semeiotic, and Pragmatism*, 328.
[241] Bellucci, "Inferences from Signs," 277.

> He *first* establishes, in place of Aristotle's ten categories and Kant's twelve, a new list of three: Quality, Relation, and Representation. He *then* uses these categories to distinguish: (1) three kinds of representations—likenesses (which he will later call icons), indices, and symbols; (2) a trivium of conceivable sciences—formal grammar, logic, and formal rhetoric; (3) a general division of symbols, common to all three of these sciences—terms, propositions, and arguments; and (4) three kinds of argument, distinguished by their three relations between premiss and conclusion—deduction (symbol), hypothesis (likeness), induction (index).[242]

However, we have seen that two years before "On a New List" Peirce already had a working understanding of the three kinds of representation and the three kinds of argument, and that these required him to formulate a general account of representation. In a remarkable passage Bellucci writes:

> the fact that in the "New List" Peirce presents his divisions of logic, of symbols, and of arguments after the deduction of the categories should not mislead us into thinking that the categories *prove* anything in logic. When Peirce in 1898 re-evokes his logical discoveries of the 1860s, he is very clear that it was only *after* he had come into possession of a definite classification of arguments that he could turn to the categorical investigation (NEM 4:331). The classification of arguments is an eminently critical task, and therefore the order of presentation in the "New List" does not correspond to the order of priority among philosophical tasks.[243]

Bellucci's position corroborates Murphey's view that the reason Peirce turns to logic in the first place is to secure a preliminary table of logical forms. After all, Peirce was aware that while the correspondence between Kant's table of judgments and his categories was perfect, Kant did not offer an argument for the correctness of the table of judgment itself, even though the deduction of the categories seems to depend on such an account. The preeminent task of classifying arguments in terms of the reduction of illation to a sign relation is to secure the forms of inference necessary to establish the categories on semiotic grounds. Since the reduction requires a general understanding of the sign relation, Peirce must have had *both* a theory of sign inference and a general account of representation prior to unfolding his theory of categories.

On March 23, 1867, Peirce wrote in his logic notebook:

> I cannot explain the deep emotion with which I open this book again. Here I write but never after read what I have written for what I write is done in the process of forming a conception. Yet I cannot forget that here are the germs of the theory of the categories which is (if anything is) the gift I make to the world. That is my child. In it I shall live when oblivion has me—my body.[244]

He then immediately writes that "this matter of the logical principles of the different kinds of inference is a difficult matter," indicating that the germ of his theory is to be found in the

[242] Fisch, *Peirce, Semeiotic, and Pragmatism*, 324; my emphasis.
[243] Bellucci, "Inferences from Signs," 266.
[244] W2: 1.

classification of the forms of inference. [245] If this is right, then the categories should reflect the semiotic grounds for these forms of inference.

We have seen that the ground of hypothesis is likeness and that likeness represents via a Firstness, or quality. The ground of induction is an index and indexical signs require a relation to something else: the sample, as we saw, is an index of the whole. Induction, then, represents via Secondness. Finally, the ground of deduction is a symbol and symbols are a kind of Thirdness. When we consider an argument as a symbolic whole, we take the premises to be signs of the conclusion to an interpretant which represents the premises as a sign of the conclusion on the ground of either a likeness, index, or symbol. The categories do not prove anything in logic, but they reflect the forms of inference that logic supplies. It is possible and perhaps even more correct to conceive of Fisch's explanation as moving in the opposite direction: we first establish the distinct forms of inference by elucidating their semiotic principles, then use these forms of inference to supply an argument for the categories.

We begin by positing the categories as a hypothesis, then deduce the consequences of the categorical scheme, and finally take inductions to extend our knowledge of the categories, taking samples to see whether experience confirms or denies them. If this is right, then Peirce's categories do not hold with absolute certainty but only provisionally or virtually. In 1904, Peirce wrote to Victoria Welby:

> I was long ago (1867) led, after only three or four years of study, to throw all ideas into three classes of Firstness, of Secondness, and of Thirdness. This sort of notion is as distasteful to me as to anybody; and for years, I endeavoured to pooh-pooh and refute it; but it long ago conquered me completely. [246]

This passage shows that Peirce remained uncertain about his categorical scheme in 1867. There is always the possibility that a further induction may cause the edifice to crumble. Yet that he identified three interweaving forms of sign inference shows that mere deduction will not suffice to establish them on a firm foundation. We must move, as with any investigation, from hypothesis to deduction to induction.

All who enter Peirce's philosophy are bound to confront the categorical edifice eventually. To the newcomer it casts an ominous shadow, and to those who have managed to peer inside it holds them captive like a conjuror's trick. Peirce's theory of signs, often closely associated with the categories, casts a similar shadow. While Semeiotic meets with the categories eventually, one advantage of the view of sign-inference that I have traced is to circumvent the categorical edifice, at least at the outset. Peirce, we saw, was led to his theory of signs by a study of inference, which suggests a way into the labyrinth of signs through the backdoor of logic. Motivating Peirce's early semeiotic by first establishing the reduction of illation to sign relation is a fruitful way to get those who do not like this fuss about signs in logic to begin to appreciate their importance. If you draw an inference, you rely on a sign relation.

The upshot of Bellucci's argument is that Peirce had a working theory of inference from signs prior to the publication of his "New List of Categories" in 1867, whereas Deely takes

[245] W2: 1.
[246] SS: 24.

Peirce's 1867 publication to initiate the new "way of signs."[247] Bellucci, drawing on Murphey's work, contends that "a deduction of the categories can only be taken once the preliminary table of logical forms is established" and that "since the preliminary table is a table of semiotic forms," Peirce's early view of inference from signs does not depend on his categories for their explanation.[248] Once the categories are established via sign inference, they support the forms of inference and the study of signs, thus confirming and fortifying the initial classifications.

## 19. Realism on the Horizon

My purpose in this chapter has been to situate Peirce in the history of semiotics and to explain the roots of his theory of signs and its application to logic. Peirce is a pivotal figure in a long tradition of sign theory, one that began in ancient Greek medicine, found its way into logic through Aristotle, the Stoics, and the Epicureans, splintered in the Middle Ages, and was recovered and systematically integrated into philosophy and logic by Peirce in the 19th and early 20th century. I have defended and further developed the view, initially proposed by Murphey in 1961 and expounded by Bellucci more recently, that Peirce's semeiotic investigations began with the reduction of illation to a sign relation, which, as we have seen, Peirce recovers from the Aristotelian doctrine in 1865. I added that such a reduction requires an account of the sign relation and that Peirce refines his formal definition of representation in order both to clarify this reduction and provide an anti-psychologistic basis for logic. Contra Deely, Peirce does not recover the notion of *signum* from the Middle Ages; instead, his contemplation of the nature of logic and his analysis of the forms of inference independently lead him to a general account of representation. The roots of Peirce's theory of signs are therefore supported by two complementary arguments: the "anti-psychologistic" argument that invokes a theory of representation to counter the psychologistic tendency to treat inference in terms of thought processes, replacing those psychological relations with logico-semiotic ones that in no way depend on particular minds, and a "reductive" argument that classifies inference in terms of these more general logico-semiotic relations.

While Peirce recovers the Greek *σημεῖον* (*semeῖon*) from his logical investigations and that this proves indispensable to his view that all reasoning is an interpretation of signs, he does indeed draw a valuable lesson from the Scholastics, pertaining to their understanding of reality. Bellucci makes no mention of Peirce's Scholastic Realism, but I believe that the integration of Peirce's early theory of signs with his theory of reality is indispensable to his anti-psychologistic argument. What, then, is the ontological status of these logico-semiotic relations that are said to obtain independently from particular thoughts? In the next chapter I integrate Peirce's theory of reality with the theory of sign inference this chapter has clarified. I argue that the confluence of these streams of Peirce's thought marks the emergence of Semeiotic Realism as a distinctive philosophical position. To this end we must confront Peirce's greatest philosophical enemy—nominalism.

[247] Deely, *Four Ages*, 637.
[248] Bellucci, "Inferences from Signs," 277.

# CHAPTER TWO

## Peirce's Critique of Nominalism and the Reality of Signs

### 1. Introduction

Every philosopher has their enemy. For Plato, it was the sophists. For Nietzsche, Christianity. But for Charles Peirce, there was nothing viler and more dreadful than nominalism. Nathan Houser writes that "if any single question can be said to have been viewed by Peirce as the most important philosophical question of his time, it is that of deciding between [nominalism and realism]."[1] Peirce rails against nominalism throughout his writings, and he often frames his philosophical position in contrast to nominalism. We can understand Peirce's philosophy, therefore, *only if* it is seen as a reaction to the tendency of nominalism.

We see how strongly Peirce felt about nominalism when, in 1909, he writes to Victoria Welby that "Nominalism and all its ways are devices of the Devil if devil there be."[2] In a similar vein, he writes to J. H. Kehler in 1911 that "nominalism is deadly poison to any living reasoning."[3] Even in his early Lowell Lectures of 1866, Peirce was aware of the controversy, describing "the fierce dispute of the nominalists and realists" as one in which "the discussions of the learned doctors sometimes ended with black eyes and bloody noses."[4] Peirce took the nominalist-realist controversy to be important not only for the history of medieval philosophy but for the history of philosophy generally. For Peirce, the controversy was still a living problem in his time, as "all modern philosophy of every sect has been nominalistic."[5] Indeed, the "nominalistic *Weltanschauung* has become incorporated into … the very flesh and blood of the average modern mind."[6] If not explicitly nominalistic, one detects the "daughters of nominalism—sensationalism, phenomenalism, individualism, materialism"—running through the canon of early modern philosophy.[7] As Paniel Reyes Cárdenas observes, Peirce saw the history of philosophy as "the struggle between realism and nominalism."[8]

Peirce was not alone in his crusade against nominalism. Houser notes that Peirce's contemporary, Francis Ellingwood Abbot, shares Peirce's sentiment, writing that "So far was the old battle of Nominalism and Realism from being fought out by the end of the fifteenth century that it is to-day the deep, underlying problem of problems, on the right solution of which depends the life of philosophy itself in the ages to come."[9] It is remarkable that even Bertrand Russell agrees with the emphasis Peirce places on the controversy: "I think Peirce was quite right in regarding the realist-nominalist controversy as one which is still undecided, and which is as

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[1] Nathan Houser, "Introduction", in *Essential Peirce: Volume 1*, ed. Nathan Houser and Christian Kloesel (Indianapolis: Indiana University Press, 1992), xxv.
[2] SS: 118.
[3] NEM 3: 201.
[4] W1*:* 361-62.
[5] CP 1.19.
[6] EP2: 157.
[7] W2: 486.
[8] Paniel Reyes Cárdenas, *Scholastic Realism: A Key to Understanding Peirce's Philosophy* (Oxford: Peter Lang, 2018), 13.
[9] Francis Ellingwood Abbot, *Scientific Theism* (London: MacMillan, 1885), 11-12.

important now as at any former time."[10] These observations make it all the more important that we ask, what exactly did Peirce think nominalism was? And, more importantly, what is his plan for defeating it? The aim of this chapter is to answer these two questions.

In Chapter 1, I explained Peirce's triadic sign relation, showing how it can be applied to logical inference, which reveals the importance of his theory of signs to his understanding of inquiry. In this chapter, I present what I call Peirce's Semeiotic Realism as the response to a problem that medieval nominalism poses for our understanding of signs. Nominalists like William Ockham think that reality is entirely independent of thought. Only what exists outside of the mind, in a world of absolute individuals, is real. This point of view has the consequence of denying the autonomous reality of signs, as on Ockham's picture signs only have a *mind-dependent* being. A sign is contained *within* a singular cognitive act and since signs are creatures of cognition they are not *strictly speaking* real.

However, Peirce is not willing to accept the nominalist position, as he believes that it leads to a skewed understanding of reality, one that makes "real" and "existence" synonymous terms. As Peirce understands it, the nominalist's theory of reality is what decides their position about the status of signs. For Peirce, reality is not *entirely* independent of thought. Reality is only "independent of the thoughts of any particular men, but is not independent of thought *in general.*"[11] My argument is that this subtle distinction allows one to say that semiotic relations are real. On Peirce's picture, a sign does not depend on its being interpreted by a particular mind but is a sign whether it is interpreted or not. Signs have a generality that is irreducible to singular cognitive acts and this generality ensures their reality.

In this chapter I argue that Peirce's critique of nominalism motivates his Semeiotic Realism, thus showing that his theory of reality is ultimately compatible with his theory of signs. The chapter breaks down into two parts. Part One answers the question "What is nominalism?" by considering the history of nominalism and disentangling it from the so-called problem of universals. Since my analysis centers on Ockham's philosophy, I outline the central themes of his nominalism from the perspective of his theory of terms, showing how this theory constrains his ontology. Ockham's account of reality, coupled with his theory of terms, presents a challenge for Peirce's Semeiotic Realism by suggesting that signs are not real.

In Part Two, I answer the question "what is Peirce's plan for defeating nominalism?" I summarize his treatment of the controversy, elaborating on his theory of reality and showing how it relates to his theory of signs. Then using Ockham as a foil, I evaluate the arguments that Peirce launches against him. I conclude the chapter by exposing two flaws in Ockham's treatment of signs and make the case that Peirce's Semeiotic Realism overcomes them. The first flaw is to confine logic to a study of the syntax and semantics of signs, thereby neglecting the function of the interpretant. The second is to make absolute categorematic terms the ultimate bearers of meaning, whereas Peirce thought that signification always involves inferential processes, and that the proper analysis of a proposition leads to a nexus of relations, not a collection of absolute terms.

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[10] Bertrand Russell, "Forward" to James Feibleman, *An Introduction to the Philosophy of Charles S. Peirce,* (Cambridge, MA: MIT Press, 1946), xv.
[11] W3: 29.

# PART ONE

## The Road to Ockham's Nominalism

### 2. The Usual Story

Given the importance Peirce placed on the nominalism-realism controversy, I begin by outlining what, historically, was at stake in the debate. To this end, I follow Peirce and other contemporary scholars in disentangling the controversy from the ill-conceived view that it turns on the metaphysical status of universals. Peirce writes in 1871 that "the current explanations of the realist-nominalist controversy are equally false and unintelligible."[12] He thinks the controversy has its roots in logic and not, as it is often supposed, in metaphysics. He traces the confusion to Bayle's *Dictionary*, although I suspect Hegel was also a culprit. In his *Lectures on the History of Philosophy,* Hegel writes:

> The general distinction between realists and nominalists relates to the antithesis between universal and singular. At issue is the *universalia*, the universal, the Platonic Idea, the genus as such, the essence of things. The main question was whether this universal exists *realiter* or whether it is only nominal, that is, a subjective representation or a thought-object.[13]

On this view, the nominalism-realism controversy is an offshoot of the old debate about Platonic forms. The question is whether universals like "Humanity" have a reality that is, on the one hand, either *in re* or *ante rem* (depending on whether your realism is inherited from Aristotle or Plato), or, on the other hand, whether these universals are mere terms whose being depends on the mind alone. While the realist takes universals like "man" or "horse" to have a reality independent of thought, the nominalist treats universals as mere figments of the mind. Only the particular, concrete individual is real, and so-called universals like "man" and "horse" are merely terms, no better than useful fictions—a kind of *flatus vocis*. As Deely puts it, "only individual things as such exist, and … the terms we utter in speaking generalities are … so much wind."[14]

Calvin Normore claims that nominalism has come to be known as a *metaphysical position* that holds either 1) that "everything there is is particular" or 2) that "all there is is concrete" (note that these are both claims about the *existence* of certain entities).[15] One need only consult the *Stanford Encyclopedia of Philosophy* to find a treatment of these two positions, the first of which is associated with the view that nominalism denies universals, and the second with the idea that it denies abstract objects. [16] For instance, Nelson Goodman (in keeping with Hegel) writes that "Nominalism … consists of the refusal to countenance any entities other than individuals. Its opposite, Platonism, recognizes at least some non-individuals."[17] The so-called

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[12] W2: 467.
[13] G. W. F. Hegel, *Lectures on the History of Philosophy*, trans. R. F. Brown and J. M. Stewart (Los Angeles: University of California Press 1990), 3: 63.
[14] Deely, *Four Ages*, 386.
[15] Calvin Normore, "Nominalism", in *The Routledge Companion to Sixteenth Century Philosophy,* ed. Henrik Lagerlund and Benjamin Hill (New York: Routledge, 2017), 121.
[16] Gonzolo Rodriguez-Pereyra, "Nominalism in Metaphysics", *The Stanford Encyclopedia of Philosophy* (Summer 2019 Edition), Edward N. Zalta (ed.)
[17] Nelson Goodman, *The Structure of Appearance* (Boston: R. Reidel, 1977), 33-34.

problem of universals occupies a major part of our contemporary understanding of the controversy. Indeed, even the leading commentators on Peirce's Scholastic Realism begin with a treatment of the problem of universals in antiquity and trace the development of the problem into the middle ages before explaining Peirce's response.[18] This approach is not wrong, but it leaves out the important connection between these controversies and logic and semeiotic. As Peirce put it in 1871, "the notion that the controversy between realism and nominalism had anything to do with Platonic ideas is a mere product of the imagination, which the slightest examination of the books would suffice to disprove."[19]

Recently, commentors have begun to challenge the received view of the nominalist-realist controversy.[20] Turning from contemporary forms of nominalism to an authentically medieval understanding of the issue, Normore shows that medieval nominalism "has nothing to do with the problem of universals and that seeing it as focused on the problem of universals simply distorts our picture of what went on."[21] To understand Normore's claim we need some acquaintance with the philosophical terrain of the middle ages.

## 3. The Prince of the *Nominales*

Deely explains that there are two major sources of nominalism in the middle ages, with two centuries between them. The first fluorescence of nominalism stems from Rocelin, in the time of Abaelard (12th century) and was chiefly set against the realism of William of Champeaux, while the second fluorescence is a result of the more sophisticated accounts of William of Ockham and Jean Buridan in the 14th century, who target the moderate realism of Thomas Aquinas and John Duns Scotus.[22] Peirce tells a similar story in his *Berkeley Review*, although he expresses uncertainty as to whether there is any connection between the two strands of medieval nominalism:

> It was at the very end of the eleventh century that the dispute concerning nominalism and realism, which had existed in a vague way before, began to attain extraordinary proportions. During the twelfth century it was the matter of most interest to logicians, when William of Champeaux, Abélard, John of Salisbury, Gilbert de la Porrée, and many others, defended as many different opinions. But there was no historic connection between this controversy and those of scholasticism proper, the scholasticism of Aquinas, Scotus, and Ockam [*sic*].[23]

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[18] See for example Rosa Mayorga, *From Realism to "Realicism": The Metaphysics of Charles Sanders Peirce* (Plymouth, MD: Lexington Books, 2007); John Boler, *Charles Peirce and Scholastic Realism: A Study of Peirce's Relationship to John Duns Scotus* (Seattle: University of Washington Press, 1963); and Paniel Cárdenas, *Scholastic Realism: A Key to Understanding Peirce's Philosophy* (Oxford: Peter Lang, 2018).
[19] W2: 471-72
[20] See for example Calvin Normore, "The Tradition of Mediaeval Nominalism", in *Studies in Medieval Philosophy*, ed. John F. Wippel (Washington, DC: Catholic University of America Press, 1987); Normore, "Nominalism", *Routledge Companion to Sixteenth Century Philosophy*; John Deely, *Four Ages of Understanding* (Toronto: University of Toronto Press, 2001); and Barry Allen, *Empiricisms* (New York: Oxford University Press, 2021).
[21] Normore, "Tradition of Mediaeval Nominalism," 216.
[22] Deely, *Four Ages*, 386-87.
[23] W2: 464.

While Peirce is right that there is no direct historic relation between these two occasions, Normore has found continuity between the deeper philosophical commitments of early and later medieval nominalism. He writes that nominalism began with Abaelard and his teacher Rocelin "in a series of worries about the relation of sentences and clauses to the world."[24] Semantic and logical problems were of utmost concern to Abaelard, the so-called Prince of the 12th century *Nominales*. What Abaelard had to say about universals was motivated by a prior commitment in semantics, which deals with the relation between signs and the world. John Boler writes that for Abaelard, universality consists "in the signifying of many things by one sign."[25] This makes predication central to universals in as much as a universal is a sign predicated of many. The crux of nominalism is not found in the stance that Abaelard and his followers took with respect to universals *per se*, but rather with the linguistic and logical tools that they deployed in their treatment of them.

Rocelin believed that universals were hot air. Abaelard thought they were "nothing more than words" and articulated his view by distinguishing two semantic properties that names, or terms, possess: 1) *nominatio*, or the reference of a name, and 2) *significatio*, or the "informational content (*doctrina*) of the concept the word is meant to give rise to."[26] As Peter King and Andrew Arlig explain, common names have a plural signification and refer distributively to "concrete individuals, though not to them *qua* individuals."[27] Rather, a common name picks out those individuals "having a given nature: 'human being' refers to Socrates and to Plato, in virtue of each of them being human."[28] Importantly, the common nature of "human being" is not in *res*, that is, in the thing (Socrates or Aristotle).

Abaelard explains that when we say Socrates and Plato are men, that does not imply that they do not agree in essence or substance, nor as existing individuals. Socrates and Plato share the *status* of being human. Boler writes that Plato and Socrates "*can* agree in having the same *status* which is itself *not a thing* but which is truly the cause of the common imposition[29] of names."[30] Status is not a matter of ontology but of the predication of terms. As Allen points out, "what language is about, what linguistic expressions pick out [*nominatio*], are *res*, things in the world, but predication is fundamentally a linguistic affair, something the logic of language handles on its own."[31] Boler agrees: "where there is no language, there are no universals."[32]

The early *Nominales* approached the problem of universals with a particular emphasis on terms or signs. The question is not whether universals exist in *res* or *ante rem*, but rather how a single term can be predicated of many. The common name "man" is a universal term or sign that refers distributively to collections of individuals who share the status of being men. It is the

[24] Normore, "Tradition of Mediaeval Nominalism," 216.
[25] John Boler, "Abailard and the Problem of Universals," *Journal of the History of Philosophy* 1 (1963), 37.
[26] Peter King and Andrew Arlig, "Peter Abelard", *The Stanford Encyclopedia of Philosophy* (Summer 2023 Edition), Edward N. Zalta & Uri Nodelman (eds.).
[27] Ibid.
[28] Ibid.
[29] In Medieval philosophy, "imposition" refers to a process of naming in which a name is assigned to a thing or concept.
[30] Boler, "Abailard and the Problem of Universals," 47.
[31] Allen, *Empiricisms*, 120.
[32] Boler, "Abailard and the Problem of Universals," 41.

logical and linguistic approach to the problem that bears continuity with the more sophisticated views of Ockham and Buridan two centuries later.

## 4. The Shift to Modes of Signification

On Stephen Tornay's account, a certain shift in the logical landscape of the middle ages provided fertile ground for Ockham's nominalism. Drawing on Carl Prantl's *History of Logic in the West* (a book that Peirce knew well), he explains that the road to Ockham's nominalism was paved by "the *Logica modernorum*, a logic presenting a reborn Phoenix-bird of long forgotten grammatical interests … a grammaticized logic and a logicized grammar" dealing "with the nexus between grammatical forms and thought-forms."[33] This new logic was first laid down by Petrus Hispanus in his influential *Summulae Logicales.* The treatise was divided into two main parts. The first part deals primarily with the *logica antiquorum* and provides a summary of Aristotelian logic as presented in the *Organon* and treated by commentators like Porphyry and Boethius. Central to the old logic was the theory of syllogism (moods, figures, etc.), the categories, the predicables, and the distinction between natural and conventional signification (as dealt with in the previous chapter's analysis of Aristotle's "On Interpretation").

The second part of the treatise presents a new logic that assigns a new and fundamental role to signification and supposition.[34] Commentators have noted that while there was no theory of supposition or signification in the 12th century, by the time of Ockham and Buridan in the 14th century it had become central to logic, and Petrus' *Summulae* together with the work of his contemporary William of Sherwood *"*records an intermediate stage in this transition."[35]

Petrus begins the *Logica modernorum* with a discussion of the properties of terms: their signification and supposition. From the vantage of Petrus' realism, a term has the property of signification and either represents a universal (like humanity) or a particular (like Socrates). A term that does not represent one or the other of these extremes has no signification whatsoever. Since naming, or imposition, is a matter of convention, signification is "the conventional representation of a thing by an utterance."[36] "Socrates" is a particular sign for Socrates, while "humanity" is a universal sign for humankind.

Signification comes before supposition, since terms must acquire their meaning before they can supposit for the things they stand for in propositional contexts. As Copenhaver, Normore, and Parsons explain, in order to secure supposition, terms must already have

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[33] Stephen Tornay, *Ockham: Studies and Selections* (La Salle, IL: Open Court Publishing Company, 1938), 2.
[34] In Medieval philosophy, "signification" refers to the meaning of a concept. Supposition, on the other hand, is slightly more technical. Basically, after a concept is endowed with signification, its term (which stands for that concept) can *supposit* for (that is, stand in the place of) the concept itself in a propositional context. So, the name "Socrates" acquires its signification (its meaning) by a process of imposition in which the name "Socrates" is assigned to our concept of Socrates. Once this signification is secured, the name or term "Socrates" can supposit for (stand in place of) the concept itself in a proposition, like "Socrates is a man". Thus, in supposition we supposit the term for the concept itself. The term *stands in place* of the concept in a propositional context.
[35] Brian Copenhaver, Calvin Normore, and Terence Parsons, *Peter of Spain: Summaries of Logic* (OXFORD: Oxford University Press, 2014), 14.
[36] Peter of Spain, *Summaries of Logic,* 42.

> acquired their significations by the original acts of imposition that establish conventional links between utterances and things—as when Adam, seeing a tree's fruit, uttered 'apple' and 'red.' [Petrus writes that] since "supposition is taking in place of something the very term that already signifies a thing …, signification comes before supposition." To *signify,* strictly speaking, is the job to be done by an utterance; to supposit is the job to be done by a *term* that already combines an utterance with a signification.[37]

In this way, a process of naming, or imposition, establishes a conventional link between a word and the particular or universal that it represents. Once this link is established, these terms can be combined to create propositions in which the terms themselves supposit for the things they represent. Importantly, Petrus regards signification and supposition as a matter of language, spoken or written. Signification is closely bound up with imposition, and the properties of terms are not applied to concepts or the intentions of the soul. It is not until Ockham that the properties of terms—signification and supposition—are extended to mental concepts too.

While Petrus does not provide a complete account of signification and supposition (there are many inadequacies in his presentation, as noted by Copenhaver, Normore, and Parsons), Ockham and Buridan overcome these shortcomings. Tornay claims that the termist school of logicians, of which Ockham was a central proponent initiated the subtle shift to consider the properties of terms. "Interest was centred now not on the right relationship to the ontological realm in order to obtain truth, but on the content of thought immanent in words, and on the function of the various forms of thought."[38] Logic was no longer interested in the modes of being, but rather in the modes of signification. By extending Petrus' account of supposition and signification, Ockham "worked out a new theory of knowledge and arrived at his nominalism."[39]

## 5. The Logical Basis of Ockham's Nominalism

Whereas Petrus' presentation does not elaborate on the properties of terms until the second part of his treatise, which deals with the new logic, Peirce writes that Ockham's *Summa Logicae* departs "from the usual method, that of writing commentaries, because he wished to present his thoughts in an order chosen by himself."[40] Ockham's own textbook divides into three parts: *On Terms*, *On Propositions*, and *On Syllogisms.* He begins his new theory of logic with an extended treatment of the most rudimentary units of logical and conceptual analysis, namely, terms. He selects this starting point because terms are the last residue of the conceptual analysis of arguments—they are quite literally the *term*inus of logical analysis. He draws on the authority of Aristotle, who held that arguments break down into propositions, and that all propositions resolve into terms (subject and predicate).[41]

We encounter here the famous triad of term, proposition, and argument. We also encounter the *compositional* interpretation of that triad: propositions are composed of terms and arguments composed of propositions. This compositional interpretation involves a reductive

[37] Copenhaver, et al., *Summaries of Logic*, 43.
[38] Tornay, *Ockham*, 3.
[39] Tornay, *Ockham*, 7.
[40] W2: 318.
[41] Aristotle, *Prior Analytics*, 24b18

thesis that breaks things down into the conceptual atoms that provide a meaningful basis for logical analysis. The aim is to establish a theory of terms and to build on this a theory of propositions and subsequently a theory of syllogism, thereby completing the termist logic that occupies the center of Ockham's nominalism and encroaches on his epistemology and his ontology.

Ockham identifies three classes of terms: written, spoken, and conceptual. Aristotle is, again, standing in the background of these distinctions. For the Philosopher:

> Words spoken are symbols or signs of affections or impressions of the soul; written words are the signs of words spoken. As writing, so also is speech not the same for all races of men. But the mental affections themselves, of which these words are primarily signs, are the same for the whole of mankind, as are also the objects of which those affections are representations or likenesses, images, copies.[42]

As Aristotle says here, spoken terms are signs of conceptual terms (impressions of the soul) and written terms are signs of spoken terms, thus subordinating speech and writing to the impressions of the soul. Whereas written and spoken terms signify by convention, conceptual terms, or mental affections, signify by nature.

Building on Aristotle, Ockham says that a written term "is part of a proposition which has been inscribed on something material and is capable of being seen by the bodily eye."[43] When I write "all conquerors are butchers" on a blackboard, for example, I inscribe a proposition, composed of a subject term (conquerors) and a predicate term (butchers) onto a material surface, which my audience encounters with their eyes (but presumably one could encounter them with tactile sensation, had I inscribed the proposition in Braille). A "spoken term," Ockham continues, "is a part of a proposition which has been uttered aloud and is capable of being heard with the bodily ear."[44] Rather than write down the proposition, "all conquerors are butchers," I could as easily have uttered it aloud, in which case my utterance would be composed of *spoken* terms.

Now, a "conceptual term is an intention or impression of the soul which signifies or consignifies something naturally and is capable of being a part of a mental proposition and of suppositing in such a proposition for the thing it signifies."[45] He explains that these "conceptual terms and the propositions composed of them" are "mental words" that "belong to no language." In fact, "they reside in the intellect alone and are incapable of being uttered aloud."[46] Conceptual terms are the atoms of thought or cognition and form the basis of Ockham's *oratio mentalis* (mental language). The mental proposition "all conquerors are butchers" is composed of two conceptual terms, "conquerors" and "butchers." These conceptual terms, if taken in themselves, have a certain natural signification and when combined in a propositional context they take on a

[42] Aristotle, *On Interpretation*, 16a4-9.
[43] William Ockham, *Ockham's Theory of Terms: Part I of the Summa Logicae*, trans. Michael J. Loux (Notre Dame, IN: University of Notre Dame Press, 1974), 49.
[44] Ibid.
[45] Ibid.
[46] Ibid.

referential function (*suppositio*).[47] In a propositional context these conceptual terms supposit for, that is, stand in the place of, the things signified by those terms.

Ockham explains that while, as Aristotle said, written and spoken terms are signs of the impressions of the soul, speech is subordinated to concepts or intentions "not because in the strict sense of 'signify' they always signify the concepts of the soul primarily and properly." Rather, he insists that "spoken words are used to signify the very things that are signified by concepts of the mind, so that a concept primarily and naturally signifies something and a spoken word signifies the same thing secondarily."[48] Written terms stand to spoken terms as spoken terms stand to conceptual terms. When I inscribe the proposition "all conquerors are butchers" on the blackboard, the written terms signify what the spoken terms would have signified were I to have uttered the proposition instead.

The Aristotelian distinction between natural and conventional signification looms large here. That the conceptual term signifies naturally while spoken and written terms signify conventionally leads Ockham to note the further difference that "we can decide to alter the signification of a spoken or written term, but no decision or agreement on the part of anyone can have the effect of altering the signification of the conceptual term."[49]

## 6. Imposition and Intention

The distinction between the natural signification of concepts and the conventional signification of spoken and written terms corresponds to that between imposition and intention. Imposition is at work at the level of written and spoken terms, while intention is at work in the *oratio mentalis*. Imposition, or the process of naming, consists in linking certain words (spoken or written) with the objects that they stand for. These links are established by convention (as we saw in Aristotle, Abaelard and Petrus). We have first impositions, like 'apple', which stand conventionally for certain species of fruit. But there are also second impositions, like 'noun,' which we can use to speak about certain first impositions ("the word 'apple' is a noun"). In this way, second impositions are about first impositions.

In similar manner, there are first and second intentions. The primitive concepts of the *oratio mentalis* are first intentions, or mental concepts, and they signify objects naturally, not by convention. My mental concept "apple" naturally signifies a certain subset of fruit. The imposition of names is used to signify conventionally the same objects that first intentions signify naturally. There are also second intentions, which are about first intentions. An example of a second intention is the term "universal." One main contention of Ockham's nominalism is to relegate universal terms to second intentions. Universals are not *in res*. They are not Platonic forms but rather second intentions. To see why this is so, we must understand how termist logic applies to the *oratio mentalis.*

Whereas Petrus Hispanus and Abaelard before him were interested in the semantics and syntax of written and spoken language and developed a logic of language that applied to spoken and written terms, it was Ockham's achievement to apply logic to the analysis of concepts and

[47] Claude Panaccio, *Ockham on Concepts* (Burlington,VT: Ashgate, 2004), 8.
[48] Ibid.
[49] Ibid.

the *oratio mentalis*. In this way, the syntactic and semantic rules governing first and second imposition apply to the analysis of first and second intentions, extending the analysis of the signification and supposition of terms to provide an analysis of the conceptual domain. Claude Panaccio argues that Ockham took more seriously "than anybody before him the idea that conceptual thought is a sort of inner discourse."[50] Concepts are therefore "not the objects of certain cognitive acts," but are "directly identified with these very acts themselves."[51] As such, they play a dual role in Ockham's logic, being "simultaneously identified both with cognitive acts and with mental signs susceptible of various referential roles in propositional contexts." [52] My concern at this point is with the view that concepts are signs and with their role in propositional contexts, as it is from this perspective that Ockham regards the syntax of termist logic as revealing the structure of cognition itself. The result constrains our understanding of universals, relations, quantity, and the other traditional categories.

## 7. The Technical Definition of the *Signum*

To appreciate Ockham's position, we need to understand his definition of the sign. In the previous chapter, I argued that the medieval understanding of the *signum* was inspired by the classic Augustinian view that a sign is a thing that "makes some other thing come to mind, besides the impression that it presents to the senses."[53] This triadic account had immense influence on medieval philosophers from Roger Bacon to Poinsot. However, in Chapter 1 I did not discuss Ockham, who introduces important modifications to this received theory.

Panaccio argues that the Augustinian definition presents a difficulty for Ockham because of its ternary structure. Recall that on the Augustinian picture we have the sign which stands for an object to a cognition. On Peirce's view (which at this point is not unlike Augustine's), the sign stands to an interpretant for an object. For Peirce, as for Augustine, the interpretant, or cognition, involves the recognition or intellectual interpretation that a sign is a sign of its object. As Ockham sees it, to treat concepts as signs would require the postulation of some third relatum, "some kind of intellectual interpretation of it [the sign] within the mind."[54] But, as Panaccio explains, Ockham "simply equates the conceptual sign with the intellectual act, leaving no room for a third item which could serve as interpretation for concepts."[55] In this way, Ockham eliminates the need for the third relatum of the triadic sign, leaving only a dyadic relation (sign-object) in its place. The act of signification is one with the act of the intellect: a concept dyadically signifies an object in a particular intellectual act. There is no further interpretation involved.

Ockham refines his view of signs by distinguishing them from the Augustinian *signum*. He acknowledges that there are two different definitions of the sign. Although he does not attribute the first to Augustine, that seems to be who he has in mind: "a sign is anything which when apprehended brings something else to cognition."[56] There is a sign, the object, and the

[50] Panaccio, *Ockham on Concepts*, 5.
[51] Panaccio, *Ockham on Concepts*, 8.
[52] Panaccio, *Ockham on Concepts*, 5.
[53] Augustine, *De Doctrina Christiana* (Oxford: Clarendon, 1995), Book II, section 1.
[54] Panaccio, *Ockham on Concepts*, 45-46.
[55] Panaccio, *Ockham on Concepts*, 46.
[56] Ockham, *Theory of Terms,* 50.

cognitive interpretation that the sign is a sign of its object. But Ockham is not, for his purposes, interested in this general definition. He seeks a narrower view of signs, one that brings the sign into the service of termist logic. He writes:

> I have not been using the term 'sign' in this wide sense. In another sense a sign is anything which (1) brings something to mind and can supposit for that thing; (2) can be added to a sign of this sort in a proposition (e.g., syncategorematic expressions, verbs and other parts of speech lacking a determinate signification); or (3) can be composed of things that are signs of either sort (e.g., propositions).[57]

As Panaccio notes, the definition is difficult to parse. One way of interpreting it is to say (still with Augustine) that, in general, a sign brings something else to cognition, but does so in three ways: by supposition as in (1), by addition as in (2), and by combination as in (3). But this will not do, because syncategorematic terms, or logical connectives, do not bring anything else to mind. "Is" or "if, then" do not stand for existing things so they cannot bring something else to cognition in the way that categorematic terms do, even though Ockham says they are a species of sign. This leads Panaccio to provide a restructured interpretation of the passage:

> A sign must: either (A) bring something else to cognition, and (B1) be able to supposit for that thing (in a proposition), or (B2) be able to be added to the signs of the precedent category within well-formed sentences in some language, or (B3) be composed in an appropriate way of signs of the previous two categories.[58]

For Panaccio, this restructured definition gets us closer to the heart of the matter. Ockham's definition of the *signum* is meant to emphasize the role of the sign in logical analysis. To this end, the definition touches both the semantic and syntactic function of signs. (A) is meant to express what Panaccio calls the sign's "referential drive," introducing the "semantical connection proper: the reference of (some) signs to objects in the world."[59] In this way, the first clause refers primarily to categorematic terms, that is, terms that have definite signification by referring to certain objects or collections of objects.

"The other three clauses in the definition," Panaccio writes, "correspond to derivative functions which all have to do with the combination of signs with each other *within sentences*."[60] These clauses emphasize the syntactic dimension of signs, that is, the ways that different signs can be combined to create propositions. So for example the proposition "all conquerors are butchers" is composed of two categorematic terms: "conquerors" and "butchers." Those categorematic terms have a semantic dimension in that they refer to certain objects, namely, numerically distinct conquerors and butchers. But they are connected and modified by the syncategorematic terms "all" and "are" so as to form a proposition and this combination involves the syntactical dimension of signs. These semantical and syntactical dimensions combine in a meaningful proposition: 'conquerors' fulfills the role of subject, while 'butchers' becomes the predicate, and they combine to express that whatever is signified by conqueror is a butcher too.

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[57] Ibid.
[58] Panaccio, *Ockham on Concepts*, 49.
[59] Panaccio, *Ockham on Concepts*, 50.
[60] Panaccio, *Ockham on Concepts*, 50-51.

We saw that Ockham is not interested solely in the syntax and semantics of written or spoken language. He thought that concepts are signs, and the technical definition of the sign just considered applies as much to concepts as to written or spoken signs. In this way, the *oratio mentalis* is itself structured by the syntactical and semantic functions of conceptual signs. Internal thought, or the first and second intentions of the soul, have "the very subject-predicate structure … that terminist logicians had been studying in spoken languages for decades before Ockham," mobilizing Ockham's definition of the *signum* "for the fine-grained description of thought." As Ockham puts it: "that thing existing in the soul which is the sign of a thing [semantic dimension] and an element out of which a mental proposition is composed [syntactic dimension] (*in the same way that a spoken proposition is composed of spoken terms*) is called by different names [intentions, rather than impositions, as we have seen]."[61] With this in view, Ockham then invokes the razor:

> But with what items in the soul are we to identify such [conceptual] signs? There are a variety of opinions here. Some say a concept is something made or fashioned by the soul. Others say that it is simply the act of understanding. This last view *gains support from the principle that one ought not postulate many items when he can get by with fewer.* Moreover, all the theoretical advantages that derive from postulating entities distinct from acts of understanding can be had without making such a distinction, *for an act of understanding can signify something and supposit for something just as well as any sign.* Therefore, there is no point in postulating anything over and above the act of understanding … [and] *we shall simply say that an intention is something in the soul which is either a sign naturally signifying something else (for which it can supposit)* [semantic dimension or categorematic term] *or a potential element in a mental proposition* [syntactical dimension or syncategorematic term].[62]

Here we see clearly Ockham's application of termist logic to the *oratio mentalis.* He treats first and second intentions as signs, and specifically as signs according to the same technical definition that he applied to first and second impositions. So by elucidating the syntactical and semantic dimensions of thought in signs we arrive at a theory of cognition. His use of the razor clarifies the precise sense in which concepts are signs. They are not created by the mind, nor are they the objects to which intentions refer. Rather, the very acts of understanding themselves are signs that stand for certain objects and are composed, following appropriate syntactical rules, to form meaningful, truth-functional mental propositions.

Panaccio presents the technical definition of the *signum* anew, now emphasizing the *functional roles* that signs play in cognition. He identifies four roles central to the function of signs: [63]

> (R1) [a sign] bringing something else to cognition,
> (R2) [a sign] suppositing for this "something else" in the context of a proposition

[61] Ockham, *Theory of Terms*, 73; my emphasis.
[62] Ockham, *Theory of Terms*, 74.
[63] In the following quotation "R" stands for "role".

> (R3) [a sign] being added in a proposition to signs satisfying both (R1) and (R2), and
> (R4) [a sign] being a well-formed combination … of signs satisfying either (R1), (R2), or (R3).[64]

These four roles account for both the semantic (R1 and R2) and syntactical (R3 and R4) functions of conceptual signs. R1 and R2 deal with the categorematic terms, which have a "definite and determinate signification."[65] The term "man" is a categorematic term because it signifies all men (R1). Categorematic terms can fulfil the role of subject or predicate in propositions, and in this way the concepts supposit for the things themselves in propositional contexts (R2). R3 deals with syncategorematic terms, which Ockham says do not have a determinate signification, nor do they "signify anything distinct from what is signified by categorematic terms."[66] That is to say, syncategorematic terms like the copula or logical connectives do not themselves stand for anything. Their function is to bring categorematic terms together so as to create truth-functional propositions (as in R4).

The four functional roles involved in the technical definition of the *signum*, as applied to the *oratio mentalis*, involve a special order of interpretation. Panaccio carefully spells out the view that, while Ockham's technical definition of the *signum* emphasizes propositional combinations of terms, his theory of conceptual meaning has an *atomistic basis*. R1, or the function of a sign to bring something else to cognition, comes prior to the combination of conceptual terms in complex mental propositions. We saw this already in Petrus Hispanus, who thought that signification is prior to supposition. For Petrus a process of naming establishes conventional links between words and the things they signify. It is only once imposition is complete and signification is settled that these terms can then supposit in spoken or written propositional contexts. For Ockham, who is interested in applying this logic to the intentions of the soul, "simple concepts … receive their signification one by one, on the basis of the intuitive acts that originally triggered their formation."[67]

## 8. Intuitive Cognition and the Formation of Concepts

Ockham's account of intuitive cognition incorporates an epistemic story about where the meaning of concepts comes from. Spade explains that intuitive cognition involves immediate acquaintance with some item existing in the ontology and "*naturally* causes in the mind a number of true *contingent* judgements about the external thing(s) that caused this intuitive cognition; for example, that this thing exists, or that it is white, and so on."[68] The concept "conqueror" is acquired on the basis of intuitive cognition by immediate acquaintance with an individual conqueror. This intuitive cognition is followed by the formulation of a number of judgments, like "this conqueror exists" and "this conqueror is brutal." Our concepts come to signify by virtue of these intuitive acts of apprehension and these intuitive acts bring along a number of judgments about that concept. The formation of any concept is a result of intuitive

[64] Panaccio, *Ockham on Concepts*, 52.
[65] Ockham, *Theory of Terms*, 55.
[66] Ibid.
[67] Panaccio, *Ockham on Concepts*, 53.
[68] Paul Vincent Spade and Claude Panaccio, "William of Ockham", *The Stanford Encyclopedia of Philosophy* (Spring 2019 Edition).

cognition, and it is only after concepts have been formed through this process that they can be combined in propositional contexts.[69]

Simple concepts, or conceptual terms, acquire their meaning via a process of intuitive cognition (satisfying R1) *prior to* their combination into propositions (R2—R3). These simple concepts are, of course, the categorematic terms with their direct and determinate signification. They acquire this signification naturally by virtue of intuitive cognition. Panaccio writes that "categorematic terms are the fundamental stuff out of which thought and language are made in Ockham's semantics, and (R1) identifies their primary function: that of calling something else to mind." In this way, he explains:

> A mental judgement presupposes the formation of a mental proposition, and mental propositions, in so far as they are complex arrangements of terms, presuppose that their categorematic components have already been endowed with cognitive signification: they should already, independently of any proposition, refer the mind to some objects in the world.[70]

The formation of a conceptual sign *x* via intuitive cognition usually leads to the further formation of the simple proposition, "this is an x." But terms themselves must acquire their signification prior to suppositing in such propositions. That is, the meaning of our concept must be supplied before the term can stand in place of that concept in a propositional context. Cognition, for Ockham, involves propositions, combinations of propositions, "*or an element capable of occurring within a proposition.*"[71] The technical definition of the *signum* in conjunction with the syntactical and semantic dimensions of termist logic provide the basis for his understanding of the *oratio mentalis.* Since Ockham's nominalism is usually supposed to be the view that "regards concepts or terms as mere *subjective representations* for externally existing things,"[72] the technical definition of the *signum* and its functional roles provide the logico-semiotic basis for nominalism.

Ockham's theory of signs and his termist logic are the essence of his nominalism. We saw that the method of logical analysis Ockham devises involves a classification of terms, both mental and spoken, and the various ways they function in propositional contexts. Central to this project is his view that concepts are signs susceptible to the same forms of logical analysis as written and spoken signs. He deploys the technical definition of the *signum* to elucidate the structure of cognition, emphasizing how conceptual signs function in propositional contexts both semantically and syntactically.

At the bottom of this theory is a conceptual atomism: the structure of thought, like the structure of propositions, decomposes into terms, which are the fundamental units of spoken and mental language, even though not every term has determinate signification. Syncategorematic terms, for instance, do not signify (that is, bring to cognition) anything beyond what the categorematic terms already signify. Instead, they serve the syntactical role of combining these categorematic terms into truth-functional propositions. Even general concepts like "man" or

[69] John Boler, "Ockham on Intuitive Cognition," *Journal of the History of Philosophy* 11, no. 1, (1973): 95-106.
[70] Panaccio, *Ockham on Concepts*, 54.
[71] Ibid.
[72] Tornay, *Ockham*, 19.

"horse" are analyzed into collections of singular demonstrative terms like "Socrates," "this man" and "that man," meaning that their extension is distributed among a collection of particulars. The general concept "man" "is nothing but the intellectual act by which all singular [men] are simultaneously represented in a given mind."[73] There is no common "universal" property uniting these numerically distinct individuals. This reductive thesis cuts deep and the crux of Ockham's nominalism lies in the way this theory of terms constrains his ontology.

## 9. Ockham's Nominalism

Ockham never specifically describes his theory as nominalism in any of his writings. But when King Louis XI condemned nominalism in 1473, he traced the doctrine back to Ockham. In the 15th century, a group of Parisian philosophers reacted to the king's decree, and in their defence of nominalism they laid down what later tradition recognizes as the doctrine's central theses. Strikingly, their defence does not revolve around the problem of universals but rather emphasizes the nominalist view with respect to the sign's relation to the world:

> Those doctors are called nominalists (*nominalistae*) who do not multiply things that are principally signified by terms according to the multiplication of terms. Realists, on the other hand, are those who contend that things are multiplied with the multiplication of terms. . . . Also, nominalists are called those who apply diligence and study to know all the properties of terms from which depend the truth and falsity of speech, and without which there can be no perfect judgment of the truth and falsity of propositions.[74]

The second claim confirms the story I have been telling, namely, that nominalists like Ockham take care to provide a proper classification of terms because terms are the *most important* elements of the analysis of propositions; they are, indeed, the atoms of thought. The first claim summarizes the nominalist position about the relation between signs and the things they stand for. The realists maintain that every category of terms must have a corresponding category in the world, so that a multiplication of terms involves a multiplication of entities in the ontology. The nominalists, however, believe that not every term must refer to some existing thing. We saw this already with syncategorematic terms. The copula or the logical connectives are terms or signs but they do not signify any additional objects than those already signified by categorematic terms. The nominalists deny that "a distinct category of things in the world corresponds to every distinct category of terms in language."[75] So while most categorematic terms have a determinate signification and bring to mind certain objects, there is not a corresponding category of "syncategorematic things" in the ontology. As Normore summarizes the argument, nominalists believe that there are more truths than truth-makers and more true sentences than truths.[76]

In ontology, Ockham admits only singular substances and singular qualities. Normore shows that Ockham's method in ontology "depends on a recipe which is inextricably connected

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[73] Claude Panaccio, *Ockham's Nominalism: A Philosophical Introduction* (New York,: Oxford University Press, 2023), CH1.P3 (as displayed in the EBook copy available through Oxford University Press.)
[74] In Claude Panaccio, *Ockham's Nominalism*, CH1.P11 (as displayed in the EBook copy available through Oxford University Press.)
[75] Panaccio, *Ockham's Nominalism,* CH1.P12.
[76] Normore, "Medieval Nominalism," 207.

with the philosophy of language."[77] The heart of this nominalism, as Normore understands it, is a philosophical program that takes the logical analysis of terms to constrain the sorts of entities admitted in the ontology. The program is this:

> First divide the expressions of your language [spoken or mental] into those which purport to pick things out (the categorematic expressions) and those which do not (the syncategoremic expressions). Then see whether some of those which purport to pick things out have nominal definitions and so can be eliminated without decreasing the expressive power of the language (these expressions Ockham calls connotative). Finally admit into your ontology whatever an undefinable (or absolute) term purports to pick out.[78]

Here we see Ockham's classification of terms deployed to constrain his ontology. Since syncategorematic terms do not pick out anything, they do not play a role in determining the ontology; only those categorematic terms that signify definitely and determinately do. But categorematic terms themselves can be either connotative or absolute, and Normore contends that Ockham admits *only* those things picked out by absolute terms in the ontology.

## 10. Absolute and Connotative Terms

The difference between connotative and absolute terms has been a stumbling block for scholars of Ockham.[79] My aim is not to weigh in on this problem, but only to observe how the distinction functions in Normore's account of Ockham's nominalist program. An absolute term, roughly speaking, is one whose signification consists *primarily* "in its having certain things in its extension."[80] Genus and species terms are examples of absolute terms because for Ockham the primary meaning of the conceptual term "man" is all the individual men who fall under its extension. For Ockham, absolute terms have *real definitions* that are "supposed to reveal the essential metaphysical structure of what [they define]."[81] Connotative terms, on the other hand, not only signify *primarily*, with respect to their extension, but also secondarily with respect to their connotation. Besides its extension, a connotative term "makes reference to something else."[82] A term connotes when "any correct explanation of the understood meaning of the term would note that a certain proposition (not involving the connotative term itself) is true of whatever the term itself is true of."[83] For example, "father" is a connotative term because it has what Ockham calls a nominal definition: a father is "a male who has sired offspring." Now, "father" is a connotative term precisely because whatever is true of the term "father" is true of the proposition "*x* is a male who has sired offspring" (this proposition, importantly, does not itself contain the term "father"). The primary signification of "father" is the set of all those males who have sired offspring, and the secondary signification, or connotation, are the offspring.

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[77] Normore, "Medieval Nominalism," 212.
[78] Ibid.
[79] Spade and Panaccio, "William of Ockham," 3.3.
[80] Richard Bosley and Martin Tweedale, *Basic Issues in Medieval Philosophy* (Peterborough, ON: Broadview Press, 2003), 810.
[81] Spade and Panaccio, "William of Ockham", 3.3.
[82] Bosley and Tweedale, *Basic Issues*, 813.
[83] Ibid.

As I understand Normore's account, connotative terms are not admitted into the ontology because they have only nominal definitions. This means that the term "father" does not add any expressive power to the language precisely because whatever is true of the term "father" is true of the nominal definition "male who has sired offspring." Certain combinations of absolute terms already account for whatever the connotative terms purport to pick out. Only the category of absolute terms has a corresponding category of things in the world. Since the *res* that these absolute terms pick out are the truth-makers of Ockham's ontology, then, as Normore contends, it follows that there are more truths than truth-makers and more true sentences than truths.

Ockham's logic begins with a careful consideration of terms in general. Through a process of analysis, elucidating the classifications of terms, their syntactical and semantic dimensions, and their signification and supposition, he arrives at an understanding of absolute terms. The crux of his nominalism is to let *this* analysis of the properties of terms determine the basic units of the ontology.[84] In this way, logical analysis permits in the ontology only those *res* that absolute terms pick out. "Reality in its inmost being," Tornay writes, "is concrete and individual."[85] It is exhausted by the *res* that absolute terms pick out. The core of Ockham's nominalism therefore has nothing to do with universals and everything to do with the proper execution of this program of decompositional analysis. Indeed, the position that Ockham takes with respect to universals, much like the position he takes with respect to a variety of other terms (such as relation and quantity) is a corollary of this program for termist logic.

## 11. The Program Applied to Universals

To grasp the force of the nominalist program, I will show how it applies to the familiar problem of universals. It is only after Ockham provides a classification of terms in the *Summa* that he turns to this problem. First he clarifies what he means by "particular:" "a particular is that which is one and not many."[86] This is distinguished from another meaning of "particular:" "that which is one and not many *and* which cannot function as the sign of many."[87] The difference is subtle but important. In the first sense (the one that Ockham favours), a universal sign (mental, written, or spoken) can be a particular while at the same time standing for many. My concept of "man" is particular in the sense that it is distinct from my concept of "horse," but as a sign it stands for many individual men (it brings to mind Socrates, Plato, and my mother). Utilizing the first sense of "particular," Ockham says that universals are numerically one in that they are distinct concepts in the mind, while also saying that as universals they are mere signs that stand

[84] My claim here is that Ockham's nominalism in ontology is informed by his logical doctrines, particularly his logic of terms, and recent work by Normore, Allen, and Panaccio supports this view. However, in the previous chapter I defend the view that Peirce's logical doctrines precede his categorical investigations, and in the next chapter we will see that both mathematics and logic inform Peircean metaphysics. If the crux of nominalism is to let logic dictate metaphysics, then is Peirce not a nominalist by the same token? To clarify, the problem with nominalism is *not* that logic informs metaphysics in a general sense, the problem is with the particular kind of logical analysis that the nominalist deploys—an analysis that bottoms out in *absolute terms* that stand for absolute individuals. By the end of the dissertation, we will have traced Peirce's effort to amplify logic by introducing relations. This amplified logic allows us to arrive at a different kind of metaphysics—one not dominated by the individuals that absolute terms stand for.

[85] Tornay, *Ockham*, 27.

[86] Ockham, *Theory of Terms*, 77.

[87] Ockham, *Theory of Terms*, 78.

for many things. Ockham writes that "every universal is one particular thing and . . . is not a universal except in its signification, in its signifying many things."[88]

We can also distinguish two kinds of universal terms, namely, those that are signs by convention and those that are signs by nature. In general, a universal is a term or sign that can stand for many. The difference, of course, is between treating universals as words (written or spoken terms) and treating them as intentions of the soul (conceptual terms). We saw earlier that Abaelard and Rocelin took universals to be words, written or spoken, that refer to numerically distinct individuals. In this sense, universals are merely conventional signs. Through a process of naming, or imposition, the word "man" becomes a common name that stands for many particular men: "it is a sign conventionally appointed for the signification of many things."[89] But for Ockham, who applies the termist logic to conceptual terms too, this approach also has implications for his *oratio mentalis*. He writes that as concepts (intentions of the soul), universals signify by nature, explaining that "by nature they are signs predicable of many in the same way that the smoke is by nature a sign of fire; weeping, a sign of grief; and laughter, a sign of internal joy."[90] Being concepts of this sort, it follows that nothing universal exists outside of the mind. The existence and significance of universal terms depend entirely on their being thought (making them *ens rationis*) and it would be absurd to think they are found in substances existing outside of the mind.

Ockham leverages a number of original arguments in favour of this view and calls on the authority of Avicenna and Aristotle for support.[91] At the basis of these arguments is the view that universals cannot be substances because substances cannot be predicated of anything. In this way, substances are particular in the second sense of "particular" noted above: a substance is one and not many and, *crucially*, is not a sign that signifies many: "that substance is not capable of functioning as a predicate is clear; for it were, it would follow that a proposition would be composed of particular substances; and, consequently, the subject would be in Rome and the predicate in England, which is absurd."[92] Propositions can only be composed of spoken, written, or conceptual terms, and since predication occurs only within propositional contexts, it follows that universals cannot be substances. The only way to make sense of universality, for Ockham, is through the termist strategy of treating universals as mere signs predicable of many.

Remember that Ockham's nominalist program admits in its ontology only those *res* picked out by absolute terms. Ultimately, those *res* are existing, numerically distinct individuals; they are not signs but rather the things picked out by signs. As such, they cannot be predicated of anything. As Barry Allen puts it, "only singular beings and their singular qualities are physically real; only they exist to be referred to, whether naturally by concepts, or conventionally by words."[93] We end up with a world of absolute individuals. Universals are not a part of that world. As Ockham forcefully asserts:

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[88] Ibid.
[89] Ockham, *Theory of Terms*, 79.
[90] Ibid.
[91] See Ockham, *Theory of Terms*, 79-81.
[92] Ockham, *Theory of Terms*, 82.
[93] Allen, *Empiricisms*, 124.

> Every universal is an intention of the mind which, on the most probable account, is identical with the act of understanding. Thus, it is said that the act of understanding by which I grasp men is a natural sign of men in the same way that weeping is a natural sign of grief. It is a natural sign such that it can stand for men in mental propositions in the same way that a spoken word can stand for things in spoken propositions.[94]

In the proposition "All men are mortal," Allen explains, "the term 'man' supposits for any individual man, and does not refer to something common among all men."[95] Here, "man" is nothing more than a singular mental term capable of standing for many. But the only reality to which it ultimately refers are the particular individual men that it can supposit for in propositional contexts.

Building on this account, Panaccio says that general terms, or universals, do not refer to "extra objects in addition to the things that are referred to by non-general [terms]." Instead, they refer to "a basic category of referential linguistic items that are altogether singular." [96] Indeed, "only those things that can be designated by a demonstrative pronoun should be accepted in the ontology in order to give a correct account of general terms." [97] This is consistent with Panaccio's earlier account of Ockham's nominalism and its relation to his view of concepts as signs since as he observes, Ockham reinterprets "an apparent reference to a single universal [such as 'man' or 'humanity'] into a distributive reference to several singular entities at once."[98] The term "man" does not, therefore, refer to something abstract or common to all men. It extends across the particular men to which the concept refers and can supposit for *any* of those men in mental propositions. Thus we see that Ockham's nominalism with respect to universals boils down to the claim that "a correct account of general terms does not require the ontological admission of anything other than singular objects capable in principle of being directly and independently intuited by some mind or other."[99]

## 12. The Kernel of Nominalism

We have come full circle. Ockham's is "a world of completely separate singulars any of which can exist apart from any other, and none have anything real in common."[100] This ontology is constrained by the application of Ockham's nominalist program, which as Normore explains is intimately connected to his theory of terms. Ockham understands general concepts to be formed through a process of intuitive cognition, which involves the immediate apprehension of an existing singular. Through intuitive cognition, the "intellect evidently cognizes a thing's existence and immediately judges it to exist."[101] There is, as Peirce sometimes puts it, no "man" (general concept) unless there is some man (existing particular). These concepts, and the intellectual acts they are identified with, are signs capable of suppositing in propositional

[94] Ockham, *Theory of Terms*, 81.
[95] Allen, *Empiricisms*, 123.
[96] Panaccio, *Ockham's Nominalism*, CH1.P25.
[97] Ibid.
[98] Panaccio, *Ockham on Concepts*, 56.
[99] Panaccio, *Ockham's Nominalism*, CH1.P26.
[100] Allen, *Empiricisms,* 124.
[101] Allen, *Empiricisms,* 134.

contexts. When I say "this is a man" and "that is a man," the concept "man" is predicated of "this" and "that" individual. Universality is solely a matter of predication; universals are not real entities. But it is important to understand that they are not psychological entities either. Predication can only occur in the context of propositions, which means that universals are primarily logical beings.[102] A universal is nothing more than a conceptual sign that serves the semantic function of referring to certain collections of singular individuals and is capable of suppositing for those individuals in well-formed propositional contexts properly governed by the syntax of the *signum.* Ockham's nominalism systematizes all of these connected ontological, epistemological, and logical commitments.

We can appreciate why Panaccio contends that it would be best to treat "nominalism" as a relational term. One can be a nominalist in relation to general terms, in relation to quantitative terms, in relation to relational terms, and so on. This is why Normore insists that thinking of nominalism *primarily* as a view about universals distorts our understanding of its central tendency. On Allen's account, nominalism has a deeper philosophical program: "a sweeping relegation of all these putatively ontological categories of being [universal, individual, essence, existence, actual, potential] to the level of formal, logical categories of predication [abstract, concrete, connotative, absolute, oblique]."[103] For Allen,

> the kernel of nominalism, from Abelard to Ockham and Buridan, is the argument that what has been mistaken for modes of being are properly modes of predication. The varieties of being are varieties of signs, syntactic varieties, carried by matter but not diversified according to matter.[104]

These signs are "creatures of syntactic convention without physical reality, existing only because we think."[105] What remains constant is the termist method fashioned to reason about each type of term (general, quantitative, relational, etc.). The method culminates in an ontology of particulars, takes only those particulars to be real, and accounts for everything else through a fine-grained analysis of signs. Crucially, these signs are considered *mere* signs whose being depends not on anything real but solely on their being thought.

The suggestion that the crux of nominalism is a special understanding of the relationship between signs and the world is fruitful for appreciating the continuity between the early nominalism of Abelard and the later nominalism of Ockham. [106] It also provides an interesting way to understand nominalism as involving a deeper philosophical thesis than the familiar story about universals. But it raises a question. Is *any* attempt to center philosophy around a theory of signs rather than a substantial, realistic ontology destined to veer into some version of the nominalistic doctrine that refuses to countenance as real anything that is not particular? As we saw in the previous chapter, the architecture of Peirce's philosophy is semiotic through and through. But Peirce is also a staunch critic of nominalism, and his theory of signs is consistent with a robust realism. If Ockham's semiotics is nominalistic and Peirce's realistic, wherein lies

[102] Tornay, *Ockham*, 22.
[103] Allen, *Empiricisms*, 122.
[104] Allen, *Empiricisms*, 123-24.
[105] Allen, *Empiricisms*, 124.
[106] Normore, "Medieval Nominalism," 216; Allen, *Empiricisms*, 123.

the difference between their views? My argument is that the difference is best understood through the different standpoints they take with respect to the meaning of reality.

In the second part of this chapter, I return to Peirce's work and spell out his early criticism of Ockham's nominalism. The problem Peirce finds in Ockham's nominalism is the claim that reality is exhausted by the totality of existing singulars. By exposing this problem, Peirce arrives at an innovative conception of reality, one that allows him to say that the triadic semiotic relations we considered in Chapter 1 are real, that is, have a reality independent of what you, I, or anyone else thinks about them. As I show, this outcome is subtly but significantly different from Ockham's view that these signs are merely creatures of *oratio mentalis*. Once we see how Peirce's semeiotic realism responds to Ockham's nominalism, a number of other interesting differences come into view with respect to the way each approaches the logic of signs.

## PART TWO

## Peirce's Critique of Ockham's Nominalism and the Motivation for Semeiotic Realism

### 13. Turning to Peirce

Having inquired into the history of nominalism I turn to Peirce's plan for defeating it. His criticism centers around two interconnected issues: the nominalist commitment to an incognizable reality, and the termist treatment of the logic of signs. Peirce attacks nominalism on two fronts: (1) by showing that the ontological commitment begs the question as to the nature of reality, and (2) by exposing the shortcomings of termist logic. I argue that these shortcomings result from Ockham's technical definition of the *signum*, which from Peirce's point of view razes the interpretant and destroys the representative relation. The consequence of Ockham's argument is grave because it leads to an inadequate understanding not only of representation but of logic itself considered as semeiotic.

I begin with the nominalist commitment to an incognizable reality. To this end, I first provide Peirce's assessment of the nominalist controversy and show that as he sees it the issue boils down to the differing standpoints each side takes with respect to their shared definition of reality. I then turn to the critique of Ockham's view of reality and show why Peirce believes it to be untenable. The critique leads him to accept Duns Scotus' alternative conception of reality, which Peirce uses to establish the reality of signs. As we shall see, the difference between treating signs as *real* relations and treating them as *mere* signs is best understood in terms of the differing standpoints that divide nominalists and realists on how best to understand what we say when we call something real. Finally, I compare Ockham's view of conceptual signs to Peirce's triadic sign relation, and then turn to the termist treatment of the logic of signs to show why Ockham's view of signs creates problems for a philosophical understanding of logic.

### 14. The Neutral Definition of Reality

In 1869, Peirce gave a series of lectures at Harvard expounding the history of British logic. He says that the most striking characteristic of the British logical thinkers

> is their nominalist tendency.… So much so that in England and in England alone are there many thinkers more distinguished at this day as being nominalistic than as holding any other doctrines. William of Ockham or Oakum, an Englishman, is beyond question the greatest nominalist that ever lived; while Duns Scotus, another British name, it is equally certain is the subtlest advocate of the opposite opinion. These two men … are decidedly the greatest speculative minds of the middle ages, as well as two of the profoundest metaphysicians that ever lived.[107]

Two years later, in his review of Fraser's *Works of George Berkeley*, Peirce claims that the realism of Duns Scotus is "separated from nominalism only by the division of a hair."[108] The trouble is sorting out just what this subtle difference amounts to. Peirce understands that the difference between nominalism and realism is not exhausted by a different opinion about universals. Normore maintains that "what is at stake … is nothing less than the question of the nature of reality itself."[109] In the same spirit, Peirce writes that "we have only to stop and consider a moment what was meant by the word *real*, when the whole issue [over universals] becomes apparent."[110]

Max Fisch summarizes Peirce's treatment of the controversy, explaining that Peirce begins with "a neutral definition" of reality: "the real is that which is not whatever we happen to think it, but is unaffected by what we may think of it."[111] This *definition* of reality has its basis in *familiarity*. Peirce writes:

> Objects are divided into figments, dreams, etc., on the one hand, and realities on the other. The former are those which exist only inasmuch as you or I or some man imagines them; the latter are those which have an existence independent of your mind or mine or that of any number of persons.[112]

Even children, for example, have some familiarity with the difference between fiction and reality, that is, between that which is solely a product of their thinking and that which is seemingly unaffected by their thought. When playing make believe children can distinguish between their own fantasies (pretending they are knights in shining armour, say) and the reality that they are swinging sticks in the schoolyard. Over time, this initial familiarity crystalizes in a *definition* of reality, namely, that the real is that which is unaffected by what we think of it.

Interestingly, Peirce believes that *both* the nominalist and the realist accept such a definition. Where they differ is not with respect to the *definition* of reality but rather the standpoint they take with respect to this definition. Peirce observes that there are "two widely separated points of view, from which *reality*, as just defined, may be regarded."[113] To understand the division of a hair that separates Ockham and Scotus, we have to tease out the differences

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[107] W2: 310-11.
[108] EP1: 87.
[109] Normore, "Medieval Nominalism," 207.
[110] EP2: 88.
[111] W2: 467; Max Fisch, *Peirce, Semeiotic, and Pragmatism* (Bloomington: Indiana University Press, 1986), 188.
[112] W2: 467
[113] EP1: 88.

between these opposing points of view, which Peirce does by explaining their different answers to the question: "Where is the real, the thing independent of how we think it, to be found?"[114]

## 15. The Nominalist Point of View

The nominalist answers this question in a way that *seems* familiar. Where is the real to be found? Obviously in that which is *entirely* independent of thought, in a world of existing singulars completely unaffected by what we may think of them. "There must be such a thing," Peirce muses, "for we find our opinions constrained; there is something, therefore, which influences our thoughts, and is not created by them."[115] Peirce describes the nominalist point of view as follows:

> We have, it is true, nothing immediately present to us but thoughts. Those thoughts, however, have been caused by sensations, and those sensations are *constrained by something out of the mind*. This *thing out of the mind*, which directly influences sensation, and through sensation thought, because it *is* out of the mind, is independent of how we think it, and is, in short, the real.[116]

The nominalist accepts this neutral definition of reality as that which is unaffected by what we think of it, then supposes that the real must therefore be something entirely independent from thought. There is, for the nominalist, a thing out of the mind, a *res extra animam*, that constrains our sensations and influences our thought. The nominalist point of view is that this *res extra animam*, the existing singulars, exhaust our understanding of reality. Reality becomes synonymous with actual, physical existence.

It is easy to see how this understanding of the real influences the nominalist position with respect to the problem of universals. Peirce writes:

> For, while from this standpoint it may be admitted to be true as a rough statement that one man is like another, the exact sense being that the realities external to the mind produce sensations which may be embraced under one conception, yet it can by no means be admitted that the two real men have really anything in common, for *to say that they are both men is only to say that the one mental term or thought-sign "man" stands indifferently for either of the sensible objects caused by the two external realities; so that not even the two sensations have in themselves anything in common, and far less is it to be inferred that the external realities have.*[117]

If we take reality to be exhausted by actual physical existence, then the real is external to and unaffected by thought. Two different men are alike *only* insofar as their existence produces sensations that can be described as falling under the same predicate. Our conception of "man," however, is only a sign that supposits for the sensible objects of the two individual men that the sign picks out. As a sign, this conception has no external reality, depending solely on its being

[114] W2: 468.
[115] Ibid.
[116] Ibid.
[117] W2: 468

thought. The different sensations associated with the two men do not have anything in common, so we cannot infer that the two men themselves have anything in common. The general conception, or sign, is therefore distributed over discrete and singular cognitive acts. Nominalism, as Peirce puts it elsewhere, is "precisely the doctrine that the universe is a heap of sand whose grains have nothing to do with one another."[118] Since, as we saw earlier, universals are mere signs and signs do not have an external reality, universals are not real. The nominalist errs by equating reality with physical existence.

## 16. The Realist Point of View

While the nominalists accept the provisional definition of reality I mentioned, they take the further step of supposing that reality is entirely independent from (or as I have been saying, external to) thought, thereby reducing reality to an actually existing *res extra animam*. The realist accepts the same neutral definition but arrives at a standpoint which, "if less familiar, is even more natural and obvious."[119] The realist, Peirce claims, recognizes that "all human thought and opinion contains an arbitrary, accidental element, dependent on the limitations in circumstances, power, and bent of the individual."[120] Despite this, however, realists hold that "human opinion universally tends in the long run to a definite form, which is the truth."[121]

To illustrate this point, Peirce considers the difference between a blind man and a deaf man who both witness the same murder. The one hears the shot fired and the victim cry, while the other sees the entire spectacle but hears nothing. Peirce explains that while "their sensations are affected in the highest degree with their individual peculiarities," ultimately "their final conclusions, the thought the remotest from sense, will be identical and free from the one-sidedness of their idiosyncrasies."[122] As Peirce puts it, "to assert that there are external things which can be known only as exerting a power on our sense, is nothing different from asserting that there is a general *drift* in the history of human thought which will lead it to one general agreement, one catholic consent."[123] For the realist, reality is not exhausted by actual physical things but is found in the opinion that *would* stand in the long run were we to push inquiry to the limit. It is in this sense that the two witnesses ultimately converge in their understanding of the murder despite the initial differences owing to their sensory idiosyncrasies.

The upshot for Peirce is that this standpoint is consistent with the neutral definition that both nominalist and realist accept. The nominalist assumes that the real is found in a *res extra animam*, though notice that the neutral definition does not *necessarily* lead to the nominalist point of view. The neutral definition does not require that reality be *entirely* independent from thought, only independent from what any particular person thinks. For the realist, however, "this final opinion … is independent, ***not*** *indeed of thought in general*, **but** of *all that is arbitrary and individual in thought*; [and] is quite independent of how you, or I, or any number of men think.

[118] SWS: 283.
[119] W2: 468.
[120] Ibid.
[121] Ibid.
[122] W2: 468-69.
[123] W2: 469.

*Everything, therefore, which will be thought to exist in the final opinion is real, and nothing else.*"[124]

The significance of this perspective—the division of a hair—is that reality is independent of particular *thoughts* but not of thought in general. Peirce clarifies in a letter to Victoria Welby that "the Real is such that whatever is true of it is not true because some individual person's thought or some individual group of persons' thought attributes its predicate to its subject, but is true, no matter what any person or group of persons may think about it."[125] This standpoint, while opposed to nominalism, is still compatible with the neutral definition of reality. While the nominalist takes the standpoint that the real is found in a *res extra animam*, the realist maintains instead that it is found in thought-in-general, that is, in the final opinion that *would obtain* were we to reason about the external realities through a communal scientific enterprise. Reality, then, "is the normal product of mental action" and not "the incognizable cause of it."[126] The real is independent of all that is particular to an individual's train of thought, but not of thought entirely. Generality is real since "general conceptions enter into all judgments and therefore into true opinions."[127]

It is helpful to draw on Peirce's account from the *Cognition Series,* written three years earlier than the Berkeley Review. There Peirce takes his first decisive step toward the scholastic realism of Duns Scotus:[128]

> And what do we mean by the real? It is a conception which we must first have had when we discovered that there was an unreal, an illusion; that is, when we first corrected ourselves. Now the distinction for which alone this fact logically called, was between an *ens* [being] relative to private inward determinations, to the negations belonging to idiosyncrasy, and an *ens* [being] such as would stand in the long run. The real, then, is that which, sooner or later, information and reasoning would finally result in, and which is therefore independent of the vagaries of me and you. Thus, the very origin of the conception of reality shows that this conception essentially involves the notion of a COMMUNITY, without definite limits, and capable of an indefinite increase of knowledge. And so those two series of cognitions—the real and the unreal—consist of those which, at a time sufficiently future, the community will always continue to reaffirm; and of those which, under the same conditions, will ever after be denied.… Consequently, that which is thought in these cognitions is the real, as it really is.[129]

He goes on to explain that we confront the idea of reality whenever we correct ourselves, which evinces our awareness of the opposite of reality, namely, error, illusion, or figment. There are two sorts of cognition. On the one hand, there are cognitions that depend on our private determinations. These are idiosyncratic, peculiar to an individual's train of thought, and are,

[124] EP1: 90; my emphasis.
[125] SS: 116.
[126] W2: 471.
[127] W2: 470.
[128] W2: 239; Mayorga, *Realism*, 83; Fisch, *Peirce, Semeiotic, and Pragmatism*, 187.
[129] W2: 239.

strictly speaking, illusions. On the other hand, there are cognitions that are not determined by any individual's thought but are such as would stand in the long run and be reaffirmed by a community of inquirers. Cognitions of this second sort are real for Peirce, as their being is not constrained by the "vagaries of me and you." The second stream of cognitions has a reality that is independent not of thought entirely but of what anyone in particular may think at a given time. Reality, for Peirce, is tied to generality—to thought-in-general—and generality is opposed to what is particular, idiosyncratic, or illusionary.

This theory of reality may seem strange at first glance but Peirce assures us that it is the more *realistic* standpoint, even a "highly practical and common-sense position."[130] It is also "fatal to the idea of a thing in itself,—a thing existing independent of all relation to the mind's conception of it." [131] This does not mean there is nothing external to thought. There is, indeed, an external permanence that impinges on our senses and the appearances of sense are signs of that reality, though "the realities which they represent," Peirce says, "would not be the unknowable cause of sensation, but *noumena,* or intelligible conceptions which are the last products of the mental action which is set in motion by sensation."[132] We see, then, that in Peirce's philosophy there is no chasm between the knower and the known. The realist does not "sunder existence out of the mind and being in the mind as two wholly improportionable modes."[133] There is continuity between the mode of *ens rationis* and the mode of *ens reale.*

> When a thing is in such relation to the individual mind that that mind cognizes it, it is in the mind; and its being so in the mind will not in the least diminish its external existence. For [a realist] does not think of the mind as a receptacle, which if a thing is in, it ceases to be out of. *To make a distinction between the true conception of a thing and the thing itself is, he will say, only to regard one and the same thing from two different points of view*; for the immediate object of thought in a true judgment *is* the reality. The realist will, therefore, believe in the objectivity of all necessary conceptions, space, time, *relation*, cause, and the like.[134]

Ultimately, reality is not exhausted by a *res extra animam*, that is, by something entirely outside the mind. Our conception of reality is such as would stand in the final opinion and the object represented *in* that opinion is the real.

We can see why, unlike the nominalist, the realist is willing to admit the reality of universals. To the realist, "a thing in the general [sic] is as real as in the concrete."[135] Our universal conception of whiteness is not merely limited to thought-in-particular, but extends to thought-in-general. Peirce says:

> It is perfectly true that all white things have whiteness in them, for that is only saying, in another form of words, that all white things are white; but since it is

[130] W2: 471.
[131] W2: 470.
[132] Ibid.
[133] W2: 471
[134] Ibid., my emphasis.
[135] W2: 470.

> true that real things possess whiteness, whiteness is real. *It is a real which only exists by virtue of an act of thought knowing it, but that thought is not an arbitrary or accidental one dependent on any idiosyncrasies, but one which will hold in the final opinion*.[136]

The nominalist reduces reality to a *res extra animam* and, as a result, is led to the position that universals are not real. Realists, on the other hand, say that while universality is primarily understood in relation to the mind, its reality would be confirmed in the final opinion.

As Peirce put it later, while both the nominalist and the realist accept that universals are signs, their difference is that nominalists say universals are *mere* signs and realists understand them to be *real* signs. To the nominalist, Peirce writes, "the general, that to which no collection of individual cases can be adequate to represent, is not only the nature of a name, or symbol, which nobody [not even the realist] questions or ever did, but is also a *figment*, it is what somebody has created it to be."[137] To the realist, however, general signs *are* real: "they are not *actual*; they do not *exist*; but they are not figments"; they are relative to a mind, but that very relation itself "is not what I may think it to be but what it is, whether I think so or not."[138]

From a logical perspective, it is not simply that the concept man is predicated of this or that existing singular in the context of a mental language ultimately decomposing into singular cognitive acts. This would destroy the generality of the predicate by *enumerating* its extension and saying that this enumeration exhausts its meaning. Rather, the predicate "____is a man" has a generality that is not exhausted by thought-in-particular or by any particular proposition but *would* apply to any subject that comes within its scope in the indefinite long run. Logically, then, the predicate "____is a man" is really a *general relation*, one that has meaning independent of any particular term that completes the proposition. To see why this is so, we need to move beyond Ockham's terminist logic, emphasizing as it does the terms themselves, to what Peirce calls the logic of relations, which emphasizes instead relations among terms.

To conclude this discussion of the difference between realism and nominalism as Peirce understood it, let me quote Peirce's own summary remarks:

> No realist or nominalist ever expressed so definitely, perhaps, as is here done, his conception of reality. It is difficult to give a clear notion of an opinion of a past age, without exaggerating its distinctness. But careful examination of the works of the schoolmen will show that the distinction between these two views of the real—*one as the fountain of the current of human thought, the other as the unmoving form to which it is flowing*—is what really occasions their disagreement on the question concerning universals. The gist of all the nominalist's arguments will be found to relate to a *res extra animam,* while the realist defends his position only by assuming that the immediate object of thought in a true judgment is real. The notion that the controversy between realism and nominalism had anything to

[136] W2: 470.
[137] SWS: 188.
[138] Ibid.

> do with Platonic ideas is a mere product of the imagination, which the slightest examination of the books would suffice to disprove.[139]

The division of a hair that separates the nominalist from the realist is found in the standpoint that each takes with respect to the neutral definition of reality. For the nominalist, reality is exhausted by actually existing particulars, completely independent of thought, which opens a chasm between the knower and the known. Whatever is in the knower's point of view is some *ens rationis*, while all that exists on the other side of the chasm, those singulars, are the *ens reale.* The former are not strictly speaking real; only the existing singulars are. As Mayorga writes, this approach is indicative of "the nominalist fixation with the individual" and leads to the "recognition of only one mode of being (existence), and ultimately, to the unknowable thing-in-itself."[140] As Peirce puts it elsewhere, "the sectators of individualism, the essence of whose doctrine is that reality and existence are coextensive, [hold] that 'real' and 'existent' have the same meaning."[141] For Peirce, however, reality does not equal existence and to think it does is to succumb to the nominalist's delusion. Reality is independent of thought-in-particular *but not* of thought-in-general.

## 17. The Reality of Signs

The division of a hair that divides nominalist and realist understandings of reality also occasions their disagreement about the reality of semiotic relations. This suggestion undoubtedly goes beyond the *word* of Peirce's assessment in the Berkeley review, but I think it captures the *spirit* of his philosophy. By making this connection between Peirce's theory of reality and his understanding of the representative relation (as explained in Chapter 1), we see the central thrust of his Semeiotic Realism, which comes down to the way the realist's standpoint, unlike the nominalist's, obliges one to admit the reality of relations.

The nominalist standpoint determines not only a view about universals but also a view on quantity and relation. As Deely puts it, "the very quintessence of nominalism … [is] to deny the reality of relations outside of thought itself in the order of mind-independent being."[142] Relation, like universality, is relegated to the *ens rationis.* Relations are not found *in res*, in physical reality; instead, concepts that supposit for singular things are brought into relation in propositional contexts, much as universality is a matter of predication in propositional contexts. Relation, then, is merely a matter of the combination of terms and has no bearing on reality in the *res extra animam*. Ockham, remember, reduces the Aristotelian categories to just two: only singular substances and singular qualities exist in *res extra animam*.

This nominalism about relation is important to Ockham's understanding of signs and especially to his view that signs are not real *because* they only occur within an *oratio mentalis.* For Ockham, as we saw, the being of conceptual signs depends on their being thought. Recall too that when Ockham offers his technical definition of the *signum* he dispenses with the Augustinian view that a sign involves a ternary relation wherein the sign stands for an object

[139] W2:471-72.
[140] Mayorga, *Realism*, 81.
[141] CP 5.503.
[142] Deely, *Four Ages*, 618.

which it presents to cognition. Traditionally, this cognition serves the interpretative function of bringing that sign into *relation* with what it signifies.

But we saw that Ockham has no patience for this mysterious third relatum.[143] "Ockham," Panaccio writes, "simply equates the conceptual sign with the intellectual act, leaving no room for a third item which could serve as interpretation for the concept."[144] So, on Ockham's picture we are left with a dyadic relation between the concept and the object for which it stands, and that concept stands for that object solely in a singular cognitive act. These concepts are formed through a process of intuitive cognition and their semantic function is exhausted by a distributive reference to several existing singulars ("man" stands for this man, that man, Socrates, and so on). These conceptual signs, themselves the atoms of thought, supposit for their objects in propositional contexts, and the formation of propositions involves the combination of conceptual signs governed by dedicated syntactical rules.

As Normore writes, "Ockham does not regard signification as a real relation. (Indeed it is not clear that he thinks of it as a relation, properly speaking, at all)."[145] These dyadic "relations" are not real precisely because their being depends solely on the actual cognitive act in which they occur, so while a concept is a natural sign of some existing object, the relation between the conceptual sign and its object is a relation *only* within that cognitive act itself. Since only that which is outside of thought is real, this dyadic sign relation (insofar as it *only* occurs within the cognitive act) is strictly speaking unreal. The nominalist standpoint therefore has the consequence of denying the reality of semiotic relations.

I showed in Chapter 1 that for Peirce a sign *is* a relation: one in which a sign-vehicle stands for an object in such a way that it determines an interpretant, this being a further sign that represents the sign vehicle as a sign of its object. Ockham would undoubtedly disagree with Peirce's account of the sign relation, since when he eliminates the third relatum of the Augustinian *signum* he is, in effect, eliminating the interpretant too, which destroys the representative relation as Peirce understands it.

On Peirce's view, the representative relation does not reduce to the cognitive act in which it occurs, as Ockham thinks. Rather, it is a *general* relation that persists independent of thought-in-particular though not of thought-in-general. In Chapter 1 I showed that a sign does not need an interpreter for it to be a sign of its object; it need only be interpretable. This is not possible on Ockham's view because the sign is realized in singular cognitive acts. There is no sign unless there is a cognitive act and of course there is no cognitive act unless there is an agent whose act it is. But as Deely and Poinsot show, we can conceive of relation more generally as "a veritable dual citizen of the order of *ens reale* and *ens rationis* alike."[146] The sign, for Peirce, is precisely this sort of relation, mediating between the object that determines it (in the order of *ens reale*) and the interpretant that it determines (in the order of *ens rationis*). The representative relation is

[143] Panaccio, *Ockham on Concepts*, 45-46.
[144] Panaccio, *Ockham on Concepts*, 46.
[145] Calvin Normore, "Some Aspects of Ockham's Logic," in *Cambridge Companion to Ockham* (Cambridge: Cambridge University Press: 1999), 35.
[146] Deely, *Four Ages*, xxxi.

not reduced to the *ens rationis*, as on the nominalist picture; instead it serves the mediating role of bringing these two orders into relation.

## 18. The Modes of the Interpretant

Peirce's late division of interpretants is helpful to clarify this position. While generally a sign stands to an interpretant for an object, Peirce eventually realized that the interpretant itself should be divided into three modes, corresponding to the modal triad of possibility, actuality, and necessity. Every sign's interpretant can be considered from the perspective of these modalities, leading to Peirce's idea of the immediate interpretant, the dynamical interpretant, and the final interpretant. As Peirce wrote to Welby in 1909:

> My Immediate Interpretant is implied in the fact that each Sign must have its peculiar Interpretability before it gets any Interpreter. My Dynamical Interpretant is that which is experienced in each act of Interpretation and is different in each from that of any other; and the Final Interpretant is the one Interpretive result to which every interpreter is destined to come if the sign is sufficiently considered. The Immediate Interpretant is an abstraction, consisting in a Possibility. The Dynamical Interpretant is a single actual event. The Final Interpretant is that toward which the actual tends.[147]

The immediate interpretant explains why a sign does not need an interpreter for it to be a sign. A sign already stands to (or is a sign for) an immediate interpretant, irrespective of any act of interpretation. That is, a sign always has the *possibility* of being interpreted and so is a sign even without *actually* being interpreted. It is possible to abstract the interpreter without destroying the sign's relation to its interpretant in the mode of possibility. In this way, George Mallory's body—preserved in the ice and rock of Everest ever since he disappeared there in 1924—has the possibility of being interpreted as a sign of the dangers of high-altitude mountaineering even if no one actually interprets his preserved remains that way.

But of course we do interpret signs all the time. When a sign is actually interpreted, it determines a dynamical interpretant in the mind of the interpreter. This dynamical interpretant is restricted to single acts of interpretation, making every dynamical interpretant distinct from every other. When the famous mountaineer Conrad Anker discovered Mallory's body in 1999, it determined a dynamical interpretant in him, and this dynamical interpretant would be distinct from the dynamical interpretant of any other climber who might encounter the body on the way to the summit. Though Ockham would not permit interpretants of any kind, Peirce's dynamical interpretant is close to Ockham's understanding of a conceptual sign. Both the sign as presented to a dynamical interpretant (Peirce's picture) and the sign as a singular cognitive act (Ockham's picture) are limited to the mode of actuality. The dynamical interpretant, while still one relatum of the triadic representative relation, is nonetheless determined by a sign in a single act of interpretation. As such, the dynamical interpretant primarily concerns thought-in-particular. It is not necessarily a figment, but it is unique to each particular act of interpretation.

[147] SS: 111.

Peirce, however, is never satisfied with mere actuality. His commitment to the final opinion, as I described it earlier when explaining his idea of realism, requires the inclusion of a final interpretant. Reality, as we saw, is never exhausted by thought-in-particular but only by thought-in-general. There would be no reality without final interpretants. As Peirce suggests to Welby, the final interpretant is of a general nature, such that it cannot be exhausted by any single dynamical interpretant. It is described only as the last interpretative result that *would obtain*. It is never actualized by a dynamical interpretant but is nevertheless that toward which those interpretants tend. Just as in the final opinion our conception of reality is general (incapable of being exhausted by any particular thought), so the final interpretant is independent of any particular act of interpretation though not from the representative relation in general. A sign stands for its object to an interpretant and *would* determine that interpretant were the sign sufficiently considered. In this way, Mallory's body *would be* a warning to any climber attempting the summit of Everest even if such an encounter never happens.

Notice that Peirce's division of interpretants is a division of modalities. In general, a sign stands to its interpretant for its object. But we can conceive of this relation in three different modalities, whether through the immediate, dynamical, or final interpretant. What changes when we move from one modality to another is not the content of the interpretant itself but the manner in which it is determined. An example helps make this clear. In the previous chapter I explained that in an argument the premise is a sign of the conclusion. Consider a simple instance of deduction: "Socrates is a man, all men are mortal, therefore Socrates is mortal." When I combine the two premises they become a sign that determines an interpretant, namely, the conclusion that Socrates is mortal. From the perspective of the immediate interpretant, the premise, as a sign, has the possibility of determining its interpretant, which means that it *is* a sign of its conclusion whether anyone actually draws the inference or not. If I *do* draw this inference in a given instance, the conclusion becomes a dynamical interpretant, with the premise a sign of its conclusion in a single interpretive act. So when I infer that "since Socrates is a man, he is mortal," the premise determines a single dynamical interpretant in my mind, a dynamical interpretant that is different from yours when you make the same inference. As for the final interpretant of the argument, it consists in the fact that this premise *would* determine that conclusion irrespective of any singular act of interpretation or its dynamical interpretant. Were one to consider sufficiently the combined premises, one *would be* led to accept the conclusion. In each perspective, the interpretant is still "Socrates is mortal," though what differs is the mode in which that interpretant is determined.

Since the primary function of an interpretant is to bring a sign into relation with its object, the representative relation itself can be understood through these three modes of being. The first error of Ockham's nominalism is to treat signs as singular cognitive acts, thereby restricting them to the mode of actuality. The second error is to hold that since signs occur in cognitive acts they are not real. Peirce's trichotomy of interpretants corrects the first error by showing that semiotic relations can be understood across modalities, thereby allowing us to consider semiotic relations apart from singular acts of interpretation. It corrects the second error through Peirce's concept of the final interpretant, which corresponds to the final opinion, thereby securing the reality of semiotic relations beyond all actual acts of interpretation.

The most striking difference between their theories of signs is, of course, Ockham's refusal to countenance the interpretant at all. This is the principal error of nominalist semiotics,

as it leads to the view that the *res extra animam* exhausts reality. For the nominalist reality is "the fountain of the current of human thought."[148] There is only a dyadic relation, the concept being a natural sign of its object within a cognitive act. For Peirce, this orientation is backwards as it takes reality to be in the object that the sign stands for, whereas for Peirce's realist account that reality is "the unmoving form to which it [thought in signs] is flowing."[149] Meaning is not found in the object but rather in the interpretant that would in the long run bring the sign into relation with its object. Semiosis, or the action of signs, involves a process of determination that is never exhausted by mere reference to an object but always consists in the determination of an interpretant. Whereas on Ockham's picture reality is entirely independent of the representative relation, on Peirce's reality must be understood through the representative relation. With these differences in mind we can turn back to Peirce's 1868 critique of Ockham's nominalism and see why he thinks we are ultimately driven to the realist position. Peirce's criticism also gives insight into the difference between Duns Scotus and Ockham, providing textual support for his reading of the Medieval controversy in the *Berkeley Review*.

## 19. Ockham Begs the Question

Peirce's argument against Ockham may not be straightforward but it is decisive. Before setting out my understanding let me quote Peirce's argument in full. Then I will elaborate the historical context of his criticisms and clarify the upshot of his argument, which, in a word, is that there is no reality independent of representation. Here is Peirce's complete argument against Ockham from 1868:

> But it follows that since no cognition of ours is absolutely determinate, generals must have a real existence. Now this scholastic realism is usually set down as a belief in metaphysical fictions. But, in fact, *a realist is simply one who knows no more recondite reality than that which is represented in a true representation*. Since, therefore, the word "man" is true of something, that which "man" means is real. The nominalist must admit that man is truly applicable to something; *but he believes that there is beneath this a thing in itself, an incognizable reality. His is the metaphysical figment.* Modern nominalists are mostly superficial men, who do not know, as the more thorough Roscellinus and Occam did, that a reality which has no representation is one which has no relation and no quality. The great argument for nominalism is that there is no man unless there is some particular man. That, however, does not affect the realism of Scotus; for although there is no man of whom all further determination can be denied, yet there is a man, abstraction being made of all further determination. There is a real difference between man irrespective of what the other determinations may be, and man with this or that particular series of determinations, although undoubtedly this difference is only relative to the mind and not *in re.* Such is the position of Scotus. *Occam's great objection is, there can be no real distinction which is not in*

[148] W2: 471
[149] W2: 471

> *re, in the thing-in-itself; but this begs the question, for it is itself based only on the notion that reality is something independent of representative relation.*[150]

I want to draw attention to two features of this passage. The first is Peirce's critique of Ockham's nominalism, which is well understood in Peirce scholarship and has been treated by scholars like Mayorga, Boler, and Fisch. A second feature has not received adequate attention in the scholarship on Peirce's realism, namely, that his critique of nominalism also motivates his Semeiotic Realism. The key takeaway from Peirce's criticism is that there is no reality apart from the representative relation of object-sign-interpretant. Indeed, as he says, "a realist is simply one who knows no more recondite reality than that which is represented in a true representation." Peirce first expressed this point in 1868 and it remains constant throughout his subsequent writings. As late as 1904, he tells Welby that the "highest grade of reality is only reached by signs."[151] To appreciate what leads him in this direction we need to understand the precise sense in which he takes Ockham to beg the question by assuming that "reality is something independent of representative relation."

Peirce's critique is both a defence of Duns Scotus' conception of reality and a criticism of Ockham's alternative. Peirce responds to Ockham's great objection to Duns Scotus, which he presents in the sixteenth chapter of Book One of the *Summa Logicae*. This much is certain, as Peirce (who often does not give citations) directs the reader to just this place. There we find Ockham's famous argument against Scotus' *Formalitates*, particularly against the attempt to explain the reality of universals by making a subtle *formal* distinction, one that allows us to say that "while only individuals exist, universals are still real."[152] Ockham summarizes Scotus' view as follows:

> It may be clear to many that a universal is not a substance outside the mind which exists in, but is distinct from particulars. Nevertheless some [Duns Scotus chiefly] want to claim that the universal is, in some way, outside the soul and in particulars; and while they do not want to say that a universal is *really distinct* from particulars, they say that it is *formally distinct* from particulars. Thus, they say that in Socrates there is human nature which is contracted to Socrates by an individual difference which is not *really*, but only *formally*, distinct from that nature. Thus, while there are not two things, one is not formally the other.[153]

The first sentence summarizes Ockham's own understanding of universals, namely, that universality is not *in res*, being solely a matter of the predication of terms in a propositional context. Since only *res* are real, that is, have physical reality as actually existing particulars (*ens reale*), universals are of the mode of *ens rationis*, creatures of second intention, logical entities, mere signs.

Duns Scotus sought a middle ground between the idea that universals are in *res* and the idea that they are merely logical entities predicable of many. He thought that a common nature, like humanity, has a "remote potency toward the determination of singularity and toward the

[150] W2: 239-40; my emphasis.
[151] SS: 23.
[152] Mayorga, *Realism*, 41.
[153] Ockham, *Theory of Terms,* 82.

indetermination of a universal."[154] The idea is that, while a common nature like humanity is *determined* in actually existing singulars (Socrates or Aristotle, say), this is *formally* but not *really* distinct from the *indeterminacy* of a common nature predicable of many in the intellect. There is only one common nature, but it is one that admits of formal determination in two different ways. This is why Peirce emphasizes the difference between determinacy and indeterminacy. His distinction between being determinate in existence and being indeterminate in the intellect comes straight from Scotus. Determinacy has to do with particularity, while indeterminacy involves generality. Indeed, Peirce quotes Scotus in Latin in a footnote to support his interpretation:

> Eadem natura est, quae in extensia per gradum singularitatis est determinata, et in intellectu, hoc est ut habet relatiobnem ad intellectum ut cognitum ad cognoscens, est indeterminata. [Thus a universal can be in things in such a way that it is the same nature which is determinate by being in existence through a grade of singularity and which is indeterminate by being in the intellect, i.e by having a relation to the intellect of known to knower.][155]

Peirce contends that Ockham's nominalism leads to the view that there is no man (as a general concept) unless there is some man (as an existing particular). For Scotus this is inadequate because "although there is no man of whom all further determination can be denied, yet there is a man, abstraction being made of all further determination." Hence, as Peirce summarizes, there is a "real difference between man irrespective of what the other determinations may be [in the intellect], and man with this or that particular series of determinations [in existence], although undoubtedly this difference is only relative to the mind [a formal distinction] and not *in re* [a real distinction]."[156] For Scotus, the common nature "man" cannot exist in *res* unless it is determined in some existing man, but is in the intellect, more generally, "always represented positively indeterminate."[157] "Universality is of course an element of our way of thinking," Boler writes, "but the commonness upon which it is based [in *res*] is not."[158]

In the Berkeley review (1871) Peirce returns to his treatment of Scotus from 1868 and clarifies his understanding of Scotus' position. He reaffirms that for Scotus common nature is "universal in the mind [and] singular in things out of the mind."[159] The universal *as such* is understood *formally* through these two modes of being:

> The truth is, therefore, that that real nature which exists *in re,* apart from all action of the intellect, though in itself, apart from its relations, it be singular, yet is actually universal as it exists in relation to the mind. But this universal only differs from the singular in the manner of its being conceived (*formaliter*), but not in the manner of its existence (*realiter*).[160]

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[154] Duns Scotus, *Quaestiones Subtillisimae,* in Bosley and Tweedale, *Basic Issues*, 385.
[155] W2: 240. Scotus, *Quaestiones Subtillisimae,* in Bosley and Tweedale, *Basic Issues*, 385.
[156] W2: 240.
[157] W2: 473.
[158] Boler, *Peirce and Scholastic Realism*, 52.
[159] W2: 473.
[160] Ibid.

On the one hand, then, a common nature is singular in existing things apart from any relation to the intellect. Scotus says humanity is *contracted* to individuals. [161] There is humanity in Socrates, in Aristotle, in this man, and that man; and each has their own humanity distinct from the others. On the other hand, this common nature is universal and so indeterminate, as it stands in relation to the intellect or as known to a knower. From this vantage, humanity is utterly general, indeterminate, and never exhausted by Socrates, Aristotle, this man, or that man. For Scotus, the universal *as such* only differs from the singular in *the way it is conceived*. There is, as Boler explains, one nature "undergoing two different processes, contraction in the individual and universalization in the mind."[162] Crucially, the difference between them is not found *in res* but only *formally*, that is, in our way of conceiving them.

That this distinction is only *formal* and not *real* is precisely the point that Ockham takes issue with. As we saw Peirce put it, "Occam's great objection is, there can be no real distinction which is not *in re*, in the thing-in-itself."[163] In Ockham's words, "there can never be any distinction outside the mind unless there are distinct things," so for example "the only thing in Socrates which can be construed as substantial is *this* particular matter, *this* particular form, or a composite of the two."[164] Remember that Ockham's ontology admits only singular substances and singular qualities: "every essence and quiddity and whatever belongs to substance, if it is really outside the soul, is just matter, form, or the composite of these."[165] Indeed, he says that "besides absolute things, namely substances and qualities, no thing is imaginable in act or in potency."[166]

The razor comes down clean on Scotus's *formal* distinction. Since only absolute things exist and are real, the only real distinctions are among those actually existing singulars. To posit a formal distinction between determinacy in existence and indeterminacy in the intellect only overcomplicates things by positing an additional distinction beyond that which is found in things. Scotus' formal distinction is to Ockham nothing more than wordplay and since it doesn't make any difference to being *in res*, we are advised to dispense with it. If Ockham's argument is successful, then we are back where we started with respect to universals: they are mere signs predicable of many, and being signs they are not real. Generality has no reality; only individuals exist.

Peirce, however, does not accept Ockham's reasoning. Peirce's critique of nominalism hinges on his claim that Ockham makes a grave error in the way he attempts to dispense with Scotus, begging the question when he says that the only real distinction is a distinction *in res* because he assumes "that reality is something independent of representative relation." As Peirce sees it, the fundamental error of nominalism is the assumption that reality is exhausted by actual existence. The nominalist believes that there is a thing-in-itself, an incognizable reality, an actually existing *res extra animam*. But this, says Peirce, is a metaphysical figment. On his

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[161] "Contraction" is a mysterious idea in Scotus' writings. It is not important to my argument to spell out precisely what this process involves. Scholars like Boler have already treated the problem in detail; see, *Peirce and Scholastic Realism*, 52-59.
[162] Boler, *Peirce and Scholastic Realism*, 52.
[163] W2: 240
[164] Ockham, *Theory of Terms*, 83-84; my emphasis.
[165] Ockham, *Theory of Terms*, 84.
[166] Ockham, in Allen, *Empiricisms*, 124.

account the real must be cognizable, otherwise it would be utterly useless. Ironically, to say that reality is exhausted by a *res extra animam*, as Peirce thinks nominalists do, is *really* to posit an unnecessary entity, something their own razor should have eliminated.

## 20. All Thought is in Signs

Peirce exposes the flaw in Ockham's thinking by challenging his commitment to intuitive cognition. It's worth noting that this challenge is not directed at Ockham alone but is presented as a wholesale rejection of both British empiricism and Cartesian rationalism,[167] with Ockham swept up in the same argument. Peirce denies that we have any power of intuition that would allow us immediately to grasp an object as it is independently of thought. The blind spot on the retina is a case in point, as it shows that the "space we immediately see … is not, as we imagined, a continuous oval, but is a ring, the filling up of which must be the work of the intellect."[168] There is no way to know by intuition (immediate cognition) alone whether a given act of perception provides intuitive data of the object itself or whether it is the result of previous cognitions; as Peirce puts it, we are unable "to rightly judge whether that cognition has been determined by a previous cognition, or whether it refers immediately to its object."[169] The basis of Ockham's empiricism is in his theory of intuitive cognition, which, as we saw, involves the immediate cognition of an object followed by a judgment that that object exists. He writes that "it is from this [intuitive cognition] that empirical knowledge begins."[170] However, Peirce denies this faculty of intuitive cognition, challenging its reliability as a basis or ultimate premise for knowledge of reality.

This denial of intuition has the consequence that all thought is mediated by signs. Just as each thought addresses another thought, so does each sign determine another sign, which makes cognition a continuous process of signs determining signs. There is no *immediate* cognition of an object. There is no way to grasp an object as it is apart from the way that it is represented to cognition through signs. The *res extra animam* does not exist *as such*, in full and complete reality apart from all thought. Since all thought is in signs, we have no immediate knowledge of reality apart from the way it is presented by the representative relation, which obviously makes any thing-in-itself not immediately cognizable and therefore not cognizable at all.

So, if the nominalist insists that reality reduces to a *res extra animam*—to something independent of the representation relation—then reality becomes incognizable precisely because there is no sign capable of representing it to cognition, eliminating Ockham's recourse to the "secure basis" of intuitive cognition. We are, as Deely puts it, cast into "the river of signs."[171] Reality must be sought through signs, since this is the only way we can conceive it. But to take this position requires that we understand reality not as exhausted by something entirely independent of the representation relation, but rather as being understood, as Peirce does, through the representation relation itself.

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[167] Fisch, *Peirce, Semeiotic, and Pragmatism*, 325
[168] W2: 197. Peirce offers a number of further arguments in support of this denial.
[169] W2: 193.
[170] Ockham, *Philosophical Writings*, 23.
[171] Deely, *Four Ages*, 644.

## 21. Signs of Reality

In "How to Make our Ideas Clear," Peirce writes that "the opinion which is fated to be ultimately agreed to by all who investigate, is what we mean by the truth, *and the object represented in this opinion is the real*."[172] Scholars often cite this passage in support of Peirce's theory of truth, though few acknowledge the underlying semiotic commitment. It is correct that for Peirce truth is found in the final opinion at the end of inquiry and is ultimately a result of scientific investigation, but merely to say this much leaves out his important clarification that "the object *represented* in this opinion is the real." This object is no *res extra animam*. It is, rather, the object *as represented* by a sign. This "fated opinion" receives a semiotic elucidation through the mature Peirce's concept of the final interpretant. Indeed, the final interpretant is "the one Interpretive result to which every interpreter is destined to come if the sign is sufficiently considered."[173] Reality, properly speaking, is what *would be* represented in the final interpretant. Indeed, reality is the object as it is represented at the ideal limit of semiosis, or the determination of signs. In this way, "the very entelechy of being lies in being representable."[174] "A symbol," Peirce writes, "is an embryonic reality endowed with power of growth [sic] into the very truth, the very entelechy of reality."[175] The nominalist, therefore, "insists on remaining blind to what is plain, that there can be no reality which has not the life of a symbol."[176] No reality is completely divorced from the representation relation and thus the possibility of representation, which possibility is no other than Peirce's potential interpretant, in other words, a sign. The realist's orientation to the neutral definition of reality, coupled with their understanding of the representative relation, requires that we understand reality to consist in the determination of signs. Indeed, no other conception of reality would be useful to us since all cognition is mediated by signs.

Peirce's plan for defeating nominalism now takes shape. First, establish the difference between fiction and reality; then define reality as that which is unaffected by thought-in-particular, showing that this definition is available to both nominalist and realist; then show that the nominalistic point of view begs the question by supposing that reality is independent of the representative relation; and finally, show that the realistic point of view implies the reality of semiotic relations, which makes reality that toward which semiosis, or the action of signs, tends. The nominalist view that signs are only figments is therefore impoverished to say the least. Peirce's criticism of Ockham's nominalism in 1868 provides the motivation for finding continuity between the realist point of view and the theory of signs, while the discovery of the trichotomy of interpretants eventually brings these two dimensions of Peirce's thought together in the end.

## 22. Practical Considerations and General Relations

Peirce writes that "the burden of proof is undoubtedly upon the realists, because the nominalistic hypothesis is the simpler" and that "[e]verybody ought to be a nominalist at first, and to continue in that opinion until he is driven out of it by the *force majeure* of irreconcilable

[172] EP1: 139; my emphasis.
[173] SS: 111.
[174] EP2: 323.
[175] EP2: 324.
[176] Ibid.

facts."[177] In the conclusion of the Berkeley review, Peirce offers some pragmatic reasons for shedding the dead skin of nominalism. He writes that "though the question of realism and nominalism has its roots in the technicalities of logic, its branches reach about our life."[178] Nominalism, he says, leads to an individualism that favours the members of a community over the community itself, which has immense influence on the constitution of public institutions.[179] So one reason to challenge nominalism is on practical and political grounds.

But this same tendency favours the individual over the community in scientific practice too, while for Peirce the individual is not the arbiter of knowledge. We have no cognitive ability to grasp the external realities as they are apart from the idiosyncratic bent of our particular situation. "The individual man," Peirce writes, "so far as he is anything apart from his fellows, and from what he and they are to be, is only a negation."[180] A negation, that is, of what *would obtain* in the final opinion of a community of inquirers were they to push scientific investigation as far as it can go. The nominalist tendency to individualism thus obstructs the path of science. "He who would not sacrifice his own soul to save the whole world," Peirce writes, "is illogical in all his inferences, collectively."[181] Nominalism tends to block the path of inquiry by favouring the individual over the community.

While these are two possibly compelling practical reasons in favor of realism, they do not exhaust Peirce's arguments. I have suggested that another point in favour of the realistic position is that it allows a proper understanding of representation and does not restrict the sign to singular cognitive acts. The inclusion of an interpretant, divided into the three modes he distinguishes, leads to the view that semiotic relations hold beyond singular cognitive acts. Indeed, from the perspective of Peirce's Semeiotic Realism it becomes possible to reason about general *types* of semiotic relations and these are distinct from their *replicas*, which are instances of such general types. It is possible, for example, to speak of an indexical sign relation in general while recognizing that a weathervane is a replica or instance of an index. When we consider a replica like a weathervane it not only indicates the direction of the wind but also alerts the interpreter to something about the nature of indexical signs, namely, that they tend to bring their interpretant into relation with their object by a real connexion.

This distinction between general signs and their replicas extends to all types of signs. The mature Peirce classified (at least) 66 different types of sign, though some of the more obscure varieties do not even have examples or replicas recorded. I will not go into these and mention them only to give a sense of the immensity of Peirce's Semeiotic. Instead, I return to the topic of inference. As we saw in Chapter 1, it is possible to conceive of the forms of inference (hypothesis, deduction, and induction) as semiotic relations, and now we see that these relations have a reality apart from any actual instance. A deduction, for instance, is a semiotic relation governed by the principle of symbolic substitution. The semiotic character of a deduction has (as we saw in Chapter 1) a symbolic ground.

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[177] CP 4.1.
[178] W2: 487.
[179] Ibid.
[180] W2: 243.
[181] W2: 270.

A particular argument in Barbara, for instance, would be a replica of such a general form of inference. When we reason *in* signs, we are literally reasoning *in* these general forms, which have a reality independent of thought-in-particular (hence, Peirce's anti-pyschologism). Houser suggests that Peirce maintains a logical realism according to which thought is governed by the laws of sign-inference.[182] The reality of semiotic relations secures the reality of logical relations, and these relations are not exhausted by the enumeration of their instantiations or replicas, which means that for Peirce there is real generality, implying that no determinate set of instances or replicas is extensionally equivalent to a general semiotic relation. Ockham's nominalism has no satisfactory way to account for the *reality* of these general types. For him, there is no real generality and signs-types, much like universals, are distributed over singular cognitive acts.

Next, I return to the logical roots of the nominalism-realism controversy to show that the difference between Ockham's and Peirce's understanding of signs has vast consequences for how we understand logic considered as semeiotic. By taking account of these differences, I provide two more reasons in favor of the realistic point of view.

## 23. Nominalism, Realism, and the Logic of Signs

Ockham's decision to eliminate the interpretant from the definition of the *signum* has two consequences for his theory of logic. First, it leads to a narrow classification of the science of logic, its aims and domain of study; second, it leads to a compositional, and so nominalistic, treatment of the logical triad of term, proposition, and argument. Peirce's Semeiotic Realism supports a much grander vision for the science of logic, and his realist interpretation of the term-proposition-argument triad is richer than Ockham's nominalistic view, since for instance it makes relations rather than terms the fundamental object of logical analysis.

While Peirce provides an account of the reality of semiotic relations, he was primarily interested in the theory's application to logic. He is close to Ockham in this respect. Earlier I showed that Ockham's technical definition of the *signum* clarifies the sign's logical function. He wants a definition of the *signum* that explains how a sign functions in propositional contexts, which leads him to define the sign in terms of its semantic and syntactic features. A consequence of this approach is to eliminate the interpretant. Ockham's argument is that no third item is required to explain the relevance of the *signum* to logical analysis, which is where Peirce and Ockham part, as on Peirce's view the interpretant is indispensable to the study of logic.

## 24. The Classification of Logic Considered as Semeiotic

For Ockham, logic examines the semantic and syntactic function of signs or terms, studying the way terms stand for their objects and supposit for those objects in propositional contexts via syntactic rules of formation. Logic is primarily interested in what terms pick out and how they are related to one another in propositional contexts. This view is not unique to Ockham, as the analytic tradition more generally tends to treat logical systems in this way. When we teach logic to undergraduates we tend to emphasize the syntactic and semantic dimensions of propositional and predicate logic, for example. These two dimensions tend to constrain most of what we take logic to be.

[182] EP1: 312.

In Chapter 1 I showed that for Peirce the definition of a sign is the most fundamental question in logic. This is because, like Ockham, he understood logic to deal primarily with signs, making logical relations semiotic relations. We saw that even inference is explained through the way that a premise or sign determines its conclusion or interpretant. On Peirce's early view, however, logic did not deal with all kinds of signs but only with those he called symbols and their relation to objects. For the early Peirce, logic is Objective Symbolistic, which makes up only one branch of the general theory of signs. While as a semiotician he was willing to consider anything that might take on the role of a sign, as a logician he was primarily interested in a particular subset of signs, namely symbols, specifically their relation to objects.[183]

So while the sign in general is defined as a triadic relation, logic emphasizes one dimension of that relation, namely that of sign and object. Additional branches treat the other dimensions of the relation: Speculative Grammar studies signs as signs, and Speculative Rhetoric studies signs as they relate to their interpretants. Semeiotic therefore breaks down into three branches, each studying a specific dimension of the triadic relation object-sign-interpretant: Speculative Grammar (sign-sign), Logic Proper (sign-object), and Speculative Rhetoric (sign-interpretant). This classification is based on the Medieval trivium (grammar, logic, rhetoric) that was popularized by John of Salisbury and implemented in the liberal arts curriculum.

Peirce eventually realized that his initial understanding of logic was too narrow. He writes to Welby in 1908 that while in 1867 he had conceived of logic in this narrow way (Objective Symbolistic), he came to realize that

> those who devoted themselves to discovering the truth about the general reference of symbols to their objects would be obliged to make researches into the reference to their interpretants, too, as well as into other characters of symbols, and not of *symbols* alone but of all sorts of signs. So that, for the present, the man who makes researches into the reference of symbols to their objects will be forced to make original studies into all branches of the general theory of signs; and so I should certainly give the logic-book that I am writing the title, "Logic, Considered as Semeiotic."[184]

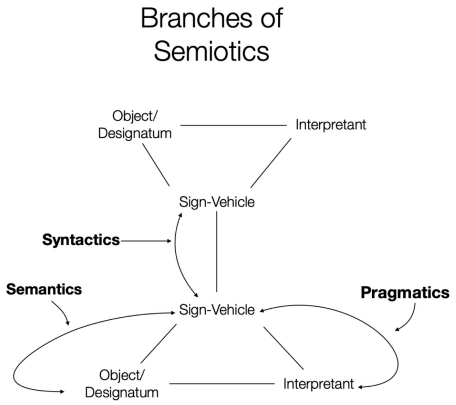
A year later, he writes to Welby on these matters again:

> I at first defined logic as the general science of the relation of *symbols* to their *objects*. And I think still that this defines the Critic of Argument which is the central part of logic,—its heart. But studies of the limits of the sciences in general convinced me that the Logician ought to broaden his studies, and take in every allied subject … and above all, he must *not* confine himself to *symbols* since no reasoning that amounts to much can be conducted without *icons* and *indices*. Nor ought he confine himself to the relations of signs to their objects. . . . My studies must extend over the whole of general Semeiotic.[185]

[183] W1: 169; W2: 57; Fisch, *Peirce, Semeiotic, and Pragmatism*, 322-23.
[184] SS: 80.
[185] SS: 118.

Whereas in 1867 logic was confined to one branch of the trivium, he came to realize that logic needs to draw from the studies of grammar and rhetoric as well. It cannot concern itself solely with the relation between symbols and their objects but must consider symbols *as symbols* and as they stand to their interpretants too. Furthermore, logic should not concern itself solely with symbols but ought to consider other types of signs as well, chiefly icons and indices. As Fisch puts it, Peirce moves from a conception of logic *within* semeiotic to a conception of logic *as* semeiotic. The name "Logic" becomes synonymous with General Semeiotic and the middle branch of the trivium becomes *critic*, being concerned with the *criticism* of arguments. By making use of speculative grammar, critic, and speculative rhetoric, such a theory accounts for the distinctive logical function of each dimension of the triadic relation.

When in the 1930s and 40s, Charles Morris challenged Carnap's treatment of formal languages, he argued that in addition to the consideration of syntax and semantics we require an analysis of the pragmatics of language. It is often forgotten that when Morris makes his case for pragmatics he is drawing inspiration from Peirce's semeiotic. Like Peirce, Morris recognizes that a sign stands for its object only in relation to an interpretant, writing that "in terms of the three correlates of the triadic relation of semiosis, a number of other dyadic relations may be abstracted for study."[186] On Morris' picture, syntax deals with the relation of signs to one another, semantics with the relation between signs and their objects, and pragmatics with the relation between signs and their interpretants. Diagrammatically:




Like the mature Peirce, Morris argues that we need to account for all three fields of study and cannot dispense with any of them. He says that "the advantage of the three-dimensional analysis is that the validity of all these points of view can be recognized, since they refer to the three aspects of one and the same phenomenon."[187] It is possible, therefore, to understand the familiar division of syntax, semantics, and pragmatics as merely different terms for the three branches of Peirce's Semeiotic trivium. What contemporary philosophers of language call the semantics-

[186] Charles Morris, *Foundations of the Theory of Signs* (Chicago: University of Chicago Press, 1938), 6.
[187] Morris, *Foundations*, 10.

pragmatics distinction was Morris's invention, though the idea traces back to Peirce's trivium and further still to the logical works of the middle ages.

When Panaccio uses modern parlance ("syntax" and "semantics") to describe Ockham's technical definition of the *signum*, he attempts to make Ockham's logic of signs intelligible to contemporary philosophers. But there is a problem with this approach. Ockham's technical definition omits the interpretant on the grounds of his principle of parsimony. A consequence of this omission is that there is nothing for a sign to stand to. A sign stands *for* its object but apparently stands *to* nothing at all. This implication not only reduces the sign to a dyadic relation in a cognitive act but also leads to the omission of a crucial branch of logic itself, since without the interpretant there is no relation between sign and interpretant for the logician to study, hence no "Speculative Rhetoric." The science of logic considered as semeiotic crumbles on Ockham's picture, which reduces three branches to two. This reduction is a result of Ockham's nominalistic definition of the sign. The razor leads to a dyadic sign and leaves the logician with no choice but to treat logic exclusively in terms of syntax and semantics. The termist logician cannot articulate the fullness of semiosis as a tri-relational determination of signs.

For Peirce, Speculative Rhetoric is closely associated with pragmatism. It allows the logician to consider "just what the processes are whereby an idea can be conveyed to a human mind and become imbedded in his habits."[188] This is part and parcel with the aim *to make our ideas clear*. "Logic," Peirce writes, "is bound, by its very nature, to push its research into the manner of reality itself, and in doing so can no longer confine its attention to mere forms of language but must inevitably consider how and what we think."[189] The logician should be interested not solely in the forms of inference but must consider how signs determine their interpretants, which is to say how arguments, as signs, have an effect on human inquirers. Part of this involves studying the way signs are used in particular contexts and to what effect. If I am lecturing on Peirce's Semeiotic Realism to a room of Peirceans, I might utilize a more technical argument than were I teaching undergraduates.

Part of Speculative Rhetoric involves developing a sensitivity to the pragmatic context in which signs (and arguments) are deployed. The aim is to construct well-reasoned arguments that produce intended interpretants in the minds of a community of inquirers. Most importantly, perhaps, it considers the best method for determining interpretants, that is, for transforming signs and fixing belief. The decision in "The Fixation of Belief" to favour the method of science over those of tenacity, authority, and apriority, for example, shows the work that speculative rhetoric does for the logic of investigation. All these considerations are missing from Ockham's account, and they are missing precisely because nominalism leads him to reduce the sign to a dyadic relation. His termist logic elaborates only the syntax and semantics of signs, neglecting the pragmatic import Peirce introduces through Speculative Rhetoric.

## 25. Against the Compositional Interpretation of Arguments[190]

Ockham's definition of the *signum* leads not only to a narrow understanding of the science of logic, but also to a nominalistic interpretation of the term, proposition, argument triad. Earlier

[188] EP2: 330.
[189] W2: 165.
[190] A portion of this section appears in Metzger, "Reducing Illation."

in this chapter I explained that Ockham owes his understanding of this triad to Aristotle, for whom an argument is composed of propositions and propositions resolve into the terms of subject and predicate. We saw that on Panaccio's interpretation, while Ockham emphasizes the propositional function of terms, he ultimately defends an atomistic thesis that takes these terms to be the atoms, or basic units, of logic. As Peirce reminds us, a *terminus* is a "bound or end."[191] This atomistic approach is reductive in as much as it treats terms as the last residue of logical analysis, the proper and ultimate *end* to an analysis of arguments.

Such an analysis bottoms out in a special sort of categorematic term, namely, absolute terms standing for absolute individuals. These categorematic terms have direct and definite signification and mental language ultimately reduces to such terms, which stand for their objects in singular cognitive acts. As Normore writes, "once one has said what the terms of a sentence signify, one has expressed all the signification there is."[192] This goes hand in hand with the nominalist view that a whole is no more than its parts. The proper analysis of an argument breaks it down into propositions and those propositions into their constituent terms. Since there is no meaning beyond what is picked out by such terms it follows that an argument signifies nothing more than what its terms do, implying that terms are the ultimate bearers of meaning.

Peirce's logic also makes use of the term, proposition, argument triad, though his understanding contrasts starkly with Ockham's compositional approach. He writes that semeiotic "leads to a different conception of the Proposition and Argument from the traditional view that a Proposition is composed of Names, and that an Argument is composed of Propositions."[193] He explains that "the difference between the Term, the Proposition, and the Argument, is by no means a difference of complexity, and does not so much consist in structure as in the services they are severally intended to perform."[194] The aim of analysis is not to break down arguments into their constituent parts but to clarify the function of terms and propositions in the inferential process.

Ultimately, Peirce cares less about the structure of arguments (how the parts of an argument fit together) and more about the service they provide to reasoning. To elucidate this view requires investigating his transition from treating the triad as a division of symbols (terms, propositions, and arguments are all symbols) to treating an argument as a symbolic whole powered by indexical and iconic signs. The mature Peirce distinguishes terms, propositions, and arguments by the capacity in which they serve as signs: terms by icons, propositions by indexes, and arguments by symbols. I begin my account of these points by sketching Peirce's earlier view, then exploring the merits of his mature reformulation.

## 26. The Triad as a Division of Symbols

In the late 1860s Peirce held that logic, which he then understood to deal primarily with symbols, recognizes three types of symbols, namely, terms, propositions, and arguments, though where Ockham took the terms themselves to be the ultimate bearers of meaning, Peirce assigns that role to the argument. He is led to this view by his understanding of the difference between

[191] SWS: 19.
[192] Normore, "Medieval Nominalism," 212.
[193] CP 4.572.
[194] Ibid.

each member of the triad in terms of the representation relation, that is, in terms of object, sign, and interpretant. As Bellucci writes, "for Peirce there is a *functional* difference between terms, propositions, and arguments, at the bottom of which lies an identical semiotic *structure*."[195] Let me explain.

In the widest sense, a sign stands to an interpretant for an object. A symbol, being a species of sign, partakes in this triadic relation. If terms, propositions, and arguments are symbols, then each participates in this more general relation. Now, in a certain sense every term, proposition, and argument has its own object, sign, and interpretant. However, on Peirce's early view arguments are the only symbols that strictly require an object, a sign, and an interpretant. Propositions *may* have an interpretant but that is not required for a proposition to be a proposition (all that is required is that it has an object and a sign). Terms *may* have an interpretant and they *may* stand for an object, but strictly speaking they require only a sign in order to be considered terms. The young Peirce takes an argument to be a total symbol, and the dimensions of *its* triadic relation are saturated by the contributions of propositions and terms: the propositions give the argument its object, the terms its sign, and the argument itself (saturated by terms and propositions) determines an interpretant conclusion. This sounds complicated but the following assessment should clarify the view.

A term is a symbol that does not require an object or an interpretant for it to be a term (though a term *may* have an object and an interpretant, having them is not requisite for being a term). As Bellucci explains, "the function of a term is to represent a possible character."[196] Consider the term "dragon." So long as it is not asserted in some proposition it "is not held to represent any object."[197] In the proposition "This dragon breaths fire" the term "dragon," being a subject, stands for an object (it doesn't matter that dragons don't exist). But apart from that propositional context, "dragon" is little better than a series of marks. The term does not need to stand for an object for it to be a term. As Peirce puts it in the "New List," terms "are thus but the sums of marks."[198] Such a term "may itself be a symbol" (as "dragon" taken alone is) or may be part of a more complete propositional symbol. That is to say, "dragon" can be taken alone or it can fulfil the role of a subject, for example, in the proposition "The dragon breathes fire" or it could even be a predicate, as in the proposition "Smaug is a dragon."[199] Notice, therefore, that terms are distinguished from propositions and arguments because they do not require an object or interpretant.

A proposition is a symbol that must stand for an object but does not necessarily require an interpretant. While terms do not require objects to be terms, propositions are more complete symbols precisely because they do stand for objects. Peirce explains that a "proposition would remain the same even if its interpretant should cease [to exist]. Though not if its object were destroyed."[200] In the "New List," he writes that propositions "independently determine their objects by means of other … terms, and thus, expressing their own objective validity, become

[195] Bellucci, *Peirce's Speculative Grammar* (New York: Routledge, 2018), 22.
[196] Bellucci, *Peirce's Speculative Grammar*, 22.
[197] W1: 347.
[198] W2: 57.
[199] W1: 347.
[200] W2: 57.

capable of truth or falsehood."[201] The proposition "Conquerors are butchers" is a symbol that involves the relation between two terms (which are themselves symbols), the subject "conquerors" and the predicate "are butchers." Being terms they are *capable* of fulfilling the role of subject and predicate in a proposition. Now, a predicate conveys the general character of its subject. In the proposition "Conquerors are butchers," the predicate "are butchers" explains the character of the subject "conquerors." The subject term "conquerors" is distinguished from the predicate term in that it indicates an object or collection of objects of which the predicate term is predicated. As Peirce writes, "the objects indicated by the subject … are therefore stated by the proposition to be related to one another on the ground of the character indicated by the predicate."[202] The proposition is a symbol representing that the objects indicated by "conquerors" are related to one another by the ground indicated in the predicate "are butchers." The proposition thus implies that whatever is represented by "conqueror" is represented by "butcher" too. In this way, as Bellucci explains, "the function of a proposition ('Socrates is a man') is both to represent a character ('Man') and to indicate the object ('Socrates')."[203]

Finally, we arrive at the *total* symbol, namely, the argument. While terms are indifferent both to their objects and interpretants, and propositions are indifferent to their interpretants *but not* to their objects, arguments uniquely determine an interpretant. As Peirce writes in the "New List," arguments are symbols that "independently determine their *interpretants*, and thus the minds to which they appeal, by premising a proposition or propositions which such a mind is to admit."[204] Just as terms are capable of fulfilling the roles of subject and predicate in a proposition, propositions are capable of becoming *premised* so as to form an argument that addresses a mind and determines in that mind an interpretant sign or conclusion.

Peirce's use of "determination" must be clarified. In what sense does an argument (colligated premises) *determine* an interpretant sign? This is a difficult question, and one that Short grapples with in *Peirce's Theory of Signs*.[205] Short begins his analysis by noting several instances throughout Peirce's writings where he uses the word "determines" in his definition of the triadic sign relation. Here are three of several examples that Short extracts from Peirce's later writings:

1) A *Sign*, or *Representamen*, is a First which stands in such a genuine triadic relation to a Second, called its *Object*, as to be capable of determining a Third, called its *Interpretant*, to assume the same triadic relation to its Object in which it stands itself to the same Object.[206]

2) I define a Sign as anything which is so determined by something else, called its Object, and so determines an effect upon a person, which effect I call its Interpretant, that the latter is thereby mediately determined by the former.[207]

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[201] Ibid.
[202] Ibid.
[203] Bellucci, *Peirce's Speculative Grammar*, 23.
[204] W2: 57.
[205] See especially Short, *Peirce's Theory of Signs*, 164-168.
[206] CP 2.274 (1903)
[207] SS: 80-81 (1908)

> 3) A Sign is a Cognizable that, on the one hand, is so determined (i.e., specialized, *bestimmt*) by something *other than itself*, called its object…, while, on the other hand, it so determines some actual or potential Mind, the determination whereof I term the Interpretant created by the sign, that the Interpreting Mind is therein determined mediately by the Object.[208]

Short acknowledges that casual language is one way of interpreting what Peirce means by determination. When Peirce says that the object determines the sign which mediately determines the interpretant, does he mean that the object, in some sense, *causes* the creation of the sign which thereafter mediately *causes* the formation of the Interpretant? Short contends that this reading is "implausible, since a human being has a great deal of choice in how to interpret signs."[209] In 3) above, we see Peirce clarify that he means "determined" in a "specialized" sense, deploying the German word "*bestimmt*." What is this specialized sense? Short draws attention to a letter Peirce sent to James in 1909, where he writes that "You [James] will probably object that *bestimmt,* to your mind, means 'causes' or 'caused.' Very well, so it does to mine."[210] Peirce proceeds to consider an example that shows why casual language is not the best way to understand what he means by "determined" or "*bestimmt*:"

> But, you may suggest, to take as an example the old-fashioned hygrometer in the form of a house from which the goodman emerges while the goodwife retreats when the interpreter of the instrument is to expect a storm and *vice versa* when it ought to clear up, although both man and wife are apt to be procrastinate in their movements, especially after a long storm, is it not a little forced to say that the *future* weather *causes* these antecedent movements? How can a cause *act* before it exists? It is conceivable that, before the morrow whose weather the instrument professes to predict comes, the Three Universes may collapse, and Time with them; so that nothing at all shall come into being to be the Dynamic Object of the sign. Can absolute Nothing be a cause in any recognized sense?[211]

Peirce confesses that this explanation is "as lucid as a bottle of ink,"[212] but it suffices to show that Peirce had something other than causation in mind when he speaks of determination in the context of signs. Short contends that

> there lurks another meaning of "determine" (and also of *bestimmen*) that applies to the relation of object to sign and of sign to interpretant and that perhaps brings us still closer to Peirce's intention. This meaning is that of to limit, as in, "The water's edge determines where your property ends." … Each object limits, or determines, what may be a sign of it, and each sign similarly determines what may be an interpretant of it.[213]

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[208] EP2: 492 (1909).
[209] Short, *Peirce's Theory of Signs*, 166.
[210] EP2: 497, Short, *Peirce's Theory of Signs*, 166.
[211] EP2: 497n
[212] EP2: 497n
[213] Short, *Peirce's Theory of Signs*, 167.

I follow Short in utilizing the notion of determination as a kind of *limiting*. When propositions are *premised* to determine an interpretant conclusion, that intended conclusion is limited, or determined, by the content contained in the premises and the form of the relations among the terms. It is not that the premises cause us to infer a conclusion, but that they impose a limit on the possible array of conclusions we might logically infer. If we sufficiently consider the premises as signs, they determine the conclusion, that conclusion being the limit of the inferential process.

It is important to remember that for Peirce an argument is "a body of premises considered as such."[214] The conclusion, then, is not strictly speaking part of an argument. An argument is a symbol that represents a relation between premises (which are themselves propositions, or symbols, involving terms which are also symbols) in such a way that they determine an interpretant sign (or conclusion). As Bellucci puts it, "the function of an argument ('Socrates is a man. Therefore Socrates is mortal') is both to represent the object as a proposition does ('Socrates is a man') and to represent the interpretant proposition that may be substituted for it without loss of truth in the substitution ('Socrates is mortal')."[215]

In a deductive syllogism in the first figure, for example, a *case* subsumed under a *rule* is a symbol, or argument, that determines a *result*, which is in turn the interpretant of the argument as a symbol. So for instance the propositions (or symbols) that "all conquerors are butchers" and "Napoleon is a conqueror" *are premised* so as to determine the interpretant — a further proposition (or symbol) — that "Napoleon is a butcher." In this way, Peirce writes, "in an argument, the premises form a representation of the conclusion, because they indicate the interpretant of the argument, or representation representing it to represent its object."[216] When an argument determines an interpretant, an illative transformation occurs whereby one symbol (the premises) consists in the determination of another (the conclusion), the conclusion being the interpretant of the argument completing a *total symbol*. Liska offers a variation of this interpretation when he says that "a premise is a proposition which contributes to the determination of a conclusion" and that "the conclusion of an argument is its interpretant, understood as the *product* of the sign process."[217]

Illation, or the act of drawing an inference, is a semiotic process that consists in the determination of an interpretant. This determination is governed by a leading principle of inference, which, as Liska puts it, is a "habit of thought controlling and validating inference from premise to conclusion."[218] Peirce writes in his "Classification of Arguments" (1867) that "every inference involves the judgment that, if *such* propositions as the premises are true, then a proposition related to them, as the conclusion is, must be, or is likely to be, true."[219] He goes on to claim that the "principle implied in this judgment, respecting a genus of argument, is termed the *leading principle* of the argument."[220] From the perspective of semeiotic, this leading principle is the ground on which the premises form a representation of the conclusion. As Peirce

[214] W2: 23.
[215] Bellucci, *Peirce's Speculative Grammar*, 23.
[216] W2: 58.
[217] Liska, *General Introduction*, 57.
[218] Ibid.
[219] W2: 23.
[220] Ibid.

writes later on, "when an Argument is brought before us, there is brought to our notice … a process whereby the Premisses bring forth the Conclusion, not informing the Interpreter of its Truth, but appealing to him to assent thereto."[221] An argument, he says, "is essentially intended to be understood as representing what it represents only in virtue of the logical habit [i.e., leading principle] which would bring any logical Interpreter to assent to it."[222]

The reduction of illation to the sign relation, considered in Chapter 1, shows that the whole process of inference (the assent to a conclusion from the premises and a leading principle) can be understood in terms of what Peirce calls a total symbol. From this point of view, inference is the semiosis, or determination, of such a symbol, in which the premises form a representation of the conclusion through the determination of an interpretant on the ground of a leading a principle.[223] The sign of illation (∴) indicates that such a tri-relational determination, or process of transformation, has taken place: P ∴ C, where C is the interpretant of P on the ground of leading principle L.

On this early reading, the difference between term, proposition, and argument depends on the function that each serves in the determination of a conclusion. The progression from term to argument fills in the triadic relation, thereby completing a total symbol. Unlike Ockham, Peirce thinks meaning is never found in the objects that terms stand for because, strictly speaking, as a symbol a term does no more than represent a possible character, and cannot be a total symbol, being a mere set of marks with no power to stand for an object or produce an interpretant.

A proposition is more complete than a term but still less complete than an argument, bringing a subject into relation with its predicate and therefore picking out a particular object and asserting that something is predicated of it. The proposition, then, is more complete than a term because it fills in the object position of the triadic relation, but it is still less complete than an argument because (as a *mere* proposition) it has yet to be premised so as to determine an interpretant sign or conclusion (it is a proposition not yet addressing a mind). When a proposition is *premised* it becomes an argument and is thereby intended to produce an interpretant. The proposition "Socrates is a man" can be *premised* so as to determine the interpretant sign "Socrates is mortal," and it is in this sense that an argument is a *total* symbol. It depends on the total relation between a sign, an object, and an interpretant. If Ockham is a termist in logic, then Peirce is an inferentialist, understanding signification through the inferential process that the mind activates when reasoning.[224] The point is not to analyze arguments into their constituent parts, but to recognize the way in which an argument is a total symbol that consists in the determination of its interpretant conclusion through the function of other symbols, namely, terms and propositions.

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[221] CP 4.572

[222] Ibid.

[223] Semiosis is the action of signs, a process involving the tri-relative relation among object, sign, and interpretant. That process is governed by determination in the sense of "limiting" considered above. Since the reduction of illation to the sign relation (considered in Chapter One) shows that inference is spelled out in terms of semiotic relations, inferential processes are one of the possible varieties of semiosis and are governed by the determination of signs.

[224] I do not allude to Robert Brandom's work. I mean inferentialist in the sense that meaning is ultimately found in the determination of signs, evoking the original meaning of semiosis as sign inference. There may be fruitful connections, but I do not delve into the arguments around neo-pragmatism.

The nominalist point of view, which is always oriented toward the object, mistakenly assumes that signification is found in the objects that categorematic terms pick out, assigning terms the foundational role as bears of meaning. But if Peirce's assessment is right, this could hardly be considered a secure foundation, as terms are far from *bounds* or *ends*. Indeed, for Peirce terms *as such* do not even have their own reference, always remaining vague or indeterminate until they are brought into a propositional context. Nominalists arrive at their account only because they eliminate the interpretant, though in doing so they fail to account for the process that, on Peirce's picture, gives a sign its life, that is, its potential to determine an interpretant. Always oriented toward the future, semeiotic realists recognize that there is no signification apart from the determination of an interpretant. So, they must look to arguments for signification, as it is arguments that ultimately determine interpretants.[225] For Peirce, it is always the process that matters most. He writes that "this Process of Transformation [i.e., inference], which is evidently the kernel of the matter, is no more built out of Propositions than a motion is built out of positions."[226] Indeed, as I argue in Chapter 3, inference is a continuous process and to try to analyze it into simpler units breaches this continuity. There is no termist foundation for Peirce. We must focus instead on arguments and the inferential process of signs.

## 27. From Categorematic Terms to the Terminus of Relational Predicates

Peirce's early view that terms, propositions, and arguments *are symbols* challenges Ockham's assumption that categorematic terms are the ultimate bearers of meaning, emphasizing instead the function that these terms serve in inferential processes. However, there is another respect in which Ockham and Peirce understand terms differently, having to do with how a term is a *terminus.* In the 1860s, Peirce was still working with a subject-predicate form of logic (he sometimes called this ordinary logic), which led him to treat terms, propositions, and arguments as divisions of symbols. Hence, while the term is not the ultimate bearer of meaning (arguments are), it is understood to be *capable* of playing the role of subject *or* predicate in a proposition.

A term like "conqueror" is a singular symbol that can be either a subject (as in the proposition "*Conquerors* are butchers") or a predicate ("Napoleon is a *conqueror*"). However, in the 1870s Peirce begins to develop a system of predicate logic with relations, independently of Frege, which leads him to favour the predicate as the primary logical *term*.[227] Logical analysis does not terminate in a categorematic term, which, being a singular sign, can be a subject or a predicate, but rather in what Peirce calls a general relational predicate (for example, something of the form "___is a man"). From this perspective, the *terminus* is no longer a symbol but the *icon* of a relation that is capable of extending over a range of possible subjects. The subject, we will see, is no term at all. Only the predicate, as a general relation, is a term for Peirce.

Some passages from Peirce's mature writings elucidate this subtle maneuver. In "The Nature of Meaning," he writes:

[225] This point about signification and meaning being a matter of arguments and not terms lends further support to the point I made earlier in Chapter 1: Peirce turns from Kant to Aristotle precisely because the only signification that propositions have is the role they play in arguments, or inference.
[226] CP 4.572
[227] The logic of relations is developed in Chapter 3.

> Let us ask what the *end* of a term is. It is plain that no use can be made of it until it is introduced into a proposition; and when it is introduced into the proposition it must form the predicate or some predicative constituent of the predicate. For the subjects of a proposition merely fulfill the function of indices and involve no general conception whatever, while a term is *essentially general*, although it may involve indexical constituents.[228]

His point is that the *terminus* must be general rather than direct and determinate, and must also be *useful*, that is, capable of becoming determinate in a proposition. What he is looking for in an *end* is not the ultimate constituents of a proposition (like the categorematic and syncategorematic terms of termist logic). Rather, Peirce wants a *terminus* that is utterly general and devoid of all denotation, or reference to an object. He finds such an *end* by beginning with a proposition and abstracting those elements that serve to indicate an object, namely, the "subject." When we do this we are left with the form of a relational predicate, or the icon of a general relation, as he writes to Welby: "when we have analyzed a proposition so as to throw into the subject everything that can be removed from the predicate, all that remains for the predicate to represent is the form of connection between the different subjects as expressed in the propositional *form*."[229] Since, for Peirce, a term is utterly indeterminate, he must abstract from the subject because it is precisely the subject's role to indicate an object. Peirce asks us to

> Imagine that certain parts of a proposition are erased, so that it is no longer a proposition but a *blankform* of a proposition containing one or more *blanks,* all which blanks are such that if they are all filled with demonstrative pronouns or proper names, the result will be a proposition. Then such a blank form of proposition is a *rhema,* or as I am accustomed to call it, a *term*.[230]

The significance of Peirce's point is best understood through an example. Consider the proposition "Socrates is a man." Here the subject "Socrates" indicates an object that has the general character of humanity (as conveyed by the predicate). We need only abstract from the subject to reach our *terminus*. We would then have the monadic relation "____is a man," where the entire relation is the predicate, which is a general relation because its blank extends over an indefinite number of subjects (Aristotle, Peirce, Kafka, and so on).

It might sound strange to call this entire *relation* a predicate or term, but in a fascinating passage Peirce explains that it is most reasonable to do so:

> Most logicians will say that this is not a term. The term, they will say, is "mortal," while I have left the copula "is" standing with it. Now while it is true that one of Aristotle's memoirs dissects a proposition into subject, predicate, and verb, yet as long as Greek was the language which logicians had in view, no importance was attached to the substantive verb, "is," because the Greek permits it to be omitted. It was not until *the time of Abelard*, when Greek was forgotten, and logicians had Latin in mind, that the copula was recognized as a constituent part of the logical proposition. I do not, for my part, regard the usages of language as forming a

[228] EP2: 220; my emphasis.
[229] SS: 71.
[230] EP: 221.

> satisfactory basis for logical doctrine. *Logic, for me, is the study of the essential conditions to which signs must conform in order to function as such.*[231]

Peirce's gloss is illuminating, as it shows that when Abaelard, the prince of the *Nominales*, applied termist logic to *spoken* and *written* terms, he applied it to the Latin language primarily and as a result was led by the nature of the language he was analyzing to break terms down into more pieces than was *logically* necessary. Since for Abaelard logic is about spoken and written terms primarily, those terms provide a faulty basis for logical analysis. From the point of view of logic considered as semeiotic it would be foolish to base the types of sign relations relevant to logical analysis on the sign system of any particular written or spoken language.

Ockham never overcame Abaelard's blunder. In fact, he doubled down on it. While he "advanced" termist logic by applying its syntax and semantics to the structure of cognition, he still let the syntactical structure of the Latin language influence his logic of concepts. For Peirce, however, "logic is the study of the essential nature of signs. A sign is something that *exists in replicas*. Whether the sign 'it is raining'… happens to have a replica in writing, in oral speech, or in silent thought, is a distinction of the very minutest interest in logic, which is a study, not of replicas, but of signs."[232] The distinction between conceptual, written, and spoken language is of no interest to Peirce's logician as these are mere replicas of more general types of semiotic relations.

A logician does not care whether a deduction is spoken, written, or thought because each of these instances can be subsumed under more general semiotic relations—the semiotic relation between premise and conclusion holds whether the inference is expressed by written, spoken, or mental signs. When we analyze an inference we ought to look beyond these expressions to the real semiotic structure governing the inference. Similarly, the *terminus* of a proper analysis of the proposition is not a collection of conceptual signs (which Ockham gives priority over written and spoken signs). Instead, the analysis should reveal the general form of the relation that governs the particular subjects that fill in the blank in a given proposition, whether written, spoken, or thought. We are looking for the general character of a relation among the possible subjects of a proposition, not a set of singular mental signs, categorematic or syncategorematic.

The blank form "____is a man" is a unary relation,[233] and the entire relation is a term which is general in that it has no determinate reference to an object, as a categorematic term would in termist logic. Indeed, the term is no longer even a symbol. It is an *icon* expressing the form, or character, of a relation among possible subjects. Peirce writes that an icon is "very perfect in respect to signification, bringing its interpreter face to face with the very character signified. . . . But in denotation it is wanting. It gives no assurance that any such object as it represents really exists."[234] When I insert "Socrates" into the blank space, the term *becomes* a proposition, and now indicates that there is an object that stands in relation to the predicate "_____is a man." In this way, a proposition is no longer a symbol either, but rather an *indexical*

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[231] EP2: 308-09.
[232] EP2: 311.
[233] There are also binary relations like "_____kills_____." This relation could become the proposition "Cain kills Abel," for instance. There would be ternary relations too, for example "___gives____to_____."
[234] EP2: 307.

sign (subject) with an iconic dimension (relational predicate).[235] Remove the subject and you are left with a relational predicate or term. Insert a new subject and it becomes a proposition again ("Aristotle is a man"). There is no determinate set of subjects that exhaust this predicate's generality. As a term, it merely presents the character of a relation between a possible subject and the predicate.

In the 1860s, Peirce understood an argument to be a total symbol that consists in the determination of an interpretant, where that inferential process functions via other symbols (terms and propositions). The mature Peirce still emphasizes the interpretative process involved in arguments. The argument is still a total symbol, only now the dimensions of an argument are no longer themselves symbolic but are iconic (general relational predicate, or term) and indexical (propositions). That is, an argument is a genuine symbol, but now it is understood to be powered by iconic and indexical signs, rather than by other symbols. In this way, an argument is a *genuine* symbol for Peirce. It is, from the perspective of his categories, a *real* third as it determines an interpretant through an inferential process involving both an iconic and indexical dimension. The following argument (with its interpretant) is a genuine symbol:

> Socrates is a man,
> All men are mortal,
> Therefore, Socrates is mortal.

Here, two propositions are *premised* to determine an intended conclusion or interpretant. The argument's *purpose* is to determine such an interpretant. But if we remove the interpretant, its purpose, we are left with two propositions:

> Socrates is a man.
> All men are mortal.

For the mature Peirce, these are not properly speaking symbols at all. As propositions, they are *degenerate* (rather than genuine), consisting only of an index (filled-in subject) with an added iconic dimension (general relational predicate). The subjects "Socrates" and "Men" fulfill the role of indexes as they indicate an object (Socrates) or a system of objects (men). The objects indicated by the subject have the general character of the predicate. A proposition is not itself a *Third* but involves a *Second* and a *First*, which makes it not that different from a weathervane. In Chapter 1, I used the weathervane as an example of an index, though for the mature Peirce this is not quite right. A weathervane does not signify anything without an icon. It is not enough for the weathervane to merely point in the direction of the wind; it must also convey to its interpretant that the direction it points is a *likeness* of the direction of the wind. An index does not signify anything without an icon, and in this sense a weathervane *is* a proposition because it functions to pick out an object (the direction of the wind) by way of a real physical connection *and* to convey to its interpretant that the position of the weathervane is an icon of the direction of the wind.[236]

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[235] EP2: 307-08; my emphasis.

[236] It is remarkable that the logic of signs, being more general than any natural or even formal language, accepts that a weathervane is a proposition. Indeed, the weathervane could even be *premised* so as to determine an interparent. Farmers do this when they appeal to the weathervane to determine whether it is safe to spray pesticide on their fields.

What is the iconic dimension of the proposition "Socrates is a man"? Certainly not the subject, as its inclusion is precisely the indexical dimension. But as a term, "Socrates" does not signify anything. It is not, *as such*, an index. It requires the added iconic dimension of the relational predicate "_____is a man." In this way, the *terminus* of our argument is not the set of words "Socrates," "man," and "is," but is rather the icon, or *Firstness*, that remains once its *Thirdness* (symbolic) and *Secondness* (indexical) dimensions have been erased. We are left with two terms that are nothing more than icons of a relation:

_____is a man.
_____are mortal.

We can now appreciate the significance of Peirce's mature view that logic does not amount to much without icons and indices:

> In all reasoning, we have to use a mixture *of likenesses, indices,* and *symbols.* We cannot dispense with any of them. The complex whole may be called a *symbol;* for its symbolic, living character is the prevailing one [i.e., an argument as a total symbol]. . . . Now, we may liken the indices we use in reasoning to the hard parts of the body [i.e., the function of the proposition as an index], and the likenesses we use to the blood [i.e., the function of term as the icon of a relation]: the one holds us stiffly up to the realities, the other with its swift changes supplies the nutriment for the main body of thought.[237]

An argument is the symbol *par excellence*. It is a living reality that carries the mind from premise to conclusion through the determination of a sign. But it would have no life without its indexes and icons.

Peirce's turn to the logic of relations allows him to conclude that the primary elements of logical analysis are not categorematic terms that signify directly and determinately but rather general relations. From Ockham's vantage, we need only break a proposition down into its constituent parts: two categorematic terms ("Socrates" and "man") and a syncategorematic term (the copula "is"). But as we saw, this decomposition depends, in a very illogical way, on the rules of the Latin language rather than on a theory of signs. Ockham is forced to say that "Socrates" and "man" both stand for existing singulars and that the terms themselves supposit for those objects in the propositional context where they are joined by the copula. Analysis terminates in an understanding of that for which those terms supposit and a predicate is *not* a relation because, as a categorematic term, it can only signify singular objects. The mistake, as Peirce sees it, is to assume that the terminus could be anything but a general relation.

Earlier I made the point that Ockham's nominalism does not allow him to treat relations as ontologically significant entities existing in physical reality. Now we see that the same nominalism is also an obstacle to an adequate treatment of relations in logic. By emphasizing categorematic terms as the *terminus* of his logic he makes relation out to be an affair of propositions ultimately glued together by syncategoremata that bring their terms into relation. This approach makes relation a matter of *secondary* signification as opposed to the *primary*

[237] EP2: 10.

signification of categorematic terms. Peirce's logic of relations dispenses with this distinction and treats terms as icons of general semiotic relations capable of denotation in the context of a proposition, which can itself be so premised as to determine an interpretant in an argument.

My aim has not been to provide a complete analysis of Peirce's understanding of the logic of relations but only to show how it affords a different idea of *terminus* compared to Ockham. This difference is not insignificant, and, I think, really gets to the heart of Peirce's critique of nominalism, because while he was content to point out the practical reasons for dispensing with nominalism at the end of his Berkeley review, he remains adamant that the controversy has its roots in logic and mathematics. Nominalism is a pervasive doctrine. It "has become incorporated into … the very flesh and blood of the average modern mind."[238] It is not enough to point out its pragmatic flaws. The conflict between nominalism and realism must ultimately be fought out in the thorny mazes of the logic of signs and, as we will see in the following chapter, by deep reflection on the nature of continua. In a draft for one of his lectures at Cambridge in 1898, Peirce writes:

> My plan for defeating nominalism is not simple nor direct; but it seems to me sure to be decisive, and to afford no difficulties except the mathematical toil that it requires. For as soon as you have once mounted the vantage-ground of the logic of relatives, which is related to ordinary logic precisely as the geometry of three dimensions is to the geometry of points on a line, as soon as you have scaled this height, I say, you will find that you command the whole citadel of nominalism, which must thereupon fall almost without another blow.[239]

The logic of relations thus affords a new way of treating logic, opening a new dimension for the understanding of signs and their signification. Ordinary logic (the subject-predicate structure of termists) is to the logic of relations what two-dimensional space is to three-dimensional space—a point I will explore in more detail in the final chapter.

Ultimately, It comes down, as it always does, to the nominalist's view that reality is a *res extra animam*. Such a position does not allow for the reality of relation and makes it impossible to treat a relation as a logical terminus. Peirce's Semeiotic Realism acknowledges real generality and so from this perspective the logical relation, which is only another word for the semiotic relation, is real.

## 28. Conclusion

The aim of this chapter has been to answer two questions: What is nominalism, and what is Peirce's plan for defeating it? I began my explanation by tracing the history of nominalism in the middle ages. We saw that nominalism is only secondarily concerned with the problem of universals, being primarily a thesis on the interplay between signs and reality. I focused on Ockham's theory, elaborating the core features of his termist logic by evaluating his definition of the *signum*. We saw that this analysis bottoms out in absolute categorematic terms that signify the individuals of a nominalist ontology. A further consequence is that the nominalist's sign is

[238] EP2: 157.
[239] CP 4.1

not a real triadic relation—the razor is applied to shave the interpretant, leaving only dyadic relations contained *within* singular cognitive acts.

In the second part of the chapter I turned to Peirce's work, showing that he did not believe that nominalism is primarily about universals, a position amply confirmed by contemporary scholars of Medieval philosophy. The heart of the nominalist's doctrine is that reality is totally independent of the mind, which poses a problem for Peirce's theory of signs, since from the nominalist point of view signs are *ens rationis* and have no mind-independent reality. To solve this problem I introduced Peirce's view of the reality of generality, showing how we can understand the precise sense in which a sign is a *real* relation. Finally, I launched a multifront assault on Ockham's nominalism, showing how Peirce challenges Ockham's ontological position on the nature of reality and his epistemological position on intuitive cognition.

We saw that Ockham's definition of the *signum* not only reduces signs to singular cognitive acts but also leaves him unable to account for logically significant differences among sign types. Finally, I elaborated on the consequences that this definition of the sign has for logic, showing how it leads to a narrow conception of logic on the one hand and an atomistic rather than inferentialist understanding of the term-proposition-argument triad, hinting that Peirce's turn to the logic of relations leads him to view terms *as* relations, which bolsters our understanding of logic considered as Semeiotic and affords a new vantage from which to analyze arguments.

In my final chapter I evaluate the merits of Peirce's turn to the logic of relations, extending the arguments of this chapter to unfold Peirce's mature plan for defeating nominalism. The mature Peirce refines his life-long exploration of the mathematical nature of continua to characterize the nominalism-realism controversy. Continuity becomes a central concept, not only to the nominalism-realism controversy but to Semeiotic Realism generally. This last argument pushes the analysis of the proposition into relational predicates to its ultimate limits, and the citadel of nominalism crumbles without another blow. In the course of this argument, we follow Peirce's effort to present logical analysis diagrammatically. Since he insists that logic should be considered as a theory of signs, it is necessary for him to develop a new logical notation that better represents the continuous process of reasoning. Peirce's existential graphs are an attempt at such a notation. His move to graphical notation is thus an attempt to better represent the continuity between his logic of signs and his theory of reality.

# Chapter 3

## On the Fringes of the Logic of Relations:

## Peircean Continuity and the *New* Plan for Defeating Nominalism

*These studies will inculcate a strong dislike and contempt for all sham-reasoning, for all thinking made easy, for all attempts to reason without clothing conceptions in diagrammatic forms.*

Charles Peirce, *Reasoning and the Logic of Things*

### 1. The Road Ahead

In Chapter 2 I explained Peirce's view that the terminus of analysis is a relation and that this is significantly different from Ockham's view of atomic conceptual signs. Peirce asks us to shift our focus from the catagoremata that pick out existing objects primarily and directly to relations that persist independently of the subjects related. Whereas Ockham treats absolute terms as the primary bearers of meaning, making relation a matter of secondary signification in propositional contexts, Peirce's analysis results in the opposite view, namely, that relations are the elementary units of logic and related subjects secondary to their propositional context. A subject is not a term, though a relation is. The result is that relations precede related subjects and have an independent reality.

However, I left out something crucial. The Peircean analysis does not actually stop at a relational predicate like "___is a man" or "__kills__". Peirce takes the analysis further to arrive at a *continuous relation*. These so-called continuous relations are the ultimate elements of logic and once we reach them it is fruitless to carry analysis further. So, what is a continuous relation? How does it mark the end of the analysis? And how does their introduction extend or amplify the critique of nominalism? These are my questions for this final chapter.

We saw Peirce's claim that once one "has mounted the vantage-ground of the logic of relatives … [one] command[s] the whole citadel of nominalism, which thereupon must fall almost without another blow."[1] He takes the logic of relations to be crucial to his new plan for defeating nominalism, though I did not develop this argument fully in chapter two, choosing to leave it to this final chapter. Scholars agree that the logic of relations allows Peirce to transform the question "Are generals real?" into the question "Are continua real?"[2] Peirce himself makes this point in his 1898 Cambridge Lectures: "the continuum is that which the Logic of Relatives shows the *true* universal to be.... Thus the question of nominalism and realism has taken this

[1] CP 4.1.
[2] Boler, *Peirce and Scholastic Realism* (Seattle: University of Washington Press, 1963), 67; Fisch, *Peirce, Semeiotic, and Pragmatism* (Bloomington: Indiana University Press, 1986), 189-90. RLT: 160-61.

shape: are any continua real?"[3] Scholars like Boler, Fisch, and Murphey have treated this problem, though none have taken into account the significance of *continuous relations*.

Peirce's notion of continuity (which, I will show, considerably extends that of Cantor) establishes that analysis goes no further than a continuous relation, a conclusion that devastates nominalism. Remember that the nominalist treats the universe as a heap of sand. There is no real continuity in a world of absolute individuals; it is all fictive, imaginary, products of thinking. Consequently, there is no continuity among the absolute terms that result from nominalist analysis, a conclusion unacceptable to Peirce, for whom continuity is "the master key which adepts tell us unlocks the arcana of philosophy."[4]

I begin this chapter by examining Peirce's 1898 Cambridge Lectures, where he explains why the problem of continuity belongs to the nominalism-realism controversy. My analysis focuses on a close reading of Peirce's third lecture, "The Logic of Relatives," which requires a discussion of both the logic of relations and Peirce's understanding of continuity. I limit my treatment to Peirce's mature theory of continuity, and support my view with the recent achievements of the Colombian School of Peirce interpretation.[5] The mathematical definition of continuity is crucial to a proper understanding of the continuous relation, which is the ultimate element of Peircean analysis. Before making this claim, however, I present the key features of Boler's interpretation of Peirce's logic of relations, which I show does not go nearly far enough. Like Murphey, he treats only the *extension* of relational predicates as continuous systems. Neither pushes their analysis to the continuity of relations themselves.

I pick up where Boler leaves off, arguing that the *continuous relation* is fundamental to Peirce's mature critique of nominalism.[6] My argument is not merely that the logic of relations treats the extension of relational predicates as a continuum (Murphey and Boler's view), but that relations themselves are continuous with one another. This requires us to abandon the nominalistic view that there is an absolute terminus of analysis. I conclude the chapter with a discussion of continuous semiosis and its relation to Peirce's theory of existential graphs. The continuity of relations requires a new way of representing logical inference diagrammatically, which is the work of the existential graphs. This new notation more clearly and *iconically* represents inference as continuous semiosis.

## 2. The Beginning of the End: The Rocky Road to the Cambridge Conference Lectures of 1898

The year 1898 brings a *new* plan for defeating nominalism. I begin my account of this phase with the history leading up to Peirce's Cambridge Lectures of that year.

His father, the renowned mathematician Benjamin Peirce, died in 1880. In 1883, Peirce divorced his wife Melusina and married Juliette Froissy six days later. Johns Hopkins University

[3] RLT: 160-61.
[4] CP 1.163.
[5] Fernando Zalamea, Gustavo Arengas, Francisco Vargas and Arnold Oostra, *Advances in Peircean Mathematics: The Colombian School* (Berlin: De Gruyter, 2023).
[6] Francesco Bellucci, "Peirce's Continuous Predicates," *Transactions of the Charles S Peirce Society* 49, no. 2 (2013): 178-202.

terminated Peirce's lectureship in 1884—the only academic position he ever held—due to his divorce and his sometimes erratic character. Peirce was not cut from the same cloth as the "fine gentlemen" of Johns Hopkins University: "Thus it came to pass that one of America's greatest masterminds, who had an impeccable academic endowment and tradition, was banned from the American Academy."[7]

In 1888 Peirce used his father's legacy to purchase farmland "two and a half miles beyond Milford [Pennsylvania], and four below the bridge to Port Jervis, New York."[8] There he remodelled and expanded an old farmhouse into "Arisbe," his residence for the last twenty-six years of his life. Peirce used most of his money on renovations and could not afford to maintain the house, which deteriorated in tandem with his health as he approached the end of his life in 1914.

In 1891, he resigned from the Coast and Geodetic Survey (where he worked for most of his adult life) and fell into financial hardship, relying on help from friends like William James and odd jobs writing dictionary entries for *Century* and *Baldwin.* Despite this hardship, Peirce was able to produce some of his best philosophical work in this last period.

Paul Carus, then editor of *The Monist,* provided a reliable outlet for Peirce's philosophical work at this time. In 1892, he published a series of articles on cosmology and metaphysics in which he developed his theories of Tychism (real chance and possibility), Synechism (real continuity), and Agapism (evolutionary love). Synechism is particularly important to my argument here, as Peirce attempts to apply the mathematical conception of continuity to some of the principal domains of philosophy—logic, epistemology, and metaphysics. In his 1892 *Monist* article "The Law of Mind," Peirce argues that "ideas tend to spread continuously" and "in this spreading they lose intensity" but "gain generality and become welded with other ideas."[9] Synechism leads to the view that all things are continuous, replacing the classic dualisms (such as mind and body) by modes of continuity, which synechism codifies in the doctrine that "continuity governs the whole domain of experience in every element of it."[10]

In 1896 Peirce began to develop a graphical notation for logical analysis which he called *entitative* graphs. Carus agreed to publish an article presenting the new notation in *The Monist* but just as the manuscript was ready for publication, Peirce hit upon a discovery that changed a key rule of the system. Whereas the entitative graphs utilized disjunction as the primary logical operator, the new *existential* graphs made use of conjunction, which Peirce believed was much more natural.

However, Carus was unwilling to budge. He knew Peirce was a fallibilist, always updating and refining his views like a laboratory scientist, and the manuscript had already been typeset. As Peirce put it, "the Editor [Carus] feared that so swift the advances of exact logic seemed to be, that, before the types were half set up, the second system might be superseded."[11]

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[7] Kenneth Ketner and Hilary Putnam, "Introduction," *Reasoning and the Logic of Things* (Cambridge, MA: Harvard University Press, 1992), 5.
[8] Fisch, *Peirce, Semeiotic, and Pragmatism*, 227.
[9] W8: 136.
[10] EP2: 1.
[11] MS: 280. See also Don Roberts, *The Existential Graphs of Charles S Peirce* (The Hauge: Mouton, 1973), 25-30.

As fate would have it, the only published account of Peirce's graphs appeared in *The Monist* in 1896 under the title "The Logic of Relatives," which presented the earlier *entitative* system. A complete account of the new *existential* graphs was never published in Peirce's lifetime.

By 1897 Peirce had made considerable headway in his understanding of continuity and his graphical notation for logic. However, his financial situation was much worse. Out of touch with the professional philosophical world, Peirce worked out his new arguments in isolation. When James published *The Will to Believe* in 1897, he dedicated the book to Peirce. Peirce wrote to James thanking him for the dedication, but also expressing a growing misery:

> I have learned a great deal about philosophy in the last few years, because they have been very miserable and unsuccessful years,—terrible beyond anything that the man of ordinary experience can possibly understand or conceive. Thus, I have a great deal of idleness and time that could not be employed in the duties of ordinary life, deprived of books, of laboratory, everything; and so there was nothing to prevent my elaborating my thoughts, and I have done a great deal of work which has cleared up and arranged my thoughts. … I am much encouraged at your thinking well of "tychism." But tychism is only a part and corollary of the general principles of Synechism. That is what I have been studying these last fifteen years, and I become more and more encouraged and delighted with the way it seems to fit all the wards of your lock. It was a truly sweet thing, my dear William, to dedicate your book to me.[12]

Despite his despair, Peirce was deeply engaged in developing Synechism, studying continuity from every side, as a mathematician, semiotician, logician, and philosopher. He had nothing to do but philosophize. Living (as he says) on little more than a *baker's twist*, he began to articulate the philosophical system that he had been groping for since the 1860s.

Peirce wrote to James again to inquire about the possibility of presenting his new material at Cambridge the following year (1898). In reply James wrote:

> I am sorry indeed that the deplorable state of your affairs should be unrelieved. You write as one who knows misery from within. It seems incredible. You shall have a course of lectures here next year, long or short. I know it can be done, and I will see to it. We all want to hear you, and our graduates *ought* to.[13]

With James' reassurance, Peirce got to work immediately, crafting a syllabus for a series of lectures on logic, mathematics, and continuity. He took this as an opportunity to present the new system of *existential* graphs which Carus had been unwilling to publish a year earlier.

By Fall 1897 James had secured a series of lectures at Cambridge for early 1898. Peirce was to be paid around $1000, the audience would mostly be philosophy students, and the subject matter was up to Peirce. However, James insisted that Peirce lecture on tychism and synechism from the perspective of his evolutionary cosmogony rather than talk about logic or mathematics,

[12] Ketner and Putnam, "Introduction," 8-11.
[13] Ibid.

which he worried would not draw an audience sufficient to pay back the fees of the lecture series.

Peirce did not heed James' advice and the first sketch of his lecture series focused primarily on the existential graphs and the logic of relations. James was not happy with the decision to stick to formal logic: "I know our graduate school here, and so does Royce, and we both agree that there are only 3 men who could possibly follow your graphs and relatives…. Now be a good boy and think a more popular plan out."[14] James told Peirce that the lectures "need not by any means form a continuous whole. *Separate topics of a vitally important character* would do perfectly well." [15] The irony of James' request was not lost on Peirce, who had spent the last fifteen years trying to come to grips with continuity. There are no *separate* topics, no *detached* ideas. Continuity *is* the most vitally important topic.

In the end, Peirce met James halfway. In the opening lecture, he addresses his audience, explaining his desire to present a new theory of logic:

> I was asked in December to prepare a course of lectures upon my views of philosophy. I accordingly set to work to draw up in eight lectures an outline of one branch of philosophy, Objective Logic. But just as I was finishing one lecture word came that you would expect to be addressed on Topics of Vital Importance, and that it would be as well to make the lectures detached. I thereupon threw aside what I had written and began again to prepare the same number of homilies on intellectual ethics and economics. They were wretched things; and I was glad enough to learn, when three-quarters of my task was done, that it would be desirable that as much as possible should be said of certain philosophical problems…. Thus you will find me part of the time offering you Detached Ideas upon Topics of Vital Importance, while part of the time I shall be presenting philosophical considerations, *in which you will be able to feel an undercurrent toward that Logic of Things concerning which I shall have an opportunity to interject scarce one overt word*.[16]

While James' overbearing editorial presence stifled an adequate presentation of the existential graphs (a fate repeated with the 1903 Lowell Lectures), Peirce developed a rich and significant series of lectures. He elaborates on three topics that he considered to be *vitally important* to philosophy: the nature of reasoning, continuity, and the nominalism-realism debate. The lectures are not devoid of logic or mathematics. There is a major account of Peirce's theory of continuity and his logic of relations (as well-tuned as possible for a popular audience). Most important, there is a new plan for defeating nominalism. These themes are not entirely detached but make up the beginning of Peirce's mature views about continuity, logic, and nominalism.

I tell this story about the origin of Peirce's Cambridge Lectures to make clear their significance to his philosophical development. Without these lectures and the Harvard and Lowell Lectures from 1903, Peirce would not have had the opportunity to refine the many ideas he had scattered upon tens of thousands of manuscript pages into coherent arguments. Peirce is at

[14] Ketner and Putnam, "Introduction," 25.
[15] Ibid.
[16] RLT: 108.

his best in these lectures. He prepared the Cambridge Lectures as though his life depended on them (because it did), using the opportunity to develop the ideas he had been working on in miserable isolation. In what follows, I offer a close reading of Peirce's third lecture and spell out his new plan for defeating nominalism: one that takes the logic of relations as its starting point. He not only shows that continuity is crucial to a proper understanding of the nominalism-realism controversy. Peirce's view here is a seed that grows into his notion of *continuous relations*, the most devasting argument one could launch against nominalism from a logical perspective.

## 3. The Intertwining Fibers of a Philosophical System

Peirce's new critique of nominalism appears in the third of these Cambridge Lectures, entitled "The Logic of Relatives." Following James' advice, he addresses the nominalism-realism controversy because he takes it to be a topic of vital importance in philosophy. However, Peirce chooses to approach the controversy anew through the logic of relations, which he presents as an improvement on ordinary subject-predicate logic, showing how from the perspective of the logic of relations the nominalist-realist controversy takes the new shape epitomized in the question, are continua real? To understand Peirce's new approach, we need to clarify both the advantage of the logic of relations and the new view of continuity, though it proves helpful first to recall the architecture of Peirce's philosophical system.

He begins the third lecture with a penetrating summary of his philosophical development, recapitulating the core ideas of his philosophy *so that* his audience understands the philosophical perspective from which he will launch the new argument against nominalism. We have already encountered many of these ideas in the preceding chapters, though it is worth quoting Peirce in full here, as it is one of the few occasions where he weaves together the many threads of his philosophical investigations, penetrating the very core of his system:

> When in 1866, Gentlemen, I had clearly ascertained that the three types of reasoning were Induction, Deduction, and Retroduction [hypothesis, or abduction], it seemed to me that I had come into possession of a pretty well-rounded system of Formal Logic. I had, it is true, a decided suspicion that there might be a logic of relations; but still I thought that the system I had already obtained ought to enable me to take the Kantian step of transferring the conceptions of logic to metaphysics.[17] My formal logic was marked by triads in all of its principal parts. There are three types of inference, Induction, Deduction, and Retroduction each having three propositions and three terms. There are three types of logical forms, the term, the proposition, and the inference. *Logic is itself a study of signs*. Now a sign is a thing which represents a second thing to a third thing, the interpreting thought. There are three ways in which signs can be studied, first as to the general conditions of their having any meaning, which is the *grammatica speculativa* of Duns Scotus,[18] secondly, as to the conditions of their truth, which is logic [or Critic], and thirdly, as to the conditions of their

[17] Peirce here confirms the argument that the forms of inference must be thought out in advance of the categories of being. Logic comes before metaphysics in the architecture of theories. This supports the argument I referred to offered by Bellucci in Chapter 1 and repeated in section one of this chapter.

[18] It is now well known that Scotus was not the author, who was Thomas of Erfurt. But in Peirce's time it was commonly thought that the author was Scotus.

> transferring their meaning to other signs [speculative rhetoric or pragmatism properly understood]. The Sign, in general, is the third member of a triad; first a thing as a thing, second a thing as reacting with another thing; and third a thing as representing another to a third. Upon a careful analysis, I found that all these triads embody the *same three conceptions*, which I call after Kant, my categories. I first named them Quality, Relation, and Representation. I cannot tell you with what earnest and long continued toil I have repeatedly endeavoured to convince myself that my notion that these three ideas are of fundamental importance in philosophy was a mere deformity of my individual mind. It is impossible; the truth of the principle has ever reappeared clearer and clearer. … I think it far the best plan to form entirely new scientific names for them. I therefore prefer to designate them *Firstness*, *Secondness*, and *Thirdness*.... They are ideas so excessively general, so much more general than ordinary philosophical terms, that when you first come to them they must seem vague to you.[19]

Peirce's opening remarks reinforce my account in the preceding chapters. We begin with logic considered as semeiotic and the idea of three types of sign inference (abduction, induction, and deduction) and three types of logical forms (terms, propositions, and arguments). Since logic *is* the study of signs, we require a general account of representation, which Peirce's conceptions of Object, Sign, and Interpretant supply. The logical forms and types of inference are understood to be varieties of this more general triadic relation, which governs the definition of the sign, the types of inference, and the variety of logical forms, all pointing to the more general conceptions Peirce names *First*, *Second*, and *Third*. Only when logic is understood through semeiotic can we take the Kantian step of transferring the conceptions of logic to metaphysics. Hence, the categories do not come before the systemic division of signs.

Peirce's categories are *general* modes of being that permeate all dimensions of reality, from mathematics and phenomenology to logic, metaphysics, and psychology. The categories function in all these perspectives because they are the conditions of the possibility of thought or thinking in general. Firstness is *could-be*: quality, potentiality, or term. Secondness is *actuality*: reaction, *thisness*, or proposition. Thirdness is *would-be*: representation, law, habit, tendency, or argument.[20] The categories are like Russian dolls: Thirdness involves Secondness and Firstness, Secondness involves Firstness, and Firstness *is as it is* apart from any Second or Third.[21]

It is possible to abstract the categories from any given experience. I can as Peirce says "prescind" the quality of redness from the experience of a Red Delicious, which results in an example of Firstness. I can also prescind the resistance of my jaw as I bite into the apple, which gives an instance of Secondness. And I can prescind the tendency of a Red Delicious to be sweet

[19] RLT: 146-47.

[20] The examples provided in these lists are not meant to be synonymous. For instance, "quality" is not synonymous with "term", however, both are examples of firstness. The point I am trying to make here is that these general categories of being are embodied in various disguises. For example, from the perspective of the division between term, proposition and argument, the term is a first, the proposition a second, and the argument a third. But from the perspective of phenomenology, the quality of an experience (the redness of an apple) is a first, the experience of reaction (biting into the apple) is a second, and the experience of a general law or tendency (red delicious apples are sweeter than granny smiths) is an example of a third. These categories permeate everything for Peirce, but they are understood differently, depending on the context they are applied to.

[21] NEM 4: 308.

rather than sour like a Granny Smith. Now I am thinking, comparing, and reasoning, which is Thirdness. But the categories do not depend on abstraction from experience, which is only one way of grasping them. I could as easily prescind the categories from the very form of an argument. Indeed, I have already done so in Chapter 2. An argument is a Third because it determines an interpretant or conclusion through the colligation of its premises. Erase the conclusion and you are left with a proposition, which is a Second (subject) involving a First (predicate). Erase the subject and you are left with a First (predicate).

Here is an example Peirce uses to convey his categories. Imagine a man sitting in a quiet room "thinking" of nothing but the quality of redness. This *feeling* is an example of Firstness. Abruptly, the door to the room blasts open and a piercing siren starts to blare. The man no longer has the quality of redness before his mind, his entire being succumbing to the new cacophony. The noise is another Firstness. But Secondness emerges from the clash between these Firsts. That is, the breaking of the man's concentration (the *shift* from the feeling of redness to the cacophony) is an example of Secondness. The man rushes to the door and slams it shut. The siren stops. He opens the door, and it starts again. Now the man is thinking and reasoning: he notices a general rule or law that governs the siren: when the door is open, the siren sounds; but when it is closed, the siren ceases. That law or rule is an example of Thirdness.[22] Another example. Suppose the air in the room is stuffy. That stuffiness is an example of Firstness. Someone opens the window, letting cool air in, which introduces Secondness by changing the temperature. The general law that stuffy air is unpleasant is Thirdness, which though general has the power to move someone to open the window. Real generality—real Thirdness—governs the action and reaction of Secondness.[23] These categories are often criticized for being vague and it is indeed difficult to have a clear and distinct idea of them. But they are supposed to be vague because that is required of general modes of being, whether logical or metaphysical. They are general and no example could completely convey their meaning. You can prescind them from a syllogism, from a semiotic relation, even from your soup if you want to, but the categories are ultimately irreducible to particular examples or what Peirce calls disguises.

## 4. The Logic of Relations

Having laid down the elements of his philosophical program and expanded on his categories of being, Peirce turns to the logic of relations to show why it leads to a new treatment of the nominalism-realism controversy. In his commentary on Peirce's third Cambridge lecture, Hilary Putnam writes that Peirce "sketched a discovery that few people had heard of at the time … the new subject (devised independently by Frege and by Peirce and his student [at Johns Hopkins] O. H. Mitchell) of quantification theory or (to use Peirce's term) 'the logic of relatives.'"[24] The logic of relatives, conceived very narrowly, involves the introduction of universal (denoted by "Π" in Peirce's early symbolic notation and by "∀" in popular contemporary notations) and existential ("Σ" or "∃") quantification into logic. Peirce, it is well-

[22] See EP2: 4-5 and SS: 26-27 for two instances where Peirce uses this example.
[23] EP2: 343.
[24] RLT: 68.

known, hits on this new discovery by extending Aristotelian syllogism through an improvement of Boole's algebra of logic and De Morgan's logic of relatives.[25]

But to say that Peirce's logic of relations merely introduces quantification into logic is misleading. As Sun-Joo Shin explains, "Peirce's predicate logic is neither a mechanical expansion from the existing logics nor a simple combination of these two."[26] Instead, it should be characterized by "three different dimensions: i) the scope of formalism (from monadic to relations), ii) the kinds of systems (from symbolic to diagrammatic systems), and iii) semantic values (from bivalence to three values)."[27] The third dimension goes beyond my aim in this chapter.[28] The second (moving from symbolic to graphical notation) will be addressed in passing soon and further expanded on in the final section of this chapter.

The first dimension is important now. It involves the move from a formalism that ranges over monadic predicates to one equipped to deal with relational predicates. Traditionally, monadic predicates like "is a man" stand for *properties* predicable of individuals ("Socrates"), while relational predicates stand not for properties but for relations among individuals ("is greater than," "loves," etc.). Traditional subject-predicate logic deals primarily with monadic predicates, typically restricted to the logic of absolute terms. A consequence is that relations become secondary—mere creatures of propositional contexts. Peirce's logic of relations broadens the scope of formal analysis to treat relational predicates by introducing existential and universal quantification. But this does not merely amount to reformulating the old syllogistic logic in new garb. As Shin points out, "quantification theory, according to Peirce, is not a matter of a linear extension of formal vocabulary, but an expansion into territory that is qualitatively different from what Aristotelian logic covers."[29] Peirce writes,

> it is interesting to inquire whether it [Boole's logical algebra] cannot be extended over to the whole realm of formal logic, instead of being restricted to that simplest and least useful part of the subject, the logic of absolute terms, which, when he wrote, was the only formal logic known.[30]

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[25] Peirce's development of the logic of relations spans a number of articles written between 1867 and 1885: "An Improvement in Boole's Calculus of Logic" (1867); "Description of a Notation for the Logic of Relatives, Resulting from an Amplification of the Conceptions of Boole's Calculus" (1870); "On the Algebra of Logic" (1880); "Note B: The Logic of Relatives" (1883); and "On the Algebra of Logic: A Contribution to the Philosophy of Notations" (1885). As noted in section 2 of this chapter, Peirce first moved beyond a symbolic to a diagrammatic notation for the logic of relations in his 1896 *Monist* article, "The Logic of Relatives." The third of his 1898 Cambridge lectures, which is the primary source considered here, was also entitled "The Logic of Relatives." My aim is not to thoroughly unfold this development, as this has already been achieved to great effect in Peirce scholarship. See Sun-Joo Shin, "Peirce's Deductive Logic," *The Stanford Encyclopedia of Philosophy* (Summer 2022 edition); Murphey, *Development*, 65, 133, 137, 151-52, 171, 176, 296-99; Ahti-Veikko Pietarinen's critical introduction to volume one and two of *Logic of the Future: Writings on Existential Graphs* (Boston: Walter De Gruyter, 2020, 2021), and Roberts, *Existential Graphs*.

[26] Sun-Joo Shin, "Peirce's Deductive Logic," *The Stanford Encyclopedia of Philosophy* (Summer 2022 edition).

[27] Shin, "Peirce's Deductive Logic."

[28] An interested reader should consult Brent Odland, "Peirce's Triadic Logic: Modality and Continuity," *Transactions of the Charles S Peirce Society* 57, no. 2 (2021): 149-71.

[29] Shin, "Peirce's Deductive Logic."

[30] W2: 359.

The worry is that traditional logic is inadequate to the full range of possible propositions (like "Whoever loves everything obeys something" or "there is one woman whom every Catholic loves") because they are restricted to a narrow understanding of the analysis of propositions, namely one that results in absolute terms, which of course cannot be relations. Peirce was inspired by De Morgan's formal representation of relatives and wanted to improve on De Morgan's project by extending Boole's formalism to account for relations. Peirce's logic of relations does not simply introduce quantification to broaden the scope of logical formalism but rather to expand the horizon of logic itself beyond the monadic predication of properties to a full-blown treatment of relations.

Rather than presenting the formal rules for the logic of relations in his lecture, Peirce motivates the need for this new logic by recounting the history of philosophical and logical reflection on relations. (His decision to present the view this way is certainly a sop to James, whom we should thank as it offers a way into the discussion without getting bogged down in formalism.) Peirce notes that his early view of logic (1865-67) was rooted in the ordinary subject-predicate form and that while it allowed him to formulate his categories he knew that his "scheme of formal logic was still incomplete."[31] Remember that the early Peirce was working in the Aristotelian tradition. His early account of sign inference (which I treated in Chapter 1) is a semiotic reinterpretation of syllogistic logic, albeit one that transcends the limited analysis of deduction to include natural-scientific inference. Peirce admits that it is "quite impossible to represent in syllogism any course of reasoning in geometry or even any reasoning in algebra except in Boole's Logical algebra" and that "pondering over these things, my notebook shows that I soon came out upon the logic of relatives and had so complemented the Boolian algebra as to give it power to deal with all dyadic relations."[32]

Peirce explains that relation "was recognized as a part of the subject matter of logic by Aristotle and all ancient and medieval logicians."[33] In *Categories*, for instance, Aristotle writes, "we call a thing relative, when it is said to be such as it is from its being *of* some other thing or, if not, from its being related to something in some way."[34] Jeffery Bower notes that while most philosophers treat relatives as "holding between two or more things, Aristotle prefers to speak of them as inhering in one thing and somehow pointing toward another."[35] He summarizes three key features of Aristotle's view of relations: "1) relations are the items that relate substances, 2) relations are accidents, and 3) no substance is a relation."[36] As an accidental category relations must inhere in substances. Being a father inheres in the father but points toward offspring. Running through Bower's points, "father" is first a relative that relates two substances, the father and the offspring; second it is accidental in that being a father is not essential to the nature of the father or the offspring; and third Third, as a relative "father" is not itself a substance.

Aristotle's theory of relations influenced all the medieval logicians. We already know Ockham's view, which reduces the Aristotelian categories to just two, namely individual

[31] RLT: 150. See also Murphey, *Development*, 65.
[32] RLT: 150.
[33] Ibid.
[34] Aristotle, *Categories,* 6a37.
[35] Jeffery Brower, "Medieval Theories of Relations," *Stanford Encyclopedia of Philosophy* (Winter 2018 edition), section 2.
[36] Brower, "Medieval Theories of Relations," section 2.

substances and qualities. Everything else, relations included, is eliminated by logical analysis. No relation inheres in a subject as its accident. We can make sense of relation only in propositional contexts, where terms (not entities) are brought into relation. Relation is secondary. No absolute term signifies a relation.

Without wishing to return to Aristotle, Peirce formulates a logic that makes relations rather than absolute terms elementary. As we saw at the end of Chapter 2, Peircean analysis bottoms out in relations rather than discrete terms. De Morgan had already attempted a formal representation of relations, but Peirce explains that De Morgan's account limits relations to a syllogistic framework.[37] In 1870, Peirce developed his "first mode of extending Boole's Logical algebra to relatives" and by 1883 he had developed the "*Algebra of Dyadic Relations*, which Schröder has fallen in love with."[38] Peirce published his 1883 treatment in a collection of writings that compiled the fruits of his students' logical investigations at Johns Hopkins. The volume, *Studies in Logic by Members of the Johns Hopkins University*, featured an article by Peirce's student O. H. Mitchell, called "On a new Algebra of Logic."[39] Peirce praises Mitchell's work in his Cambridge Lecture, calling it "one of the most suggestive chapters that the whole history of logic can show," noting that it provides "a method of treating a logical universe of several dimensions." Peirce later (1885) shows that Mitchell's theory amounts "to a new algebraic method of treating relatives generally."[40] He concludes his brief history of logical reflection on relations by noting that his and Mitchell's contributions were further developed by Schröder, and that in 1896 he (Peirce) "developed two intimately connected graphical methods which I call Entitative and Existential Graphs."[41] This brings us to Shin's second point: the logic of relatives requires the development of a diagrammatic system of representation capable of rendering relations explicit.

## 5. Existential Graphs: Continuity and Iconicity

Contrary to James's hope and expectation, Peirce gives his audience a taste of his "chef d'oeuvre," the existential graphs.[42] Even a cursory introduction shows the power of Peirce's new logic of relations over traditional logic. He asks his audience to imagine that the blackboard is a *sheet of assertion* and to "pretend to assert anything that we write down on the blackboard."[43] As Pietarinen describes them, these existential graphs are

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[37] See Daniel Merrill, *Augustus De Morgan and the Logic of Relations* (Dordrecht: Kluwer, 1990), 110, 113. Merrill writes, "De Morgan develops the general logic of relations only to the point where it can be used for his familiar syllogistic purposes" (113). He also argues that "the most obvious problem with this view of the proposition is that it does not seem general enough. If we can unite two terms into a proposition by relating them, why not three or four or ten terms? De Morgan's concern with the relational syllogism seems to have precluded this generalization; but there is no reason in principle why it could not be made. For this, though, we must wait for Frege and Peirce" (110). For a deeper treatment of Peirce and De Morgan, see Shin, "Peirce's Deductive Logic" and Daniel Merrill, "DeMorgan, Peirce and the Logic of Relations," *Transactions of the Charles S Peirce Society* 14, no. 4 (1978): 247-84

[38] RLT: 150.

[39] Charles S. Peirce et al, *Studies in Logic by Members of the Johns Hopkins University* (1883; Philadelphia: John Benjamins, 1983).

[40] RLT: 150.

[41] RLT: 151.

[42] CP 4.347.

[43] RLT: 151.

> drawn on the sheet of assertion that represents what the modeller knows or what mutually has been agreed upon to be the case by those who undertake the investigation of logic. The sheet thus represents the universe of discourse. Any graph that is drawn on the sheet puts forth an assertion, true or false, that there is something in the universe to which it applies.[44]

So long as the blackboard remains blank, Peirce tells his audience, "We assert nothing."[45] But as soon as he "scribes" [46] something on the blackboard he makes an assertion. Peirce then scribes the proposition:

You are a good girl.[47]

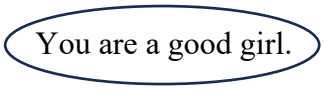
Now that something has been scribed on the sheet of assertion, the graph asserts that something is the case in *this* logical universe (that is, in the universe represented by *this* blackboard), namely, that "you are a good girl." Suppose that I scribe an additional proposition so that the blackboard now reads:

You are a good girl.

You obey mamma.

Now the graph asserts, "you are a good girl *and* you obey mama." Notice that *conjunction* is represented simply by adding to the blackboard. The sheet of assertion is *a logical surface* and that surface becomes part of the syntax of the logical system. Whereas in *symbolic* notation we would represent conjunction with a symbol such as ampersand, in the *iconic* notation of graphs no additional symbol is required. The simple act of scribing two propositions on the sheet of assertion is an iconic representation of the logical operation of conjunction.

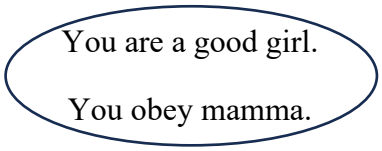
As for negation, the graphist need only enclose a proposition (using a *cut*) thereby "fencing it off from the field of assertion."[48] Anything scribed within a cut is negated. Suppose the graphist places a cut around one of the scribed propositions:



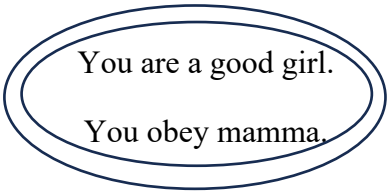

You obey mamma.

[44] Pietarinen, LoF 1, 15.
[45] RLT: 151.
[46] I use "scribe" rather than the expected "inscribe" to remain faithful to Peirce's preferred description: "Since it is sometimes awkward to say that a graph is *written* and it is sometimes awkward to say it is *drawn*, I will always say it is *scribed*" (R 450).
[47] The examples are all used by Peirce in his lecture, see RLT: 151-55.
[48] RLT: 152. The shape of the cut doesn't matter. All that matters is that a particular portion of the sheet is fenced off.

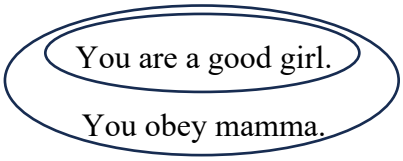
The graph now asserts, "you are *not* a good girl, *but* you obey mamma." Consider another possible graph:




Peirce writes, "this graph denies that you are both a good girl and obey mamma." [49] Whereas in the previous graph only one of the conjuncts is negated (O & ~G), here the entire conjunction is negated (~(O & G)). Peirce sometimes divides the sheet of assertion into *odd* and *even* zones. A zone is *odd* if an odd number of cuts fence off an area of the sheet, and *even* when an even number of cuts do. Odd zones are negated while even zones are not, and a blank sheet is an even zone. If I apply a cut, that portion of the sheet becomes an odd zone and anything scribed inside is negated. Suppose I apply a second cut around the first. Now that zone is again even and the conjunction is no longer negated (double negation):




This graph now asserts that "it is not the case that it is not the case that you are a good girl and you obey mamma," which is the same as saying "You are a good girl and you obey mamma." Two cuts can be used to create what Peirce calls a *scroll*, which gives us the power to represent the *conditional* using only the syntactical rules of conjunction and negation. Suppose that the graphist scribes the following graph:




Now the graph asserts that "*it is not the case that* you obey mamma *and* are *not* a good girl." This is logically equivalent to asserting that "*if* you obey mamma, *then* you are a good girl." The propositions are equivalent since (O → G) ←→ ~(O & ~G).

It is up to the interpreter to choose whether to *read* the graph as a conditional or as a negated conjunction. But note the power of iconic representation over symbolic representation: while you can interpret the graph in multiple ways (as a negated conjunction or as a conditional), the graphical representation of the proposition does not change. This is a virtue of the *iconic*

[49] Ibid.

method of these graphs. Whereas *symbolic* notation requires different symbols to stand for the logical operators (~,→, &, v, ←→), the *iconic mode* of graphical representation needs only *a logical surface* and some rules for scribing on the sheet. Indeed, it is possible to scribe any proposition from traditional propositional logic using only variations of the simple icons described above.[50] With only negation (cut) and conjunction (scribing the surface) one can represent the entirety of propositional logic.

The existential graphs are divided into a triad of logical systems (Alpha, Beta, and Gamma), each adding a new dimension of expressive power over its successor. So far I have been describing the *Alpha Graphs*, which use the features described above. Don Roberts explains, "Alpha is concerned with the relationship between propositions *considered as wholes*. That is to say, it is a formulation of the propositional calculus, the logic of truth functions."[51] Find any practice question in your logic textbook and some graph iconizes it. You can even do natural deduction using the graphs![52] Of course some propositions and arguments are more difficult to represent than others, but *any* can be scribed.

My aim is not to provide a full account of the logical rules governing the manipulation of Alpha Graphs. I am interested in the larger question of ways of representing logical relations, whether by symbols, as has been the traditional approach, or by icons, as Peirce's graphs do. I explore some of these ideas in more detail in the final section of this chapter. For now, I consider Peirce's treatment of the graphs in the third Cambridge lecture only insofar as relevant to his ensuing argument against nominalism.

## 6. Beta and the Logic of Relations

The Alpha Graphs have yet to extend the bounds of ordinary logic into the logic of relations, which requires the Beta system. As Roberts puts it, "Beta is, in fact, a treatment of the functional or predicate calculus, the logic of quantification."[53] The introduction of quantification into logical analysis enables a logic of relations that extends monadic predication to cover *n*-ary relational predicates, as Shin explains: "Peirce's first motivation for the Beta system is to represent relations graphically."[54] In order to represent relations and quantification, Peirce must introduce a new icon, which he calls *the line of identity*.

He muses that "this little feature is everything."[55] The line of identity is simply a line scribed on the sheet of assertion. It is used to "*assert the identity of its extremities*."[56] As Peirce later put it in 1903: "A heavy line, called a Line of Identity, shall be a graph asserting the

[50] See Roberts, *Existential Graphs*, ch. 3 for a complete graphical representation of propositional logic.
[51] Roberts, *Existential Graphs*, 3; my emphasis.
[52] There are several rules that govern the manipulation of graphs. These rules are like the transformation rules used in traditional deductions (modus ponens, conjunctive syllogism, etc.). However, the rules for the graphs pertain to the manipulation of icons. See Roberts, *Existential Graphs*; Sun-Joo Shin, *The Iconic Logic of Peirce's Graphs* (Cambridge, MA: MIT Press, 2002); and Pietarinen's introduction to LoF for detailed accounts of natural deduction using the graphs.
[53] Roberts, *Existential Graphs*, 47.
[54] Shin, *Iconic Logic,* 54.
[55] RLT: 153.
[56] Ibid.

numerical identity of the individuals denoted by its two extremities."[57] Roberts explains that "Peirce argued that since the universe of discourse (represented by [the sheet of assertion]) is a collection of individuals, any decidedly marked point of the sheet should be taken to stand for a single individual existing in that universe."[58] For example, consider the following graph:

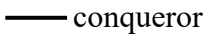


Here we have a sheet of assertion with a single line of identity. The graph asserts that *something exists* in this universe of discourse (that is, in the universe of discourse represented by the sheet itself). The line, therefore, stands for a numerically distinct individual in that universe. Since the sheet of assertion represents a potential field of signification, so long as it is blank it asserts nothing—there is no portion of a blank sheet for the graph interpreter to attend to. Though as soon as I scribe a line of identity onto the sheet, I *assert* that something exists in *this* field of signification—now the graph interpreter attends to a specific portion of the sheet, a specific individual among the possible collection of individuals denoted by the sheet itself. Since, as Pietarinen explains, "any graph that is drawn on the sheet puts forth an assertion, true or false, that there is something in the universe to which it applies," what we take to be true does indeed exist in the universe of discourse.[59] Though in the above graph that individual is understood only

[57] LoF 2/1: 148.
[58] Roberts, *Existential Graphs,* 47.
[59] LoF 2/2: 19. Interestingly, Pietarinen adds that "Ligatures, representing continuous connections composed of two or more lines of identity, stand for quantification, identity, and predication, all in one go" (LoF 2/2: 19). In this way, the line of identity functions as a single iconic sign in the syntax of Existential Graphs—it is the only syntactical feature added to the Beta system. However, by this single addition, Peirce accounts for three distinct features of a logical system: quantification, identity, and predication. The line represents existential quantification in the way described above: by asserting that *there is something* in *this* universe of discourse. (We get universal quantification when the outermost part of a line is enclosed by an odd number of cuts. As Shin explains: "Existential and universal quantifiers are represented by whether the outermost part of a [line of identity] is evenly or oddly enclosed" [Shin, *Iconic Logic*, 56; see pp. 56-57 for a complete explanation]). We get predication when the line hooks onto a rheme (or predicate, like "is a man"). Hence, the graph "—is a man" asserts that "something is a man" in this universe of discourse (this will become clearer as this section unfolds). We get identity because a single line of identity stands for a numerically distinct individual in that universe of discourse—so long as the line is continuous, no matter how many times it branches to incorporate a new predicate (or rheme), those predicates are added as modifications of *that* individual represented by the line.

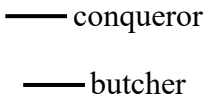
It is also important to realize that the universe of discourse represented by the sheet of assertion is not necessarily representative of our actual universe. It is only representative of a possible universe of discourse that the graphist and graph interpreter agree to. That is to say, I can scribe the following graph, "—is a unicorn". Here I am only asserting that in *this particular universe of discourse*, there is something that is a unicorn. And the graphist can draw inferences about unicorns in that universe of discourse. It does not follow that unicorns *actually exist* in *our* universe. It is worth noting that Peirce's foray into the Gamma graphs (which add to Beta as Beta adds to Alpha), gives him the means to reason about possibilities and other modalities. I do not examine the Gamma system in this dissertation, since it is the least defined system of Peirce's graphs. However, by introducing new variations of the cut, Peirce's system is able to account for possible beings, like unicorns, in Gamma.

in a vague way: the graph merely asserts that "there is *something*." Suppose we now scribe the following graph:

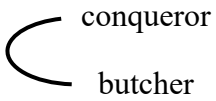



Now the graph asserts that "there is something that is a conqueror." For those familiar with the usual *symbolic* notation of predicate logic, the above graph represents iconically what the following statement represents symbolically: ∃x (Cx) ("There exists an x such that x is a conqueror"). As Stjernfelt puts it, "the *end point of* [a] *line* as the sign for Existential Quantification is more iconic than … ∃x because it selects one point from the universe of discourse."[60] The line literally picks out a position on the sheet and commands the attention of the interpreter to that portion of the sheet, to that individual represented by the line.

The spatial syntax of conjunction still applies in the Beta system. For instance, we may scribe on the one sheet of assertion:




Now the graph asserts that "there is something that is a conqueror *and* there is something that is a butcher." Notice that there are in this case two separate lines of identity, and consequently two separate individuals identified. The above graph equates to the following symbolization: ∃x ∃y (Cx & By). Consider the significance of a subtle variation:

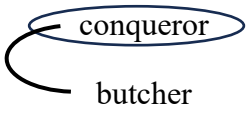



The new graph differs from the previous graph because now there is only a single line of identity connecting two predicates. Therefore, the graph asserts that "*there is something* that is *both* a conqueror *and* a butcher," or ∃x (Cx & Bx). Whereas in the previous graph, there are two lines

[60] Stjernfelt, *Sheets, Diagrams, and Realism in Peirce* (Boston: De Gruyter, 2022), 174.

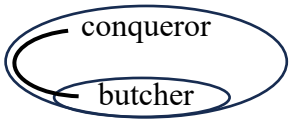
and consequently two objects, now there is one continuous line representing a single object with two predicates (conqueror and butcher).

Negation can be applied to the Beta system just as to the Alpha:




Here the graph asserts that "there is something that is a butcher and not a conqueror," or ∃x (~Cx & Bx).

What if I wanted to say that all conquerors are butchers? How do the existential graphs handle universal quantification? Stjernfelt writes that "negated Existential Quantification is an iconic sign for Universal Quantification because Universal claims are inherently negative—to claim that All X's are Y's is to say there are no X's that are not Y's—so to actually find such an X would be a counterexample."[61] Consider the following graph:




This graph asserts, "*It is not the case that there exists* a conqueror *and* who is *not* a butcher," or ~∃x (Cx & ~Bx), which is logically equivalent to "All conquerors are butchers," or ∀x (Cx → Bx). We saw above that the *scroll* is an icon of the conditional though it can also be read as a negated conjunction. The if-then structure of the conditional is preserved in the scroll and the line of identity adds quantification. Therefore, a single graph signifies both ~∃x (Cx & ~Bx) and ∀x (Cx → Bx). The graph itself does not change in either case but the interpreter can read the graph either way.

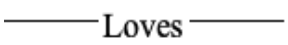
By the simple inclusion of the line of identity the graphist acquires all the tools necessary to represent the logic of relations. The line of identity marks the transition from ordinary logic to the logic of relations, which is why as Peirce said, it is "everything"—it is the single feature by which diagrammatic reasoning transcends the limitations of ordinary propositional logic.

Peirce introduces the existential graphs so that his audience (unfamiliar with predicate logic) can *literally see* the difference between ordinary or propositional logic and the logic of relations. Whereas the ordinary logic represented by Alpha deals only with propositions as

[61] Ibid.

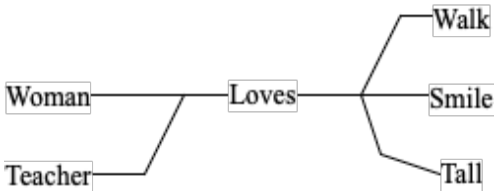
wholes, the line of identity makes the relations among predicates themselves iconic. The line of identity *is* the icon of relation and provides Beta with the power to express propositions for which Alpha, or ordinary logic, is inadequate, including not solely quantification and identity but also relational predicates like "kills," "loves," or "gives."

Shin argues that Peirce's transition to iconic representation allows for a more fluid and continuous representation of relations—a continuity that is not obvious when represented by symbolic notation.[62] Consider the graph for the proposition "somebody loves someone else" or ∃x ∃y (xLy):




The dyadic relation "loves," is scribed on the sheet. Since "loves" is a dyadic relation, a line of identity is *hooked* onto each end of this predicate, where the extremities of the line indicate possible subjects. Since this graph does not indicate any properties of those subjects other than the relation of love, it simply asserts that there is someone who loves someone else. This is like the discussion of terms as relational predicates from the previous chapter ("___loves ___") where the blanks are placeholders for possible subjects.

To show the true power of iconic representation, Shin compares the following symbolic representation, ∃x ∃y [Tall(y) & Love(xy) & Walk(y) & Teacher(x) & Smile(y) & Woman(x)], with its diagrammatic counterpart:




The symbolic notation is cumbersome and requires the interpreter to "keep track of [the] tokens *x* and *y*" which repeat throughout the long formula.[63] On the graph, however, matters are visually clarified and nothing repeats. Looking at the left side of the graph, a branching line of identity asserts "that there is someone who is both a woman and a teacher." This line hooks onto the dyadic predicate ("loves") and *continues* to the right side of the graph, where the line of identity branches again, with its three extremities representing an individual who is tall, smiles, and

[62] Shin, *Iconic Logic,* 54-55.
[63] Shin, *Iconic Logic,* 55.

walks. Taken as a continuous whole, the graph asserts that "someone who is both a woman and a teacher loves someone who is tall and smiles and walks."[64]

The strength of the diagrammatic representation lies in its inherent continuity. As Peirce puts it elsewhere:

> The line of identity which may be substituted for the selectives [∃,∀] explicitly represents identity to belong to the genus of Continuity and to the species Linear Continuity. … In order to ascertain this, let us contrast the iconicity of the line with that of the *surface* of the Phemic Sheet [sheet of assertion]. The continuity of this surface being two dimensional, and so polyadic, should represent an external continuity, and especially, a continuity of experiential appearance. Moreover, the Phemic Sheet iconizes the Universe of Discourse, since it more immediately represents a field of Thought, or Mental Experience, which is itself directed to the Universe of Discourse, and considered as a sign, denotes that universe…. This being the case, the continuity of the Phemic Sheet in those places, where, nothing being scribed, no *particular* attention is paid, is the most appropriate icon possible of the continuity of the Universe of Discourse—where it only receives *general* attention as that universe—that is to say of the continuity in experiential appearance of the Universe, relatively to any objects represented as belonging to it…. Now for the Continuity of the Line of Identity. This being one dimensional, or dyadic, (i.e. running two ways only), should represent an internal or mental continuity; and being definitely marked, should iconize a continuity of attention.[65]

As Stjernfelt points out, Peirce explains the iconicity of the existential graphs by contrasting the *spatial* continuity of the sheet of assertion with the *linear* continuity of the line of identity.[66] The sheet of assertion is a continuous field of signification. As a continuous surface it is a perfect icon of a possible universe. We pay no *attention* to any particular portion of the sheet, which is itself the icon of a possible universe. Once a line of identity is scribed on the sheet our attention is directed to a particular portion of it. We see, then, that the line of identity gets its continuity from the continuity of the surface on which it is scribed—a one-dimensional continuity scribed

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[64] Note that this graph is true in the case where the teacher loves herself, and it is true in the case where the teacher loves someone *else* who is tall, smiles, and walks. To clarify these cases, we would need to include an identity relation: symbolically, either "& (x=y)" (for the case where the teacher loves herself) or "&~(x=y)" (for the case where the teacher loves someone else). To better represent this difference graphically, we would need to connect the left line with the right line. Zooming in on the relevant portion of the above graph, we would then have:

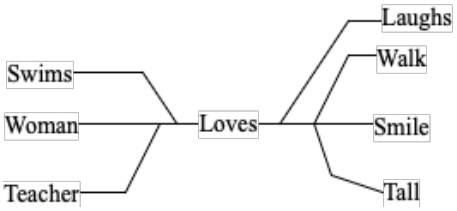

Now the line of identity seamlessly connects with both sides of the relation clarifying the case where the teacher loves herself ("&(x=y)"). To clarify the case where the teacher loves *someone else*, we would add the same connecting line, but this time with part of it enclosed with a cut, indicating that they are distinct ("&~(x=y)"):


[65] R 300. See Stjernfelt's exegesis, *Sheets, Diagrams, and Realism*, 175.
[66] Stjernfelt, *Sheets, Diagrams, and Realism*, 175.

across a continuous two-dimensional surface. Such a line is an icon of thought's continuity. In Shin's graph above, for example, the interpreter follows the line of identity across the continuous surface of the sheet, noting its branching paths (which are all continuous) until she is led from one end to the other. The interpretation of the graph involves a continuity of thought (a continuity of attention to a portion of the graph), and the line itself is an icon of the continuity of the thought-sign that interprets the graph.

Like the sheet of assertion, the line of identity teems with possibility. Peirce writes that "every line of identity ought to be considered as bristling with microscopic points of teridentity[67]; so that [the line] _____ when magnified shall be seen to be:"[68]

A line of identity can branch indefinitely. Were we to zoom in on it as if through a microscope, we would find an infinity of bristling fibres just waiting to branch out from the line and command the attention of the interpreter. It is possible, for example, that through the course of inquiry we learn more about the individuals represented by Shin's earlier graph. Suppose we learn that the teacher also swims and the one who smiles also laughs:




These new branches burst from the existing line and further clarify the identity of those picked out by the extremities, leading Peirce to note that "we must hereafter understand it [the line of identity] to be potentially the graph of teridentity by which means there will *virtually be at least one loose end in every graph*."[69] The continuity of the line is homogenous with the continuity of the sheet, and like the sheet it is potentially indeterminate. The importance of these considerations will become clear as I push further into the labyrinth of continuity, since it is the inherent continuity of the logic of relations, as represented diagrammatically, that provides the starting point for Peirce's new critique of nominalism.

[67] Teridentity is meant to invoke a ternary identity relation (x=y=z).
[68] L 463.
[69] CP 4.583

## 7. The Logic of Relations and the Nominalism-Realism Controversy:

## Class and System

Having shown that the line of identity takes us beyond the limitations of ordinary logic, Peirce elaborates on the significance of his new logic of relations by exploring its consequences for the nominalism-realism controversy, which he introduces in the following way: "I will try to give you a rest now, by passing to something easier. *But mind, you certainly miss very important revelations concerning the question of nominalism and realism by being shut out from the great world of logic of which I have just given you one momentary glimpse* as I whisk you by in our railway journey through the forms of reasoning."[70] What does this new diagrammatic logic reveal about the nominalism-realism controversy? In the previous chapter I argued that the logic of relations requires us to treat the terminus of analysis as a relation rather than an absolute term. This is one element of the new critique, though Peirce explores a different angle in the Cambridge Lectures, which requires that we follow Peirce's argument carefully.

The first step appears when he explains,

> Although I am debarred from showing anything in detail about the logic of relatives, yet this I may remark, that where ordinary logic considers only a single, special kind of relation, that of similarity … the logic of relatives imagines a relation in general to be placed. Consequently, in place of the *class,*—which is composed of a number of individual objects or facts brought together in ordinary logic by means of their relation of similarity, the logic of relatives considers the *system*, which is composed of objects brought together by any kind of relation whatsoever.[71]

There are two points worth dwelling on here. First, ordinary logic treats only a special kind of relation, namely *similarity*. Two objects are similar by virtue of their shared properties. Socrates is *like* Aristotle because they share the *property* of being human. That is, both Socrates and Aristotle are similar because they share a monadic predicate ("is a man"). The logic of relatives, however, recognizes similarity as only one of many relations and therefore treats relation with greater generality than traditional logic.

To demonstrate the difference, Peirce asks the audience to consider the following argument:

> A does not possess any shade of grey,
> B does possess a shade of grey,
> ∴ A is not B.[72]

Peirce remarks, "the logic of relatives sees that the quality grey here plays no part that any object might not play."[73] It is important to recognize that "A," "B," and "shade of grey" are subjects (or

[70] RLT: 154.
[71] RLT: 156.
[72] Ibid.
[73] Ibid.

from the perspective of semeiotic, indexes) of their propositions. As propositions, the premises are replicas of a dyadic relation whose general predicate is "___possess____." Any subject could replace the quality of grey in both premises and the inference would still be valid. The quality of grey does not play a part in the inference because the general predicate ranges over many possible subjects. "Nor," Peirce adds, "does the relation of possessing as a character differ in its logical powers from any other dyadic relation."[74] The significance of the predicate "___possess___" is not *possession* but the simple fact that the predicate is dyadic, that is, has two subject spaces that range over a system of possible subjects.

"Possession" is from this point of view no different from "killing" or "loving"—all are dyadic relations insofar as the line of identity links *both* ends of the predicate. Therefore, these predicates signify that two subjects are related. While the relation may be specified (e.g., "killing" or "possession"), specification does not add anything to the form of the inference. Remember, the significance of a proposition is determined by the role it plays in inferential processes. Peirce explains that the logic of relatives "looks upon that inference as but a special case of one like the following:

> A loves everybody of the name Grey,
> B has a servant of the name of Grey,
> ∴ A loves a servant of B.[75]

In this argument, one subject (the *quality* of grey) is replaced by someone named Grey, and the relation of "loving" replaces "possession." However, the structure of the inference remains the same. One advantage of the logic of relations is to recognize the intrinsic generality of relational predicates, and this generality, as we shall see, is not exhausted by the similarity relating the members of a *class* but instead constitutes a *system* of possible subjects falling under relations of *any* kind.

The difference between the relation of similarity and relation in general leads to the significant consequence that whereas ordinary logic treats *classes*, the logic of relatives treats *systems*. A *class* is composed of individuals that are brought together through the relation of similarity. The *class* of human beings contains both Socrates and Aristotle because both share the monadic predicate of being men. A *system*, on the other hand, is composed of objects brought together by *any* relation, monadic, dyadic, triadic, and so on. Boler explains that "the older logic had reached its limit in treating things that are similar to one another as a collection; the logic of relatives provides the notion of a *system* that can be constituted by any relation of its members."[76]

Such systems include relations of many kinds, such as the triadic relation of the sign "whose members are not necessarily similar to one another."[77] For instance, a particular object (the wind), a particular sign (a weathervane), and a particular interpretant (the wind blows north) are not *similar* to one another in the way that Socrates and Aristotle are (by virtue of a shared monadic predicate), though they are brought together through a *system* of triadic representation.

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[74] Ibid.
[75] Ibid.
[76] Boler, *Peirce and Scholastic Realism*, 76.
[77] Ibid.

The same can be said of the *systems* of cause and effect or disease and cure.[78] The cause is not the same as the effect nor is the disease the same as the cure. The *system* is a general relation that ranges over possible subjects that are not necessarily like one another.

The difference between a class and a system is important to the nominalism-realism controversy because, as Peirce says, "among the classes which ordinary logic recognizes, *general* classes are particularly important."[79] By general classes he means something like the set of all men, as we considered above. He adds that "these general classes are composed not of real objects, but of possibilities" and says that the nominalist takes "a mere possibility which is not realized" to be "nothing but … an 'abstraction,' and little better, if at all, than a fiction."[80] The class of all men, which is a collection of members bound by the monadic predicate "____is a man," is not merely a collection of existing subjects but a collection of all *possible* subjects that share the character of humanity.

These subjects are not actualities (real existing objects), but rather *possibilia*. The universal is an abstraction *because* it is not reducible to an actually existing collection of subjects. Remember that the nominalist reduces reality to existence (that is, to the *mode of being actual*, or what Peirce calls *secondness*). For the nominalist, a class is "little better, if at all, than a fiction" because its members are not actually existing objects (the only *real* objects from the nominalist point of view). A class is a collection of *possibilia* and since these are only abstractions, a class is a figment. The only real collection for the nominalist is the *discrete* collection of existing particulars.

With this consideration in mind, Peirce claims that it "will be instructive, therefore, to inquire what it is in the logic of relatives which takes the logical position occupied in ordinary logic by 'generality,' or in Medieval language by the *universal*."[81] This question is motivated by the preceding discussion of the difference between a class and a system. In ordinary logic, generality is exhausted by the similarity relating the members of a collection. But, as Boler says, "the contribution of the logic of relatives … is to treat a class or collection as a degenerate form of system."[82] How are we to understand the generality of a system? Searching for an answer to this question leads Peirce into the labyrinth of continuity. The generality of a class is replaced by the *continuity* of a system and the nominalism-realism controversy is reinterpreted as a question about whether continua are real.

## 8. Peircean Continuity

To show how generality becomes continuity in the logic of relations, Peirce must clarify the concept of a continuum and show that generality is only another word for continuity.[83] It is important to realize that Peirce was thinking about continuity his entire philosophical career, and like most Peircean concepts this one was continually under refinement and subject to modifications large and small. Potter and Shields note four key stages in the development of his

[78] Ibid.
[79] RLT: 156.
[80] RLT:156-57.
[81] RLT: 157.
[82] Boler, *Peirce and Scholastic Realism*, 76.
[83] NEM 3: 925.

thinking about continuity: 1) A pre-Cantorian period (1860s-1884); 2) a Cantorian period (1884-1894); 3) a Kantian period (1895-1908); and 4) a post-Cantorian period (1908-1911).[84] However, as Jérôme Havenel shows, Shields and Potter's account of the development is misleading.[85]

Where Potter and Shields describe four stages, Havenel finds five: 1) An anti-nominalistic period (1868-1884); 2) a Cantorian period (1884-1892); 3) an infinitesimal period (1892-1897); 4) a supermultitudinous period (1898-1907); and 5) a topological period (1908-1913).[86] I will use Havenel's characterization, though I do not provide a complete account of the development of Peirce's views about continuity because this has already been done. Nor do I offer a treatment of the history of continuity in philosophy and mathematics.[87] My problem is to understand Peirce's account of continuity in the 1898 Cambridge Lectures, and particularly its relation to the problem of nominalism and realism, though my analysis is not limited to these lectures since I develop the point into a discussion of continuous relations. To this end, I am most concerned with the fourth stage of Havenel's characterization: the supermultitudinous period (1898-1907). Peirce's mathematical account of continuity is crucial to understanding his Semeiotic Realism because it provides the basis not only for his new critique of nominalism but for his account of continuous relations and continuous sign inference as represented by the existential graphs.

What, then, is continuity for the mature Peirce? This is no easy question to answer. Recently, however, the members of the Colombian School of Peirce Studies have made serious headway. In 2012, Fernando Zalamea published his breakthrough work, *Peirce's Logic of Continuity*.[88] Zalamea's book inspired an array of rich mathematical treatments of Peircean continuity, some of which culminated in the recent collection, *Advances in Peircean Mathematics: The Colombian School* (2023).[89] A central aim of this group's work is to differentiate the Peircean continuum from that of Cantor, which has dominated contemporary understanding.

Peirce was aware of Cantor's work and while he was a Cantorian for a while (1884-1894), he eventually overcame this position, and what Havenel calls the supermultitudinous period marks the beginning of his divergence. Francisco Vargas claims that "in his 1898 Cambridge Lectures, Peirce vindicated the consistency of his conceptions on what he calls 'true

[84] Vincent Potter and Paul Shields, "Peirce's Definitions of Continuity," *Transactions of the Charles S Peirce Society* 13, no. 1 (1977): 20-34.
[85] He worries that Potter and Shields' depiction of the "Kantian Period" is mislabeled and inaccurate. The authors are misled in their characterization due to editorial blunders (assigning the wrong dates to some of Peirce's manuscripts) in the *Collected Papers* (the primary source material for Peirce scholarship in the 1970s). Having access to Carolyn Eisele's *New Elements of Mathematics* (NEM), a collection not available to Potter and Shields, Havenel corrects these errors and offers a more nuanced account of the development of Peircean continuity.
[86] Jérôme Havenel, "Peirce's Clarifications of Continuity," *Transactions of the Charles S Peirce Society* 44, no. 1 (2008): 86-133. Havenel's decision to call the first period "anti-nominalistic" does not mean that the subsequent periods are not anti-nominalistic. Indeed, the fourth stage of Peirce's development that I will be discussing is perhaps the *most* anti-nominalistic.
[87] For a rigorous history of mathematical thinking about continuity, see John L Bell, *The Continuous, the Discrete, and the Infinitesimal in Philosophy and Mathematics* (Cham: Springer Nature, 2019).
[88] Fernando Zalamea, *Peirce's Logic of Continuity* (Boston: Docent Press, 2012).
[89] Each chapter of the book is written by a different author from the Colombian School. I utilize the chapters by Zalamea and Vargas.

continuity,' emphasizing that his logic of relatives is suitable for proving it."[90] The 1898 Cambridge Lectures therefore mark the beginning of Peirce's mature view of continuity and of his divergence from Cantor.

Zalamea explains that the Peirce's thinking about the continuum "is better understood when Peirce's ideas are contrasted with Cantor's."[91] Vargas points out that Cantor is well-known for "identifying the line with the real numbers (thus conceived as points)."[92] This, he says, involves an "arithmetization" of the continuum.[93] Indeed, John Bell explains that the arithmetization of the continuum began with Karl Weierstrass, was developed by Richard Dedekind, and reached maturity with Cantor, "the most visionary arithmetizer of all."[94]

The arithmetizer (who on Peirce's view would be a nominalist) aims "to replace the continuous by the discrete."[95] The continuum is treated set-theoreticaly as an "analytical object" where the continuous line is made up of points, each in one-one correspondence with a number on the real line (**R**). In this construction, the continuum is *dense* and *uncountable*. It is *dense* because there are no gaps between points on the line. Just as there is a real number between every real number, so there is a point between every two points on this line, which are *uncountable* because there are more real numbers than natural numbers (the set of reals has a greater cardinality than the set of natural numbers).[96] Zalamea explains that the real line **R** "serves to model one of the fundamental aspects of a generic *continuum*: its completeness, or 'analytical saturation.'"[97] The continuum is *saturated* by a process of accumulation whereby we move from the set of natural numbers (**N**) through to the integers (**Z**), the rationals (**Q**), and finally the reals (**R**): these number sets "arise in a process of *accumulating points* inside an *actual* infinite, which begins with the natural numbers," and each accumulating set (**N → Z → Q → R)** "form[s] sets of points in which elements are added." "The *summa* of those elements," Zalamea says, "represents a model of the continuum."[98]

The attempt to construct such a model, however, limits our *concept* of continuity to the analytic *object* represented by the model itself. Zalamea warns that this approach is inadequate to represent the richness of the general concept of continuity, a point echoed by Vargas: "leaving apart the property of density, among the main characteristics that Peirce attributes to the continuum ('inextensibility,' 'supermultitude,' 'reflexivity,' 'potentiality,' and 'genericity'), none (!) is present in the construction of the reals *à la* Cantor-Dedekind."[99] In other words, the Cantorian approach, which has had an enduring influence in contemporary mathematics, identifies the *concept* of continuity with the set-theoretic *object*, **R**. From this perspective, **R** is a

[90] Vargas, "A Full Model for Peirce's Continuum," *Advances in Peircean Mathematics*, 56.
[91] Zalamea, "Around Arengas, Vargas, and Oostra Models for Peirce's Thought," *Advances in Peircean Mathematics*, 186.
[92] Vargas, *Advances in Peircean Mathematics*, 58.
[93] Ibid.
[94] Bell, *Continuous*, 116.
[95] Bell, *Continuous*, 113.
[96] In his account of the history of continuity, Bell explains that Ockham was the first to attribute the property of density to the continuum. Richard Dedekind was the first to realize that density is not enough and began to formulate the property of uncountability. See Bell, *Continuous*, 36.
[97] Zalamea, *Logic of Continuity*, 4.
[98] Ibid.
[99] Zalamea, *Logic of Continuity*, 3-7; Vargas, *Peircean Mathematics*, 58.

set-theoretic model that *represents* continuity. That model serves as an *analytic object* that restricts our understanding of continuity to **R**. That is to say, the mathematical concept of continuity is understood in terms of the analytic object, **R**.

However, Zalamea contends that "the existence of multiple ways of representing and modelling should avoid any identification of *a* mathematical concept with *a* mathematical object (something which, however, is normally and even normatively done)."[100] Continuity is rather a *synthetic* concept that resists being reduced to any one model, like **R**. It is therefore a mistake to identify the concept of continuity with **R**. As Vargas puts it, the Cantorian model, "nowadays assumed as standard, incarnates for Peirce only an 'embryo of continuity,' a continuum in a nascent state yet far from having been deployed in all its potential beyond all 'multitudes' (of any transfinite cardinal) and beyond 'extensibility' (of the existence of points that determine it)."[101] As Peirce himself says, "that which the mathematicians call 'continuity' becomes, for me, 'pseudo-continuity.'"[102] Again elsewhere, "I define a *pseudo-continuum* as that which modern writers on the theory of functions call a *continuum.* But this is fully represented by, and according to G. Cantor stands in one-to-one correspondence with, the totality of real values, rational and irrational."[103] If the set-theoretic object **R** offers only a partial model of continuity—a model of mere pseudo-continuity—then what is Peircean continuity?

Against the Cantorian arithmetization of continuity, Zalamea argues that Peircean continuity is a "*protean* concept, which—like Proteus, the mythical sea-god fabled to assume various shapes—can be modelled in several diverse ways, witnessing its extraordinary richness."[104] He claims that "Peirce's *continuum* is an 'absolutely general' concept which, in principle does not have to be completely objectified in just a formal context."[105] In this way, the Peircean continuum is not an *analytical object* but a *synthetic concept* represented by a range of different models, and crucially is never held hostage by any single model.

The upshot is that "Peirce insists in a synthetical understanding of the continuum, as a general whole which cannot be analytically reconstructed by an internal sum of points."[106] For Peirce, the line is not saturated by points in one-one correspondence with the set of reals. There are no *actual* points on the line at all, since real continuity resists punctuality. The arithmetization of the continuum as an analytical object is rejected as a form of nominalism. Peirce asks us to imagine this:

> Across a line a collection of blades may come down simultaneously, and so long as the collection of blades is not so great that they merge into one another, owing to their supermultitude, they will cut the line up into as great a collection of pieces *each of which will be a line—just as completely a line as was the whole*. This … is the intuitional idea of a line with which the synthetic geometer really works … and I … cast aside all analytical theories about lines, and looking at the matter

[100] Zalamea, *Logic of Continuity*, 5.
[101] Vargas, *Peircean Mathematics*, 58.
[102] CP 7.652.
[103] CP 6.176.
[104] Zalamea, *Logic of Continuity*, 5.
[105] Zalamea, *Logic of Continuity*, 7.
[106] Ibid.

> from a synthetical point of view … say that the line refuses to be cut up into points by any discrete multitude of knives, however great.[107]

No discrete multitude of blades could slice the line into points. Each cut results in a line that is just as continuous as the original line from which it is cut, and the continuity of each cut line is homogenous with the continuity of the whole. Peirce says that "*continuity* is thus a special kind of *generality* … a *homogeneity*, or generality among all of a certain kind of parts of one whole."[108] The parts are homogenous with the whole and the continuum becomes reflexive since the "whole can be reflected in *any* of its parts."[109] As Bellucci explains:

> The parts of a continuous line are continuous lines themselves, and the same is true of the parts of each part. Accordingly, continua cannot be composed of actual, definite point-like parts, for a point is precisely something without parts; a continuum is instead composed of potential and indefinite parts, and it always contains a multiplicity of such parts that exceeds any multitude.[110]

Every time we cut a line we end up with a new line that is just as continuous as the whole—the cut lines are part-like *reflexions* of the original whole. There are no actual points in the line at all and this reflexivity "distinguishes at once the Peircean continuum from the Cantorian, since Cantor's real line *is* composed by points and *is not* reflexive."[111] The continuum is therefore *inextensible*, that is, it cannot be "captured extensionally by a sum of points." [112] The result is, Peirce writes, "that we have altogether eliminated points…. There are no points in such a line; there is no exact boundary between parts…. When the scale of numbers, rational and irrational, is applied to a line, the numbers are insufficient for exactitude."[113] Peircean continuity therefore resists the arithmetization of the continuum through its *reflexivity* and *inextensibility*. Furthermore, this continuum is characterized by its *generality* and *supermultiplicity*. We need to further clarify these characteristics to strengthen our understanding of Peircean continuity.

The key characteristic of Peircean continuity is real generality, which requires Peirce's theory to pass beyond the mode of the actual and the discrete to that of potentiality. Zalamea argues that the "most salient trait of Peirce's continuum is its general character," explaining that "the general is what can live in the realm of *possibilia*, not determinate nor actual, and which opposes the particular mode of the existential."[114] If we consider the Peircean categories, generality is opposed to *Secondness* (the mode of being actual). Generality is a product of *Firstness* (the mode of being potential, which is essentially general) and *Thirdness* (which is concrete, developed potentiality).

Peirce argues that "the idea of a general involves the idea of possible variations which no multitude of existent things could exhaust but would leave between any two not merely *many*

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[107] NEM 3: 96.
[108] CP 7.535.
[109] Zalamea, *Logic of Continuity*, 16.
[110] Bellucci, "Peirce's Continuous Predicates," 186.
[111] Zalamea, *Logic of Continuity*, 16.
[112] Zalamea, *Logic of Continuity*, 17.
[113] NEM 3: 126-27.
[114] Zalamea, *Logic of Continuity*, 11.

possibilities, but possibilities absolutely beyond all multitude."[115] The continuum is general precisely because it cannot be broken down into discrete points. It is not made up of a multitude of actual points but a "potential aggregate of points."[116] The multiplicity of these *potential* points is not simply a collection of possible points but rather a *super*multiplicity absolutely beyond all discrete multitudes—the points could never be actualized, as any attempt to do so would result in a breach of continuity. Zalamea puts it best:

> The *continuum* is thus a *general*, where all potentialities can fall—overcoming all determinations—and where certain modes of connection between the parts and the whole (local and global) become homogenized and regularized—overcoming and melting together all individual distinctions. The generic character of Peirce's *continuum* (thirdness) is thus closely weaved with the overcoming of determinacy and actuality (secondness). In this process the threads of indetermination and chance (firstness) become essential, freeing the existent from its particular qualities in order to reach the generality of *possibilia*.[117]

Whereas in the Cantorian picture the saturation of the continuum is achieved by an actual infinite in one-one correspondence with the reals, the Peircean continuum moves beyond the point-like secondness of actual existence into the realm of *possibilia*—a realm irreducible to the discrete and incapable of being arithmetized.

The move from the actual to the potential—from discrete determination to general indeterminate potentiality—involves the notion of a *supermultitude*. Havenel claims that "Supermultitudinality is a greatness beyond any discrete multitude."[118] It is what you get when you move from a discrete multitude (bound to secondness) to an understanding of the continuum as a general concept in the *mode of being potential*. As Peirce explains, "a *supermultitudinous* collection … is so great that its individuals are no longer distinct from one another."[119] That is, the constituent individuals of a supermultitude "are no longer distinct and independent subjects. They have no existence … except in their relations to one another."[120]

The difference between a multitude and a supermultitude, therefore, involves the difference between the *mode of being actual* and the *mode of being potential*. A multitude is a discrete collection of actual members—be they points on a line, grains of sand on the beach, or the population of Boston. But a supermultitude has a multiplicity greater than any possible discrete multitude—a *continuous system* of *potential* members that are completely indeterminate. The points on a line are no longer in discrete, one-one correspondence with the reals; if there are points at all, there is only a potential aggregate of points. But being potentialities rather than discrete actualities, these points are no longer distinguishable from one another: no point on the line has "any distinct identity absolutely discriminated from every other."[121]

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[115] CP 5.103.
[116] Havenel, "Clarifications," 104.
[117] Zalamea, *Logic of Continuity*, 12.
[118] Havenel, "Clarifications," 107.
[119] NEM 3: 86-87.
[120] NEM 3: 95.
[121] RLT: 159.

Peirce's favourite metaphor for continuity is "welding" or "melting." In the Cambridge Lectures, after giving two mathematical demonstrations (one involving the doctrine of multitudes, the other using the example of a line[122]), Peirce provides the following definition of the continuum:

> a continuum is a collection of so vast a multitude that in the whole universe of possibility there is not room for them to retain their distinct identities; but they become welded into one another. Thus the continuum is all that is possible, in whatever dimension it be continuous.[123]

The supermultiplicity of the continuum is a "multitude so vast that the individuals of such a collection melt into one another and lose their distinct identities."[124] The welding, or melting, occurs when we move beyond the *actual* to the *potential*. This move utterly opposes the arithmetization of the continuum *à la* Cantor. Bell explains that arithmetization is an attempt to make the continuous discrete—this he calls a form of atomism which, like all forms of atomism, is entangled with the devilish doctrine of nominalism. While the line is composed of points in one-one correspondence with the reals, there are no gaps between points even though they remain discrete since they are *identified* with the reals. Peircean supermultiplicity thus exposes Cantor's arithmetization as mere pseudo-continuity. We cannot *identify* the points with the reals because once we move beyond the mode of actual to that of potential everything melts together and we are left with a homogenous continuous whole.

Zalamea evokes the Parmenidean One: "'immovable in the bonds of mighty chains,' a continuous whole which cannot be broken, 'nor is it divisible, since it is all alike, and there is no more of it in one place than in another, to hinder it from holding together, nor less of it, but everything is full of what it is.'"[125] "From the very beginning of their investigations," Zalamea argues, "Cantor and Peirce's paths are clearly opposed: while Cantor and, systematically, most of his followers, try to *bound* the continuum, Peirce tries to *unbound* it: to approach a supermultitudinous continuum, not restricted in size, truly generic in the transfinite, never totally determined."[126] Peircean continuity is essential to Semeiotic Realism and in these Cambridge Lectures Peirce brandishes his new protean continuity as a weapon in the war against nominalism.

## 9. The Continuum is the True Universal:

## Nominalism and Realism Redux

[122] I do not reproduce the mathematical demonstrations that Peirce provides. They are examples that draw out the key characteristics of Peircean continuity that I have elaborated through Zalamea and Vargas (generality, supermultiplicity, reflexivity, and inextensibility). Additionally, after demonstrations Peirce remarks that even if "all my conclusions about abnumerals were brought to ruin, what I now say about continuity would stand firm" (RLT: 160). While Peirce's mathematical understanding of continuity does not exactly come out of the blue, the investigation he provides is sufficient to bolster the new critique of nominalism.
[123] RLT: 160.
[124] RLT: 159.
[125] Zalamea, *Logic of Continuity*, 17-18.
[126] Zalamea, *Logic of Continuity*, 15.

I return to the question motivating Peirce's foray into the labyrinth of continuity, namely, "what it is in the logic of relatives which takes the logical position occupied in ordinary logic by 'generality,' or in medieval language by the *universal*"?[127] After clarifying the continuum via supermultiplicity—a welded homogeneity that resists discrete actually—Peirce explains that much like the continuum, "the general or universal of ordinary logic comprises whatever of a certain description is possible."[128] Just as a class consists of potential members, a line has a supermultiplicity of potential points (a multiplicity of points beyond all discrete multitude). This is in contrast to the nominalist, who contends that a universal (being comprised not of actualities but of possibilia) is merely an abstraction and little better than a figment.

Against this picture, Peirce insists that "the *continuum* is that which the Logic of Relatives shows the *true* universal to be."[129] He concludes by remarking that "the question of nominalism and realism has taken this shape: Are any continua real?"[130] As Peirce put it in "Law of Mind," "we have here before us a question of difficulty, analogous to the question of realism and nominalism. But once it has been clearly formulated, logic leaves room for one answer only."[131]

The logic of relations provides the machinery necessary to reason realistically about continuity. Since continuity lies in the *relation between things*, we need a logic that extends over relations: "true continuity is perfect generality elevated to the mode of conception of the logic of relations."[132] "Continuity," Peirce says, "is shown by the logic of relations to be nothing but a higher type of that which we know as generality. It is relational generality."[133] Whereas ordinary logic treats classes in terms of relations of similarity, the logic of relations sees them as the degenerate form of a continuous system in which all the individuals melt together in higher relational generality:

> it is shown that every general concept is, in reference to its individuals, strictly a continuum. This (though asserted by Kant and others) did not appear quite evident as long as the doctrine of generals was restricted to non-relative terms. But in the light of the logic of relatives, the general is seen to be precisely the continuous. Therefore, the doctrine of the reality of continuity is simply that doctrine the scholastics called realism.[134]

The so-called universal is a class of *possibilia* and this is the same as a *true continuum*, that is, "something whose possibilities of determination no multitude of individuals can exhaust."[135] The class of all men, for example, is analogous to a line. Just as no discrete multitude of points is sufficient to fill a line, so no discrete collection of men is sufficient to exhaust the generality of the predicate "___is a man." As Murphey puts it, "those things which constitute the extensions

[127] RLT: 157.
[128] RLT: 160.
[129] Ibid.
[130] Ibid.
[131] W8: 137.
[132] CP 5.528
[133] RLT: 258.
[134] R 398.
[135] CP 6.170.

of universals are continuous."[136] The monadic relation ("___is a man") ranges over all men that *could be*, all men that *are*, and all men that *would be.* The actual existing men are continuous with the possibilities. Indeed, as Boler notes:

> Peirce eventually comes to hold that every predicate specifies a continuous collection of possible objects. The collection of animals specified by the biologist's classification includes not only the discrete individuals, which are the actually existent animals, but a continuous range of possible cases between any two of these.[137]

A predicate is therefore a relation that ranges over a supermultiplicity of potential subjects, which lose their distinct identities and melt into one another. "Thus," Murphey writes, "the way is opened for a new ontology in which what there is would be continua."[138]

In Peirce's Berkeley Review, the nominalism-realism controversy hinges on the nature of reality—a division of a hair separates the nominalist from the realist. For the nominalist reality is exhausted by existence, actuality, or Peirce's Secondness. The realist broadens the scope of reality to include what *would* stand in the long run and is not limited to the idiosyncrasies of any one individual, extending instead to *thought in general*, which necessarily involves reference to a community. Reality extends beyond the limitations of Secondness to embrace real possibility (Firstness) and real continuity (Thirdness).

Although in this later work the problem of the precise nature of reality still looms large, realism now attains its ultimate form in Synechism: "that tendency of philosophical thought which insists upon the idea of continuity as of prime importance in philosophy."[139] As Fisch puts it, "since the continuous is what the general becomes for the logic of relatives, realism becomes 'the doctrine of the reality of continuity.'"[140] Continuity is clarified mathematically and becomes "an essential ingredient of reality."[141] Generality is continuity. The general class becomes a continuous system, a general relation, ranging over all the *potential* subjects of a relational predicate. This relational generality is of a higher form than mere similarity because relational predicates do not require their potential subjects to be alike. The transition from class to system (which is made possible by the logic of relations) ascends to the real continuity that governs the potential subjects of a system of relations.

This view involves the notions of evolution, tendency, and entelechy, whereby systems of relations become more and more concrete through an ever-unfolding process of investigation: "the becoming continuous, the becoming governed by laws, the becoming instinct with general ideas, are but phases of one and the same process of the growth of reasonableness."[142] As Peirce muses to his audience in 1898, "I will not trouble you with any disquisition on the extreme form of realism which I myself entertain that every true universal, every continuum, is a living and

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[136] Murphey, *Development*, 401.
[137] Boler, *Peirce and Scholastic Realism*, 78.
[138] Murphey, *Development*, 318.
[139] CP 6.169.
[140] Fisch, *Peirce, Semeiotic, and Pragmatism*, 193.
[141] EP2: 345.
[142] CP 5.4

conscious being, but I will content myself with saying that the only things valuable, even here in this life, are the continuities."[143]

If the mathematical study of continuity has the consequence of making realism the doctrine of real continuity, then how is nominalism to be characterized from this new perspective? Peirce says that "of all the hypotheses which metaphysicians have ever broached, there is none which quarrels with the facts at every turn, so hopelessly, as does their favourite theory that continuity is a fiction."[144] The idea is that continuity is subjective, something that we project onto the world. We may perceive time or motion as continuous, but the nominalist thinks that everything real is discrete and individual, which from Peirce's point of view is a consequence of the nominalist's obsession with Secondness.

In his 1903 Lowell Lectures, Peirce claims that nominalism is the view that there is "but one mode of being, the being of an individual thing or fact, the being which consists in the object's crowding out a place for itself in the universe, so to speak, and reacting by brute force of fact, against all other things. I call that existence."[145] Pure Secondness, torn from Firstness and Thirdness, is discontinuity. "It is only actuality, the force of existence, which bursts the fluidity of the general and produces a discrete unit," Peirce writes.[146] Nominalism preserves the discrete individual in the luminous actuality of its Secondness, therefore destroying Peirce's image of continuity as individuals melting into one another.

*Only that which actually exists is real*, muses the nominalist, sifting a handful of sand through her fingers—the perfect metaphor for a discrete ontology of individuals devoid of continuity. In a penetrating note from 1912, Peirce writes that nominalism "is precisely the doctrine that the universe is a heap of sand whose grains have nothing to do with one another, and to recognize concatenation is to recognize that there is something that is not Individual and has another mode of Being than that of an Individual Existent."[147] Concatenation, or the interconnectedness of things, is a feature of continuity, though this interconnectedness is not found in the existing things themselves but is of an entirely different mode of being, namely, that of general relations (or Thirdness), which governs the individuals of Secondness.

Real continuity, therefore, requires the recognition of modes of being beyond that of actuality. Peirce's realism captures the reality of all three of his categories of being—all three are operative in the universe. Possibilities and continuities are just as real as tables and chairs. "The continuum," Peirce says in 1898, "is concrete, developed possibility. The whole universe of true and real possibilities forms a continuum, upon which this Universe of Actual Existence is, by virtue of the essential Secondness of Existence, a discontinuous mark—like a line figure drawn on the area of a blackboard."[148]

By reducing reality to mere Secondness, nominalists shut themselves out from the continuity that would bind and govern their ontology of *existing* particulars. This continuity, they

[143] RLT: 162.
[144] RLT: 162.
[145] LoF 2/2: 253.
[146] CP 4.172.
[147] SWS: 283.
[148] RLT: 162.

say, is only a figment. But it is only a figment *because* they equate reality with actual existence. There would be no real continua if all that is real are discrete, actually *existing* particulars. There is no continuity in a world of pure Secondness. The universe would be a heap of sand. But Peirce reminds us that "breaking grains of sand more and more will only make the sand more broken. It will not weld the grains into unbroken continuity."[149]

Nominalism is still primarily characterized by its narrow perspective on the nature of reality, though now, since the problem has shifted beyond generality to continua, nominalism is further characterized as a philosophy of discontinuity. Nominalist analysis breaks everything down into absolute terms that signify and supposit for the discrete individuals of nominalist ontology. These terms, like grains of sand, are discontinuous. They are the atoms of logic—the ultimate elements of analysis. General signs are reduced to discrete collections of sign-instances, or replicas. The class of all men can only be understood through the replicas "Socrates," "Aristotle," "this man," and "that man."

These demonstrative pronouns are restricted to the mode of actuality (whether past, present, or future, they make up a discrete multitude of signs). The Peircean supermultiplicity of *potential* subjects—the continuous system of subjects beyond all discrete multitude—is looked upon as a figment. The nominalist places all value on Secondness—discrete actuality—and in doing so blocks the path of inquiry into the nature of continua, unable to see "the really possible eternal order of things to which we are trying to make our arbitrariness conform."[150]

## 10. The New Plan for Defeating Nominalism

I began this chapter with Peirce's claim that once you "mount the vantage-ground of the logic of relatives … you command the whole citadel of nominalism, which must thereupon fall almost without another blow."[151] To understand why he thinks this, I will recapitulate the argument I have covered so far. The central flaw of nominalism is a consequence of a naive theory of logic—the failure to extend logic beyond non-relative terms. Ordinary logic explains generality through the relation of similarity: a general class "is a set of objects comprising all that stand to one another in a special relation of similarity."[152] If the universal is a sign predicable of many, then that sign ranges over all possible subjects that resemble one another, or share a predicate.

Consequently, the nominalist treats classes as mere abstractions or figments, since the members of a class are comprised of *possibilia*. The advantage of the logic of relatives is to move beyond classes to continuous *systems*: a "set of objects comprising all that stand to one another in a group of connected relations."[153] As we saw, the subjects of relations are not necessarily bound by similarity. The logic of relations "regards the form of relation in all its generality and in its different possible species," with the result that "every doctrine and

[149] CP 6.168.
[150] RLT: 163.
[151] CP 4.1.
[152] CP 4.5.
[153] Ibid.

conception of logic is wonderfully generalized, enriched, beautified, and completed in the logic of relatives."[154]

On Peirce's view, the achievement of his new logic of relations is to allow us to reason about the nature of continuity (a view that the Colombian School has forcefully defended). The mathematical study of continua, which extends far beyond Cantor's pseudo-continua, is broached and continuity becomes a *protean concept* marked by its supermultiplicity (a characteristic that requires us to recognize modes of being beyond discrete actuality). Ketner and Putnam remark that Peirce's 1898 Cambridge Lectures should have been called "The Consequences of Mathematics."[155] There is value to this proposed title since in Peirce's classification of the sciences mathematics precedes logic (considered as semeiotic) and logic precedes metaphysics.[156] Mathematics clarifies the concept of continuity, allowing us to transfer its lessons to metaphysics, including reshaping the contours of the nominalism-realism controversy.

What we learn when we mount the vantage ground of the logic of relations is that "true generality is, in fact, nothing but a rudimentary form of true continuity. Continuity is nothing but perfect generality of a law of relationship."[157] What has traditionally been understood as a *class* becomes a *continuous system*. The universal is no longer a discrete term ("man") predicable of many ("Socrates," "this man," "that man") but is properly speaking a relation ("___is a man."). As I showed in Chapter 2, all predicates are general relations with their subjects erased. Being relations, these predicates form systems that range over a continuous supermultiplicity of potential subjects. The nominalist denies this continuity because only discrete individuals are real. Peirce's realism, insofar as it extends the limitations of Secondness, recognizes the continuity governing the extension of relational predicates, which comprises the continuous system of all subjects that *could be*, that *are*, and that *would be.*

The new plan for defeating nominalism requires that we extend ordinary logic via the logic of relations. This allows us to treat the monadic predicates of classes as systems of relations, therefore generalizing relations beyond mere similarity. Additionally, the new plan requires that we undertake a mathematical study of continua, from which we learn that the universal is a degenerate form of the continuum. The study of continua clarifies what is meant by a universal by presenting its extension as a continuous supermultiplicity of subjects. Finally, Peirce welds continuity to his extreme realism, which secures the reality of continua via a multi-modal theory of reality. Those modes of being conducive to supermultiplicity fall under the categories of Firstness and Thirdness, which are just as real as the actualities of Secondness.

The nominalist is content in a castle made of sand—a universe of discrete actuality. But Peirce teaches that the great ocean of continuity sweeps the castle into its homogenous tide. Realism is only another word for Synechism, the doctrine of real continuity, not only in the universe of logical discourse but for the entire universe beyond the discontinuity of our peculiar,

[154] CP 4.4.
[155] Ketner and Putnam, "Introduction," RLT: 1.
[156] This characterization is not complete but suffices for my point. There is an order of determination in which the preceding sciences inform the succeeding sciences. For a more nuanced account of the classification of the sciences, see "The Architecture of Theories" (W8: 98) and "An Outline Classification of the Sciences" (EP2: 258).
[157] CP 6.172.

actually existing universe. The nominalist shuts herself out from the ocean of continuity, while its continuous currents govern the synechist: "our knowledge is never absolute but always swims, as it were, in a continuum of uncertainty and of indeterminacy. Now the doctrine of continuity is that *all things* so swim in continua."[158]

Boler doubts whether the new plan "strikes fear in the heart of the nominalist."[159] But this is because his treatment of the new plan does not take the analysis far enough, being limited to the *extension* of continuous systems: "Peirce eventually comes to hold that every predicate specifies a continuous collection of possible objects."[160] Murphey makes the same point: "those things which constitute the extensions of universals are continuous" and the "relations constitute continuous connections among their correlates."[161] This interpretation implies that once we abstract the indexical element of a proposition (that is, once we erase the subject, leaving only a blank in its place), we are left with a general relational predicate, which is a system that *extends* over a continuum of potential subjects.

The generality of the relational predicate is therefore explained through the continuity of its potential subjects. The extension does not involve only a discrete collection of existing subjects (the nominalist's position), extending beyond all possible multitudes. This view helps to clarify the relationship between a predicate and its extension, which defines a continuous system. Indeed, this is Peirce's argument in the 1898 Cambridge Lectures and the view he consistently maintained thereafter.

Peirce's clarification of continuity does not merely allow us to understand the *extension* of a system of relations as a continuous set of potential subjects. While it is true that the extension of a universal is analogous with a true continuum, there is a further consequence that Boler and Murphey fail adequately to address. The point is not just to abstract the subject of a proposition so that the remaining predicate *extends* over a continuous system of potential subjects. Rather, it is to show that the resulting relations *themselves* are continuous with one another. The upshot of the new plan involves Peirce's mature theory of *continuous relations*: the view that what remains at the end of an analysis of the proposition is the vague generality of a *continuous relation*, a position in the sharpest contrast to the nominalist's logical atomism.

## 11. Continuous Relations:

## Further Consequences of the New Plan

In this section, I elucidate a further consequence of Peirce's new plan for defeating nominalism. In Chapter 2, and again at the beginning of this chapter, I argued that the difference between nominalism and Semeiotic Realism boils down to opposing analyses of the proposition, a fundamental problem of logic. I now argue that Peirce's understanding of continuity informs his analysis of the proposition into continuous relations, extending Bellucci's position by

[158] CP 1.171
[159] Boler, *Peirce and Scholastic Realism*, 67.
[160] Boler, *Peirce and Scholastic Realism*, 76.
[161] Murphey, *Development*, 401, 318.

applying the argument to the nominalism-realism controversy. Continuous relations ring the death knell for nominalism as a logical doctrine.

Analysis involves the notion of a terminus, the point where analysis stops and we harvest the fruits of our labour. Without a terminus, analysis would go on forever. How could we learn something new if we spiral into an endless regress? We should expect that analysis bears fruit of some kind, otherwise it would be a pointless endeavour. Decompositional analysis has traditionally dominated over all other forms of analysis. Aristotle, for instance, decomposes an argument into propositions and a proposition into terms (subject and predicate), which constitute the terminus of an analysis of the proposition.[162] Since we can go no further than terms, they become the atoms of logic.

In Chapter 2, I argued that Ockham's logic follows the same approach. The proposition "Socrates is a man" decomposes into a discrete collection of terms: "Socrates," "is," and "man." "Socrates" and "man" are categorematic terms that signify their objects primarily and directly, and as signifying objects serve a semantic function. "Is" is a syncategorematic term and as such has only the syntactic function of bringing categoremata into relation with one another in propositional contexts where those terms supposit for their objects. Ockham's logical atomism, which is an extension of his nominalism, treats this collection of discrete terms as the ultimate elements of logic (and reality). As Normore shows, the driving force of the nominalist program is found in the way that this recipe for logical analysis constrains ontology. Syncategorematic terms do not signify anything outside of propositional contexts, while categorematic terms, distinguished into connotative and absolute, leave a collection of absolute terms that signify the individuals of a nominalist ontology.[163]

Bellucci notes that while Peirce certainly values logical analysis he did not believe that it achieves absolute results. Peirce writes, "absolute completeness of logical analysis is no less unattainable [than] is omniscience. Carry it as far as you please, and something will always remain unanalyzed."[164] Indeed, there is a loose end to every graph. He does not think, as the nominalists did, that analysis terminates in a discrete collection of absolute categorematic terms. In his "Prolegomena to an Apology for Pragmaticism," Peirce offers a different account of analysis:

> I trust you will all agree with me that no analysis, whether in logic, in chemistry, or in any other science, is satisfactory, unless it be thorough, that is, unless it separates the compound into components each entirely homogeneous in itself, and therefore free from the smallest admixture of any of the others.[165]

The notion of homogeneity is crucial because of its relation to Peircean continuity. Analysis should not terminate in discrete parts or atoms but in components entirely homogenous, that is, continuous with themselves. This homogeneity remains unanalyzable. As Bellucci puts it:

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[162] Aristotle, *Prior Analytics,* 24b18.
[163] Normore, "Medieval Nominalism," 212.
[164] R: 1454. See also Bellucci, "Continuous Predicates," 178.
[165] Charles Peirce, "Prolegomena to an Apology for Pragmaticism," *The Monist* 16, no. 4 (1906), 518.

> while an *absolutely complete* logical analysis is unachievable, a *satisfactory* logical analysis is nevertheless possible in so far as we can discover those elements of a logical compound that are not composed of other elements but are entirely homogeneous in themselves; when such things are encountered, we can say that analysis must stop, for a component entirely homogeneous in itself always remains unanalyzed and is thus elementary in the required sense.[166]

On my view, the Peircean analysis of a proposition uses two forms of abstraction: prescission and hypostatic abstraction. As early as 1867, Peirce defines prescission as the process of abstraction that arises from "*attention to* one element and *neglect of* the other."[167] The geometer, for instance, prescinds the geometrical figure from its colour, that is, attends to its figure and neglects its colour. But in 1893 Peirce cleanses prescission of its psychological baggage, writing that prescission treats an element in general "without regard to the differences of its individuals."[168] "In general," Peirce says, "prescission is always accomplished by imagining ourselves in situations in which certain elements of fact cannot be ascertained. This is a different and more complicated operation than merely attending to one element and neglecting the rest."[169] When we undertake a semiotic analysis of the proposition and erase the subject, we abstract the indexical element of the proposition and prescind its relational predicate, ending up with the form of a relation apart from any actual multitude of subjects.

In Chapter 2 I argued that the semiotic analysis of a proposition does not result in a collection of discrete terms. Whereas the nominalist decomposes the proposition into terms, Peirce's kind of analysis removes the indexical element of the proposition so that what remains is a relational predicate. In the proposition "Socrates is a man," the subject ("Socrates") is an indexical sign because it indicates (as if by pointing with an index finger) a particular individual that is predicable of the character of humanity. Peircean analysis erases the index, leaving a blank as the placeholder that extends over a *continuous system* of subjects, resulting in what Peirce calls a rheme, "____is a man," though this rheme is not a term on par with the nominalist's categorematic term since it does not directly or primarily signify an object. Only the subject *indicates* an object and a rheme is what remains after erasing the subject of a proposition, which makes the rheme a relation that we can now appreciate as extending over a continuous system of potential subjects.

Nominalists tend to regard relation as occurring *secondarily* in propositional contexts, where categorematic terms are brought into relation via the syntax of syncategorematic terms. For the nominalist the absolute terms that signify the items of an ontology take precedence. Relation is *secondary* to the *primary* signification of categorematic terms. Only individuals are real and relations, not being individuals, are therefore not real. Peirce takes the opposite position. Once the index is erased only a relation remains, making relations more elementary than the individuals they relate in a propositional context. The terminus is not a categorematic term but a relation that extends over a continuous system of subjects. As it turns out, the subjects are secondary.

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[166] Bellucci, "Continuous Predicates," 184.
[167] W2: 50.
[168] CP 2.428.
[169] Ibid.

Prescission is this process of erasing the subject. The rheme prescinds from the indexicality of a particular subject, an operation that can be applied to any proposition. "Cain kills Abel" becomes "___kills___"; "God gives some good to every man" becomes "____gives____to____." In each instance, the subjects are abstracted and the relation itself becomes prominent. We can now treat these relations without consideration of any particular subject or subject-set. The logic of relations therefore extends ordinary logic by emphasizing the relations themselves over the related subjects.

Giving relations precedence over categorematic terms drives a wedge between Peirce's logic and the decompositional approach of the nominalists. Where they decompose propositions until no relation remains, for Peirce only relations remain at the end of analysis. Indeed, Boler claims that once we reach the level of rhemes we attain the relational predicates whose extensions constitute continuous systems of potential subjects. There is real generality—real continuity—in this view, though Boler does not mention that it is possible to carry this analysis even further, which Bellucci makes explicit. Indeed, while a rheme is a relation, it is not yet a *continuous relation*, being instead a pseudo-terminus not yet analyzed into elements homogenous with itself.

To push analysis as far as it can go requires an additional method of abstraction. *Hypostatic abstraction* is the logical operation that transforms a predicate into the subject of a further proposition. Boler notes that in hypostatic abstraction "the aspect [predicate] selected is converted into another logical subject, and thus changes from something we think through to something we think about."[170] In Peirce's words, hypostatic abstraction is the logical operation that turns predicates "from being signs that we think … through, into being subjects thought of. We thus think of the thought sign itself, making it the object of another thought sign."[171] For example, hypostatic abstraction moves from the proposition "the library is large" to "the library has largeness."[172] Both examples transform the *predicates* "____is a man" and "____is large" into *subjects* that fill one of the blanks of a new *dyadic* relation. Both predicates are converted into variations of the form "___has___" and the new blank now extends over a continuous system of possible monadic predicates (humanity, largeness, and so on).

Hypostatic abstraction is not merely a grammatical operation; for Peirce it is a strictly logical one. Boler explains that "*largeness* has become a logical subject, a change that is obscured if we think of it only as an adjective becoming a noun. The change allows now for further predicates to be applied to *largeness*."[173] Moreover, hypostatic abstraction shows that every monadic relation ("____is large") is *virtually* the subject of a dyadic relation ("___has___."). For instance, the monadic relation ("____is large") transforms into one of a continuous system of potential subjects, as in "____has largeness".[174]

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[170] Boler, *Peirce and Scholastic Realism*, 79.
[171] CP 4.549.
[172] Boler, *Peirce and Scholastic Realism*, 79.
[173] Boler, *Peirce and Scholastic Realism*, 80.
[174] I leave "largeness" underlined to make clear that the relation is still of the form "___has___." This is an intermediate step. First we use hypostatic abstraction to convert the predicate "is large" into the subject slot of a new dyadic relation, "____has largeness." Then we use prescission again to abstract away "largeness" laying bear the form "___has___."

In Chapter 2 I showed that Peirce takes a proper analysis of the proposition "to throw into the subject everything that can be removed from the predicate," so that what "remains for the predicate to represent is the form of connection between the different subjects as expressed in the propositional *form*."[175] Bellucci notes that "hypostatic abstraction is the means to complete the process of throwing into the subject all that we possibly can, and is thus absolutely necessary if we want to reach the form of the proposition."[176] Let me explain his point.

The aim of Peircean analysis is to remove the indexical dimension of a proposition so that only the general form of a connection between potential indexes remains. To understand the proposition "Cain kills Abel," we require collateral experience of both Cain and Abel—something that the proposition itself does not provide. Prescission abstracts the subjects, therefore prescinding the form of the connection that extends over a continuous system of subject-sets, ((Cain, Abel), (Oswald, Kennedy), and so on). After prescission has run its course we are left with "___kills___." Peirce tells Welby that to understand this result we still need some collateral experience of killing, meaning that we must treat killing as a further subject along with Cain and Abel: "Cain, Abel, and the relation of killing are the subjects of this proposition."[177] So we have not yet reached the end of the analysis. We need a way to transform the dyadic predicate "___kills___" into the subject of a more general relation, which requires hypostatic abstraction.

In the same way that hypostatic abstraction transforms a monadic predicate ("____is a man") into the potential subject of a dyadic relation ("___has humanity"), we can transform a dyadic relation into one of the subjects of a further triadic relation. That is how hypostatic abstraction transforms the predicate "___kills___" into the subject of a further triadic relation: "___is to____in the relation killing." Now killing is no longer the predicate, being instead the subject of a more general triadic relation. Using prescission again, we can abstract "killing" in the same way we did "Cain" and "Abel," so that what remains is the general form of a connection among the subjects: Cain, Abel, and the relation of killing. We simply have: "___is to____in the relation____." The added blank now extends over a continuous system of potential dyadic relations (killing, loving, possessing, and so on).

According to Peirce, once we have thrown everything into the subject position that we possibly can via hypostatic abstraction we reach the point where analysis cannot *fruitfully* go any further. Indeed, "___is to____in the relation____" *is* a continuous relation—a relation homogenous with itself. We have reached the end of analysis. We cannot fruitfully go further than "___is to____in the relation____."

The reason why this is so is what makes "___is to____in the relation____" a *continuous relation*. Consider the following objection. Is it possible to apply hypostatic abstraction again and transform the new predicate ("___is to____in the relation____") into the *subject* of a further relation? Yes, it is certainly possible. We would then have something like "____is to____in relation to the relation _____." Using prescission again we could then erase the subject "relation" and get a new rheme: "____is to____in_____ to the relation _____." We can theoretically apply hypostatic abstraction an infinite number of times. In each application, however, all we do is turn

[175] SS: 71.
[176] Bellucci, "Continuous Predicates," 185.
[177] SS: 70.

"relation" into a subject that is then *related* to the other subjects by a new *relation*. Each application of hypostatic abstraction adds a new blank to the relation such that the number of blank subjects increases by one: "____is to____in_____ to the relation _____" becomes "____is to____in_____ to the relation to the relation _____," and so on *ad infinitum.* By interweaving applications of prescission and hypostatic abstraction in this way we plunge into an abyss of relations.

One may be tempted to liken this to the Hegelian *schlechte Unendlichkeit* or bad infinity, "a proliferating process of repetitive thought without end."[178] On some accounts, a commitment to the reality of relations leads to this evil infinity: "if you accept real relations, then what about the relations between the relation and the relata?"[179] This problem was broached by F. H. Bradley in *Appearance and Reality*. Allen summarizes Bradley's argument: "If relation is real and different from its terms, then it has *to be related* to those terms, requiring a *new* relation, and with that yet another relation, and so on, reducing the concept of relation to absurdity."[180] In Bradley's words, "we are hurried off into the eddy of a hopeless process, since we are forced to go on finding new relations without end."[181] Evil infinity be damned! Bradley's nominalism is explicit:

> a relation without terms seems mere verbiage; and terms appear, therefore, to be something beyond their relation. At least, for myself, a relation which somehow precipitates terms which were not there before, or a relation which can get on somehow without terms, and with no differences beyond the mere ends of a line of connection, is really a phrase without meaning.[182]

Relations are figments of abstraction; there is no relation apart from the terms related, and no relation precipitates terms, since individuals are prior to their relations. This reasoning is a symptom of nominalism's insistence that reality is exhausted by existing individuals. The problem, as nominalists like Bradley see it, is that a commitment to the reality of relations leads to a regress of relations, which is reason enough to call the reality of relations into question. It seems, then, that Peirce's process of abstraction leads to evil infinities, but this is not so. The regress resulting from a semiotic analysis of propositions is not a problem for Peirce because real continuity binds the process of abstraction.

To be sure, on Peirce's account there *is* a regress. You can apply hypostatic abstraction infinitely many times, proliferating relations, though the regress is redundant. With every further application of hypostatic abstraction the only thing that changes is the number of subjects being related. What does not change is *the character of the predicate itself*: while the number of subject blanks increases, each new subject is still *in relation to* the others. As Bellucci explains, each new predicate "simply means 'to be in relation to,' and therefore, we see that making 'relation' a further subject would result in essentially the same predicate, for [each new

[178] Stjernfelt, *Sheets, Diagrams, and Realism*, 261.
[179] Ibid.
[180] Allen, *Empiricisms*, 294.
[181] F. H. Bradley, *Appearance and Reality* (Oxford: Clarendon Press, 1897), 28.
[182] Bradley, *Appearance and Reality*, 27.

predicate] express[es] the same concept, that of 'being related to.'"[183] Peirce expresses this point brilliantly in 1908:

> *To be in relation to X, and to be in relation to a relation to X mean the same thing.* If therefore I were to put "relation" into the Subject at all, I ought in consistency to put it in infinitely many times, and indeed this would not be sufficient. *It is like a continuous line: no matter what one cuts off from it a line remains.* So I do not attempt to regard "A is B" as meaning "A is identical with something that is B." I call "is in relation to" and "is identical with" Continuous Relations, and I leave such in the Predicate. *The Predicate is that part of the assertion which is signified as the logical connexion between the Subjects. But I sometimes term the whole set of Subjects the Subject-System.*[184]

Thus "___is to___in the relation___" is a continuous relation precisely because any further application of hypostatic abstraction results in a predicate *homogenous* with the one from which it was abstracted. A continuous line is a perfect analogy. No matter how many blades cut a line, as long as they are not supermultitudinous they will cut the line into as many lines, each homogenous with the whole from which they were cut. Each further application of hypostatic abstraction is analogous to one of the blades coming down across the line. But no matter how many times I apply hypostatic abstraction I still end up with a relation continuous with the one from which I abstracted it.

Peircean continuity informs the analysis of the proposition by showing that analysis, once carried to its limit, results in a continuous relation. The relation is continuous precisely because a potentially infinite number of applications of hypostatic abstraction will result in relations completely homogenous with the relations from which they are abstracted. As Peirce explains to Welby:

> A predicate which can thus be analyzed into parts all homogenous with the whole I call a *continuous predicate* [or relation]. It is very important in logical analysis, because a continuous predicate obviously cannot be a *compound* except of continuous predicates, and thus when we have carried analysis so far as to leave only a continuous predicate, we have carried it to its ultimate elements.[185]

There is no absolute analysis, that is, no absolute terminus in a discrete collection of terms, and thus no logical atom. Hypostatic abstraction goes on indefinitely, though we reach a *satisfactory result* once we have properly applied prescission and hypostatic abstraction to reach a continuous relation. We can do no better than that. To cling to the notion of an absolute categorematic term, an absolute terminus of analysis, is a dogma of nominalism's philosophy of discontinuity. "The principle of continuity is the idea of fallibilism objectified," Peirce writes; "our knowledge is never absolute but always swims, as it were, in a continuum of uncertainty

[183] Bellucci, "Continuous Predicates," 186.
[184] SWS: 266; my emphasis.
[185] SS: 72.

and of indeterminacy."[186] A continuous relation, being the only *satisfactory* result of analysis, is the quintessence of relational generality.

In the Cambridge Lectures the mathematical clarification of continuity leads to a notion of "Subject-Systems"—a view Peirce still held 10 years later in 1908. The predicate (rheme) *extends* over a continuous system of subjects or subject-sets. But now we see that setting the extension of rhemes aside, the rhemata themselves are continuous with each other. Hypostatic abstraction allows for the transformation of *specific* relations or rhemes ("___is a man" or "___kills___") into general *continuous relations* ("___is to___in the relation___"). The possibility of these transformations shows that the highest form of generality, the *continuity* conceivable only from the vantage of the logic of relations, *is* a continuous relation. The analysis of the proposition does not result in a *determinate* collection of terms but in an *indeterminate* continuous relation than which nothing is more general. Every proposition can be analysed into a rheme and all rhemata into continuous relations. Continuous relations have a reality apart from the subjects related—they are the vague and indeterminate elements of a logic of semiotic relations and define the real continuity governing signs.

The fundamental error of decompositional analysis (the heart and soul of the nominalist program) is to expect analysis to terminate in something particular or determinate, an absolute categorematic term. The nominalist begins analysis expecting to find an atom—something absolute, unbreakable, and utterly discontinuous. This prejudice distorts the analysis because it *blocks the path of inquiry* by rendering the possibility of *real* continuous relations obsolete before the analysis even begins. As Allen explains, "philosophical thought about relations long stumbled over subject-predicate logic…. Relations are not individuals, not terms…. If an absolute individual is the standard, relations must seem scarcely real."[187] "Basically," Allen writes, the nominalist argument is that "relations are not individuals; but everything is individual; therefore relations do not exist."[188] While Allen overcomes this nominalism through James' psychological ideas about external relations, Peirce seeks a logical solution. As we have seen, he was aware of the stumbling blocks besetting ordinary subject-predicate logic, and his aim in the Cambridge Lectures is to extend ordinary logic via the diagrammatic study of the logic of relations—a study that leads to the development of continuous relations.

Once we take this vantage and elucidate its consequences, we find a double argument against nominalism. The first uses the mathematical clarification of continuity to expose the untenable assumption that similarity exhausts generality and that the general class, being comprised of *possibilia*, is a figment. The logic of relations conceives of the class as a relation that *extends* over a continuous system of subjects, not bound by mere similarity but rather by their being subjects of relations of any kind. This view is welded to Semeiotic Realism and requires the recognition of real modes of being beyond that of actual existence. There are real general relations governing continuous systems of subjects.

The second argument, not explicit in the Cambridge Lectures but growing out of them, exposes the nominalist commitment to decompositional analysis as another stumbling block of

[186] CP 1.171.
[187] Allen, *Empiricisms*, 294.
[188] Ibid.

ordinary subject-predicate logic. The logic of relations shows that the ultimate elements of logic are hardly absolute. A proper analysis of the proposition does not decompose it into individual terms or logical atoms. Rather, it uses an interweaving process of prescission and hypostatic abstraction to arrive at continuous relations, utterly indeterminate, hardly absolute, but certainly satisfactory. These two arguments together destroy nominalism as a logical doctrine. The crystalizing theme of Semeiotic Realism is that there is no reality independent of relations, and we see now that these relations are continuous with one another, exploding the assumption that continuity is a figment. Continuous relations, though indeterminate, have a reality independent of thought-in-particular. Semeiotic relations are real continuous relations and the *citadel of nominalism crumbles without another blow*.

## 12. Continuous Semiosis and Existential Graphs:

## The Bedrock Beneath Semeiotic Realism

I have now completed the principal aim of my dissertation, which is to systematically study Peirce's Semeiotic Realism and his arguments against nominalism. In what remains I weld together the three themes explored in the previous chapters—the logic, reality, and continuity of signs—to explain what I see as the driving force of Peirce's Semeiotic Realism, which is what you get when you combine Peircean continuity with the logic of signs and the doctrine of scholastic realism. This realism is not primarily a metaphysical but rather a logical doctrine informed by mathematics but having metaphysical consequences and establishing the reality of continuous semiosis. To conclude this chapter, I explain what continuous semiosis is and how the existential graphs represent it.

In 1907 Peirce defines semiosis as "an action, or influence, which is, or involves, a cooperation of *three* subjects, such as a sign, its object, and its interpretant, this tri-relative influence not being in any way resolvable into actions between pairs." [189] He adds that *"*σημείωσις in Greek of the Roman period, as early as Cicero's time, if I remember rightly, meant the action of almost any kind of sign; and my definition confers on anything that so acts the title of a 'sign.'"[190] Semiosis in the most general sense involves the process of determination through which a sign stands to its interpretant for its object, which makes semiosis a tri-relative force. Peirce's scholastic realism secures the reality of signs over and above their individual replications (tokens). Semeiotic "is the doctrine of the essential nature and fundamental varieties of possible semiosis."[191] Semeiotic *Realism* is the doctrine that semiosis is operative in the universe, that it is not merely a mental, fictive, imaginary relation but one based on real relations existing independently of thought or at least of particular thoughts, and, finally, that these sign processes are not limited to their various instantiations but have a generality that cannot be exhausted by actual existence.

Semiosis is smooth or continuous, with Peircean continuity characterizing all sign action. Even in the *Cognition Series* (1868), for example, Peirce takes cognition to unfold in continuous semiosis. "From the proposition that every thought is a sign," he writes, "it follows that every thought must address itself to some other, must determine some other, since that is the essence of

[189] EP2: 411.
[190] Ibid.
[191] EP2: 413.

a sign."[192] In the doctrine of the thought-sign we find a continuous series or succession of signs, with each one determining a further. The interpretant becomes a new sign that then determines a further interpretant and so on *ad infinitum.* Yet this is no evil infinity.

This semiotic continuity extends further. Semeiotic Realism recognizes three modes of interpretant: "the Immediate Interpretant is an abstraction, consisting in a Possibility. The Dynamical Interpretant is a single actual event. The Final Interpretant is that toward which the actual tends."[193] Short argues that "there is no progression from immediate to dynamic to final interpretant: any dynamic interpretant must actualize the immediate interpretant, and the progression—where one occurs—is from one dynamic interpretant to another, until, finally, the final interpretant is made actual."[194] Of course, the final interpretant may never actualize, and even if it did we could not be certain that it was truly final, given our limited, fallible perspective. Semiosis only *tends* toward a final interpretant as an ideal limit; the progression of actual, dynamical interpretants is a continuum stretching out between the immediate and final interpretant. We can imagine the progress of dynamical interpretants as an indefinite series of fractions between 0 (immediate interpretant) and 1 (final interpretant). "The Dynamical Interpretant," Peirce writes to James, "indefinitely approaches the character of the Final/Immediate Interpretant."[195] A continuous succession of dynamical interpretants emerges from the possibility of the immediate interpretant and indefinitely approximates the final interpretant (as a limit) *in the long run*—a process of dynamical interpretants stretching out in a continuum between the immediate interpretant, as first, and the final interpretant as last. In scientific investigation, for example, inquirers begin by drawing an abduction to explain some surprising phenomena. That abduction produces a possible explanation for phenomena *x*—a hypothesis—and in doing so, draws a limit around the state of information relevant to that investigation from which the inquirers can then begin to *deduce* the consequences that *would* follow, were the hypothesis to stand. Once the consequences have been teased out by deduction, the inquirers proceed to test whether they do in fact hold in practice, utilizing induction to take samples that will either further confirm or challenge their hypothesis. If induction deems the hypothesis inadequate, that instills doubt in the inquirers, causing them to draw a new abduction and begin the process anew. But if induction tends to confirm the hypothesis, then the inquirers will continue to adhere to that hypothesis as an explanation of *x* until a new induction challenges their results:

> But insofar as it [science] does this, the solid ground of fact fails it. It feels from that moment that its position is only provisional. It must then find confirmations or else shift its footing. It still is not standing upon the bedrock of fact. It is walking upon a bog, and can only say, this ground seems to hold for the present. Here I will stay till it begins to give way.[196]

We have learned that the conclusion to any argument (whether abductive, deductive, or inductive) is an interpretant. Scientific investigation unfolds within continuous semiosis, these

[192] W2: 207.
[193] SS: 111.
[194] Short, *Peirce's Theory of Signs*, 184.
[195] EP2: 499.
[196] EP2: 55.

interpretants emerging from the possible explanation set up by that initial abduction. The very fact that you can always take another induction—another sample—suffices to show that this process of interpretation only approximates an end as an ideal limit in the long run (the final interpretant, or reality). "The interpretant is nothing but another representation to which the torch of truth is handed along; and as representation," Peirce says, "it has its interpretant again."[197] Scientific investigation is a living example of how the torch of truth is passed from dynamic interpretant to dynamic interpretant.

Peirce is primarily interested in those varieties of semiosis relevant to logic. In Chapter 1 I argued that his principal contribution to semiotics is the reduction of illation to the sign relation, which establishes that logic is Semeiotic. An argument is a symbol in which the premises are a sign of the conclusion. When we draw an inference, an illative transformation occurs whereby the sign (premise) determines an interpretant (conclusion). The process is smoothly continuous; there cannot be any breaks in the transformation. Peirce writes:

> when an Argument is brought before us, there is brought to our notice (what appears so clearly in the Illative Transformations of Graphs) a process whereby the Premisses bring forth the Conclusion, not informing the Interpreter of its Truth, but appealing to him to assent thereto. This Process of Transformation, which is evidently the kernel of the matter, is no more built out of Propositions than a motion is built out of positions.[198]

Inference, like motion, is continuous. Motion is not made of positions, a line is not made of points, and an inference is not composed of discrete propositions. But how do we model, or represent, these continuous transformations *as continuous*?

When Peirce introduces the Logic of Relations (a logic of *semiotic* relations), he does not simply extend propositional logic via the introduction of quantification, relations, and identity. He overcomes the limitations of symbolic notation with an iconic, diagrammatic notation, which is the value of the existential graphs: they allow us to represent inference *as* continuous semiosis.

Suppose I want to derive the conclusion "Napoleon is a butcher" ($\exists x (Nx \& Bx)$) from the premises "Napoleon is a conqueror" ($\exists x (Nx \& Cx)$) and "All conquerors are butchers" ($\forall x (Cx \rightarrow Bx)$). Using the usual symbolic notation of predicate logic, I could draw up a list of the discrete steps that prove the validity of the argument:

1. $\exists x (Nx \& Cx)$ (Premise)
2. $\forall x (Cx \rightarrow Bx)$ (Premise)
3. $Ni \& Ci$ (Existential Instantiation: 1)
4. $Ci \rightarrow Bi$ (Universal Instantiation: 2)
5. $Ci$ (& Elimination: 3)
6. $Ni$ (& Elimination: 3)
7. $Bi$ ($\rightarrow$ Elimination: 4,5)
8. $Ni \& Bi$ (& Introduction: 6,7)

[197] NEM 4: 310.
[198] CP 4.572.

9. ∃x (Nx & Bx) (Existential Generalization: 8)

While this derivation proves the validity of the argument, it hardly captures the continuity of the process that the thought-sign goes through when we draw the inference. The symbolic derivation represents the inference as unfolding through a discrete series of steps that make the process of inference seem point-like—akin to the idea that motion consists in a series of discrete positions or that a line is composed of points. Symbolic notation and traditional logical derivations are nominalistic because they *appear* to break the continuity of the inferential process.

The existential graphs (which as I showed earlier use icons in place of symbols) represent the process of inference as a continuous transformation. Indeed, Peirce thinks that these graphs provide a "moving picture of thought."[199] In a wonderful article, Richard Atkins explains that Peirce's existential graphs are inspired by Muybridge's experiments on animal motion.[200] Muybridge wanted to know whether all four hooves of a galloping horse ever leave the ground simultaneously. He put this question to the test by placing a series of cameras (triggered by trip wires) around a horse track. As the horse runs around the track it triggers the cameras, whose images provide snapshots of the horse's continuous gallop. In much the same way, the existential graphs provide snapshots of the continuous process of the mind in reasoning. Peirce envisions a succession of graphs scribed onto magic lantern slides spinning around a projector, displaying a moving picture of illative transformation:

> If upon one lantern-slide there be shown the premises of a theorem as expressed in these graphs and then upon other slides the successive results of the different transformations of those graphs; and if these slides in their proper order be successively exhibited, we should have in them a veritable moving picture of the mind in reasoning.[201]

Indeed, as Atkins shows, this is the "bedrock beneath pragmaticism:" "The System of Existential Graphs may be characterized with great truth as presenting before our eyes a moving picture of thought."[202] As Atkin's puts it:

> This continuity of thought lies in the fact that every thought is (or may be) interpreted by a subsequent thought. The most obvious case is an inference: the conclusion of an inference interprets (is an interpretant of) the premises. That conclusion, moreover, may serve as a premise in another inference, which will be interpreted by a different conclusion, and so on.[203]

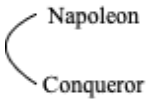
When at the beginning of this chapter I introduced existential graphs, I showed that a graph is scribed onto a sheet of assertion, a logical surface and field of potential signification. I hinted that the sheet of assertion is continuous, and we can now appreciate that Peirce conceives it this way because of his foray into mathematics. Much like a continuous relation, any portion of

[199] CP 4.8.
[200] Richard Atkins, "Peirce, Muybridge, and the Moving Pictures of Thought," *Transactions of the Charles S Peirce Society* 53, no. 4 (2017): 511-27.
[201] R: 905.
[202] L: 381.
[203] Atkins, "Peirce, Muybridge," 517.

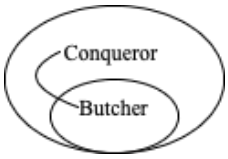
the sheet is homogenous with the sheet itself, so if graph interpreters attend to the blank sheet, they do not attend to any specific portion but only to the sheet as a whole. Indeed, if I try to emphasize a particular portion of the sheet, I have no way to distinguish it from the rest of the sheet, since every portion of the sheet is continuous with the sheet itself.

Suppose we scribe the line of identity onto the sheet. Now my attention shifts from the sheet to a particular graph scribed on its surface. The line of identity is also continuous, since any portion of the line is homogenous with the line itself. While the sheet of assertion involves a kind of *spatial* continuity, the line of identity is a degenerate species of this same continuity—a kind of *linear* continuity. Whatever graph we scribe onto the sheet is continuous and derives its continuity from the sheet of assertation itself. The interpretation of a graph involves a continuity of attention whereby the interpreter follows the continuous line of identity across the continuous surface of the sheet. Earlier in this chapter I focused only on the diagrammatic representation of propositions but I now give a hint of the diagrammatic representation of an illative transformation.

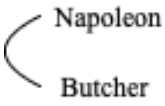
Let's return to the syllogism that I derived symbolically above. This syllogism has two premises and a conclusion. We want to know how the graphs represent the transformation of the premises into the conclusion to provide a moving picture of the illative transformation. First I scribe the premises and the conclusion as independent graphs. The following graph represents premise one, "Napoleon is a conqueror:"




The graph reads: "there is something that is both Napoleon and a conqueror." Here is the graph for premise two, "all conquerors are butchers:"



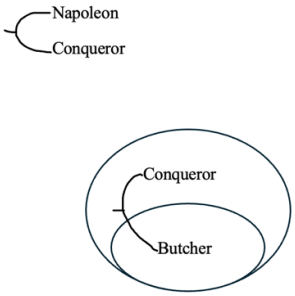

The graph reads: "it is not the case that something is a conqueror and not a butcher." The question now is how the existential graphs represent the continuous transformation of these two graphs into the conclusion, "Napoleon is a butcher:"



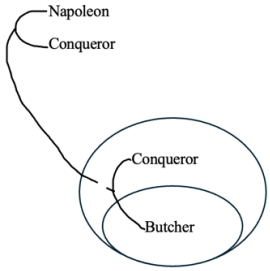

I will not introduce all the inference rules governing illative transformation since I am interested only in the semiotic question of how to represent inferential processes as continuous

transformations.[204] All I ask is that the reader compare the following iconic transformation with the preceding symbolic derivation and note the difference in the manner of representation. The symbolic derivation does not convey that inference is continuous, while the illative transformation of graphs renders that continuity explicit.

Still, it is difficult to convey the continuity of this transformation without a magic lantern. Imagine that the following succession of graphs is scribed onto a series of lantern slides that would be rapidly projected one after the other to create a moving picture of the inference. The first slide colligates the premises, for which we simply scribe them next to one another on the sheet of assertion.[205] Slide One:



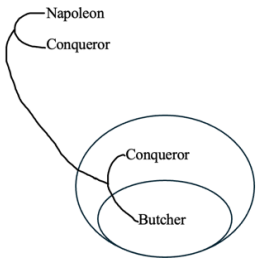

Since spatial juxtaposition represents conjunction on the sheet of assertion, this graph represents the colligation of the premises "There is something that is Napoleon and is a conqueror *and* there is no conqueror that is not a butcher." Now that the two propositions have been *premised* they begin the process of determining their interpretant ("Napoleon is a butcher"). Slide Two:



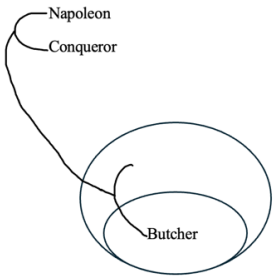

[204] There are several rules that govern the transformation of graphs, much like the inference rules of traditional logical derivations, except they govern the transformation of icons rather than symbols. For a formal account of all the rules governing Peirce's graphs see Roberts, *Existential Graphs*, 56-60.

[205] The following derivation is based on a "neo-Peircean calculus" that offers a modern reconstruction of Peirce's graphs. See Nathan Haydon's work on "Peirce's existential graphs and the logic of string diagrams" (TalTech Press, 2024. (Tallinn University of Technology. Doctoral thesis).

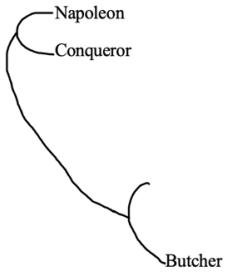
Slide two deploys the rule of *iteration*, extending the line of identity from premise one through the cut of premise two.[206] Slide Three:




Now the line of identity links the two graphs, establishing continuity between them and resulting in what we might call the "canonical graph." Slide three contains all the information necessary to draw the inference: "there is something that is both Napoleon and a conqueror *and* it is not the case that there is a conqueror that is not a butcher." A continuous line of identity now welds the premises together and all that remains to complete the inference is a series of deiterations and erasures that render the conclusion explicit. Slide Four:

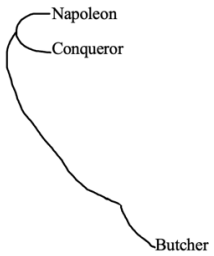



Since the same predicate ("is a conqueror") appears twice along one line of identity, we can *deiterate* the instance inside the cut, leaving a double cut enclosing the predicate "is a butcher."[207] This portion of the graph now reads: "it is not the case that there is not a butcher," which is equivalent to "there is something that is a butcher." Slide Five:

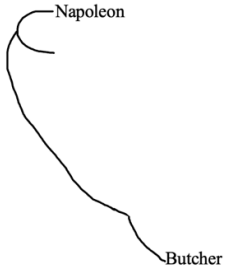



[206] Roberts, *Existential Graphs*, 57.
[207] Roberts, *Existential Graphs,* 58-59.

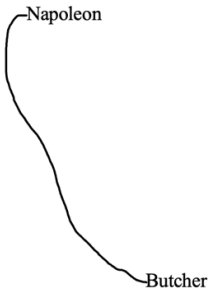
Here we erase the double cut, bringing us nearly to the end of the transformation.[208] Since Napoleon *is* a conqueror and there is no conqueror that's not a butcher, Napolean is a conqueror and a butcher. The graph now reads "there is something that is Napoleon and is a conqueror and is a butcher." Slide Six:




To maintain continuity, I simply retract the branching line that was left hanging in the previous graph. Slide Seven:



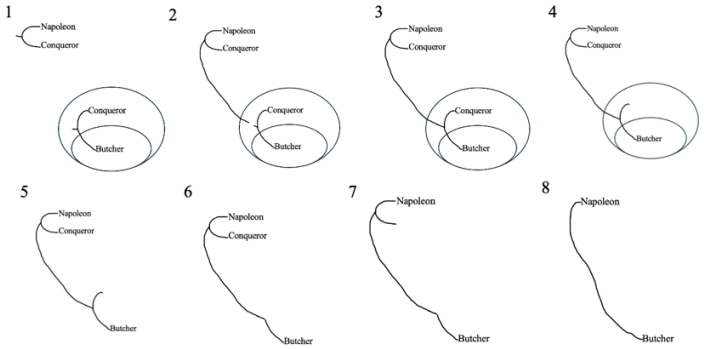

Using the rule of *erasure* we can erase anything that appears on an even portion of the graph.[209] Since no cuts remain, the entire graph is an even zone, so we can erase the predicate "is a conqueror" and reach the conclusion, "Napoleon is a butcher." Slide Eight:




[208] Roberts, *Existential Graphs,* 59.
[209] Roberts, *Existential Graphs*, 56.

Just as with “Slide Six”, I retract the hanging line that remains once the final instance of “is a conqueror” is erased.

Imagine that we insert slides 1-8 into a magic lantern so that they are projected in continuous succession onto a screen:




Instead of individual slides representing discrete steps, the whole process of inference is now represented as a continuous moving picture. We would see the line of identity branch out from premise one, extend into premise two, and hook onto the corresponding predicate, then come a series of deiterations and erasures until the graph transforms into the conclusion, which is the determination or interpretant of the inferential process, with the entire sequence representing a continuous process of inference. We no longer emphasize the discrete steps but become aware of the *movement* among them. The individual slides melt into one another and the continuity that binds them presents a moving picture of the reasoning mind.

The reduction of illation to the sign relation shows that inference is a variety of semiosis. The premise is a sign of the conclusion; all thought is in signs; and when reasoners draw an inference their unfolding thought-sign consists in the transformation of the premise into the conclusion, which is the determination of an interpretant in their minds. The existential graphs model that process through a continuous change of icons across a continuous surface. Illative transformations are continuous and the graphs represent the continuity of the inferential process.

It is difficult to convey this continuity when we restrict ourselves to symbolic notation. Worse still, symbolic notation gives no indication that the discrete steps involve a continuous process. Symbolic notation is a dispensable artifact of ordinary logic along with absolute termini and the relation of similarity. Since for Peirce inference really is continuous, our method of logical representation needs to model the inferential process *as* a continuous one. The continuity of existential graphs overcomes the nominalistic tendency to treat inference as unfolding in discrete steps by changing the mode of representation from symbols to icons.

We now see how Peircean continuity informs all the dimensions of logic considered as semeiotic. The mathematical study of continua informs our understanding of semiosis (as in the doctrine of the thought-sign and the continuum of interpretants), of continuous relations (as shown in the analysis of propositions), and of the syntax and illative transformation of existential graphs, which represent general inferential processes. In this way, the illative transformation of

the deductive syllogism does not merely represent a moving picture of an *individual* mind. It represents the process that *any* mind *would* go through were it to draw the inference.

The Realism of this theory lies in recognizing modes of being beyond that of actuality, namely, real continuity and generality. I showed in Chapter 2 that there is a difference between a sign *replica* and a sign as a *general type* of relation, a distinction that carries over to the existential graphs. "We must distinguish carefully between the *graph* and its different *replicas*," Peirce writes.[210] Technically, slides 1-6 are replicas or graph-instances—creatures of those pages of my dissertation, though these replicas are signs of their general types. "What is asserted (or 'assented' to) are the graphs as types," Pietarinen writes.[211] This is the same as saying that erasing a graph from a particular sheet does not destroy the graph; it only destroys one of its replicas. Remember, we think *in* signs, but that does not mean the signs are *in* us. Like all signs, graphs are relations irreducible to their discrete manifestations.

If continuous semiosis is the governing feature of Semeiotic Realism and if the most important variety of semiosis is inferential, then the existential graphs are among the most important tools in the Semeiotic Realist's kit. They diagram continuous semiosis. I have limited myself to simple examples of deduction in the above analysis since I want to emphasize the way the existential graphs *represent* semiosis. We should also remember that Peirce was still working out his diagrammatic logic of signs when he died in 1914.

There is evidence that he wanted to extend diagrammatic reasoning beyond deduction to model abductive and inductive semiosis.[212] Developing these understudied dimensions of diagrammatic reasoning would be a fruitful expansion of Peirce's Semeiotic Realism, as that would allow us to construct semiotic models of the interweaving processes of abduction, deduction, and induction. Imagine a moving picture of investigation—a diagram unfolding in tandem with the continual semiosis of a community of inquirers. This project would require the interdisciplinary expertise of mathematicians, logicians, semioticians, and philosophers.

A question for the semiotician on this imaginary research team would be how to represent the interweaving modes of inference on a sheet of assertation. Peirce's tinctured Gamma Graphs may afford a clue. Through the introduction of colours, Peirce is able to represent different modalities of being on a two-dimensional diagram. Of course, while the sheet of assertion is two-dimensional, it is really the sign of a field of signification of indefinite dimensions. Since the sheet of assertion represents a topological space, we can wonder what results when we fold the sheet of assertion into a Möbius strip so that the recto continuously weaves into the verso and we can no longer distinguish the front from the back. Since a cut represents negation by a path to the verso of the sheet, we would blur the distinction between what is asserted and what is negated, which shows that the way we conceive the sheet of assertion may alter the meaning of the graphs scribed on it.[213] Or again, suppose we extend the sheet of assertion into three-dimensional space using computer-generated models. What about four-dimensional fields of signification? Could

[210] R 450.
[211] Pietarinen, LoF 1: 15.
[212] See Ahti-Veikko Pietarinen, "Abduction and Diagrams," *Logic Journal of the IGPL* 29, no. 4 (2021): 447–68.
[213] See Arnold Oostra, *Advances in Peircean Mathematics*, 162-178 for an account of how topological surfaces affect diagrammatic representation.

changes to the field of signification extend our capacity for the fine-grained diagrammatization of semiosis?

These questions are beyond the purview of my investigation, though they show the potential of Semeiotic Realism to expand into new frontiers. Peirce explains that the "clue [to understanding the universe as continuous semiosis] consists in making our thought diagrammatic and mathematical, by treating generality from the point of view of geometrical continuity, and by experimenting on the diagram."[214] In the final Cambridge Lecture, Peirce introduces a theory of geometrical topology that secures "systems of relations between the different [spatial] dimensions."[215] His infamous cave metaphor, in which he describes an unbounded three-dimensional space by conceiving of two connected caves where the "walls" are portals through which one twists from one cave into the second cave (and from the second back into the first), gives a hint as to what a topological "sheet" of assertion might look like.[216] Such a "sheet" might allow for lines of identity to pass continuously across dimensions just as an agent might pass between the caves, therefore representing unbroken transitions among different modes of inference—a line of identity continues from an abductive dimension, twists through a portal into a deductive dimension, then turns in an inductive dimension to complete the inference. As this suggests, a topological study of signs could open the way to multi-dimensional models of continuous semiosis.

## 13. Conclusion

In this chapter I investigated Peirce's *new* (and final) plan for defeating nominalism. By mounting the vantage ground of the logic of relations, he treats generality as a degenerate form of continuity. The mathematical study of continua shows that the extensions of relational predicates constitute continuous systems of subjects. What the nominalist calls a class becomes for Peirce a continuous system. Not only do the features of Peircean continuity—supermultiplicity and homogeneity—inform his understanding of generality; additionally they inform his analysis of propositions into continuous relations—an analysis that overcomes "regress arguments" against relations and eliminates the threat of evil infinities.

Beyond that, Peircean continuity informs the diagrammatic representation of logical inferences via the existential graphs. Continuity governs the two major syntactical features of these graphs, namely, the sheet of assertion and the line of identity. Given the inherent continuity of diagrammatic syntax, these graphic transformations represent inferential processes as continuous. Semeiotic Realism is the view that continuous semiosis permeates logical investigation and this continuity rings the death knell for nominalism's philosophy of discontinuity.

[214] RLT: 262.
[215] RLT: 253.
[216] RLT: 252-53.

# CONCLUSION

## The Influx of a Symbol

I have presented Peirce's Semeiotic Realism as the answer to a problem raised by medieval nominalism. The nominalist warps our understanding of signs by confining them to singular cognitive acts, holding that only what is external to the mind is real. Signs are not real *because* they are merely beings of the mind. Worse still, a sign is not even a relation because the nominalist eliminates the interpretant whose primary function is to represent the relation between the sign and its object.

Semeiotic Realism is the doctrine that signs are not merely mental, fictive, imaginary relations but are real relations existing independently of particular thoughts, and therefore have a generality that cannot be exhausted by any discrete set of singular cognitive acts. I have argued that Peirce articulates a special sense in which semiotic relations are real. Reality is not entirely independent of thought but only from what is particular to thought. By developing the reality of thought-in-general, Peirce clarifies the reality of semiotic relations. A sign is not a sign merely because you or I *think* that it is. A sign is a sign whether we individually think it or not. The *potential* of a sign's being interpreted (the reality of the immediate interpretant) and the last result to which individual interpretations tend (the final interpretant) suffice to show that signs do not require interpreters for them to be signs of their objects and that the final interpretation of a sign is an interpretation free from the one-sidedness of any singular interpretative event.

Semiotic relations have a generality that can never be exhausted by a singular cognitive act or by any discrete multitude of replicas (be they signs written, spoken, or thought). When we think, reason, and investigate the world we do so through networks of sign relations. These relations are not figments: "a realist is simply one who knows no more recondite reality that that which is represented in a true representation."[1] I have shown that Peirce's realism is compatible with his Semeiotic (the theory of signs and its application to logic). Furthermore, I argued that once we appreciate how these two threads of Peirce's system intertwine, we overcome the shortcomings of nominalism, which was the point of the critique of termist logic in Chapter 2 and the critique of nominalism's decompositional analysis of propositions in Chapter 3.

In Chapter 1 I challenged the received story that Peirce takes his theory of signs from Augustine's *signum* and subsumes the distinction between natural and conventional signs into a single triadic relation. While Peirce's Semeiotic does accomplish this, his more interesting discovery is to apply this triadic relation to logic, developing a rigorous anti-psychologistic theory of inference, treating abduction, deduction, and induction as variations on a more general inferential process in which the premise is a sign of the conclusion. In this way Peirce's logic of signs broadens our logical horizons, pushing beyond deduction to include scientific inferences (abductions and inductions) too. He was led to this view of logic because he thought that the logic of signs should ground the forms of inference without recourse to psychology—logic does not depend on psychology but rather on the forms of relations that govern both deductive and scientific inferences.

[1] W2: 239.

The logic of investigation that Peirce develops in his articles on pragmatism ("The Fixation of Belief" and "How to Make Our Ideas Clear") *must* be understood through the theory of signs and sign inference that he began to develop in the 1860s. For Peirce, the logic of investigation is a method for transforming signs, and the interweaving forms of sign inference secure the path to truth and reality in the long run. Indeed, "the highest grade of reality is only reached by signs."[2] That is, by abductive, deductive, and inductive sign inferences.

On the other hand, this logic of signs is fundamental to Peirce's theory of the categories of being: Firstness, Secondness, and Thirdness. Traditional accounts of Peirce's semeiotic begin with these categories and go on to elaborate the theory of signs through them. This is only because in his "New List of Categories" Peirce presents the categories before the theory of sign inference, though Bellucci shows Peirce's decision to begin with the categories is a rhetorical one and the order of *presentation* in the "New List" is not conducive to the order of philosophical *explanation*.[3] Indeed, we need a thorough logic of signs to derive the categories, which turn out to reflect the three forms of sign inference. We must begin by positing the categories as a hypothesis, then *deduce* what consequences would follow from their acceptance, and finally put that hypothesis to the test through an indefinite series of inductions. A transcendental deduction of the sort Kant envisioned for his categories is not satisfactory once the forms of inference are enlarged beyond deduction and a logic of signs is firmly in place.

Having traced the roots of Peirce's formal definition of the sign and elaborated on its key consequences in Chapter 1, I turned to the question of nominalism and realism in Chapter 2, providing a historical account of nominalism and explaining the problem it poses for Peirce's semeiotic, as well as Peirce's realist response. Semiotic relations are not merely creatures of individual minds severed from the external world. Semeiotic Realism is the view that the action of signs does not reduce to any series of actual cognitive acts. The generality of triadic semiotic relations cannot be exhausted by any discrete multitude of singular cognitive acts. The sign is, as Deely puts it, a "dual citizen:" a relation that mediates between the order of *ens reale* and *ens rationis.* Such relations are not figments because the pragmatic clarification of reality extends mind-independent existence to include thought-in-general, so that reality is not entirely mind-independent but only unaffected by what is *particular* to thought. Those particular thoughts that would not withstand inquiry in the long run are figments.

Chapter 2 concludes with a discussion of the analysis of propositions. I distinguished the nominalist from the semeiotic realist by their different views on the terminus of analysis. The nominalist aims to resolve a proposition into its terms: "Socrates is a man" reduces to the collection of terms "Socrates," "man," and "is." Analysis reaches bedrock in the recognition of the absolute categorematic terms "Socrates" and "man." The nominalist treats these terms as the atoms of logic, comprising the ultimate elements of thought. Analysis terminates in absolute terms, which directly and *primarily* signify the individuals of a nominalist ontology. A consequence of this atomism, which is an outgrowth of nominalism, is that relation becomes *secondary* to the *primary* signification of absolute terms. Relations do not signify anything absolute as some categorematic terms do. The nominalist relegates relations to propositional contexts in which categorematic terms are brought *into relation* through syncategoremata. From

[2] SS: 23.
[3] Bellucci, "Inferences from Signs," 277.

this perspective relations become secondary because analysis *aims* for absolute terms, which are *not* relations.

A nominalist like Ockham is led to this view because he insists on treating logic through the traditional subject-predicate form. The semeiotic realist, who recognizes the essential role of semiotic relations in logical analysis, does not think that analysis terminates in absolute terms or that there is any absolute terminus at all. Instead, generality pervades analysis. Something always remains unanalyzable into absolute terms.

From the perspective of a logic of semiotic relations, instead of the proposition decomposing into its constituent parts, analysis aims to abstract all that is indexical to a proposition so that only a rheme remains (e.g., "___is a man"). This amounts to erasing the "subject" of the proposition, whose logical function is to *indicate* an object, leaving only a predicate. The predicate, or rheme, *is* "___is a man" and it is general because a continuous system of *possible* subjects could fill the blank and complete the proposition. The upshot is that relations are no longer secondary, as in the nominalist picture, but are the primary units of logic. The analysis of propositions does not terminate in absolute terms but in the generality of a relational predicate that exhibits forms of connection among possible subjects.

The view that the terminus of analysis is a real general relation does not come out of the blue. The nominalist rejoinder is that a commitment to the reality of relations threatens a regress (we need a new relation to relate the relation to its relata and so on *ad infinitum*), though they think this only because they assume that analysis must terminate in something absolute. They cannot maintain that something vague and indeterminate, something utterly general such as a relation, could remain unanalyzed at the end of analysis. Peirce offers an alternative, and my challenge in Chapter 3 was to explain its superiority.

Critical to that argument is the effort to push the Peircean analysis to its ultimate limits by introducing Peirce's mathematical theory of continua. Since for Peirce mathematics precedes both logic and metaphysics, the theory of continuity informs our understanding of both. The transition from the nominalist's absolute categoremata to Peirce's rhemata (general predicates) marks the first crucial difference between a semiotic and a nominalistic analysis of the proposition. I drew on Boler's work to explain the generality of the rheme's extension in terms of a continuous system of *potential* subjects. The rheme "___is a man" stands for a supermultiplicity of subjects, and these *potential* subjects are of an entirely different mode of being than discrete existing actualities. They are *possibilia* and from the perspective of scholastic realism these possibilia are no mere figments—they do not actually exist, though they are real.

Where Boler stops at the rheme, I showed that analysis can and should go further. Using hypostatic abstraction, Peirce converts the rheme into the subject of a new, more general proposition: "Cain kills Abel" becomes "___is to___in the relation of_____." This is a continuous relation, since any further abstraction does not change the character of the predicate, which remains a relation homogenous and continuous with the one from which it was initially abstracted. While the nominalist worries that this leads to evil infinities (relations of relations of relations), Peirce's theory of continuity shows the worry to be unfounded. It is impossible to carry analysis further than a continuous relation, and once we have this result we reach the elementary units of logic. Analysis bottoms out in a network of continuous relations, leaving

relation itself as the most fundamental concept in logic. These relations are not terms in the nominalist's sense. They signify not objects but forms of possible connection among objects. Continuous relations thus precede the subjects related (a point unacceptable to the nominalist), and they can be understood apart from any relation among actual terms in a propositional context, thus making continuous relations primary rather than secondary for Peirce's logic of signs.

What is most striking is that this continuity flows both ways. It not only informs the analysis of propositions into their elementary units but also governs the movement between propositions in arguments. The existential graphs, governed by the continuity of the sheet of assertion and the line of identity, represent inference as a continuous process, providing moving pictures of investigation. It is relations all the way down, all the way up, and all the way out in every direction—there is no way out of semiosis. "The universe is perfused by signs" if not "composed exclusively of signs."[4]

What does this mean for ontology? As Normore maintains, the logical analysis of terms constrains the nominalist's ontology to admit only those individuals that absolute terms pick out. Since no absolute term is a relation, the nominalist's ontology includes neither relation nor signs. The problem with nominalism, as I see it, is not that their logic constrains their ontology. The problem has to do with their logic itself, constrained as it is by their analysis of propositions into absolute terms. It's an antiquated logic leading to a bad metaphysics, one that refuses to countenance as real anything general and continuous. Of course, we can't blame Ockham for this; he was working with the limited conception of logic available to him at the time.

This is why Peirce thought that his new logic of relations shows a way out of the conundrum, dealing the fatal blow to nominalism by correcting the antiquated logic and extending logic's domain beyond absolute terms to embrace relations. When we transfer the lessons of Peirce's logic to metaphysics, we see that it is relations, not the objects related, that are most fundamental: what matters are the relations, the generalities, and the continuities. Reality is not limited to actual existence, which is no more than an ephemeral mark in the sand, ultimately pulled by the tide into an ocean of continuous semiosis. The fabric of reality is interwoven with continuous relations. This is how Peirce's logic of signs understands reality. The upshot of Semeiotic Realism is therefore an ontology constrained by the proper elucidation of a logic of signs.

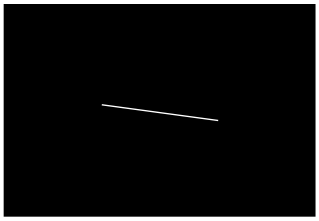
The mature Peirce teaches that reality "is but a retroduction, a working hypothesis which we try, our one desperate forlorn hope of knowing anything."[5] "So far as there is any reality," he writes, "what that reality consists in is this: that there is in the being of things something which corresponds to the process of reasoning, that the world *lives*, and **moves** and **HAS ITS BEING**, in a logic of events."[6] The universe is a great symbol, or argument, unfolding in continuous semiosis. While the mechanistic philosopher maintains that the universe unfolds determinately like a deductive syllogism, Peirce thinks that it must be making abductions and inductions too: "I point out that Evolution wherever it takes place is one vast succession of generalizations, by

[4] CP 5.448.
[5] RLT: 161.
[6] Ibid.

which matter is becoming subjected to ever higher and higher Laws; and I point to the infinite variety of nature as testifying to her Originality or power of Retroduction."[7] In the logic of investigation (the interweaving semiosis of abductions/retroductions, deductions, and inductions) we get a model of the evolving cosmos.

By way of a conclusion I want to sketch what I take to be the upshot of applying the logic of investigation to Peirce's evolutionary cosmology. In 1904, Peirce writes that "that is logical which it is necessary to admit in order to render the universe intelligible. And the first of all logical principles is that *the indeterminate should determine itself as best it may*."[8] If our aim is to understand the universe, our first principle ought to be that the *indeterminate should determine itself as best it may.* Peirce invokes this principle to explain how the universe comes into being out of chaos. The idea is that given enough time, habit or continuity (Thirdness) emerges from pure spontaneity (Firstness) to govern "a theatre of reactions" (Secondness).[9] A tendency to determination emerges from the indeterminate.

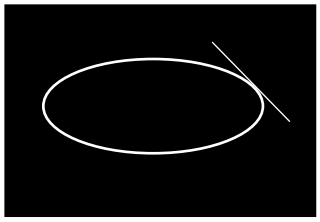
In the final moments of the 1898 Cambridge Lectures, Peirce constructs a diagram to explain the evolution of the universe. I quote Peirce in full here adding diagrams to illustrate his argument:

> Let the clean blackboard be a sort of Diagram of the original vague potentiality, or at any rate of some early stage of its determination.
>
> 
>
> This is something more than a figure of speech; for after all continuity is generality. This blackboard is a continuum of two dimensions, while that which it stands for is a continuum of some indefinite multitude of dimensions. … I draw a chalk line on the board.
>
> 
>
> This discontinuity is one of those brute acts by which alone the original vagueness could have made a step toward definiteness. There is a certain element of continuity in this line. Where did this continuity come from? It is nothing but the original continuity of the blackboard which makes everything upon it continuous. What I have really drawn there is an oval line. For this white chalk mark is not a

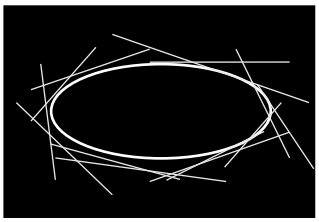
[7] Ibid.
[8] EP2: 324; my emphasis.
[9] RLT: 258.

> line, it is a plane figure in Euclid[’s] sense—a *surface*, and the only line that is there is the line which forms the *limit* between the black surface and the white surface. Thus discontinuity can only be produced upon that blackboard by the reaction between two continuous surfaces into which it is separated. The whiteness is a Firstness—a springing up of something new. But the boundary between the black and the white is neither black, nor white, nor neither, nor both. It is the pairedness of the two. It is for the white the active Secondness of the black; for the black the active Secondness of the white…. We see the original generality like the ovum of the universe segmented by this mark. However, the mark is a mere accident, and as such may be erased….

> No further progress beyond this can be made, until a mark can *stay* for a while; that is, until some beginning of a *habit* has been established by virtue of which the accident acquires some incipient staying quality, some tendency toward consistency. This habit is a generalizing tendency, and as such a generalization, and as such a general, and as such a continuum or continuity…. Once the line will stay a little after it is marked, another line may be drawn beside it.



[And so on].



> This rather prettily illustrates the logical process which we may suppose takes place in things, in which the generalizing tendency builds up new habits from chance occurrences. … The straight lines as they multiply themselves under the habit of being tangent to the envelope, gradually tend to lose their individuality.

> They become in a measure more and more obliterated and sink into mere adjuncts to the new cosmos in which they are individuals.[10]

This lengthy quotation comes at the climax of the Cambridge Lectures, where Peirce uses the doctrine of continuity to diagram the process through which our universe comes into being out of the vague potentiality of chaos.

The blank blackboard, not unlike a sheet of assertion, is a continuous surface—the perfect sign of undetermined potentiality, the quintessence of Firstness. Since all the variations on the blackboard are themselves continuous surfaces, their continuity derives from the continuity of the blackboard itself. Tendency emerges only when the oval drawn on the blackboard endures long enough for new lines to form around it—these lines being governed by a crystalizing habit. This duration allows time for growth—for the vague potentiality of Firstness to begin to develop into habit. The ever-multiplying lines that bristle from the oval and *continue* to overlap until we are no longer able to distinguish them from the oval around which they form models the determination of a habit. The habit governing the emergence of lines around the envelope models the logical principle that the indeterminate takes on determination. The tendency for the lines to emerge around the oval is the Thirdness that governs their determination.

This diagram is perfectly in line with Peirce's mature view that the universe is a great symbol in a process of determination. As he put it in 1904:

> A chaos of reactions utterly without any approach to law is absolutely nothing; and therefore pure nothing was such a chaos. Then pure indeterminacy having developed determinate possibilities, creation consisted in mediating between the lawless reactions and the general possibilities by *the influx of a symbol*. This symbol was the purpose of creation. Its object was the entelechy of being which is the ultimate representation.[11]

*First* there is pure spontaneity—something utterly indeterminate, for instance a blank blackboard. *Second,* brute force bursts from this spontaneity in a chaos of reactions, as a line drawn on the blackboard. *Third,* these reactions endure and eventually, by the influx of a symbol, real Thirdness or continuity emerges to govern these reactions in a lawlike fashion, like the tendency of lines to form around the envelope. Total determination or dead matter "would be merely the final result of the complete induration of habit reducing the freeplay of feeling and the brute irrationality of effort to complete death."[12] The most important element of this evolution is the continuity that binds the process: "I chiefly insist on continuity, or Thirdness, and in order to secure to Thirdness its really commanding function, I find it indispensable that it is a third, and that Firstness, or chance, and Secondness, or Brute reaction, are other elements without the independence of which Thirdness would not have anything upon which to operate."[13]

[10] RLT: 261-63.
[11] EP2: 324; my emphasis.
[12] RLT: 261.
[13] RLT: 261.

Of course, this is only an abduction, a hypothesis offered to explain cosmic evolution through the emergence of a symbol from pure spontaneity. We have no direct acquaintance with the universe before it came into being. We find ourselves in our own peculiar universe governed by its own peculiar laws. We arrive *in medias res*, with whatever beliefs we may have. Peirce writes:

> The evolutionary process is, therefore, not a mere evolution of the ***existing universe,*** but rather a process by which the very Platonic forms themselves have become or are becoming developed.… ***This existence*** is presumably but a ***special*** existence. We need not suppose that every form needs for its evolution to emerge into this world, but only that it needs to enter into ***some*** theatre of reactions, of which this is one.[14]

We arrive at our little universe amidst a cosmic process that has been working out its determination for millennia, little signs in an ocean of continuous semiosis: "Qualities are already possible. Actual existence has begun. Accidental reactions are taking place. Several continua are established. A tendency toward generalization is operative."[15] Indeed, this tendency is "more ancient than actual existence itself."[16] It emerges to "fight the lawless brutality of chance with its youthful freakishness, and ebullient vitality."[17]

We fashion a method of logical investigation (abduction, induction, and deduction) fit for "marshalling … signs and … finding out the truth," in the forlorn hope that with time it will render the universe intelligible.[18] But there are no guarantees, and the final interpretant may never be actualized. Peirce asks only that we don't eliminate the possibility of an explanation and block the path of inquiry. "The sole immediate purpose of thinking is to render things intelligible," he writes, "and yet in that very act to think a thing unintelligible is a self-stultification. It is as though a man furnished with a pistol to defend himself against an enemy were, on finding that enemy very redoubtable, to use his pistol to blow his own brains out to escape being killed by his enemy. Despair is insanity."[19] The universe is a sign, we are signs, and the logic of investigation mirrors both the process through which the universe comes into being and the process through which inquirers render it intelligible.

If my investigation has taught us anything, it is that nominalism is a philosophy of despair poisonous to living reasoning. The nominalist sets barrier after barrier across the road of inquiry. In logic as in metaphysics, the nominalist is content with individuality and discontinuity—the results of a "heavy handed application of Ockham's razor."[20] But Peirce teaches that the simplest explanation is not always the best, nor the most philosophically fruitful. Reality is more than actual existence and a sign is never a mere figment.

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[14] RLT: 258.
[15] NEM 4: 139.
[16] Ibid.
[17] Ibid.
[18] EP2: 10.
[19] CP 1.405.
[20] Houser, "Semiotics and Philosophy," 153.

Peirce, the self-proclaimed "backwoodsman" of Semeiotic, is only an underlabourer, confined to asking the most elementary questions and clearing away the brush and weeds so that future scholars can erect a Semeiotic Realism worthy of the name. Part of this ground-clearing work involves overcoming nominalism's insistence that signs are merely *en rationis*, and my primary aim in this dissertation has been to show how Peirce eradicates this deep-rooted delusion.

Contemporary philosophers seem to have forgotten the deep connection between semeiotic and philosophical problems. I hope to have shown that this is a mistake. Indeed, the nominalism-realism controversy (one of the most significant philosophical problems ever broached) turns on the nature of signs and their relation to the real. Nathan Houser, the first to characterize Peirce as a semeiotic realist of the sort I have described concludes by claiming that "I won't risk making any predictions about how long it will be before we move into a new age of understanding, the age of signs, after philosophy has adopted semiotic realism as its foundational metaphysics—of course I don't know truly whether that day will ever come."[21] I share Houser's sentiment, but I defer to Peirce for the last word:

> Finally, as what anything really is, is what it may finally come to be known to be in the ideal state of complete information, so that reality depends on the ultimate decision of the community; so thought is what it is, only by virtue of its addressing a future thought…. In this way, the existence of thought now depends on what is to be hereafter, so that it has only a potential existence, dependent on the future thought of the community. The individual man, since his separate existence is manifested only by ignorance and error, so far as he is anything apart from his fellows, and from what he and they are to be, is only a negation. This is man,
>
> Proud man,
>
> Most ignorant of what he's most assured,
>
> His glassy essence.[22]

[21] Houser, "Semiotics and Philosophy," 159.
[22] W2: 241-42.

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