

International Journal of Education & the Arts

Editors

Christopher M. Schulte
Pennsylvania State University

Peter Webster
University of Southern California

Eeva Anttila
University of the Arts Helsinki

Mei-Chun Lin
National University of Tainan

<http://www.ijea.org/>

ISSN: 1529-8094

Volume 19 Number 13

May 16, 2018

In Search of Our Beginnings: Locating ‘Firstness’ in Arts Education in the Service of Advocacy

Cary Campbell
Simon Fraser University, Canada

Citation: Campbell, C. (2018). In search of our beginnings: Locating ‘firstness’ in arts education in the service of advocacy. *International Journal of Education & the Arts*, 19(13). Retrieved from <https://doi.org/10.18113/P8ijea1913>

Abstract

Attention to sub-conscious and pre-conceptual cognition is often neglected in educational research and theory, which, through failing to adequately conceptualize the emergence of perceptual learning, often inadvertently privileges a narrow and disembodied approach that emphasizes ‘abstract symbolic processing’ at the expense of more sensory forms of knowing. I argue that Umberto Eco's (2000) notion of *primary iconism* — understood as the *terminus a quo* of the perceptual/semiotic process — can offer educational discourses some needed conceptual clarity in regards to better understanding the relationship between creativity and ‘arts-based’ learning, with ‘everyday’ acts of perception. By considering this ‘starting point of the emergence of learning’, I aim to bring renewed attention to two neglected aspects of educational scholarship, specifically: 1) the role of creative inference (or what Peirce called Abduction) in defamiliarizing our conventional processes and modes of schematization, and; 2) an expanded (educational) account of consciousness, beyond what is actual and material, that can also recognize “the reality of potentialities not

yet actualized, as Firstness” (Stables and Semetsky, 2015, p. 24). I hope such considerations can help sensitize researchers and arts practitioners to the importance of “imagistic and non-verbal semiosis as primary constituents of learning” (Titone, 1994, p. 129). I will argue that, through this (edusemiotic) conceptual framework, educational researchers and practitioners might gain insight into aspects of learning often associated with imaginative or creative/artistic perception, that are not easily expressed through many theories of learning, and therefore this research is valuable for arts education research and advocacy.

1. Introductory Remarks

Preamble

It is common knowledge that we humans can control and cultivate our initial sensory impressions through reflective practice and training. We always have the capacity to *see* and feel things anew: to “perceive resemblances even in things that are far apart” (Aristotle, *The Rhetoric*, 1992: 1412a11-12). This has already been well established by many ethno-semantic studies, notably the Robertson et al. (2005) study that showed rather persuasively how distinct cultural/language groups segment (and thus experience) the chromatic spectrum with surprising variation. But what these studies point to is already well known (intuitively and consciously) by the practitioners of those diverse human activities we broadly label *Art*: the artist can *see* qualitative possibilities in a blank canvas that the layman cannot; the experienced musician can *hear* inchoative musical possibilities radiate from a harmonic opening; the carpenter can do the same with a block of wood. Eco (2000, p. 223) elaborates on this ‘role of the artist’ in *Kant and the Platypus*:

The work of the artist always tries to call our perceptual schemata into question, if in no other way than by inviting us to recognize that in certain circumstances things could also appear to us differently, or that there are alternative possibilities of schematization, which make some features of the object pertinent in a provocatively abnormal way.

This is to say, that artists can increase and refine what the philosopher and scientist C.S. Peirce (1839-1914) called their *abductive capacity* throughout their lives: able to envision “alternative possibilities of schematization”, and work towards realizing these possibilities in action and perception. This shows us, as educators and theorists, that much of what we call *learning* isn't explainable as information processing or computation, but constitutes a more *primary and embodied* level of perceptual engagement. That is, there is seemingly *more* going on than the shuttling around of information between mind and world: than ‘reasoned’ deductions checked through ‘validating’ inductions.

Our human ability to shape and influence our largely sub-conscious (CP: 5.181)¹ and automatic perceptual processes through reflexivity is not only possible, it is happening all the time, whether we like it or not. We are always inferring a frame of reference to account for environmental complexity. When we walk into a classroom we expect to see tables and chairs, but there is always the possibility that our inference, so automatic and habitual, was mistaken. Maybe in fact what we initially thought was a chair, upon further inspection turned out to be a sculpture made of wax. Another example: Because I take the Skytrain in my hometown city of Vancouver daily, I am also relatively comfortable navigating the Metro system in Montreal (a city I've never lived in). I realize, mostly unconsciously, that much of the urban environment is similar, at least enough to get me from one place to the other most the time. However, if I happen to grow up in rural Nunavut, and have perhaps never seen or taken a train, riding the Skytrain will be a very different reality. I will probably be more alert, more “*wide-awake*” to my surroundings, as Maxine Greene (1979) would say, and constantly searching for *points of similarity* between this new environmental complexity and what I already know. Finding the familiar in the new (the essential structure of abductive inference, as we will see) is central to revealing the possibilities *inchoative* within our first perceptual encounters, and thus central to aesthetic experience, broadly defined here for simplicity, as Baumgarten does in *Aesthetica*, as “the science of sensory experiences.”

When the world we expect to be there fails to emerge — when the familiar fails to show itself in the new — our sense of aesthetic (our habits of feeling, cf. Campbell, 2018) is called into question, and it is here at this site of de-familiarisation that we base our inquiry. I will contend in this text, that to foster learners who can reveal these inchoate possibilities to themselves, educators must cultivate educational settings hospitable to novelty, to the unexpected, to the *other*. This learning theory suggests an approach to pedagogy routed in what Tim Ingold (2000) calls a “poetics of dwelling”: an aesthetic understanding of education routed in “direct perceptual engagement”² (p. 55) and co-participation in a shared environment. Arts practices (and artistic learning), as well as constituting the experiential grounds for this research, are also the ideal processes and activities from which to apply this theoretical account.

Argument

In this paper, I argue that If we approach Umberto Eco's (2000) *Kant and the Platypus* as an

¹ The abbreviation “CP” as per convention refers to the 8 volume *Collected Papers of Charles Sanders Peirce* (1935–1966). The numerals represent volume and paragraph, respectively.

² Ingold (2000, p. 55) explains such a poetics in terms of a “logic of constructivism” vs. a “logic of discovery” (CP 5.172; 5.590): “Knowledge of the world is gained by moving about in it, exploring it, attending to it, ever alert to the signs by which it is revealed. Learning to see, then, is a matter not of acquiring schemata for mentally *constructing* the environment but of acquiring the skills for direct perceptual engagement...”

educational text — as a book about how learning happens — then many of its highly technical discussions about the problem of determining a starting point (*a terminus a quo*) of the cognitive process, gain an enlarged importance. My thinking is that Eco's notion of *primary iconism*, understood as the *primum* of the perceptual process, can offer contemporary educational discourses with some *needed* conceptual clarity in regards to better understanding the role of pre-interpretative cognition in the learning process. Such considerations provide us with an entry point into the question ‘what is the most basic form of semiotic-engagement (how we use and respond to signs and signals alike, cf. Stables 2006) that may be called *learning*?’ Attention to pre-intentional consciousness³ and pre-conceptual cognition is often neglected in educational research, which, through failing to properly conceptualize the beginnings of perceptual activity in the learner, often inadvertently privileges a disembodied approach to learning and curriculum that focuses on abstract symbolic processing and (epistemic) problem solving. Even to this day, many popular understandings and theories of learning focus on an enlightenment idea of rational autonomous subjects inquiring into autonomous phenomenon (Usher and Edwards, 1994, p. 24) — *things* that can be known apart from the knower. With such a conception, focus inevitably gets placed on conscious and involved *information processing*, while other *phases of consciousness* (cf. Section 3) — other ways of thinking and knowing — receive less consideration.⁴ To put it more technically: this debate on determining the *terminus a quo* of finite semiosis (the beginning of semiosis, or sign-action, in the organism), can help us, as educators and educational theorists, better understand ‘what happens in the learning process *before* such conscious and involved cognition comes into play’.

By considering the sensory origins of semiosis, I aim to bring renewed attention to two neglected aspects of learning theory, specifically:

1) The role of creative inference (or abduction) in *defamiliarizing* our conventional modes of

³ What Semetsky (2005) has called *sub-doxastic aboutness*.

⁴For contemporary examples, we can look to the rise of standardized testing in North American schools or perhaps even the recent Bologna accord effecting European universities, and the solidified and obdurate knowledge such standardization necessarily mandates. For more on the “educational costs” of this increased standardization see McNeil (2002). For more on how the arts can counter the (negative) effects of standardization in schools, see Eisner, (2002). Baker’s (2012) study “The Effects of High Stakes Testing Policy on Arts Education” — though, an example of the flawed approach of measuring the value in arts for their ability to positively impact general academic achievement — offers some empirical validation to the common assessment (Meier cited in Winner and Hetland, 2008, p. 31), that “Top down mandates may actually hinder this kind of culture of high achievements”. Also relevant to this conversation on the depreciated role of arts education in North American schools is the historical study (in the American context) “From Dewey to No Child Left Behind: The Evolution and Devolution of Public Arts Education” (Cole and Aguilar, 2010).

schematization⁵ and bringing renewed attention to our formative sensory engagements (Firstness experience, cf. Campbell, 2018). And;
 2) an expanded account of consciousness, beyond what is merely actual (the here and now), that can also account for both potentiality, and anticipation/mediation. (represented by a Peircean (triadic) semiotic, cf. Section 2.2).

I hope such recognitions can help reinvigorate interest in the role of intuition and sub-conscious phases of consciousness in theories of learning, and help sensitize us to the importance of “‘imagistic and non-verbal semiosis as primary constituents of learning” (Titone, 1994, p. 129). I will argue that, through this (edu)semiotic framework, educational researchers and practitioners might gain new insight into aspects of learning often associated with creative and artistic cognition that are not easily expressed through many theories of learning, and thus this research may be valuable for arts education research and advocacy.

Understanding learning-as-semiotic engagement (Stables, 2006; Stables and Semetsky, 2015) allows us to recognize that Eco’s inquiry into the beginning of perceptual semiosis, is also an inquiry into *what* constitutes learning. Although learning is, from a popular language perspective, always being deferred into the future, Eco displays that Peirce’s triadic account of consciousness does allow us to, in some sense, ‘locate’ learning in the perpetual ‘opening up’ of virtual potentialities (Firstness’). This implies an educational philosophy that considers “a domain of mental structures and processes which influence experience, thought, and action outside of phenomenal awareness and voluntary control” (Stables and Semetsky, 2015, p. 21). It incorporates anticipatory dynamics (Nadin, 2010; Campbell, 2017b), and an “ontology that asserts the reality of potentialities not yet actualized, as Firstness” (Stables and Semetsky, 2015, p. 24). This allows us to explore an aspect of learning consistent with what Dewey associated with *pedagogical growth* (see Dewey, 1916/2004; Campbell, 2017b); as the growth of habits that enable future habit making. Not habits that ‘close’ interpretative possibilities; but rather open them up! In Peirce’s triadic philosophy this is expressed well by the emergence of Firstness (the possible) through a rupture in our habitual modes of being-in-relation to the environment (Thirdness). This rupture is ‘felt’ by the learner through the encounter with resistance (Secondness).⁶

⁵This focus on abduction is particularly relevant as a response to the privileged place of deductive and inductive methods within educational research and formal education generally, see; Shank (1991; 2008). For more on the theoretical details of abductive learning, and for what separates this from deductive and inductive learning, see; Nesher (2001).

⁶ Here Peirce explains the categories directly: “First is the conception of being or existing independent of anything else. Second is the conception of being relative to, the conception of reaction with, something else. Third is the conception of *mediation*, whereby a first and second are brought into relation... Feeling is First, sense of reaction

On a more global level, this inquiry is part of the growing edusemiotic movement (Semetsky, 2010; Stables and Semetsky, 2014; Semetsky, 2017; Semetsky and Campbell, 2018; Olteanu and Campbell, in press) that conceptualizes learning-as-semiosis, a conceptualization that understands that “relation is ‘ontologically basic’” (Noddings, 2010, p. 390). This is a move beyond substance dualism (this *or* that), towards recognizing the logic of the included (rather than excluded) middle (this *always becoming* that) (cf. Semetsky and Campbell, 2018, p. 124).⁷ My contention, is that it is precisely this triadic logic of the included middle that is lacking in much educational theory and practice, and that this conceptual lack functions through policy to diminish the role of arts education in curriculum design and implementation. Arts processes don’t translate well into substance dualism: the arts are embodied, sensual, but also cognitive and intellectual; artistic thinking and doing is intuitive, but also conscious and rational. I aim to show that the conceptual framework offered by edusemiotics is very much in line with the Arts and Arts education, for both draw no “experiential distinction between “what things are” and “what they mean to us” (Stables and Semetsky, 2015, p. 36).

2. Situating Ourselves in the Literature

Neither Constructivist nor Behaviourist

So how do we, in a segmented and polarized field like education, navigate a course between information processing accounts of cognition — where learning is often reduced to the transmission of static and concretized schemata — and the, often watered down, idealist theories associated with progressivism? Winfred Carr (1997) unravels a few of the dangers of this latter pedagogical approach, which he notes, can easily drift into an unsettling solipsist place where the subject and their ‘constructed’ experience is worshipped above all:

In the course of its transition from a politically subversive set of educational ideas into an uncritically accepted set of educational dogmas and practices, progressivism has become little more than a contrived rationalization for the postmodern view of education which proclaims that ‘experience is all’, that the authenticity of the subject

Second... the tendency to take habits is Third. Mind is First, Matter is second, Evolution is Third (CP 6.32 1891; emphasis added).”

⁷ The **structure of this inquiry** is as follows: In **Section 2** we situate our study within common educational discourses: *first*, showing the implications our question about the ‘beginning of learning’ might have for common constructivist and positivist understandings; *second*, clarifying the ‘reading’ of Peirce this study relies on. In **Section 3** we explain and explore our essential concepts and orientations. In **Section 4** we apply these concepts to aesthetic education. In **Section 5** we address how these pedagogical considerations relate to Peircean theories of sensory-perception, and address our thesis head on. In **Section 6** we conclude the conversation by summarizing this study and addressing how this research project has implications for future Arts Ed advocacy.

should be respected, that learners should not be required to read anything that they do not understand, that they should always be free to pursue endless opportunities for personal self-fulfilment and self-expression (p. 324).

But the other side of this binary tightrope, the overtly materialist side, is clearly not an adequate answer, as it does not account for the complexity of human relations, and thus reduces in explanation and pedagogical practice the educational experience. The problem is that on the one end we have a subject who can only know the world through private psychological states and on the other, a (pseudo-)scientific understanding of learners ‘computing’ data from a depersonalized ‘operational environment’.⁸

My thinking is that conceptualizing this initial moment of the perceptual process⁹ is the *missing link* in many student-centred theories of education, especially those that get broadly lumped under the labels constructivist or progressivist. What these theories often fail to consider is that although learners (in a sense) *do* construct meaning from their engagements with the world, the fact remains that they have been given *something to construct with* (Cunningham, 1988; 1998; Uden, Liu and Shank, 2001; Eco, 1990; 2000). Therefore, many of these well-intended approaches can easily drift into solipsism¹⁰ and privilege a radical constructivism that can come to deny even a minimal realism. To address these conceptual inadequacies, this study posits the significance of, not a “logic of construction” but what Hanson (1958) called the “logic of discovery”, that is, *abduction*.

But why is this relevant to the arts educational researcher or practitioner outside of the world of theory? Well, for two main reasons: 1) It is partially because of this *theoretical vacuum* that ‘informal’ educational practices — those that focus on learning as an act of discovery, creative inference, and self-exploration — are attacked by more conservative voices that see learning more solely as an act of rational computation and transmission.

⁸ The kind hypothesized by a modern scientific/theoretical enterprise that cannot tolerate semiotic ambiguity: how the observer changes the world simply by observing it (Nadin, 2014). This account takes us beyond what is expressible in formal systems of representation—the reduction of phenomenon to completely describable axioms/ production rules (Rosen, 1991). See Ferraroti, 2003, p. ix-xxx, for the implications of this dichotomy for social science research)

⁹ As we shall see shortly, to call this ‘a moment’ is clearly problematic as it implies a temporal quality which is already suggesting Secondness, but these embarrassments of speech are completely unavoidable when talking about the idea of a primary *first*, which Peirce reminds us is “so tender that you cannot touch it without spoiling it” (CP 1.358). My designation ‘Firstness moment’ is clearly a reflective act, and thus necessarily of Thirdness.

¹⁰ A symptom no doubt of following, in the wake of post-structuralism and deconstructionism, a fundamentally idealist position that finds its origin in Descartes’ radical split with the earlier scholastic history (a story that is historically detailed (at length) in; Deely, 2001).

This conceptual lack can result in educational policy that effectively turns learning into an accountability tool; reifying learning from its experiential basis, “assuming that all activity that is assumed to lead to good outcome measures must therefore constitute “learning processes”” (Stables and Semetsky, 2015, p. 31). Some of the consequences of this operationalizing of learning is greater standardization in schools, including arts classes themselves becoming more high-stakes and exam-based, as well as a reduced role for the arts and those learning processes associated with the arts (cf. Winner and Hetland, 2009). And; 2) because a lack of understanding on how the learner moves from a primary world of sensory-knowing to sign-mediated (re-)cognition (cf. Danesi, 2010), is probably *one of the* reasons why aesthetic experience¹¹ receives so little consideration in formal school-learning. In short, without an understanding of the perpetual *beginnings* of embodied-sensory learning, we can't hope to escape from our inherited Cartesian conceptions of learning. Edusemiotic scholar Andrew Stables (2015, p. 31-45) explains that when mind and matter are seen as fundamentally distinct, learning is mystified and separated from experience, no matter where one might sit on the mentalist-materialist tightrope:

Thus, the mind-matter dualism partly attributable to, and certainly exemplified by Descartes encourages materialist responses that both valorize mathematically-based conceptions of nature and society as predictable and controllable and devalue any conception of mentalistic activity. As a result, conceptual confusion can occur between positions that are “anti-Cartesian” in a thorough-going way (those that reject the mind-matter divide) and those that are materialistic and anti-subjectivist (that prioritise objectifiable matter over mind). (p. 32)

I concur that such a research heritage has resulted in inadequate explanatory frameworks that adhere to a dyadic (and thus classically dualist) conception of the sign defined through binary opposition; “in which a term is understood in the context of its opposite” (Stables and Semetsky, 2015, p. 32). Thus, these frameworks privilege substance dualism on one hand — materialist and behaviourist responses that favour predictability and the rejection (or at least nullifying) of mental processes — and paradoxically, the opposite; the extreme expressionism that Carr spoke of (see also Olteanu and Campbell, in press). This substance mind-body dualism is at work in popular pedagogical assumptions that “take for granted the existence of an ‘educable’ inner intelligence distinct from a ‘trainable’ bodily organism, despite calls in the philosophy of education for more attention to the embodied nature of both knowledge and

¹¹Which Peirce frequently linked with the category of Firstness, cf. Gorlee (2009), and Campbell (2018), for the relevant Peircean analysis and aesthetic application. For more on the relevance of semiotics to Arts Ed, see; Smith-Shank (1995).

teaching” (p. 33). This alas is a great impediment to arts education, as this inadequacy of explanation finds no connection between how the arts relate to (‘core’) school subjects, nor how artistic processes integrate sensory and embodied forms of knowing with more cognitive (epistemic) ones. Thus, the creativity and *interconnectedness* that rules all learning — the fact that human beings are amazingly able to “understand things from a seemingly limitless number of perspectives” — becomes an obstacle to overcome (Cunningham, 1988, p. 4) for educational theory and curriculum.

I bring up such issues in education only because they are the context I wish this current research project to be considered in, fully recognizing that I cannot fully honour such debates here and have for communication purposes perhaps over-simplified them. I argue that part of this communication gap is *the problem of beginnings*, of an inability to properly think about the emergence of perceptual learning.

But Which Peirce Are We Talking About?

In the last two decades, there has emerged a body of research that has looked to Peirce’s *pragmatism* for an embedded philosophy of education (Chiasson, 2001; 2005; Garrison & Neiman, 2003; Calapeirto, Midtgarden and Stand, 2005). To generalize, many of these studies have tended to focus on the scientific inquiry processes emphasized in Peirce’s pragmatic method. In this scholarship, we find an educational approach that emphasizes the processes of *right reasoning* (CP 5.421) and analytic (critical) thinking strategies. For example, Chiasson (2001, 2005) has accomplished this to great results, developing a fully fleshed out educational program rooted in Peirce’s pragmatic method that she calls *engaged intelligence training*. Although I find much value in this work, this is not the embedded philosophy of education I have extracted from Peirce’s scholarship. Nor is it the side of Peirce that Umberto Eco emphasizes in his exploration into Primary Iconism in *K and P*. The Peirce that I and Eco explore is a post-1885 Peirce (Strand, 2013), in which, after first elucidating the concept of semiosis in 1883 (CP 5.829), his semiotics turned away from formal logic, becoming more existentially and cognitively rooted. Eco (2015, p. 511), in a late paper entitled *The Threshold and the Infinite*, explains his own approach to interpreting Peirce in *K and P*:

My starting point was in fact a suggestion made by Armano Fumagalli (1995: ch, 3), who saw in the post-1885 Peirce an almost Kantian return to the immediacy of intuition, antecedent to any inferential activity (the Ground is no longer a predicate but a sensation, and indexicality becomes the kind of experience which takes the form of a *shock*; it is an impact with an individual, which “strikes” the subject without yet being a representation).

This less logic-based (post-1885) reading of Peirce has informed what has been called the

“iconic turn” (Olteanu, 2015) in Peircean scholarship. This iconic turn has begun to seriously inform the emerging edusemiotic project, suggesting that “icons are the signs that afford learning, all signification having an iconic ground” (Olteanu, 2015, p. 76). It is these *primary* aspects of experience that have been historically neglected by modernist educational approaches (cf. Olteanu and Campbell, in press), and are most relevant to understanding aesthetic experience. Using Peirce’s famous triad of icon-index-symbol we can say this move represents a turning away from explicit reliance on symbolic accounts of learning, to recognize more fully the embodied and sensory foundations of indexicality and iconicity. A symbol is a sign that signifies its object based on a learned (arbitrary) convention or habit. But behind every symbol is an underlying indexicality (signification based on direct presence and contiguity), and iconicity (signs that signify based on perceived similarity). Catherine Legg (Legg, 2017, p. 33-34) quoting Peirce, provides the following outline:

Symbols, due to the repeatability of their defining conventions, give us general concepts. Indices, due to the brute actuality (directness) of their pointing function, connect us with particular objects in the world which we wish to talk *about*. If symbols give us the general and indices give us the particular, what is left for icons to signify? Icons, precisely due to the fact that their objects may or may not exist, enable us to exercise our imagination, and think about *what is possible*: “The value of an icon consists in its exhibiting the features of a state of things regarded as if it were purely imaginary. The value of an index is that it assures us of positive fact. The value of a symbol is that it serves to make thought and conduct rational and enables us to predict the future” (Peirce, CP 4.448).

In the interest of not burdening the reader with a long and perfunctory argument, I will simply offer up the point that much of this shuttling back and forth between cognitivist and behaviorist accounts can be better contextualized recognizing that this intrinsic dualism results from a failure to conceptualize the possible, and thus per Peirce, *the icon*.

3. Invention: The Discovery of Materials

What is Primary Iconism?

Warning: what you are about to read is confusing. Why? Because I am attempting to speak about a cognitive state that is devoid of intentionality (any notion of *aboutness*), outside of temporality, outside of sensation, and perhaps most alarmingly, outside of linguistic description. Such is the challenge assigned to any philosophaster¹² who dares speak about

¹² Cf.: www.philosophaster.org

beginnings¹³.

Peirce struggled with this metaphysical dilemma just as Aristotle, Augustine, Aquinas, and Spinoza had before him. To speak of a Firstness, or primary iconism, as an *auroral* moment of cognition is something of a problem in a philosophical system (like Peirce's) that is fundamentally anti-intuitionalist, and based upon an inferential view of knowledge where “all cognition is the result of previous cognition”, cf.; Peirce, 1868. For Firstness is, by its very nature, related only to itself, a purely positive characteristic (CP 5.44), a “potentiality without existence” (CP 1.328): “and therefore the icon is a likeness, not in the sense that it is like something else, but because it is the phenomenon that founds any possible judgement of similarity, without being founded by it” (Eco, 2014, p. 512). To use a popular example from Peirce, primary iconism (which remember is a Firstness) can be understood as a pure and singular feeling of *purpleness*, before this purpleness has been recognized in relation to myself (Secondness) — as acting upon my sense organs in time and space — and before this sensation becomes related to the continuity of my lived experience (Thirdness). As this purple moves from being simply PURPLE (*all that is*, a monadic quale consciousness CP 2.221-237), to *purple as sensation* in relation to some minimal conception of self, to merely *this sort of purple* in relation to my total continuous interpretative experience, that is; my *way of perceiving* the chromatic spectrum as informed and determined by all my past experiences as well as my anticipation of the future.

For our purposes, we are specifically interested in that ambiguous moment *between* the categories of Firstness and Secondness, between primary iconism and the shock of realizing yourself in relation to an (as-of-yet) amorphous ‘other’. I will argue that it is here, in this liminal space between Firstness and Secondness, between a (primary) iconism that is realized by the causal shock of (primary) indexicality, where the *terminus a quo* of learning can in some sense be ‘located’. This location I argue must be approached semiotically (and not psychologically, cognitively or neurologically) because this is not an empirically measurable ‘state in the mind/brain’, but rather a dynamic *emergence* of new action-possibilities (new Firstness’) from out of the regularity of habitual relations in a historically constituted environment. This locating of learning can be validated *cenoscopically*¹⁴ because at this threshold, just before cognitive awareness (just before realization in Thirdness) is the first instance of the perpetual process that we can influence through reflexivity, creative inference,

¹³ Speaking poetically about the reality of Firstness’, Peirce says: “Their very airy-nothingness, the fact that their being consists in mere capability of getting thought, not in anybody’s actually thinking them, saves their reality” (CP 6.455).

¹⁴ That is, through what presents itself to every human’s normal experience, see; CP 1.238-242 and the corresponding distinction with ideoscopic knowledge.

and contemplative practice, even though these first impressions are by nature, fundamentally unknowable to us.¹⁵ Hence, my focus in this text on everyday experiences and perception and their fundamental similarity to those (supposedly) exalted acts of creativity associated with the Arts. Eco (2000, p. 114) elaborates this liminal zone where ‘sensation’ can be said to emerge:

Feeling, pure Firstness, is the awareness of a moment of absolute and atemporal singularity; but from this first moment we already enter Secondness, we attribute the first icon to an object (or at least to something we are faced with), and we have the sensation, an intermediate moment between Firstness and Secondness, between icon and index.

To better understand this *terminus a quo* of perceptual learning it is important to recognize that temporality itself is a constituent of the process of schematization (conscious realization in Thirdness), and not something itself existing in the pure potential that is Firstness (Eco, 2000, p. 115). As we’ve already alluded to, it is fundamentally misleading to speak about this atemporal singularity using language that, because of its indexical and iconic foundations (see; CP 5.119; Neshier 2001), requires conceptual *metaforms*. From cognitive linguistics, we learn that these metaforms — that are necessary for communication (and even for mental-representation and extensional (abstractive) modelling) — *themselves* require notions of time and space (see; Danesi, 2013; Sebeok and Danesi, 2000; Lakoff and Johnson; 1980)¹⁶. What we might tentatively call ‘the beginning of learning’ is merely *in the process* of becoming temporal in our own recognition of it.

Clearly to speak about such a pure potentiality, which as Peirce frequently said “every description of it must be false to it” (CP 1.302), is to speak about an imprint left by an impresser that is no longer accessible to us. This is what leads Eco to approach this phenomenological problem from a textual semiotic perspective, concluding that all learning (even awareness of Firstness) must be attained through recourse to a text. This is “an organizing principle whereby an element can be identified insofar as it is not the other, which by evoking it, it excludes” (2000: 111). This is *primary* iconism as distinct from relative instances of iconism. It is, as Eco (2000; 2014) says, merely the presupposition to correspond

¹⁵ “Our first impressions are entirely unknown in themselves and the matter of cognition is the matter of fact and what is not a question of a possible experience is not a question of fact. The impressions are grasped into the unity which the mind requires... by conceptions and sensations” (Peirce cited in Campbell, 2018, p. 78).

¹⁶ Danesi (2013, p. 34) explains: “A “*metaform*” can be defined as the form that is connected interpretively (semiotically) to a conceptual metaphor as a consequence of the metaphor being distributed throughout the cultural network of meaning”.

— prior to any instance of indexicality and thus any correspondence to an object. The primary icon reaches out into the environment, not to demonstrate that its object exists (as the index does), but rather “to demonstrate that their object is... consistent [with its own internal structure], and thus *possible*” (Legg, 2017, p. 34). Prodi (1988, p. 55) explains this proto-semiotic reaction on the cellular level through the lock and key analogy:

An enzyme... selects its substrate from among a number of meaningless molecules with which it can collide: it reacts and forms a complex only with its partner molecule. This substrate is a sign for the enzyme (for its enzyme). The enzyme explores reality and finds what corresponds to its own shape: it is a lock that seeks and finds its own key. In philosophical terms, an enzyme is a reader that "categorizes" reality by determining the set of all the molecules that can react with it factually... This semiotics (or proto-semiotics) is the basic feature of the entire biological organization (protein synthesis, metabolism, hormonal activity, the transmission of nervous impulses, and so on).

I contend that such a (primordial) primary iconism represents the basic structures of intentionality that sustain the learning and perceptual processes¹⁷. It is not *yet* an act of inference (a syllogism) related to distinguishing between qualitative possibilities (like the abductive inference). It is what sets the *Ground* (cf. Section 5) for the very possibility of conscious cognition, and indeed, per Peirce, consciousness and signification generally.

¹⁷ Adopting Sebeok's Maxim that "Life is co-extensive with semiosis" it is possible to conceive of this basic level of learning-intentionality as being reflective of the basic anticipatory processes that distinguish life processes from physical/mechanical processes (cf.: Rosen, 1991; Nadin; 2010; 2014; 2017).

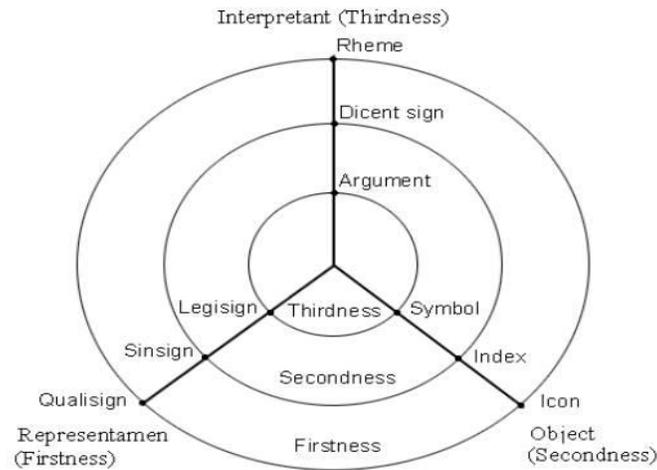


Figure 1. Peirce's triadic sign model and its relation to the categories, adapted from Thellefsen (2001)¹⁸

The Wholeness of Three: Situating Primary Iconism in the categories

Peirce's categories are continuous and holistic. Despite segmentation for the sake of communication, *they are one*. "Therefore every cognitive phenomenon, even the most aurorally primal, must call upon all three categories." (Eco, 2014, p. 514) Within the dynamic and continuous flow of signs that make up our conscious experience, we only ever infer the predominance of Secondness or Firstness. Peirce often stressed that the experience of semiosis is a *simultaneous event*.¹⁹ This is explained through his cosmological outline of the universes' formation,²⁰ an idea that anticipates big bang theories (cf. Campbell, 2017b). "Firstnesses "do not spring up isolated; for if they did nothing could unite them. They spring up in reaction upon one another, and thus in a kind of existence" (CP 6.199). So, although we cannot know Firstness *in itself*, this auroral moment of perception is directly a result of the continuity and *already-thereness* of our conscious experience.²¹ In a certain sense then, we can say that Thirdness is always *inchoately* implicit in Firstness:

¹⁸ Notice how the popular Peircean trio [icon – index – symbol] specifically refers to how a sign signifies its object; that is only one set of the three (palimpsest) triads that stem from each leg of the tripod.

¹⁹ In propositional calculus, this is expressed through what is called Peirce's Law (also known as the principle of the excluded middle (cf. Semetsky, 2014, for the implications of this principle for edusemiotics. Also see; CP 3.384: $((P \rightarrow Q) \rightarrow P) \rightarrow P$

²⁰ For more on Peirce's cosmology; the reader is directed to; Sheriff, 1994; and Turley, 1977.

²¹ For more on the neuro-phenomenology of consciousness, including the details of the intentional nature of conscious experience, see; Laughlin, d'Aquili, & McManus, 1990; Laughlin 1992a.

The emergence of Firstnesses through their being opposed to one another (Secondness) starting from the regularity of the habit (Thirdness) for Peirce is an *event* (CP 6.200), i.e. a singularity, a point at which something occurs... In this way the spontaneity of Firstness, whose irregular and singular nature Peirce underlines (CP 6.54) turns out to be nothing other than an infinitesimal deviation from the law and from the regularity on whose basis it is produced (CP 6.59). (Eco, 2014, p. 514)

Thus, Firstness only emerges from out of a rupture (a primary indexicality) in the regularity of habits that make up our total experience (conscious and unconscious and imagined). It is these singular *events* that break through the wall of routine cognitive processing by demanding our attention and response.

Our Test of Coherence: Stimulus Response Engagements

I raise the famous coffee pot example, which Eco elaborates in *K and P* (2000, 2.2.1). The sensation of Eco burning his hand on his percolator in a morning stupor is a rupture in the regularity of his morning breakfast routine. The question that demands to be answered from this example is ‘How do we, if, like Peirce, we are to deny the immediacy of intuition²², account for the seemingly pre-inferential experience of stimulus-response engagements?’ And furthermore, where is something that could be called *learning* in such stimulus-response engagements that by their very nature seem entirely pre-inferential and sub-doxastic?

I believe that accounting for these *primary* perceptual encounters is the main test of validity for the learning theory I am putting forward in this study. I argue that it is these seemingly pre-cognitive aspects of perception that need to be accounted for by any account of learning that is rooted in experience and the learner’s actual embodied actions and sensorial engagements in the world. Eco (2014) makes the point that a stimulus-response event is, in the sense Peirce intended, not a cognition at all, and in terms of our conversation, not yet *learning*. We are not yet ready to attempt a full explanation of this problem yet, so please allow me to get there slowly.

4. Learning Theory

Realizing Firstness through Abduction (Iconic Learning)

I now attempt a sketch of how primary iconism functions within a broader Peircean theory of

²²This is the understanding that we possess no (Gibsonian-like) direct perception; that we must come to know the ‘thing in itself’ only through *semiotic* mediation which constitutes an *umwelt-anticipatory* dynamic (cf.; Peirce, 1868; Nadin; 2017).

learning. As I have argued elsewhere (2018), the formation of aesthetic experience within consciousness is particularly well suited to this task. This understanding of Firstness emerging as a *rupture* within the regularity of habitual interactions with the environment (Thirdness) provides a conceptually nuanced way of thinking about what constitutes aesthetic experience. Following closely Dewey's own approach (Art-as-experience,²³ cf. 1934/2005), I feel that aesthetic experience must be approached as a mode of sensory-perceptual engagement, and not a form of disinterested reflection, as is so often implicitly and explicitly implied by much aesthetic education scholarship and its corresponding notions of pedagogy.

With this understanding, education principally concerns, not the enculturation of students into an established 'body of knowledge' and codified interpretative procedures, but rather the cultivation of a learner's *primary receptivity to the unknown*. This is what I (2016) have called the "*pedagogy of novelty*", implicit in Peircean thought. This pedagogy concerns replicating this natural proto-semiotic interaction of Firstness-through-Secondness, Primary Iconism through Primary Indexicality—a realization of potential *through the* actual. This involves not a teaching/learning of schemata, but rather a teaching/learning of *dwelling*, or *attuning to* (Ingold, 2000, p. 51). It involves fostering students' receptivity to novelty, to the *indexical rub* (Campbell, 2016, p. 17) of new learning. It is through such a process of primary indexicality that we are thrust into embodied semiosis. There can be such rubs in the act of reading, such as a sudden moment of introspection felt as an animating jolt through our body. This is like the sort of embodied recognition of getting on the wrong train and only noticing when you feel your body launched in the wrong direction, or like playing an unintended note or chord in the context of group improvisation. But through this *rub* one may realize new harmonic possibilities; new openings to something other and new.

This site of instability, as the singular (Firstness) is born from out of the continuity of experience (Thirdness), is what I have previously called a *Firstness Moment* (2018). This is a site of *defamiliarization* where our regular perceptual processes are called into question by the brute force resistance of indexicality, and we are forced to *creatively* rearrange existing interpretative responses to account for environmental novelty. It is through *attuning to* the feeling of the unknown that we *discover* (not construct!) new ways of distributing the sensible, new *phases of consciousness*. This understanding of pedagogy is thoroughly triadic in its orientation. It cannot be "accommodated within the terms of a dichotomy between the material and the mental, between ecological interactions *in* nature and cultural constructions

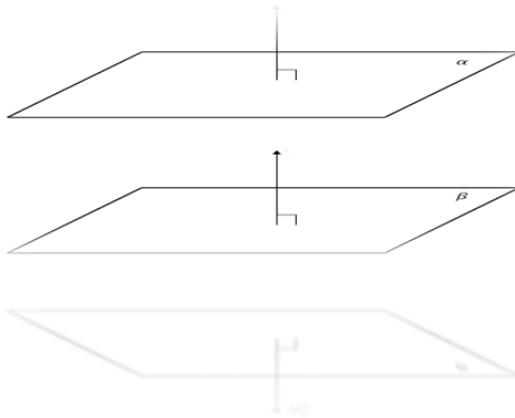
²³ Although inadequate to account for aesthetic experience as a philosophical definition, Dewey's approach is pedagogically relevant, as Shusterman (2003: 405) has argued, for its "'directional' or motivational value by directing us toward the value of aesthetic experience" and for "challenging the rigid division between art and action or real life."

of nature” (Ingold, 2000, p 57).

For Dewey, the essence of art lies in its ability to emphasise these *primary* (Firstness) aspects of experience that “always precede the categorical rigidity imposed on us by reflection” (Eco, 1962/1989, p. 26)²⁴. Art-as-experience is thus the emphasis of an underlying (Firstness) totality: “this quality of being a whole and of belonging to the larger all-inclusive, whole which is the universe in which we live” (Dewey cited in Eco, 1962/1989, p. 26). For our direct purposes, this evocation of totality is the principle point I will take from Dewey’s aesthetic. My contention is that this discussion on the proto-semiotic interaction of primary iconism and indexicality can offer clarification of the (somewhat suspect) absence of psychological clarification in Dewey’s aesthetic, and perhaps escape some of the trappings of his philosophy’s romantic and naturalist foundations.

This underlying totality is *realized* by the learner through a process of *iconic learning* (cf. Legg, 2017; Campbell 2018). This is where the learner strives to realize an *imprint* of this primary iconism in their encounter with the art-object, to reflect, not on those unknowable (proto)semiotic interactions (primary iconism), but rather, on *the way* such Firstnesses impress upon the surface level of cognition (Thirdness). This is a contemplative process that consists in bringing renewed attention to qualitative possibilities inchoative within aesthetic encounters: a practice that artists engage in intuitively through the very process of making and doing art. In this understanding, the transformative potential that many say is definitive of aesthetic experience results from the way the experience arranges known materials and percepts in unfamiliar ways. I have argued (2018), that this transformation occurs through being-in-habit with an arts practice (Thirdness). The continual *doing-undergoing* of a practice attunes the artists to rubs and resistances (Secondness), where through this encounter with the new they may experience an awareness of presence (Firstness moment).

²⁴ This quote is from an analysis of Dewey’s *Art as Experience*.



Thirdness (surface level of cognition/experience)

Secondness (Novel stimulus as *primary indexicality*: a site of rupture in the continuity of Thirdness)

Primary iconism as mimetic imprint of **Firstness** experience (an impression left by impresser no longer accessible): Firstness-through-Secondness.

Figure 2. The *palimpsest* nature of the categories

This focus on art-as-experience (broadly conceived) is justified through the central principle of Peircean category theory that “firstness can be precinded (logically) from secondness but cannot occur in its absence” (Eco, 2000, p.190). This is the idea that “we only know the potential through the actual, and only infer qualities by generalization from what we perceive in matter” (CP 1:429). Since Firstness does not appear out of nowhere, but rather through a rupture in the fabric of Thirdness, that is, we can only experience glimpses of Firstness through establishing a firm basis of habitual relations. Real creative freedom (the kind any skilled practitioner cultivates) comes not from volition, indexical force, but from “dwelling in habit” (cf. Ingold, 2017).

This iconic approach to aesthetic education is a reminder that even these intangible experiences called *Firstness moments* —a ghostly memory²⁵ of the unconscious pathways we find as we realize our first impressions— are still driven by our propensity and conditioning for *form-making*. Even with aesthetic experience, meaning always possesses some reference to purpose, and attention drives perceptual processes in a significant way.²⁶ This is not some

²⁵ See the ‘ghostly reflection’ of the Firstness plane in Figure 3.

²⁶ Laughlin (1998) demonstrates how novelty functions in the structuring of experience in the context of meditation instruction, presenting a great example of this basic pedagogical orientation: “When you are all comfy and settled into the awareness of the sphere of sound, then shift your task to paying attention to new sounds as they appear in the sphere. Notice how they “demand” your attention. You will be working with novelty. So watch how your mind maps redundancy onto the novelty. Watch how the recognition process happens. Watch

purposelessness (Kantian) aesthetic object in our awareness. This is an active and motivated teleological/semiotic event!

I now turn to an explanation of how this process of *revealing* the impact of Firstness upon conscious experience occurs. For this imagining, we need the notion of *abduction*.

Realizing Firstness through Abduction

Abduction in one sense is synonymous with the learner's level of perceptual awareness, their way of acting within and *attending to* the environment. This basic act of discovering and taking in the world follows the logical form of abduction for, the simple reason that

[i]t 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. Deduction proves that something must be; Induction shows that something actually is operative; Abduction merely suggests that something may be. (Peirce, CP 5.172)

Semetsky (2014, p. 20) expresses the form of abduction as follows: "If A is B, and C can be signified by B, then maybe A is a sign of C. As a hypothesis-bearing statement, abduction asserts its conclusion only conjecturally..." Thus, we can begin to see how (without getting fully into it here) that abduction is the illative process behind human creativity, intuition, and imagination generally. Abduction merely suggests a possibility, and thus an icon (a possible structural resemblance).

Abduction is in large part expressed in the action of *skills* and the processes of *enskillment*. Skills are established *habitualized* ways of *being in relation* to an environment (Ingold, 2000), and thus constitute the way our consciousness is structured and formed within Thirdness. This understanding of *abduction-through-perceptual-skill* reveals a fundamental insight from neuro-phenomenology (Laughlin, 1990; 1992a; 1992b; 1996): *that consciousness forms around intentional objects*. This literature suggests that much of the structure of consciousness and the perception of the environment involves the level of engagement and absorption involved in *action*-processes (like making a fire, or playing music, dreaming, or engaging in any form of ritualized behavior or event).

how meaning reaches out to meet the sounds, and how meaning and sound-form merge so that it isn't just a sound of X (bird, truck, voice, etc.)."

Eco explores this same idea (cf. 2014, p. 520; 2000, Ch. 6) through the perceptual issue of distinguishing figures from background. The conclusion is that “once the level of *pertinence* has been decided—or the level of interest with which I focus on things—not only do negotiable objective impossibilities become evident, but also *starting points* from which my inferential activity begins” (Eco, 2014, p. 521). This question of *cognitive negotiation* has important implications for re-understanding the teacher-learner dynamic. Teaching that strives to emphasize experiential learning processes is *not* in actuality about delivering specific knowledge-content, but rather about fostering increased degrees of perceptual awareness within dynamic processes of doing and making. It also emphasizes that learning *begins* at the level of intentionality (or what Ingold (2017) prefers to call “attentionality”). For learning (as semiotic growth) to occur at all it must be seen within a *field of possibilities* significant to the student (there must be some ability to see the familiar in the new). Addressing these starting points where inferential activity begins involves the cultivation and refinement of the learner’s *abductive capacity*, essentially the capacity, and learned presupposition, to imagine things anew.

The way in which we cognize novel experience involves *responding to* the objective criterion we are presented with (the *grains of resistance* felt through the directness of the *indexical rub*). *Dwelling in* the unknown experience allows us to fully draw upon our total semiotic awareness to discover an *iconic resemblance*. This is a point of relation that at least *asymptotically* ‘maps’ the unknown.

Chiasson (2001, p. 76) explains how this process of creative abduction, is always motivated by the shaping of conditional purposes, of goal-directedness, or meaning-towards-purpose, and action-towards-meaning:

Relationships come from making connections between things. Peirce believed that all actual and all potential relationships already exist and we are discovering these when we inquire into some matter [the pure possibility of Firstness]... we make relationships by relating the qualities of things to one another for some purpose. In doing this we construct general categories. General categories allow us to make sense of things, to make sense of the world. However, they can limit us as well.

Abduction then, is a reaching into the vast space of the *possible* (Firstness), to *anticipate* the future (Thirdness), and thus maintain and establish the continuity of my experience in the ongoing present. As Peirce frequently emphasized, Abduction is behind humanities greatest

creative achievements, but also the most banal and fundamental acts of perception.²⁷ The level of creativity in the abductive inference has to do with the level of riskiness involved in the inference: how far we are willing to *leap* into the unknown.

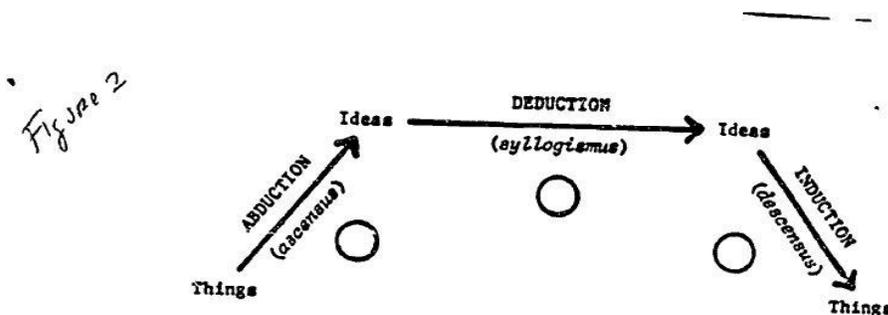


Figure 3: the spiraling of semiotic consciousness (from Cunningham, 1988)

Summary of Firstness Concepts

To summarize my steps so far, I have explored three *angles* from which to approach this topic of beginnings:

- Firstness** (the general metaphysical category);
- primary iconism** (Firstness as a proto-semiotic component in the formation of experience); and
- abduction** (the fully semiotic and inferential movement that allows the learner/organism to realize an imprint of such primary iconism)

Considering these three approaches to thinking about Firstness can reveal important understandings about the learning process and are of general methodological value to researchers. These interrelated concepts have allowed me in my own teaching/arts practice to think more carefully about our most automatic and routine perceptual processes, especially in the context of music-learning (which constitutes the experiential grounds for much of this

²⁷ Although defining and exploring ‘what is creativity?’ is not the immediate task of this paper, as we shall see, an expanded notion of creativity is central to Peirce’s theory of perception, and represented by the concept of abduction explored in this text. This theory sees creativity on a continuum (based on the level of ingenuity of the abductive inference), but nonetheless something that is central to all perception (including basic forms of sensory engagement). This is what separates this notion of creativity from scholars like Csikszentmihalyi (1999) who sees creativity as connected to the symbolic domain of a culture (p. 6). This latter approach to creative learning was recently advanced by Gardiner (2017) in this journal.

research). The conscious-logical aspect of abduction constitutes a very small aspect of this more general (and ubiquitous) semiotic process. Experience teaches us that these (Firstness) processes are often so ritualized in everyday cognition that it often takes the encounter with novelty, through a defamiliarizing event (a *firstness moment* realized through indexicality), that they become noticeable to us, and thus pedagogically significant. Neuro-anthropology (cf. D'aquili et al., 1979; 1990) has shown us that 'traditional' societies have various ritualistic means of renewing awareness to these primary aspects of consciousness. In a modern technocratic society, arts processes represent some of the best windows into these often-neglected modes of being that we have available.

Implications of Theory for Music Learning

I know as a musician that it is through continual practice and contemplation that we can influence, and in some sense *shape*, these transformative possibilities inchoative in (musical) experience. This is an abductive process, where we sensitise ourselves to different *phases of consciousness* (Laughlin, 1992a, p. 19) and modes of being (Peirce's categories). For example: the mindset necessary for group improvisation is a phase of consciousness that musicians learn to cultivate. It is what I (Campbell, 2017b), following Nadin (2009; 2014; 2017), describe as an *anticipatory mindset*, where the improviser not only *reacts* to what other musicians do and play, but attempts to realize the *relational stream* of the music as it flows and fluctuates dynamically in the active doing-undergoing of music-making. With this anticipatory conceptualization, the music-maker does not simply *respond* to musical signals already played or written (in a manner often implicitly and explicitly linked to mechanical causation) but rather *anticipates* future states of the music, and through this anticipatory action, re-models their relationship to the past, and indeed the present.²⁸ This anticipatory dynamic is, per Nadin, fundamentally creative: "creativity: reaction will not do, the cause lies in the future"²⁹. This dynamic of reaction and anticipation explains how skilled improvisers in a group setting (say, a jazz ensemble) are somehow able to *collectively* anticipate ideas that no one in the group has yet played. This is to say that *general* directions in the music were inchoative and un-actualized within previous semiotic states, and then collectively anticipated by different musicians *in the act of* merging together their collective efforts. Semiosis requires time, for a sign's meaning is always extended into the future, and past.

This tells us something very important about Peirce's scholastic realism and its implicit

²⁸ This is a perspective that "the external world and the internal reality of integrated mental and physiological activity go into what is expressed in the anticipatory action — a realization from the large space of the possible" (Nadin, 2017, p.156)

²⁹ <https://www.youtube.com/watch?v=ZjwVzOcQcU4>

learning theory. Within a Peircean informed edusemiotic, individuals, generals as well as potentials are admitted to have causal efficacy³⁰ upon the learning process. This expanded understanding of learning necessarily calls upon all three Peircean categories: Firstness (the *possible*), Secondness (the *is*) and Thirdness (the *would be*) (Merrel, 1997, p. 27). The art of playing music is not explainable in a computationalist theory of learning, where musical-phenomena are reduced to baseline axioms (formalized modes of representing and perceiving music) from which musical information can be inferentially entailed. In music, and perhaps in all art, this deductive and inductive reasoning (the encoding and decoding of formal systems, cf. Rosen, 1991), is never *all* that is going on. In music, we also realize that something *may be*.

5. Learning through the Senses

Embodied Beginnings

I now address what these pedagogical considerations bring to a Peircean theory of perception. It is here, at the interstices of perception and learning theory, that I can finally address the question: “How does learning-as-semiosis begin?” This involves looking in more detail at that auroral moment of perceptual awareness realized through the brute force of stimulus-response encounters. I return to Eco’s coffee pot:

But as soon as I become aware of pain and cry out, I assume that pain as *a point of departure in an upward direction*, to find out what it is and what caused it, and not *in a downward direction*, to understand how my brain *processes* the external stimulus. I consider that *quale* beneath a molar respect and capacity. (Eco, 2014, p. 523)

Learning takes place in the *molar* (and not *molecular*) realm, which is to say that, although, for all practical purposes we may be a brain, learning reaches out into the world, not down into the recesses of our neurogostic structures (D’Acquili, Laughlin, & McManus, 1979; Laughlin, 1992a;1996, p. 363). This insight is consistent with what in the domain of neuro-anthropology has been referred to as the *symbolic function* (cf. Laughlin 1992a, 1997), which put very simply refers to “the property of the nervous system by which partial information about the operational environment derived from the senses is associated neurologically with a far greater field of cognitive associations” (Laughlin, 1998). These insights about the brain

³⁰ Edusemiotic scholar Olteanu (2015, p. 75) explains: “What happens when learning, is that structures of signification (what needs to be apprehended) have to settle on already existing structures of signification: a learner [a good example of iconic/abductive learning]. In their interaction, these signs will find their own compatibility and the probability for this to happen in the same manner in two different cases is too small to be considered”

provide another window from which we can access the claim by many semioticians (including Peirce) that sensory perception itself is abductive in structure. Proni (1990, p. 106) expresses this perspective clearly:

The hypothetic inference of the sensation is two-thirds written (the premises) by the nature of our sensorial system: it's a hypothesis, but our conscious intervention is limited simply to drawing the conclusion, which is obtained in an automatic manner... The laws of logic construct the form of the sensation, but it's content, that which arrives from without, is not part of it: the *feeling* is the *material quality* of the perceptual sign.

This is the understanding that even complex acts of symbolic modelling, the kind privileged in behaviourist/materialist approaches, have a very *real* objective criterion rooted in the internal structure of the icon, and the 'unmediated immediacy' of abduction. This tells us that we are not Cartesian bodies impressed around by mechanical forces that, at a higher stage of intellection get processed and cognized, but rather, have the innate capacity to attune and adapt our sensory perception to the environment we inhabit. Abduction suggests that organism-environment complementarity is not only present but also the very 'ground' or foundation for future semiotic unfurling. This essential complementarity is in fact what is conceptualized by the very notion of Primary Iconism; that, before any encounter with an object, every sign-using lifeform projects (even the mono-cell, as argued by most bio-semioticians) its own internal structure into the world, and it is this projection that forms the basis for any future found 'likeness' (relative iconicity). When we teach schemata as being disconnected from lived encounters, as we do when we teach univocal and predetermined interpretative solutions to educational problems, we effectively destroy *the body in the sign* (Danesi, 1998). This is to work against what is referred to in Modelling Systems Theory as the *natural learning flow principle* that sees learning as a 'flow' "from iconicity to connotatively and symbolicity, i.e., from concrete, sensory modes of representation (and knowing) to complex, abstract modes..." (Danesi and Sebeok, 2000, p. 171). This *body* does not experience things on a quantitative level, it doesn't separate *primary* from *secondary* sensations, sensation from concept. Experience starts from the senses and it starts from a totality. Again, Eco (2014):

In other words, if, cosmologically speaking, there is never perhaps a Firstness that is not the result of a previous Thirdness, cognitively speaking there is a limit to our perceptual abilities, which experience as undivided something that, cosmologically speaking, is *in posse* capable of being further divided. What is *in posse* belongs to cosmology. What is *in actu* belongs to the agent subject (p. 526).

This is an important methodological point. Considering the categories metaphysically is the only way Peirce (or anyone for that matter) can conceptualize the impact of possibility upon the unfolding present. However, although necessary philosophically, we do not experience the world from such a metaphysical vantage point. In terms of empirical measurement, a phenomenon can always be broken down into smaller (molecular) components, while the impression of primary iconism, like art-as-experience, in *actu* presents itself as a *manifest totality* to the learner, a totality, as Proni tells us, “two thirds written by the premise”. But what exactly constitutes these two thirds that provide the ‘Ground’ of signification.

The Ground, and ‘Locating’ where Learning Begins

The Peircean concept of Ground is where the various threads of this study come together. The Ground is a concept that (although changing in meaning several times throughout his life) was important to Peirce’s sense of (Scotus inspired) scholastic realism.³¹ Petrilli and Ponzio (2005, p. 29) explain the Ground as the *first* and *dominant* perceptual materials that spring up in semiosis:

If I say, ‘this stove is black’, the immediate object ‘stove’ is considered in a certain respect – it’s ‘blackness,’ which is the ground of the interpretant (cf. CP 1.551). From this perspective of the phenomenology of perception..., the ground is undifferentiated material that is gradually differentiated in a certain respect through a process by which it eventually becomes a sign for an interpretant.

The ground is “differentiated” by a deep-level abductive process, but as we have already discussed, such powers of differentiation emerge through processes of ‘dwelling in habits’ of relation. This is a top-down explanation that recognizes that Firstness is only realised through engaging in practices of emergent patterning, or Thirdness. What we learn from Peirce’s semiotic philosophy, is that both top-down and bottom-up explanations are required to describe perceptual learning. The concept of Ground points to this hybrid approach (cf. Reybrouck, 2015, for a detailing of this within the context of musical perception).

In *K and P* (2.8.1) Eco makes clear that the Ground is a Firstness; “we are still before the encounter with something that resists us; we are about to enter Secondness, but are not there

³¹ Here Peirce (CP 2.228) incorporates the ground into a description of his sign model: “A sign... is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the *interpretant* of the first sign. The sign stands for something, its *object*. It stands for that object, not in all respects, but in reference to a sort of idea, which I have sometimes called the *ground* of the representation”.

yet” (p. 100, 2.8.). For educational purposes, I feel the Ground (not the term “ground” itself, which can easily confuse things³² but what the concept aims to describe) can be extremely useful. For one thing, it helps us describe the ambiguous channel that primary iconism must cross until it can become realized as sensation (Secondness), and only as a sensation acting upon a nervous system and recognized by neural networks can this sensation be related to previous cognition and properly enter the flow of semiosis (or Thirdness). This is the bottom-up explanation. But it seems that to honour the kind of scholastic realism that Peirce's later (post-1885) semiotic strongly rests upon, the Ground, although firmly within Firstness, already possesses certain inchoative possibilities for activation. In this sense the Ground then “is an idea, a skeleton plan, but if it is such, it is already an immediate object, a full realization of thirdness” (Eco, 2000, p. 103).

Are we simply resorting to Platonic (maieutic) conceptions of innate learning at this late point in the argument? How is a Firstness, which is necessarily singular and not related to anything already a blueprint for future realizations, and thus *modus ponens* purporting future forms of schematization? I think this is because the Ground *cannot be understood solely on the cognitive level*, as a psychological state within the awareness of some organism. To even conceptualize Firstness at all, we must step outside of the cognitive and enter the metaphysical realm, not in some vain hope of transcending our biological embeddedness, but because it is only from such a vantage point that we can approach the learning/perceptual process *non-deterministically* (not as an axiomatic reduction, cf. Campbell, 2017b). We must do this, Peirce believed (even as far back as his early 1866 Lowell lectures) because our first impressions are entirely unknown in themselves, but do however, preserve themselves as imprints upon (and thus affect) conscious experience. Learning in this estimation is essentially the ability to realize these possibilities in the signs that we use and respond to, not to realize things as they are, but rather, things as they might be, and things as they will become.

In *K and P* Eco reiterates a point he had made back in 1979, that, “from a certain point of view, Ground... and Meaning are the same thing” (2000, p. 117). Which is essentially to say that even in primary iconism, *meaning*, and thus the possibility of an immediate object (the outline or plan of future schematization) is already in some *virtual* form present within the reality of Firstness. This is perhaps why Peirce spoke about “the fugitive meaning” (CP 6.455; 6.530) contained in Firstness experience, and why Eco (1979) repeatedly insisted that “a sign was an inchoative text”.³³ It is my belief that these same “fugitive meanings” are the power

³² By Ground, we do mean in a certain sense the ground or foundation of the cognitive process, but as we shall see, it cannot be exclusively considered cognitively, but also, must be treated metaphysically, that is, in regards to Peirce's categorical outline.

³³ Cf. Campbell 2017a, for a chapter dedicated specifically to this passage.

and significance behind what is commonly called aesthetic experience. Thus, aesthetic learning is in its broadest sense simply the “opening up” of qualitative and interpretative possibilities in the ongoing continuum of experience.

Some descriptions of the Ground exclude memory/culturally informed content, instead suggesting that Grounds are furnished only by sensory information. Such an approach is like Gibsonian (1979) theories of direct perception, which hypothesize an information-rich sensory field, that an agent perceives *directly*, unmediated by habitual processes of schematization and action in an environment. To make this demarcation, seems to me less the result of a rational-logical (deductive/inductive) operation and more the result of a longstanding culture/nature divide in Western culture. But if we take art-as-experience seriously, we know that these first salient impressions, that from out of some amorphous sensorium jump out and call to be dealt with, can be, in some capacity, known and discovered. So already by the time we get to talking about Grounds we are already talking about sub-doxastic cognition, that although pre-intentional has the “mysterious power of guessing right”. Semetsky (2005, p. 232) explains:

Any talk ‘of unconscious mental phenomena that are in principle inaccessible to consciousness is incoherent’ (Searle, 1884, p. 550). The abductive suggestion ‘comes to us as a flash. It is an act of insight’ (Peirce, CP 5. 181) which is fallible but still has a mysterious power ‘of guessing right’ (Peirce, CP 6. 530) even while being pre-conscious and not rationally controllable.

As mentioned, the power of abduction is for Peirce the power of intuition, human creativity, but it is also paradoxically the baseline or “ground state of cognition” (Shank, 1991). Within the “abductive suggestion”, unconscious reactions and interpretations converge to impact upon the learner’s ongoing perceptual engagement in the world. How such intuitive understanding is realized emerges not through scientific logico-deductive steps, but rather in “perceptual skills that emerge, for each and every being, through a process of development in a historically specific environment” (Ingold, 2000, p. 25). I have suggested in this paper that artistic *processes* provide an ideal experiential stage for understanding and studying these creative-intuitive aspects of learning and cognition, and that behind these skill-processes are anticipatory dynamics, which manifest themselves through *attending* and *attuning to* the environment. Eco suggests how this inescapable intentionality of consciousness impacts upon our selection of Grounds:

If it can be granted that for Peirce the Ground is what I referred to as primary iconism, let us bear in mind that the Ground is an element, a marker, a quality that is (for whatever reason) being isolated and considered in itself. By whom is it isolated? Potentially isolable, it becomes isolated when a subject isolates it, from a certain point

of view, and at that point it becomes the terminus a quo of an inferential process, *in an upward* and not downward direction --- toward the series of relationships, in other words, that bind that spot to me and to my perceptual interests... (2014, p. 528)

So, although, Primary iconism may have a cosmological basis (and this basis is the only way we can come to even think of what is a pure potentiality) it can only ever be experienced above a certain *threshold of intelligibility*, the point it enters the ongoing flow of experience. The ground helps us demarcate that liminal space where mind-independent ‘stimulus-info’ begins entering-into-relation with the organism: a minimal threshold of perceptual-semiotic engagement.

6. Implications of Study and Suggestions for Future Research

Although there certainly is a neurological basis to the event of burning ourselves, Eco points out that the process transpires in an upward, rather than a downward motion. We don't reach down into our brains to determine what neurologically caused us to feel a given sensation in such-and-such a way. Rather, one reaches *upwards* to see how such Firstness functions within the regularity of our intentional experience: that the world we expected to be there, does in fact arise. Thus, attention to primary iconism (and the primary indexicality in which such Firstness is realized) is central to a heuristic vision of education that doesn't relegate sensible embodied experience to a depreciated place, or artificially segment body from mind.

But what does considering Firstness as un-actualized potential *really* tell us about how perception happens, and for that matter the perception of art-as-experience? If, on a subjective basis, anything can be said to resemble anything else, how does iconic learning give teachers, students, and researchers anything concrete to work with? Symbols after all can be pinned down and reduced into axioms, and indexes actually point something out to us through an experience of co-presence. It is on this perceived subjectivism that the creative and imaginative learning associated with the arts have been discredited and challenged. Ironically according to Peirce, it is icons and not symbols, that give reality its structure and ‘realness’. In fact, it is always the primary modelling characteristic of the iconic sign that provides signification with its objective basis, or Ground, and this is because “what is most characteristic of it is that “its parts are related in the same way that the objects represented by those parts are themselves related (CP 3.363)” (Legg, 2017, p. 33). Therefore, we can see how the essential aspect of the icon, is not in fact likeness, but rather *structural resemblance*. The organism, through moving and acting in the environment, forms *patterns of relationship*, based on its own level of awareness of its internal structures and processes. This objective basis of iconic signification represents what Peirce calls diagrammatic reasoning, and it is this ‘mapping’ of the new through the known that gives our knowledge of the world shape and dimension. In fact, we get a much better picture of iconic signification by considering, not a

picture (the standard analogy), but rather a *diagram*: As Peirce notes: “Many diagrams resemble their objects not at all in looks, it is only in respect to the relations of their parts that their likeness consists” (CP 2.281). Iconic learning transcends mimesis or resemblance, to incorporate relational-correspondence. This is in fact what the artist does, as exemplified by the Eco quote we began with. They attune themselves to their world, by entering into relation with it. Thus, the importance of routine habitual practice in the Arts. The artist establishes Thirdness by this ‘dwelling in habit’, and through this dwelling they perceive new resemblances and resistances. The success or impact of artistic expression lies in the artist’s ability to show ‘someone else’ this previously unrealized potential in things. Legg (2017, p. 34) tells us that “strictly speaking icons are the only signs of the type that can “show” anything, since showing someone must involve presenting some kind of intelligible structure (not in the case of the index, a mere pointing at something, or in the case of the symbol, a continuation of an already established and defined habit)”. This is the deep-rooted attention to iconism that (for Peirce) makes artists, and not the scholar-scientist, the true gatekeepers of meaning.

Fundamentally, Eco’s discussion on primary iconism as the *terminus a quo* of perceptual semiosis, reminds us that although learning may only be fully realized in the realm of Thirdness, it has a tripartite nature that extends beneath our everyday modes of cognition and intellection. An edu-semiotic perspective seeks to bring attention to how Firstness and Secondness are always dormant within Thirdness. It is about expanding consciousness in educational discourses beyond the processing of symbolic, conventionalized, obdurate knowledge to recognize the aesthetic bedrock of Firstness and its embodied realization in Secondness (the *palimpsest* nature of the categories, cf.: Figure 2).

I believe that part of the reason why it is a continual struggle to argue and justify the need for creative/artistic learning in an age of high stakes examination and increasing standardization is partially because of an inability to conceptualize and account for cognition and learning outside of problem-solving (epistemic) forms of computation. These embodied and sensory forms of knowing emphasized by the arts, are not easily accounted for by many theories of learning with their strong focus on abstract symbolic processing, and reductionism (Danesi, 1993, pp. 47-70). Unfortunately, Ken Robinson’s (2006) definition that “creativity is the process of having original ideas that have value” does nothing much to describe how creativity, not only aids, but is also *dominant* in perception and learning generally—how it functions holistically and experientially, not tangentially.

In their well-known study, Winner and Hetland (2009) presented research on why the arts should not be advocated for how they positively impact student core subject competencies. In this study, these authors found that the arts encouraged the development of cognitive skills not

emphasized within standardized forms of curriculum. I commend these authors' work in combatting a rising tide of standardization, although I add that a more heuristic understanding of learning will better reveal the centrality of creativity and artistic thinking underlying all perceptual engagement. Accordingly, Arts Ed advocacy should be focused *not on* showing how the arts offer something that core subjects do not — *not for* how Arts Ed can positively influence general academic performance — but rather by emphasizing the Peircean understanding that all learning and perception is *at root* inherently creative (following the basic structure of abduction). It is a generative act of discovering qualitative possibilities within perception. What I am saying is that such pleas will likely *remain* pleas unless more work is done in demonstrating the centrality of “creative, or poetic, cognitive activity” (Titone, 1994, p. 128). Such a task no doubt involves the ability to synthesize broad and diverse subjects and disciplines (such as; aesthetics, philosophy of education, biology, developmental psychology, anthropology, neuroscience, etc.). Because of its intrinsic *transdisciplinary* nature (Deely and Semetsky, 2017) I believe semiotics, and more specifically edusemiotics, will be a fruitful place to attempt such a bridging exercise.

References

- Aristotle (1991). *On Rhetoric*. (G. A. Kennedy, intro.; trans.) New York: Oxford University Press.
- Baker Jr, R. A. (2012). The effects of high-stakes testing policy on arts education. *Arts Education Policy Review*, 113(1), 17-25.
- Campbell, C. (2016). Indexical ways of knowing: an inquiry into the indexical sign and how to educate for novelty. *Philosophical Inquiry in Education*, 24(1), 15-36.
- Campbell, C. (2017a). A walk in the Textual woods: Umberto Eco's growing concept of text, in Torkild Thellefsen and Bent Sørensen (eds.), *Umberto Eco in his own words*. Berlin: De Gruyter Mouton.
- Campbell, C. (2017b). Learning that reflects the living: Aligning anticipation and edusemiotics. *Public Journal of Semiotics* 8(1). 1–25.
- Campbell, Cary. (2018). Toward a pedagogy of firstness: Aesthetic education as firstness experience. *Chinese Semiotic Studies* 4(1). 71–102. Berlin/Boston: De Gruyter.
- Carr, W. (1997). Professing education in a postmodern age. *Journal of Philosophy of Education*, 31(2), 309-327.
- Chiasson, P. (2001). *Peirce's pragmatism: the design for thinking* (Vol. 107). Amsterdam: Rodopi.
- Chiasson, P. (2005). Peirce's design for thinking: An embedded philosophy of education.

- Educational Philosophy and Theory*, 37(2), 207-226.
- Colapietro, V., Midtgarden, T., & Strand, T. (2005). Introduction: Peirce and education: The Conflicting processes of learning and discovery. *Studies in Philosophy and Education*, 24(3-4), 167-177.
- Cunningham, D. (1988). Abduction and affordance: A semiotic view of cognition. Paper presented at the 1988 AERA Conference, April 5–9, New Orleans, LA.
- Cunningham, D. J. (1998). Cognition as semiosis: The Role of inference. *Theory & Psychology*, 8(6), 827-840.
- Csikszentmihalyi, M. (1999). Implications of a systems perspective for the study of creativity. In R. J. Sternberg (Ed.), *Handbook of creativity* (pp. 313–335). Cambridge: Cambridge University Press.
- D'Aquili, E. G., Laughlin, C. D., & McManus, J. (1979). *The spectrum of ritual: A biogenetic structural analysis*. New York, NY: Columbia University Press.
- Danesi, M. (1993). *Vico, metaphor, and the origin of language*. Bloomington: Indiana University Press.
- Danesi, M., & Nuessel, F. H. (eds.) (1994). *The imaginative basis of thought and culture: contemporary perspectives on Giambattista Vico*. Toronto: Canadian Scholars' Press.
- Danesi, M. (1994). Vico and cognitive science. In Danesi, M., & Nuessel, F. H. (eds). *The imaginative basis of thought and culture: contemporary perspectives on Giambattista Vico*. Toronto: Canadian Scholars' Press.
- Danesi, M. (1998). *The body in the sign: Thomas A. Sebeok and semiotics*. Ottawa: Legas.
- Danesi, M. (2010). Foreword: Edusemiotics, in I. Semetsky (ed.) *Semiotics Education Experience*. Rotterdam: Sense Publishers.
- Danesi, M. (2013). On the metaphorical connectivity of cultural sign systems. *Signs and Society*, 1(1), 33-49.
- Dewey, J. (1916/2004). *Democracy and education*. Mineola, NY: Dover Publications.
- Dewey, J. (1934/2005). *Art as experience*. New York: Penguin.
- Deely, J. (2001). *Four ages of understanding*. Toronto: University of Toronto Press.
- Deely, J. (2009). *Augustine and poinsot: The protosemiotic development*. Scranton: University of Scranton Press.
- Deely, J., & Semetsky, I. (2017). Semiotics, edusemiotics and the culture of education. *Educational Philosophy and Theory*, 49(3), 207-219.

- Heilig, J. V., Cole, H., & Aguilar, A. (2010). From Dewey to no child left behind: The evolution and devolution of public arts education. *Arts Education Policy Review*, 111(4), 136-145.
- Eco, U. (1979). *The role of the reader: Explorations in the semiotics of texts*. Bloomington: Indiana University Press.
- Eco, U. (2000). *Kant and the platypus: Essays on language and cognition*. New York: Harcourt Brace.
- Eco, U. (2014). *From the tree to the labyrinth*. Harvard University Press.
- Eisner, E. W. (2002). What can education learn from the arts about the practice of education? *Journal of curriculum and supervision*, 18(1), 4-16.
- Gardiner, P. (2017). Playwriting and flow: The interconnection between creativity, engagement and skill development. *International Journal of Education & the Arts*, 18(6).
- Garrison, J. & Neiman, A. (2003). Pragmatism and education. In N. Blake, P. Smeyers, R. Smith and P. Standish (Eds), *The Blackwell guide to the philosophy of Education* (pp. 21–37). Oxford: Blackwell Publishing.
- Gorlée, D. L. (2009). A sketch of Peirce's Firstness and its significance to art. *Σημειωτική-Sign Systems Studies*, (1-2), 205-269.
- Greene, M. (1977). Toward wide-awakeness: An argument for the arts and humanities in education. *The Teachers College Record*, 79(1), 119-125.
- Ingold, T. (2000). *The perception of the environment: essays on livelihood, dwelling and skill*. Abingdon (UK): Routledge.
- Ingold, T. (2017). *Anthropology and/as education*. Abingdon (UK): Routledge.
- Lakoff, G., & Johnson, M. (1980). The metaphorical structure of the human conceptual system. *Cognitive science*, 4(2), 195-208.
- Laughlin, C.D. and E.G. D'Aquili. (1974). *Biogenetic Structuralism*. New York: Columbia University Press.
- Laughlin, C. D., McManus, J., & d'Aquili, E. G. (1990). *Brain, symbol & experience: Toward a neurophenomenology of human consciousness*. Boston: New Science Library.
- Laughlin, C. D. (1992a). Consciousness in biogenetic structural theory. *Anthropology of Consciousness*, 3(1-2), 17-22.

- Laughlin, C. D. (1992b). Time, intentionality, and a neurophenomenology of the dot. *Anthropology of Consciousness*, 3(3-4), 14-27.
- Laughlin, C. D. (1996). The properties of neurognosis. *Journal of Social and Evolutionary Systems*, 19(4), 363-380.
- Laughlin, C. D. (1997). The cycle of meaning: Some methodological implications of biogenetic structural theory. In Stephen D. Glazier (ed.), *Anthropology of religion: A handbook of theory and method*, 471–488. Westport, CT: Greenwood Press.
- Laughlin, C. (1998) *Tangent: The structures of experience (part 2)*. Retrieved from <http://www.biogeneticstructuralism.com/tutstrc2.htm>
- Legg, C. (2017). ‘Diagrammatic teaching’: The role of iconic signs in meaningful pedagogy. In Inna Semetsky (ed.), *Edusemiotics– A handbook*, 29–45. Singapore: Springer.
- Nadin, M. (2010). Anticipation and the artificial: aesthetics, ethics, and synthetic life. *AI & society*, 25(1), 103-118.
- Nadin, M. (2014). Semiotics is fundamental science. In M. Jennex (Ed.), *Knowledge discovery, transfer, and management in the information age* (pp. 76–125). Hershey, PA: Information Science Reference.
- Nadin, M. (2017). Anticipation and the brain. In *Anticipation and Medicine* (pp. 147-175). Cham CH: Springer International Publishing.
- Nesher, D. (2001). Peircean epistemology of learning and the function of abduction as the Logic of discovery. *Transactions of the Charles S. Peirce Society*, 37(1), 23-57.
- Noddings, N. (2010). Moral education in an age of globalization. *Educational Philosophy and Theory*, 42(4), 390-396.
- Mark, M. L. (2002). A history of music education advocacy. *Music Educators Journal*, 89(1), 44-48.
- McNeil, L. (2002). *Contradictions of school reform: Educational costs of standardized testing*. Routledge.
- Merrell, F. (1997). *Peirce, signs, and meaning*. Toronto: University of Toronto Press.
- Midtgarden, T. (2005). On the prospects of a semiotic theory of learning. *Educational Philosophy and Theory*, 37(2), 239-252.
- Noth, W. (2010). The semiotics of teaching and the teaching of semiotics. In I. Semetsky

- (Ed.), *Semiotics education experience*. Rotterdam: Sense Publishers.
- Olteanu, A. (2015). *Philosophy of education in the semiotics of Charles Peirce: A cosmology of learning and loving*. Oxford: Peter Lang.
- Olteanu, A. & Campbell, C. (in press). A Short Introduction to Edusemiotics. *Chinese Semiotic Studies*. Berlin/Boston: De Gruyter. [Publication set for spring 2018]
- Peirce, C. S. (1868). Some consequences of four incapacities. *Journal of Speculative Philosophy*. 2 (3):140 – 157
- Peirce, C. S., Hartshorne, C., Weiss, P., & Burks, A. W. 1965. *Collected papers of Charles Sanders Peirce*. Cambridge, Mass: Belknap Press of Harvard University Press. [References to *collected papers* — CP — are in accordance with common practice.]
- Petrilli, S., & Ponzio, A. (2005). *Semiotics unbounded: Interpretive routes through the open network of signs*. Toronto: University of Toronto Press.
- Prodi, G. (1988). Signs and codes in immunology. In E. Sercarz, F. Celada, A Mitchison, and T. Tado (eds.), *The Semiotics of Cellular Communication in the Immune System*. Berlin: Springer.
- Proni, G. (1990). *Introduzione a Peirce*. Milano: Bompiani.
- Roberson, D. et al. (2005). Colour categories in Himba: Evidence for the cultural relativity hypothesis. *Cognitive Psychology* 50, 378–411
- Robinson, K. (2006). Do schools kill creativity? TEDTalks. Retrieved January 1, 2008, from <http://www.youtube.com/watch?v=iG9CE55wbtY>
- Sebeok, T. A. & Danesi, M. (2000). *The forms of meaning: Modeling systems theory and semiotic analysis (Vol. 1)*. Berlin: Walter de Gruyter.
- Semetsky, I. (2005). Peirce's semiotics, subdoxastic aboutness, and the paradox of inquiry. *Educational Philosophy and Theory*, 37(2), 227–238.
- Semetsky, I. (Ed.). (2010). *Semiotics education experience*. Rotterdam: Sense Publishers.
- Semetsky, I. (2014). Taking the edusemiotic turn: A body-mind approach to education. *Journal of Philosophy of Education*, 48(3), 490-506.
- Semetsky, I. (Ed.). (2017). *Edusemiotics—A Handbook*. Springer Singapore.
- Semetsky, I. & Campbell, C. (2018). Semiotics and/as Education: An Interview with Inna Semetsky, *Chinese Semiotic Studies* 14(1). 121–128. Berlin/Boston: De Gruyter.
- Shank, G. (1991). Abduction: Teaching to the ground state of cognition. In *Bergamo*

- Conference on Curriculum Theory and Classroom Practice*. Dayton, OH.
- Shank, G. (1994). Shaping qualitative research in educational psychology. *Contemporary Educational Psychology*, 19(3), 340-359.
- Shank, G. (2008). Abductive strategies in educational research. *The American Journal of Semiotics*, 5(2), 275-290.
- Sheriff, J.K. (1994). *Charles Peirce's guess at the riddle: grounds for human significance*. Bloomington, IN: Indiana university press.
- Stables, A. (2006). Sign(al)s: Living and learning as semiotic engagement. *Journal of curriculum studies* 38(4). 373–387.
- Stables, A. & Semetsky, I. (2015). *Edusemiotics: Semiotic philosophy as educational foundation*. New York and London: Routledge.
- Strand, T. (2013). Peirce's rhetorical turn: Conceptualizing education as semiosis. *Educational Philosophy and Theory*, 45(7), 789.
- Titone, R. (1994). Vico and contemporary psychology. In Danesi, M., & Nuessel, F. H. (eds). *The imaginative basis of thought and culture: contemporary perspectives on Giambattista Vico*. Toronto: Canadian Scholars' Press.
- Thellefsen, T. (2001). CS Peirce's evolutionary sign: An analysis of depth and complexity within Peircean sign types and Peircean evolution theory. *SEED: Semiotics, Evolution, Energy, and Development*, 1(2), 1-45.
- Turley, P. T. (1977). *Peirce's Cosmology*. New York: Philosophical library
- Uden, L., Liu, K., & Shank, G. (2001). Linking radical constructivism and semiotics to design a constructivist learning environment. *Journal of Computing in Higher Education*, 12(2), 34-51.
- Usher, R., & Edwards, R. (1994). *Postmodernism and Education*. London: Routledge.
- Winner, E., & Hetland, L. (2009). Art for our sake: school arts classes matter more than ever-but not for the reasons you think. *Arts education policy review*, 109(5), 29-32.

About the Author

Cary Campbell is a music educator and musician residing in Vancouver, Canada. He is a PhD candidate in the Faculty of Education at Simon Fraser University and an educational researcher for MODAL research group. He studies the relevance of semiotics and the

philosophy of Peirce for conceptualizing the foundations of education, with a focus on music education. He is also co-founder and editor of the website/magazine philosophasters.org.

International Journal of Education & the Arts

<http://IJEa.org>

ISSN: 1529-8094

Editor

Christopher M. Schulte
Pennsylvania State University

Co-Editors

Eeva Anttila
University of the Arts Helsinki

Mei-Chun Lin
National University of Tainan

Peter Webster
University of Southern California

Media Review Editor

Ann Clements
Pennsylvania State University

Managing Editor

Christine Liao
University of North Carolina Wilmington

Associate Editors

Kimber Andrews
University of Cincinnati

David Johnson
Lund University

Shari Savage
Ohio State University

Marissa McClure
Indiana University of Pennsylvania

Deborah (Blair) VanderLinde
Oakland University

Heather Kaplan
University of Texas El Paso

Christina Hanawalt
University of Georgia

Alexis Kallio
University of the Arts Helsinki

Advisory Board

Full List: <http://www.ijea.org/editors.html#advisory>