

**PEIRCE ON INFERENCE:
HOW THE MIND OPERATES.**

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Abstract

That the mind performs inferences is pretty much beyond doubt. That some of these inferences are logical inferences is also quite uncontroversial. Peirce, however, presents a fascinatingly plausible thesis to the effect that the only operation that the mind performs is logical inference. In this thesis I explicate what this single type of inference is.

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INFERENCE.

It was Peirce's explicit intention to reduce all operations of the mind to a single type of operation, that of logical inference.

In other words, we must, as far as we can do so without additional hypotheses, reduce all kinds of mental action to one general type. [...] We must, as far as we can, without any other supposition than that the mind reasons, reduce all mental action to the formula of valid reasoning.¹

In this thesis I will present a novel interpretation of Peirce's philosophy that explicates what this single type of inference is.

Before I explain how I will fulfill this aim I need to introduce and define inference, and provide a criterion with which to distinguish two distinct types of inference. To these ends I will articulate Descartes' theory of inference and Hume's theory of inference. To define what an inference is I will examine two similarities between these inferences. To provide a criterion with which to distinguish two distinct types of inference I will extricate a difference between these inferences.

¹ Edward C. Moore, ed. Max H. Fisch, consult. ed. Christian J. W. Kloesel, snr. assoc. ed. Don D. Roberts, assoc. ed. Lynn A. Zeigler, textual ed. *Writings of Charles S. Peirce: A Chronological Edition, Volume Two* (Bloomington: Indiana University Press, 1982 -) p 220, c.1868.

1) Descartes' inference.

Insofar as inference for Descartes is reducible to intuition, I will begin by explaining intuition.² First, intuition is carried out by the attentive mind. Here we can consider this text of Descartes' and the editors' footnote inserted on the word 'intuit':

Concerning objects proposed for study, we ought to investigate what we can clearly and evidently intuit or deduce with certainty, and not what other people have thought or what we ourselves conjecture. For knowledge can be attained in no other way [italics removed].³

And the relevant footnote is: "[Intuit] Lat. *Intueri*, literally 'to look, gaze at'; used by Descartes as a technical term for immediate mental apprehension."⁴ More evidence that intuition is carried out by the attentive mind is presented in Rule three: "Intuition is the indubitable conception of a clear and attentive mind which proceeds solely from the light of reason."⁵

Second, intuition is indubitable in two distinct senses. Intuition is indubitable in the sense that the person who has perceived the intuition cannot disbelieve it.

By 'intuition' I do not mean the fluctuating testimony of the senses or the deceptive judgment of the imagination as it botches

² With respect to intuition Peter Schouls has argued the position that I will advocate here. "For Locke as for Descartes, it is only from the foundation of these fully known contextless items that theorizing can start, that systematic ('general') knowledge can be achieved." Peter A. Schouls, *Reasoned Freedom: John Locke and Enlightenment*. (Cornell University Press, 1992), p 21.

³ Rene Descartes. "Rules for the Direction of the Mind" in John Cottingham, Robert Stoothoff, and Dugald Murdoch, trans. *The Philosophical Writings of DESCARTES: Volume One*. (Cambridge University Press, 1985). Hereafter referred to as *Rules*. AT X, 366, p 13.

⁴ *Rules*, AT X, 366, p 13.

⁵ *Rules*, AT X, 368, p 14.

things together, but the conception of a clear and attentive mind, which is so easy and distinct that there can be no room for doubt about what we are understanding.⁶

And intuition is indubitable in the sense that intuitions are actually true: “These simple natures [intuited] are all self-evident and never contain any falsity.”⁷

The final aspect of intuition that I will note is that it plays two roles in inferences for Descartes. Before I do this I will discuss two terms of art that I will use throughout the thesis that deserve some comment. The first is the term *relata*. By the term *relata* I mean ‘relate’, which is defined as: “*Logic*. One of two objects of thought between which a relation subsists.”⁸ I cannot use the term ‘relate’ because I need both the singular and the plural, yet I also use the term ‘relates’ in the sense ‘x relates y to z’. To avoid confusion I will use the term ‘relata’ for the plural of relate, and the term ‘relatum’ for the singular of relate.⁹ The second term deserving of comment is ‘connexion’. Since the term ‘relation’ refers to both the link that relates the *relata* and the linked ‘relata-relation-relata’ complex, I will use the term ‘connexion’ to refer to the link, and reserve the term ‘relation’ for the complex.

The two roles that intuition plays in Descartes’ theory of inference are, first, it provides the *relata* of inference, and second, it provides the *connexion* whereby the *relata* are logically related.

Secondly, those things which are said to be simple with respect to our intellect are, on our view, either purely intellectual or purely material, or common to both. Those simple natures which the

⁶ *Rules*, AT X, 368, p 14.

⁷ *Rules*, AT X, 420, p 45.

⁸ Revised and edited by C. T. Onions, *The Shorter Oxford Dictionary On Historical Principles* (Clarendon Press, 1950) p 1694.

⁹ I would like to thank Dr. S.E. Lawrence for clarifying to me the usage of these Latin terms.

intellect recognizes by means of a sort of innate light, without the aid of any corporeal image, are purely intellectual. [...] Those simple natures, on the other hand, which are recognized to be present only in bodies –such as shape, extension and motion, etc. –are purely material. Lastly, those simples are to be termed ‘common’ which are ascribed indifferently, now to corporeal things, now to spirits –for instance, existence, unity, duration, and the like. *To this class we must also refer those common notions which are, as it were, links which connect other simple natures together, and whose self-evidence is the basis for all the rational inferences we make* [italics mine].¹⁰

One further concept is needed before articulating Descartes’ theory of inference. I need to explain the concept of ‘clear and distinct ideas’. All indubitable ideas, either because they are simple intuitions, or because they are logically related clusters of simple intuitions are clear and distinct ideas.

It is certain, however, that we will never mistake the false for the true provided we give our assent only to what we clearly and distinctly perceive.¹¹

Inference for Descartes is the relating of ideas by intuition, where the ideas being related are all clear and distinct. To avoid confusion I need to explicate the distinction Descartes’ draws between inference and deduction. The difference being that deduction consists of more than one inference:

There may be some doubt here about our reason for suggesting another mode of knowing in addition to intuition, *viz.* deduction [...]. But this distinction had to be made, since very many facts which are not self-evident are known with certainty, provided they are inferred from true and known principles through a continuous and uninterrupted movement of thought in which each individual proposition is clearly intuited. This is similar to the way in which

¹⁰ *Rules*, AT X, 419, p 44.

¹¹ Rene Descartes, “Principles of Philosophy”, in John Cottingham, Robert Stoothoff, and Dugald Murdoch, trans. *The Philosophical Writings of DESCARTES: Volume One*. (Cambridge University Press, 1985). AT VIII A, 21, p 207.

we know that the last link in a long chain is connected to the first: even if we cannot take in at one glance all the intermediate links on which the connection depends, we can have knowledge of the connection provided we survey the links one after the other, and keep in mind that each link from first to last is attached to its neighbour. Hence we are distinguishing mental intuition from certain deduction on the grounds that we are aware of a movement or a sort of sequence in the latter but not in the former.¹²

Thus, all inference, for Descartes, contains two elements, clear and distinct ideas as *relata*, and intuition of the logical connexion between the *relata*. And we can further note that the requirement is strict:

But, whenever even the smallest link is overlooked the chain is immediately broken, and the certainty of the conclusion entirely collapses.¹³

And again:

If in the series of things to be examined we come across something which our intellect is unable to intuit sufficiently well, we must stop at that point, and refrain from the superfluous task of examining the remaining items [*italics removed*].¹⁴

2) **Hume's causal inference.**

Hume propounds a theory of inference that differs from Descartes'. Specifically, whereas the relating of the *relata* in Descartes' inference is carried out by the attentive mind's ability to intuit, the attentive mind plays no role in cognizing the connexion between the *relata* in Hume's causal inference. I will explicate Hume's theory of inference by substantiating this claim.

¹² *Rules*, AT X, 369, p 15.

¹³ *Rules*, AT X, 388, p 25.

¹⁴ *Rules*, AT X, 392, p 28.

For Hume, all ideas are derived from impressions. Our idea of causation too, is derived from an impression.

To begin regularly, we must consider the idea of *causation*, and see from what origin it is deriv'd. 'Tis impossible to reason justly, without understanding perfectly the idea concerning which we reason; and 'tis impossible perfectly to understand any idea, without tracing it up to its origin, and examining that primary impression, from which it arises.¹⁵

By examining Hume's quest for the impression responsible for the idea of causation we find that Hume proposes a type of inference where the attentive mind is not responsible for perceiving the connexion between the relata.

Hume first discovers that the idea of causation is not copied from an impression derived from the objects deemed to belong in causal relations.¹⁶ He next examines the connexion between the objects deemed to belong in causal relations, but in this connexion he discovers only contiguity and succession.¹⁷ Nor, Hume claims, are contiguity and succession sufficient explanations for our idea of causation but "there is a NECESSARY CONNEXION to be taken into consideration; and that relation is of much greater importance, than any of the other two above-mention'd [contiguity and succession]."¹⁸

Here again I turn the object on all sides, in order to discover the nature of this necessary connexion, and find the impression, or impressions, from which its idea may be deriv'd. When I cast my eye on the *known qualities* of objects, I immediately discover the

¹⁵ L. A. Selby-Bigge, ed, P. H. Nidditch, rev. second edition. *David Hume: A Treatise of Human Nature*. (Oxford, Clarendon Press. 1978) Hereafter referred to as *Treatise*. 1, 3, 2, p 74.

¹⁶ *Treatise*, 1, 3, 2, p 75.

¹⁷ *Treatise*, 1, 3, 2, p 75.

¹⁸ *Treatise*, 1, 3, 2, p 77.

relation of cause and effect depends not in the least upon *them*. When I consider their *relations*, I can find none but those of contiguity and succession; which I have already regarded as imperfect and unsatisfactory.¹⁹

Lamenting this inability to discover the impression responsible for our idea of causation, Hume approaches the task from a different angle. He asks: “Why we conclude, that such particular causes must necessarily have such particular effects, and why we form an inference from one to another? [italics removed]”²⁰

To this question Hume answers: The inferences we form from ‘cause’ to ‘effect’ are customs embedded in the mind. These customs are established because the mind is immersed in experience, and this experience contains objects that are constantly conjoined. Essentially, we become accustomed to expect that a certain type of object be followed by another type of object because it has always done so in experience. This expectation is the causal inference.

We have no other notion of cause and effect, but that of certain objects, which have been *always conjoin'd* together, and which in all past instances have been found inseparable. We cannot penetrate into the reason of the conjunction. We only observe the thing itself, and always find that from the constant conjunction the objects acquire an union in the imagination. When the impression of one becomes present to us, we immediately form an idea of its usual attendant.²¹

The inference, it must be stressed, is the blind compulsion of the mind, such that when it is aware of one idea its usual attendant is inexplicably, and almost inexorably, brought to consciousness also.

¹⁹ *Treatise*, 1, 3, 2, p 77.

²⁰ *Treatise*, 1, 3, 4, p 82.

²¹ *Treatise*, 1, 3, 6, p 93.

First, We have already observ'd, that the mind is determin'd by custom to pass from any cause to its effect, and that upon the appearance of the one, 'tis almost impossible for it not to form the idea of the other. Their constant conjunction in past instances has produc'd such a habit in the mind, that it always conjoins them in its thought, and infers the existence of the one from that of its usual attendant.²²

Hume claims that the impression responsible for our idea of causation is the causal inferences that we make as these create an impression upon the mind.²³

There is, then, nothing new either discover'd or produc'd in any objects by their constant conjunction, and by the uninterrupted resemblance of their relations of succession and contiguity. But 'tis from this resemblance, that the ideas of necessity, of power, and of efficacy are deriv'd. [...] Tho' the several resembling instances, which give rise to the idea of power, have no influence on each other, and can never produce any new quality *in the object*, which can be the model of that idea, yet the *observation* of this resemblance produces a new impression *in the mind*, which is its real model.²⁴

Examining Hume's quest to find an impression from which our idea of causation is derived thus illustrates that an attentive mind is not involved in perceiving the connexion between ideas in Humean causal inferences. Rather, reflecting upon the causal inferences we make is responsible for the impression from which our idea of causation is derived. These causal inferences are customs where the mind blindly yet

²² *Treatise*, 1, 3, 11, p 128.

²³ "From a second observation I conclude, that the belief, which attends the present impression, and is produc'd by a number of past impressions and conjunctions; that this belief, I say, arises immediately, without any new operation of the reason or imagination. Of this I can be certain, because I never am conscious of any operation, and find nothing in the subject, on which it can be founded." *Treatise*, 1, 3, 8, p 102.

²⁴ *Treatise*, 1, 3, 14, p 164.

consistently associates the ideas of objects constantly conjoined in experience.

3) **Inference defined.**

By extricating two similarities between Descartes' theory of inference and Hume's theory of inference I will now present two aspects of inference that I will incorporate into a definition of inference. The first similarity is that inference for both Descartes and Hume consists of and a connexion that relates the relata into a relation.²⁵ For Descartes the relata are always clear and distinct ideas, and the connexion is an intuition apprehended by the attentive mind. For Hume, the relata are objects and/or ideas. The connexion, which enables the mind to perceive one relatum and associate it with its effect or cause, is a habit that is embedded in the mind.

The second similarity between Descartes', and Hume's theories of inference, is that the connexion which relates the relata depends upon the mind. That is, without mind there is no connexion and no inference. With respect to Descartes I have shown that all intuition is carried out by the attentive mind. Since the connexion relating the relata in inference is intuition for Descartes, it follows that without mind there is no intuition, therefore there is no connexion relating the relata, and no inferences.

With respect to Hume, even though the attentive mind plays no role in perceiving the connexion between the relata in causal inferences the connexion still depends upon the mind. The constant conjunction of objects in experience is sensation. It is only when the mind appropriates the relation between constantly conjoining objects in the form of a habit, and uses that habit to form inferences, that causal inference differs from sensation.

²⁵ It is uncontroversial that all relata when related form a relation.

Were there no mixture of any impression in our probable reasonings, the conclusion wou'd be entirely chimerical: And were there no mixture of ideas, the action of the mind, in observing the relation, wou'd, properly speaking, be sensation, not reasoning. 'Tis therefore necessary, that in all probable reasonings there be something present to the mind, either seen or remember'd; and that from this we infer something connected with it, which is not seen nor remember'd.²⁶

Again, without the mind there are no causal inferences for Hume because the connexion relating the relata is a habit embedded in the mind.

I am now in a position to define how I will use the term 'inference' throughout this thesis. An inference consists of relata, and a connexion that relates the relata, where the connexion depends upon the mind such that were there no mind there would be no connexion and no inference. I will also state at this juncture that for the purpose of this thesis I take it to be beyond doubt that there are inferences, and by definition therefore, the mind performs inferences.

4) **Two types of inference.**

In this section I will examine a difference between Descartes' and Hume's theories of inference and extricate a criterion with which we can distinguish two distinct types of inference. I have already introduced this difference when I introduced Hume's causal inference. The difference is that the attentive mind perceives the connexion between the relata in Descartes' theory of inference, whereas the attentive mind plays no role in perceiving the connexion between the relata in Hume's theory of inference.

Given that every inference consists of relata and a connexion that relates the relata, it is logically possible to distinguish two types of inference. In one type of inference, as instantiated by Descartes' inference,

²⁶ *Treatise*, 1, 3, 6, p 89.

the attentive mind perceives the connexion that relates the relata. This type of inference I will term *Cartesian type inference*. In the other type of inference, instantiated by Hume's casual inference, the attentive mind is not involved in perceiving the connexion that relates the relata. This type of inference I will term *Humean type inference*. Humean type inference, to be clear about it, still requires that the mind cognizes the connexion that relates the relata, only, it is not the attentive mind that does the cognizing.

This distinction has universal applicability, as there is no inference which cannot be classed as either a Cartesian or a Humean type inference. That is, it is logically possible for an inference to be either a Cartesian or a Humean type inference. It is logically impossible for an inference to be both a Cartesian and a Humean type inference. It is also, given the above definition of inference, logically impossible for an inference to be neither a Cartesian or a Humean type inference.

5) **Introducing Peirce.**

Now that I have defined inference and explicated the distinction between Cartesian and Humean type inference, I am in a position to comprehensively introduce Peirce. I have already shown that Peirce explicitly intended to reduce all operations of the mind to a single type of inference.²⁷ I have also stated that my aim in this thesis is to present a novel interpretation of Peirce's philosophy that explicates what this single type of inference is. I will now explain how I intend to accomplish this aim.

²⁷ We find this intention restated in MS 339: "It is necessary to reduce all our actions to logical processes so that to do anything is but to take another step in the chain of inference. Thus only can we effect that complete reciprocity between Thought & its Object which it was Kant's Copernican step to announce." (MS 339) in Max H. Fisch, 'Chronical of Pragmatism, 1865 -1879', in Kenneth Laine Ketner, Christian J. W. Kloesel, ed, *Peirce, Semeiotic, and Pragmatism: Essays by Max H. Fisch* (Indiana University Press, 1986). Hereafter referred to as Ketner, p 116.

The interpretation of Peirce that I present in this thesis is dictated by the need to understand Peirce's theory of inference as either a Cartesian or a Humean type inference. For if Peirce is to succeed in reducing all operations of the mind to a single type of inference then this inference must be either a Cartesian or a Humean type inference. As I have already shown, every inference is classifiable as either a Cartesian type inference or a Humean type inference. I will argue that Peirce maintains that the mind performs only Humean type inference.

This is not to say that understanding what a Humean type inference is means that one understands the single type of inference that Peirce posits. Rather, it is to say that understanding what a Humean type inference is means that one understands an important aspect of Peirce's theory of inference. It is by substantiating the claim that Peirce reduces all operations of the mind to a Humean type inference that I will concurrently present a novel interpretation of Peirce that comprehensively explains what Peirce's inference is. Or to state the position in terms of analogies, by arguing that Peirce reduces all operations of the mind to Humean type inference I have a single thread running through this thesis, around which I can develop a comprehensive explanation of the single type of inference that Peirce posits.

The structure of the thesis from here on is as follows. In the second chapter I will introduce Peirce's philosophy by explaining semiosis.²⁸ I will thereby introduce the single type of inference that Peirce advocates. In the third chapter I will examine the elements of this single

²⁸ With respect to terminology, Fisch has noted that: "For [Greek symbols]- the art or science or doctrine or general theory of semiosis -he uses *semeiotic*; much less often, *semeiotics* or *semiotic*." Max H. Fisch, *Peirce's General Theory of Signs*, in Ketner, p 322. Yet contemporary commentators on Peirce vary in their spelling of the terms 'semiosis', and 'semiotic'. I will follow Hookway who uses the immediately preceding spelling. See Christopher Hookway, *Peirce* (Routledge & Kegan Paul, 1985).

type of inference, and thereby explicate what this single type of inference is. In the conclusion I will demonstrate that the single type of inference presented in the thesis is a Humean type inference.