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The Universe as an Argument: Argumentative function—a Peircean orientation

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ABSTRACT: One of the basic metatheoretical premises of pragma-dialectics is that “Argumentation has the general function of managing the resolution of disagreement.” (p.277) From a Peircean perspective this is at best a partial truth. While it may be correct that in concrete, finite contexts, argumentation may function to manage the resolution of disagreement, in the long run argumentation will tend towards the Truth (in a Peircean pragmatic sense).

Using Peirce as my compass, I will take *argumentation* to refer to the resolution function of thought contingently situated and finitely understood (aimed at the settlement of belief). I will take *argument* to mean any structure or process which *can* serve as a real, compelling constraint upon thought in general. I will show that while the particular function of argumentation may be managing the resolution of disagreement, when situated within a Peircean-styled realism (where the universe has the form of an argument), argumentation will tend in the long run toward the Truth (as the end of argumentation in general). I will end by showing that while argumentation may have a resolution function, its real measure and normative standard is *growth* (epistemic, moral, political and otherwise) rather than resolution per se.

KEYWORDS: argument, argumentation, belief, evolution, growth, logic, Peirce, reality, reason, hope.

1 INTRODUCTION

This is work within the theory of argumentation. One of the principal aims of this paper is to outline a comprehensive framework, a theoretical map of sorts, to help orient the construction of a comprehensive theory of argumentation. As a result, the scope of this paper is very broad, its aims extremely ambitious, perhaps problematically so. A second, lesser aim of this paper is to introduce others to the sometimes difficult, but incredibly rich vein of work that has been done by C.S. Peirce in the general theory of argumentation. I hope to make clear that what Peirce calls his theory of *logic* can be translated, using more contemporary parlance, as a *theory of argumentation* in a general and comprehensive sense. To this end, I will sketch a portrait of Peirce’s thought that may challenge some of the more conventional understandings and caricatures of Peirce’s work. As a final warning it should be noted that this paper is dense, one hopes that its author is less so.

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1.0 PEIRCEAN LOGIC

In his classification of the sciences¹, Peirce positions Philosophy in between Mathematics and Idioscopy as a “Science of Discovery.” Mathematics aims at discovering “what is and what is not logically possible, without making itself responsible for its actual existence.” While Mathematics is indifferent to actual existence, Philosophy is a “*positive science*, in the sense of discovering what really is true; but it limits itself to so much truth as can be inferred from common experience.” It follows that the more particular and novel facts of reality are the proper domain of the more specialized sciences of Idioscopy. (Peirce 1903f, pp. 258-259)

As a *positive science* of discovery, Philosophy itself has three divisions: A) Phenomenology, B) Normative Science, and C) Metaphysics.

Phenomenology ascertains and studies the kinds of elements universally present in the phenomenon; meaning by *phenomenon*, whatever is present at any time to the mind in any way. Normative science distinguishes what ought to be from what ought not to be, and makes other divisions and arrangements subservient to its primary dualistic distinction. Metaphysics seeks to give an account of the universe of mind and matter. Normative science rests largely on phenomenology and on mathematics; metaphysics on phenomenology and on normative science. (Peirce 1903f, p. 259)

Normative Science itself “has three widely separated divisions: (i) *Esthetics*; (ii) *Ethics*; (iii) *Logic*.”

Logic is the theory of self-controlled, or deliberate, thought; and as such, must appeal to ethics for its principles. It also depends upon phenomenology and upon mathematics. All thought being performed by means of signs, Logic may be regarded as the science of the general laws of signs. It has three branches: (1) *Speculative Grammar*, or the general theory of the nature and meaning of signs, whether they be icons, indices, or symbols; (2) *Critic*, which classifies arguments and determines the validity and degree of force of each kind; (3) *Methodetic*, which studies the methods that ought to be pursued in the investigation, in the exposition, and in the application of truth. Each division depends on that which precedes it. (Peirce 1903f, p. 260)

From Peirce’s account of Logic we discern the following: 1) Logic, as a division of Philosophy, is a *positive normative science* whose proper function is to distinguish what *really* or *truly* ought to be from what ought not to be with respect to self-controlled or deliberate thought. 2) As a positive normative science, logic aims to discover what ought and ought not to be for *thought in general* (where thought is itself to be understood as a real feature of the world). 3) Since all thought must have the structure of a sign, then Logic may also be defined as the science of the general laws of signs, i.e., *semiosis*. 4) Logic itself has three divisions or aspects: a) as *speculative grammar* it entails the study of signs in general, b) as *critic* it entails the classification of arguments (as real or natural kinds with respect to thought) and an accounting of the validity and force of each argument kind, and c) as *methodetic* it stands as the method for selecting or determining

¹ Incidentally, for Peirce, all sciences are either: A) Science of Discovery, B) Science of Review, or C) Practical Science. Since classification is itself part of the Science of Review, then Peirce’s present classification is not an arbitrary or ad hoc construction, but the result of a previous process of Discovery.

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the method or methods that ought to be employed with respect to the ends proper to deliberate or self-controlled thought. I will now discuss each of these in turn.

1.1 LOGIC AND REALITY

Insofar as logic is a division of philosophy, and thus a *positive* science, its principal or primary function is to distinguish what *really* or *truly* ought to be from what ought not to be for self-controlled or deliberate thought. In other words, logic aims at distinguishing what deliberate, self-controlled thought² ought to think from what it ought not to think (as that which is worthy of critical assent in a *real* or *truthful* sense). This amounts to saying that logic deals with distinguishing propositions, argumentations, theories, etc. that ought to be believed, affirmed, etc. from those that ought not to be believed, affirmed, and so on. Since thought does not contain the conditions for determining what ought and ought not to be entirely within itself, then it must have reference to something that is distinct or independent from thought. This thought-independent reference point is what Peirce refers to as *reality*. Reality is simply that which is what it is independent of contingently situated thought. (Peirce 1971, pp. 88-90) So defined, reality is a purely logical notion, a logical *axiom* (and so not yet part of any metaphysics). Peirce himself asserts that the “axiom that *real things exist*” is “the fundamental axiom of logic, for it amounts to the claim “that every intelligible question whatever is susceptible in its own nature to receiving a definitive and satisfactory answer, if it be sufficiently investigated by observation and reasoning.”³ (Peirce 1883-84, pp. 216-217)

1.2 LOGIC AND THOUGHT IN GENERAL

A theory of logic in general (or logical theory) ought to function at the level of *thought in general*. While psychological, anthropological and other finite facts may have some relevance to logical theory, (e.g., establishing the most effective means of communication in a particular context), logical theory in its most general sense ought to be concerned with distinguishing what ought to be from what ought not to be for thought in its most general sense.

Logic is the science of thought, not merely of thought as a psychical phenomenon but of thought in general, its general laws and kinds. (Peirce 1898, p. 36)

Thus, logically speaking, the category *thought in general* need not entail any actual thinking here and now (*hic et nunc*), but need only refer to conditions governing what ought or ought not to be assented to at the level of thought in general, i.e., what would-be or should-be thought by any possible thinker. (Peirce 1911, p. 455) Hence questions regarding such things as the function and validity of various forms of argument must be addressed from the point of view of thought in general “covering all rational life” (Peirce

² For Peirce, “logic stops where self-control stops.” (Peirce 1903d, p. 207)

³ Peirce goes on to note “that any man who proposed to *go* on any other principle as a maxim of reasoning would be as *insane* as Gauss, Lobachewsky, Riemann or Helmholtz would hold that geodesists to be who should think that he could detect any departure from the accepted laws of geometry, in any triangle measured on this earth.” (Peirce 1883-84, p. 217)

1905a, p. 337), and not from any more restricted anthropological or psychological point of view.

Logic does rest on certain facts of experience among which are facts about men, but not upon any theory about the human mind or any theory to explain facts. (Peirce 1903c, p. 189)

(I will have more to say about the importance of evaluating argument forms from a broad perspective “covering all rational life” in section 4.0)

1.3 LOGIC AS SEMIOSIS

Logic aims to distinguish what ought to be from what ought not to be really or truly for thought in general. Thought in its proper, *logical* sense is one with what we call *law*. Law in this logical sense is something general or something that is generally true of particular factualities. What we call thoughts are expressions or instantiations of thought in general (in a logical, not a metaphysical sense).

Thoughts are neither qualities nor facts. They are not qualities because they can be produced and grow, while a quality is eternal, independent of time and of any realization. Besides, thoughts may have reasons, and indeed, must have some reasons, good or bad... A thought then is not a quality. No more is it a fact. For a thought is general. I had it. I imparted it to you. It is general on that side. It is also general in referring to all possible things, and not merely to those which happen to exist. No collection of facts can constitute a law; for the law goes beyond any accomplished facts and determines how facts that *may be*, but *all* of which never can have happened, shall be characterized. There is no objection to saying that a law is a general fact, provided it be understood that the general has an admixture of potentiality in it, so that no congeries of actions here and now can ever make a general fact. (Peirce CP I. 420)

Thought is the bringing together of fact and quality (subject and predicate) in a way that “recognizes that they are together.” (Peirce CP I.485) More explicitly, thought is that which brings fact and quality (subject and predicate) together in a way that is *reasonable*, that is, that so relates a fact and a quality (subject and predicate) as to stand as the reason (or, expressed epistemically, the explanation) for their being so related. Expressed most succinctly, *thought is a reasonable relation between a fact and a quality* (a subject and a predicate). Thus, unlike a quality (which is non-relational), or a fact (which is a purely dyadic or binary relation), thought must have the form of a triadic relation (i.e., that which lawfully mediates, governs or brings together in a reasonable manner some fact and some quality). Hence, *thought is mediation*.

As a form of mediation, thought is an expression or instantiation of the form or mode of mediation as such, and the form or mode of mediation as such is that of a *Sign*. Hence all thought has the form of a *representation* or a *Sign*. (Peirce 1868a, p. 24) A sign possesses or is constituted by the following complex dynamical structure:

I define a *Sign* as anything which on the one hand is so determined by an Object and on the other hand so determines an idea in a person’s mind, that this latter determination, which I term the *Interpretant* of the Sign, is thereby mediately determined by that Object. A Sign, therefore, has a triadic relation to its Object and to its Interpretant. (Peirce 1906-08, p. 482)

And again

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I use the word “Sign” in the widest sense for any medium for the communication or extension of a Form (or feature). Being medium, it is determined by something, called its Object, and determines something, called its Interpretant or Interpretand. But some distinctions have to be borne in mind in order rightly to understand what is meant by the Objects and by the Interpretant. In order that a Form may be extended or communicated, it is necessary that it should have been really embodied in a Subject independently of the communication; and it is necessary that there should be another Subject in which the same Form is embodied only in consequence of the communication. The Form (and the Form is the Object of the Sign), as it really determines the former Subject, is quite independent of the sign; yet we may and indeed must say that the object of a sign can be nothing but what that sign represents it to be. (Peirce 1906-08, p. 477)

Signs mediate between Objects and Interpretants in three ways: 1) *Iconically*, in the conveyance of some *qualitative* aspect of an Object to some Interpretant (i.e., Depth or Signification), 2) *Indexically*, in the conveyance of some *factual* aspect of an Object to some Interpretant (i.e., Breadth or Denotation), and 3) *Symbolically*, in the conveyance of some *reasonable* or *lawful* aspect of an Object to some Interpretant (i.e. Information). While thought may include, and indeed must include if it is to convey any Information (Peirce 1894, p. 7) Iconic and Indexical aspects, thought in general has the form of a *Symbol* (though not all Symbols need be thoughts).

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. (Peirce 1894, p. 10)

In the same way logic needs no distinction between the symbol and the thought; for every thought is a symbol and the laws of logic are true of all symbols. (Peirce 1865a, p. 166)

A Symbol in this broad sense is a sign which mediates between Object and Interpretant by means of a conventional or habitual principle, rule, or governing condition.

A *Symbol* is a Representamen whose Representative character consists precisely in its being a rule that will determine its Interpretant. All words, sentences, books, and other conventional signs are Symbols [...]

A symbol is a law, or regularity of the indefinite future. Its Interpretant must be of the same description; and so must be also its complete immediate Object, or meaning. But a law necessarily governs, or “is embodied in” individuals, and prescribes some of their qualities. Consequently, a constituent of a Symbol may be an Index, and a constituent may be an Icon. A man walking with a child points up into the air and says, “There is a balloon.” The pointing arm is an essential part of the Symbol without which the latter would convey no information. But if the child asks, “What is a balloon?” and the man replies, “It is something like a great big soap bubble,” he makes the image a part of the Symbol. Thus, while the complete Object of a Symbol, that is to say, its meaning, is of the nature of a law, it must *denote* an individual, and must *signify* a character. A *genuine* Symbol is a Symbol that has a general meaning. (Peirce 1903g, pp. 274-275)

In other words, a Symbol is a “sign whose Object is a general law or type” (Peirce 1903h, p. 293), but whose Object can only be conveyed by reference to an individual factuality whose qualities are prescribed by that law. *Arguments are Symbols*. (Peirce 1903g, p. 286)

1.4 BRANCHES OF LOGIC

Logic has three principal branches: 1) Speculative Grammar or the study of signs in general, 2) Critic which includes the classification of arguments and articulation of the validity conditions for and force of each argument kind, and 3) Methodeutic or the prescriptive study of method selection. Peirce's account of the three branches of logic is a modern rendering of the medieval *trivium* (i.e., Grammar, Dialectic and Rhetoric).

Speculative grammar is semiotics, which Peirce calls the "physiological" aspect of logic. (Peirce 1903g, p. 272) It is also called "Originalian logic" "the doctrine of the general conditions of symbols and other signs having the significant character." (Peirce CP 2.93)

Logical critic is concerned with "judging particularly what reasoning is good and what bad." (Peirce 1903g, p. 272) It is also called "Obsistent logic, logic in the narrow sense" or "the theory of the general conditions of the reference of Symbols and other Signs to their professed Objects, that it, it is the theory of the conditions of truth." (Peirce CP 2.93)

Methodeutic is "the principles of the production of valuable courses of research and exposition" (Peirce 1903g, p 272) It is also called "Transuasional logic" or "the doctrine of the general conditions by the reference of Symbols and other Signs to the Interpretants which they aim to determine." Another name for *methodeutic* is *Speculative Rhetoric* (Peirce CP 2.93) *Speculative Rhetoric* is to be broadly understood as

the method of discovering methods. This can only come from a theory of the method of discovery. In order to cover every possibility, this should be founded on a general doctrine of methods of attaining purposes, in general; and this, in turn, should spring from a still more general doctrine of the nature of teleological action, in general. (Peirce CP 2.108)

This is "the highest and most living branch of logic." (Peirce CP 2.333) It is concerned with the

laws of the evolution of thought, which [...] coincides with the study of the necessary conditions of the transmission of meaning by signs from mind to mind, and from one state of mind to another. (Peirce CP 1.444)

If I understand Peirce correctly, then *Speculative Rhetoric* may be described broadly as that aspect of logic dedicated to prescribing the most effective means for discovering, articulating and communicating the truth (as the proper end of logic in general).

1.5 THE ULTIMATE AIM OF LOGIC

From this we can discern more clearly that Logic is a positive normative science whose ultimate aim is to advance thought towards the truth. As we shall see, this is equivalent to the aim at making the world more reasonable. The manner in which Logic advances thought towards the truth is not simply by advancing our knowledge directly (though this is an important aspect of Logic's task), but by discovering/constructing a theory of how knowledge can best be advanced.

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The ultimate aim of the logician is to make out a theory of how knowledge is advanced.... But this theory is not possible until the logician has first examined all the different elementary modes of getting at truth and especially all the different classes of arguments, and has studied their properties so far as these properties concern [the] power of the arguments as leading to the truth. This part of logic is called *Critic*. But before it is possible to enter upon this business in any rational way, the first thing that is necessary is to examine thoroughly all the ways in which thought can be expressed. For since thought has no being except in so far as it will be embodied, and since the embodiment of thought is a sign, the business of logical critic cannot be undertaken until the whole structure of signs, especially of general signs, has been thoroughly investigated. (Peirce 1903e, p. 256)

While the ultimate aim of Logic is the selection of the methods that *ought to be* employed in the advancement of knowledge (where ‘ought to be’ is taken in a complex, triadic, normative sense), to best achieve that end depends, logically, upon a prior (and coincident) critical investigation of the different forms of argumentation (including their various strengths, limits, roles, etc.); this itself depends upon a prior (and coincident) semiotic investigation of the nature, role and function of signs (and of general signs in particular). Thus, Semiosis and Critic stand as necessary conditions for Logic’s ultimate aim of selecting the methods that ought to be employed in the advancement of knowledge towards the truth, for without the necessary work of Semiosis and Critic, Logical Methodetic (or Speculative Rhetoric) could not fulfill its proper normative function (which is to best advance our knowledge to where it *ought to be*). As we shall see, this means that Logic, understood in its most complete and vital sense, is a power or capacity that is orientated or aimed at developing a theory for selecting methods that ought to be employed for the settlement of belief in the long run.

2. ARGUMENT AND ARGUMENTATION

It is only in his later works that Peirce explicitly differentiates Argument from Argumentation.

An “Argument” is any process of thought reasonably tending to produce a definite belief. An “Argumentation” is an Argument proceeding upon definitely formulated premises. (Peirce 1908, p. 435)

As already noted, Arguments are Symbols. As Symbols, Arguments communicate general laws, rules, habits, etc., that is, conditions that can serve as guiding or *governing* conditions of conduct rather than *compulsive* forces determining action. (Peirce 1903g, pp. 282-283) To function as an Argument, a process need only be such as to prompt or produce a definite belief, where belief itself functions to *govern conduct generally* (as a kind of general maxim as it were, not as a force that compels some action directly and specifically—I will have more to say about belief in section 3.0).

Logically speaking, while all Argumentations are Arguments, not all Arguments are Argumentations, that is, not all Arguments need have premises that can be given some definite formulation. (Peirce 1908, p. 441) Unlike Arguments, Argumentations must be deliberate and self-controlled to some degree:

For this theory requires that in reasoning we should be conscious, not only of the conclusion, and of our deliberate approval of it, but also of its being the result of the premiss from which it does

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result, and furthermore that the inference is one of a possible class of inferences which conform to one guiding principle. Now in fact we find a well-marked class of mental operations, clearly of a different nature from any others which do possess just these properties. They alone deserve to be called *reasonings*; and if the reasoner is conscious, even vaguely, of what his guiding principle is, his reasoning should be called a *logical argumentation*. (Peirce 1903e, p. 248)

A process is generally self-controlled if it includes a conscious means of mitigating between some possible courses of action.

The machinery of logical self-control works on the same plan as does moral self-control, in multifarious detail. The greatest difference, perhaps, is that the latter serves to inhibit mad putting forth of energy, while the former most characteristically insures us against the quandary of Buridan's ass. (Peirce 1905b, p. 347)

Examples of Arguments that may not qualify as Argumentations include: some Retroductions (or Abductions), Explication (as the first stage of Deduction), and Classification (as the first stage of Induction). (Peirce 1908, p. 441-42)

While Argumentations have to be thought through in a deliberate, self-controlled manner, Arguments in general need not have any concrete mental instantiation, but need only extend to the level of thought in general. Argument in this sense implies any process or structure at the level of thought in general that *would* reasonably tend to produce a definite belief in some possible interpreter (as the locus of the Argument's Interpretant, which is a necessary condition of any Symbol or Sign). Thus there could in principle be Arguments that are incomplete, idling, as it were, until such time as its Interpretant is produced (and thereby completing or fulfilling the Argument's full semiotic structure or form).

Moreover *thought in general* is a very different affair from *thought*. Thought in general prescinded not only from intuition—and so reduced to an *ens imaginarium* which is one of Kant's four species of *nothing*—but also from all connection with the individual mind, is nothing but a fiction which expresses merely the possibilities of discourse. I propose to adhere to the essence of this definition but to regard it from such a point of view that it may not seem to have any more relation to psychology than it really has.

Suppose that in an undecipherable inscription of a long-extinct people an argument is written. Is that any less logically correct or fallacious because no one can read it and so no one can think it? I believe the reader will agree that it is not. It seems to me to be in exactly the same condition as a flower in the desert. This is said to have colour, though colour is nothing but in the eye; and no one can see this flower. This colour is nothing actual—nothing physically possible—but it is a fiction from which all the fictitious element has been eliminated by a device of language. Such fictions freed from fiction are common in mathematics, where they are exceedingly useful; and they can evidently do no harm, so long as they are understood. I may say that this page has a spot upon it, although it has none provided I add that the spot has no size or that it is *in potential*, or that the color is devoid of all intensity, or that it is neutralized by anti-redness. Such a fiction as this I propose to hold that meaning resides in words and other material representations whether these representations be understood or not and whether they be actually written or fashioned or not. (Peirce 1865b, pp. 306-307)

Arguments need not entail Argumentations precisely because they are directed towards determining what any thinker *ought to believe* (and not to what any thinker actually happens to believe). While the quotation noted above comes from a very early work of Peirce's, he makes a strikingly similar claim in one of his very late works where he

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defines reasoning as “any change in thought that results in an appeal for some measure and kind of assent to the truth of a proposition called the “*Conclusion*” of the reasoning, as being rendered “*Reasonable*” by an already existing cogitation (usually complex) whose propositional formulation shall be termed the “*Copulate Premiss*” of the reasoning.” (Peirce 1911, p. 454) Continuing the discussion, Peirce outlines what he takes to be an important point that he had developed in more detail in his earlier work:

There remains a third point that I shall not blamelessly leave wholly unexpressed, although I shall not undertake in this essay to bring readers to see its full importance. Namely, I have referred to reasoning as a process, or change, “of thought.” I have not said “of thinking,” since if, for example, there be a certain fossil fish, certain observations upon which, made by a skilled paleontologist, [and] taken in connection with chemical analyses of the bones and of the rock in which they were embedded, will one day furnish that paleontologist with the keystone of an argumentative arch upon which he will securely erect a solid proof of a conclusion of great importance, then, in my view, in the true logical sense, that thought has already all the reality it will ever have, although as yet the quarries have not been opened that will enable human minds to perform that reasoning. (Peirce 1911, p. 455)

It would seem that it is the normative character of Arguments that frees them from having to be instantiated in any thinker here and now, for this allows them to refer to some possible thinker not yet present in any actual or fully determinate sense.

Understood in this general sense, it can make perfect sense to say that “the universe is an argument,” for it may be said to possess or be characterized by relations, structures, processes of thought in general that are capable of “reasonably tending to produce a definite belief” in some future interpreter (as the possible site of the Argument’s Interpretant).

Now every symbol must have, organically attached to it, its Indices of Reactions and its Icons of Qualities; and such part as these reactions play in the Universe, that Universe being precisely and argument. In the little bit that you or I can make out of this huge demonstration, our perceptual judgments are the premises *for us* and these perceptual judgments have icons as their predicates, in which *icons* Qualities are immediately presented. But what is first for us is not first in nature. The premises of Nature’s own process are all the independent uncaused elements of fact that go to make up the variety of nature, which the necessitarian supposes to have been all in existence from the foundation of the world, but which the Tychist supposes are continually receiving new accretions. Those premises of nature, however, though they are not the *perceptual facts* that are premises to us, nevertheless must resemble them in being premises. We can only imagine what they are by comparing them with the premises for us. As premisses they must involve Qualities.

Now to their function in the economy of the Universe,—the Universe as an argument is necessarily a great work of art, a great poem,—for every fine argument is a poem and a symphony,—just as every true poem is a sound argument. But let us compare it rather with a painting,—with an impressionist seashore piece,—then every Quality in a premiss is one of the elementary colored particles of the painting; they are all meant to go together to make up the intended Quality that belongs to the whole as a whole. That total effect is beyond our ken; but we can appreciate in some measure the resultant Quality of parts of the whole,—which Qualities result from the combinations of the elementary Qualities that belong to the premisses.

But I shall endeavor to make this clear in the next lecture. (Peirce 1903c, pp. 193-94)

Arguments in this general, logical sense are not peculiar to minds. Instead the mental embodiment or expression of an Argument or Argumentation is itself merely the broader argumentative structures and processes found throughout nature manifest or expressed in

the mode of conscious thought or mind. There is no division or separation between mind and nature here. Mind is merely the structures or patterns found in nature raised to the level of conscious thought, and logic is merely those same argumentative structures brought under deliberate, self-controlled thought. This is consistent with the view already outlined that Arguments are Signs, and not all Signs need have a particular mental character (though they must be accessible to mind). Thus, Arguments as here understood are not merely things, structures or processes that we as individual thinkers employ. As Signs, Arguments are relations of a certain triadic (Symbolic), mediating character that are found throughout the world at large, regardless of their particular instantiation. It is certainly true that to count as an Argument, the triadic structure in question must be cognizable by some possible mind, but it need not be cognized by some actual mind here and now. What we call conscious thought or “mind is a sign developing according to the laws of inference” (Peirce 1868b, p. 53) and is constituted (at least in part) by the temporal transition through “beginning, middle, and end” (Peirce 1878a, p. 129) that is characteristic of an inference in general (Peirce 1866b, p. 494) Such inferential structures are not limited to minds, however, but can also be found instantiated in other dimensions of the natural world. For example, the tendency to develop or take on habits is not limited to mental phenomena:

habit is by no means exclusively a mental fact. Empirically, we find that some plants take habits. The stream of water that wears a bed for itself is forming a habit. Every ditcher thinks of it. Turing to the rational side of the question, the excellent current definition of habit [...] says not one word about the mind. Why should it, when habits in themselves are entirely unconscious, though feelings may be symptoms of them, and when consciousness alone,—i.e., feeling,—is the only distinctive attribute of mind? (Peirce 1907, p. 418)

Similarly, operations found within nature, such as the automated movement of a frog’s legs from a stimulus, have the same structure of an inference.

In deduction the mind is under the dominion of a habit or association by virtue of which a general idea suggests in each case a corresponding reaction. But a certain sensation is seen to involve that idea. Consequently, that sensation is followed by that reaction. That is the way the hind legs of a frog, separated from the rest of the body, reason, when you pinch them. It is the lowest form of psychical manifestation. (Peirce 1892b, p. 327)

(I shall have more to say about the status of deduction as the “lowest form of psychical manifestation in section 4.0)

As an important addendum, it should be noted that no Argument functions in isolation. To be complete, an Argument must determine its Interpretant in a way that

is complicated by the circumstance that the sign not only determines the interpretant to represent (or to take the form of) the *object*, but also determines the interpretant to represent the sign. Indeed in what we may, from one point of view, regard as the principle kind of signs, there is one distinct part appropriated to representing the object, and another to representing how this very sign itself represents that object. (Peirce 1906-08, pp. 477-478)

Thus, a sign must convey to its Interpretant both the Form of the Object that is being conveyed, and the determinative role of the sign itself in the conveyance of that Object. Further, the sign must also convey the broader context within which the Object is to be

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interpreted, as a necessary condition for the possibility of that interpretation (its broader Universe, as Peirce, puts it, or what would be akin to a “language game” using more Wittgensteinian parlance).

There is the *Intentional* Interpretant, which is a determination of the mind of the utterer; and *Effectual* Interpretant, which is a determination of the mind of the interpreter; and the *Communicational* Interpretant, or say the *Cominterpretant*, which is a determination of that mind into which the minds of utterer and interpreter have to be fused in order that any communication should take place. This mind may be called the *commens*. It consists of all that is, and must be, well understood between utterer and interpreter, at the outset, in order that the sign in question should fulfill its function. (Peirce 1906-08, p. 478)

The *commens* is a necessary condition for the possibility of any communication, serving as a holistic framework or means of orienting the interpreter so that the Intentional and Effectual aspects of the Interpretant may be properly conveyed (and so properly or truthfully interpreted).

No object can be denoted unless it be put into relation to the objects of the *commens*. A man, tramping along a weary and solitary road, meets an individual of strange mien, who says, “There was a fire in Megara.” If this should happen in the Middle United States, there might very likely be some village in the neighborhood called Megara. Or it may refer to one of the ancient cities of Megara, or to some romance. And the time is wholly indefinite. In short, nothing at all is conveyed, until the person addressed asks, “Where?”—“O about a half a mile along there” pointing to whence he came. “And when?” “As I passed.” Now an item of information has been conveyed, because it has been stated relatively to a well-understood common experience. Thus the Form conveyed is always a determination of the dynamical object of the *commind*. By the way, the dynamical object does not mean something out of the mind. It means something forced upon the mind in perception, but including more than perception reveals. It is an object of actual *Experience*. (Peirce 1906-08, p. 478)

3. REASON, INQUIRY AND THE SETTLEMENT OF BELIEF

In a sense, Logic and reasoning are one and the same. Reasoning is the conscious instantiation or expression of Logic in general.

Whatever opinion be entertained in regard to the scope of logic, it will be generally agreed that the heart of it lies in the classification and critic of arguments. Now it is peculiar to the nature of argument that no argument can exist without being referred to some special class of arguments. The act of inference consists in the thought that the inferred conclusion is true because *in any analogous case* an analogous conclusion *would be true*. Thus, logic is coeval with reasoning. Whoever reasons *ipso facto* virtually holds a logical doctrine, his *logica utens*. This classification is not a mere qualification of the argument. It essentially involves an *approval* of it,—a *qualitative approval*. Now such self-approval supposes *self-control*. Not that we regard our approval as *itself* a voluntary act, but that we hold the act of inference which we approve to be voluntary. That is, if we did not approve it, we should not infer. (Peirce 1903d, p. 200)

In this broad, ‘naturalistic’⁴ framework, reason itself must be understood as the conscious expression of deeper non-conscious structures or forms. Viewed as a development from

⁴ My use of ‘scare quotes’ here is a bow to the fact that most *naturalistic* philosophers would have a much more minimalistic account of nature than the one I’m outlining here. Nevertheless, I stubbornly insist on

more base natural forms, the most proximate non-conscious or unconscious form or structure of which reason is a conscious development is *instinct*, “for Reason *is* a sort of instinct.” (Peirce 1913, p. 464, p. 472)

When an animal responds to a stimulus in much the same way as almost any other individual of the same species or division of that species (such as sex, for example), and does not, so to speak, mechanically (as when a man’s kneecap is struck), but voluntarily, and when the response is of such a kind as generally to have a beneficial effect upon that same animal or its progeny, which effect, however, the animals that act so can hardly be supposed to have divined or, at any rate not to have ascertained by reasoning from any other facts within their knowledge, then we call the action “instinctive,” while the general habit of behavior, regarded as appertaining to the animal’s consciousness, we call “an instinct.” (Peirce 1913, p. 473)

An instinct as here understood is a kind of *habit*, that is, a rule or general tendency, usually deeply inherited, that serves and has developed or evolved as a guide for action. (Peirce 1885, p. 226; Peirce 1913, pp. 464-465) Generally speaking (and as a function, in part, of evolution), instincts will be well adapted to achieving their purposes, successfully guiding or directing action in some general sense (or at the very least, better than chance alone would achieve).

As a sort of instinct, Reason is itself a set of deeply inherited dispositions or tendencies that serve to guide action which, in this specific sense, takes the form of *conduct*, that is, “action under an intention of self-control.” (Peirce 1909, p. 499) Understood as a kind of instinct, reason need not be limited to humans, and Peirce, explicitly admits that other animals seem to get around in the world, at least in part, by way of reason.

I may notice, by the way, that when I was a child I was told by my teachers, or understood them so, that only human beings reason, while only the other animals have incomprehensible instincts; but I suppose that today only benighted persons any longer believe either of these two assertions. No animals reason so much as men or about such intricate subjects; but to say that an intelligent dog, or horse, or parrot, or magpie, or canary bird does not reason at all, or only in such ways as humans have taught him, can have no definite meaning. On the other hand, to say that man has no incomprehensible instincts would be to talk without reflection and from surprisingly slight or else shockingly untitled experience. (Peirce 1913, p. 470)

As a condition for self-controlled or deliberate conduct, the proper function of reason is tied directly to *belief*, for belief is a kind of habit or disposition that serves to guide or direct conduct generally. (Peirce 1907, pp. 432-433; Peirce 1908, p. 440) A habit, broadly speaking, is “the generalization of effort” (Peirce 1907, p. 432)

Habits differ from dispositions in having been acquired as consequence of the principle, virtually well known even to those whose powers of reflection are insufficient to its formulation, that multiply reiterated behavior of the same kind, under similar combinations of percepts and fancies, produces a tendency,—the *habit*,—actually to behave in a similar way under similar circumstances in the future. (Peirce 1907, p. 413)

my less conventional usage because the overly minimalistic assumptions that most philosophers have of nature is one of the very things I am challenging in this paper.

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In one sense then reason is a self-controlled process or power of forming or selecting effective habits, that is, habits that are maximally effective in achieving their proper purposes.

The term “reasoning” ought to be confined to such fixation of one belief by another as is reasonable, deliberate, self-controlled. A reasoning must be conscious; and this consciousness is not mere “immediate consciousness,” which (as I argued in 1868, *Journal of Speculative Philosophy*) is simple Feeling viewed from another side, but is in its ultimate nature (meaning in that characteristic element of it that is not reducible to anything simpler), a sense of taking a habit, or disposition to respond to a given kind of stimulus in a given kind of way. (Peirce 1905b, p. 347)

Located within the larger context of this discussion, the primary role of reasoning will be the formation of increasingly reliable habits to serve as reliable guides or directives of future conduct. In other words, the primary role of reason will be the formation of true (or truer) beliefs.

When it happens that a new belief comes to one as consciously generated from a previous belief,—an event which can only occur in consequences of some third belief (stored away in some dark closet of the mind, as a habit of thought) being in a suitable relation to that second one,—I call the event an *inference*, or a *reasoning*. And your Honor, the Reader, will please observe that any decided leaning toward a belief is or involves a full belief; namely, the full belief that the substance of the belief to which one leans is probable, or promising, or has some other title to intellectual honor. (Peirce 1913, p. 463)

The habits of reasoning, generally understood, are the three classes or kinds of inferences that Peirce identifies as Abduction, Deduction, and Induction (including the formal *Leading Principles* that serve as the guides for each of those forms of reasoning). The soundness of these logical forms rests upon the factual question of whether they have a greater tendency to generate truths than chance alone would allow.

the only fact which the soundness of all reasoning and the truth of all human thought really depends [on] is that man’s conjectures are somewhat better than purely random propositions.... the question of what is good reasoning and what bad is not a question of whether the mind approves it or not, but is a question of *fact*. A method that tends to carry us toward the truth more speedily than we could otherwise progress is good; a method that has a tendency to carry us away from the truth is utterly bad, whether we naturally approve it or not. (Peirce 1903e, p. 252)

Logically speaking, a habit will have the greatest chance of success in guiding action if it is true, that is, if its law, tendency or rule conforms to reality. Hence the proper end of reason, that which will allow it to serve as the most reliable guide to action in its maximal sense, must be *truth* or the maximal conformity of the beliefs which reason produces with reality in general in the long run. In a sense, the entire discussion of Peirce’s “The Fixation of Belief” is a demonstration (or perhaps more accurately, a *monstration*, a bringing to critical attention) of that logical point. For to say that reason’s proper function is to serve as a reliable guide for conduct means that the point of view, the conclusions that reason asserts and defends will not be upset by any possible conflicting, constraining conditions, central of which are what Peirce includes under the general category of *experience*.

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An “Experience” is a brutally produced conscious effect that contributes to a habit, self-controlled, yet so satisfying, on deliberation, as to be destructible by no positive exercise of internal vigor. (Peirce 1908, p. 435)

As Peirce, argues, while the methods of *tenacity* and *authority* (where the *a priori* method is seen as the authority of one’s present rational predilections) may successfully buffer the effects of unsettling, conflicting constraints in the short term (logically speaking), only a method that is able to avoid unsettlement from all possible sources will serve as a successful guide to action in the long run. And the one method that best achieves that end is the one that tries to bring reason and belief into perfect conformity with reality, as that end to which all rational inquiry must consent in the long run. Hence Peirce’s oft repeated claim (with numerous variations) that

an inference is “logical,” if, and only if, it is governed by a habit that would in the long run lead to the truth. (Peirce 1906-08, p. 480)

Expressed in pragmatic terms, an inference is logical only if it tends generally or in the long run to effect conduct that will attain its purposes, again in the long run. Inferences that tend toward the truth, that is, that conform to *reality* will have the best chance of achieving these ends in the long run.

Hence the end or proper function of reason is attainment of true belief, that is, the bringing of belief into conformity with reality in the long run, a kind of conformity which will inevitably result in universal consensus, or what Peirce variously calls the final opinion.

4. EVOLUTION AND GROWTH: CONSENSUS AS A REGULATIVE IDEAL

Reasoning, as here outlined, *is a vital power or capacity whose function is the progressive modification of belief for the increasingly effective conduct of life.*

Now good reasoning is reasoning which attains its purpose. Its purpose is to supply a guide for conduct,—and thinking, being an active operation, is a species of conduct,—in case no percept from which a judgment could have been directly formed, is at hand. Its object is to say what the reasoned either *will* think when that percept occurs, or what he *would* think if it did occur. The psychological process of reasoning is wholly aside from the purpose of logic. (Peirce 1906, pp. 386-387)

As Peirce argues in “The Fixation of Belief,” the aim at increasingly effective conduct is equivalent, logically (in his broad sense of the term), to an aim at beliefs that are true in the long run. Beliefs that have been settled by other means (e.g., tenacity, cultural authority, a priori authority, etc.) will inevitably, i.e., logically, be unsettled by *experience* in the long run. Only beliefs that are true, that is, which conform to reality (again in the broad, logical sense of that term), will result in maximally effective conduct. Therefore, the most logical course of action is to aim at developing beliefs that will remain true under all real circumstances, and thereby remain maximally effective for all future conduct. Expressed in different terms, the ultimate aim of reasoning and argumentation *ought to be* a maximal *integrity of belief*. Achieving maximal *integrity of*

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belief is a normative demand placed on us as logical beings, that is, beings who are “in the main logical animals.” (Peirce 1877, p. 112)

But above all, let it be considered that what is more wholesome than any particular belief is integrity of belief, and that to avoid looking into the support of any belief from a fear that it may turn out rotten is quite as immoral as it is disadvantageous. The person who confesses that there is such a thing as truth, which is distinguished from falsehood simply in this, that if acted upon it will carry us to the point at which we aim and not astray, and then, though convinced of this, dares not know the truth and seeks to avoid it, is in a sorry state of mind indeed. (Peirce 1877, p. 123)

Logically speaking, maximal integrity of belief is equivalent to *rational consensus*, for without such rational consensus, beliefs cannot be adequately settled. Without rational consensus the integrity of one’s beliefs will inevitably remain threatened by the possibility of a *rational disensus* (i.e., the real, logical possibility that one’s beliefs are not true). Integrity of belief thereby entails the elimination of all *rational disensus*. In other words, *true integrity of belief* must be at once *both individual and communal*. This amounts to saying that my own finite interests must be one with (e.g., be rationally coherent with) the interests of the community in the broadest sense of that term.

But what, without death, would happen to every man, with death must happen to some man. At the same time, death makes the number of our risks, of our interests, finite, and so makes their mean result uncertain. The very idea of probability and of reasoning rests on the assumption that this number is indefinitely great. We are thus landed in the same difficulty as before, and I can see but one solution of it. It seems to me that we are driven to this, that logicity inexorably requires that our own interest shall *not* be limited. They must not stop at our own fate, but must embrace the whole community. This community, again, must not be limited, but must extend to all races or beings with whom we can come into immediate or mediate intellectual relation. It must reach, however vaguely, beyond this geological epoch, beyond all bounds. He who would not sacrifice his own soul to save the whole world, is, as it seems to me, illogical in all his inferences, collectively. Logic is rooted in the social principle. (Peirce 1878b, p. 149)

It is noteworthy here that a necessary condition of logicity in general is *Hope*. Without the hope of constructing a *rational consensus* or communal belief about what ought to be, argumentation and reasoning are rendered vain and futile. Hope thus stands as a necessary condition for the possibility of logic and argumentation as such. Such hope is itself rendered more hopeful by the fact that reasoning and argumentation are not confined to a statically bound framework of fixed limits and deductive compromise (where consensus entails giving up as much as you get), but are situated instead within a vital, evolutionary framework. Thus the real aim of reasoning and argumentation is not consensus in any deductive sense (soon to be explained), but evolution or *growth*. But the growth we are speaking of here is not some sheer or mere growth as an end in-itself (which would not preclude maladaptive, pathogenic or cancerous growths), but reasonable growth, that is the *growth of reasonableness* per se.

To understand what is meant by growth here, we must first notice that while all inquiry (and argumentation is a form of inquiry) is logically aimed at the settlement or satisfaction of belief, this logical or, as I would call it, *alethic orientation* does not (and indeed cannot) require or entail the *actual* settlement of belief in any final or absolute sense. The end of inquiry or ultimate settlement of belief, as here employed, stands

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logically as a *limit concept* or *ideal limit* at which inquiry is aimed (or toward which it is oriented), but which can never be actually achieved.

if Truth consists in satisfaction, it cannot be any *actual* satisfaction, but must be the satisfaction that *would* ultimately be found if the inquiry were pushed to its ultimate and indefeasible issue. (Peirce 1908, p. 450)

Every action has a motive; but an ideal only belongs to a line of conduct which is deliberate. To say that conduct is deliberate implies that each action, or each important action, is reviewed by the actor and that his judgment is passed upon it, as to whether he wishes his future conduct to be like that or not. (Peirce 1906, p. 377)

Like any such limit concept, the best that we can actually hope to achieve in any finite, actual, deterministic sense is to approach the limit or ideal at which we are aimed asymptotically (i.e., approaching, but never reaching). Thus, while logic or rational thought as such may be oriented towards the truth in some ideal sense, the real, actual measure of logical or rational advance is not consensus as such (in any final sense of that term), but *growth towards* a rational consensus, that is, a continuous increase in the integrity of belief at both the individual and the communal level.

Accordingly, the pragmatist does not make the *summum bonum* to consist in action, but makes it to consist in that process of evolution whereby the existent comes more and more to embody those generals which were just now said to be *destined*, which is that we strive to express in calling them *reasonable*. (Peirce 1905a, p. 343)

As an aspect of expression of thought in general, reasoning and Argumentation function as aids or guides to future conduct. As a Symbolic semiotic guide to future conduct, reasoning (or Argumentation) thus functions as a *governor of conduct* (rather than a strict compulsive force) whose success is to be measured by the growth of reasonableness.

The very being of the General, of Reason, *consists* in its governing individual events. So, then, the essence of Reason is such that its being can never have been completely perfected. It must always be in a state of incipency, of growth [...] So, then, the development of Reason requires as a part of it the occurrence of more individual events than ever can occur. It requires, too, all the coloring of all qualities of feeling, including pleasure in its proper place among the rest. This development of Reason consists, you will observe, in embodiment, that is, in manifestation. (Peirce 1903e, p. 255)

The aim at making the world more reasonable is, for Peirce, the only thing that seems to be fully and completely admirable in-itself, and so deserving of the status of being a truly ultimate aim.

The one thing whose admirableness is not due to an ulterior Reason is Reason itself comprehended in all its fullness, so far as we can comprehend it. Under this conception, the ideal of conduct will be to execute our little function in the operation of the creation by giving a hand toward rendering the world more reasonable whenever, as the slang is, it is “up to us” to do so. In logic, it will be observed that knowledge is reasonableness; and the ideal of reasoning will be to follow such methods as must develop knowledge most speedily. (Peirce 1903e, p. 255)

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In the full, aesthetically, ethically and alethically vital sense implied here, “speedily” means that one ought to advance the pursuit and acquisition of reasonableness in a way that preserves and promotes what is most admirable, good, and true.

Expressed in Peirce’s earliest and most minimalistic logical sense (which is all I have room for here), and beginning with the logical notions of Breadth and Depth (where Breadth is roughly equivalent to denotation, extension, sphere, etc. and Depth is roughly equivalent to connotation, intention, signification, etc.), then growth is the synthesis of Breadth and Depth in what Peirce calls a state of *Information*. For Peirce, a fixed or complete deductive system is a closed system where equilibrium entails that Breadth and Depth stand in an inverse relation to one another. In such a closed system, an increase in Depth must be accompanied by a corresponding decrease in Breadth, and vice versa. There is no possibility of growth in such a closed, deductive system. In what he calls a state of Information, on the other hand (which in his later works is expanded into his account of dynamic evolutionary development), Breadth and Depth need not stand in inverse proportion to one another, but can increase “conversely.” This converse increase in Breadth and Depth in a state of Information is a logical form of growth. Thus we see that growth in this sense is only possible in an open system, that is, a system which admits the possibility of genuine novelty. Deduction, taken by itself, is an insufficient condition for the possibility of knowledge in any genuine, ampliative sense. For deduction is not ampliative in any genuine sense (advancing us toward a conclusion not already present in the premise), but is primarily explicative or demonstrative and so merely explicates what we know. (Peirce 1866a), p. 463) Genuine knowledge (i.e., learning) requires that we advance to conclusions that are not already contained in the premises. Hence, genuine knowledge cannot be obtained within a purely deductive, that is, a fixed framework of static equilibrium. Thus, what Peirce is here calling Information is a necessary condition for the possibility of knowledge as such. We see Peirce first developing this idea as early as 1866.

Now deduction rests as we have seen upon the inverse proportionality of the extension and comprehension of every term; and this principle makes it impossible apparently to proceed in the direction of assent to universals. But a little reflection will show that when our knowledge receives an addition this principle does not hold. (Peirce 1866a, p. 463)

Thus, the rule that the greater the extension of a term the less its comprehension and *vice versa*, holds good only so long as our knowledge is not added to; but as soon as our knowledge is increased, either the comprehension or extension of that term which the new information concerns is increased without a corresponding decrease of the other quantity. The reason why this takes place is worthy of notice. Every addition to the information which is incased in a term, results in making some term equivalent to that term [...] Thus, every addition to our information about a term, is an addition to the number of equivalents which that term has. Now, in whatever way a term gets to have a new equivalent, whether by an increase in our knowledge, or by a change in the things it denotes, this always results in an increase either of extension or comprehension without a corresponding decrease in the other quantity. (Peirce 1866a, pp. 463-464)

Thus every increase in the number of equivalents of any term increases either its extension or comprehension and *conversely*. (Peirce 1866a, p. 464)

What we see in this somewhat formal discussion of Breadth, Depth and Information is an earlier version of Peirce’s later, more explicitly evolutionary account of growth. The

seeds or traces of the same vitalistic, evolutionary language is already present here, but in a less broadly developed form.

Indeed, the process of getting an equivalent for a term, is an identification of two terms previously diverse. It is, in fact, the process of nutrition of terms by which they get all their life and vigor and by which they put forth an energy almost creative since it has the effect of reducing the chaos of ignorance to the cosmos of science. Each of these equivalents is the explication of what there is wrapped up in the primary; they are the surrogates, the interpreters of the original term. I call then the *interpretants* of the term. And the quantity of these *interpretants*, I term the *information* or *implication* of the term. (Peirce 1866a, pp. 464-465)

So important was this insight to Peirce that at one point in these earlier works he declares it to be the fundamental secret of logic.

I here announce the great and fundamental secret of the logic of science. There is no term, properly so called, which is entirely destitute of information, of equivalent terms. The moment an expression acquires sufficient comprehension to determine its extension, it already has more than enough to do so. (Peirce 1866a, p. 465)

We see this same vitalistic theme repeated in 1873.

If two terms *a* and *b* differ so that we may write *a* is *b*, but not *b* is *a*, as for example, we may say that any man is an animal but not that every animal is a man, then the term of which the other may be predicated is said to have less breadth than the latter; meaning by that that there are fewer terms of which it can be predicated while that the other term is said to have less depth, meaning by that that there are fewer terms which can not be predicated of it. It is obvious, and requires no proof that of the two terms the one which has the greater breadth has the less depth and *vice versa*. (Peirce 1873, p. 88)

it is useful to consider the known breadth and depth of a term in different states of our knowledge. In any one state of our knowledge every term is known to be predicable of certain others, and have certain others predicable of it. And of the two terms the one which has all those things predicable of it which are predicable of the other and more beside, is itself predicable of only a part of these terms of which the other is predicable, and *vice versa*. The effect of an addition to our knowledge is to make one term predicable of another which was not so before to our knowledge. And it thus at once increases the known depth of the subject term, and the known breadth of the predicate term, without any decrease of either of these qualities so that in the increase of knowledge the known breadth and depth of terms are constantly increasing and the sum of the breadths and depths on either product, if you please, will measure the extent to which investigation has been pushed. (Peirce 1893, p. 89)

What is expressed epistemically here as “different states of our knowledge” is greatly expanded in Peirce’s later works to an ontological account of ‘different states of reality.’ For as he studies this more carefully and rigorously Peirce comes to realize that what is true epistemically is also true of reality in general, namely, that reality itself is an open rather than a closed system. Even the very laws that we discover to be operative in nature in general are not themselves fixed, a-historical principles or conditions, but regularities of nature that have themselves evolved or come into being, and continue to evolve in response to the novel additions or “accretions” to reality as a whole.

Given this radical, evolutionary account of the real as an open system, the epitome or model of reason cannot be deduction (as has been traditionally maintained), but the more vital argument forms of abduction and induction. For deduction stands as the ideal

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only within a completed, closed system. But in an open system such as ours, such as really exists, then the most vital expressions of reason will be those that play the strongest role in advancing our knowledge beyond what we already know, beyond what is already contained in the premises. What appear as weaknesses to abduction and induction from the looking glass world of an ideal, closed, deductive system are in the real, the actual world their greatest strengths, for these more vital, more life-enhancing argument forms are not bound to or limited by the conditions of their premises, but move us beyond those conditions, beyond those limits. Such movement, such growth is essential to the vital function of reason not simply because it allows our knowledge to grow in some isolated sense, but also because nature and existence itself is continuously evolving and growing in novel ways. If mind is to truly conform to the real, then it must evolve and grow as the real evolves and grows, keeping pace with its changes. A static, purely deductive approach to inquiry cannot attain this end, at least not by itself. Deduction has its place, of course, as a necessary stage in the process of inquiry and the general aim at consensus, but it has a much lesser role than the more vital argument forms of abduction and induction. In an open, evolutionary system such as this, those forms of argument that have been traditionally vilified for being unable to measure up to the strict standards of deduction are suddenly cast in a new, more vital light. In a real sense, Peirce's system turns traditional logic on its head. From the point of view of logic, of reason as such, it is the certain, the absolute, that has to be looked upon with caution and suspicion, and those who fail to present their rationally held beliefs in a provisional, testable manner is to be rightly judged as less reasonable than they ought to be.

5. CONCLUSION

Under this dynamic, evolutionary, 'naturalistic' account of argumentation (which Peirce broadly calls Logic), principles of argumentation (such as logical principles, or leading principles) and argument forms are not universally fixed forms that are valid across all possible times. Like laws of nature, such principles and forms are formalized conditions that have evolved or come into being over the course of time and history. As Peirce goes to great pains to argue, reason cannot authorize its own legitimacy or validity by appealing to a priori or transcendental principles (as a-historical, non-temporal conditions or grounds), for these principles are themselves part of the form and function of reason as a historically situated mode of world-orientation. The validity of any such principles is not something that can be demonstrated once and for all, but must always be up for question. As such, the validity and legitimacy of reason depends upon whether or not its use results in a greater tendency towards the truth than might be expected by randomness or chance. This itself can never be absolutely, deductively demonstrated, of course, which entails that if reason, as the search for truth (logically understood) is to be secure, then it must stand in relation to some non-reason, that is, something that is independent of any historically situated reasoner. That which is independent of reason or thought (contingently understood) is *reality*. Hence the ultimate guide or ground for determining the legitimacy and authority of reason cannot be any *principle* as such (as traditional metaphysics has held), but a secure and reliable *method* of securing the reliability, validity and truthfulness of the principles and forms of reason in general. This is why Peirce places so much emphasis on method, and upon logic as a methodological

orientation normatively aimed at method selection (for the settlement of belief). In fact, many of Peirce's better known early writings are directed precisely towards highlighting the limitations of our faculties and epistemic "incapacities" with the aim of redirecting attention towards the importance and role of *method* in making our ideas clear and in fixing our belief. Viewed from this point of view, these early works are in essence a defense of Logic as the normative method for selecting methods (thereby ensuring that inquiry remains truthfully oriented in the most effective manner possible). As a normative method of method selection, the leading or logical principles that logic itself employs in directing its selections must themselves be taken as provisional, revisable and subject to continual testing, experimentation and improvement. Also, since Logic, as a normative science, must rest its own principles upon those of Ethics and Aesthetics (as its developmental base), then Logic (or Argumentation Theory) must include the study of the norms and principles underlying these other normative sciences in order to more fully understand and direct its own activities in an increasingly self-controlled manner.

Within the Peircean-styled, evolutionary framework that we are outlining here, reason and argumentation in general (which is what we are trying to understand here) can only be properly understood when viewed from within their real, lived context. As Peirce puts it, to truly understand what "reasoning" means "we have to shape our thoughts to the general facts of human life." (Peirce 1911, p. 453) From the general facts of human life we discern that no single argument form (and that includes deduction), stands on its own as the perfect or ideal model of reason in general. Instead, *reason in general is the entire package of argument forms taken together*. Reasoning is a mode of orientation, a way of mapping the world. It seeks both to uncover the general conditions that mediate or govern (or ought to mediate and govern) actual occurrences in the world, and to construct or advance the effectiveness of those conditions that ought to mediate future actual occurrences. This is part of its ultimate aim of making the world more reasonable. In seeking these mediating conditions, reason serves to bring mind into conformity with the general, governing conditions that both are and ought to be operative in the world, conditions that are themselves continually evolving.

Viewed in this broader, naturalized light, the various forms of argument (e.g., abduction, deduction and induction) should not be read as standing independent of one another as if they could be sufficiently analyzed and understood in and of themselves. Instead, these argument forms each stand as necessary phases or stages in the full, vital work of reason as such. For it is only when taken together, as necessary stages in the vital work of reason in general, that the larger role and function of each can be properly evaluated and understood. Viewed independently in and of themselves (as seems too often to be the case), each form of reasoning seems replete with problems. Abduction, for example, is often said to be problematic because it is ignorance preserving, induction is unable to demonstrate its own validity (partly, I believe, because it is being measured against deductive criteria), and deduction has long been accused of impotence in actually advancing our knowledge (being primarily explicative and demonstrative in character). These perceived deficiencies are a product, however (at least in part), of failing to understand the proper role of each form in the broader activity of reason (and logic or argumentation) as such. When abstracted from "the general facts of human life," for example, it is not clear whether deduction per se could even count as a form of reasoning as such. For if, as Peirce himself notes, "that cannot properly be called reasoning which

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does not carry us from the known to the unknown,” (W 3, p. 14) then it is questionable whether deduction, which functions more like a lifeless, mechanistic or compulsive derivation, could count as a genuine form of reasoning per se (hence Peirce’s earlier description of the deductive form as the “lowest form of psychological manifestation”). When viewed in its proper explicative and demonstrative role, however, (as a necessary state in the testing of an abductive hypothesis), deduction clearly emerges as a vital condition in the broader life of reason in general. Reasoning and argumentation in their fullest, most vital sense then, ought not to be limited to any single argument form, but ought to encompass all the various stages and argument forms needed to accomplish their ultimate and necessarily vital ends.

At the level of logic or argumentation in general (as here outlined), the ultimate and vital end or aim of reason is to move particular minds toward a general consensus as to what ought to be affirmed and assented to at the level of thought (e.g., consensus about what is better or worse, life-enhancing or life destructive, true or false). Nevertheless, while the ultimate aim of reason (as a regulative ideal towards which we, as logically hopeful beings are oriented) may be consensus, the real measure and vital function of logic or argumentation ought to be the enabling and enhancement of *the general growth of reasonableness*. The growth of reasonableness in its most general sense involves bringing compulsive forces, facts or events under the general guidance or governance of laws or rules (hence the growth or order in the universe counts as a growth in reasonableness in a purely logical sense). In the particular context of self-controlled conduct (whether aesthetically, ethically or logically oriented), the growth of reasonableness means bringing compulsive occurrences, relations or actions under the general guidance or governance of what ought to be (aesthetically, ethically or logically). The reference to reasonableness here must be understood at a number of levels.

Firstly and perhaps most simply, making the world more reasonable would involve the progression or growth of reason as such, that is, the possibility of improvement in the validity and quality of reasoning per se. The validity and proper application of particular forms of reasoning should be improved and better established in the long run, resulting in general improvements in the quality of reasoning and argumentation at both an individual and at a communal (e.g., institutional) level. Such improvements are possible first because they are but an instance or expression of the evolutionary character of existence in general, and secondly because reason or argumentation contains within itself a necessary, self-critical component (i.e., be self-controlled and deliberate). As Peirce notes:

“What causes men to reason right?” That question I did substantially answer in my first lecture. Namely, to begin with, when a boy or girl first begins to criticize his inferences, and until he does that he does not reason, he finds that he has already strong prejudices in favor of certain ways of arguing. Those prejudices, whether they be inherited or acquired, were first formed under the influence of the environing world, so that it is not surprising that they are largely right or nearly right. He, thus, has a basis to go upon. But if he has the habit of calling himself to account for his reasonings, as all of us do more or less, he will gradually come to reason much better; and this comes about through his criticism, in the light of experience, of all the factors that have entered into reasonings that were performed shortly before the criticism. Occasionally, he goes back to the criticism of habits of reasoning which have governed him for many years. (Peirce 1903e, p. 534 Note 6)

Given this, then we should expect to find an overall improvement in reasoning and argumentation throughout the long history of *homo sapiens*, particularly in the methodetic selection of methods of reasoning that are better attuned to their purposes and aims. Some may dismiss this idea of a progressive development of reason as a suspiciously ‘modern,’ colonialist notion, but to deny that there are any genuine, life-enabling measures of good and bad reasoning, and that the application and adaptation of these norms to their intended ends has not seen general improvement seems beyond the pale. It may be the case, of course, that progress in such things as argumentative methodetic do not permit of any absolute or perfect demonstration (in a narrow, deductive sense), but the call for such absolute demonstrations is itself unrealistic, unreasonable, and despairing, “the lowest form of psychical manifestation.”

Making the world more reasonable also applies to other areas as well. It applies scientifically, for example, in Peirce’s dictum that one should never block the road to inquiry by declaring some fact or condition to be unintelligible. Such a declaration is absolutely detrimental to inquiry, marking its death and the death of reason (and the aim at reasonableness) as such. For to declare something unintelligible is to abandon all reason, all hope, and to give in to despair. Thus, making the world more reasonable means an unceasing commitment to inquiry in its broadest and richest sense.

Extending this point, the call to make reasonable should also be applied to other domains as well. It should also apply, for example, to personal and social relations as a critical condition for resolving regressive conflicts and for promoting consensus in some provisional sense. Just as one should never block the path to inquiry in a narrow sense, so too one should not block the path to inquiry or argumentation in a more general sense by declaring some conflict or condition (whether personal, political, environmental, etc.) to be absolutely irresolvable. For to declare some conflict or tension to be rationally irresolvable is, in effect, to give up on the possibility of its resolution (thereby giving in, once again to despair). This applies not just at the level of individual persons, but at social, institutional and other levels of analysis as well. Of course, while it may be necessary at times to postpone efforts at arriving at a reasonable resolution to some conflict, it would be illogical and unreasonable to abandon such efforts altogether.

Making the world more reasonable would also include making the institutions and other culturally constructed conditions conform to what they ought to be. Put very broadly, institutions or other culturally constructed governing condition ought to be what they ought to do. Such governing conditions ought to function in a way that enables the things they govern (whether they be persons, non-human animals, environments, etc.) to be what they ought to be, that is, to be whatever is best for them (locally and generally). Determining what ought to be must itself be a continuous inquiry that develops and evolves in a way that remains attuned to the continuously evolving nature of reality, a process of evolutionary advance must remain essentially incomplete. Such incompleteness, however, does not mean that there is no possibility and no measure of progressive advance. To affirm this is itself part of what it means to be a rational being, and hence is essential to the very aim at reasonableness per se.

Understood in this broad, naturalistic sense (and using the long standing metaphor of orientation), what Peirce calls logic (and reason) and the corresponding aim at reasonableness stands as a kind of compass by which we as humans are oriented to our world. Logic or reason, in this sense, *is literally a mode of orientation*, a particular way of

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negotiating and navigating the sea of qualities, facts and relations within which we find ourselves. As a compass or mode of orientation, reason (and the forms of argumentation it employs) in its very essence is generally directed or oriented towards what we call the truth. Hence, logic or reason functions as what I would call an *alethic compass*. It is but one such compass, and it need not (and indeed should not) be restricted to the peculiarities of our human mode of existence (though certain features of that compass may indeed be peculiarly human, e.g., the anthropology or psychology or certain argumentative effects). Thus, when Peirce says that we are “in the main logical animals,” (Peirce 1977, p. 112) this does not mean that we always act according to reason, nor that we always reason well (in a strict, performance by performance sense of that term). Expressed in terms of the distinctions here noted, it means that as rational beings we have an *alethic orientation*, that is, that our rational attitude and the methods we employ as rational beings (as a way of navigating or negotiating the world) are generally oriented towards the truth.

In keeping with Peirce’s triadic framework, logic would seem to be one of three main ways in which we as humans are generally oriented in the world, the other two being our aesthetic and our ethical orientation. Following this, we may say that there are three distinct (but related) compasses that we as humans use in orienting ourselves in the world: A) an *aesthetic compass*, B) an *ethical compass*, and C) an *alethic compass*. Our *aesthetic compass* is generally oriented towards the *admirable* (i.e., what stands as an end *in-itself*); our *ethical compass* is generally oriented towards the *ideal* (as the end proper to conduct in general); and our *alethic compass* is generally oriented towards the *true* (as the end proper to the conduct of thought). Each of these modes of orientation has a corresponding normative science, a theory of what “*ought to be*” for each. Thus, Aesthetics is aimed at “right being,” Ethics is aimed at “right effort,” and Logic is aimed at “right reason” (i.e., “that which shall be conducive to our ultimate aims”; Peirce 1903a, p. 144; Peirce 1903e, p. 252) Each mode of orientation also has a corresponding “faculty” or power associated with it: 1) the observational powers of the “faculty of the artist,” 2) the attentive power of “resolute discrimination,” and 3) the “generalizing power of the mathematician.” (Peirce 1903b, pp. 147-148) These correspond, once again, to the three moments or ‘dimensions’ of mind, namely, Sensation, Attention, and Thought. (Peirce 1913, p. 471) The position I’m outlining here is, of course, another play upon the traditional triad of the Beautiful, the Good and the True. Unlike some thinkers, however, I don’t think we need be particularly embarrassed about that. In fact, I think such an affinity stands as a point in its favor.

Part of our *alethic orientation* is our general tendency to achieve the settlement of belief. In fact, in one respect the settlement of belief is itself an expression of our *alethic orientation* (its constitutive manifestation or lived expression as it were). For belief, broadly understood, is the development of general tendencies or habits aimed at successfully realizing or making actual what ought to be. But this end is not something that can ever be factually achieved. It is instead more like a regulative ideal, an absolute limit to which inquiry stands, and can only stand, in an asymptotic relation. The real measure of rational inquiry is thus not consensus or the resolution of opinion as such, but growth or movement towards that end. Put most simply, the ultimate aim of reason and argumentation (in their most general sense) ought to be, not consensus as such (which can

easily be misconstrued in dangerous ways), but the growth of a *community of individuals* in the broadest, deepest, richest, most truthful senses of those terms.

In the course of this conclusion I have made several references to the ideas of hope and despair. These are not subsidiary or secondary notions here, introduced solely for rhetorical effect. Instead such notions lie at the heart of what it means to be reasonable, to be logical. For central to the aim of making the world more reasonable is the rational obligation, the logical imperative to never give in to despair. For to despair is to lose all hope, and to lose all hope is to give up on reason, to give up on the possibility that concrete facts can be brought under the governance of more general, more reasonable purposes, aims and ideals. For reason's proper role or function is to bring compulsive, factual conditions under the general guidance or governance of more reasonable purposes, aims and ideals for the effective conduct of life. Such aims or ideals include the pursuit of what is admirable, what is good, and what is true, for these cover, generally, the ultimate aims of all conduct (properly understood). To fulfill its function as a reliable and effective aid to conduct, reason must necessarily include within itself the hope that compulsive facts can be brought effectively under its direction or guidance. Without this hope, reason can have no effective role, no justification for the energies and resources it requires. Put most succinctly, *without reason there is no hope, and without hope there is no reason*. Some might protest that this is untrue, that hope can be grounded in something other than reason, in justice or tolerance for example, or in play or love. But there is no conflict here, no real opposition, for reason as here portrayed is no tyrannical force, no totalizing power with colonial aims of oppression and control whose effects would entail some deadening conformity or lifeless homogeneity. Such notions rest upon the presumption that reality (and with it, reason) is a closed, deductive system where an increase in Breadth entails a corresponding decrease in Depth. But if Peirce is right, then Breadth and Depth, inclusion and difference, community and individuality, need not stand in inverse proportion to each other. If growth in any genuine sense is to be possible at all, then Breadth and Depth, inclusion and difference, community and individuality must be able to increase conversely. If not, reason and the governing power of norms have no real place in the world. For it is only through the possibility of a converse increase in Breadth and Depth that things can grow and become more reasonable in any ampliative sense. As for the threat of reason becoming a tool of oppression and control, these too would be inconsistent with genuinely reasonable aims. For to aim at making the world more reasonable necessarily requires recognizing the fallibility, revisability and inherently provisional character of all beliefs, however firm and true they might appear. This includes the possibility that sometimes the most rational thing to do might be to loosen the reins of reason itself.

But in practical affairs, in matters of vital importance, it is very easy to exaggerate the importance of ratiocination. Man is so vain in his power of reason! [...] Those whom we are so fond of referring to as the "lower animals" reason very little. Now I beg you to observe that those beings rarely commit a *mistake*, while we _____!... The very fact that everybody so ridiculously overrates his own reason is sufficient to show how superficial the faculty is. (Peirce 1898, p. 31)

Recognizing the limits of reason does not entail mere subjectivism or relativism, for to hold that one's reason is fallible, that a belief is provisional and revisable does not prohibit such a belief from being a legitimate and rationally warranted ground for action.

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The claims that I am making here, for example, are provisional and fallible and will almost inevitably need to be revised and altered as they are subject to more critical scrutiny. But though they are provisional, I am also confident enough in them (and that is all we need for conduct proper) to submit them for the consideration of others. It is, after all, the only reasonable thing to do.

[Link to commentary](#)

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