

Action Habit as Imperative: Peirce's Supreme Art

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Bionote:

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Abstract:

This inquiry illustrates how Peirce's concept of habit-change is foundational to inference-making. A 1911 manuscript features how, within the initial five years, children translate dynamic belief structures into action-habits. Insightful belief structures recommending behavior change operate as primary agents to discover new meanings. Ultimately, these novel belief structures cultivate novel explanations to resolve real-world problems/unexpected consequences.

Via index, paths are drawn offering viable solutions. Index serves a path-finder function, showing where to situate events within a sequential logical framework, informing the abducer how to proceed from consequences to premises and from one premise to another. Via index, abducers gain increased physical and mental control over logical

determinations, initially expressed in action habits. Afterward, perspectives accessed through Inner dialogue prepare abducers to handle event trajectories through greater control of action habits. These enactments transcend mimetic processes; they constitute intrasubjectively conceived insights, fashioned from instinct.

Keywords: Habit, Index, abduction, Imperative, Peirce's categories

1.Introduction

This inquiry illustrates how Peirce's concept of habit-change is foundational for the development of inferencing. Peirce illustrates this in a 1911 manuscript, in which he features how, within the initial five years, children translate dynamic belief structures into action-habits. As such, insightful belief structures recommending behavior change operate as primary agents for discovery of new meanings (interpretants) for sign-object relations. Ultimately, these novel belief structures cultivate novel explanations to resolve real-world problems/unexpected consequences.

These habit-changes defy previous belief and behavior structures – those which surface without fail. “Were the tendency to take habits replaced by an absolute requirement that the [battery] cell should discharge itself always in the same way, or according to any rigidly fixed condition whatever, all possibility of habit developing into intelligence would be cut off at the outset...” (c. 1890: 1.390). Peirce contends that habit must ultimately offer a new intellectual order of things –a preferable way of resolving an anticipated problem, ordinarily fueled by some rationale, however implied. The insistence that habits transcend blind adherence to established regularity fosters more adequate explanations for surprising events – “put[ing] together what we never before thought of putting together.”

In further support of the utility of habit to hasten inquiry, Peirce makes plain that apprehension of physical relations in Secondness constitutes habit in its elemental form only. In human ontogeny, without some mental operations beyond mere perception of co-occurring objects/events (how they contribute to particular consequences), habit would be truncated, in that it would lack the primary element of intelligent change. Some openness to divergence from previous appearances (ordinarily requiring conscious deliberation), is

necessary to qualify as full-fledged habit. This is so because Automatic iterations of appearances, beliefs or conduct obscure the apprehension of possible logical relations which might hold between concurrent events – an operation necessary to guess which factors contribute (either by instinct or by more planned processes).

Peirce features (1911: MS 674) how the categories are relevant to habit-change – facilitating recognition of logical event relations. This process entails utilizing temporal and spatial features of events (in Secondness) to anticipate their future effects. This process incorporates elements of Firstness and Thirdness, given deliberation of how events contribute to possible consequences. Thirdness operates when indexical features of the spatial and temporal context are manipulated: determining timing, and place orientation (source, movement path, destination of participants within events) (cf. West 2016a and West 2017 for further elaboration). These indexical determinations serve as imperatives because they establish the logical relations between events, thereby suggesting the implementation of the events to reach the consequence. In other words, the apprehension of the deictic components of like future event structures (orientation and location features) hastens the organization of likely episodes, hence implicitly recommending actual performance of the events themselves (cf. West 2013, and West 2015a for additional explication) – the essence of determining event relations. In this way children apprehend how one event points to particular consequences (cf. West 2014).

It is likewise critical to point out that although Peirce's notion of habit incorporates change in beliefs and action, the change need not be obvious; nor need it give rise to explicit mention of the rationale for the change. Instead, children's conduct alone may imply that a new belief structure has emerged. In short, the impetus or the source for the habit-change may be either implicit or explicit; and early inferences qualifying as habits may be implied only. In this way, habit-change can consist in intangible implicit conduct which intimates the emergence of new logical connections between two or more events as episodes (causal or otherwise); and the nucleus of one event's effect upon the other(s) defines the habit as well as the logical relationship holding between the two. It is evident then that without the component of implicit change, habit would lack its defining characteristic – that of suggesting the nature of event relations, evidenced early in

ontogeny via indexical actions.

2. Habit as Instinct

In its role as governor of event relations, habit can surface from instincts or from deliberate and/or conscious cognitive planning. With respect to the former, in 1902, Peirce refers to a habit as an instinct: "If I may be allowed to use the word "habit," without any implication as to the time or manner in which it took birth, so as to be equivalent to the corrected phrase "habit or disposition," that is, as some general principle working in a man's nature to determine how he will act, then an instinct, in the proper sense of the word, is an inherited habit, or in more accurate language, an inherited disposition. But since it is difficult to make sure whether a habit is inherited or is due to infantile training and tradition, I shall ask leave to employ the word 'instinct' to cover both cases" (2.170). Peirce selected "Instinct" rather than habit to make emphatic the spontaneity intrinsic in habit-change, given the lack of deliberation necessary to instate a new belief or action pattern. Instinct applies to tendencies of belief/conduct resultant from biological predisposition or from spontaneous flashes of novel conceptual relations. Peirce's use of "disposition" underscores both the implicit nature of knowledge acquisition, and how habits are governed by a general system of making certain that beliefs and action patterns pursuant to them are congruent. Habit-change is tantamount to abduction in that it fosters right guessing with respect to subsequent events -- a tendency to guess right in spite of blunders along the way. Peirce's deliberate use of "instinct" for habit reveals his wish to deemphasize the knowledge source (implicit, explicit). Instead, in using "instinct" Peirce emphasizes the potentiality for habits to emerge spontaneously as insights. Here patterns of belief and action have their foundation in inspiration or unplanned propositions/assertions. As such, habit carries with it both the character of spontaneously emerging guesses, together with their fit within an already constructed system of beliefs and actions.

In 1907, Peirce addresses the effects of habit as spontaneous belief/action, such that a belief habit in the form of an inference serves as an imperative for enactment -- ultimately suggesting patterns of behavior. This spontaneous nature of habit-change illustrates the

compelling effect of a set of connected beliefs upon action (EP 2: 413). This demonstrates the relevance of novel beliefs (habit-change) within established cognitive, affective and logical systems. Accordingly, Peirce distinguishes habit from “disposition,” in that (unlike disposition) habit serves a reliably directive and imperative purpose in the scheme of one’s design, thereby commanding action. It is equivocal to conducting oneself in the “same way” in “similar circumstances.” One’s actions are guided by the same percepts and “fancies,” giving rise to tendencies: “Habits differ from dispositions in having been acquired as consequences 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” (EP 2: 413). Here Peirce claims that habit as action supersedes disposition, when actual performance is compelled by dreams (“fancies”) or interpretations of events – demonstrating some new but settled upon paradigm to accommodate to the same contextual features. In producing the compelled conduct, habit entails some semblance of change by way of self-control.

In 1911 (MS 674), Peirce traces how habit-change via self-control governs inference-making. He illustrates how during infancy self-control emerges as the gatekeeper, determining whether a new belief possesses sufficient value to be implemented: “...this is a different kind of exertion being describable to a person who has experienced it as an act of giving a compulsive command to oneself. Some books call it ‘self-hypnotization,’ whatever that may signify. This [is] effective whether there be any ‘disposition,’ i.e., any imperfectly developed or otherwise imperfect habit, or not” (MS 674:14). Peirce demonstrates that self-control consists in beliefs becoming actions, “giving a command to one’s self;” because it is in the command and its enactment that one further defines the belief. It is the command that places limits and provides direction in furtherance of beliefs. Self-control surfaces consequent to the self-overseeing the self’s own mental or physical conduct, requiring some degree of conscious and deliberate internal intervention. Peirce indicates that behavior may be self-induced not from conscious effort, but from a form of self-hypnotization, such that either hypostatic abstraction or forces intrinsic to the action itself (or both) drive the command to act. As

such, one's own internal action propels physical action, persuading the self of the value of the believed cause. The influence of the performance further convinces the actor of its value to logical and practical ends – increased further by the hypnotic character of the belief.

3. Habit as Conscious Effort

Carrying out these commands from exercised action schemes is a powerful instrument to develop the determinations which are inherent in Peirce's concept of habit. Peirce identifies habit as determinations as opposed to resolutions. He defines resolutions as acts decided in a rather fleeting manner. Resolutions may, in fact, be orchestrated more than once; but they are absent genuine directives or purposes. In contrast, determinations ascend to the will to achieve a goal. To reliably achieve a particular goal/consequence, one must have generated at least a superficial will or plan to guide the subject as to which behaviors culminate in which outcomes. In this way, determinations entail some degree of consciousness; and they are promoted by an increased degree of self-control. As such, they ultimately require the implementation of metaskills to act in a certain way under certain conditions. Here consciousness informs logic to bring about knowledge of how a consequence is reached – increasing the effectiveness of the action scheme. Similarly, consciousness informs action by directing it toward a goal, hence providing a purpose.

4. Conscious Habits to Facilitate Inferential Reasoning

Peirce illustrates how consciously implementing a hunch is tantamount to taking a habit. In fact, he coins the term “habituescence” to memorialize the interdependence of objective logic and idiosyncratic insights harvested in Firstness and enacted in Secondness. Habituescence synthesizes the well-founded inference-making generated in abductions with the “creative hallucinations” which Peirce refers to in EP 2:192 (1903). Habituescence requires both consciousness of what might ultimately be acceptable in the social community or that of scholars, as well as a new seed of contemplation perceived to be plausible. In MS 930: 31 (1913) Peirce's use of “habituescence” or the “taking of a habit” obviates the need for deliberate and conscious integration of objective and subjective

factors present in determining whether a hunch reaches abductive status. Hence, taking a habit requires, at minimum, a conscious decision as to whether the insight from internal sources has some objective validity. This decision as to the plausibility of the inference demonstrates how firm internal directives influence belief and action habits (for further discussion of the action habit, cf. Kilpinen 2016; Stjernfelt 2014: 118). In settling upon a novel viable inference, the inference-maker imposes a habit change upon himself. The selection of the hunch as viable creates new mental and practical habits (cf. West 2015a), which propel conduct. As such, abductions serve as imperatives directing one's own conduct and potentially that of the community at large.

Conduct here refers not merely to actions, but also to mental habits -- habits of feeling and belief which can impel action or of cognition in which relatively invariant concepts include or exclude single events. All of these processes call us to the doctrine that structure is paramount to inferential improvements via habit change. This dynamic system is foundational to the ultimate reach for truth through inquiry, or as Peirce terms it, the "twigging of ideas" (MS 930 c.1913: 32).

The relevance of the "twigging of ideas" to abduction is unmistakable; it constitutes the impetus for opening up regularity to habit change brought about by advances in inferential reasoning. As such, abduction is inquiry-seeking; it supplies the system for guessing right in the face of an unexpected consequence—seeing future possible events as an observer. Abductions are not merely any inference, they rise to the level of inferences that suggest a novel way of resolving a problem – although they need not be correct in their initial form; ultimately they uncover the "truth at last" (1903: EP 2: 250). Peirce augments this claim with the pronouncement that alternate means to come to the truth (belief-changes) after operating on several hunches, validates the need for habit change. In fact, this unrelenting search for better explanations comes unbidden from "our dear and adorable creator" (1911: NEM III: 206).¹ Settling upon new habits of mind and action through inferencing then naturally requires guessing right even though in 1895, Peirce indicates that guessing can in fact be wrong on many occasions (EP 2: 24). Nonetheless,

¹ Peirce continues in the same vein: "It is the side of human intellect that is exposed to influence from on high" (1911: NEM III: 206).

eventually we come to guess right by natural means: "Thus, suppose a quantity of inscriptions to be found in a wholly unknown mode of writing and in an unknown tongue. To find out what that writing means, we have to begin with some guess. We should naturally make the most likely guess we possibly could; and that is an inference. Yet it is considerably more likely to be wrong than right".

The fact that belief changes/abductions can be fallible suggests that human agency enters in (consciously or unconsciously) to exert some form of control over the integration of the arguments making up the hunch: "The abductive suggestion comes to us like a flash. It is an act of *insight*, although of extremely fallible insight" (1903: 5.181). Although hunches come to us in a "flash" of insight, they are still subject to handling, on the part of the abducer. Consequently, despite the non-deliberate nature of their emergence into the mind, thereafter their viability must be considered by the abducer – and hence consciousness to least to a minimal degree must validate the utility of the hunch. In short, habit-changes consequent to abductions ordinarily proceed from uncontrolled to controlled thought. By controlled thought Peirce refers to more conscious and rather creative processes. Here abductions are the very essence of habit change, such that they offer a new explanation for an unexpected consequence. In fact, the puzzling consequence itself serves as the impetus to develop novel inferences. In 1903, Peirce expands upon this process: "The surprising fact, C, is observed; but if A were true, C would be a matter of course..." (5.189). Hence, there is reason to suspect that A is true. If my assumption is true, then the consequence would surface as a matter of course. Abducers must consider the event in reverse (hence Peirce's use of "retroduction"); events are turned on their face—from consequence to contributing factors. The non-canonical character of abductions becomes the catalyst for employing index consciously, to reconstruct event relations. As such retroductions force abducers to transcend automatic and formulaic states of affairs (cause to effect), permitting potential contributory factors to be isolated. In short, without engaging in retroduction (looking back from the puzzling consequence), without tracing back to the precedent events, determining plausible causes would be constrained to automatic preconceived templates, which would not qualify as habit at all given their mechanistic character. In short, forcing one's self to look backwards at the events which may have led up to the unexpected consequence appears to be a necessary operation to

discern event relations.

In fact, the ultimate purpose of retroductions is to introduce a novel indexical template for a state of affairs—to suggest new action habits: “It will be remarked that the result of both Practical and Scientific Retroduction is to recommend a course of action” (1909: MS 637: 12; cf. West 2016a). Peirce’s pragmatic emphasis informs us that prior to making a determination about the viability of inferences. Pliability of event relations and reconstitutions of event shape are paramount. Opening up new pathways via indexical relations – one event declaring that another is near in space and/or time – hasten well-formed course of action to resolve the puzzling finding. As MS 637 indicates, these retroductions give rise to recommendations for new viable courses of thought and action for oneself and/or for others.

5. The Role of Action Habit in the Ontogeny of Abduction

In MS 674 Peirce divulges how the analysis of retroductive reasoning develops into the means to take a habit. Seven stages toward “the supreme art,” are outlined here, illustrating the ontogeny of habit change. Here Peirce demonstrates advances in inferential reasoning which culminate at 5;0: “When once the regular lessons in The Supreme Art are begun, the principal points to be inculcated are these: 1st, how to make an effort; 2nd, how to make a great effort, preceded by that mysterious action, or brief voluntary process, (it should be deliberate) by which the various elementary powers that are to be simultaneously put forth on the ‘great effort’ may be coordinated. This power of ‘gathering one’s forces’ is an art (and as such a habit); and is to be cultivated on the same general principles as any other; 3rd, how a performance is to be facilitated by repetition; 4th, how it is still more facilitated by intense attention to the precise modes of effort and precise feeling of effort at each stage of the performance; 5th, how the breaking up of the performance, in its rehearsal, into simpler parts, so as to practice upon each of them separately, facilitates it;” (MS 674: 11-14 c.1911). The first stage entails how to make an

effort. This stage consists in both Firstness and Secondness.² Firstness operates when feelings are brought to bear upon a narrow examination of a single feature of an event/object. It is feeling that is responsible for the narrow focus on a particular object/event feature.

Index becomes critical when Secondness controls. The relevance of haecceity in exacting attention to features of the here and now requires the presence of signs which force attention on changes in location and orientation of objects and event participants (cf. West 2013 and West in press for elaboration on the ultimate role of index). In Secondness, index suggests logical relations proposed to hold concurrently. By performing in episodes, children model their hunches (cf. West 2017); the performance via action schemas both organize the episode (temporally and spatially), and suggest a cause and effect paradigm.

Nonetheless, neither analysis nor synthesis of action interrelations is operational at this first stage, merely an expressive focus. Hence, in the first stage, only a form of proto-inferencing surfaces. It is so, particularly consequent to the rather mechanical nature of the habit. What is obviated at this stage is a look toward a physical pathway absent any focus on source and/or goal. Only when inferencing suggests a habit-change can it qualify as abductive reasoning; absent the element of accommodation to an unexpected consequence, any reasoning falls short of truly inferring. For an inference to become abductive, the purpose or relational effect of precedent events to the consequence must be primary.

What differentiates Peirce's initial stage, "how to make an effort" from the second stage, "how to make a great effort" (MS 674: 11-14 c.1911) is increased dependence on Secondness, rather than on the category of Firstness which pervades in the initial stage. Peirce characterizes this next level of exercising and harnessing regularities in the physical world as "making a great effort." In doing so, children begin to coordinate schemes which beforehand were quite disparate/undifferentiated, e.g., coordinating vision with reach in prehension (earlier these sense modalities were separate and unrelated schemes). Prehension entails targeted reaching of the hand toward particular objects (Piaget & Inhelder 1966/1969: 9-10). This represents a foundational indexical representation (West

² Although effort is a primary characteristic of Secondness (1903: EP 2:268), it does not take precedence here, given the likelihood of hypostatic abstraction (hyperfocus on a unitary object) inherent to Firstness.

2013: 36), in that it directionalizes cause and effect conduct in a regularized but not mechanistic manner—providing a path to access sought-after objects. As such, children’s directionalized conduct to attain the desired object constitutes a spatial primitive (Mandler 2010: 25; Mandler 2012: 431; West 2016a: 40). By 0;8 children’s indexical use graduates to pointing with an index finger toward an object (Bates, 1976: 61). This kind of index individuates objects for ego; it compels the child, himself, to fix his attention on the object in Secondness, given its salient qualities. This exercise functions as a self-directing behavior; it is not yet social (Bates, 1976: 61). At 1;0, pointing toward objects becomes social in nature, when it draws a triangle between three components – the agent, the engaged adult and the topic / object.

Secondness still represents the most primary of the categories, comprising effort and resistance to items in the physical world—these issues come to bear on conceptualization and the guessing instinct. In intersubjective dialogue, the imperative reinsinuates itself on a social level—explicitly expressing the imperative to act, think, or infer within a particular context in a specific way consonant with the speaker’s frame of reference. The listener must likewise infer and interpret directives based on implications from the speaker’s utterance. This developmental trajectory illustrates the reciprocal nature of habit as a form of Secondness at this age, given the primary place of effort and resistance in this paradigm: “It is inconceivable that there should be any effort without resistance, or any resistance without a contrary effort. This double-sided consciousness is Secondness” (1903: EP2: 268).

The third Peircean stage, striving toward the supreme art, is likewise rooted in Secondness, in that its focus is on repetition and coordination of action schemes (cf. West 2015a for further discussion of coordination of indexical schemes). Peirce draws attention to the fact that “...a performance [entire sequence] is to be facilitated by repetition” (MS 674: 11-14 c.1911). Repeated behaviors rise to the level of habit at this stage, because they are subject to change given their deliberate, albeit unconscious nature. Actions do not reach habit status if a goal is not in place. If the conduct in question is expressed/practiced in its entirety absent the practical import of a consequence, habit does not operate. Although advancement from one action to an action sequence can be actualized at this

stage, but the action sequences are not ordinarily separated from the goal; they constitute an undifferentiated aggregate. Accordingly, events are not typically distinct from each other. More particularly, consequences are indistinguishable from contributing events, making discernment of the weight of specific contributions rather challenging, especially for an inexperienced abducer. Once an action is affiliated with a consequence, it is not easily disentangled from the conditions under which it initially surfaced, and is impervious to habit-change.

The 4th Peircean stage illustrates intense attention to both feeling and effort simultaneously, although feeling is primary. For Peirce, the feeling is so foundational to the performance that, but for the feeling the performance would be automatic conduct only. Here the feeling is more concentrated than is the case in the initial stage -- the subject actually plans to enter a hypostatic abstraction state. To reiterate, Peirce defines the import of the fourth stage as follows: "...intense attention to the precise modes of effort and precise feeling of effort at each stage of the performance" (MS 674: 11-14 c.1911). At this juncture, children coordinate sensorimotor schemes produced earlier on as isolated units. The coordination of schemes results from translating single behaviors which once were consciously produced into unconscious and connected multisensory acts. The presence of intense feeling can interfere with conscious displays of performance, such that actions become automatic. Later in ontogeny, when self-control operates, intense feelings can be monitored; and self-control can regulate which conduct becomes conscious or unconscious. Nonetheless, intense feelings do have a critical purpose at this stage in development; they permit transcendence from automatic conduct to facilitate an awareness of even slight modifications from the original behavior scheme.

In stage 5 of his explanation of how to perfect the "supreme art," Peirce features practice of mechanical components of each action leading to the consequence: "...how the breaking up of the performance, in its rehearsal, into simpler parts, so as to practice upon each of them separately, facilitates it [the performance]" (MS 674: 11-14 c.1911). "Breaking up" the performance promotes still further coordination of action schemes. Behaviors which were first conscious single non-automatic associations become unconscious connected behaviors; upon which they again become conscious when the

linkage of individual conducts integrally relate to other minimalistic conduct. This process permits children to consider co-occurring events and co-existing conditions as potential contributors to certain consequences. Exercising this “breaking up” operation, promotes logical analysis, because it fosters the realization that co-existent factors may not connect logically to one another. What Peirce highlights here is the gradual emergence of a greater level of self-consciousness and self-control during the actual performance. This effectuates a distinct transition from behaviors which are not habit, in that they are mechanical only, to those for which reflection and hence change becomes the hallmark.

With the emergence of attentional signs in gesture and language, children are afforded further opportunities to inject feeling onto their action-based effort, e.g., pointing and demonstratives individuate for others what the child considers to be the “really critical thing!” Children’s “really critical things” amount to implied propositions and assertions which reveal inferences of an individual child. Accordingly, inferences become more explicit with the emergence of names rather than pointing words such as “this” and “that” (cf. West 2015b: 13). Names emerge somewhat later (after demonstratives), given their increased classificatory/symbolic nature. While demonstratives emerge within the first 10 words (Clark 2009: 92), common nouns surface in aggregates slightly later. The demonstrative pronoun “that” and the noun constitute habit beyond the previous stage in that, consequent to their more symbolic status; they require more developed conscious effort. Nonetheless, linguistic pointers (demonstratives and nouns) supersede action habits. Although these terms are typically accompany actions (gaze, pointing) to individuate salient objects, they rise to the status of conceptual habits when intrinsic to their interpretants is an implied comparison with other, like objects, e.g., “this” indicating all near objects within the speaker’s focus. In the earliest uses, when demonstratives are accompanied by pointing, their interpretants are largely action-based, and do not imply any similarity to other objects, but, instead may effectuate attentional imperatives (cf. West 2011). In any case, these linguistic pointers (especially in the latter use) constitute indexes impelling the user and the interlocutor to jointly direct attention to something which the signer considers to be important enough to merit individual notice. As such, feeling and effort together toward ascertaining the supreme art are obviated.

The supreme art at stage five represents an imperative to self and another that what the child noticed has sufficient merit to enjoin that other to do likewise. This imperative rises to the level of a proposition, for two reasons: 1) its growing interactive, social nature, and 2) the particularity of habit as determinations. As such, children recommend to another a precise way of resolving a problem. Indexical gestures are paramount, given the need to make salient the object/features under focus. The implied proposition here can take the form of eye gaze or a linguistic pointer, e.g., "that [animal] is an X." These deictics can qualify either as a declarative or an imperative. Were an assertion implied it might surface as follows: the signer's conviction that it is in the interest of the interlocutor to attend to or to act upon x.

6. The Modality of the Supreme Art

The last two stages toward reaching the "supreme art" (six, seven) in MS 674 (c.1911) elevate separate behavior schemes to both a deliberate and conscious orchestration of them as aggregates: 6th, how, after this analysis [in stage 5], it is advantageous to gain synthetic ideas of several successive steps taken together, and then, by successive enlargements of the synthesis, ultimately to gain a synthetic idea of how to perform the whole, the parts of every such synthesis being held together by each of them being associated with some regular fancy, the same for all of them; and this should be as simple as is compatible with its never (or hardly ever) being allowed to enter consciousness except to call on that synthetic idea. Here Peirce refers to ascertaining a "synthetic idea," and follows with the fact that such ideas are possibilities – they are "held together by some regular fancy." This intimates the necessity of conjecture, and the existence of an ultimate vision or "virtual habit" (1909: MS 620: 24-26).³ The supreme art

³ So a determination is not a habit, since, it does not result from repeated performances, on the same sort of occasions, of the sort of action that it will cause to be again performed on the same sort of occasion; but it works all the effects of habit, and is, therefore, strictly speaking, a "virtual habit." The truth is that an oft-repeated performance in the imagination on the same sort of imagined occasion of one and the same sort of action will create a real disposition to a real performance of an action on the same sort of real occasion. The effectiveness of this disposition appears to be not only as great relatively to that of a habit induced by real performances on real occasions, as the proportional vividness of the imaginations that induce it are to the vividness of the perceptions that would induce the habit, but in truth to be far greater. The effectiveness of the virtual habit relatively to that of a real habit is, I say, unquestionably than in proportion to the vividness of the imaginations that induce the former

consists in conceiving ideas idiosyncratically while, at the same time, seeking ultimate logic of event relations for others. Peirce's inclusion of "regular fancy" to hold together the distinctive events into a larger, more pervasive schema demonstrates the influence of Firstness-based creative envisionments/hallucinations to achieve the logical synthesis; and the fact that Peirce insists that they be regular without blind conformity, reifies his commitment to abduction as habit.

Peirce's seventh stage likewise commits to the import of synthesis, not derived primarily from impositions of Firstness as in stage six, rather from impulses in Secondness, emanating from effort and resistance: "...7th, how the facilitation asserted in the 4th point, where it is caused by attention to feelings, where the attention of the nature of an inward exertion of power, is perhaps even greater when a different kind of exertion is substituted for the attention to feeling, this different kind of exertion being describable to a person who has experienced it as an act of giving a compulsive command to oneself. Some books call it 'self-hypnotization,' whatever that may signify. This [is] effective whether there be any 'disposition,' i.e., any imperfectly developed or otherwise imperfect habit, or not" (MS 674: 11-14 c.1911). The level of self-control characteristic of this seventh stage supersedes the art of inner focus by icon or envisionment alone. Rather, it relies more heavily upon index in Secondness -- the self's performance of an action or set of actions, which, when orchestrated, defines the future direction of the goal. In other words, enacting the feeling from Firstness supplies more particularized imperative for the individual when it meets implementation in Secondness. In short, the action itself, or being in the process of taking that action, confirms the plausibility of the hypothesis, and propels a viable course of action producing the remedy. Essentially, an image/icon conceived of in Firstness by "self-hypnosis" can easily fade in the absence of a course of directed action (action habit) in Secondness.

The shape of these action habits toward a particular goal constitutes a structure/syntax, primarily indexical; but such motility-based structures are not without a

relatively to the vividness of the perceptions of a (...) therefore, I venture to think, be a sort of self-hypnotizing effect, when we strain, in some obscure way, to influence our future behaviour by calling up as vividly as we can the image of a given sort of stimulus and that of our responding to it in the desired way. For we seem to command our organism or our soul as if we said to it: "You will act thus: do you hear? Thus! Thus!! Thus!!!

semantic component. This meaning-based component constitutes not merely a proposition, but an implied assertion/argument, in that a planned course of conduct to ascertain a particular consequence demonstrates the performer's belief habit of the action plan's utility. Because in propositions, arguments are not explicit, they do not expressly contain assertions/explanations indicating how one behavior/event contributes to the emergence of a surprising consequence (for further discussion regarding implied arguments, cf. Bellucci (2014: 536). Children's implied propositions (such as targeted reach toward an object) might consist of: the implied assertion "X object is not merely interesting, but is an improved way of picking up the object in question, given its shape, dimensions, and pliability. Here propositions in the form of behaviors rise to the level of assertions and arguments (cf. Bellucci 2014:), despite their implied nature. The objective of many of these implied assertions/arguments is to suggest another, more viable approach to ascertain the surprising consequence. As such, they serve as imperatives – modeling how to retrieve the sought-after object." Ultimately guessing right emerges, applying merely to present objects and action habits.

The pivotal place of "action habits" in the development of abductive reasoning is unmistakable. Their representamen constitutes a depiction of the logical relationship between events and the players who take part in them (cf. West 2014: 164-165). Children's enactment of an event sequence often serves as a proposition, implying that events transitionalize from hunch or inference regarding a certain event or consequence to action and outward communication. Absent the ability to test inferences in practice, determinations would not energize the hunch to qualify it as habit.⁴

7. Dialogue as Facilitator of Inquiry

⁴ But Hell is paved with good resolutions; and therefore to this promise must be attached good security, or, in other words, the resolve, which is compared to (...) thinking, must be baked into the hard brickbat of a real determination of the habit-machinery of his organism, which shall have force to govern his actions. A determination is a virtual habit. Nota bene that the word "virtual" is one of those excellently definite English words that are derived from the lingo of medieval scholasticism, a part of our speech that, now that so many men, coming home after years spent in Germany, have somewhat lost their mastery of their mother tongue, are apt to get misunderstood. The English "virtual" and the German "virtuel" differ widely in their meanings. Virtuel seems to be a tenable synonym of möglich (possible). But "virtual," followed by any common noun, say "N," makes an appellative phrase which denotes anything which, while it is not an "N," has, nevertheless, the characteristic behaviour and properties of an "N" (MS 620: 24-25)

Peirce makes the argument that determinations, as the epistemological mechanism of virtual habit and the force behind abduction, are rooted in dialogue. In 1908, Peirce posits to Lady Welby that, "all thinking necessarily is a sort of dialogue, it is an appeal from the momentary self to the better considered self from the immediate self to the self that is general and future" (SS: 195). This dialogue constitutes a viable action habit and a supreme art -- not merely as intersubjective communication to recommend a course of action (1909: MS 637: 12), but as internal dialogue to command the self to take up a new action habit. This qualifies as forerunner of Vygotskiiian intrasubjectivity; this inner dialogue carries a command or imperative to behave in a certain way under certain circumstances, thus directing and shaping subsequent inferences (cf. West 2015c).⁵ The process of commanding the self to take up a course of action solidifies what once were fleeting beliefs—making them determinations. Through self-talk or inner speech children specify the integral structure of how events logically serve one another; then they enact such – and find greater success targeting action to goals/consequences.

Once inner speech begins making explicit arguments which were implicit, they can then obviate inferences; and decisions regarding which inferences are explanatorily adequate can be proffered. It is obvious then, that internalization liberates the working memory system – by providing increased utility for operations of inferential reasoning (cf. Baddeley 2007: 198-203 for a more detailed account of the functionality of the working memory system). The resources which were needed in working memory to identify viable factors contributing to the surprising consequence and to articulate them (step-by-step), can then be filled with determinations of how unexpected consequences materialize. At this juncture, when thought and language become one and when signs become more mental, working memory has increased means to administer semiotic and logical relations. This paradigm of giving voice may well proceed according to Vygotskii's paradigm of: articulated arguments, to whispered arguments, and finally to a form of inner speech – arguments which mature in the mind (Vygotskii 1934/1962: 16-17, 149). This shift in the

⁵ “[To] believe the concept in question is applicable to anything is to be prepared under certain circumstances, and when actuated by given motives, to act in a certain way” (1907: EP 2: 432).

functionality of working memory resources permits children to more effectively reflect upon a greater number of arguments simultaneously, establishing new means to govern facts, would-bes, and possibilities. The internalization of language actuates a higher and more efficient course of mental action -- integrating assumptions and determining which hunches are reasonable about states of affairs. This higher mental capacity introduces new habits (habit change), which ultimately facilitates abductive reasoning.

Inner/intersubjective dialogue provides a new forum to repackage action icons into more symbolic signs, and to convert energetic Interpretants into Logical ones. Children ascertain new Logical Interpretants by using more refined semiotic instruments (cf. West in press). Furthermore, alterations in the objects and interpretants of index give rise to new semiotic instruments; and learning to use these instruments to advance the state of logic toward reaching the "supreme art" is Peirce's primary objective. Engaging in intersubjective dialogue demonstrates how index is responsible for advancing to higher levels of semiotic functioning – from physical signs to physical objects virtually devoid of an interpretant, to linguistic indexes whose objects and interpretants trace perspective-shifts. In the latter case, index shapes either intrasubjective event constructions, or alternation of event partners.

8. Conclusion

Peirce's concept of action-habit constitutes an indispensable indexical tool to foster inferential reasoning. It hastens discovery of event relations – clarifying unspoken assumptions by utilizing inner dialogue to enact them. As such, regularized action or action habits (courses of action) frame and reframe implied arguments to make them explicit.

Via the patterned and dynamic nature of index necessary paths are drawn toward offering viable solutions to reproduce or avert consequences. Habit here serves a path-finder function, showing where to situate events within a sequential logical framework, informing the abducer how to proceed from consequences to premises and from one premise to another. Peirce encapsulates the ontogeny of this process in MS 674 (c.1911), when he demonstrates how his categories (Firstness, Secondness, Thirdness) bring the abducer to increasingly higher levels of physical and mental control over logical

determinations – initially through hypostatic abstractions in Firstness, and afterward via action habits in Secondness. Mediating between the two is a Thirdness-based operation -- inner dialogue which prepares the abducer to handle event trajectories through action habits. These enactments transcend mimetic processes, in that they are idiosyncratically conceived insights (not intersubjectively derived) typically fashioned from material elements of instinct. These primary Firstnesses are then bundled into Secondnesses when regulated courses of action, in turn, shed light upon novel event relations.

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