Peirce, Popper, And Putnam: Abduction, Reason, And Consequences

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This paper takes up and considers three different, but interlaced, aspects of what C.S. Peirce termed "abduction." First, we consider abduction in its non-rational aspect, and then take note of two undesirable consequences of it should it be divorced from rational, critical contexts. Thus, abduction is taken to be the initial phase of epistemological inquiry, and is shown to be at least in part a non-rational act of creativity, imagination, or insight; an employment of instinct. Abduction is then seen, when consequently unelaborated or uncriticized by pragmaticistic means, to produce relativism. Likewise, abduction is found, when consequently unaided or unexamined by such rational means, to lead to mechanicalistic formularies for knowledge. On this view of abduction as a non-rational enterprise, the discovery of explanations or hypotheses, while hopefully well-prepared by rational but not necessarily deterministic means, occur in moments when ordinary considerations of rationality and irrationality are in abeyance. But such non-rational enterprises should be conducted within a rational, pragmatic context of criticism, else our two undesirable consequences become troublesome.

We begin with the question, "How should abduction be viewed?" Hilary Putnam reminds us, in the eighth paper of his *Reason, Truth, and History* entitled "The Impact of Science on Modern Conceptions of Rationality," of the familiar understanding that abduction is, as we say, reasoning to the best hypothesis or "inference to the best explanation (Putnam 1981: 198)." This we ordinarily understand as the trial approval of an already present hypothesis or explanation although Putnam, at least in this particular context, does not himself elaborate on possible meanings of such phrases. One part of the answer to our question, "How should abduction be viewed?" then, is that abduction is the overtly rational selection and approval of hypotheses after their origination. This says nothing, however, about their origination as a logically discriminated part of critical investigation.

Putnam goes on to use Darwinian evolution by natural selection as an example of such a "retroduction," as abduction is sometimes termed, while adding that, to some, Darwin's theory seems not strongly falsifiable in either a Peircean or Popperian way. Nicholas Rescher having pointed out that Peirce's general method "... is virtually indiscernible from the conjecture-and-refutation model of scientific inquiry advocated by K.R. Popper in the present century" (Rescher 1978: 41-42), we may consider the views of Peirce and Popper in tandem. In the latter case,

Putnam points up Popper's objection, now outdated and indeed abandoned by Popper no later than 1977 in, of all places, the First Darwin Lecture at Cambridge, that indeed Darwin's theory of evolution by natural selection is not strongly falsifiable and so should be discarded as a candidate for so-called "scientific" knowledge. This is a curious disagreement, Putnam saying in 1981 that, in effect, "Popper rejects evolution" when, as noted above, Popper, to use his own self-description, uttered a "recantation" in the matter years earlier (Popper 1977, in Miller, ed. 1985: 242-243). Putnam says that, indeed, abduction in just the sense of reasoning to the best hypothesis was in fact "... exactly the kind of inference that Popper wanted to *drive out* of science." So it isn't just that "Popper rejects evolution" was true for a time and then became false, but that the whole category of so-called "inferential" processes from which evolution by natural selection is an example, abduction, is rejected. But it is not at all clear that Popper really did want to drive abduction out of science altogether, or that he considered abduction solely "inference to the best explanation" in the sense we have detailed above, namely, the overt rational selection of already-originated hypotheses. We shall return, below, to this issue in Popper, but for now let us push this "approval" understanding of abduction one step further. If choosing, rationally, a hypothesis from a presented or definable list equates with abduction, still nothing is said about originally how such a list came to be composed, supplemented, or modified. This odd disagreement about Popper and his views on evolution contributes to our examination of abduction as a non-rational phenomenon and as the initial phase of a pragmaticistic investigation in two ways, thanks to Putnam and Popper themselves.

In an earlier essay from the same volume entitled "Two Conceptions of Rationality," Putnam makes mention of how Wittgenstein, in *Lectures on Aesthetics*, compared Darwin's theory unfavorably with theories of physics. Putnam quotes Wittgenstein for physics as saying "One of the most important things about an explanation is that it should work, that it should enable us to predict something. Physics is connected with Engineering. The bridge must not fall down." But against evolution Wittgenstein opined "People were certain on grounds which were extremely thin ... In the end you forget entirely every question of verification, you are *just sure* it must have been like that." Interestingly, Wittgenstein weighs in, in the same context, with the observation "Couldn't there have been an attitude which said: 'I don't know. It is an interesting hypothesis which may eventually be well confirmed (Burret, ed. 1967: 25-26).'" This latter observation of Wittgenstein's is clearly pragmatic in import, of course, but what about the former one? What kind of process for the acquisition and development of human knowledge involves disregard for "... every question of verification," *i.e.*, for questions of rational approval or disapproval, but which leaves us " ... *just sure* it must have been like that"?

My notion of abduction as being at least in part the non-rational flash of insight, the creative employment of and, in its moment of arisal, uncriticized entertaining of a fresh explanation or hypothesis against a new or unfamiliar problem answers to this demand. And there is evidence from both Peirce and Popper to the effect that abduction is indeed at least in part a non-rational enterprise, even if not specifically so termed. In his Harvard lectures of 1903, for example, Peirce said the following:

> Abduction is the process of forming an explanatory hypothesis. It is the only logical operation which introduces any new idea; for induction does nothing but determine a value, and deduction merely evolves the necessary consequences of a pure hypothesis ... Its [abduction's] only justification is that from its suggestion deduction can draw a prediction which can be tested by induction, and that, if we are ever to learn anything or to understand phenomena at all, it must be by abduction that this is to be brought about. No reason whatsoever can be given for it [abduction], as far as I can discover; and it needs no reason, since it merely offers suggestions. (*CP* 5.171)

And Popper weighed in on the subject some nine years prior to his "recantation" with this observation: "The initial stage, the act of conceiving or inventing a theory, seems to be me neither to call for logical analysis nor to be susceptible of it" (Popper 1968: 31). To settle a confusion from above, then, this sense of abduction which neither calls for nor accepts a "reason" for its existence doesn't seem to be something Popper wanted to dispense with in science.

There is precedent for the use of this term "non-rational," as well. As stated at the beginning of this paper and as Kenneth Ketner and others have admonished in conversation, though, one must take pains to insure that "non-rational" is not construed according to the use of "non-" in, say, a Venndiagrammatic sense: it is not *outside of* or *divorced from* reason. In the seventh essay from *Reason, Truth, and History*, entitled "Reason and History," Putnam uses this term to describe, for example, Foucault's take on why people really adopt the ideological positions that they do, writing that "... his motive for focussing on the cases he chooses is *precisely* to suggest the utterly non-rational (and, in fact, *irrational* [when implemented]) character of the real *reasons* that people have for adopting ideological positions." And as Putnam there observes, "... to the eagle eye of the Marxist sociologist or the French philosopher, almost *every* belief is 'ideological' (Putnam 1981: 160)" and so, we must assume, generated or induced in some non-rational manner. If all adoptions of ideology then, on this view, come down to non-rational, uncriticized, and, because of their exclusively non-rational character, *uncriticizable*

beliefs, then indeed the non-rational when implemented does become the irrational. Worse still, this transition to the irrational seems unavoidable, given a lack of pragmatic criticism. A collection of such non-rational and uncriticized beliefs, then, when put forward as ideological maxims for conduct, becomes relativism in spades: all members of the collection are of equal value. Rationally approved hypotheses or beliefs, if also uncriticized, display the same tendency. Likewise, either non-rationally discovered or rationally approved hypotheses and beliefs invite mechanicalism: uncriticized selections can only be maintained dogmatically. This holds for both the theoretical and abstract consideration of beliefs, and for their ordinary practical employment.

Thus, when we conduct ourselves according to the dictates of being creatures who are *rational*, we try, whenever possible in such matters, to use both relevant types of and sufficient amounts of evidence, to draw conclusions from such evidence consistent with it, and to draw such conclusions in just that way because we have used good reasoning. On the other hand, when we operate in an *irrational* manner we either ignore or distort the issues of relevancy and sufficiency of evidence, and/or employ defective reasoning, both of which are inevitable if abduction in either sense is distanced from criticism. But now, if rationality implies good reasoning while irrationality implies bad reasoning, then non-rationality in and of itself implies *no* reasoning. It is this fundamental characteristic of the non-rational that we seem to be able to tolerate and actually benefit from, under certain accompanying conditions, when dealing with some aspects of our emotional lives live love, religion, and art. But when we identify abduction as at least in part a non-rational enterprise for human *knowledge*, we become uncomfortable. And for the perfectly good, rational, reason that uncriticized non-rationality leads directly to irrational consequences.

Clearly, a non-rational insight, however well prepared, will, if not *handled rationally*, invite the *irrational.* Abduction in this non-rational sense carries with it no guarantees, but it does seem to carry with it a quite high probability that ideological relativism subjected to, or becoming the subject of, unrigorous pragmatic-seeming criticism will result in a kind of irrationality. Thus, relativism becomes not only smugly irritating, but practically and *logically irrational;* it becomes mechanicalistic dogmatism.

As Peirce observed in his "Our Senses as Reasoning Machines" of 1900, if a process of inquiry, surely including abduction in either or both of the senses we have considered, is not rationally criticized, we do indeed invite mechanicalistic dogmatism. There he remarked:

> What, then, is the use of designating some formations of opinion as rational, while others (perhaps leading to the same results) are stigmatized as blind following of the rule of thumb or of authority, or as mere guesses? When we reason we set out from an assumed representation of a state of things. This we call our *premise*; and working upon this, we produce another representation which professes to refer to the same state of things; and this we call our *conclusion.* But so we do when we go irreflectively by a rule of thumb, as when we apply a rule of arithmetic the reason of which we have never been taught. The irrationality here consists in our following a fixed method, of the correctness of which the other method affords no assurance; so that if it does not happen to be right in its application to the case at hand, we go hopelessly astray. In genuine reasoning, we are not wedded to our method. We deliberately approve it, but we stand ever ready and disposed to reexamine it and to improve upon it, and to criticize our criticism of it, without cessation (Peirce 1900/*MS*).

Thus, abduction in exclusively the post-creation "approval" sense invites, no matter how lengthy or detailed its list of hypotheses presented, either authoritarian relativism or rule-of-thumb mechanicalism. That is, again, all items in the list are of equal value, and those put irreflectively into practice can only, because decontextualized and thus uncriticizable, be maintained dogmatically. Again still, abduction in the non-rational "discovery" sense also invites relativism and mechanicalism, and further implies their progeny, which Putnam decries as Majoritarianism and Instrumentalism, if it is found divorced from its legitimate critical context. Abduction should retain its requisite but initially autonomous role within such contexts, otherwise we are likely to find any grand logic for human knowledge deprived of even the logical possibility of rigor, much less improvement.

We may then say that abduction in the non-rational sense is not just an entertaining diversion for artists, religious enthusiasts adequately proscribed, or ordinary you and me falling in love, but is a logical requirement for the avoidance of relativism and mechanicalism. Put otherwise, for knowledge to improve in any legitimate pragmatic sense I am acquainted with, non-rational abduction must be present in the right degree and in the right location, logically, and it must consequently submit itself to criticism, logically. In both amount and placement, more is better than less, assuming criticism to be pursued. This accords with the idea that, pragmatically speaking, *we do not care logically where our hypotheses come from*, assuming they are reasonably free of egoistic preoccupations and are not mere irreflective repetitions of old recipes. In this sense abduction has much to do with the Greco-Hebraic understanding of what we are pleased to translate as "prophecy," namely, the ability to *see the problem before us clearly* and as what Peirce

called a "First." And it seems that with the intelligence, background, curiosity, and initiative to so see, original explanations and hypotheses arise for us spontaneously, in an almost instinctual-seeming way. This seems paradoxical, though, saying that the origination of creative explanations happens instinctually or quasi-instinctually, for we usually consider instinct to be a necessitarian expression, a mechanicalistic if not behavioristic reaction to circumstances, only. But there is a way to consider this paradox which may allow it to resolve into a coherent logic of events.

One way to resolve this paradox would be to defend the notion that, after all, instinct is not the same as *reflex*, and that it is *reflex* which responds to so-called problems in a mechanicalistic or behavioristic sort of way. This move would save instinct from necessitarian damnation, allowing it to retain enough freedom and autonomy to generate non-rational abductions, non-rational explanations or hypotheses. But this equivocates the matter of instinct and, perhaps worse still, could be construed to suggest that any holding to a doctrine of innate ideas or innate knowledge commits the holder to a companion doctrine that innate ideas or innate items of knowledge can only function or express themselves in a strictly deterministic sort of way.

One way out of this paradox or dilemma seems clear enough, and it is one which accords with our experience, namely, to loosen the constrains on our conception of instinct. Instinct does indeed function at least in part in an automatic-seeming sort of way, a way not dominated nor informed by conscious or overt rationality, a way neither corrupted by irrational contradiction or inconsistencies. Instinct, in part, certainly seems to have an automatic character. But is the dyadic pairing of "non-rational, creative abduction" on the one side and "reflexive-seeming instinct" on the other side the whole story? Does Peirce's constant and consistent observation that genuine semiosis requires *three* players, a triadic arrangement, ring true here? What or who would this third player be? Is there a third player, at all?

Indeed there is. First, consider for a moment the possibility that instinct can be modified, changed, or actually learned. This is not to say that all our instincts can be evolved by our conscious, rational, overt efforts, for surely there is a residuum of instinctual knowledge for us, individually and collectively, that evolves only over time, through the ages, using that very evolutionary process that, at least as a theory put to certain epistemological standards, Wittgenstein disdained and about which Popper was moved to utter a "recantation." Let us set aside for the moment such long-term instincts and concentrate for a time on the short-term ones, the ones we seem capable of modifying under certain circumstances. It should not be forgotten, though, that evolution would imply that consciously modified instincts of the short-term variety might well have an impact on long-term habits, especially if thoroughly well-fixed habits function as instincts. I rely here on Peirce's notion that if two terms, here "habit" and "instinct," have the same conceivable practical bearings, then they have the same meaning; I extract from this the implication that if two such terms have *in part* the same such bearings, then to just that extent they share just the same meaning.

Now I mean something much broader here by habit than my propensity to smoke cigarettes, but this will serve as a rather good, already-known starting point for this examination of modifiable or, if you will, "acquired" instincts or habits. My desire for a cigarette with my morning coffee is almost certainly, after twenty-five years of practice, nearly unconscious, certainly unreasoned, and some combination of involuntary and automatic action. In short, I know what to do to solve my recurrent, daily "problem" without any rational effort (which doesn't, of course, rule out that in the long run smoking cigarettes may in fact be utterly *irrational*). In these respects this habit of smoking quite resembles, in its practical bearings, an inborn instinct. But unlike a truly inborn instinct, that is, an instinct like survival that is driven and regulated by our genetic codes and their interplay with our surrounding and enwrapping environment, this habit of smoking can, I am told, be changed or modified.

What I am thinking about here, though, is something even more fundamental and elemental. Consider the following extract from one of Peirce's 1906 "Pragmatism" essays proposed for *The Nation*. Note carefully his remarks about our inner and outer worlds, the acquisition of habits, and especially his description of the burning dress. And note what, exactly, his brother Herbert had learned that allowed him to act so decisively and beneficially; to act, it seems, *instinctually*.

> Every sane person lives in a double world, the outer and the inner world, the world of percepts and the world of fancies. What chiefly keeps these from being mixed up together is (besides certain marks they bear) everybody's well knowing that fancies can be greatly modified by a certain non-muscular effort, while it is muscular effort alone (whether this be "voluntary," that is, pre-intended, or whether all the intended endeavour is to inhibit muscular action as when one blushes, or when peristaltic action is set up on experience of danger to one's person) that can to any noticeable degree modify percepts. A man can be durably affected by his percepts and by his fancies. The way in which they affect him will be apt to depend upon his personal inborn disposition and upon his habits. Habits differ from dispositions in having been acquired as consequences of the principle, virtually well-known even to those whose powers of reflexion are insufficient to its formulation, that multiple reiterated behaviour of the same kind, under similar combinations of percepts and fancies, pro-

> duces a tendency – the *habit* – actually to behave in a similar way under similar circumstances in the future. Moreover – *here is the point* – every man exercises more or less control over himself by means of modifying his own habits; and the way in which he goes to work to bring this effect about in those cases in which circumstances will not permit him to practice reiterations of the desired kind of conduct in the outer world shows that he is virtually well-acquainted with the import and principle that *reiterations in the inner world – fancied reiterations – if well-intensified by direct effort, produce habits*, just as do reiterations in the outer world; *and these habits will have power to influence actual behaviour in the outer world*' especially, if each reiteration be accompanied by a peculiar strong effort that is usually likened to issuing a command to one's future self.

So, on this account, habit and instinct, in our narrowed common version, allow of self-control, of modification, of learning. Peirce continues with a striking illustration of this principle in the following note.

> I well remember when I was a boy, and my brother Herbert, now our minister at Christiania, was scarce more than a child, one day, as the whole family were at table, some spirit from a "blazer," or "chafing-dish," dropped on the muslin dress of one of the ladies [their mother] and was kindled; and how instantaneously he jumped up, and did the right thing [smothered the fire with a rug], and how skillfully each motion was adapted to the purpose. I asked him afterward about it; and he told me that since Mrs. Longfellow's death, it was that he had often run over in imagination all the details of what ought to be done in such an emergency. It was a striking example of a real habit produced by exercises in the imagination. (*CP* 5.487)

What had Herbert absorbed? Had he mechanically or literally taken in the experience of Mrs. Longfellow's death? Surely not, or it would have equipped him for but rote repetition. Was his response to the emergency based on acquired habits divorced from the world, on a mere shot-in-the-dark guess? Again, surely not. Was some innate-seeming but modifiable habit, like the bond between parent and child, involved? Surely so. No doubt our truly automatic, genetically advantageous sense of instinct is involved here, and fundamentally so, but so also involved in Herbert's abduction are three items crucial to our understanding of it, namely, that abduction is 1) the employment of an instinct which 2) relies on previous and current knowledge and experience 3) to modify itself and evince non-rational insights that can

be experimentally employed. Let us look further into the details of Herbert's abduction.

First, some sort of innate, habitual empathy towards his fellow human beings was surely involved, an innate instinct parallel to or even a part of what Peirce considered a larger instinct shared by us to abduct, in a rational universe, what can turn out to be rational explanations (see *CP* 5.173). This empathy on Herbert's part made him receptive to the previous experience involving Mrs. Longfellow, from which he learned, *in her particular instance*, what should be done. That is, he did not come to the experience of Mrs. Longfellow's death devoid of previous cognitions that might have some bearing on her situation, any more than an Einstein came to the question of a static universe unprepared. So, with the "knowledge baggage" Herbert brought to the experience, plus his observation of the phenomenon itself, he began to suspect or abduct non-rationally that perhaps there was more to this circumstance with Mrs. Longfellow than an explanation of it as an absolutely isolated incident could provide. Second, through exercises in the imagination he began to understand or "abduct as approval" that, perhaps, somewhere within all this there just might be a general maxim of action, an hypothesis to be approved, applicable to his "future self." These phases of Herbert's non-rational and subsequent rational abduction are not entirely unlike the moves in the history of medical pathology from the humoral and miasmatic theories of disease to the germ theory. Herbert produces for himself, as pathologists did for themselves, an acquired habit or instinct: he has learned what should be done. Third, he sees his mother on fire and, equipped with the appropriate acquired Habit, acts. This too appears to parallel the rise of modern medicine: no sane pathologist would use an instinct to abduct to further abduct a suggestion that the humoral approach could cure anything.

We should close this paper with a more fundamental question yet: is non-rational abduction a matter exclusively of *the instinct itself*, or rather a matter of the *employment of* instinct, adequately formed? Surely, as our illustrations with Herbert Peirce, Einstein, and various unnamed pathologists show, it is the latter, for it appears that they employed their instincts for abduction *itself* to abduct further still to the right instinct for the problem at hand. Herbert Peirce, et al., did indeed, to emulate earlier language, "infer to the best solution." Perhaps we should say that here "infer" should be understood in a completely non-technical sense. But this again would equivocate. Perhaps we should just bite the methodological bullet and simply acknowledge a non-rational division in abduction, discarding the notion of inference altogether from this species of abduction, while regarding non-rational abduction as a necessary but not a sufficient condition for the evolution of knowledge.

Notes

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