In Charles S. Peirce in His Own Words: 100 Years of Semiotics, Communication and Cognition. Eds. Torkild Thellefsen and Bent Sørensen. Routledge, 2014.

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12 Reasoning is Communal in Method and Spirit

> It may seem strange that I should put forward three sentiments, namely, interest in an indefinite community, recognition of the possibility of this interest being made supreme, and hope in the unlimited continuance of intellectual activity, as indispensable requirements of logic. Yet, when we consider that logic depends on a mere struggle to escape doubt, which, as it terminates in action, must begin in emotion, and that, furthermore, the only cause of our planting ourselves on reason is that other methods of escaping doubt fail on account of the social impulse, why should we wonder to find social sentiment presupposed in reasoning? As for the other two sentiments which I find necessary, they are so only as supports and accessories of that. It interests me to notice that these three sentiments seem to be pretty much the same as that famous trio of Charity, Faith, and Hope, which, in the estimation of St. Paul, are the finest and greatest of spiritual gifts. (CP 2.655, W3: 285, 1878).

This quotation from "Illustrations of the Logic of Science: The Doctrine of Chances" (1878) is found among Peirce's most detailed and explicit statements of his social theory of logic. Other statements include passages from "Grounds of Validity of the Laws of Logic: Further Consequences of Four Incapacities" (CP 5.356–357; W2: 271–272), and his famous statement from "How to Make Our Ideas Clear" that "The opinion which is fated to be ultimately agreed to by all who investigate, is what we mean by the truth, and the object represented in this opinion is the real" (CP 5.407; W3: 273).

It is one thing to hold that our conception of truth and reality is logically connected with our conception of inquiry indefinitely extended. It appears to be quite another thing to hold that our very capacity to be reasonable and logical is bound up with our moral commitments to some hypothetical community undertaking all that inquiry. Can't a person be quite logical, as far as they are able, independent from anyone else's capacity to be logical as well? Don't we confront the supreme truth of logic individually, to be judged as illogical separately and blamed separately? No one is saying that any typical person's logicality reaches perfection alone; but what average logicality a person may possess surely can't depend on how logical a neighbor may happen to be. Why must I have any social concern for my neighbor's reasonableness in order to preserve my own? Finding social commitments at the heart of rationality is radical enough; declaring social sentiments and even virtues to be necessary for logic

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seems impossible. Besides, doesn't Peirce repeatedly warn against reducing logic and the validity of its norms to what any number of people are able to feel or think? Logic cannot be reduced to psychology, since logic is about what reasoning ought to be. Minds are right to use logic because of its independent validity, not because many minds happen to already be somewhat logical (see e.g. CP 2.7; CP 2.52; CP 2.55; CP 5.125).

We must ask why logic's independent validity would involve anything about people or groups of people. Peirce's answer is that logic deals with the contingent validity of actual thinking about realities through signs, unlike mathematics, which concerns pure relations necessarily holding between abstract conceptions. "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" (CP 1.191). Logic concerns "the process of inference, or the self-controlled formation of new belief on the basis of knowledge already possessed" (CP 7.276). What is inference? "Logic is obliged to suppose (it need not assert) that there is knowledge embodied in some form, and that there is inference, in the sense that one embodiment of knowledge affects another". (CP 2.66) By 'knowledge' Peirce never means justified true belief, since the truth of a belief is what knowledge aims for and never takes for granted (since all knowledge is fallible). Rather, knowledge is simply justified (so far) belief, which grew from past learning and is presently relied upon. If there is perfect knowledge attained now, no one could know that: "Perhaps we may already have attained to perfect knowledge about a number of questions; but we cannot have an unshakable opinion that we have attained such perfect knowledge about any given question" (CP 4.63).

The instability and unreliability of knowledge, so far as anyone can tell, makes an odd contrast with Peirce's insistence on the absolute validity of logical laws for inference. That perfect validity is contaminated, so to speak, with the way that premises of knowledge about facts are involved with all inference (unlike inferences in pure mathematics). Suppose one reasons that "Given any event A (granting conditions C), then event B occurs". What makes this proposition actually true? Only the reality that B occurs wherever and whenever A-in-C occurs. Where is this truth-making reality? Anywhere that A-in-C could occur – potentially anywhere in the universe, now or into the future. Practical reasonings about trees from seeds and toast from toasters don't involve the whole universe, yet a vast four-dimensional space-time region on and near earth into its future is still involved. Theoretical science potentially involves the entire cosmos from its origin to its destiny. Knowledge aims at truth, which is to say reality, so any particular instance of reasoning is but a sampling of all possible

tests of this reality. "[R]easoning may not be logical, because the rule may involve matter of fact, so that the reasoner cannot have sufficient ground to be absolutely certain that it will not sometimes fail. The inference is only logical if the reasoner can be mathematically certain of the excellence of his rule of reasoning; and in the case of necessary reasoning he must be mathematically certain that in every state of things whatsoever, whether now or a million years hence, whether here or in the farthest fixed star, such a premiss and such a conclusion will never be, the former true and the latter false" (CP 4.477).

No actual reasoner will be in a personal position to know about the cosmos's total compatibility with an inference. As a lone reasoner, a person has access to only an infinitesimal sampling of reality for facts and confirmations of inferences. Nevertheless, reasoners do place firm confidence in their inferences in order to live. Skeptics unable to find guaranteed knowledge about the world have an ally in Peirce, but those who play at total skepticism towards any partial knowledge are alone (and complete skeptics are non-existent). People controlling the modification of their body of knowledge with beliefs acquired from inference are practically committed to the validity of those inferences. Hence there are logical sentiments. Not only do people reason for a purpose, they reason with purpose. When they reason, they do it with purpose by selecting reason, reasoning with care, and committing to where reason leads. When reasoning occurs, people are willfully controlling their minds in habitual, methodical ways with the aim of growing knowledge towards truth.

Another odd contrast arises here, between people committing to the growth of their own knowledge through inferences, and Peirce's insistence that only all relevant reality could make those inferences valid and true. Why should Peirce expect people to commit to matters which by definition they shouldn't think has much chance of being true? Given the enormity of reality, the only reasonable person may be the one who admits, "My little body of mere opinions from my own experience is barely enough to live on, and it shall have to suffice, for I haven't hardly any reason sufficient for knowing more". This humble skeptic, if truly unable to communicate knowledge with others, would only grow a miniscule amount of learning and regard every chain of inference with great suspicion. But the lone inquirer is logically impossible – nothing which this lone inquirer does to relieve doubt (if any arose) and grow knowledge could be done with any confidence, so this person could not be logical at all. A less humble skeptic won't commit to any logical rules until they are logically justified, and then complains that neither foundational nor circular justifications can suffice, leaving this skeptic without a logic and hence without any knowledge or reason.

The only reasonable people are those taking the growth (however limited) of their knowledge to be real. If growth of knowledge is real, then logical inquiry

cannot be solitary, and hence logicality must be communal. Communal inquiry requires communication of knowledge, in turn requiring not only the acceptance of facts from others, but also the acceptance of others' inferences. Naturally, one would refuse to accept others' knowledge if no confidence could be placed in them, but on the supposition that growth of knowledge is anywhere real, one must logically place some confidence in the knowledge of others. This credulity towards others' knowledge both arouses doubts towards one's own knowledge as well as inspires joint inquiry to improve knowledge. One must commune with all those capable of communication, and regard logicality as well as knowledge as continuously distributed and growing within a community rather than the possession of solitary people. (This is Peirce's solution to the 'problem of the criterion' raised by traditional skepticism – see CP 5.327; W2: 247). In short, it is impossible for one's knowledge to grow unless the knowledge of others in the community is growing in concert. The logicality of committing to this growth of communal knowledge is the logical virtue of Charity.

Furthermore, no one could reasonably place confidence in any single arbitrary community of actual knowers, for that would be equivalent to trusting just one other random person, or just oneself. Therefore, the only remaining option is to place one's confidence in an idealized community of all possible inquirers of which oneself and one's local community is but a part. Going further, it is insufficient to think that knowledge is growing just because one's local community is regarding itself as part of this indefinite community; whether knowledge is really growing depends on how well this indefinite community would be able to receive communication of, and then confirm, your local community's inferences. That is to say, not only must your local community view itself within this indefinite community of inquirers, but it must prioritize what that indefinite community would confirm, committing itself to the principle that only this indefinite community's broader judgment validates local logicality. One must regard one's own logicality to be intrinsically involved with communing together with all those inquirers similarly capable of communing with this indefinite community. The logicality of committing to this indefinite community is the logical virtue of Faith.

Finally, because only that indefinite community's judgments could validate local logicality now, each inquirer must not take that community to be merely hypothetical as an imagined conception, but as potentially real for an indefinite amount of time into the future. Only that indefinite community's ultimate knowledge would be able to approximate the actual reality of the cosmos and closely approach truth. One's logicality at present does not really depend on whatever tiny sampling of reality and modestly designed methods of reasoning one's local community has been able to achieve, but whether the ultimate judg-

ment of that indefinite community would approve. One must regard one's own logicality to be intrinsically tied to what an actual community of ultimate inquirers would eventually determine. The logicality of committing to this ideal community surviving past any definite period of time is the logical virtue of Hope.

In short, people can regard themselves as reasonable and capable of knowing objective reality to any degree only if they first commit to the ideal of logicality itself, and then commit to the logical virtues of Charity, Faith, and Hope in that order, with respect to this indefinite community of inquirers. Peirce says a great deal about logicality, but he does not expand upon the three highest logical virtues, nor does he explain what communities of people satisfying these virtues specifically do to exemplify these virtues. Virtue in this context of 'social' logic probably means for Peirce something like an ethical habit, a deliberately adopted disposition regarding the promotion of communality. Peirce does cite ethics as a crucial aid to his reflections on communal logicality (CP 1.191; CP 1.576; CP 2.82; CP 2.198; CP 4.240; CP 5.35; CP 5.111; CP 5.533).

We can question the ethical habits of inquiry communities already using scientific methods (rather than tenacity, authority, or a priori methods). These communities are loyal to logicality in principle, not merely by pursuing its own scientific inquiries, but also by refusing to compromise with any non-scientific community. Scientific communities frequently encounter intellectual communities based on tenacity, authority, or a priori methods. For example, dialogue between science and religion (where tenacity and authority dominate) is fruitful when heightened understanding of science can result, but nothing about science should change in the process. Peirce envisioned a 'scientific' theology in "A Neglected Argument for the Reality of God" (CP 6.452–493) to induct religion into scientific inquiries. Science also encounters philosophical systems based on a priori methods. Intellectual communities self-satisfied with their own intuitive reasons make complaints about incompatibilities between their reasons and scientific methods or knowledge. Some a priori communities think they can intuitively or rationally know reality better than science, leading to transcendentalisms; others only maneuver for a relativistic situation where they can't be disproven by science, leading to dualisms. Again, loyalty to logicality demands that science refuses to be impressed by illusory a priori realities, and refuses to admit any limitations to its logical reach. Science's loyalties to naturalism over transcendentalism and scientism over dualism are demanded by the ethics of science.

After devotion to logicality itself, the three highest virtues for inquiry communities – Charity, Faith, and Hope – demand characteristic excellences. An inquiry community exemplifying the spirit of Charity will pay due respect and

consideration towards the knowledge of other inquiry communities, past and present. The precise methods used by different fields of science, for example, may not look much like each other, yet these fields are prepared to use each other's knowledge where relevant, and seek coherences where possible. The virtuous habit of Charity will be exemplified in Consilience – fields of science care about their coherences and convergences regardless of whether inquiry methods are identical.[2] Sometimes neighboring fields will converge in method and knowledge to the point of merger, but Charity does not demand widespread unification or reduction of many sciences to a few sciences or just one. Consilience does demand some sort of connected naturalism, in which logical and ontological relationships connect every science with at least one other science to link all sciences. This continuous perspectivalism finds a place for every science and yields a general survey across all known reality, so that reality "hangs together" without any absolute discontinuities or ontological dualisms. Aristotle's naturalism was an early vision of this consilient naturalism.

An inquiry community fulfilling the virtue of Charity may or may not also fulfill the virtue of Faith. Seeking consilience among communicative sciences is one thing. Conducting science with a view towards communing with an indefinitely enlarged community, with whom mutual communication and comparison may be impossible, is quite another matter. How can our science commune with any broader community of intelligent inquirers that may learn of our knowledge someday, long after human inquirers are extinct? To conduct inquiry with a view towards ensuring that any future inquirers could understand our knowledge and perhaps make some small use of it, is to conduct inquiry with an attitude of profound Faith. Faith makes different demands on inquiry communities than Charity. To make our science useful to any inquiry community later surveying what we have learned, the design of scientific methods must be carefully considered. To fulfill Charity, respect for scientific perspective is needed; to fulfill Faith, perspective in science becomes a problem. Science must control its terminology (CP 2.219–226) to avoid cultural parochialism and control its theoretical laws to ensure perpetual confirmability. (Consider the difficulties understanding Mayan or Babylonian scientific texts). From terms for measurement (compare 'one yard' with 'one meter') to theoretical terms (from 'impetus' to 'inertia'), and on to the very conception of 'laws', 'forces' and 'energies' of nature along with 'space' and 'time' in themselves – they all must be stripped of intuitive local meaning or replaced by invented terms to become the skeletal framework for truly scientific logicality. Scientific terms must be defined in ways that any intelligence could decipher, and scientific laws must be sought which could be tested, and perhaps confirmed, by any intelligence anywhere in the universe. This is the Galileo-Einstein revolution in science: Relativity is the fulfillment

of the scientific virtue of Faith. Consilient naturalism and universal relativity are quite compatible (today's cosmology satisfies both, for example) so long as sciences can communicate with each other and commune with any future intelligence.

Finally, an inquiry community fulfilling both Charity and Faith has the opportunity to fulfill the virtue of Hope. We are almost powerless to influence the far future of all intelligence in the universe, but failing to try is the surrender of Hope. Devotion to Hope demands far more than the basic virtue of logicality. It is one thing to prevent science from compromising with other cultural forces in the pursuit of truth; it is quite another to instill science as the truly all-pervasive force in culture. To encourage not merely the survival of science, but to grow scientific culture (including scientific ethics and aesthetics) into the greatest guiding force for all humanity and anything that make evolve from humanity, is to promote Hope. To control civilization towards a thoroughly scientific future, to shape it as an exemplary model of reasonable civilization regardless of its own eventual extinction, is to fulfill Hope.

Reasoning is communal in method and spirit. Consilient naturalism, universal relativity, and reasonable civilization are the communal exemplifications of the three highest scientific virtues of Charity, Faith, and Hope. The virtuous growth of communal reasonableness, not coincidentally, meets Peirce's expectations about the *summum bonum* (CP 1.191) and the harmonious destiny of the cosmos.