Educating Semiosis:
Exploring Ecological Meaning through Pedagogy

by

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Abstract

This thesis consists of six essays – framed by introduction and conclusion chapters – that develop possibilities for philosophy of education and pedagogy from the lens of bio-semiotics and edu-semiotics (biological and educational semiotics). These transdisciplinary inquiries have found commonality in the concept of *learning-as-semiosis*, or meaning-making across nature/culture bifurcations. Here, quite distinct branches of research intersect with the American scientist-philosopher Charles Sanders Peirce's (1839 - 1914) *pragmatic semiotics.* I argue in these essays that the research pathway suggested by the convergence of edu- and bio-semiotics, reveals possibilities for developing a (non-reductive) theory of learning (and pedagogy generally) that puts meaning-making processes in a central light. A fully semiotic theory of learning implores us to take an ecological and biological view of educational processes. These processes explore the complementarity of organism-environment relations and the relationship between learning and biological adaptation. They also unravel new implications for education through the basic recognition that meaning is implicitly ecological. Understanding semiotic philosophy as an educational foundation allows us to take a broader and less dichotomized view of educational dynamics, such as: learning and teaching, curriculum design, arts and music education, inter/trans-disciplinary education, literacy (including environmental and digital literacy), as well as exploring the relationships and continuities between indigenous/place-based and formal pedagogical processes and practices. From this meaning-based and ecological perspective, what is important in the educational encounter *is not* psychologic explanations of learning stages, predetermined competencies, or top-down implemented learning-outcomes, but rather meaning and significance and how this changes through time-space and with others (not only human others) in a dynamic and changing environment. As addressed more directly in the conclusion chapter, these essays unravel the implications of this emerging approach to the philosophy of education, pedagogy and learning theory, specifically by providing conceptual/philosophical possibilities for integrating arts education, science education, and indigenous place-based knowledge into holistic educational approaches and programs.

Keywords: learning theory; philosophy of education; C. S. Peirce; biosemiotics; edusemiotics; arts education; transdisciplinary

Acknowledgements

To a reader, who takes the time to read this:

> *When I communicate my thought and my sentiments to a friend with whom I am in full sympathy, so that my feelings pass into him and I am conscious of what he feels, do I not live in his brain as well as in my own – most literally? True, my animal life is not there but my soul, my feeling thought attention are [...] Each man has an identity which far transcends the mere animal; – an essence, a* meaning *subtile as it may be. He cannot know his own essential significance; of his eye it is eyebeam. But that he truly has this outreaching identity– such as a word has – is the true and exact expression of the fact of sympathy, fellow feeling – together with all unselfish interests – and all that makes us feel that he has an absolute worth.*[1]

> - Charles Sanders Peirce (CP 7.591, 1866)

The people who need to be acknowledged are acknowledged within.

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[1] Please excuse the male-centred language in this passage. Of course, these are observations about humans in general.

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Foreword

These articles comprise a large amount of my published scholarly work during the period of my doctoral studies (2015–2020). Before continuing to introduce this research a few notes on the format are in order.

This is an example of a 'thesis by publication' or 'article thesis'. Unlike the traditional monograph model, a 'thesis by publication' comprises a collection of published, peer-reviewed academic articles (in this case 6), that are thematically linked and usually connected through introduction and conclusion chapters that frame the research project and its implications. The 'thesis by publication' format is relatively common in the natural and medical sciences, where graduate students are often engaged in and conducting scientific studies of their own. This model is becoming increasingly common in the humanities and social sciences, and is already relatively common in Europe. I have observed directly how it is being widely recognized and used across disciplines by Nordic and Northern European universities.

I should also note that some of the formatting of the original articles has been adjusted to be in accordance with APA guidelines. Font type, formatting, spacing and figure numberings have also been adjusted to adhere to SFU's required specifications. Beyond these minor changes, the content of the papers remains consistent with the published versions.

The appropriate copyright permissions have been obtained to reprint these papers and have been submitted along with this thesis and are available upon request. The citations for the essays are as follows:

Campbell, C. (2018). Returning 'learning' to education: Toward an ecological conception of learning and teaching. *Σημειωτκή-Sign Systems Studies*, *46*(4), 538–568.

Campbell, C. (2018). Educating openness: Umberto Eco's poetics of openness as a pedagogical value. *Signs and Society*, *6*(2), 305–331.

Campbell, C. (2019). Educating semiosis: Foundational concepts for an ecological edusemiotic. *Studies in Philosophy and Education*, *38*(3), 291–317. Springer Nature.

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. (2018). In search of our beginnings: Locating 'firstness' in arts education in the service of advocacy. *International Journal of Education & the Arts*, *19*(13).

Campbell, C. (2017). Learning that reflects the living: Aligning anticipation and edusemiotics. *Public Journal of Semiotics*, *8*(1), 1–25.

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Chapter 1.

Introduction

1.1. Preamble

I was driven to this research because I was, throughout my formal schooling, dissatisfied with my educational experiences. As will be revealed gradually through the following six articles and conclusion chapter, outside of a few encounters with some passionate and driven teachers, overall and in general, *my education lacked meaning*. It failed to connect me to the place I was from, and the things and practices that seemed important. This was emphasized to me in the way art practices – the processes and rituals that seemed inherently *full of meaning and significance* – were often presented as peripheral and supplementary to the more primary educational focus on information-processing and problem-solving. The richness of learning, teaching and shared inquiry, seemed reduced to a determined and calculative performativity – not about learning, and the experience of meaning, but rather: getting the marks, passing the test. Many students certainly can adapt to these extrinsically imposed aims and outcomes. I, being dyslexic and a "slow" learner, could not so easily, causing me to withdraw from formal schooling (see Chap 2). My lifelong struggle with dyslexia has deeply informed my approach to learning and meaning-making. If anything, it has made me sensitive to the variable ways all humans and animals have of connecting to the world around them and communicating their experiences. It was not until I could direct and channel my own perception and dispositions, that I could go on learning anything – be it music, writing or philosophy. However, meaningful experiences, and teaching and learning driven by this experience of meaning, were quite simply not afforded through much of my formal education.

But what was meaningful to me?

Processes that I could, as a learner, directly engage with and participate in. Practices and processes that I could live in and dwell in – that seemed real, *resonating*. Anything, any study or practice, any discipline *could* constitute such a practice, but for

me, these meaningful experiences were revealed most directly by art and art-making – specifically music, literature, and engaging with the natural world.

It was what we often call *aesthetic experience* that seemed to possess and offer wholeness, and thus form, to experience, from which learning *could* happen. A story, a song, an improvisation, a walk in the forest, a poem – these all seemed to me to say something *true,* in the sense that they stood in a *real* relationship to the world. Jan Zwicky (2019) says that this is simply the *work* of poetry: "It is the work of telling the truth, that is, of perceiving and responding to the real. In all ages and in all cultures, it springs from the discernment of complex, non-linear, integrated, and therefore resonant structures [forms] in the world" (p. 27). These meaningful practices, these *forms of life and living*, don't just re-present the world – the *thing, out there*. Rather, they show a way of relating to it, a mode of attention, and thus, of sustaining meaningful engagement.

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This collection of essays elaborates the educational possibilities behind the basic recognition that learning (and living) *is* meaning-making, and that pedagogy should be driven by the experience of meaning. This perspective on education is indeed an ancient one, revealed in the opening lines of Augustine's *De Doctrine Christiana*: "learning concerns either things or signs, but it is through signs that we learn what things are" ([397AD], book 1, line 2).[2] This is to say that there are not two types of reality, one external and one internal; one mind-independent and the other mind-dependent. Rather, we, and all living organisms, only come to know the *things* of our environment by bringing meaning and significance to them – by recognizing them as meaningful *signs*.

Augustine's discovery of the sign as an educational concept instantly blurs the persistent nature-culture bifurcation in Western philosophical thought. In fact, this seems to be an accident – stemming from his self-confessed ignorance of Greek. The Greek understanding of the sign (σημεῖον), meant something far narrower than Augustine's "signum"– being confined to the connotation of mostly indexical signs, clues, tracks, signs of the weather, divinatory signs (cf. Deely (2001, pp. 212-223) for a comprehensive historical account). That is, the Greek understanding of the sign was tethered to so-

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[2] See Olteanu and Campbell (2018, pp. 245-246) and the dialogue Olteanu and Campbell (2019), for a fuller analysis of this passage.

called objective, *mind-independent reality* (*ens reale*). As will be explained later, Augustine's definition suggests an understanding that *what is properly objective* is what enters within the *objective awareness* of some organism's perception: "Here is the recognition that humans and animals alike only know the mind-independent *things* of their environment through attributing meaning and value to them..." (Olteanu & Campbell, 2018, pp. 245–246).

To live is to respond to and engage with the signs in your environment. For any animal, the failure to find meaning in the environment will eventually result in the opposite of living, that is *death*. But here is the central crux. There is no existence apart from an existence with others – and there is no meaning in isolated components divorced from the whole. This is to say that there is no thinking except through *thinking like an eco-system* (Bringhurst & Zwicky, 2019). As Heraclitus expresses in his debate with Parmenides: "All things think and are linked together by thinking" (translation as cited in Bringhurst, 2006, p. 139).

On an ecological level, less plurality brings less life (see Chap 2 and Chap 7). I maintain that this basic orientation – to describe how meaning emerges through plurality, to think like and/through an ecosystem – also describes the educational relationship: to sustain and reveal meaningful relationships with the world, to call others and oneself into *participation*. This is adapted into a central educational theme in these essays: that the teacher calls meaning into presence, and furthermore, that teacher and learner are not substantive and bounded entities, but instead, enacted *modes of being* and *forms of experience* revealing, hopefully, what are *real resonant relations* in the world. The learner strives to form and enact their own way of relating to what is being "put on the table" through their education (see Masschelein & Simons, 2015, p. 88). It is not a relationship in our brains, nor in the environment, but specifically an embodied participation and co-evolution with the world. This is to observe that meaningful relationships are embodied in mimesis, which can be better understood as *relational participation*, rather than its more relativistic understanding as imitation or mere resemblance. Knowledge is anything meaningful to an organism in the here-and-now (cf. Stables, 2012) – the immediacy and situatedness of experience unfolding in an environment. In this sense, knowledge is never simply *there* (Hoffmeyer, 2018), in advance of our needing it – it is something evoked, enacted, in the act of coming to know and correspond with the world.

I also aim to show in these articles that this world-centred and ecological orientation toward knowing and learning follows from the "thinking through making" and the kind of "knowing from the inside" revealed by the work and practices of makers (Ingold, 2013; Sennett, 2008). The skilled practitioner knows what to do based on their aptitude for finding *a richness of decision making* in the continuity of their habitual practices. Indeed, it is through our habits, entrainments, practices, and rituals that we come to know the world at all. I will highlight that this perspective intersects with the kinds of being and knowing embodied by the arts and arts education, and indeed, all forms of creative making. The practices of artists, I argue, reveals that meaning emerges in the act of doing, *from within* – accentuating that poetry, *poetics*, stems from the Greek, poiéō, *to make*, and the notion of *poiesis*; *the act that makes (and continues) the world*. To be alive in the here-and-now (to be present) is to be in a process of becoming – it is a process of continually *making* the world (cf. Stables, 2012).

Parmenides says, in response to Heraclitus that: "To be and to have meaning are the same".3

1.2. Research Background

This research was written principally between 2014 and 2019, coinciding with a fruitful period of renewed interest in finding shared meaning-based approaches between the life sciences and the humanities. These *trans*disciplinary[4] inquiries have found commonality in the concept of *learning-as-semiosis*, or meaning-making. Here quite distinct branches of research intersect on the American scientist-philosopher Charles Sanders Peirce's (1839–1914) *pragmatic semiotics.*

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3 Find a fuller treatment of this passage in Bringhurst (2006, pp. 139 –159).

4 For more on the transdisciplinary nature of educational semiotics, see (Seif, 2017; Deely & Semetsky, 2017) and for the transdisiciplinarity of Peirce's philosophical project and working method (see Campbell, 2020). As I expanded upon in a recent special issue I edited on improving access to Peirce's Harvard manuscripts: "Why trans- and not just plain old interdisciplinarity? Because inter- is not enough – as Peirce demonstrated through his synechism and his semiotics (which some would consider a meta-discipline framing all learning and inquiry processes in nature and culture alike). We need integrated and holistic approaches that transcend the simple piecing together of "closed disciplinary perspectives" (Ingold 2017: 75): "In every case, the *inter*-, the focus on between-ness, is complicit in setting up the borders it is alleged to cross" (Ingold 2017: 75). Here, knowledge and inquiry appear "not as a continent divided into territories or *fields of study* but as a tangled mesh of ongoing pathways or *lines of interest"* (Ingold 2017, p. 74), pathways, we should add, moving together *through time*" (Campbell, 2020, p. 147).

Peirce is the founder of philosophical pragmatism – he was a close friend of William James and briefly, John Dewey's logic professor at Johns Hopkins. Semiosis is the transformation, or action, between signs (CP: 5.473) – this is a triadic [non-dualistic] process that contains (1) a sign, (2) its object, and (3) an interpretant, that is in no way reducible to any one of these three parts. The important thing about this concept as it pertains to learning, is that it terminates not in individual mental states, nor in describable and determined outcomes, but in *qualitative relations* that mediate organism and environment interaction. Note, Peirce's odd term "interpretant" and not interpreter. Signs, though central to cognition and 'thinking', are neither psychologically defined nor located in Peirce's approach. From the 1907 "Pragmatism" manuscript, Peirce highlights how, "that because humans only know semiosis as a cognitive phenomenon ["a modification of consciousness"], we can easily miss that the former is not only inclusive of, but also more comprehensive than the latter" (Olteanu, Campbell, & Feil, 2020, p. 6):

> Although the definition [of semiosis] does not require the [...] interpretant [...] to be a modification of consciousness, yet our lack of experience of any semiosis in which this is not the case, leaves us no alternative to beginning our inquiry into its general nature with a provisional assumption that the interpretant is, at least, in all cases, a sufficiently close analogue of a modification of consciousness to keep our conclusion pretty near to the general truth. We can only hope that, once that conclusion is reached, it may be susceptible of such a generalization as will eliminate any possible error due to the falsity of that assumption. The reader may well wonder why I do not simply confine my inquiry to psychical semiosis, since no other seems to be of much importance. My reason is that the too frequent practice, by those logicians who do not go to work [with] any method at all [or who follow] the method of basing propositions in the science of logic upon results of the science of psychology – as contradistinguished from common-sense observations concerning the workings of the mind, observations well-known even if little noticed, to all grown men and women, that are of sound minds – that practice is to my apprehension as unsound and insecure [...]; seeing that, for the firm establishment of the truths of the science of psychology, almost incessant appeals to the results of the science of logic –as contradistinguished from natural perceptions that one relation evidently involves another –are peculiarly indispensable. Those logicians continually confound psychical truths with psychological truths, although the distinction between them is of that kind that takes precedence over all others as calling for the respect of anyone who would tread the straight and narrow road that leadeth unto exact truth. (CP 5.485)

This is to assert that semiosis is a more general, and thus less limited, explanation of interpretation – not at all restricted to human cognition or conscious/intentional mental processes. From a (post-)Peircean perspective, semiosis is primary and, evolutionarily,

prior-to the emergence of anything like consciousness or cognition, being expressed in the actions of any living, meaning-seeking system.[5] The category of *meaning*, as foundational to semiotics, offers a philosophical perspective from which to understand learning outside of psychologic reductions, which mostly conceive of learning as the expression of achieved behavioral outcomes or mental states, occurring within the brain of the subject.

Recent interdisciplinary research has galvanized around this central orientation that life and meaning-making are co-extensive, referred to as *Sebeok's thesis* (Kull *et al.*, 2011):

> The phenomenon that distinguishes life forms from inanimate objects is semiosis. This can be defined simply as the instinctive capacity of all living organisms to produce and understand signs" (Sebeok 2001, p. 3).

Following from this recognition of semiosis as a basic criterion for life, a notion of *semiotic learning* has become a major focus in both biological and educational semiotic research (bio and edu-semiotics, respectively). In these discourses, learning is expressed broadly in the modification of sign-relations that result in significant change for the organism. For biosemiotics in particular, this research focus on learning-as-semiosis is ultimately a way to describe how adaptations occur through qualitative (meaning-based) means, and not solely through natural selection. Learning is these discourses is linked with the growth of significance, of meaningful action-possibilities, within a species-specific phenomenal world, or *umwelt* — a biological and ethological concept developed in the early 20th century by Estonian-German biologist Jakob von Uexküll (see

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[5] A full discussion on this point will not be possible in this introduction. In place of this, I direct the reader to two important biosemiotic texts: "Perception, understood as the process of creating internal models of events or things in the surroundings, is a high level activity based on the integration of hundreds, thousands or, in some cases, even millions of semiotic interactions in the body and between the body and its environment and facilitates, in higher organisms, comprehensive mental maps of relevant aspects of organism surroundings… these endosemiotic tools are collectively responsible for the interaction of the organism with its social and physical world and constitute the fundament out of which so-called psychological reality, if any, of the organism will emerge" (Hoffmeyer and Stjernfelt, 2016, p. 9). And further in Stjernfelt (2014), on how signs are vehicles for thought and cognition in general, outside of the narrow scope of language and logic: "Thus, signs are not analyzed as derivatives of more primary perceptions […] Rather, many signs are indeed simpler than perceptions, as evidenced particularly by the biosemiotic sign use in simple animals without full perceptual field, sensory integration, central nervous systems, etc. Perception and consciousness are rather to be seen as evolutionary later, more complicated phenomenon, probably evolved so as to scaffold and enhance simpler cognitive semiotic processes already functioning [even, as shown in both these texts, at the level of mono-cellular organisms (Prokaryotes)]" (p. 4).

1957[1934], 1982[1940]), and a central concept in this collection of essays (see Chap 4 in particular).

As will be tracked, these insights follow from a resurgence of interest in finding meaning-based, ecological, approaches to many research domains over the last two decades, and in many ways, precipitated by the urgency of the climate crisis. Andrew Stables (2006), for example, laid out the foundation for a semiotic educational philosophy and theory by starting from the observation that "[i]f all living is semiotic engagement, then learning is semiotic engagement", (p. 375). This broad concept of learning-as-semiotic engagement has stimulated much contemporary writing and inquiry into educational practice and theory, often under the banner of *edusemiotics* (see Semetsky, 2010, 2017; Semetsky & Stables, 2014; Stables & Semetsky, 2015; Stables *et al.,* 2018; Olteanu & Stables, 2018; Olteanu & Campbell, 2018).

In these essays, I argue that this broad focus of semiotic learning across nature/culture bifurcations, currently being explored at the intersections of edu- and bio-semiotics – again, a research pathway rediscovered in contemporary times through new and increased understanding of Peirce's late semiotic philosophy — also provides possibilities for developing an ecologically informed, (non-reductive) theory of learning that puts meaning-making processes in a central light. I propose that this theory of learning will be useful in bridging conceptualizations across both the humanities and life sciences (see Campbell, Olteanu, & Kull, 2019), opening possibilities for inter/transdisciplinary research and practice in education (see Section 8.3).

Semiotics has traditionally played an applied role in educational studies. Edusemiotics changes this, by recognizing an extensive and ancient philosophical tradition that sees the sign, or relational being, as ontologically basic. This is not semiotics applied to education, as a teaching tool, or method of research/analysis, but rather *thinking* semiotic philosophy as the foundations of educational theory at large. Hence the title of Andrew Stables' and Inna Semetsky's modern classic for this emerging field – *Edusemotics: Semiotic philosophy as educational foundation* (2015). Inna Semetsky (Semetsky and Campbell, 2018, p. 124) explained the significance of this research orientation in an interview with me:

> Take the concept of *semiotics in education.* More often than not, it still deals with objects – even those that play a somewhat mediating role such as

teaching "aids." But *edusemiotics* purports to deal with signs, taking as its starting point the rejection of non-contradiction that says: If this is this, it cannot also be that. Logic as semiotics says it can, because "this" is always *becoming* "that." People are also signs: In learning, in interpreting signs, they grow and become, as Peirce would say, *more developed signs*. It is the process of learning and evolving that brings together ens *reale* (reality) and *ens rationis* (our knowledge of reality).

I hope to show that this perspective on education – semiotics *as* educational philosophy – can de-center taken-for-granted assumptions about what learning and educational experience entails and create new possibilities for research, theory and praxis in education. In these articles, I am specifically interested in the ways that understanding semiotic philosophy as an educational foundation allows us to take a broader and less dichotomized view of educational dynamics, such as: learning and teaching, curriculum design, arts and music education, inter/trans-disciplinary education, literacy (including environmental and digital literacy), as well as exploring the relationships and continuities between indigenous/place-based and formal pedagogical processes and practices (see Chap 8.3).

From a semiotic account, meaning always implies a relationship, and therefore a mediation between organism and environment. Following from this, a semiotic theory of learning must ultimately be *ecologically construed* (see Olteanu & Stables, 2018), emphasizing the active abilities of organisms to reshape their environments through enacting and discovering sign-relations, i.e., to learn. I argue in these essays, that the educational sciences have in large measure, advanced disembodied and *mentalistic* theories of learning, which, by seeing human cultural-learning as distinct and separated from the broader forms of learning and knowing expressed by all lifeforms (plant and animal), has ultimately proliferated narrow educational perspectives and destructive ecological and social relations. A fully semiotic theory of learning implores us to take an ecological and biological view of educational processes – one that explores the complementarity of organism-environment relations, the relationship between learning and biological adaptation, and unravels new implications for education, through the basic (bio-)semiotic recognition that meaning is implicitly biological.

Again, from this perspective, what is important to take notice of pedagogically is not precisely psychologic explanations of learning stages, predetermined competencies, or desirable learning-outcomes, but rather meaning and significance, and how this

changes through time-space and with others (not only human others) in a dynamic and changing environment.

1.2.1. Pedagogical background

In line with this broad outlook on education, I am fascinated by experimental pedagogical practices and exploratory research that reimagines what both teaching and research *can be*. Perhaps one of the main implications of a meaning-based (semiotic) approach to education is that it challenges the dichotomization of research-teaching and learner-teacher, reminding us that education is ultimately a process of studying with others in a shared and evolving world.

My own teaching practice – whether in music, education, research practices, or philosophy – is shaped by the understanding that teaching and learning are essentially indeterminate and open-ended processes (see Chap 3). They cannot be constrained from the outside through a narrow performativity and drive for measurable evidence. I argue that learning cannot be determined or imposed from *outside the pedagogical event* (Chap 2). It is not something given in advance, but emergent in the significant event of new learning and the cultivation of shared experience (see the pedagogy of novelty, developed in Chap 5). In this sense, my approach to teaching focuses on cultivating a kind of continual knowledge discovery, where teacher and student alike strive to form meaningful relationships through the cultivation of shared practices and *forms of gathering* (Masschelein & Simons, 2015).

Much of my research has focused on how the concept of learning is essentially empty without practices (Chap 2; Chap 8). As such, I emphasize a pedagogical and curricular approach that emphasizes *learning through* and *studying within* shared practices (see Section 8.1 for a fuller account of the significance of educational practices to this research). This orientation around study is important and deliberate. As Claudia Ruitenberg (2017) observes, while evidence of teaching and learning effectiveness must always "point beyond itself" to efficient and productive outcomes, in contrast "study [and I would also include practice], primarily points to itself, in the sense that the result of study is a transformed relationship between the studier and the object of study" (p. 3). Conceived this way, teaching, learning, all blur into a kind of living *re*-search. Research is not conceived here as a solitary affair. It is always done with others and

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involves acknowledging the relations that sustain us. In this sense, teaching is an essential part of research, not an added-on appendix – "a way of sustaining [a] relation of mutual indebtedness" to the world and the 'others' we commune with (Ingold, 2017, p. 71).

1.2.2. Journey to Tartu – why *music*, and why semiotics?

Semiotics has always been a philosophy of learning for me. First, it helped me understand how I learned and—later, when I found myself teaching music at a young age—how my students learned. Through semiotic philosophy, I articulated and developed over the course of a decade as a music instructor what might be called a *phenomenology of pedagogy*: teaching in a variety of settings (classroom, private, ensemble, band), and to a wide demographic of age groups (from pre-school aged children, teens, to seniors). What I sought through this pedagogical philosophy was a connection to my actual creative practices of music and writing. I was seeking meaning, and thus, holism in life and pedagogy. My mission was to articulate the continuity between how *I* learned and inquired through my artistic practice and how *students* learn in a classroom – regardless of whether this classroom is a teen jazz ensemble, a music theory class, an undergraduate philosophy tutorial, or a Master's seminar in curriculum and instruction. Specifically, I was pursuing a philosophy that orients us towards understanding (as well as enacting) meaning-making practices *in situ*.

Again, rather than crafting or prescribing specific teaching strategies, my aim was to elaborate a basic pedagogical disposition and receptivity towards the ways that meaning emerges through continued and sustained practices. This is, arguably, simply the disposition of *creative pedagogy*. In their excellent review article, Abramo and Reynolds (2015) argue that creative pedagogy, and the practices and dispositions of creative pedagogues, can be used as a framework for pre- and in-service music teachers. They rightly observe, that though obviously different, creative pedagogy requires and shares many of the traits necessary for creative musicianship.[6] This broad research orientation was driven by intuitions and insights stemming from my own

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[6] "Approaching music teacher education as a process of *becoming* a creative pedagogue can serve as a complement to the cultivation of creativity in performance, composition, and improvisation. Stressing that the development of their creativity as a pedagogue is independent of, albeit related to, their creative music development allows students to nurture their teaching" (p. 48).

learning journey: I realised that it was only by entering into absorbed continuity with practices (*to study*) that I was able to achieve a sense of presence, of *nowness.* It was through cultivating an increased awareness of the present-unfolding, of the improvisatory movement/act itself, that I could overcome my dyslexia, anxieties, and inhibitions around many aspects of learning.

I was drawn to semiotics at a young age because I craved a way of thinking about and talking about meaning-making across nature/culture, art/science, animal/human, mind-body bifurcations. I argue in these essays that semiotic philosophy provides an ideal outlook and conceptual toolbox for education as it is inherently a meta-science explaining the ways in which knowledge itself is created, evoked, communicated, and sustained. What got me interested in Peirce, as a young educationalist interested in learning, was precisely this basic orientation toward process and complementarity – expressed in the growth and evolution of signification (semiosis) and the way organisms come to know (or "model") their world. In terms of Peirce's pansemiotic cosmology (Chap 7.3), this is the process of interpretation conceived as broadly as possible – connected to the "generalizing tendency" of the universe itself – the tendency of meaning to grow. Learning here is neither narrowly symbolic nor anthropocentric, as the phenomenon is often treated in the legacy of Saussurean semiotics (often referred to as semiology). As noted recently by Semetsky (2020) the Peircean tradition "sees in semiosis a broader and much more fundamental process, involving the material universe itself in human semiosis and considering semiosis in our species a part of semiosis in nature" (p. 3). It was through turning to Peircean semiotics that I made sense of my own educational experiences, and found a theoretical outlook that could accommodate and reveal connections to my practices and interests.

Semiotics has opened a lot of doors for me – it was one way that I connected with my supervisor Dr. Susan O'Neill (besides music education and aesthetics, of course). Dr. O'Neill runs a research group (**MODAL**), that I would eventually work for, centered, in part, on the social-semiotic approach of multimodality studies. Suzie was entirely instrumental in the development of this research; not only in terms of fast-tracking me into the PhD from a Master's program, but also in providing me with extremely relevant and stimulating research experience as part of MODAL and the Canada-wide music-learning research project called the *Creative Music Practice Program (CMPP)*. This project was an important site and laboratory for me and this

research – a place, where I could, in a flexible and open environment, try out and explore in depth the approach to creative music teaching that I had developed over the past several years working professionally as a music teacher. I worked closely with fellow teacher-researcher, classical vocalist and vocal instructor Siri Olesen, who, along with Suzie, I also owe a huge debt of gratitude to.[7]

Semiotics was also one of the intellectual keystones (along with anthropology, music, teaching, art and philosophy) of my friendship with Dr. Michael Ling, whose words and ideas are spread through these articles and who continues to act as a guide and mentor to me. Not to mention other very significant people such as music education professor Dr. Maria Spychiger (University of Frankfurt), who I met and became good friends with while she was a visiting researcher for MODAL research group in the Winter of 2016 and 2017 – sharing MODAL's office space, as well as exploring the city and snowshoeing in the mountains. Of note for this research is that Maria was one of the pioneers of semiotic approaches to music education (see Spychiger, 1997, 2001).

In many ways, this research culminated with me travelling to the University of Tartu (Estonia) to work as a visiting doctoral researcher/lecturer in the Department of Semiotics in Spring 2019. Tartu has a long tradition of semiotics and biosemiotics, ecology and naturalism generally – this is in part revealed by the lineages of famous professors and students like Jakob von Uexküll, biologist and naturalist Karl von Baer and semioticians like Juri Lotman. I first heard about Tartu and this intellectual lineage

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[7] Siri has taken the time and energy to document this process and the teaching relationship me and her formed through the CMPP, in her MA thesis *Musical Dialogues: Narrative explorations of Buber's ideas of 'Meeting' and 'Living Center" within the creative musical collaborations of a professional singing group and a children's after-school music program* (2019). She presents an extended analysis of one teaching moment (event) I shared with a student late in the third unit of the program. Siri's analysis is poignant (see pp. 69-72, and pp. 80-81) and I think expresses very directly what is at the heart of this teaching philosophy, something I learned just as much through watching *her teaching* through the program: "I discovered that this [pedagogical] goal wasn't achieved by reading articles about teaching music to children, or by designing curriculum and lesson plans, or by personal reflection about what I was doing wrong. Through Cary's example, I witnessed that connection was made because of Cary's connection and commitment to music, and his sincere desire to create opportunities for the students to find these connections. It meant moving away from strategies and teaching concepts, to connecting to something that is living, in this case to music." (pp. 80-81)

through my partner Marion Benkaiouche when we were 18 or 19, so it was meaningful that nearly ten years later we would travel there together.

At Tartu, I worked closely with ecologist Timo Maran, on issues related to environmental literacy and education. I also collaborated with educational philosopher and humanities scholar Dr. Alin Olteanu, and biologist Dr. Kalevi Kull, on research and writing projects exploring 'shared concepts' across the life and the social sciences. One notable outcome of this research has recently been published in an article called "Learning and knowing as semiosis: extending the conceptual apparatus of semiotics" (Campbell, Olteanu, & Kull, 2019). Here, we map in some detail the interrelationships between a host of learning-centered ecological concepts that have been used variously and inconsistently in different disciplines (specifically, learning, memory, resources, competences, affordances, and scaffolding). In this paper, we redefine these concepts as interrelated semiotic terms in the interest of developing a theory of knowledge with broad transdisciplinary relevance. A passage from this article (p. 356), describes this project, while also centering the larger scholarly context of these articles:

> The convergence of semiotic theory of education and the semiotic theory of biology reveals one of the most interesting features of semiotics in general: its *implied theory of knowledge.* Signs, as basic semiotic units, are not units of measurement, but rather refer to *meaningful relationships* that sustain, enable and constrain the organism's interactions – thus, they are ultimately qualitative and subject to dynamic change and growth [...] Following trends in ecosemiotics and biosemiotics, it is possible to consider that semiotics itself is increasingly becoming a theory of knowledge, as it describes the diversity of models and modelling phenomena across different organisms' umwelten, and thus the "forms of knowledge" (Sebeok, Danesi 2000) expressed by life's diverse interactions. The interactions of living organisms and ecosystems create new forms (scaffoldings and resources) for meaning-making. These basic biological forms (*scaffolding structures*) appear to be signs (or, sign-vehicles) that organisms endow with meaning through coming to *know* them in their own species-specific ways. In this way, "biology accounts for a spectrum of meanings that a form *affords* within the horizon of an organism's *competences* for meaning-making" (Olteanu & Stables, 2018, p. 411, [emphasis added]).

From a post-Peircean bio-semiotic point of view, *knowledge* can be defined as everything meaningful for an organism. Knowledge is not conceived here, as Plato has passed down to us, as justified, true belief. Hoffmeyer explains: "knowledge is not something we have but something created [evoked] in the very moment of use" (Hoffmeyer 2018, p. 1). Implied here is that knowing is always primarily an embodied

activity, enacted and evoked from inside the continuity of an organism's engagements with an environment.

As I will continue to reveal through these articles, this orientation stems from deep-rooted and personal realizations. Conceptualizing knowledge as something pre-existing, disembodied, narrowly symbolic, and static – as many of my teachers did, explicitly or implicitly – was an impediment to my own learning and completely out of line with how I experienced and related to my practices of music, writing, and scholarship. It was through continually seeking to understand this central *aporia* and its manifestations in my own experience, that I find myself here today – still inquiring, still making, still practicing.

1.3. Theoretical Outline

1.3.1. A Pedagogy of the Event

As alluded to, one central point in these articles is that teaching and learning are open-ended and essentially indeterminate processes. They are enacted through meaningful practices that cultivate the *possibility of attention.* I argue that from a semiotic and bio-existential perspective (see Chap 4), the significance of teaching and learning can only be *sporadically realized* and is not fully generalizable or determinable– emergent in a *significant event* (Chap 2.), and always spatially and temporally situated.

A focus on events, and what might be called *event-time* (cf. Manning, 2016), orients us toward the *experience of meaning*, the realization of emergently enacted form; a wholeness (a gestalt) that cannot be reduced to its comment parts: "Gestalt thinking [the *re*-cognition of meaning] fundamentally involves the spontaneous perception of structure: not analytic order – one brick stacked on another – but what might be called *resonant internal relations*" (Zwicky, 2019, p. 19, [emphasis added]). The realization of these real "resonant internal relations" is the experience of enacting meaningful experiences. It is why such a pedagogical commitment is oriented *toward the event*, where resonant movements and relations provide *the ground* (see Chap 6.5.2) for the very possibility of significant experience.

A focus on events orients us toward a focus on practices, in the sense that any notion of learning as significant change must be discerned within the practices that enact

it. Practices enact *forms* to be entered into relationship with, and these forms allow for the *continuation of meaning*. Stables (2016) notes clearly that the concept of "learning is empty without practices" (p. 48). So, learning can *and is* channeled through pedagogical practices, but it is not determined by them. In this sense, the teacher cannot ensure that their teaching will be received or understood – "teaching is always the giving of a gift that one doesn't possess" (Biesta 2016[2013], p. 52) – and because of this essential relationality we must practice a "pedagogy of the event" (Biesta 2016[2013], p. 139). This is to say, it is only from inside emergent and sporadic events, where new possibilities for action and response (ways of being in dialogue with the world) can be re-cognized and granted meaning and significance. Thus, such emergent events sustain practices as living and dynamic processes.

When learning equals the achievement of 'good outcomes', learning is reduced; in our actual educational experiences but also in educational policy (Chap 2). It refers not to an experiential transformation, for finding and enacting a richness of choice within the context of a significant practice or process, but a simple means-ends mechanism. This notably implies a curricular orientation that *That Which Is To Be Learnt* is a stable substance, and not an enacted significant relation, as implied in this account (among many others, cf. Stables, 2019a; Maran, 2020). Teachers within such an accountability model are often construed as 'instruments of the state', transferring an approved curriculum onto passive students. Such a reduction (learning = good educational outcomes, determined outside and in advance of pedagogical encounters) reifies learning from its experiential basis and feeds into a persistent *performativity problem* in terms of how teaching, learning, curriculum, and schools are evaluated.[8] As Biesta and Priestley (2013, p. 36) noted in their classic article "Capacities and the Curriculum": "[w]hat is significant here is that as a result of this the student shifts from being the

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[8] "For example, schools are deemed improvable if they adopt input measures that appear to have resulted in improved outputs elsewhere. If School, or School System A adopted innovation X and experienced output improvement I (AX – > A), it is assumed that X will have the same level of effect in school or system B (BX –> I). However, this is illogical as A and B remain different, B + X will not necessarily lead to I. There is no reason to believe that an intervention in one content will have the same effect as it did in another. Universal generalizations cannot validly be made from specific instances, yet performative policy making has nothing firmer to fall back on. Relatedly, in a sort of subversive desperation, correlations are often taken as cause-and-effect relationships, even though there is no logical reason to assume that they are…" (Stables 2019b, p. 29). cf. Daniels *et al.,* (2019).

subject in education – that is the one who is supposed to study, learn, master, acquire, evaluate, judge, etcetera – to become the outcome of education".

Thus, I follow a particular orientation in educational thinking that connects emergent semiotic processes with the discovery of new learning opportunities. This orientation of course is nothing new, and educational theorists have long focused on the importance of social semiotics (e.g. Gee, 2005), event-based pedagogy (see section 8.1) and emergent curriculum (e.g. Jone, 2012). What is perhaps at least somewhat novel in my approach in these essays is my explicitly ecological and biosemiotic outlook that allows us to think about learning on a much broader scale; outside of being narrowly human, representational, or psychologistic. I argue through these essays that an ecological, meaning-based philosophy of education may help us recover from the stultifying and narrow performativity that results when the student (and their measurable competencies) becomes the outcome of the educative process and the teacher becomes the deliverer of knowledge approved and designed from above. My goal with these articles is rather to realize a way of responding to and describing teaching, learning, and curriculum *that emerges inside the experience of meaning*: a pedagogy sensitive to the emergent flow of signification, the essential openness of signs and how they are enacted *inside* events (see Chapter 3).

I will argue that Peirce's philosophy is important to this conceptualization precisely because it allows us to theorize the sign as *a feature of an event,* a process in becoming, not a static representation of a pre-existing entity: This is behind the basic, though often ignored, principle that the teacher *cannot guarantee or determine learning*, but can only *channel it through practices* (Stables *et al.*, 2018, p. 18). Understanding learning as the growth of meaning requires the recognition that learning can never be completely pinned down, or operationalized. It is emergent in the practices that give rise to it. From a semiotic (meaning-based) perspective on pedagogy, we cannot, as teachers, afford to control or pin down these events. All we can do is continually practice our joint capacity for response and attention – *for collective (and sustaining) study*. Again, I am not claiming that thinking about pedagogy as a continuous, indeterminate and enacted process is anything new, just simply that a Peircean, biosemiotic outlook provides a fresh and, I argue, valuable way of thinking about and describing such processes beyond some of the dominant frameworks of educational theory and research and prevalent technocratic demands on education.

1.3.2. Learning as productive outcome

This account of pedagogy is not about ensuring what a child *ought to become,* but about recognizing the sporadic event of becoming itself (cf. O'Neill, 2012; Stables, 2012) as it *emerges inside* meaningful teaching and learning practices. This perspective allows us to explore, what we can call an *internal pedagogical perspective*, that helps to expose an *open morphology of educational processes* – one that importantly draws no distinctions between informal and formal educational programs and prescribes no external functionality onto schools or educational institutions. Masschelein and Simons (2015) explain what a *morphological approach* to understanding the role of the school and schooling entails, in their article *Education in Times of Fast Learning*:

> We call this a morphological understanding of the school and we distinguish it from functionalist understandings (sociological or economic perspectives on the school in terms of functions, roles and societal needs) and idealistic understandings (philosophical ones in terms of ideas and meanings of education and schooling)… from a morphological perspective, the school is understood neither as an institution (obtaining legitimacy from a transcendent idea or ideal) nor as a (multifunctional) organization (obtaining legitimacy from the performance of functions), but refers to a particular *form of gathering*. ([emphasis added] p. 85)

In response to common demands that teaching, learning, and schools, be productive (as determined by pre-defined measurable outcomes and competencies) this kind of *internal* pedagogical perspective (Masschelein & Simons, 2019) prescribes no external functionality onto educational institutions (schools), teachers, or the learning process in general. By recognizing that the telos and aims of education are *enacted within* shared rituals and practices (forms of gathering), we recognize a different way of thinking about the role of education and schooling in society.

I consider that this orientation is an extension of Peirce's pragmatic maxim – the recognition that meaning is in reference to a purpose, no matter how changing and dynamic such purposes may appear to be (CP 5.3 [1902]). Rather than *forcing or manipulating attention* on curricular outcomes or teaching/learning objectives, an internal perspective focuses on how meaning is created and sustained *within* ongoing pedagogical practices. Conceived this way, pedagogical practices, offer ways of being and doing that *make attention possible*, by offering *experiential forms* from which to

engage with the world and form relationships with it.[9] Therefore, I consider that this educational approach recovers and elaborates an expansive (ecological/semiotic) notion of "learning-centered" that encompasses a much wider range of relationships to the other-than-human world than other seemingly analogous methods that focus on (what might be perceived as) isolated and clearly demarcated "learning environments".

By committing to narrow productivity models, features that can be easily measured and quantified, we have both unwittingly and deliberately created structures that atomize students from their peers, teachers, and community. By individualizing learning and imposing highly competitive evaluative structures, coupled with a gradual corporatization of many areas of education, educational institutions, policy, and society itself have adopted an essentially neo-liberal conception of education: In the learning environment, learner-consumers seek and extract *positive learning outcomes* in the interest of individual advancement. Put somewhat hyperbolically: *they mine for learning-capital.* Learning, thus construed, can become little more than a means to constantly keep up one's employability in rapidly changing market conditions.[10] Notably, these "learning outcomes" are created outside of unfolding pedagogical events, imposed from the outside, and very easily education (and more broadly, learning) becomes something that *everyone* is expected to undergo. This is often expressed in the language of life-long learning: that everyone can and should learn, and therefore, they must continue to learn through their entire life for this is the way they may preserve their societal worth in an *accelerationist form of living*. Essential to a bio-existentialist perspective is the recognition that "forms of life are also forms of meaning" (Bringhurst & Zwicky, 2018, p. 90). Sociologist Franco Ferraroti (2003, p. 4) explains this sense of time-destroying urgency as a type of positivist research relationship, but most fundamentally as an existential state, or form of life:

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[9] In contrast to this, we can observe that the commonly referred to *learning environment* is often not conceived of as a meaningful phenomenal world, or *umwelt,* as conceived by the biosemiotics informed approach to school-research presented in the recent *School Design Matters: "*The environment is a collection of significations not merely a mass of entities to which we are indifferent. Selection and values lie behind what we notice, find important, and like or dislike about where we are. This is not merely true of the human world: consider that the same blade of grass in a field may be a snack for a cow or a pathway for the ant. Semioticians refer to the environment of any organism as its umwelt" (Daniels *et al.,* 2019, p. 3).

[10] This perspective is explained well by Biesta's (2016[2013]) critique on *learnification*, Stable's (Stables *et al.*, 2018, pp. 17-30) recognition of "The Limits of Learning". See also Chap 2 of this thesis for a fuller analysis.

I can't think now; I'm in a hurry; I've no time. In the phrase, there is the idea of postponement, an indefinite one, until there will be time, until the hurry, the urgency will be over. However urgency and lack of time are interrelated concepts, terms, and existential situations. The greater the hurry, the less time one has. Urgency destroys time in advance. In the end, there is no more running toward, hurry with a direction, an aim, a telos; there is only the pure and simple act of running, not knowing where or why. This is pure urgency, made into an internalized habit and a way of life, without any aim which could give it meaning.

Many of the first and second year undergrad students I've taught over this past year in the course *Introduction to the Philosophy of Education*, have expressed similar sentiments, explaining to me that they are stressed out, tired, unable to focus, anxious, often medicated, nervous, uncertain – "I can't think now; I'm in a hurry". Much of this anxiety stems from their increased awareness of the immensity of climate change, and their general disillusionment with technocractic ways of thinking about progress and development. These kids aren't stupid: not only do they recognize the complexity of the issues – they see well enough, for instance, that no one in charge is swooping in with a last minute grand fix, as the prevailing ideology has promised – but also, that no one is even offering them meaningful suggestions about how to live through an era of climate crisis.

I have observed that these young people are often eager for deep, nourishing, existential dialogue. And that's what I try to do with them, as much as they are willing. The existential orientation to our conversations on climate-change and ecological issues frees us from reducing these complex phenomena to a problem that contains its fix. Not to offer solutions, but simply to wonder 'how to go on living from here?'. There is no point in delaying or repressing our existential reckoning behind familiar and hollow vapidities: 'someday, somebody will invent something' and we can keep living the way we always have: "To hope for a technofix is to imagine, yet again, that calculative rationality and control the world; it is hubris" (Bringhurst & Zwicky, 2018, p. 52). However, if we accept climate change as inescapable, and everything that this weighty recognition implies for us in this moment, then the question becomes "how do you want to spend today?" (p. 30).

What I envision through these essays is a society that allows for the possibility of teaching and learning to emerge; again, *to let learning happen,* and not impose it from above. The *Tao Te Ching* famously says plainly "If you don't trust the people, you make

them untrustworthy"[11]. Such possible educational futures require a polis "ready to trust people enough to free them of requirements of productivity … [to] allow them to be teachers and students" (Masschelein & Simons, 2015, p. 93). As I'll discuss in Chapters 2 and 3 (Part 1), resisting this kind of *productionist thrust* in education requires renewed *trust* in the work of teachers and students and of no longer thinking of schools as learning environments whose main aim is to produce desirable (and economically justified) learning outcomes. This calls for a critique of how individualistic and essentially extractivist languages of learning are implicitly linked with technocratic and extractivist ways of being. As will also be developed, such a perspective of learning as productive/good outcomes aligns with the modernist account of the non-human world as standing-reserve – something to be used freely and without concern, for the sake of individual human advancement (whatever this may entail, culturally or environmentally). This suggests further relevance and implications of this ecological approach to education and learning theory.

1.3.3. What is different in my account of learning (and, by implication, teaching)?

Learning as I present it in these articles is expressed in the emergent *event* of new possibility – the growth of meaning and signification in a *moment of presence and attention.* Learning is thus expressed not with computation, but rather the realization of possibility, a richness of response, *of choice.*

Kalevi Kull explains this notion of *learning as choosing*, and how it is fundamentally different than what happens in algorithmic or computational models of learning: "Processes without choice would be algorithmic transformations, or simply codes. In this sense, codes are both products and preconditions of semiosis, not semiosis itself. Meaning exists only within interpretation processes" (Kull, 2018, p. 455). In this sense, Kull (2018) shows how semiotic learning is fundamentally different than computational learning, for "[s]emiotic learning requires a *choice* between options" (Kull, 2015, p. 225). It requires decision-making and "[d]escision making is not computing, it is choice" (p. 226). Choice, as meant here, is phenomenological: decisions are *situated*,

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[11] See chapter 17, Mitchell's (1991) translation.

taken by organisms in time and space. Important to recognize here is that decisions are always environmental/historical – the result of inhabiting *a place*, or being in-habit with it. For education, this implies that decisions in time and space, built up through habituation, become *places of significance,* and thus (possible) *sites of learning*. An important reminder of the importance of place and local knowledge in orienting pedagogy and curriculum (see Stables, 2019b).

According to Kull (2015) – and as summarized and applied further into educational philosophy by Pikkarinen (2018) – semiotic learning requires two main elements: 1) a situation of *logical incompatibility*, in which a problem situation emerges for the organism, and 2) *a phenomenal present* (or species-specific *nowness*), "a subjective duration felt as one moment so that the options or choices, which computationally taken are always sequential, are seen simultaneously" (p. 444). Kull (2018, p. 455) explains further in a thought-provoking comment:

> A peculiarity of semiosis consists in its momentariness and presentness. Because optionality requires the simultaneous presence (co-presence) of possibilities, the existence of choice implies the existence of finite present, the *nowness*. Accordingly, semiosis [...] is what happens within one subjective moment of the agent […] Semiosis stops time – in the sense that the Now emerges in semiosis. Semiosis is choice-making.

Such nowness emerges through establishing modes of relation – cultivating habits that enable future habit-taking, or, the cultivation of a *semiotic freedom* evoked and enacted within *unfolding practices and events*. The 'result' of learning is, in this sense, a richness of decision making and response in the environment.

Accounting for the role of such nowness and its educational significance, is one of the main methodological reasons why these essays in this thesis argue for the *expanded temporality* of Peirce's phenomenological categories of firstness, secondness, and thirdness. Again, signs are not positivistic units, but relations between an organism and the environment. What mediate learner and environment, in an edusemiotic account, are signs: "The sign […] acts as both confluence and influence, bringing together a set of habituated responses to similar although not merely identical situations, and thereby modifying future signification" (Stables 2018, as cited in Stables *at al.*, 2018, p. 33). This self-referentiality is central to Peirce's (triadic) semiotic, where 'the possible' (firstness), 'the is' (secondness), and 'the would be' (thirdness) all possess 'real' causal

efficiency and influence our actions in the unfolding present.[12] This is the expanded temporality necessary to understand living, growing, creatures: the fact that an organism finds meaning in the world by anticipating and adapting to a future state of being (see Chap 7).

One of my main goals with these essays is to outline a perceptual/semiotic theory of learning (derived predominantly, from Peirce's categories of experience) that is useful in describing subtle pedagogical interactions phenomenologically. Hence my focus on developing tangible experiential concepts, like, for example, the *indexical rub* (discussed throughout part 2, and introduced in Ch. 6).[13] I think of this as a pragmatic pedagogical/experiential form to *channel* (but not determine) learning – understood broadly as the emergence of new possibilities for action/response within communities of practice, or more technically, a *taskscape*.[14] The sporadic event of new learning can be conceptualized through the way regularity and habit give way to new habits and new chance occurrences (how thirdness gives way to firstness).

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[12] As Peirce says in a famous description: "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 Second… the tendency to take habits is Third. Mind is First, Matter is second, Evolution is Third" (CP 6.32 [1891]; *emphasis added*).

[13] I'm very pleased that several researchers and teachers have found this terminology useful in the context of their own work, and that these ideas have been explored and carried forward in a number of publications and pedagogical contexts. Along with Winfried Nöth (Stables, *et al.*, 2018, Ch. 5) who discusses my ideas around indexical pedagogy in the context of semiotic theories of learning and teaching, I'll mention Dr. Maria Spychier in particular. In a yearlong seminar for music teachers, entitled *Firstness, Secondness, Thirdness. Charles Peirce´ epistemologischen Kategorien als Zugänge zu Musik und Bildung,* professor Spychiger, used my article *Indexical Ways of Knowing* (2016; Chap 5) as required reading for the course, in the context of applying Peirce's philosophy to music education practice (Spring 2018). I was pleased and excited to see that several students found fascinating and interesting uses for this notion of 'indexical rub" in their final projects.

[14] The taskscape concept was developed by anthropologist Tim Ingold (see the article "the Temporality of the landscape," (1993), and the book *The Perception of the Environment* (2000). Musicologist Gary Tominlinson (2015, p. 65) describes how the taskscape is more properly sonically conceived, over and against the more static designation *land*scape and its implicit visual connotations: "the taskscape emerges from the varied actions of a social group, the mobile performance of these actions, their structuring of the lived environment, and indeed the sounds they make… the taskscape is not external and static but changeable and manufactured, it is not so much seen, in the manner of an unmoving tableau, as made and heard. The taskscape creates from the rhythms of action sequences that form it, its own *temporality*, one based on moments of *mutual attention* commanded among its participants by movement and gesture" ([emphasis added]).

Umberto Eco (a central figure in these essays, see Chap 3 and Chap 6) late in his own life, reconstructed these Peircean ideas, in an important passage that has deeply informed my own conceptualization of learning:

> 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)

The 'educative event' I speak of in these essays, is expressed in a coming into presence with others, articulated by the emergence of previously unactualized possibilities for action and perception in a moment of presentness (nowness). In Peirce's semiotic philosophy, this is emphasised by the experience of firstness – an underlying moment of pre-interpretative engagement, atemporal and singular (Chap 6), yet to come into interaction with a subject, not yet secondness (Chap 5), and not yet connected to the continuity of signs in our unfurling experience, or thirdness (Chap 7).

As will be further unraveled throughout –in particular, the concluding chapter (8.1; 8.2) – this view of the sign as a feature of an event has major educational implications. Stables (2019a, p. 783) locates the issue clearly in a recent article:

> Crudely, a view of the sign as a form of representation that stands for an object in relation to other objects has quite different implications for teaching and learning from a view of the sign, more simply, as feature of an event [...] If the sign is seen as merely a representation of an otherwise-existing entity, then the tendency is to regard the process of teaching as one of conveying objective truth, usually via language, into the subjective world of the learner: a view of teaching-matter as objective and fixed, of learners as subjective and unreliable, of teachers as deliverers, and of language as a vehicle.

This highlights how Peirce's pragmatic semiotics presents an avenue from which to transcend the persistent experience/language divide, characteristic of 20th century philosophical debates (cf. Olteanu, 2019, p. 789). Learning as meaning-making across nature/culture divisions (that is, learning as semiosis) implies that learning as a process is not reducible to linguistic, or computational determinations, and following from this, that learning is emergent and enacted through significant experiential events that reconfigure and *open-up* experience.

As argued at length through Part 2, Peirce's categories, and his general theory of signs, give educators and educational researchers the means to talk about and conceptualize aspects of the learning process that are not easily addressed, for they occur existentially prior to full intentional(/cognitive) awareness and rely on embodied, pre-verbal signification processes. The pure potentiality of firstness, that I argue is central to aesthetic experience and new learning, can only emerge from out of a prior, more general regularity (again, established through *continuity in place and practice*). To learn, we must be confronted with the world, and this is characterized by the way complex reality strikes us and causes a response (see Chap 7). This is the logical incompatibility Kull speaks of, presented to us through Peirce's category of secondness, and the contiguous force of indexical signs (Chap 5). Learning how to meet this state of incompatibility (to *learn* from it) is to realize an underlying pre-supposition to respond to the world, stemming from our previous engagements (continuity) in the environment and our embodied morphology. However, to consider the categories experientially, and not metaphysically, involves recognizing that firstness is, by its nature, inaccessible to our conscious awareness (once we cognize it, it is gone). In fact, firstness is the pure possibility of the cognitive process (Chap 6). To learn from our unknowable first impressions is to realize these impressions as acting upon our senses (and thus already within the realm of secondness) and to relate these impressions to the continuity of our experience in the unfolding present. This is because all experience takes place necessarily within the realm of thirdness—our established ways of inhabiting (or being in-habit) a world. What is generally called 'cognition' seems to occur exclusively in the realm of thirdness, however, it is only through mindful attention to what I call in these essays the *palimpsest*-nature of experience (Chap 4, 6)—to the aesthetic bedrock of firstness and its embodied realization in secondness—that we can cultivate students receptive not just to subject matter or knowledge content, but more fully, to the various shades and continuities of the learning process itself.

As I argue particularly in the second part of this thesis, these *primary* aspects of experience have been historically neglected by modern educational approaches. Furthermore, such 'intuitive, 'creative', and 'embodied' aspects of learning are often associated with arts and making practices, which has led to a further devaluing of arts education in formal education (see Chap 6). When we try to understand the arts through the lens of computational and disembodied theories of learning they quite obviously

appear as inadequate for fulfilling dominant or mainstream (academic) aims of education, as represented by "core" domains of the curriculum. Does learning music make us better at math? Possibly, but is this the question we should be asking? The tendency at this juncture is to turn to expressivist justifications for the role of the arts in education – saying that the arts are central to self-expression and creativity, all those things that "core" components of the curriculum lack, and thus we must advocate 'art for art's sake' (Winner and Hetland, 2009). However, as Biesta (2017) has recently observed in his short book *Letting art teach*, this move is only inevitable if we accept a productionist view of education as recounted in Section 1.3.2, accepting "that the only way in which we can speak meaningfully about education is in terms of its usefulness" (p. 54). He continues:

> Yet the educated person is not a thing or a product, but a human being with an altered outlook. This means that asking questions about the usefulness of education amounts to what philosophers refer to as a category mistake, where we apply categories that are inappropriate for the topic at hand or, in more plain language, that simply miss the point of the activity. Rather than asking what education *produces*, we should be asking what education *means*. And rather than asking what education *makes*, we should be asking what education makes *possible*". (p. 54).

Biesta makes the case that what the arts teach certainly goes beyond what can be captured and measured through productive outcome, but also goes beyond self-expression. Rather, the arts show us ways of being in- and sustaining dialogue with the world. Therefore, art is not an instrument for "education work, but that the work of art *is* this work, *is* the ongoing challenge of figuring out what it might mean to be in dialogue with the world" (p. 118).

Like Biesta, reasserting and reviving the centrality of art-making processes for educational work *in general* is one of my major aims in this thesis. Using Peirce's famous triad of icon-index-symbol, I can say that one of my main theoretical 'moves' in these articles exemplifies a turning away from an explicit emphasis on symbolic/conceptual/analytic aspects of learning, to recognize more fully the embodied and sensory foundations of indexicality and iconicity. For Peirce, a symbol is a sign that signifies its object/meaning based on a learned convention – that is, by habit. Rooting symbols in the principle of habit means that symbols are not abstracted, disembodied entitles – they are not algorithms, production rules, or sets of necessary and sufficient conditions. This perspective is, in fact, discontinuous with dominant approaches in

analytic philosophy of education, which claim a basic opposition of images from concepts: exemplified in the thinking of Richard Peters: "What is a concept? It is obviously not an image" (Peters in Dearden *et al.,* 1973, p. 3). One of the main offerings of this work is thus a rethinking of some prevalent educational conceptions of symbols and symbolic thinking and learning. From a Peircean perspective, concepts and symbols are not over and above the world (rooted in abstracted/conceptual, social conventions), but fundamentally grown out of an organism's modes of inhabiting (or being in-habit) with the world. Symbols are still a part of the world in the sense that every symbol possesses an underlying indexicality (signification based on direct presence and contiguity), and iconicity (signs that signify based on similarity and resemblance). Thus, this research can be seen as part of an *iconic turn* in contemporary semiotics (Boehm & Mitchell, 2009) that recognizes the primacy and relationality of iconic signification, in place of symbolic and computational forms of reductionism, and what this has to offer educational theory. For instance, Lacković and Olteanu (2020) have recently observed various ways in which "abstractionist and conceptualist view[s] […] strongly influence […] the design of educational curricula and methods across educational levels" (p. 2) and present a methodological focus on iconicity in educational theory as a counteractive to the "common-place undertheorizing and marginalisation of the integral role of images in concept development" (p. 13). They observe, that:

> [I]ogocentric, excessively symbolic systems, dominant in the modern world initiated through the print medium, inculcate an illusion of both the distinctiveness of human cultures […] and humanity's distinctiveness from the rest of nature that lies at the epicentre of the environmental crisis. Our approach finds relations between seemingly disparate things. It is a relational approach to thinking, learning and acting, rather than an approach of fierce individualism and differentiation that promotes various ideas of (human)exceptionalism" (p. 5).

(I will explain the pedagogical and curricular implications of this imposed emphasis on a narrow conception of symbolic-learning, and the consequent exclusion of embodied and environmental ways of knowing, in conclusion, 8.1 and 8.2.)

Educational philosopher Catherine Legg (2017, pp. 33-34) quoting Peirce, provides the following outline of icon-index-symbol that helpful in untangling these distinctions while highlighting the essential and primary role of icons in communication and learning:

> 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).

Methodologically, it is important to stress here that pure icons and indices are marginal phenomena and in isolation, they signify nothing: "Such signs are indeed possible, but they remain limit cases, because neither the pure icon nor the pure index is able to communicate anything" (Stjernfelt, 2014, p. 143). Symbols always have an iconic and indexical dimension: "to be understood, a symbol must bear information in the shape of an icon and relate that information to an object by means of an index" (Stjernfelt 2014, p. 143). In this sense, symbols are signs that might cause us to act a certain way in the future – representing the prior established habitual connections that make something appear *as possible* to an organism. Stjernfelt (2014, p. 142, [*emphasis added*]) explains further: "symbols are signs which are general as to their object, they possess an *esse in futuro*, referring to a potential continuity of future objects; they refer to their object by means of a habit, natural or cultural; they comprise icons for their understanding and indices for their object reference [...]" As Winfreid Nöth clarified in interview: "The reality of symbols is not the reality of embodied signs; it is the reality of signs in their possibilities of embodiment".[15] So, symbols are not the result of arbitrary signification rules, solely existing within mind-independent reality, or for that matter, the exclusive realm of human language, as is often conceptualised in analytic philosophy. They are not universal laws, like the laws of classical physics, but rather *tendencies*. Symbols, thus conceived, are not abstracted and disconnected from the world of nature – nor are they solely cultural. As already alluded to, this conceptual orientation is significant in educational philosophy, as an idea of human cultural learning as symbolic and distinct from broader ecological types of learning has a range of consequences, particularly in

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[15] See my interview with Nöth (Nöth, *et al.*, 2018), *From Plato to Peirce*:

https://philosophasters.org/blog/2018/8/13/from-plato-to-peirce-an-interview-with-winfried

separating humans from the other-than-human world.[16] (These issues around conceptualizing the symbol and symbolic learning and the implications for arts and specifically music education will be returned to in Chap 8.3.)

Meaning doesn't reduce to its component parts in a convenient process of reductionist fractionation, nor does it necessarily follow the combinatorial symbolic signification characteristic of human language. For Peirce, the sign is an *evolving phenomenon* (CP 2.302, 2.303). This inherent property of growth is perhaps its central feature. *The meaning of a sign resides in some possible future interpretation.* This is expressed in Peirce's semiotic formulation of pragmatism by which a "sign is only a sign *in actu* by virtue of receiving an interpretation, that is, by virtue of its determining another sign of the same object" (CP 5.569, [emphasis added]). In this sense, signs are necessarily underdetermined and general. In one of Peirce's simplest definitions, "a sign is something by knowing which we know something more" (CP 8.332). This future orientation of the sign – that it grows and evolves and thus cannot terminate in individual psychological states – is representative of one of the most misunderstood aspects of Peirce's anti-psychologism (see Stjernfelt, 2014, pp. 13-48). In this regard, Peirce argued that "a sign should leave its interpreter to supply a part of its meaning" (CP 5.449) but that no single interpretation can possibly exhaust this meaning, for the simple reason that reality itself is always complex and continually changing (Chap 7).

This anti-determinist orientation, is perhaps the central point in Peirce's doctrine of continuity, termed *synechism*: "A true continuum is something whose possibilities of determination no multitude of individuals can exhaust" (CP 6.170). *Synechism* is a research program that strives *to seek continuities* in place of assumed discontinuities (body–mind, nature–culture, mind–matter, etc.). As explained in Esposito's (2005) entry

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[16] "The anthropocentrist idea of humans being distinguished by their potentiality to undergo education and, as such, of participating in a sociocultural life which is unknown to other animals originates in the early modern educational philosophy of contractualism (see Rousseau's *Emile*, 1911[1762]; Hobbes's *Leviathan*, 1909 [1651]), inherent in turn of mind–body dualism. This assumption oriented much of the modern educational research to come, which, as particularly noticed in Piaget (1959 [1926]), has attributed particular cognitive capacities for learning to human infants. Thus, particularly the capacity of learning a language, as a specifically human capacity, came to be considered as the key to all learning, endorsing the linguistic turn, whereby knowledge, the object of learning, came to be understood as constructed entirely in linguistic categories. The semiotic approach to education challenges the assumptions for learning and education of the linguistic turn, claiming that learning processes occur more broadly in nature. In this view, learning is not construed as a matter of linguistic articulation but, more generally, as meaning-making (semiosis)" (Olteanu & Campbell, 2018, p. 248).

for "Synechism" in *The Commens Encyclopedia:* "As a research program, synechism is a scientific maxim to seek continuities where discontinuities are thought to be permanent and to seek semiotic [triadic] relations where only dyadic [mechanical] relations are thought to exist." Interpretation that proceeds along a continuum can always be subject to error, to falsity, and it is precisely this fact that makes this a semiotic (triadic) process and not a mere mechanical (dyadic) one. Meaning is the inevitable process/result of organisms modelling their environment, and meaning is not static – *meaning means more meaning* (CP 2.92). It is in this vein that Umberto Eco (1976) famously said that semiotics is the study of anything that could be used to lie. More properly, Eco should have said: semiotics is the study of anything that can be mistaken, for it is fallibility that is the defining characteristic of semiosis – that the future is not determined and signs are always evolving and thus subject to error. Meaning-making on the biological level may be, for the most part, truth-seeking – as organism's have it in their interest to fit to, and adapt to their environments, in meaningful ways (see Kull, 2020) – however truthfulness itself (in terms of verity) is not a necessary component or condition of meaning-making. It is in this sense that Eco (1979) said "semiosis explains itself through itself", which is in itself not necessarily a relativist position.

As will be picked up again in the conclusion, the main implications of post-Peircean semiotic-philosophy for education, resides in this commitment to synechism as a research program in education (Chap 1 and 3).

> A central plank of such a non-dualist semiotic argument must be that the signification processes of rational human beings, of other sensory beings, and of the inanimate are not entirely discrete. This is not to claim that people are the same as atoms, but that the processes that drive atomic activity and human culture can be understood on a single continuum, whether or not that continuum is interpreted as attributing superiority or merely difference to human practices. (Stables, 2019a, p. 780).

A synechist perspective on learning would involve recognizing education as an institutional means to channel (but not determine) learning as adaptive responsiveness to the environment (cf. Gough & Stables, 2012). That is: to respond meaningfully to the world and, importantly, to continue and sustain this meaningful response through generations. By mapping the continuity of learning across nature-culture boundaries, this ecological, biosemiotic account of learning, in a sense "returns learning to education" (Ch. 2) by offering up new ways to think about learning beyond its reduction to

productive outcome, imploring philosophy of education to consider "education in terms of its service to learning and not the other way around" (Olteanu & Campbell, 2019).

1.4. Chapters and Outline

Each of the following essays were originally published as stand-alone articles in a variety of academic journals. As such, some overlap occurs as core Peircean and semiotic ideas are explained and introduced in each. However, each article develops these ideas in different ways, and thus, I hope that this overlap provides useful re-contextualizing for the reader, and is not overly tedious.

1.4.1. Part 1. A meaning-based learning theory, for education

Part 1 features two articles which together present the broad outline of a meaning-based philosophy of education. First, centered around the actual concept of learning and its use in both educational and bio-semiotic discourses. Secondly, as a general pedagogical value of openness that teacher/learner can cultivate in relation to their educational practices.

Chapter 2. *Returning Learning to Education: toward an ecological conception of learning and teaching*. This chapter describes and outlines the implications for education of considering learning as adaptive semiotic-growth, in line with recent developments in (Peircean informed) biosemiotics. It was published as part of a special issue for *Sign Systems Studies* (the world's oldest semiotic periodical, published by the University of Tartu) entitled "Learning and Adaptation: semiotic perspectives", edited by Alin Olteanu and Andrew Stables. In line with a synechist research program, learning is approached on a broad ecological and evolutionary continuum – most generally expressed as a form of adaptation to the environment. Viewing learning through the criterion of signification (semiosis) means that learning is continuous across the entire biological realm. Both the life process and the learning process are expressed through forms of semiotic-engagement and involve continual adaptation and meaning-making. Thus, learning cannot be unique to humans. Learning is more broadly ecological before it is "cultural". Thinking of learning on an ecological continuum means that learning cannot be "located" or pinned down easily in educational research or practice. Rather, learning has a *sporadic identity* –it is emergent in the specificity of events and must be discerned within

the practices that enact it. I argue that realizing learning as something emergently enacted in the educative encounter, and not something that can be determined and implemented, allows us to resist turning learning into an accountability tool that can easily be used towards ideological ends.

Chapter 3. *Educating Openness: A poetics of openness as pedagogical value.* This article presents the basic aesthetic outlook at the root of this theory of learning and pedagogy, in mostly non-technical language. It was published in the interdisciplinary (sociology, anthropology, communications, semiotics) journal *Signs and Society* by the University of Chicago. The article mainly focuses on the work and ideas of Umberto Eco, and specifically showcases his *slow and respectful convergence* (Proni, 2015) with Peircean philosophy throughout his career. This is an aesthetico-critical perspective that recognizes that pedagogy should be oriented around the essential openness of signification processes. This openness is indeed an essential aspect of Peirce's sign theory, often referred to as unlimited semiosis. The poetics of openness, as formulated by Eco in his pre-semiotic work *The Open Work (1962)*, has already been useful and applicable to cultural studies and textual analysis. Here, I propose that this poetics of openness be applied to critical educational practices as well. I argue that a poetics of openness when coupled with active on-the-ground "critical public pedagogics" can provide a flexible framework for approaching the education of interpretation. Through this framework, a text or sign system is understood as 'closed' if it elicits univocal meanings: expecting a predetermined response from a generic/average reader. A text is 'open' when it fosters a plurality of interpretative possibilities that actively engage the "existential credentials" of the interpreter. Aesthetic openness is part of adopting a semiotic perspective toward educational processes. Eco's late theory of the model reader, and his Peirce-inspired *minimal realism*, pedagogically helps protect against the kind of radical constructivism this interpretative-pedagogical approach can seem to foster. Openness is not presented as a system or methodology in education, but as a pedagogical value.

1.4.2. Part 2: A Peircean edu-semiotic philosophy

This second part of the thesis specifically presents and elaborates the relevance of Peirce's pragmatic semiotics for re-conceptualizing learning theory, pedagogy, and, by extension, educational theory and philosophy generally.

The first article provides a detailed overview of this approach. The subsequent three articles advance this outline by exploring the pedagogical importance and application of Peirce's categories of secondness, firstness, and thirdness, respectively. This ordering of the categories, in some ways replicates the learning theory I outline, which emphasises the Peircean perspective, that learning (and inquiry) begin with a fundamental irritation (doubt), of being confronted with complex reality and novel experience – communicated pedagogically (in terms of teaching practice) in these articles through my notion of the *indexical rub*. Additionally, these last three (category centered) articles all explore the relevance of this theory for the actual teaching and learning of music, drawing upon my own experiences as a music teacher and musician.

Chapter 4. *Foundational Concepts for an Ecological Edusemiotic.* This article was published in the journal *Studies in Philosophy and Education* published by Springer Nature. In this article, the details and methodological scope of a Peircean theory of learning and education are presented and summarized. It includes an extensive literature review and history of educational semiotic discourse, as well as a presentation of Peircean educational philosophy. In line with the convergence of edu- and bio-semiotic discourse, the ecological concept of *umwelt* is explored in relation to learning and educational theory. To address the conceptual and experiential foundations of the edusemiotic perspective, this paper focuses its attention on the basic semiosic processes that sustain the learner's primary modelling system or umwelt—the world of meaning and sensory engagement that the organism is immersed in. This focus enables me to identify and explore four basic principles that an ecologically-concerned edusemiotic perspective can be said to rest upon: The *Iconicity Hypothesis*, the *Principle of Suprasubjective Relation*, the *Natural Learning Flow Principle*, and the *Continuity Principle*. The identification and elaboration of these basic philosophical orientations help establish the importance and relevance of the edusemiotic perspective for educational philosophy and theory in general. This task requires the methodological framework of Sebeok and Danesi's (2000) Modelling Systems Theory (MST), which (a) provides a biosemiotically grounded approach to understanding the diversity of modelling phenomena across all species, and (b) contextualizes the specific focus of this study within the broader forms of learning and knowing encompassed by a semiotic theory of learning. My argument is that, such attention to the foundational principles of this new perspective, will encourage more educational research to take what Semetsky (2014)

has called the edusemiotic turn, providing new directions and possibilities for educational theory.

Chapter 5. *Indexical Ways of Knowing: An inquiry into the indexical sign and how to educate for novelty.* This paper was published in 2016, in the journal *Philosophical Inquiry in Education* published by Simon Fraser University. It represents the earliest published piece in this thesis. In this article, I propose that the indexical sign can be used to derive a model for active (touching-and-feeling) learning and present the basis of my *pedagogy of novelty.* I argue that the implicit processes involved in the subtle reading of indices contain explanatory possibilities for understanding how students adapt to novelty in the learning process. Besides looking at how indexicality functions in human ontogeny and cognition, I also examine the human capacity for modeling our world through aggregations of systems of representations. Modeling systems (with their implicit recognition that the human is a semiotic animal) help us to conceptualize how novelty is assimilated in the learning process. I posit that the way we come to terms with new experiences (and new stimuli generally) is of an indexical nature. I am specifically referring to the site where "the new" comes from the outside (like a rain cloud signaling the coming storm) and acts upon us. We can recognize the rain cloud as an experiential pattern (as a semiotic entity) or not; the rain is still going to bear down on us regardless of the success of our interpretations. This existential realness of indexical signs is precisely their power as pedagogical tools, helping us assimilate and accommodate novel stimuli. The concept of modeling helps us conceptualize the process in which the new stimulus is absorbed and integrated into our cultural/semiotic systems. In short, this paper aims to explore what I call the *indexical rub* of learning; that initial friction or resistance felt when meeting a new experience. My hope is that this exploration can aid in the cultivation of a mindset in teachers, students and researchers that does not fear this resistance, but can use it to propel positive absorption and engaged learning. As demonstration, I apply this pedagogical theory to the process of ear-training and learning new music by ear.

Chapter 6. *In search of our beginnings: locating firstness in arts education in the service of advocacy.* This article was published in the *International Journal of Arts and Education*, in early 2018 through PennState Libraries Open Publishing. The original name for this paper was "How does learning begin?", and I have (slightly) retitled it for this collection as "How does learning begin – locating firstness in arts education". This is

my study that explores the origins of perceptual-learning in terms of Peirce's philosophy -- how does firstness (chance) somehow emerge out of the continuity of thirdness? As mentioned, 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. This chapter focuses on a close reading of Umberto Eco's (2000[1997]) *Kant and the Platypus*, a major book for Peirce studies and cognitive-semiotic discourses in the last twenty years. I argue that Umberto Eco's re-interpreted Peircean notion of *primary iconism* — understood as the *terminus a quo* of the perceptual/semiotic process — can offer educational discourses some needed conceptual clarity. This results in better understanding of 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 & 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). Through this conceptual framework, I argue that 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.

Chapter 7. *Learning that reflects the living: aligning anticipation and edusemiotics.* This paper was published in 2017, in the *Public Journal of Semiotics*. This journal is currently edited by Prof. Jordan Zlatev of Lund University Sweden; Zlatev took an active editorial role in this piece and was instrumental in its development. It is the last addition in the triad of papers that explore Peirce's categories for education (along with the method/framing paper, Chap 4), and is aimed at understanding learning as emergent in the continuity of living (that is, thirdness). By 'living', I am referring to the integrated

dynamics of reaction and anticipation that is definitional of living organisms, as distinguished from (non-living) inanimate matter. This calls for a theoretical perspective that transcends the realist/idealist divides often inherent in educational theory; offering a possible middle way between the constructivist emphasis on *mind-dependent* reality, and the positivist emphasis on *mind-independent* reality. Such a theoretical approach must be able to account for interactions in states of becoming, and thus calls for a broader causality than reductionist methods or computationalist accounts allow. To approach this re-conceptualization, I explore the combined relevance of two theoretical perspectives: anticipatory biology and the edusemiotic understanding of learning-as-semiosis. To address how anticipatory systems research from biology can be applied to learning theory, I first explore Nadin and Rosen's notion of (Gödelian) G-complexity, and how this contributes to an understanding of the living as *complex*. Secondly, I address Peirce's notion of semiosis as it is embedded in his categorical system and overarching cosmology. In conclusion, I consider the confluences and differences between the concept of semiosis (and the triadic relations that Peirce saw as fundamental to the origins of life), and the anticipatory processes that these theoretical biologists use to define living organisms, and examine how and if these two conceptions (taken in union) can potentially enrich theoretical accounts of learning. In this final analysis, these two perspectives are applied to an exploration of musical improvisation as an anticipatory/semiotic dynamic to demonstrate the possible pedagogical relevance of this theoretical alignment.

1.5. Some concluding remarks

Education then, from this meaning-based, ecological perspective, is concerned with the cultivation of *semiotic freedom* (the richness of response) that results from *dwelling* within *places and practices* endowed with significance through continual engagement and habituation. Much like the arts themselves, the work of education is driven by – and finds its internal motivations, forms and meanings – from within the *in-act* of the event (Manning, 2016; Ingold, 2017). In contrast to such an internal perspective, prevalent substance-dualism in much formal educational culture often results in learning, teaching, and curriculum which emphasize competitive advancement and abstract knowledge in place of significant, embodied, experiences and interactions in locally meaningful practices and places (Deely & Semetsky, 2017; Ingold, 2017; Ross & Mannion, 2012;

Stables, 2019b). Noted here, is how the 'internal' approach to enacting education *from the inside* is often more analogous to both the work of makers and artists and the educational practices of 'traditional' (long-standing, or Indigenous) peoples. I will argue (particularly in Chap 8.3.2) how dualistic and anthropocentric educational perspectives contribute to a further dichotomizing of informal and formal educational experiences and a devaluing of local place-based indigenous knowledge and pedagogy (Stables, 2019b; cf. Mead, 1943). Thus, a conception of education, and a corresponding *pedagogical regime,* emerges that is non-ecological, disembodied, anti-Indigenous, and separated from interactions in places endowed with significance.

Rejecting the prevalent dichotomy of human (cultural) learning from adaptation is perhaps one of the central insights of recent semiotic theories of learning (see Olteanu & Stables, 2018). Understanding learning as continuous with adaptation reveals a perspective on learning that is embodied and environmental. It also means that human language, cognition and symbolic modelling cannot simply and reductively be our dominant models for understanding the process of learning *in general*. Like emerging post-humanist approaches in education, we must come to conceive of education beyond the limits of anthropocentricism and language-centrism. I argue that this is precisely what biosemiotics offers as a research program for education. Meaning is a dynamic relationship between an organism (or network of organisms) and a changing environment; it is thus essentially qualitative, growing and indeterminate. This is the challenge that biosemiotics offers educational thinking: to examine and explore how learning is distributed throughout ecosystems and the other-than-human world; to better understand the basic processes and mechanisms of meaning-making across living systems in the hope that this might reveal new curricular, pedagogical and even existential possibilities. Aligning learning with semiosis (meaning-making across nature/culture boundaries) implies that learning is, at least at a broad level of analysis, co-extensive with the capacities of communities and ecosystems alike to sustain and cultivate meaningful communication and engagement.

We should observe further the connections of this educational philosophy to artistic practice: contemplating things this way involves "a certain kind of thinking" (Bringhurst & Zwicky, 2018, p. 31), akin to poetic thinking, that is often diminished by technocracy and its grasping, rapacious desires for managerial-like control: "*letting something happen* instead of forcing it to happen, and simultaneously letting yourself be

enlarged. Letting the facts form a poem in your mind is a way to practice thinking like an ecosystem, thinking like a planet, thinking like a world" (p. 31). To think like an ecosystem involves thinking about the more-than-human; not what distinguishes us humans from everybody else but the ways we are continuous with other life – how we can exist in plurality. This involves realising the limits of being human, and consequently the limitations of humanity, humbled in the face of a planet that will not bend to our will and power – a world that is clearly not standing-reserve for infinite growth and progress. Robert Bringhurst in many of his books and lectures (see Bringhurst, 2006, p. 55), recounts and observes that in Haida humans are "*xhaaydla xhaaydaghaag*" (surface people) and in classical Haida poetry and myth, "*xhaaydla xhitiit ghidaay*" (ordinary surface birds). This etymology evokes Raven's encounter with the 'first men' he found crawling out of a giant clamshell (captured in Bill Reid's iconic sculpture): pallid little creatures, flapping about, helpless and, quite frankly, pathetic. These beings are not the centre of the universe – Aristotle's supreme, rational animal – they are "shallow rooted denizens" wishing, as Zwicky says quoting Aldo Leopold, to be a "'plain member and citizen' of the land community" (Bringhurst & Zwicky, 2018, p. 65). Similarly, challenging claims of human superiority in educational research and practice is a central aspect of this work.

Broadly conceived, education is something communities (parents, teachers, neighbors) must undertake and enact in their own unique time and place, and thus it has, and always will have *local* significance. Following from this, educational issues cannot be judged and treated as general and absolute. This implores educational theory to look for new ways of thinking about and understanding learning, that acknowledge and honour both its ecological embeddedness, its connections to place-based and Indigenous knowledge, as well as its sporadic and indeterminate nature – the fact that learning cannot be determined from *outside the pedagogical event*. Thus, I reiterate that this research seeks an *internal* pedagogical perspective (Masschelein & Simons, 2019); a view within the unfurling events of learning and teaching. I will show also how such an internal perspective reveals a particular ethos or pedagogical responsibility (see Chinnery, 2015), rooted in, what I would claim are fundamentally ecological principles of being-with and seeking-out plurality, participation, and complexity: "the wider and more complete participation of all components in a whole." (Bookchin, as cited in Hern, Johal & Sacco, 2018, p. 91). Ultimately, this is a kind pedagogical responsiveness that

requires teachers and students to call forth "a new way of being with and being for each other— […] a way of responding to each other that cannot be prescribed or predicted in advance, but which *emerges only in the moment of response*" (Chinnery, 2015, p. 9 [emphasis added]).

Here, my experiences as a practicing musician and music teacher are central to my analysis. I seek to carve out in these essays, a broad philosophical perspective (as well as concrete conceptual and experiential/pedagogical forms) that explain how both art-making and pedagogy alike find their telos from within the "forms of their enactment" (Biesta, 2017, p. 46). Again, what I am seeking is not a functionalist perspective on education – what education, what teaching and learning, are supposed to do/accomplish, or the various ways they can be read and interpreted (sociologically, economically, psychologically, etc.) – but what they already and implicitly *are*, inside the experience of meaning.

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Part 1.

A meaning-based learning theory, for education

Chapter 2.

Returning learning to education: Toward an ecological conception of learning and teaching

The difference between anything meaningful and anything that has no meaning can be described as a difference between the unique and the plural, or one and many.

Kalevi Kull[17]

2.1. To go on learning

It is difficult not to consider life as a process of becoming plural. Plurality, after all, is the essence of growth and becoming. To become implies becoming something other than oneself – not a new entity altogether, but a growing *into* the other.

From my earliest struggles with the mechanics of reading and maths, unable to focus on the symbols on the page or in my mind, I came to think of myself *as a learner*. Someone capable of undergoing transformative growth, someone capable of constantly adapting and varying their interactions and responses to the environment. I came to this understanding because I recognized a potential in myself. This was a belief that I did not need to take on authority, and in fact seemed to be counteracted and rejected by most of my teachers. Still, it was a belief that I intuitively knew and would continue to adapt to my

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[17] Morten Tønnessen interviewing Kull: "M [Interviewer]: What kind of plurality are we talking about? K[ull]: The difference between anything meaningful and anything that has no meaning can be described as a difference between the unique and the plural, or one and many. Everything that has meaning is plural. M: So what is unique or unitary, what is only one, cannot be meaningful, because being meaningful implies multiplying of what is meaningful. K: The problem is that it is almost impossible – or at least quite hard – to imagine something that completely lacks meaning. On the other hand – this is exactly what physics has to do. M: A non-semiotic approach would treat an object of biology as one objectified object only, and not as a plurality, and would thus lose a lot of the meaning involved..." (Magnus, Tønnessen 2010, p. 7). See also Alin Olteanu (in Stables *et al.* 2018, p. 117): "That plurality is the basic and necessary condition for learning […] implies the need for cultivating and enhancing plurality. Biological evolution provides clear examples of this enhancement, arguably driven by the rationale of learning. As explained, biological phenomena are driven semiosically, semiosis being the principle of pluralistic development itself."

changing experience. Thinking back, this "learning" I underwent was never the result of acquiring new information, or data, nor the result of acquiring problem-solving strategies. No – rather, it was a process of *realizing plurality through achieving presence*.

I knew that many of my struggles with dyslexia could be overcome if I could achieve some sort of presence of mind and body. I learned that if I could enter into the evolving grain of things – find a groove and hang on, so to speak, then I would be capable of spelling things *correctly*, reading (music or text) *properly*, etc. My dyslexia would become manageable and perhaps even assist me creatively in the educative process. It would not matter how many times a math teacher yelled at me in frustration (and I am sad to admit it happened frequently) to "just remember the formula!" If I failed to experience this "coming into presence" as I performed these computations, then I would have no hope of comprehension, and even less of retention. Through these failures and tribulations, I learned that to learn (or perhaps more accurately, *to go on learning* some*thing*) was to experience a simultaneous event of *doing-undergoing*; to have what you do in an environment lead into what you undergo in a continuous process. If doing did not anticipate undergoing in a finely tuned, self-referential feedback loop, then I would be out of the running before I even began. But, if I gave myself sufficient time and space, I could often find ways to enter into events. I would be able to "cleave the event from within" (Ingold 2017, p. 42), and through this freedom from being-in-habit, be able to follow down the words on the page; my dyslexia somehow, to my own surprise, remedying itself before me.

Unfortunately, this was not the way I was taught by most of my teachers. *Us* students were mostly taught to perform drills, under the pressure of time. This was very important. We were often didactically "taught", before experiencing things for ourselves, context-independent "rules of encoding and decoding", from which we would *deduce* necessary answers.

As you can imagine, this sort of approach to teaching does not work well for a dyslexic child. More importantly however, *all of us* who have ever experienced these sorts of educational practices, experience our world being divided into heavy dualities: mind/world, subject/object, culture/nature, content/expression, event/description, signifier/signified. The consequence of these educational – and more specifically *pedagogical* – failures, I argue, arises from a fundamental misunderstanding about *what*

learning is and its role in educational dynamics and organizations. This is often displayed in the way society collectively explains the role, purpose (telos), and results of the educational process.

For this special issue of *Sign Systems Studies*, I will describe a notion of *learning as adaptive semiotic-growth*. I have advanced various dimensions of this 'learning theory' elsewhere and I will be referring to these other articles throughout. In line with the theme of this special issue, I argue that learning can be approached on a broader ecological continuum – most generally expressed as a form of *adaptation* to the environment. Viewing learning through the criterion of signification (semiosis) means that learning is *continuous* across the entire biological realm. Both the life process and the learning process are expressed through forms of semiotic-engagement and involve continual adaptation and meaning-making. Thus, learning cannot be seen as unique to humans. Learning is more broadly ecological before it is "cultural". From here we can imagine educational institutions as forms of *exaptation*, that evolved naturally to channel learning more effectively. Thinking of learning on an ecological continuum means that learning cannot be "located" or pinned down easily in theory or educational practice. Rather, learning has a *sporadic* identity; it is emergent in the specificity of events and must be recognized within the contexts and practices that enact it. The 'educative event' I speak of, is expressed in a *coming into presence* with others, articulated by the emergence of previously unactualized possibilities for action and perception in a constantly evolving environment.[18] This acknowledgement of learning as a sporadic form of *continual becoming* (cf. Stables 2012) ensures that we recognize the limits of determinist accounts in describing and observing learning. Realizing learning as emergent and sporadic, and not something that can be determined and implemented, allows us to resist turning learning into an accountability tool that can easily be used towards ideological ends.

Learning, as I present it here, is: (1) rooted in processes of doing and making with others in a shared environment,[19] and; (2) part of a larger (cosmic) process of semiotic evolution (the growth of meaning in its broadest consideration). This article is in

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[18] I will show that, from a perspective rooted in Peirce's semiotic philosophy of perception, the 'event of learning' (Section 4) emerges from a rupture in the continuity of habitual engagement with an environment (umwelt). This is the site of new semiotic possibilities, new habit-taking, new ways of relating to the environment.

[19] Or what anthropologists often call processes of *enskillment*, cf. Ingold (2000) and Wattchow & Prins (2018).

a sense a re-imagining of learning outside of the domain of formal education, on multiple levels:

(A) In respect to the term's common interpretations in educational and everyday discourses, as *the attribution of significance to certain forms of change* (Sections 2 and 3). Then,

(B) explored as *a general biological attribute*, co-extensive with the life process, but not strictly equivalent to it (Section 4);

And, finally,

(C) expressed in the growth and evolution of signification (semiosis), connected to the way organisms come to know (or "model") their environ- ment – and, on a wider level, connected to the "generalizing tendency" of the universe itself, how the universe comes to know itself (Section 5).

Through this gradual procedure of *telescoping* various understandings of learning,[20] I hope to, as Olteanu says, explore the possibilities for "liberating the concept of learning from the domain of education, and rethinking education as a system or a program that works in the service of learning" (Olteanu, Campbell, 2017).[21]

Through this inquiry, I will try to explain how learning is central to living a life that is meaningful. I will show that this basic alignment (learning with living) rests in a notion that both living and learning are *continuous* and embedded in related processes of growth and self-referentiality. This implies that humans and animals alike only know the mind-independent "things" of their environment through attributing meaning to them: by re-*cognizing* them as "signs" within their species specific phenomenal world (or umwelt).[22] As we will be seeing, this requires conceptualizations that think of mind and

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[20] An analogy for which I am indebted to Michael Ling (Simon Fraser University).

[21] Olteanu, Alin & Cary Campbell (2017). An interview with Alin Olteanu: Learning, signs, and the history of ideas.

In: Benkaiouche, Marion(Ed.), Philosophasters.org/interviews.

https://philosophasters.org/blog/2017/11/8/an-interview-with-alin-olteanueducationsigns- and-the-history-of-ideas (accessed 27 February 2018).

This is not at all a rejection of formal education outright. But rather, as Michael Ling (personal correspondence) says, an "uncoupling" of "'learning' from 'schooling', so we can see more clearly what learning looks like in terms of human flourishing, both individually, and collectively".

[22] This has been called the "Continuity Principle" which rests on Peirce's doctrine of synechism. In my recent article "Educating semiosis: Foundational concepts for an ecological edusemiotic" (Chap

matter as continuous (*synechism*) and related – not as distinct entities. From this perspective, semiosis (the growth of signification) is what mediates the learner to the world, and semiosis transcends any nature/culture, matter/mind dichotomies.

2.2. Controlling learning

Sadly, learning in our society has largely become concerned with the achievement of good outcomes. Of course, 'good' is always a metamorphizing compendium of societal opinion and activity. At certain times in history, 'good learning outcomes' has meant and necessitated a transactional model of education which required 'obedience and passivity to the teacher as a conveyor of knowledge'. In the modern corporate university, good outcomes are now generally concerned with making things easily consumable to the student. Italian cultural theorist Franco "Bifo" Berardi argues that this is one of the most pernicious and ubiquitous expressions of power in this "neo-liberal" historical moment: power, he says, referencing the words and ideas of Bill Gates, resides in "making things easy" (Berardi 2012, p. 15). One consequence of our modern consumer models of education is demonstrated within the social phenomenon of e-learning. In e-learning culture, excessive strain is put on *facilitating* learning. Learning has to be available when the student wants it, at any time, and more than this, be palpable and enjoyable on the student's terms and conditions.

It is notable that e-learning is now the dominant coinage, and not e-education. The rise in 'e-learning' culture, and its largely unquestioned acceptance in schools and universities, can be better understood through a lens of what the educational philosopher Gert Biesta labels, with a deliberately ugly term, *learnification*. Learnification refers to the effects of the prevalent language and 'discourse of learning' that has dominated educational discussions for around two decades. These effects are evident in several educational trends of the past two decades: the attribution of the 'learner' identity to all (even those not currently undergoing educational programs); the widespread

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3; Campbell, 2019) I outline four basic principles that Peircean edusemiotic conceptualizations can be said to rest upon. These are: (1) the iconicity hypothesis (IH); (2) the natural learning flow principle (NLFP); (3) the continuity principle (CP); (4) the principle of suprasubjective relation (PSR). In this article I will be mainly discussing the CP and PSR, with some reference to the IH.

change from "life-long education" to "life- long learning"; and the rise in simplistic constructivist theories of learning, that undermine pedagogy and teaching.

The English word 'learning' has two obvious distinguishing attributes: aside from being a process term, it is an individuating term. As just mentioned, the individualizing aspect of the language of learning has "shifted attention away from the importance of relationships in educational processes" (Biesta 2016[2013], p. 63). Very easily, as Biesta points out, learning becomes a tool of neoliberal policy. Political problems quickly become "learning problems" (Biesta 2016[2013], p. 67) and individuals are responsible for being 'lifelong learners', which in this narrow context basically means that they are "responsible for keeping up their employability in rapidly changing global markets" (Biesta 2016[2013], p. 67). He continues: "[T]he issue is entirely defined as a question of individual *adaptation and adjustment* – as a matter of learning – and not as one about structural issues and collective responsibilities" (Biesta 2016[2013], p. 67).

This discourse has major existential consequences for the very practice of education, according to Biesta (2013, p. 36):

> The quickest way to express what is at stake here is to say that the point of education is never that children or students learn, but that they learn *something*, that they learn this for particular *purposes*, and that they learn this from *someone*. The problem with the language of learning and with the wider 'learnification' (Biesta, 2010a) of educational discourse is that it makes it far more difficult, if not impossible, to ask the crucial educational questions about content, purpose and relationships.[23]

This culturally mandated *learner identity* in one quick swipe undermines that important '-ing' function. The fact that learn*ing* is a process. This process aspect of the term is

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[23] Learnification, as expressed in much 'e-learning' that happens these days, is a market-driven expression of a far more prevalent cultural conviction; that *learning should be operationalized in the service of society*. The trend towards increasing standardization in the North American educational context has only grown since the 1980s and shows little evidence of slowing down. Doug Ford's new conservative government in Ontario (Canada) is a depressingly topical testament to this. In just a few short weeks he has vowed to scrap the newly reformed Sex Ed curriculum, reverting it to its 1998 iteration, promising along with these changes the creation of a website (or "snitch line") from which students and parents can report "problem" teachers who refuse to teach this newly reverted curriculum. Immediately following his election win, Ford promised a "back-to-basics" approach for his government's reform of the province's public education. As we have seen over and over again in the past, generally these pronouncements imply greater standardized measures (for students, teachers, and administrators) as well as less funding for arts education in particular. See, for journalistic response to Doug Ford's educational reforms: https://www.theglobeandmail.com/opinion/article-doug-ford-is-failing-on-the-education-file/ .

important for our societal conceptions of the role of education. As Biesta (2016[2013]) has outlined in *The Beautiful Risk of Education,* education is ambiguous, fundamentally unpredictable, radically open (cf. Campbell, 2018b), and existentially weak. While disagreeing with some aspects of Biesta's critique on learning, I agree that the reduction of learning to something individualized and controllable (as displayed in most e-learning) runs antithetical to the (semiotic) understanding that learning is expressed in the growth of signification. Effectively, learnification makes exploring qualitative educational dynamics irrelevant, and has the unwanted effect of "naturalizing" the concept, presenting learning as something everyone implicitly does, without explaining why or how.[24]

Because of the essential indeterminacy of education dynamics, I believe semiotics provides an ideal vocabulary and syntax, as it is inherently a *meta*science embracing and describing processes of mediation (i.e. signs). As Peirce says, semiotics is the "logic of vagueness" (cf. Chiasson, 2002[9]). From this basic understanding, I will try to show how the 'event of learning' is always *sporadic*; enacted in the growth of meaningful relationships with the environment. Learning, in this estimation, is not some sort of naturalizing force, but is always emergent, singular, local and occasional. From a pedagogical perspective, learning is, like the very practice of democracy ac- cording to Rancière (1999, p. 33), "a mere assumption that needs to be discerned within the practices implementing it". It is according to this logic of vagueness, I argue, that we may embrace this defining indeterminacy of teaching and learning.

I will also aim to show that understanding learning as the growth of signification means that learning can never be pinned down or operationalized. And in this sense, it is it is not something that education *is required* to put into service:

> The institution of education is about channeling learning rather than developing it. Thus, engagement in practices is all-important […] if teachers claim they are teaching students to learn in general, they are unwittingly

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[24] This is not an argument between left- or right-wing political agendas, but rather, as we will particularly see in section 5, between top-down and bottom-up conceptualizations. Both the left and the right wish to improve their model of what 'good learning is' whenever they gain public office. The issue is the ideological cult of solutions, productivity, and accountability itself that destroys an appreciation of learning and teaching as emergent and sporadically enacted. Whatever the idea of progress happens to be, this operationalizing of learning in curriculum, policy and its various forms of expression, means learning *can* always run the risk of being reduced to an accountability tool. This is perhaps one of the ways in which Western democracies have largely, without necessarily intending to, robbed the majority of formal educational programmes of their truly 'educative' qualities.

exaggerating, for they are rather engaging students in activities that are designed to result in their being deemed to have learnt specific things. (Stables *et al.* 2018, p. 18)

It is through this understanding of learning and its relation to education and teaching, that we can appreciate Maxine Greene's (2001[1972]: 15, [emphasis added]) reflection, when she asks with Heidegger,

Why is teaching more difficult than learning:

Not because the teacher must have a larger store of information, and have it always ready.

Teaching is more difficult than learning because what teaching calls for is this: *to let learn*.

The real teacher, in fact, lets nothing else be learning than – learning. His conduct, therefore, often produces the impression that we properly learn nothing from him, if by "learning" we now suddenly understand the procurement of information.

The educator teaches students not curricular "knowledge-objects", but rather, *ways to be in relationship* with things (see Campbell 2017, p. 18), so that the learner may continually find new meaning. When learning equals the achievement of standardized "good outcomes", learning becomes a simple means-ends mechanism. Teachers, within such a model, are construed as "instruments of the state", actualizing and transferring a standardized curriculum onto passive students – as the above-mentioned Ford "snitch line" (Footnote 9) is testament to. It is almost needless to say (yet I shall say it anyway) that such a reduction (learning = good educational outcomes) reifies learning from its experiential basis. And the feeling and significance that we attribute and demarcate through this concept of learning has little connection to what is emphasized and enacted through formal education.

2.3. Differing senses of education

Of course, the concept of learning we have will be deeply connected to our underlying conception of education. There are two main Latin origins to the concept of 'education' itself, and both suggest different notions of what learning is. '*Educare*' means to train or to mould, while '*educere*' implies a process of leading, or drawing, out. Bass and Good (2004, p. 162) explain further:

> [T]here is an etymological basis for many of the vociferous debates about education today. The opposing sides often use the same word to denote two very different concepts. One side uses education to mean the preservation and passing down of knowledge and the shaping of youths in the image of their parents [educare]. The other side sees education as preparing a new generation for the changes that are to come – readying them to create solutions to problems yet unknown [educere]…To further complicate matters, some groups expect schooling to fulfill both functions, but allow only those activities promoting educare to be used.

'*Educare*' implies, for many authors, a logic of control, of passing down what is valued and indorsed from a dominant culture. On the other hand, '*educere*' seems to imply an *experiential transformation*, where what has been passed down through social learning can be reborn, and reinterpreted by the new generation – so the infinite flow of signification may continue, advancing the adaptive capabilities of the social group. Additionally, the purpose or telos of *educere* implies growth and shared experience; not a shallow conception of individualized adaptation (bootstraps mentality), but a collective (arguably ecological) response to uncertainty, novelty, and ambiguity.

Reflecting on a 40-plus-year career as an educator and anthropologist, Tim Ingold has recently explored the experiential aspects of this notion of *educere* in his book *Anthropology and/as Education* (2017). He explains his perspective in interview (Ergül, Ingold 2017, p. 8)

> Education, for me, is about what it means not just to live life but to *lead* it. The word comes from the Latin compound *ex* (out) plus *ducere* (to lead). Thus, to educate is literally to 'lead out'. This is the very opposite of what it is commonly taken to mean today, namely to instill, into the minds of novices, the approved knowledge, values and mores of a society. Education in this majoritarian sense starts from the assumption that the novice is ignorant, therefore weak and vulnerable. To make our way in society, it is supposed, we need to be provided with the intellectual armoury to cope with the vagaries of experience, and the combative skills to hold our positions and defend them. Knowledge gives us strength and power. But it does not always make us wise. For the more we think we know, the less inclined we are to attend to what is there, to listen to other people and things around us, and to learn from them. Wisdom lies in *not* pretending that we already know, or that problems already contain their solutions. In the minoritarian sense of leading out, education is a process of becoming wise to things, and to the world. It teaches us to attend, and to learn from what we observe. Far from making us strong and invulnerable, this kind of

education disarms us: it leaves us feeling exposed, literally 'out of position'. But it also allows us to open up to the truth of what is there.[25]

As noted by a fellow anthropologist-turned-educationalist Michael Ling (personal correspondence), when students reflect back to their significant educative experiences, they often express a sense of transformation that they have been able to make meaning from, in the sense that it "maps" onto their previous knowledge and experience. He shares the following anecdote in relation to distinctions of informal and formal educational settings:

> In my undergrad course, one of the first in-class activities I ask them to do is identify and describe what their best and worst school experiences have been, AND, an example of where and what they have learned most in "formal" (i.e. school) settings, and where and what they have learned best in an "informal" setting (i.e., in the wider *Lebenswelt* that informs their umwelt). Time and again, the significant learning in "school" settings has to do with when they were able to actually chart out the learning trajectory themselves, and, time and time again, there is more significant learning in "informal" settings than in formal ones – if I was of a certain cast of mind, I suppose I could do a "study" on that – but for the moment, that informal "statistic" is enough for me. (Ling, personal correspondence)

Stables, in the recent co-authored volume *Semiotic Theory of Learning*, presents a similar understanding of learning as "the recognition and attribution of significant change":

> Learning is not, strictly, something we do, but something, it is deemed we have done as a result of certain actions and outcomes; while all of living is about signification, on a semiotic account, learning is about that which has become to be regarded as particularly significant in the context of a person's life trajectory. (Stables *et al*. 2018, p. 18)

In other words, for a semiotic account of educational practice things *are-what- they-mean*, and learning is located, not in the "mental state of the learner", but in the habits of relationship they form with the world. Thus, I believe that our notion of learning we use as scholars must always be consistent to some degree with how the term functions in common usage. In this sense there can be "no observational test of learning, as learning is always revealed as a qualitative version of change, and change is ubiquitous" (Stables 2016, p. 44).

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[25] See also my interview with Ingold: https://philosophasters.org/blog/2018/4/15/tim-ingold-on-improv-writing-and-the-future-of-education.

It is when we ask such basic and fundamental questions about the "meaning of learning" in everyday life that we realize that this event or process we label learning, is always being perpetually deferred into time, and never seeming to "occur" at all. When we say things like "I've learned something" or "I think I'll learn from that experience" we are really using the concept of learning as an attribution of significance that we either anticipate or project retrospectively. This is in itself an important example of how a basic tenet of semiotics – that a sign's meaning (its interpretant) is perpetually lurking in possible future interpretations – can offer basic educational insights. Stables has emphasized this "deferral of learning" repeatedly in his work:

> Meaning [and thus learning] is deferred, […] that is, the meaning of every sign depends on its relations both spatially (to other signs) and temporally (to past experience and use). The point at which I learnt something is therefore not objectively measurable, nor, as my point in space-time is never yours, can my learning experience correspond exactly to yours. (Stables *et al.* 2018, p. 16)

On a basic level, stating that learning is deferred means that learning can be neither temporarily nor spatially pinpointed. If learning is neither locatable nor measurable in any singular event, then how can we constantly refer to its occurrence (and perhaps more strangely, its outcomes, or results) in policy, research, and teaching? It is precisely because learning is so often reduced to "normative judgements about desirable change" (Biesta, 2016[2013], p. 60) that learning is obfuscated and operationalized in the service of ideology. I wholeheartedly agree that unquestioningly presenting learning as something natural, "something we cannot *not* do, runs the risk of keeping people in their place" (Biesta, 2016[2013], p. 60). But doing away with the concept altogether is not an adequate solution, as Biesta seems to suggest. I argue that a wider and more encompassing conception of learning is needed.

But how do we reconcile this notion that learning is deferred, with the parallel experiential 'feeling of learning' that is implied in *educere*, and indeed the etymology of learning itself?[26] The actual process of learning new knowledge and skills is often not experienced or expressed as an incremental "piling up", but takes the form of a winding process of discovery, a "drawing out" that the learner has been able to make sense of

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[26] The Old English word 'leornian' (associated with the term, 'læran' – 'to teach') has base roots in 'to follow or find the track' (cf. https://www.etymonline.com/word/learn?ref=etymonline_ crossreference); inviting reflection on this notion of educere and education as a 'leading out'.

and re-cognize through further experience. Ling expresses this in the following 'quip' to his students undergoing 'Professional Teacher's Education':

> Teaching is not 'rocket science.'
>
> With all due respect to – and admiration for – the rocket scientists, it is actually a lot more complex than that.
>
> What it _is_ is a way of relating to each other, and to oneself, perhaps even 'a way of being' that is full of _depths_, _nuances_, and _mysteries,_ a way of being that in a certain sense begins, and ends, with an ongoing desire _to learn about learning_.
>
> And so, if you can be receptive – and responsive – to those depths, nuances, and mysteries, if you can make learning about learning (which is to say, learning about the world, each other, and oneself, along with learning _for_ each other and oneself) a central tenet of what guides us in being a teacher,
>
> then perhaps we can come to some understanding of what teaching is as a practice, what it has been, and what it can be.
>
> -Michael's Quips, #1 (.m ling, Fall 2018, PDP PLC #9)

For Ling just like Ingold, there is an important experiential aspect of learning that comes prior to teaching that we need to take notice of: "Learning _precedes_ teaching, insofar as it goes on without formal teaching, often enough, and, that effective teaching _has to be_ shaped by an understanding of learning, first and foremost" (Ling, personal correspondence). Again, as Greene (2001[1972]) said, teaching is so difficult because it involves learning "to let learn". The pedagogical act of channeling learning implies that, although learning may be deferred (not fully locatable in space or time), _learning still happens._ Ingold (2013) arrived at this understanding that "learning precedes teaching" through reflecting on his early fieldwork with the Sami people of North Eastern Finland, when he was constantly told by his hosts to "know for yourself". He eventually concluded that these people were not simply being unhelpful, but rather fostering his own process of "learning to learn" (Ingold, 2013); acquiring knowledge not through didactic explanation but through "a process of self-discovery". "To know things" he says, "you have to grow into them and let them grow in you, so that they become a part of who become a part of who you are" (Ingold 2013, p. 1).

In this sense, I have argued repeatedly that an understanding of learning can only be oriented around practices (I have written on this mostly in the context of music

education). We can say with Stables (2016, p. 48), that the concept "[l]earning is empty without practices". This is also a reminder that we learn things for some *purpose*, even if this purpose is forever evolving and ultimately contingent upon further experiences.

Being a teacher means bringing something from the outside, that was not there to begin with.[27] In my own teaching, what I bring to the table is usually a particular way of expressing varying modes of relation; an *expressive indexicality;* a 'look here', and a 'let's make sense of this together?' The only way I have been fortunate enough to develop some personal and pedagogical awareness of these modes of relating, is because I have engaged in varying forms of praxis myself (music, pedagogy, writing, reading). These practices have taught me how to dwell in relational correspondence, and more importantly to dwell in processes of becoming. I believe that it is only through an awareness of becoming, and not being, that we can cultivate the pedagogical sense of *educere* discussed.

As we will discuss in the following section, this is not ultimately a didactic force upon students, but the enacting of a ritualized process that can never be fully operationalized, as it changes from within and from without: through self- referential processes of collective habit-taking that extend beyond the confines of the individual to incorporate the wider community and environment.

2.4. Learning is continuous

In previous research, I have acknowledged more explicitly how this "quest for certainty" in describing and ensuring learning presents a serious challenge to dominant educational approaches. I have shown (Campbell 2017; chap 7 in this thesis), how learning (like the life process itself) appears to be expressed in an anticipatory dynamic[28] and is thus *complex,* and not complicated (as according to Nadin's notion of G-

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[27] In ecological accounts of educational dynamics, it can appear difficult to account for the role of the teacher as something more than just a facilitator of "good" learning environments (as in our accounts of e-learning above). Such an account of learning, while suitable to describe idealized constructivist scenarios, does little to escape the reification of learning that we discussed earlier, nor does it provide us a satisfactory account of "those great depths, nuances, and mysteries" that Ling expressed in his 'quip'.

[28] "Within physics-based explanations, the current state of a system is determined by its past and is deterministically well defined, i.e., non-ambiguous. An anticipatory system is a system whose current state depends not only on previous states, and eventually its current states, but also upon possible future states" (Nadin 2010, p. 112).

complexity, built on Gödel's famous incompleteness theorems). Anticipatory systems always preserve a certain degree of undecidability (vagueness). Through this criterion, scholars like Mihai Nadin have defined the difference between the living and the non-living as the difference between "undecidable complexity and decidable complication" (Nadin 2017, p. 154).[29] The fact that learning is not reducible to formal reductions (that it transcends computation), ultimately points to another sense of deferral which we will be exploring in these next two sections.

Understanding learning as the growth of signification, or semiosis, means learning necessarily extends beyond the individual (and beyond reductionist- determinist accounts) to incorporate the wider community, culture, and ecosystem.

This is learning that possesses an "evolutionary telos" according to Olteanu (in Stables *et al* 2018, p. 112):

> In this conception, learning is therefore attributable to several agencies: to the individual, as it seeks its place in the environment, to neighbouring organisms, to its close groups, to its species, and to its relations to other species and to the entire phenomenon of evolution, both of its own species and of other species. As such, learning in the cultural sense is, at most, a sub-case of learning in the evolutionary sense, if not the same phenomenon altogether.

Learning, in this grand Peircean estimation, is not in any way unique to humans, but ultimately occurring on a *continuum* with all living organisms and indeed the wider universe. Olteanu (in Stables *et al.,* 2018, p. 112) quotes Peirce in discussing this principle of continuity:

> Specific human cultural learning and natural evolution are understood here as continuous, from the perspective of Peirce's notion of continuity. According to Peirce, constituting parts of a continuum are "individually indistinguishable in their very existence – that is, are distinguishable, and

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[29] According to Gödel's theorem: "[A] complex system cannot be fully and consistently described. All other systems (those that can be unequivocally specified) qualify either as simple or, at most, complicated. Within this view, complexity is not a matter of scale. Moreover, it does not accept degrees (the empty formula of "higher complexity" and the like). Since the living is characterized by complexity, it follows that any formal representation, including the modeling of the natural system, can be only a reduction" (Nadin 2014a, p. 78).

the parts distinguishable indefinitely, but yet not composed of individuals absolutely self-identical and distinct from the other". (CP 1.499)[30]

This is consistent with the understanding that learning transcends any reductionist process of *fractionation* (again it is G-complex, not complicated). It is *deferred* in the sense that it is never ending and reaches both forwards and backwards in time. Learning is therefore not something that can be broken down into constituent parts with the expectation that these *parts* can be consistently and completely described and used to construct formalized models that purport to explain the *whole* of the phenomenon.

Dewey, too, saw 'living and learning' as co-extensive. For him, both learning and the life process are both rooted in principles of growth and continuity. Living, he says:

> [...] possesses continuity because it is an everlastingly renewed process of acting upon the environment and being acted upon by it [...] of relations between what is done and what is undergone [...] The world we have experienced becomes an integral part of the self that acts and is acted upon in further experience. In their physical occurrence, things and events experienced pass and are gone. But something of their meaning and value is retained as an integral part of the self. Through habits formed in intercourse with the world, we also in-habit the world. It becomes a home and the home is part of our every experience. (Dewey 2005[1934], p. 108)

This experiential account of living leads Dewey to think of both learning and education through this broad criterion of *habit*: learning is the creation of habits that enable future habit-taking, and thus "the result of the educative process" can only be a capacity "for further education" (Dewey 2004[1916], p. 68).[31] As Dewey recognizes here, to be *in*-habit in this manner, is to be open to the evolving and changing environment, and to be *out*-of-habit is to be closed to it. To in-habit the world from such a deeply

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[30] The guiding principle that "semiosis and the life-process are coextensive" has been the great contribution of Thomas Sebeok's (Sebeok 2001[1994], 2001; Sebeok, Danesi, p. 2000) biosemiotic project. This central idea has been referred to as 'Sebeok's Thesis' by Kull, Emmeche and Hoffmeyer (2011, p. 2). This has encouraged some scholars and researchers in the emerging field of edusemiotics to say that semiosis and the learning process are co-extensive, along similar Peircean lines.

[31] Affifi (2014: 76) explains further: "For Dewey, growth occurs when possibilities open up for an organism, thereby "enhancing its ability to participate in its environment" (Gouinlock, 1972, p. 238). It is the process of developing habits that allow the organism to interact more spiritedly, responsively, and openly to arising circumstances. By contrast, a lack of growth limits possibilities of encounter, as the organism relies on preformed habits that stultify, ossify, and close it off to novelty […] growth is predicated on habits that enable future habit-forming, whereas the restriction of growth occurs when existing habits monopolize the operational domain […]".

experiential place, is not to be in habit with a mind-independent reality "out there". No – it is to in-habit and dwell in a phenomenal world (or umwelt). Dwelling precedes re-cognition, and re-presentation. For Dewey (and to an extent his teacher Peirce) habit is "the principle of production" itself, "whereby a self that dwells in its own practices is recursively generated by them" (Ingold 2017, p. 22).

To inhabit an umwelt is to be receptive to the continual emergence of possibility and presence through habit. To come into presence, necessarily means coming into the presence *of others* (cf. Biesta 2016[2013], p. 143). To study with others is thus to dwell in overlapping and shared umwelten. To live, and more importantly, to live *well,* as a flourishing and adaptive organism, is to *go on* learning.[32] Learning, then, from this perspective can be said to result in the creation of *semiotic freedom* that results from *dwelling* within habits of practice.[33]

But how far does this conception take us? What does this criterion of the growth of habits that enable future habit-taking really imply? Addiction can only be considered addiction when it closes possibilities and solidifies or closes our potential for future habit-taking. And furthermore, habits can only open to new habits in the context of particular practices. Because there is no pure equilibrium of habits that open possibilities (all possible openings require a closure of others),[34] learning must always to some degree be a qualitative judgement of value, that is "sporadically enacted" through the practices that enact it.[35] As Stables (2006) notes: if all living is expressed as semiotic-engagement between the organism and its environment; and, if all living necessarily involves change; and, if learning entails semiotic engagement that results in change; then, it must be

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[32] Following this Deweyan legacy, the emerging edusemiotic project has largely rallied behind the notion that we cannot separate education from life experience: "education is identical with the operation that is living a life that is fruitful and significant, the ultimate value which can be set up is just the value of living itself " (Dewey cited in Stables, Semetsky 2015, p. 84).

[33] I have elaborated this pedagogy of dwelling recently in a forthcoming article called "Dwelling in music: The pedagogy of creative improvisation classes".

[34] It is always dialectics of open and closed interpretations. For a fuller treatment of Eco's poetics of openness in the context of pedagogy, see Chap 3 of this thesis and Campbell 2018b.

[35] Furthermore, we must tread carefully by making this alignment, questioning whether we are merely perpetuating the *naturalization of learning* that Biesta (2016[2013], p. 68) warns us about, a slippery slope where: "(1) learning first becomes equated with living, (2) then almost necessarily becomes a lifelong process, which (3) next moves to the claim that any normal human being *can* learn, (4) then easily moves to the suggestion that therefore every normal human being *should* learn, so that (5) in the end, there must be something wrong with you if you do not want to learn and refuse the learner identify".

concluded that "there is no clearly identified 'form of life' (to use Wittgenstein's term) that is learning" (Stables 2016, p. 48).

Fully recognizing this line of reasoning and all that it implies, I am arguing that there is, however, practical value to expanding our narrow use of the term 'learning' (at least in the anglophone world). This expansion of what learning *can mean* is performed in the interest of developing flexible *telos* (not outcomes) that can connect this process of learning to a broader ecological and evolutionary continuum. "Expanding our notions of learning" is a way to take control over the corruptions that the concept can suffer under the prevalent discourse of learnification. Furthermore, I argue that this "conceptual-exploding" has specific insight into the actual forms of life (teaching and learning) that educational institutions are said to *channel*, but do not determine.

Charls Pearson (2018, p. 412) notes that it is widely accepted by modern biology that "the essential attributes of life include functional autonomy, and self- reproduction". According to Pearson, biosemiotics adds an additional criterion, semiosis, or *semiotic causation* (which we shall be treating in more detail in Section 5 shortly): "These three attributes partake of a common trait, that of having an essential self-referential structure" (Pearson 2018, p. 412). The connecting link between a notion of living-as-semiosis and learning-as-semiosis is found in the fact that both rely on such self-referential structures. What mediate learner and environment, in an edusemiotic account, are *signs*: "The sign […] acts as both confluence and influence, bringing together a set of habituated responses to similar although not merely identical situations, and thereby modifying future signification" (Stables 2018, p. 33).This self-referentiality is central to Peirce's (triadic) semiotic, which rests upon what he called an extreme scholastic realism; where 'the possible' (firstness), 'the is' (secondness), and 'the would be' (thirdness) all possess 'real' *causal* efficiency and influence our actions in the unfolding present. The sporadic event of new learning can be conceptualized through the way regularity and habit give way to new habits and new chance occurrences (how thirdness gives way to firstness). Umberto Eco (2014, p. 514) explains this aspect of Peirce's categories:

> 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).

Inchoative in this paragraph is an entire *theory of pedagogical and artistic practice* (see Campbell 2018c)*.* It implies the importance of education: (1) being oriented around shared practices, and; (2) as being toward *significant events* that may induce an *awareness* of presence and possibility in learners. These significant events should be learner-aware and not merely learner-centred,[36] for they ultimately extend beyond the learners themselves to embrace a wider continuum of community and environment.

I have argued before how a semiotic approach to pedagogy should ultimately be concerned with cultivating shared 'habits of feeling', a collective aesthetic responsiveness expressed in rituals of practice (see Campbell 2018a; 2018c) that aim to bring about significant experiences for students. For instance, many of the musical ensembles I teach orient around shared practices of music-making, not specific and determined music-learning outcomes. These shared practices gradually become more and more habitualized through time: the ensemble continuously "learns" to approach these practices with care and preparation, by growing into the ritual and having it grow within them. This is a ritualized mode of communing with others that involves developing shared modes of attention and engagement. Again, this is a pedagogy aimed not at instilling knowledge or moulding learners to hold specific viewpoints (*educare*), but rather, a process of finding a path and following it; leading learners out of their familiar positions and habits. *We will only be 'led out' together if we are engaged in practices together.*

This requires, as educators, a sensitivity to what I have previously called the *palimpsest* nature of the categories. This is the principle that states that our experience is always necessarily triadic; how all three categories are always present, despite our level of awareness (see Campbell 2016; 2017; 2018c; 2018d). Thirdness – or the growth of possible interpretative responses and thus also the growth of action possibilities – occurs in perception to mediate between the processes of qualification (firstness) and

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[36] "To educate for significant events involves placing the emphasis on student activity though with clear and significant responsibilities for teachers. Adapted as a template for teachers, it would result in an approach that is not "learner centred" in terms of putting the primary emphasis on "what students bring to the topic", or in the student's assumed intelligence or cognitive capacity, but is certainly "learner aware" in terms of having to ensure that new activities "map onto" what has come before" (Stables in Stables, Semetsky 2015, p. 41). See also Stables (2018, pp. 53-54).

sensory-impression (secondness) or, to put it more directly, to mediate the potential becoming actual in our ongoing experience (CP 1:429). As Torill Strand affirms, in this sense, "Thirdness is learning" (2013, p. 795). Thirdness is found in establishing new relationships to the world and expressed in the "emergent patterning" characteristic of life itself (Stables, Semetsky, 2015, p. 63). This is, on a basic level, the capacity and potential for an organism to grow the meaningfulness of its umwelt. It is in this way that we can understand learning in the abovementioned Deweyan sense as the creation of habits that enable future habit-taking – habits that enable the learner to *go on* learning within the context of specific practices, and in this sense also "the formation of habits that will engender a [future] receptiveness to novelty" (Campbell 2017, p. 17).[37] Aligning learning with the growth of semiotic possibilities implies the necessity of life-long learning, but not in the narrow instrumentalist sense we discussed before. Again, this is the basic premise that learning is continuous, that "[t]he more an organism learns the more it still has to learn: education means more education and becoming more developed signs" (Semetsky in Stables, Semetsky 2015, p. 81).

Peirce sees semiosis as bridging any distinctions of mind and matter, and thus connects what he considers "the irreducibly triadic nature of the universe" to the problem of the origin of life itself:

> [T]he problem of how genuine triadic relationships first arose in the world is a better, because more definite, formulation of the problem of how life first came about; and no explanation has ever been offered except that of pure chance, which we must suspect to be no explanation, owing to the suspicion that pure chance [firstness] may itself be a vital phenomenon. (CP 6.322)

For Peirce, it is futile and fallacious to think of mind and matter as categorically distinct. Because we know that mind must have emerged from matter in some capacity, the relation can only be continuous (cf. Deacon, 2011). Living organisms in-*habit* their umwelt, by forming varying modes of relationship, "scaffolding" the conditions for their ongoing adaptation.

This perspective is in line with the biosemiotic project, which has been said to examine "the processes and consequences of habit-making via sign activities in living

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[37] For a fuller treatment of this 'pedagogy of novelty', see Campbell 2016, and Nöth's discussion of my ideas in Stables et al. 2018, pp. 80–81.

beings" (Affifi 2014, p. 73). Biosemiotics rests upon the hypothesis (expressed by the above Peircean quote) that "there is a semiotic core seeding the emergence of biological systems, from cells to ecologies" (Affifi 2014, p. 74). From here we can understand the biosemiotic and edusemiotic project as shared, as both orientations concern themselves with the "processes and consequences" of semiotic habit- making; the emergence of genuine triadic relationships, that enable growth to occur. As I've discussed elsewhere, this is essentially how an organism's "action in the world effects (through a constantly evolving anticipatory dynamic) how the organism will continue to act, and how through these actions the environment itself changes (by incorporating the actions of the organism into it and breeding semiosic plurality)" (Campbell 2017, p. 11).

Throughout his life, Peirce gradually expanded and grew his concept of habit: first understanding the generalizing tendency as an essential *law of mind* (see CP 6.21, 1891); and eventually extending this notion of generalization to incorporate not only the life of signs (CP 2.222, "a symbol is a living thing"), but more broadly, manifestations of "life in general, in the evolution, development and growth of organisms and their associations" (Fernández in print *a*). In his late semiotic philosophy, Peirce began to fully extend his concept of habit as the universal generalizing tendency itself, and it found a central place in his evolutionary cosmology.[38]

I will now explore how this broad criterion of Peircean habit-taking as a "cosmic phenomenon" may allow us a viewpoint from which to consider first-order (physical) causation as continuous with second-order (final, or *telic*) causation. This interplay of

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[38] According to Charls Pearson (2018, p. 395), expounding the legacy of his friend Eliseo Fernández in an overview memorial essay: "Peirce's habit grew to become a centerpiece, not only of his mature semeiotic, but also of his prescient evolutionary cosmology". According to Fernández, this consists in a generalizing of the concept of habit itself as being synonymous with the modern scientific notion of *tendency*. Eliseo's "boldest move" says Pearson, consists in reversing the traditional hierarchy of substance – tendency, by arguing that from a fully semiotic perspective, tendencies are more basic than substances. As we've already alluded to, at this level of abstraction Peirce's notion of Habit becomes synonymous with "a tendency to enact the same tendency every time the same precipitating circumstances are enacted. Therefore […] habits are simply higher-order tendencies that repeatedly release lower-order tendencies into action whenever similar circumstances are reenacted." This is what Fernández claims is Peirce's "mature evolutionary vision" (Pearson 2018: 396). Although it will not be possible to fully elaborate the details of Fernández's biosemiotic approach to the philosophy of science, I believe that realizing this mature vision allows us a vantage point to consider seriously a fully pansemiotic perspective. The approach to *habit as tendency* is very much in line with the edusemiotic project; both reverse the traditional hierarchy of substances as the stable furniture of the world to recognize that "relation is ontologically basic" (Noddings 2010, p. 390).

matter and mind has been explored in biosemiotics research through the late work of the brilliant Argentine-American librarian/scholar Eliseo Fernández (from approx. 2008 till his death in 2017),[39] most directly through his seminal notion of *semiotic causation*. I will try to show how, through such considerations, it is possible to view the environment, and the universe itself, as always evolving, growing, and, in a certain extension of the term, *learning*.

2.5. Learning as semiotic evolution

Learning is part of living. As Olteanu (in Stables *et al.*, 2018, p. 105) says, "[l]earning is a vital symptom: we learn as long as we are alive, and we are alive as long as we learn. This mutuality of learning and living is meant to be understood in both existential and biological senses". Both learning and living (understood through the criterion of semiosis) can be said to be *teleological* processes. They are processes oriented towards possible or "virtual" states of being. Peirce's "grand vision" (see Footnote 35) implies that the teleologies displayed by organisms "have their evolutionary roots in final causation, which is present at all levels of nature." (Fernández in print b). To explain how this continuity occurs, Fernández presents us with his seminal theory of semiotic causation (see Fernández 2012, 2017). Pearson (2018, pp. 399–400) summarizes this theory cogently in the above-mentioned *In Memorium* article (see Footnote 35):

> Biological causation may turn out to be a generalization of classical physical causation, in the sense that ordinary causation may then appear as a special, limit case of the forms of causation manifest at the level of living systems. This approach treats semiosis as a form of second-order causation; it causes changes, amplifications, or inhibitions upon ordinary processes of physical (first-order) causation. It does not act directly by a discharge of energy, as in physical causation. Instead, it changes the course of events by modifying the constraints that in all physical phenomena modulate the flow of energy towards its final dissipation. Peirce suggested that physical causes act by channeling the trending of energy towards its dissipation; a top-down explanation. Fernández suggests a heuristic approach to causal top-down explanations based on the interplay of three factors: 1) a source of free energy moving **spontaneously** towards its complete dissipation; 2) structures that resist, redirect, and channel the flow of energy in various ways (**constraints**); and 3) a tendency to

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[39] This ground-breaking work has been presented in a series of eleven papers (seven published and four soon to be published), featured in *Chinese Semiotic Studies'* 'Peirce Section' (previously created and edited by Pearson, and more recently edited by myself following Pearson's retirement in late 2017). See Pearson (2018) for a summary and treatment of this series of articles.

reproduce similar effects every time similar energy flows and constraints are reproduced (**habit**). These three factors, spontaneity, constraints, and habit are instances of the Peircean categories of firstness, secondness, and thirdness. Based on this triadic conception of physical causation, he further proposes to treat semiosis as a form of second-order causation […]: semiosis causes changes in the causal action itself. It alters the way that energy is channeled by acting on the habits embodied in the constraints that guide the flow of energy towards equilibrium.

As much edusemiotic research is concerned with understanding the dynamics of learning as semiosis it is important to consider how semiosis *is continuous with*, but still distinguishable from, first-order, physical causation: distinguishable, yes, "yet not composed of individuals absolutely self-identical and distinct from the other" (CP 1.499). This has been discussed in edusemiotics through the *principle of suprasubjective relation* (or *PSR*).[40] The very principle of semiotic causation implies suprasubjectivity by nature of being a form of second order causation, dependent upon ordinary first-order causation (it is, as Pearson and Fernández note, *triadic)*. More directly, this is to say that 'signs' are not divorced from the world, but dependent on the 'things' that furnish their existence. As Augustine famously opens *De Doctrina Christiana*: "learning concerns either things or signs, but it is through signs that we learn what things are" ([397AD], Book 1, Line 2). In this form of scholastic realism, historically culminating with Poinsot's *Tractatis de Signis* (see Poinsot 1985[1632]), there is a reversal of the modern convention of defining subject-object relations antithetically. Here, *objects* are only objects if they are "objects within our awareness". That is, if they become signs, signifying something (some meaning) within our phenomenal world or umwelt. What is *subjective* is that which "is what it is regardless of what we know of it", thus it is of the order of *mind-independent reality* (or *ens reale,* a hypothetical "operational environment", distinct from our "cognized environment", cf. D'Aquili *et al.*, 1979).[41] This philosophical location of learning in the

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[40] In the context of ecological edusemiotics, see Olteanu in Stables *et al.,* 2018 and Campbell 2018d. This notion of suprasubjectivity has been redeveloped in contemporary philosophy through the work of John Deely (see Deely, 1990).

[41] Deely (1990, p. 100) describes the revised (at least by the moderns) notion of 'objective reality' that semiotic causation illuminates, explaining why: "[a]ny attempt to restrict semiosis to cognition falls short at the level of theory for the reason that nature and culture mutually penetrate one another in the constitution of experience, so the objects of experience also reveal themselves more suited to some significations than to others in any given context or inquiry. The objective sphere reveals itself as neither closed nor closable upon itself absolutely […]. The full semiosis of experience, thus is never merely actual, but is suffused at every moment with elements and factors passing in and out of varying degrees of actuality and consciousness through the virtualities that remain in their own right semiosic [...]".

growth of signs, which are them- selves dependent upon physical forms of causation, has major implications. Learning in this estimation is something that, despite its immateriality – its *absence –*, still impacts and influences the present unfolding. Responding and interpreting signs means that the organism is forming a relation to its environment; that it *means* something to it. Kull (2009, p. 82) similarly explains the Peircean triadic sign model through reference to anticipation and '*absential phenomena'*:

> The sign vehicle, or representamen (or sign, sensu stricto), stands for an object. This is the relation that is created by semiosis. The object, thus, has an interesting duality – it is both there and is not there – because it is both connected and anticipated. The relation of standing for is possible owing to the absence of what is referred to (the object) and, concurrently, there cannot be semiosis without the existence of a reference (an object) [...]. Semiosis is what makes anything plural.

We can say that these immaterial "supra-subjective" relations, that make physical things plural, are the proper object of educational studies. Although possessing subjective/material fundaments (of the order of Secondness), these relations transcend "over and above" such spatial temporal terminus, reaching both forwards and backwards in time. This provides another way of understanding why 'learning' is always absent in our accounts of it: we can say, with Deacon (2011, pp. 2–3), "there is something not there, there".[42] From here we can better make sense of the alignment that learning is co-extensive with living, as both are expressed in processes by which an organism makes and finds meaning in its environment. With Augustine, learning is a term we apply to the of its environment into 'signs', signifying something beyond themselves, enabling the growth of meaning. It is through such a growth of meaning that the organism can adapt to and channel semiotic complexity in its umwelt, in the context of particular habits (practices) of engagement.

This notion of semiotic causation as continuous across mind-matter distinctions shows us again that it is impossible to hierarchize or dichotomize organisms based on their presumed complexity: as each umwelt, no matter how seemingly deficient when compared to other "standards of life", is full and complete in itself. No umwelt is lacking.

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[42] "Each of these sorts of phenomena – a function, reference, purpose, or value – is in some way incomplete. There is something not-there there. Without this "something" missing, they would just be plain and simple physical objects or events, lacking these otherwise curious attributes. Longing, desire, passion, appetite, mourning, loss, aspiration – all are based on an analogous intrinsic incompleteness, an integral without-ness".

The implication that "learning is suprasubjective" (PSR) implies that learning is not fully explained through cultural explanations cut off from biology or the environment. With this logic, neither can there be a strict hierarchy of intelligences at all, based on the all too common operational pedagogical belief that 'the child = incomplete adult". Education is not about ensuring what a child *ought to* become; it is about recognizing the sporadic event of *becoming* itself, as it emerges within our shared experience. Learning is ecological, a result of in- habiting an umwelt, and because of this it occurs on a continuum.

To in-habit an umwelt implies responsibility towards it. To learn then, is to have some changing sense of what has come before (memory system, history) and this is, according to insights in biosemiotics, expressed in processes of *semiotic scaffolding*.[43] Scaffolding is the inevitable effect of an organism being *in habit* with its environment. Put directly, this is to say that the organism projects its own embodied morphology onto the environment and, through a self-referential process of action and response, both changes and *is changed* by it: "It becomes a home and the home is part of our every experience".[44] As semiotic causation is dependent upon an interaction with efficient causation it will ultimately always impact upon the world materially; by orienting and channeling energy differently. As Fernández (in press b) says in an introspective comment, "The telos of semiosis is the creation of an interpretant, and this is achieved by the transmission of a form".[45] From here, we may fully comprehend the significance of Olteanu's (in Stables *et al.* 2018, p. 106) argument that learning can be understood as

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[43] "The network of semiotic interactions by which individual cells, organisms, populations, or ecological units are controlling their activities can thus be seen as scaffolding devices assuring that an organism's activities become tuned to that organism's needs" (Hoffmeyer 2008a, p. 154). This concept has been developed throughout Hoffmeyer's biosemiotic project (see Hoffmeyer 2015), adopted and expanded from earlier educational research – see Olteanu and Campbell 2018, p. 252–254 for discussion on this. Interestingly, Fernández (in print b) considered semiotic scaffolding as a corollary conception to his own theory of semiotic causation.

[44] I have explored this process in greater depth elsewhere (Campbell 2018c; Chap 6 of this thesis), through a revising of Eco's notion of primary iconism, understood as the *terminus a quo* of perceptual learning. All learning begins from such a place of "primary iconism", which is merely the presupposition to correspond to an object, prior to any encounter with it (a firstness). This is consistent with the view, expressed by Sebeok and Danesi (2000, p. 199) "that all modelling is initially guided by sensory processes", also called the *sense-implication hypothesis.* See also Campbell 2019 (Chap 4 of this thesis) for more on how *Modelling Systems Theory* can be adopted in educational contexts, and the related *Iconicity Hypothesis***.**

[45] I think we may read "form" in this usage as "model"; noting also that, according to Sebeok (2001, p. 23), the English word that most approximates the meaning of the German term "u*mwelt*" is "model".

the "telos of life". Learning organisms are more open to the growth of signification in their umwelt; better able to 'scaffold' their environment, so that their actions in the world become more tuned to its needs. I believe, this notion of semiotic causation is conceptually powerful as it allows us an opening from which to consider a fully pansemiotic hypothesis where one can analogously come to think of the universe as both living and adapting, as Peirce in fact did.

Although such conjectures about semiosis as a universal and cosmic force may be ultimately speculative, for the practical purposes of education dividing this line is not conceptually useful. Stables has advocated for just such a fully non-dualist perspective on the philosophy of education; one that recognizes that pragmatically there is no point in adopting anything less than a pansemiotic perspective.[46] A notion of habit-taking is essential to this expanded conceptualization:

> The way we change through modulating habitual responses in new contexts is a complex version of what happens in simpler contexts. When a ball is repeatedly thrown against a wall, both the ball and the wall gradually change, although the latter generally more slowly than the former. Scaled up to the complexity of a human being (noting that we are bound to see ourselves as complex), the same principle can apply. We do not need separate operational categories for human action, such as reason or mind, for this to hold. (Stables *et al.* 2018, p. 46)

Although semiotic causation is something characteristic of organisms, with their ability to re-channel and re-interpret their umwelt for their own evolving needs, we must also extend our notion of learning beyond the organismic level. From this pansemiotic perspective, the process of evolution is not simply a continuous growth in complexity. Another way to explain this: the simplest organisms (monocells, for example) are not actually simple, but rather a single component of extensive intercellular structures designed to perform *complex* semiotic operations. Research in endosemiotics has gradually confirmed this: plants not only communicate; they communicate on an intersubjective level far more complex than many have imagined possible. Again, all life is complex (G-complex, as for Nadin), only commutation is complicated. In this

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[46] But is there any use to thinking of Peirce's notion of semiosis, or semiotic causation, as what *separates* living beings from non-living things? From a fully Peircean perspective we should not divide this line, in order to preserve the principle of continuity. Although a scientist like Nadin will do so with the more specific purpose of researching and experimenting on anticipatory systems (see Campbell 2017, pp. 12–13). This is because, for Nadin semiotics remains fully a modelling theory, and not an attribute of nature in its own right.

understanding, more individualized organisms (non-plant and fungi lifeforms) represent more closely centralized concentrations of semiotic causation. They simply represent different modes and expressions of semiosis and not an increase in complexity. Olteanu (Stables *et al.* 2018, p. 105) explains further: "[…] on Peirce's account, signification did not evolve from simple to complex, but that which is biologically simple presents complex semiotic structures, to which natural evolution itself adapted to recognise and use". From this reasoning, we can recognize the process of evolution itself on semiotic grounds – where the universe can be understood as a never-ending process of inquiry and interpretation. In this manner, Peirce viewed the entire universe as a kind of evolutionary argument-structure. This understanding of "[s]emiotic evolution is then taken to rest upon the ongoing differentiation, articulation and subdivision of simple Argument structure, facilitating the growth of semiotic freedom and cognitive capabilities over the course of evolution" (Stjernfelt 2014, p. 9). A growth in *semiotic freedom* is inevitably expressed in the capacity of an organism to model its environment in its own species-specific manner; *to learn* (to "find the track") *within its umwelt*.

Organisms gradually evolve to use and recognize these signs through their life-span, and this type of *competence*[47] is passed down bio-genetically as well as through social forms of learning and teaching. Some organisms, in order to meet semiotic complexity in their environments, may evolve to convert exosemiotic resources into endosemiotic ones. This refers to the evolutionary process by which complex intercellular and multi-species networks are progressively made interior, and eventually replaced with centralized nervous systems. This creates in turn more strongly individualized lifeforms that, as Olteanu points out, also have the honour of dying alone. Seeing learning as continuous with the life and evolutionary process allows us to conceptualize learning-as-semiosis radiating beyond the individual organism. This is an understanding that tries to make sense of this phenomenon on a much grander evolutionary continuum. Recognizing learning across a continuum of related interconnected processes is to recognize with Ling (personal correspondence), that "we each are elements, we each are 'learning processes' in a larger 'cosmic' process of learning (the universe coming to understand itself)".

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[47] See Campbell 2018d for a treatment of this notion of "competence" in terms of Modelling Systems Theory (Sebeok & Danesi, 2000).

2.6. Conclusions

We have now explored this concept of learning from various levels and perspectives: at the level of everyday educational discourses, exploring the ways the concept is co-opted and misused; its relation to different conceptions of education (*educere – educare*); its phenomenology or experiential basis; and finally, as a form of adaptation and evolution.

Why then, have I insisted on using this concept of learning in orienting my own pedagogy and research?

Well, on a personal level, because it was only through treating the way I learned seriously as a young person (learning to learn) that I was able to overcome my own struggles with dyslexia; because this notion served a pragmatic function, enabling me to adjust and adapt my own action and perception. And it is on this point that I differ from Biesta, while at the same time, hearing seriously his plea for considering the politics and power that is spread through learnification.

My thinking, following this gradual *telescoping* of the concept, is that we must as educationalists and semioticians run towards learning as a "sensible" and meaningful concept – not away from it. This in fact may be the only way we can effectively resist naturalizing the concept, in both theory and practice. Realizing learning as something emergent and sporadic, allows us to resist turning learning into an accountability tool that can be used towards ideological ends. It also explains how learning is something felt, as our concepts themselves map a changing field of experience. Viewing learning through the criterion of semiosis means that learning is continuous in the entire biological realm and does not in any way begin with human beings, or what is sometimes called *cultural* learning. All living is expressed in semiotic-engagement and living necessarily involves continual adaptation and meaning-making, not just human meaning-making. From here we can understand the persistent insight from the anthropology of education, that social groups *scaffold* environments in which learning can happen in order to both sustain social-cohesion (*educare*) and ensure their ongoing adaptive capacity to uncertainty (*educere*). From a semiotic perspective, this is what schools and all educational institutions (no matter how "informal") are pragmatically for. Educational

institutions are understood as instances of *exaptation*, that evolved naturally to channel learning more efficiently for specific social groups.[48]

As we have already mentioned, teaching and learning, can only be sporadic; they emerge in the specificity of a moment and present themselves to reflection as an initial presupposition of what is educationally desirable (Biesta 2016[2013], p. 89). The teacher cannot ensure that their teaching will be received or understood – "teaching is always the giving of a gift that one doesn't possess" (Biesta 2016[2013], p. 52) – and because of this we must practice a "pedagogy of the event" (Biesta 2016[2013], p. 139) – because it is only in emergent and sporadic events that break through the walls of routine consciousness where novelty can find the possibility of being re-cognized and granted meaning and significance. We cannot, as teachers, afford to control or pin down these events; we can only practice our joint capacity for response and attention, and it is in this sense that *educere* is always about 'leading out together' and that a teacher in order to teach at all must also be able and ready to learn. Both teaching and learning alike, then, depend on a collective ability to develop "habits of feeling" (Campbell 2018a) that will enable our openness to changing and novel events. This is the power in the designation 'learner' – not by subscribing or forcing a learner identity (no different than assuming that the role of education is in ensuring productive citizens), but *by reminding us implicitly of the essential complementarity of teacher and learner.* That we can only learn together; that education implies plurality and togethering.

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[48] Education can thus be understood as "an institutional means to influence the direction of ongoing semiotic engagement by learners with the world they inhabit. The role of education, broadly defined, therefore includes the preparation of learners to respond effectively, *adaptively*, and in collaboration or competition with others, to uncertainty, surprise and novelty" (Gough & Stables 2012, p. 370; [emphasis added], C. C.).

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Chapter 3.

Educating openness: A poetics of openness as pedagogical value

3.1. Introduction

Too often a piece of art is approached with the notion that its entire meaning and significance exist solely within itself. This approach is what I remember of reading Robert Frost and Emily Dickinson poems in high school English class. The poem was presented as a conglomerated mass of metaphors and similes, rhyme scheme and allegory, that we were told formed a *(secret) code*. We were rarely expected to rely on our own experiences and ideas in our interpretation. No, the poem already had a solution. With this approach, knowledge was not something to enter into a relationship with, but rather, something *hidden* beneath the surface of the text. Thus, we pupils were nothing but humble sleuths trained to detect simple poetic devices, who, if surreptitious enough to piece these together and "crack the code," were rewarded with the prize of validation. Needless to say, this process resulted in bored teenagers and what might have been a good poem had I discovered it elsewhere, being reduced to a riddle.

This type of analysis rests on the antiquated conviction that the piece of art must be understood exactly as the artist created it—that, when the pencil is set down, so is the work. By subscribing to this iron-fist notion of authorial intention in education, we are ignoring the complex social and historical relationship between author and addressee, but also teacher and student, observer and observed.

The poetics of openness, as formulated by Umberto Eco in his 1962 book *Opera Aperta* (*The Open Work*), has already been useful and applicable to cultural studies and textual analysis. I propose that this poetics of openness be explored for its (critical) pedagogical significance. As many have pointed out (Ellsworth, 1989, 2005; Sandlin and Milam, 2008), much scholarship in critical pedagogy has remained largely theoretical: critiqued for perpetuating "highly abstract and utopian ideals that reinforce repressive myths and perpetuate hegemonic relations" (Ellsworth, 1989, p. 298). In this essay, I

argue that Eco's poetics of openness when coupled with active on-the-ground "critical public pedagogics"—such as culture jamming (cf. Sandlin and Milam 2008)—can provide a flexible framework for approaching the education of interpretation.

Through this framework, a text or sign system is understood as 'closed' if it elicits univocal meanings: expecting a predetermined response from a generic/average reader. However, a work is 'open' when it fosters a *plurality* of interpretative possibilities that actively engage the "existential credentials" of the interpreter. Such a poetics of openness is part of adopting a semiotic perspective toward educational processes and thus can be understood as part of the growing edu-semiotic research movement (see Nöth, 2010; Semetsky [ed.], 2010, 2017; Stables and Semetsky, 2014; Campbell, 2017b; Semetsky and Campbell, 2018). It recognizes that meaning is always something *discovered* through the action of interpretative semiosis; that it is in a work's dynamism, its *openness*, that we locate its aesthetic value: through the merging of a text's "possible worlds" with our own collective and personal life-worlds. We will also address how a theory of *model reader* (Eco, 1990, 1994) pedagogically helps protect against the kind of radical constructivism and student-centered pedagogy this interpretative approach can (if not properly treated) foster.

I am offering this poetics of openness not as a method of education, but as a pedagogical value, encouraging both educators and students to bring a perspective of *critical openness* to all the texts—taken in Eco's broadest understanding, as being synonymous with any unit of meaning (or sememe), no matter how minute or global[49] — they engage with. What I am proposing is in part a critical public pedagogy, one that encompasses art appreciation and reflexive engagement with pop culture. This is not analogous to encouraging an artistic elitism, or about providing students with the "right" interpretation. For as we shall see, this is not a simple binary of open and closed; for even texts that are constructed with closed intentions can breed interpretative openness. In fact, such an approach rejects the commodification of knowledge in formal education that pioneering scholars like Ivan Illich (1971) anticipated and warned against, and instead fosters the values of plurality: celebrating the intrinsic openness of the

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[49] See my chapter "Exploring the Textual Woods: Umberto Eco's Growing Concept of Text" (Campbell 2017a), where I explore Eco's (1979) notion that a sign is a textual matrix and offer a more technical/theoretical account of semiotic openness.

interpretative process. In line with critical pedagogue Elizabeth Ellsworth (2005), such interpretative approaches are not concerned with an end result of interpretation—a distinct *product* of knowledge—but rather represent a form of continual engagement by the "learning self in the making" (p. 2).

In this discussion, I will begin by reviewing the central elements of Eco's poetics of openness as it is conventionally applied to aesthetics, historicism, and a critique of the mass culture industries and interpretation generally (all elements of Eco's original study). I will conclude by deliberating on some educational perspectives and tools that could help realize this value of semiotic openness in educational practice by aligning these early pre-semiotic ideas of Eco's with his later (post-1990) interpretative semiotic theories.

3.1.1. Examples of the open work

We have witnessed an aesthetic transformation over the latter half of the twentieth century, where the freedom to 'read' a multiplicity of interpretations from an art object, a text, or experience generally, has become a cultural value, even at times a rite of passage. Contained within this aesthetic orientation is a dialectic of open and closed texts (e.g., Eco [1962] 1989, 1979). In the way Eco ([1962] 1989) describes it, a 'closed work' is something that has limited channels of interchange between the channels of artist and addressee. In this sense the closed work encourages a limited or reduced *field of interpretation*. These two actors are viewed as autonomous, static components that either do not interact at all, or do so, but only minimally. Semioticians love the analogy of a traffic light to describe a closed system because a traffic light is very fixed in terms of the ways it can be interpreted. Its interpretation is solidified; reduced almost (but not quite) to the function of a signal. And even if this cultural convention stops being fixed in the mind of some imaginative (or deluded) driver, then the object merely stops functioning as a traffic sign. This is to say; it is no longer functioning within the same semiotic/textual system.

This semiotic notion of openness is based on the realization that we perceive and communicate our reality through dynamic systems of signs that are directly conditioned by our acquired experiences (both personal and sociocultural) and our genetic/biological makeup. By signs we do not simply mean "signs that signify their objects based on

convention" (which Charles Peirce associated with symbols specifically) but anything that stands for something *other than* itself. Peirce frequently described his triadic sign model through the criterion of openness, saying: "a sign is something by knowing which we know something more" (CP 8.332). This fundamental principle in Peirce's semiotics is already present within *The Open Work*, in which the role of the addressee is always present in this open stream of communication. As described by Eco ([1962] 1989, p. 3): "As he reacts to the play of stimuli and his own response to the artist's patterning, the individual addressee is bound to supply his own existential credentials, the sense conditioning that is purely his own, a defined culture, a set of tastes, personal inclinations, and prejudices."

According to many literary theorists often associated with reader-response theories, works actually gain their "aesthetic validity precisely in proportion to the number of different perspectives from which they can be viewed and understood" (Eco 1979, p. 49). To better understand the psychological disposition toward an openness of communication it can be helpful to use extreme examples: let's think of the interpretative pleasures one can receive from reading a train schedule (the kind found in any train station, telling you what times trains are arriving and departing), in which the content in the specific context of a train station elicits a strongly coded and singular unequivocal reading. If this object is removed from its familiar setting (say placed on the wall of a studio or as part of an art exhibit), certainly the time table gains some enriched meaning through the increase in possible interpretations it now entertains. Although this *defamiliarization* (to borrow a term from the Russian formalists) in itself does not constitute a work of art, at least we are now faced with more than one interpretative path. At the very least we are wondering, "What the f$&@ is this train table doing here!?"

Eco describes that the apex of this aesthetics of openness can be found in the world of music, as the channels of *composer-performer-listener* are interacting and communicating with one another to a greater (or at least more obvious) extent than the channels of *writer-reader*. Even if a piece is entirely composed and planned to the smallest detail, the performers' interpretation, and even the location/environment of the performance, inevitably filters, plays with, and reacts to the ideas of the composer. Eco ([1962] 1989, pp. 1–4) points to the *indeterminate music* movement of the 1950s for examples of this aesthetic. Indeterminate music can be understood as music that leaves at least some of its elements unscripted and open to chance. The piece as the composer

writes it is not complete; she presents only the basic materials while the remaining details are fleshed out by the environment and context the music is performed in as well as by the performers themselves. The composition is in flux, what Eco calls "works in motion." Eco ([1962] 1989, p. 1) finds an excellent example of the work in motion in Stockhausen's *Klavierstück XI*. In the piece, Stockhausen provides a sheet of small musical cells, which the performer is free to play in any order for any amount of time. The narrative structure of the piece is thus a dynamic creation of the performer in a specific time and space.

Eco's focus is on composers who come from the European concert music tradition, such as Stockhausen, Berio, and Boulez. Although the compositions examined provide fine examples of this conception of the work in motion, I think Eco fails to address a superior example of this aesthetic, that is, improvised music and more specifically jazz. A jazz composition is never fully complete; it is a harmonic and melodic sketch, a ground for further development, interpretation, and musical dialogue. Ornette Coleman's "Lonely Women" is arguably more open in conception and expression than Stockhausen's *Klavierstück XI*. The former is a group improvisation around a simple melodic framework; beside this melodic outline, the improvisation has the potential to venture into endless abstractions or melt into complete simplicity. Each time the piece is performed by any of Coleman's groups, the individual personalities and styles of the performers as well as the venue, audience, and even the historical moment all synthesize and influence the formation of the piece.

These examples of jazz and indeterminate music provide examples of the extreme embodiment of this poetics of openness, useful for the student or educator who may not be comfortable with formal aesthetic considerations. But this notion of openness certainly has broader implications. It is about recognizing that the work of art (generally) is not a structurally pure entity with the rigidity of a crystal, as Levi Strauss insisted, endowed with precise and objective properties.[50] Through realizing the infinite *recursivity* of semiotic processes—verified by a theory of unlimited semiosis (see Eco 1979, chap. 7)—such as reading a text, we realize that the cooperation of ('real')

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[50] Claude Levi Strauss originally made these comments in response to the newly translated French addition of Eco's *Opera Aperta*. For Eco's counter objection, see the introduction in Eco (1979, p. 3).

empirical addressees with their unique textual competence and cultural background is a necessary feature in the actualization of any text. This is to say that openness, to greater or lesser degrees, is a structural feature of aesthetic texts *in general*, which always call out for a possible interpreter. As Eco (1979, p. 5) says: "So-called open-texts are only the extreme and most provocative exploitation—for poetic purposes—of a principle which rules both the generation and interpretation of texts in general."

3.1.2. The closed interpretation as kitsch

My first music history professor once tried to summarize for our class the aesthetic differences between the Enlightenment and the Romantic eras. He pointed to a chair at the front of the lecture theater with a jacket draped over it: "If I were an Enlightenment scholar, I would look at this chair and talk about the various ways we can perceive it … the beautiful symmetry of the combined image … how the sunlight enhances the angles through the concentration and absence of light … if I were a Romantic scholar I would stab myself and throw myself upon the chair and slowly and dramatically bleed to death." What this (probably badly paraphrased) anecdote demonstrates tongue-in-cheek is how cultural customs and aesthetics inevitably mold collective interpretation. Milan Kundera argues in his book of essays *Testaments Betrayed* (1995) that modern society still connects strongly to a Romantic nineteenth-century aesthetic. Devising a simple analogy, Kundera describes the development of the European novel and the parallel development of European music as separated, "like two halves of a football game" (1995, p. 59). Being children of "the second half," we still have an affinity for the inner emotional experience ingrained in the Romantic aesthetic—the tragedy of joy and sorrow and passion. As I've seen with my own music history students and myself, this aesthetic preference can often make us unable to relate to art before the European Enlightenment. We are so often left feeling alienated by the early European novel like Cervantes's *Don Quixote*, or even the mathematical precision inherent to a Bach fugue. Even such an erudite and venerable figure like Vladimir Nabokov cannot accept Don Quixote's unbearable objectivity, calling it "overvalued, naïve, repetitive, and full of unbearable and implausible cruelty" (Nabokov, cited in Kundera 1995, p. 60). In a similar dichotomy, any piece from Chopin's *Nocturnes* is instantly recognizable as being 'melodic,' in the sense that it fulfills our preconceived expectations of what constitutes something melodic: a defined melodic peak followed by stark valleys, flowing scalar

runs, exaggerated use of dynamics and expression, and so on. A Bach fugue with its calculated extractions of one single kernel of motif does not fulfill this expectation to the same extent. These early works seem so totally measured and impersonal that we hastily label them as being devoid of emotional substance, because they do not *gush forth from the heart*. This binding emotional response provides an obvious (and relatable) instance of interpretation being limited due to historicism. By assigning strong emotional connotations to music or literature, we severely limit its potential interpretative fertility and thus our own aesthetic pleasure.

Many scholars have tried to demonstrate (Kundera and Walter Benjamin among them) that this binding nineteenth-century romanticism has given rise to a very particular phenomenon in mass culture often referred to as *kitsch*. Kitsch is often characterized by an excessive use of easily packaged emotion passed off in the *guise of art*. It is charged with generalities, predetermined meaning, and redundancy. Essentially, kitsch attempts to provide the end result of art through the use of immediate effects—that is, without the difficulty or time required of careful hermeneutics. One of its most blatant features is the use of worn-out symbols to invoke excessive emotions of sentimentality, like a single red rose standing for unrequited love, or a torn nation flag blowing in the wind used to invoke feelings of nationalism. Kitsch can of course be much subtler, and even take the disguised form of simple textual mechanisms, such as a "panning out shot" in film, or a narrative arch in literature. While enjoying the latest summer blockbuster, kitsch can seem like a harmless and pleasurable indulgence, but to many, such as Kundera, it is more than just "junk art" (or *art de pacotille*) created in bad taste: it functions to suppress and rob art of its identity. Kitsch is made up of devices that are stolen from culture precisely because of their ability to elicit a controlled response in the interpreter. Eco ([1962] 1989, p. 183) explains: "Given the way in which it articulates itself, like any other artistic communication whose project is not that of involving the reader in an act of discovery but that of forcing him to register a particular effect (in the belief that therein lies aesthetic pleasure) … or as Hermann Broch puts it, 'the elements of evil in the value system of art.'" With this understanding, kitsch is pure imitation; it masquerades itself as art in order to conceal its 'real' objectives. It is this parasitical nature that allows kitsch to be so easily co-opted for ideological and manipulative ends. According to Walter Benjamin (1968), kitsch's principle difference from art is this utilitarian function; it "offers instantaneous emotional gratification without intellectual effort, without the requirement

of distance, without sublimation" (Menninghaus 2009, p. 41). It destroys the necessary reflexive distance between observer and observed through the immediacy of effects. These devices, already precoded and conditioned by cultural practice, arrive at (or perhaps, *strike*) the interpreter with an efficiency of communication, a determined trajectory seeking a determined (closed) response. Such a device conveys a stable equivalence between form and content (signifier and signified), and it is this univocality of meaning that can make kitsch, when used carelessly, dangerously ideological. *Pedagogically*, the ability to recognize elements of kitsch in the works we engage with is crucial, as it is through the deciphering of kitsch that we render it harmless and rob it of its power over us.

Of course, the very comparison of art and kitsch suggests some criterion from which we can make a distinction. Unlike some members of the Frankfurt school, I don't believe that a strict delineation can be made, just as Eco insists that no strict delineation can be made between open and closed texts. In line with Eco's own aesthetic theories, I would rather like to suggest that these judgments lie in the dynamic act/process of aesthetic engagement; that is, it is the addressee's/learner's personal responsibility to continually address whether their interpretative possibilities are being further opened and expanded, or rather, closed and restrained. A definition of kitsch cannot be attributed solely to the intent of the sender, just as aesthetic openness itself cannot be attributed to authorial intent. This will be further elaborated in the conversation to come, but suffice it to say, ready-made effects (elements of kitsch) are operative in all works of art, and that the *openness potential* of/within aesthetic experience has to do with the way the learner is able (or unable) to form meaningful relationships to this experience. This relationship—this cognitive mediation—not the objective stimulus itself nor the subjective experience of the addressee, is what in the end determines elements of kitsch.[51]

Kitsch provides a bridge in this discussion: it highlights the tenuous relationship between a poetics of openness and the rise of mass media. Interestingly, kitsch in the twentieth century has grown up alongside this aesthetics of openness. At first glance,

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[51] The reader is directed to Eco's ([1962] 1989, chap. 9) essay "The Structure of Bad Taste." Here Eco says: "At times, Kitsch is on the side of the message, at times on the side of the receiver's intention, and more often than not, on that of the sender who tries to palm his product off for something it is not" (p. 214).

the mass culture industries have seemingly rejected this poetics of openness in favor of the "ready-made effects" of kitsch that can be sold to a "generic mass of consumers" (Eco [1962] 1989, p. 185). Yet closer observation shows that this is not an outright rejection but rather a subversion, for it is through the observation of trends in the art world that the culture industries generate these effects: through absorbing elements of "high art." One can see how the musical systems of Ligeti have been co-opted by Hollywood in horror films, or how impoverished renditions of what the Russian formalists call narrative *fabula* have been employed in advertising. Certainly this proliferation of mass media has resulted in a diminished role for art in modern times. With some notable exceptions, modern art has, at large, regressed into itself, becoming increasingly insular and metaphysical—that is, increasingly concerned with its own processes, and less and less culturally relevant.

3.2. Mass Media, Communication Theory, and Language

What I have tried to show in the first part of this essay is that it is in a work's dynamism, its openness,[52] that we find its aesthetic value and interpretive pleasure: through the merging of fictional "possible worlds" with our own collective and personal life-worlds. Surely we seek greater enjoyment from the multidimensional poem "Le Front aux Vitres" by Paul Eluard than we do from a traffic light.[53] The red traffic light conveys only one very simple direction in a very specific context, while the experience of reading the poem is an experience that grows richer with each additional reading—each time we uncover new significance and make new correlations. Its openness allows us to relate our entire acquired experiences to the poem, and as we change and develop throughout our lives, so does the way we relate to the work. Thus, the poem becomes something of a living entity in our minds. Likely, the way we react to and engage with the traffic light will remain fixed throughout our lives (one would hope!). To truly understand the implications of this (seemingly reductive) analogy of the traffic light and the poem (the open and

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[52] Or at least the openness we bring to a work, for one cannot deny that even works that attempt to dictate a univocal interpretation can be approached in such a way that a reader can reel life into their rigid structures. This is a point Eco ([1962] 1989) makes frequently in the book; see, e.g., the essay "Analysis of Poetics Language" (chap. 2).

[53] This poem is an example Eco ([1962] 1989) uses in the book.

closed work), we must first understand something about information theory and the study of communication.

3.2.1. The medium is not (strictly) the message

Let us begin with a bare-bones version of Jakobson's (1960) model of the communicative act.[54] Although this model is for the most part outdated (and fraught with problems, especially in its application to pedagogy), understanding the separation of these components is still essential, for it is this sort of *information processing* account of cognition (and the familiar mind-machine analog) that still dominates much formal education (cf. Cunningham 1992, 1998), quite regardless of however advanced and progressive educational research may think itself to be. The channel is generally understood as such:

The *source* creates a signal, which travels through a channel—and this signal is received and processed by the addressee through a receiver. This reduced model, however, ignores two crucial elements:

- It ignores the codes that enable the addressee to process the message received, thus supposing the message as a preformed and static entity or product.

- It does not demonstrate that as the signal travels through the channel, it is potentially disrupted by large or small amounts of outside disturbances, which information theorists have traditionally referred to as *noise.*

Let's start with the first point. Communication scholars, following the formidable influence of Marshall McLuhan, often overlook the importance of the addressee's interpretation of the message. Their grand claims regarding mass media are thus hegemonic; they see the power residing with the source and the people who control the source, failing to recognize the significance of the addressee's ability to receive and interpret information. This "overlooking" of the interpreter is well displayed in McLuhan's (1967, p. 26) belief that "all media work us over completely. They are so pervasive in their personal, political, economic, aesthetic, psychological, moral, ethical, and social consequences that they

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[54] I must further insist that this is a reduced understanding of Jakobson's model that is often proliferated in educational contexts, and not nearly as developed or nuanced as what is proposed in the cited text (1960).

leave no part of us untouched, unaffected, unaltered." If we follow a more interpretative semiotic perspective, it becomes clear (somewhat contrary to McLuhan's famous aphorism) that it may be the medium that asserts the message, but ultimately the success of the message rests in the interpretation of the addressee. If the addressee fails to understand the way in which the message has been encoded by the source, or manipulates it through interpretation, the control the medium exerts is inconsequential.[55]

It is undeniable that all communication mediums dictate content. The medium of radio certainly does prescribe certain limits on the people who utilize it. So too does music notation software. However, it may be an oversimplification to view such mediums as "wholly autonomous entities with 'purposes' (as opposed to functions) of their own" (Chandler 2002, p. 4) as suggested by McLuhan (e.g., McLuhan and Fiore, 1967). The content of a message and its medium are in constant conversation. The power may shift at times in the direction of one or the other, but the process still must be looked at as *bricolage* rather than an outright domination.

Let's move onto the issue of *noise*. Systems of communication, language being the most accessible for analysis, are vulnerable to corruption within high levels of noise. Eco ([1962] 1989, p. 50) explains: "[Languages] are organized systems governed by fixed laws of probability and likely to be disturbed either from within or from without by a certain amount of disorder, of communication consumption—that is to say, by a certain increase in entropy (meaning the loss of information) commonly known as noise." The interreliance between ambiguity and communication appears to run contrary to the basic pragmatic functions of language. To ensure that a message is received and understood, it must be wrapped in high levels of redundancy—that is, we must send the same content in different reiterations in the same message. A popular linguistic formula (see Shannon, 1950) suggests that the English language is 50 percent redundancy, meaning that only 50 percent of a given message conveys the specific content of the message. An obvious example of this is the telegraph message that attempts to convey only the bare bones of a message and thus is devoid of syntax and grammar. Repetition ensures

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[55] Due to space restraints, I cannot go into a detailed analysis of McLuhan's theories of media. For a fuller critique of the shortfalls of McLuhan's theories I direct the reader to Umberto Eco's lecture and article "Towards a Semiological Guerilla Warfare" ([1967] 1986, pp. 135–45). Here Eco, always the aesthetician, returns primacy to the consumer/interpreter in shaping the media that they consume.

that despite the presence of noise, our message is properly relayed. Paradoxically, this attempt to be completely and absolutely understood becomes stifling in an aesthetic context. "The very order which allows a message to be understood is also what makes it absolutely predictable—that is extremely banal" (Eco [1962] 1989, p. 52).

3.2.2. Ambiguity and the aesthetic message

So, at least in a certain understanding, the clearer a piece of information is, the less meaningful is its content. This again illuminates the value and pleasure we receive from art that possesses a multiplicity of meaning. A Hallmark greeting card is very easy to understand, yet it tells us very little. It competes against a sea of other greeting cards, all with a very similar message, which must be understood by a wide array of people from diverse backgrounds. It is precisely because of its reduced content that the card retains this clarity, and it is this clarity that allows it to fulfill its utilitarian function.

In fact, the ambiguity inherent in the aesthetic message—the tension between the externally and internally referential[56]; the ability "to call into the question the legitimacy of the code itself" (Eco 1979, p. 67)—is entirely necessary for language to transform and develop. Without the aesthetic dimension of language, it would not be possible to say anything not predetermined by the code, and thus only closed-circuit semiotic judgments would be possible, like those of Morse code. The open work evokes rather than proclaims.

> Any work of art can be looked at as a message to be decoded by an addressee. But unlike most messages, instead of aiming at transmitting a univocal message, the work of art succeeds precisely insofar as it appears ambiguous and open-ended … poetic language deliberately uses terms in a way that will radically alter their referential function. … It eliminates the possibility for a univocal decoding, it gives the addressee the feeling that the current code has been violated to such an extent that it can no longer help. … [The addressee is] thus forced to learn the code of the message from the message itself … ambiguity is not an accessory to the message it is its fundamental nature. (Eco [1962] 1989, p. 195)

Unlike the greeting card, or the traffic light, or elements of kitsch, the open work cannot dictate or propose a univocal message. Its very structure and motivation embrace

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[56] This *is* a pipe; this is *not* a pipe.

disorder and do not fight noise. In this regard, the open work cannot so easily serve a utilitarian function like the road sign, and cannot be marketable in the same way as kitsch art, and similarly cannot be as easily graded or tested.

Many semioticians (following the lineage of Peirce and Bathkin) insist that interpretation (and the sign itself) is necessarily dialogical. Without getting into the theoretical underpinnings (cf. Campbell 2017a) behind this assertion, let me offer the following passage: "The original modality of being a sign is otherness and dialogue. In contrast with univocality, reiteration, and identity—which characterize signals—dialogue and otherness are the original, constitutive modalities of that which emerges as a sign in the proper sense. In other words, the sign exists and is characterized as a sign insofar as it is a response to, and in relation to, that which is other from itself" (Ponzio & Petrilli 2005, p. 382). A *pedagogy of openness* is necessarily a struggle against "the signalization" of communication alluded to in the above quote. This is exemplified by the reductive model presented at the beginning of this section, where a fully formed and objectively defined message is transmitted by a source for immediate consumption by a receiver. This model reflects, generally, the inadequacy of code semiotics to account for the complicated nature of interpretation. Ignorant to such debates in semiotics, North American schools by and large still teach interpretation though the lens of signalization.[57] That is, they often reduce complex interpretative acts to simple procedures of decoding and encoding.

3.3. Educational Application

I should clarify that I do not purport openness as a mere valuation—something synonymous with 'the good'. Openness is an interpretative stance one can bring to various forms of communication. It is not a system or methodology in itself, but only one possible interpretative lens the student or educator can adopt. As mentioned, Eco asserts repeatedly that openness is a quality that exists to greater or lesser extents within the structures of texts themselves.[58] This does not mean to say works that exhibit

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[57] For more on the standardization of interpretation in formal education, see Apple (1996); Oliver & Gershman (1989).

[58] See Eco ([1962] 1989, chap. 2) for an examination of how "every work of art can be said to be 'open,' how this openness manifests itself structurally, and to what extent structural differences entail different levels of openness" (p. 24).

closed qualities or intentions are of somehow lesser value artistically (in fact I would assert that often the opposite can be true). Rather, works that rely on this open collaboration between creator and reader stand as extreme embodiments of this process of openness. The examples both Eco and I use serve to elucidate the multifaceted dialogue involved in interpretation as they are embodied in concrete 'works'. I recognize that using the concept of artistic 'works' as opposed to 'processes' has become problematic in recent educational and aesthetic scholarship, as it seems overtly situated in a Western/Eurocentric conception of art. I insist on using this terminology, not to undermine the various and distinct cultural and personal processes involved in experiencing and interpreting art, but as a way to distill a particular structural and experiential pattern that we can return to again and again for reflection.[59] The work of art represents only a beginning, a terminus a quo, of these complex processes that starts when the author sets down her pen.[60]

The very idea of the *open work* as Eco has pointed out is a sort of oxymoron, for a work is something finished, objectified, closed, and certainly many artistic forms do not even fit the concept of 'work' too closely. The very idea of work as it is used in this essay is a recognized construct—despite its artificiality, I think it proves to be a pedagogically useful one, as long as we recognize it for what it is. Apologetics aside, following are several concepts and approaches that the educator *can* use to foster a discourse of openness through their practice.

3.3.1. Culture jamming through defamiliarization

As I stated in the introduction, the aesthetics of openness that I am proposing is not paramount to some sort of artistic elitism where students are pushed to disengage with pop culture and the world of mass art. Robert Scholes (1982, p. 14) elaborates:

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[59] For a further account of this process, which I deem *mimetic learning*, see my essay "Toward a Pedagogy of Firstness" (Campbell 2018a).

[60] As one of the principal applications of this poetics of openness is aesthetic education, I would have liked to say a few more cautionary words on the dangers of dealing with this ineffable and translucent stuff called *the aesthetic*. The notion of the aesthetic is, like openness, often reduced to a mere valuation of goodness and can at times seem like an artificial construct—manipulating intelligent discourse, acting as an invisible norm. For me, aesthetics is all-encompassing and not intrinsically good or bad, but rather simply the various ways in which sensible experience is distributed through life.

"Students need to acquire the interpretative codes of their culture, but they also need to see them as codes, so they can appreciate those texts that reshape accepted ideas and at the same time defend themselves against the manipulative exploitation of received opinion." As Andy Warhol and his contemporaries understood, the immediacy of semiotic reactions implicit in mass communicative acts can be a powerful force. This force can be harmful and exploitative, as in the case of propaganda, but it can certainly be educational and introspective, depending on the interpretative approach adopted by the addressee. Warhol demonstrated this as he removed pieces of pop art from their familiar contexts in order to gain new insight into these objects and understand their broader societal implications. As I see it, this concept of 'defamiliarizing', as developed by the Russian formalists in the first half of the twentieth century,[61] is central to the various contemporary movements that attempt to engage and challenge the culture industries' hegemony.

"Culture jamming" is a form of defamiliarization directly applied to counter passive consumerism and corporate hegemony. First and foremost, culture jamming, through the artful and political confrontation of daily consumer life, attempts to a give a voice to the ideas and peoples that have been marginalized by the commercial values exercised by societies' dominant power formations. It does this, in one sense, through *the emancipation of interpretation*: empowering groups of people with the freedom to interpret mass media and consumerist messages in new and multifarious ways. A quick glance at the "about" page of Vancouver's *Adbusters* magazine (http://adbusters.org) sheds lights on this important civil practice:

> [We culture jammers are] concerned about the erosion of our physical and cultural environments by commercial forces … dedicated to examining the relationship between human beings and their physical and mental environment. We want a world in which the economy and ecology resonate in balance. We try to coax people from spectator to participant in this quest. We want folks to get mad about corporate disinformation, injustices in the global economy, and any industry that pollutes our physical or mental commons."

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[61] Carlo Ginzberg (2001) presents an excellent history of this concept and its various iterations, both literary and cognitive.

I must stress that the target of these criticisms is not simply mass media in its many forms, but rather mass media that, as David Robey (who wrote the introduction to the English edition of *The Open Work*) states, "reaffirms the public's sense of the essential rightness of the world in which they live" (Eco [1962] 1989, xvii–xviii). Who can say that we must only engage with entertainment of the highest caliber? The "average" consumer is present in all of us. Certainly everyone can admit, even those select cultural gatekeepers, to having the desire to consume works that elicit quick and immediate sensations (Bondandello 1997, p. 53). This rejection resides more directly in mass culture that is deceptively ideological and motivated. This is media that is "dishonest," such as kitsch, which attempts to pass itself off as art to mask its utilitarian aims. As Bondandello (1997, p. 52) explains, these forms of media only become dangerous when they are used by "a manipulative power structure to obfuscate reality and to conceal the power relationships present within our contemporary world." The elitist cultural criticism exemplified by Adorno and other members of the Frankfurt school does not bring one closer to pedagogical truths. An outright rejection of pop culture and its conventions can be just as damaging as passively consuming mass media.

Culture jamming is an active embodiment of the critical components of a dialectics of open/closed works. Just because a text is closed in its intentions (such as an advertisement) does not mean that the text cannot be read in an open way—that there are no learning opportunities to be gained through interpreting such a text. Sometimes culture jamming is entirely necessary to realize dormant meanings implicit within pop culture. The practice of culture jamming is purposely *defamiliarizing*,[62] so it can "open up" and reveal what Ellsworth (2005) has referred to as *pedagogical hinges*. These hinges are simply aspects of learning spaces that are pedagogically transformative and that put "inside and outside, self and other, personal and social into relation" (Ellsworth 2005, p. 38). Sandlin and Milam (2008, p. 339) expand the connections between pedagogical hinges and culture jamming: "Pedagogy's hinges create possibilities for both inside and outside—self and society—to be disrupted and refigured. We believe an important pedagogical moment—culture jamming's pedagogical hinge—occurs when audience members as learners experience de´tournement (literally,

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[62] Aspects of this *pedagogy of surprise*, exemplified by this defamiliarizing process, are explored under the guise of indexical learning and what I call a "pedagogy of novelty" in Campbell (2016, Chap. 5 of this thesis).

a "turning around"). All of the pedagogical tactics used in culture jamming attempt to lead the learner to a moment of détournement, where she is no longer who she used to be, but rather is caught off guard by the possibility of becoming someone or something different." To provide a rather blunt example: placing an ad for Nike shoes next to a photograph depicting the working conditions of an Indonesian sweatshop in a public space *can* potentially "open up" learning possibilities: calling students to consider the athletic-consumer lifestyle symbolized by the ad in relation to broader social forces that they participate with in various ways. It is not simply a matter of rejecting the intent of the advertising or accepting it, but rather an opportunity to relate *personally* (but also as a learning community) to the ad from different levels and perspectives. With this understanding, education is a process aimed not at instilling knowledge or molding learners to hold specific viewpoints (as in the Latin *educare*), but rather, a process of leading learners *out* of their established positions (*educere*): *leading out* so that one can experience the world through direct perceptual engagement rather than through representations or mental constructions (cf. Ingold, 2017). Part of this engagement involves addressing how our interpretative processes themselves can be open or closed: do they continue the open flow of semiosis, or pragmatically and swiftly close thought and reflection? These practices of culture jamming help highlight that this dialectic of open/closed texts is a form of praxis that must go beyond mere recognition and proceed toward active confrontation and continual renewal.[63]

3.3.2. Openness in union with critical pedagogy

A poetics of openness builds upon the practice of culture jamming by emphasizing the interpretative and metaphoric undercurrent behind all communicative acts. This reflects the cognitive *opening potential* behind metaphoric thinking that Aristotle outlined in *On Rhetoric* (1991, 1412a 11–12), where he defines metaphor generally through the criterion of iconicity, as the capacity to see resemblances even between things that are far apart. With this understanding, a closed metaphor is a metaphor that limits and reduces our thinking by not allowing us to explore and make new connections to our

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[63] For a more thorough analysis of how culture jamming can function as a form of critical public pedagogy (with examples even from *Adbusters* magazine!), see Sandlin and Milam (2008).

existing knowledge structures.[64] The closed metaphor rather forces an established course upon our thinking, controlling, and standardizing meaning-making. This closure can be (and often is) pragmatic (Eco 1984, chap. 3)—like the highly conventionalized meaning of traffic signs, or *overcoded* metaphors like "the leg of the table"—but, as we have seen with our brief study of kitsch, this closure can also be performed in the interest of ideology and dogma.

A poetics of openness—because it is just that, *a poetics*—does not conceptualize this closure from a wholly combative or critical perspective, as a force to be usurped or attacked. And in this lies its pedagogical strength: by approaching issues of critical pedagogy from an aesthetic standpoint,[65] the student has the capacity to rearrange qualitative possibilities and consider not only how texts may limit or reduce meaning but also how they *distribute sensible experience* (to borrow some coinage from Ranciere).[66] Anthropologist Michael Ling spoke to me about the interpretative praxis implied in a poetics of semiotic openness, emphasizing that:

> although certain ideologies may attempt to close the interpretative *space of possibilities*, we nevertheless have the capacity to 'read through' or 'read across' (literally, dialogue) the limitations. I think this is significant as represented in how people have cognitively—and thereby in part, emotionally—survived oppressive sociopolitical regimes, by in effect, being able to engage that '*openness potential*' even in the face of constraints and suppression of thought. See, for example, Josef Skvorecky's essay "Red Music" on the importance of jazz under the anvil of two totalitarian regimes, Vaclav Havel's appreciation for jazz and the experimental contemporary music of Frank Zappa, and the thread that runs through the film about East German surveillance of artists, "The Lives of Others" by Florian von Donnersmarck. (Personal correspondence)

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[64] For more on the metaphoric connectivity of sign systems, see Danesi's (2013) excellent article from this journal.

[65] As I was reminded by a helpful reviewer, critical pedagogy is a *polysemic* term; that is, it can have different and sometimes contradictory meanings. Thus, I should emphasize that the form of critical pedagogy I am drawing parallels with is not the simple neo-Marxist project of exposing dormant power relations, nor is it solely about addressing authoritative claims to knowledge in general. As explained in this section, it is rather a form of aesthetic criticism that is informed and sensitive to issues of class, race, gender, ideology, and oppression.

[66] In "A Theory of Semiotics," Eco (1979, p. 312) says that "semiotics helps us to analyze different ideological choices; it does not help us to choose."

In my own teaching practice and experiences as a student, I have repeatedly seen critical pedagogical approaches (lacking this aesthetic sensibility) fall short in their attempt to empower students and challenge issues of domination in the classroom. I have come to believe that this failure occurs largely because of the didactic ways in which issues around empowerment are often framed, ways that do little to question the inherent power imbalance between teacher-student (or student-text) relations. By focusing on the careful and meaningful art/practice of interpretation, students can begin to approach critical issues, not specifically as critiques on political domination and repression, but rather from an interpretative-aesthetic standpoint. Since a poetics of openness—being nothing other than *the* fundamental property of the action between signs, or semiosis[67]—is not a particular interpretative method, but fundamentally ontological in nature (i.e., a state of being and engaging with the world), students will be encouraged to seek out their own forms of emancipation and are not simply prodded (by the classroom environment) to follow a predetermined path of learning, which inevitably suggests a particular ideological underpinning.[68]

But why is critique necessary at all, and could the practice of criticism potentially work against this value of pedagogical openness? I would insist that to address differing aesthetic orientations and perspectives, a certain degree of critique *is* necessary. This is not critique in terms of deconstruction, nor about using the text for specific political uses, but rather in terms of *participatory aesthetic engagement*: finding new ways to "read across" the text. David Robey (cited in Eco [1962] 1989, xiv) explains the stance of critical engagement that Eco elaborates in *The Open Work*—most notably in an essay entitled "Form as Social Commitment" ([1962] 1989, chap. 6):

> In one sense alienation is both necessary and desirable, in that we can say that we are alienated to something other than ourselves, and therefore lose full possession of ourselves, whenever we become involved in it. Losing possession of ourselves is not something to be lamented; it is simply part of the back-and-forth movement between self and the world that is the condition of a truly human existence. What we must do is accept our involvement in things other than ourselves, and at the same time assert our

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[67] Again, for the theoretical side of this poetics, see chap. 7 of Eco (1979) and my recent chapter (Campbell 2017a).

[68] For more on some of the shortcomings of critical pedagogy, specifically its ingrained rationalist assumptions and how it can in practice proliferate the very relations it critiques, Ellsworth (1989) is still important and relevant.

selfhood in the face of the world by actively seeking to understand it and transform it.

Asserting one's selfhood is the "critical" aspect of this form of "engagement," and the justification of my alignment with critical pedagogy. Without such assertions of self, there can be no meaningful learning engagement. Learners *must* present themselves in their learning encounters, for it is only through this presentation that they can (*a*) focus attention on the structures of the work/text itself, and (*b*) address how their perception reacts to and organizes these dynamic structures.[69] It is through attention to the ambiguity in the aesthetic message that our normal modes of schematization are called into question (Eco 2000, p. 223), and we are *led out* of our familiar positions. Just like the dichotomy between traditional and contemporary art that *The Open Work* is predicated upon, pedagogy too must not "channel … [learners'] responses in a particular direction" (Robey, in Eco [1962] 1989, x) but rather encourage dynamic forms of participatory engagement. With this poetics of openness—unlike with many descriptions of critical pedagogy, which assert a critical approach/method a priori— engagement *precedes* critique, but once engagement is established, a certain degree of critique is inevitable.

3.3.3. The model reader: protector against overinterpretation and radical constructivism

Openness as a pedagogical value is not equivalent to extreme student-centered approaches where any possible interpretation is valid and accepted. Scholes explains in *Semiotics and Interpretation* (1982, p. 14): "Leaving the reader 'free' to interpret is an impossibility. The free reader is simply at the mercy of the cultural codes that constitute each person as a reader, and of the manipulative features of the text, the classroom, and the whole reading situation as well." This ideal educational method should, through critical engagement (both intellectually and actively, i.e., through forms of culture jamming) address the underlying structures at work in the closed work. As discussed, closed works are texts that strive for a univocal reading by invoking predetermined responses through the use of ready-made effects. In this sense, they are "inflexible

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[69] "Where a form is realised there is a conscious operation on an amorphous material that has been brought under human control" (Eco [1962] 1989, xiv).

objects" that yearn to be read *a particular way*, "pulling the reader along a predetermined path" (Eco 1979, p. 8) of interpretation.

A well-organized text postulates an envisioned *model reader* who can activate the cultural codes that the author imparts in the text, both consciously and unconsciously. With this prerequisite knowledge, the model reader "can deal with the text interpretatively in the same way the author does generatively" (Eco 1994, p. 7). I must stress that this model reader is not the same as the empirical reader (who is simply you or me when we read a text) who instinctively relates the text to their prior knowledge and experiences. As Eco has said repeatedly, the model reader is a hypothetical construct: "a set of textual instructions displayed by the text's linear manifestation precisely as a set of sentences or other signals" (Eco 1994, p. 16). Contrastingly, the closed text does not presuppose such a fully formed model reader, but in fact presupposes an *average one* in the same way advertising does (or for that matter, standardized testing) based on medium demographics. In this sense, these works are essentially speaking to everyone: "These texts that obsessively aim at arousing a more or less precise response on the part of a more or less empirical reader are in fact open to every aberrant decoding. A text so immoderately open will be called a closed one" (Eco 1979, p. 8).

Eco's model reader is not simply a means of upholding the intention of the author. The empirical author certainly has intentions for the way her work is to be received, even if this intention includes involving the active participation of the reader.[70] But in Eco's view the work takes on a life of its own, emitting its own intention (*intentio operis*), which is distinct from the authors, and it is this intention that we must use to guide us in the interpretative process.[71] However, if we refuse to give a privileged

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[70] As Eco ([1962] 1989) suggests was Joyce's intention in crafting *Finnegan's Wake*.

[71] See Eco (1992) for a further elaboration of the *intentio operis* and how it relates to and interacts with the reader's intention (*intentio lectoris*), as well as the author's intention (*intentio auctoris*). The following passage from these lectures is relevant in demonstrating Eco's view that the reader's interpretative efforts can be understood as a conjecture about the *intenio lectoris*: "A text is a devise conceived in order to produce its model reader. I repeat that this reader is not the one who makes the 'only right' conjecture. A text can foresee a model reader entitled to try infinite conjectures. The empirical reader is only an actor who makes conjectures about the kind of model reader postulated by the text. Since the intention of the text is basically to produce a model reader able to make conjectures about it, the initiative of the model reader consists in figuring out a model author that is not the empirical one and that, in the end, coincides with the intention of the text. Thus, more than a parameter to use in order to validate the interpretation, the text is an object that the interpretation

position to the author in interpreting her own work, we run the risk of arriving at the opposite extreme, where, as Todorov says jokingly, "a text is only a picnic where the author brings the words and the readers bring the sense" (Todorov, as cited in Eco 1994, pp. 23–24). This overtly deconstructionist attitude toward interpretation even might seem to be advocated by a theory of unlimited semiosis, where *theoretically* semiosis is an infinite process by which "the torch of truth" (an expression Charles Peirce was fond of; see CP 1.339) is continually handed off from one sign to another. Envisioning a text's model reader protects against this infinite recursivity, which Eco has coined hermetic drift; that is, "the uncontrolled ability to shift from meaning to meaning, from similarity to similarity, from a connection to another" (Eco 1990, pp. 26–27). The model author is consistent with the approach to semantics proposed by Augustine (*De magistro*, CE 389), where the meaning of a word is not a platonic "dictionary-type" definition but rather a bundle of textual instructions for interpretation.[72] The text elicits a multiplicity of interpretative pathways but not *any* possible pathway. "Thus the competence of model readers is determined by the kind of genetic imprinting that the text has transmitted to them … created in and imprisoned in the text they enjoy as much freedom as the text is willing to grant them" (Pugliatti, as cited in Eco 1994, p. 16). I believe this concept of the model reader has the potential to be a useful pedagogical device. Having this analytical goal to strive for can only be beneficial in guiding the student through the interpretative process, even if such a notion does not empirically exist, or if reaching such a level of textual competence is not possible. By envisioning and constructing a given text's model reader, we can gain insight into its underlying motivation and can perhaps through this process unveil a text's relative openness and closeness. This is useful to protect against the apparent limitlessness of interpretation that this aesthetics of openness can seem to encourage. The conception of a model reader reminds the student that although personal engagement with a text is a right that should be encouraged, there is certainly a point when we are no longer interpreting a text but rather using it (Eco 1994, p. 10).

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builds up in the course of the circular effort of validating itself on the basis of what it makes up as its result. I am not ashamed to admit that I am so defining the old and still valid 'hermeneutic circle'" (Eco 1992, p. 64).

[72] For a fuller account of this semantic theory, see Eco (1984).

3.3.4. Openness as a model of lifelong learning

This aesthetics of openness informs not only our interpretative processes and engagement with texts but also presents us with a model of lifelong learning. The term "field of possibilities" coined by the composer Henri Pousseur provides a fitting analogy of this pedagogical orientation.[73] The notion of 'field' here is borrowed from contemporary physics and provides a "revised vision of the classic relationship posited between cause and effect as a rigid, one directional system: now a complex interplay of motive forces is envisaged" (Eco [1962] 1989, p. 58). The term *possibilities* in this usage shows an increasing trend in modern science, art, and philosophy: "The discarding of a static, syllogistic view of order, a corresponding devolution of intellectual authority to personal decision, choice and social context" (Eco 1979, p. 8). One can see how this analogy can be applied to the development of an educational philosophy that is in accordance with the examples of openness that I have presented, where each reading of a text is only one possible path of interpretation and certainly not the ultimate one.

It is through fostering this poetics of openness whereby lifelong learners are created. Students who understand the power lurking behind every metaphor that expands their life-worlds consequently understand the power of imaginative learning. This kind of learning is not something unearthed and thus cannot be reduced to a *surface-substratum* metaphor, encapsulated well by that famous phrase of Bachelard, ironically adopted by the Althusserians: "There is no science … but of the hidden." I am often dismayed how this search for "the hidden beneath the apparent" (Ranciere 2004, p. 49) is plaguing educational discourse. My main problem with this approach is that when one searches for something beneath the surface (whether that be the secret language of the body, Plato's forms, an appeal to an essence or soul, a governing center outside of discourse, a god, the univocal *meaning* of a poem or story, etc.), a position of mastery is inevitably established. And suddenly we find ourselves thrust back into the dismal world of high school, with a teacher who knows "the code," and a bunch of ignorant pupils grappling to find it. In short, such appeals work against the educational framework I have been elaborating. A pedagogy of openness must always try to operate not in terms of surface-substratum, but rather, as Ranciere says, in terms of "horizontal distributions, combinations between systems of possibilities" (2004, p. 49). The goal of

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[73] This analogy is explored by Eco ([1962] 1989) throughout the book.

such education is to continually reimagine the conceptual frameworks that allow us to conceive these statements and oppositions, those conditions that allow for a particular distribution of the sensible "that causes a painting or a piece of music to make an impression, that cause reality to appear transformative or inalterable" (Ranciere, 2004, p. 49).

The fact that Eco ([1962] 1989, p. 24) says that "a work of art is never really 'closed' because even the most definitive exterior always encloses an infinity of possible 'readings'" is precisely why texts constructed with closed intentions (like Dante's *Divine Comedy*, a reoccurring example from *Opera Aperta*) *should* be read dynamically and openly. To reject these texts and the meaning to be discovered in them simply because of their author's authoritarian strategies for semiotic control is no different from critical pedagogy that exposes power structures but then does not go further to understand how these structures can be reimagined or "opened up" through the growth of collective semiosis.

As elaborated in the previous section, a pedagogy of openness is not about chasing authorial intention, but is rather about realizing a plurality of meanings inchoative within the structure of texts themselves—opening "fields of possibilities." But these possibilities are only activated "locally" from certain empirical readers, with certain points of view at particular times in their life. Hence, the model reader proposed by the text is only ever achieved and brought to life in a certain "respect or capacity" (to use another Peircean turn of phrase). Eco explains that openness (and aesthetic experience generally) is not wholly subjective, nor objective, but rather activated in a relationship defined by the complementarity of observer and observed: "Neither Openness [of interpretative possibilities] nor [aesthetic] totality is inherent in the objective stimulus, which is in itself materially determined, or in the subject, who is in himself available to all sorts of openness and none; rather, they lie in the cognitive relationship that binds them, and in the course of which the object, consisting of stimuli organized according to a precise aesthetic intention, generates and directs various kinds of [aesthetic] openness" (Eco [1962] 1989, p. 39). Thus, this *field of possibilities* is dynamic and perpetually changing like the flow of semiosis itself, and thus it cannot be locked away in the idealist "casket of consciousness" (Deely 2009), nor in some reality "out there." Openness— being validated by Eco in later years through Peircean semiotics (see Eco 1979, chap. 7)—is in fact "semiotic openness" and thus constitutes the mediating relation between a

'real' (i.e., a *mind-independent*) reality, and a *mind-dependent* cognitive process. As emphasized in later works—most notably *Kant and the Platypus* (2000, 1.11)—Eco advances what he calls a *minimal realism*: the understanding that there are many ways of segmenting the continuum of experience, but that there are also "grains of resistance" that motivate how and in what direction we make these cuts. In this sense, the text(/world) tells us (through *fallibilism*, how it pushes back against our interpretations) what readings it supports and which it does not.[74] What I thought was an open door will still break my nose if in fact it turns out to be a glass wall!

Openness, as I have tried to display it, is a value that I feel is absent from much formal education: in the classroom but also at the levels of administration, policy, and curriculum. This is not a new educational method or a specific approach, for to prescribe this would be contrary to the type of education I am envisioning. To escape the clutches of standardization and the homogenization of learning, society must come to trust teachers in their ability to be flexible and not just display a blind adherence to method and curriculum. But also, and perhaps more importantly, we must trust students to question and engage with the texts and textual strategies that are set before them, and from this extrapolate to questioning the essential taken-for-grantedness of their lives and the societies that shape them; not from a place of blind expressionism, but from a place of reflexive and careful hermeneutic interpretation. This of course requires a massive societal swift, a great *de-acceleration* of schooling—of no longer thinking of schools as *learning environments* that produce desirable and profitable *learning outcomes* in the fast and certain march toward the future. This is a society that allows for the emergent space of the possible: "ready to trust people enough to free them of requirements of productivity … [to] allow them to be teachers and students" (Masschelein and Simons 2015, p. 93).

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[74] Eco (2000, p. 53): "If the continuum has a grain … then we cannot say all that we want to say. Being may not be comparable to a one-way street but to a network of multilane freeways along which one can travel in *more than one direction;* but despite this some roads will nevertheless remain dead ends. There are things that cannot be done (or said)."

3.4. Openness as neo-baroque (in lieu of a conclusion)

As Italo Calvino reminds us in his celebrated and uncompleted *Six Memos for the Next Millennium* (1988)—echoing the sentiments of his younger friend Umberto Eco—art in the last century has engaged in a poetics of openness, a celebration of multiplicity, which is embodied in the forms of serial composition, free jazz, abstract painting, and (so-called) postmodernist literature. This runs somewhat contrary to the values of previous eras, such as the medieval system of hermeneutics, and the romantic individualism we've explored earlier. "Medieval literature tended to produce works expressing the sum of human knowledge in an order and form of stable compactness, as in commedia, where the multiform richness of language converges with the application of a systematic and unitary mode of thought. In contrast, the modern books that we love most are the outcome of a confluence and a clash of multiplicity of interpretive methods, modes of thought, and styles of expression" (Calvino 1988, p. 116). This celebration of openness points to interesting parallels between our postmodern age and the baroque aesthetic.[75] The classical Renaissance form tended to perceive art as having a definite interpretation: a single perspective from which the entire work could be perceived and understood. Dante wrote extensive treatises explaining precisely how his works were meant to be read, down to minute details of the poetic forms he utilized and the allegorical references he wrestled into these forms. Renaissance painting searched for a single divine vantage point, which could be plotted mathematically, from which all detail and meaning could be actualized in a frame. Such efforts were no doubt the result of a deeply religious society that perceived reality as possessing a divine author whose intent was always present.

Contrastingly, baroque art attempted to dissolve such a "rigid, privileged, definite frontal view," instead "inducing the spectator to swift his position continuously in order to see the work in constantly new aspects, as if it were in a state of perpetual transformation" (Eco [1962] 1989, pp. 38–39). The Bach fugue reveals this aesthetic: where a simple melodic figure embarks on a process of continuous metamorphosis,

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[75] This connection between the baroque aesthetic and a poetics of openness was, three decades after the publication of the open work, explored by Eco's Bologna colleague Omar Calabrese in his 1992 book *Neo-Baroque: A Sign of the Times*. In the forward to this text, Eco himself further elaborates these connections.

always in motion and never attainable in a definite solid state. This is a sentiment echoed by much modern science, which constantly reveals new knowledge to us about a universe that is charged with potentiality and in a state of continuous flux.

As masterful as Dante's verse is, the aesthetic pleasure we receive from his work is not in our ability to recognize his rigorous adherence to a system of medieval hermeneutics. Similarly, the sense of validation that students receive from "figuring out" that an Emily Dickinson poem with the title and author removed is about a garden snake or some allegory about the beauty of nature is fleeting and shallow. Probably such pleasure is more a result of students' drive for monetary success (of learning that is tethered to *productive* time) rather than a delight in aesthetics. Aesthetic pleasure is at the center of this dialogue of openness, for it is when our active participation is called upon in a work that we truly engage with it. As Borges's famous title reminds us, we delight in the garden of forking paths—not the superhighway that gets us from one point to another as quickly possible, but the ability to linger, and wander, and explore.

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Part 2:

A Peircean edu-semiotic philosophy

Chapter 4.

Foundational concepts for an ecological edusemiotic

4.1. Introduction

4.1.1. Peircean edusemiotics: What is it? What does it do?

Let it be clear from the outset, signs are not our focus here but rather; the action between signs, that is, *semiosis*. Donald Cunningham in his introductory essay to *Semiotica's* special issue on *Semiotics and Education* (2007, p. 3) made the same point: "so signs are everywhere, but they only impact us if we take notice of them in some way. Learning to take notice is the key component of an education semiotic".[76]

Edusemiotics is a growing interdisciplinary research project that explores the relevance and possibilities behind understanding the doctrine of signs *as* the philosophical foundation for learning theory and educational philosophy (Stables and Semetsky 2015; Stables et al. 2018). People who study edusemiotics are joined by one central orientation: *they conceptualize learning as semiosis*, that is, as a signification process mediating learner and environment, and thus use this understanding of learning-as-semiosis to think about and practice education. Edusemiotics provides an integrated and "transdisciplinary" (Deely and Semetsky 2017) theoretical approach that can help educators and researchers 'take notice' of important aspects of learning that are difficult to express in our dominant explanatory systems. But take notice of *what* exactly?

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[76] For some recent introductions to edusemiotics, see Nöth's (2010) thorough literature review; Semetsky's (2010) edited anthology outlining various approaches to edusemiotics from leading authors (of which Nöth's article is included); see also (Strand, 2013; Olteanu, 2015; Campbell, 2016, 2017, 2018a, b, c) for the relevance of Peirce's categories for philosophy of education; as well as the recent handbook (Semetsky, 2017). The term edusemiotics was coined by Danesi (2010) in the forward to the above-mentioned volume edited by Semetsky. The co-authored book *Edusemotics: Semiotic Philosophy as Educational Foundation* (Stables and Semetsky, 2015) has quickly emerged as a foundational text for this new research project. For more on the essential points of edusemiotics see the recent interview with Inna Semetsky (Semetsky and Campbell, 2018) and "A Short Introduction to Edusemiotics" (Olteanu and Campbell, 2018).

In a nutshell, many theories of learning cannot account for the role of: *un-actualized potential,* nor; anticipatory *teleological* processes. Thus, learning often gets reduced to either; (a) the attainment of psychological states *inside* the mind-brain of the learner, or; (b) in the processing or *computing* of (conventionalized) symbolic representations. Often, both these orientations are present simultaneously, and what we end up with is a confusing mix of constructivism and behaviourism, interpretism and positivism.[77] Such a cocktail of contradictory forces has been detrimental to the pragmatic contributions of educational philosophy generally (cf. Carr, 1997; Stables and Semetsky, 2015, Ch. 3; Campbell, 2018c).

A growing body of educational research that looks to CS. Peirce's categorical semiotic philosophy has emerged to address some of these conceptual deficiencies. The strength in Peirce's semiotic philosophy is precisely that it is triadic and non-duelist. It sets out to explain and conceptualize relation itself as an ontological modality. That is to say, that the theory of learning implicit in Peirce's semiotic (see Olteanu 2015) will not locate learning within *ens rationis* (mind dependent reality), nor in a learner's 'competence' in 'processing' an external *ens reale* (mind independent reality). No. The event of learning always occurs in the complementarity and interaction of the learner to their environment; in the specifically triadic mediation of observer, the observing, and the observed. This interaction constitutes the *pedagogical event* that edusemiotic pedagogy orients itself toward. This is a step beyond substance dualism and the principle of non-contradiction (*this* is this because it is not *that*), to recognize the logic of the included (rather than excluded) middle (*this* is always becoming *that*), and its implied ontology. This perpetual emergence and unlimited growth potential that is characteristic of educational processes, is conceptualized through the action and growth of signs (semiosis), presented to us in terms of a theory of unlimited semiosis (cf. Eco, 1979).

At the centre of this conceptualization, is the enlarged *tripartite* conception of experience as offered to us by Peirce's categories of firstness, secondess, and thirdness.

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[77] See Cunningham (1988, 1998), and Shank (2008), for more on the implications of this methodological confusion for educational research, and the role semiotics can play in addressing this confusion. See also the special issue on "Data" from the journal *Cultural Studies* (Vol 13, issue 4, 2013).

> 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 Second… the tendency to take habits is Third. Mind is First, Matter is second, Evolution is Third (CP 6.32 1891; emphasis added).[78]

Much of the (Peircean oriented) Edusemiotic research of the last two decades suggests that one of the main applications of these categories for education is that they offer the ability to describe and understand learning without operationalizing it and reifying it from its experiential origins. Learning-as-semiosis is a form of conceptualizing *continual emergence*, and thus goes beyond what is reducible and describable through philosophical or mathematical reductions. Learning-as semiosis, must account for the reality of:

1. "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), hence the focus on Peircean concepts like abduction and firstness (cf. Semetsky, 2005; Stables and Semetsky, 2015, pp. 16–30; Campbell, 2018a, c);

2. The "forceful, dyadic consciousness of 'resistance'" (Strand, 2013, p. 754; Colapietro, 2013; West, 2015; Campbell, 2016; Nöth in Stables *et al.*, 2018, Ch. 5) to new learning (secondness), as well as;

3. The growth and generativity that results through mediation; a first coming into relation with a second—this is the growth of habits that beget future habits. This is what underlines pedagogical growth (in the Deweyian sense) and learning itself (Strand 2013; Affifi, 2014; Campbell 2017; Nöth in Stables *et al.,* 2018, Ch. 4) representative of the category of thirdness and the process of semiosis in its full estimation.

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[78] The abbreviation "CP", as per convention, refers to the 8 volume *Collected Papers of Charles Sanders Peirce* (1931–1966). The numerals represent volume and paragraph, respectively.

4.1.2. Finding our foundations

Many edusemiotic writers have begun to closely align edusemiotics to the biosemiotic research project; the basic logic being that if living biological processes can be defined and understood through semiosis, so can learning (cf. Stables, 2006; Olteanu, 2015; Campbell, 2017). As more and more Edusemiotic research connects its agenda to biosemiotics, and because biosemiotics has followed in recent years a predominantly Peircean orientation, much edusemiotic research follows or adheres to a Peircean triadic philosophy. However, it would be misguided to assume that *all* edusemiotic research is inherently Peircean, nor necessarily seeks its philosophical guidance from the Peircean canon. In fact, much research in edusemiotics (including some of the work of the two main edusemiotic scholars Andrew Stables and Inna Semetsky) seeks and explores many non-Peircean perspectives. Just a look at the new Routledge volume *Semiotic Theories of Learning* (Stables et al., 2018), presents a diverse and rich field of influence, with at least two of its five authors presenting semiotic conceptions that draw prominently on non-Peircean ideas (Eetu Pikkarainen and Sébastien Pesce**)**.

In this article, we will be more specifically treating the conceptual foundations of Peircean edusemiotics *in particular*, not assuming in the least that all edusemiotics is inherently Peircean. More specifically, we will be following Olteanu's (2015) approach of extracting and developing the *philosophy of learning* that is implicit in Peirce's semiotic.[79] Taking seriously Biesta's (2016 [2013]) important caution about not reducing *philosophy of education* to a *philosophy of learning* (something much edusemiotic research could potentially be charged of) we must remember that this orientation towards understanding the dynamics of learning on a bio-semiotic level, is always performed in the service of imagining future possibilities for informal and formal educational networks and programs. Understanding all learning and living as semiotic engagement presents us with

> the possibility for "liberating the concept of learning from the domain of education, and rethinking education as a system or a program that works in the service of learning" (Olteanu and Campbell 2018). This orientation suggests a more ecologically and biologically minded approach to

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[79]For more, see the conversation between Campbell and Olteanu; https://philosophasters.org/blog/2017/11/8/an-interview-with-alin-olteanu-education-signs-and-the-history-of-ideas.

education that resists separating humans from animals, culture from nature, recognizing that because '[l]earning is continuous, occurring in every life form… any Umwelt has educational potential" (Olteanu 2016, p. 586). (Olteanu & Campbell 2018, p. 254)

We can say then more specifically, that this article is also a study into the dominant conceptual frameworks of a *biosemiotics informed edusemiotic*, and not solely a Peircean one.

Perhaps the most important non-Peircean idea explored in this study is the ecological and biosemiotic concept of *Umwelt* (the organism's phenomenal world, as opposed to the more static designation, environment). Umwelt philosophy has come to be a central area of investigation for edusemiotics; allowing theorists to address learning and living concurrently, from the perspective of how an organism *discovers* (not only constructs!) meaning and significance in a dynamic and changing environment. This article will focus primarily on the basic semiosic processes that sustain the learner's *primary modelling system* (or umwelt). This is the world of meaning and sensory experience that the organism is immersed in. Not the world as it is, the hypothesized *ens reale*, but rather, the ontologically *real* phenomenal world of the learner.

This focus enables us to identify and explore four basic hypotheses' (all previously explored and elaborated upon) that a Peircean informed edusemiotic perspective can be claimed to rest upon. These are:

- The iconicity hypothesis (**IH**);

- The natural learning flow principle (**NLFP**);

- The continuity principle **(CP)**;

- The principle of suprasubjective relation (**PSR**);

The identification and elaboration of these basic philosophical orientations will hopefully help further establish the importance and relevance of the intertwined bio-semiotic/edu-semiotic perspective for both educational theory and practice. I will argue that this task requires the methodological framework of Sebeok and Danesi's (2000) *Modelling Systems Theory* (MST), which: (a) provides a biologically grounded methodology to understanding the diversity of modelling processes across all species, and; (b) contextualizes the specific focus of this study within the broader forms of learning and

knowing encompassed by a general semiotic theory of learning.[80] This reach across species is important, for it is emblematic of the continuity principle (**CP)**, which rejects on pragmatic grounds, essentialist distinctions between humans and non-humans; but also mind from matter, and body from mind.

Hopefully such attention to the conceptual foundations of this new edusemiotic perspective will encourage more educational research to take what Semetsky (2014) has tongue in cheek referred to as 'the edusemiotic turn'.

4.1.3. Alignment and divergence between modelling systems theory and Peirce's categories

Peirce hypothesized that forces in the universe progress from states of chance indeterminacy (firstness, chance), to states of total generalization and interconnectedness (regularity, law-as-tendency, thirdness). He concurrently described this as the growth of relation itself, and thus a form of evolutionary and cosmological love (Rose 2016; Campbell 2017, pp. 9–12). Although his grand cosmology is not verifiable a priori, this categorical progression has shown to possess relevance in recent studies into human development and cognition.[81]

In a series of recent papers (2016, 2017, 2018a, b, c) I have attempted to show the usefulness Peirce's categories can have for re-conceptualizing educational praxis and theory. The experiential basis of these studies comes from my work over the last 10 years as both a music teacher and educational researcher. Following these experiences and refection, it is my belief that education, to: (1) align itself with the way we actually learn in the world, and; (2) to create ethical and responsible humans who carry *pragmatic beliefs*—"that upon which a [hu]man is prepared to act" (Peirce, CP

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[80] Cf. Eco (1984, pp. 1–13) for the distinction between general and specific semiotics. See Stables *et al.*, (2018) for more on semiotic theories of learning.

[81] See, for example, the cognitive/ontogenetic perspectives of Zlatev (2009, 2013), Zlatev and Andrén (2009) and West (2015, 2018). Noted is how this research in cognitive semiotics and cognitive linguistics generally notices and observes a consistent developmental progression from firstness to secondness to thirdness, or iconic modelling to indexical modelling to symbolic modelling. These more empirical (clinical) studies continue to deeply inform edusemiotic conceptualizations.

5.12) —must come to embrace what Danesi (1998, p. 61) calls the *Natural Learning Flow Principle (NLFP).*

This principle refers to the flow of semiosis within ontogeny, and rests upon the recognition that human sign use begins with the senses and in the body—hence Danesi's (1998) apt title *The Body in the Sign.* This principle rests upon a central tenet of MST called the *Sense-implication Hypothesis* (SIH); the "view that all modelling is initially guided by sensory processes" (Sebeok & Danesi, 2000, p. 199).

> The sense-implication hypothesis (SIH) posits that all sign-making efforts are initially grounded in the experiential realm of the senses. In this conceptual framework, semiosis is considered to constitute a transformation of bodily experience, converting the external world of the senses into an internal one of representation (Danesi, 1998, p. 17).

The NLF principle follows from the acknowledged sensory beginnings of semiosis, asserting that the human child proceeds from a stage of:

- *iconically* modelling their environment (that is, simulating the referential domain *internally*: forming "mental images" of a referential domain that is *isomorphic* with pre-existing internal structures and processes); to a stage of

- *indexical* modelling: *extending* this basic iconic competence into the environment through acts of deixsis and 'indicative' mimesis—visual, gestural, and aural); to finally,

- a stage of *symbolic* modelling: using socially-verified (and thus conventionalized and stipulated from specific contexts of occurrence) sign systems to cognize referential domains).

This flow from **iconicity–indexicality–symbolicity** mirrors the progression, within the human use of signs (anthroposemiosis) of **primary modelling–secondary modelling–tertiary modelling**:

> Primary modelling, for instance, is "knowing through simulation". Secondary modelling is "knowing through extension and indication". This implies that the SMS does its handiwork, by and large, after the PMS has completed its own, in a manner of speaking. Further extensions of forms lead eventually to highly abstract, symbolic (tertiary) systems of representation. The PMS is the default system, while the SMS and TMS respectively are extensional systems… (Sebeok & Danesi, p. 167)

Modelling Systems Theory is applied not only to human ontogenesis, but also towards species-specific modelling behaviour generally; the *forms of knowledge* that

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determine how an animal knows something, and the ways in which these forms are represented (internally and externally). As we will discuss further in Sect. 3, this approach to learning finds its origins in ethology and the "Umwelt theory" initially developed by Jacob von Uexküll (1957[1934], 1982[1940]). In terms of Peirce's categories, this is equivalent to the progression from firstness (indeterminate sense impressions/qualia, as yet atemporal and unrelated to anything) to secondness (the dynamic 'imprinting' of these impressions acting/resisting upon an organism's sense perception, in space and time) to finally, habitual modes of perceptual action and reaction with the environment (thirdness).[82]

We can in fact say that Modelling Systems Theory corresponds *grosso modo* to Peirce's categorical outline, enriching the significance of this theoretical alignment for edusemiotics:

> The child's earliest strategy for knowing an object with his or her senses is, in fact, a firstness strategy. The modeling system that translates firstness sensory forms into models is the primary modeling system (PMS). The PMS can be defined as the instinctive ability to model the sensory or perceptual properties of referents. Needless to say, Peirce referred to this process as iconicity. The child's subsequent attempts to refer to the object through vocal imitation and/or manual indication constitute a secondness knowing strategy. The modeling system that guides these attempts is the secondary modeling system (SMS). The SMS can be defined as the capacity to refer to objects with extended primary forms and with indexical (indicational) forms. Finally, in learning to use a culture-specific name to refer to an object, the child is engaging in a thirdness form of knowing. His or her ability to do so is dependent upon the tertiary modeling system (TMS), which can be defined as the capacity to acquire and utilize the symbolic resources of culture-specific abstract systems of representation (Sebeok & Danesi 2000, p. 10).

Peirce's categories, and his general theory of signs, give educators and educational researchers the means to talk about and conceptualize aspects of the learning process that our not easily addressed, for they occur existentially prior to full

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[82] The following outline from Sheriff (1994, p. 2) is useful in conceptualizing some of the prominent dimensions of each category:

Firstness, Secondness, Thirdness;

Possibility, fact, law;

Quality, reaction, symbol (representation);

Feeling, effort, habit.

intentional(/cognitive) awareness. However, to consider the categories *experientially*, and not metaphysically, involves recognizing that firstness is by its nature inaccessible to our conscious awareness (once we cognize it, it is gone). In fact, firstness is the pure possibility of the cognitive process (cf. Eco, 2000). To *learn from* our unknowable first impressions is to realize these impressions as acting upon our senses (and thus already within the realm of secondess) and to relate these impressions to the continuity of our experience in the unfolding present. This is because all conscious awareness takes place necessarily within the realm of thirdness—our established ways of inhabiting (or being in-habit with) an umwelt.

This is to say, that although the PMS can be considered loosely a firstness 'strategy', it is not strictly equivalent to that singular atemporal totality that constitutes firstness in the Peircean sense, and not how firstness is conceived of phenomenologically. What is generally called 'cognition' seems to occur exclusively in the realm of thirdness, however, it is only through mindful attention to what I have previously called the *palimpsest-nature* of experience (cf. 2016, 2017, 2018a, c)—to the aesthetic bedrock of firstness and its embodied realization in secondness—that we can create students receptive not to subject matter or knowledge content, but rather, to the various shades and dimensions of the learning process itself. Strand makes this same point by saying authoritatively that "(t)hirdness is learning" (2013, p. 795). She quotes Peirce who explains that:

> 'Thirdness essentially involves the production of effects in the world of existence, —not by furnishing energy, but by the gradual development of Law' [(Peirce, 1903[1998], p. 271)]… So, in addition to the immediate, incommunicable perception of the qualities of 'pure presence' (firstness) and the forceful, dyadic consciousness of 'resistance' (secondness), thirdness entails 'learning', or 'the felt sense of personal transformation (of acquiring a new habit or at least of having one's present habits strengthened, refined, or in some other way modified)' (Colapietro, 1999, p. 23). Thirdness contains firstness and secondness, but it is by no way reducible to the two.

Because of this non-reducibility, we must replicate this tripartite fullness of experience in educational settings (Fig. 1).

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-Secondess.
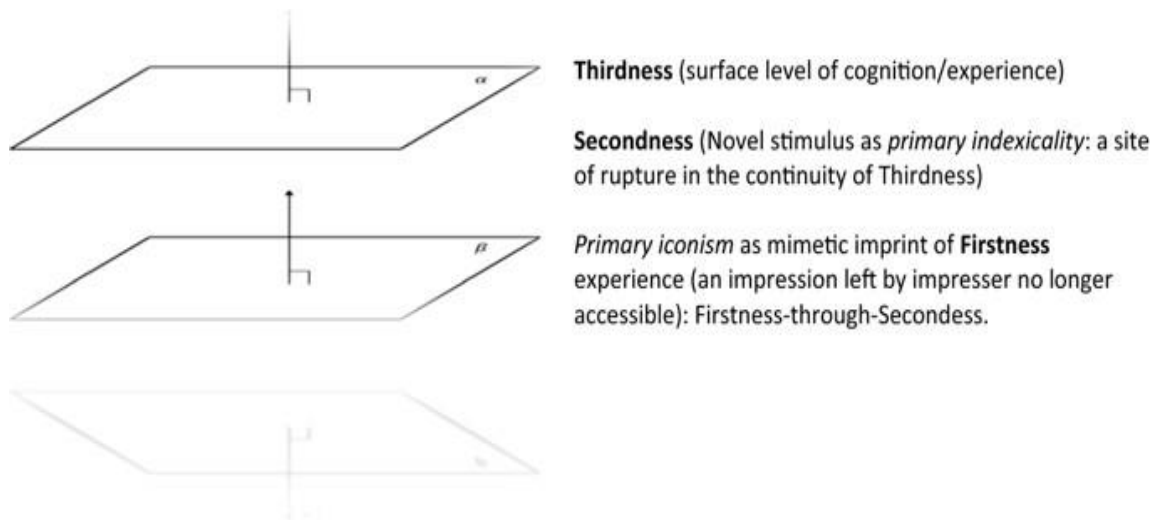
Figure 4.1.   The *palimpsest* nature of the categories

As noted by many (cf. Danesi 1998; Ponzio, 2002; Petrilli and Ponzio, 2005, pp. 223–230; Campbell, 2016; Yu, 2017) one of the main offerings Sebeok's MST brings to education is the understanding that "the semiotic [meaning-making] capacities of the learner…—rather than the subject matter to be learned—should be the focus of education" (Danesi as cited in Petrilli and Ponzio 2005, p. 229). It is in this sense that we can understand Petrilli and Ponzio's (2005, p. 229) assessment that "the main implications of Sebeok's modelling theory for education is of a *methodological nature*". I would also add, following Yu (2017), that this is also one of the central contributions that edusemiotics (as a new research program) brings to educational philosophy: a re-orientation and re-considering of the philosophical foundations of education.[83]

Learning is, in some sense, always being deferred and never occurring in a single moment of space and time. It is this constant deferral (and an inability to conceptualize it) that leaves the concept vulnerable to obfuscation by political or ideological interests. This failure to locate learning, or rather to reduce learning to a set of repeatable circumstances and structures, functions to operationalize the concept;

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[83] As noted in particular by Olteanu (2015), there is a strong historical case for the connecting of educational philosophy and semiotics, which is evidenced quite clearly, by the fact that the book that is often considered the foundational text of liberal education and the foundational text of semitoics are shared in Augustine's *De Doctrina Christiana*. The first lines in this ancient text reveal this deep historical tie: "learning concerns either things or signs, but it is through signs that we learn what things are" ([397AD], book 1, line 2).

turning it into little more than an accountability tool. Peirce's triadic account of consciousness does allow us to, in some sense, 'locate' learning in the perpetual 'opening up' of virtual potentialities (firstness'); for its capacity to account for *emergence.*[84] Such a relational account, recognizes 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); as the growth of habits that enable future habit making. In Peirce's phenomenology (which he called phaneroscopy) this is expressed 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 (the *'indexical rub'*, cf. Campbell 2016), where anticipated models fail to fully account for the fullness of experience; this constitutes a 'Firstness event' (Campbell 2018a).[85]

All in all, category theory approached phenomenologically (and not metaphysically), presents us with non-reductionist learning theory that can account for indeterminacy, riskiness, uncertainty, and openness; all of those essential educational qualities as argued by Beista (2016[2013]) in his important book *The Beautiful Risk of Education*.

4.1.4. Structure and Method

Now with our basic theoretical orientation of edusemiotics clarified with its alignments to biosemiotics and MST expressed, we can explain more directly the objectives for this study. My task is twofold:

First, to address how signification processes emerge on what anthropologist Michael Ling (personal correspondence) refers to as the *bio-existential* level. The focus of this first line of inquiry is the basic components and processes involved in

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[84] Cf. Rose (2016) for more on the Peircean notion of emergence.

[85] Eco (2014, p. 514) explains this aspect of Peirce's categories: "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)".

the *emergence* of the perceptual process; that is, the *terminus a quo* of finite semiosis (semiosis in the organism) and thus also the emergence of embodied sense-based learning. These are (proto[86]) semiosic process that help to explain how our initial sensory impressions (firstness) are realized through a process of *adaptive fallibillism*; their resistance and impression upon an organism's perceptual system. This is fallibilism as expressed by the coming-into-being indexical interaction of secondness: how a primary iconism is only realized through a primary indexicality (that takes the form of a '*shock'* towards sign re-collection and re-cognition). This self-sustaining (and auto-poeitic) process of realizing the iconic properties of the environment through indexicality, forms the basis of *pre-conceptual sensorimotor perception*, that is, the organism's processing of its umwelt through its internal structures (innenwelt) in a circular feedback loop (see Fig. 3).

My **secondary** task will be to draw out several fundamental principles from this analysis that a Peircean theory of learning necessitates (the above mentioned **IH**, **PSR**, **CP**, and **NLFP**). To reiterate, my goal will be, not to explain the extensional modelling systems in any significant detail (the SMS and TMS respectively), but rather to address the main concepts and principles that can help educational researchers address the fundamental aspects of perceptual engagement, representative of what we are here calling the *proto-semiosic sustainment of umwelt*.[87]

By narrowing our focus to the basic conditions *that make perceptual learning possible*, we can hopefully gain insight into some of the central claims of edusemiotics. Only through such careful attention to *beginnings* can we, as Danesi (2010) says, help create "a veritable edusemiotics for the future".

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[86] "Proto", as this is not yet a genuine triadic interaction, we are still at the footholds of genuine thirdness; there is only the *possibility* of future mediation. Cf. Eco (2000, 2014, pp. 508–530).

[87] This model is in several ways a synthesis of Nesher's (2001) model of abductive perception and learning, and the Vichean model of mind presented in Danesi (1993).

4.2. Proto-semiosic Sustainment of PMS

4.2.1. The Primacy of Iconicity in Learning

Many edusemiotic writers (myself included) have followed what has been called the iconic turn in semiotics, largely following a new reading of Peircean ideas presented in Eco's (2000) *Kant and the Platypus*. Olteanu (2015, p. 76) has articulated this orientation cogently, saying "icons are the signs that afford learning, all signification having an iconic ground." This is obvious in everyday teaching and learning situations. No two people learn something in the same way: A trumpet student who knows basic piano will possess a very different relationship to harmony, then one who does not; a physics student learning about the concept of *force* who knows how to swim, will have a very different relationship to this knowledge then another student who doesn't, etc. Olteanu (2015, p. 75) clarifies:

> What happens when learning, is that structures of signification (what needs be apprehended) have to settle on already existing structures of signification: a learner. 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.

Within a Peircean informed edusemiotic, both individuals and generals are admitted to have causal efficacy. The 'general' idea of some-*thing* is recognized as real, in the sense that this materially absent idea impacts upon our actions and responses in the phenomenologically 'real' present. This is to assert the reality (and in fact the *causality*) of teleology itself (or what Aristotle called final cause). From this we can better understand our nominalist leanings in popular learning theory, which whatever (more or less) materialist or (more or less) behaviorist, are distinctly dyadic, thus giving way to determinist explanatory frameworks. Thirdness—or the growth of interpretants and thus the growth of action-possibilities—occurs in perceptual learning to mediate between the processes of qualification (firstness) and sense-impression (secondness): *to mediate the **potential** becoming **actual*** in our experience.[88] It is in this

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[88] "We only know the potential through the actual, and only infer qualities by generalization from what we perceive in matter" (CP 1:429).

sense that we can understand learning in the Deweyian sense (1916) as "the formation of habits that will engender a [future] receptiveness to novelty" (Campbell 2017, p. 17).[89]

Learning in this understanding is expressed in an *anticipatory dynamic* (Nadin 2009, 2010, 2014, 2017), where the anticipation of a future state changes and mediates the learner's relation to the present as well as the past.[90] Education understood through such a triadic philosophy, consists in the deliberate cultivation of this anticipatory response and mindset. Such an account of learning involves the ability to conceptualize oneself as a semiotic entity, as a sign in a process of continual unfolding (cf. Olteanu 2015, p. 74), undergoing continuous growth simply as being part of the life-process. Teaching then, from an edusemiotic perspective is not about finishing things off, or closing and solidifying a worldview, but rather about a continual opening-up to a future not yet determined; and the *school* itself can be imagined as a place of continual and sustained suspension, where this form of semiotic emergence can occur (cf. Masschelein 2010; Stables et al. 2014).

What we can call the primary modelling capacity in the organism/learner, is, in its most basic description*: a basic iconic/mimetic attention to the environmental surround* as expressed in perceptual action and emergent patterning. This has been referred to simply as the **iconicity hypothesis** (Danesi 1994, 1998). This is the process by which an organism, through continuous acts of semi-instinctual and mostly pre-conceptual inference produces and emits models (in the form of meaning-bearing sign vehicles) to adapt to dynamic environmental conditions. Edusemiotic analysis has shown that this basic level of receptivity can be expressed in educational discourses by adopting *abductive models of learning* (Nesher, 2001; Shank and Cunningham, 1996;

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[89] Affifi (2014, p. 76) explains in the context of his "biological pedagogy": "For Dewey, growth occurs when possibilities open up for an organism, thereby "enhancing its ability to participate in its environment" (Gouinlock, 1972, p. 238). It is the process of developing habits that allow the organism to interact more spiritedly, responsively, and openly to arising circumstances. By contrast, a lack of growth limits possibilities of encounter, as the organism relies on preformed habits that stultify, ossify, and close it off to novelty… growth is predicated on habits that enable future habit-forming, whereas the restriction of growth occurs when existing habits monopolize the operational domain" (see also Dewey 2004[1916], pp. 44–48). Aligning this understanding with Eco's (1962[1989]) pre-semiotic poetics of openness, we can say that this is an aesthetic-oriented philosophy of education, in the sense that we locate learning in the aesthetic pleasure and sensibility involved in this perpetual *opening* to future semiosic unraveling (cf. Campbell 2018b; Chap 2., this thesis).

[90] I have aligned the science of anticipation to edusemiotics in depth elsewhere (Campbell, 2017).

Shank, 2008; Semetsky, 2005; Stables and Semetsky, 2015, pp. 16–30;
Campbell 2018a), in place of common (in theory and practice) deductive and inductive
models, which are generally characteristic of information processing (as well as banking)
models of learning.[91]

4.2.2. How Mind Emerges from Matter

Iconicity provides the very foundation for understanding how semiosis and learning can
be conceived as co-extensive and is thus one of the central concerns of edusemiotics.
All my examples so far have focused on how iconicity functions through organisms. This
is in line with the broadly ethnological and zoological aims and history of MST. However,
I want to argue that we can better understand the educational significance behind
the *iconicity hypothesis*[92] by understanding how and in what ways these processes are
first operative in the physical world. To demonstrate this, I will adopt the approach to
Iconicity outlined by Thom (1973) and elaborated further by Sebeok (2001[1994]).

First, let's consider how icons frequently occur in the natural world: the result of
an effector system *imprinting* a replica of itself upon a receptor system. Consider the
following examples, all first presented by Thom:

- **a person's shadow,**

- **a shape reflected in water,**

- **a footprint in sand.**

In the first two examples the image is impermanent, based on a temporally fleeting
specular model. It is a copy that is dependent upon the immediate presence of the
effector under specific environmental conditions. However, in the third example, the
receptor system possesses a degree of (what Thom calls) *plasticity*, which enables the
footprint to not simply disappear once the impresser has come and gone. We can say,

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[91] Abduction is, at its basis, a process that *extends* iconic forms outwards into the environment; "abduction transforms overall iconic structure into overall symbolic structure" (Pearson, 2017, Sect. 1.5).

[92] The IH rests on the NLFP; the understanding that all indicational (indexical), and extensional (symbolic) modelling is rooted in primary (iconic) forms that stem from the organism's sensorimotor perception.

that the stimulus has *transformed* the receptive system in some way. "The formative stimulus alters the equilibrium of the receptor system when impressing the shape of the model; here the image becomes a memory trace (Sakitt 1975)" (Sebeok 2001 [1994], p. 112). The dynamic process involved in the imprinting of this iconic *caste* from effector to receptor is what Thom refers to as *competence*. Competence requires models to make a "irreversible temporal interaction"; without such an ability to persist through time there is little or no possibility of the future attribution of semiotic value. And Peirce frequently emphasised, Semiosis always requires time.

These examples of dyadic (or mechanical) iconicity provide a proto-semiosic window into the thoroughly triadic (teleological) processes displayed by living biological systems. According to a Sebeokian/Thomian view, life itself is the result of such *primary iconism*:

> A living being L fabricates at some temporal remove, another living being L^, L^ will soon supplant L. Thom claims that this feature of plasticity activates the genetic code, giving rise to a self-replicating, mutable molecular system that is also environment-sensitive… It becomes particularly plain in embryological development, which may be among the most dramatic forms of iconization: it is nature's design for unfolding the growth and differentiation of a structure isomorphic with the parent by virtue of a spatial–temporal translating operation (Sebeok, 2001[1994], p. 113).

As explained in the introduction, largely thanks to the bridging and pioneering work of Thomas Sebeok, the edusemiotic project and the biosemiotic project are coming together. Considering instances of primary iconism in both physical and biological processes *alike* brings us closer to understanding the enormous implications of this theoretical alignment for educational philosophy, specifically in orienting us towards a more pansemiotic perspective rooted in *synechism*, discussed in this study as the Continuity Principle (**CP**).[93]

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[93] Peirce's *synechism* is the doctrine that mind and matter cannot be logically considered distinct from one another. It has emerged as central to the edusemitoic orientation. Esposito (2007) has summarized the essential points of synechism, with reference to the Peircean corpus:

(1) "the doctrine that all that exists is continuous" (CP 1.172);

(2) the rejection of atomism and the existence of ultimate elements;

(3) the view that continuity of being is a condition for communication (CP 7.572);

(4) the view that to exist in some respect is also to not exist in that respect (CP 7.569);

4.2.3. Iconicity in Perception and Development

To illustrate and motivate the foundational orientations of edusemiotics, we may carry Thom's theories of iconicity to the other end of the ontogenetic ladder; to the phenomenon of perception. At this level of analysis, we can form a more adequate account of the basic requirements of perceptual-learning, here "regarded as a modification of dynamic competence by the sensory impact of external reality…". Sebeok (2001[1994], p. 113) offers further clarification of this definition, reiterating the *Sense Implication Hypothesis*:

> Any competent system, for example, the mechanical and hydrodynamic components of cochlear partition and the acoustic cortex, or the retina and the visual cortex, etc., rapidly recovers its percipient virginity, indispensable for total and permanent competence, while its plastic faculty guarantees that the sense impressions remain stored in [some form of] memory.

Following this account of iconic competence, we can now say that, for a minimal threshold of learning (as transformative growth) to occur *the receptor system must in some way be **transformed** by the effector system. This transformation occurs through the receptor systems **plasticity** and dynamic **competence**, which is essentially the learner's basic capacity to adapt to and assimilate novel stimulus-patterns.* As I have shown elsewhere this can be understood as a re-iteration of a central Piagetian axiom, expressed here by John McManus, that, "For transformation to occur dis-adaptation in some form must occur in the attempted match between internal structure and its environment" (in d'Aquili et al., 1979, p. 196). This is almost paradoxical when made to conform to current materialist frameworks, as it implicitly says, that for learning as semiotic growth to occur, the modelling relation must *not* be completely determined, but

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(5) the view that "all phenomena are of one character" consisting of a mixture of freedom and constraint that tends in a teleological manner to increase the reasonableness in the universe (CP 7.570);

(6) the view that consciousness has a bodily and social dimension, the latter originating outside the individual self (7.575);

(7) "the doctrine… that elements of Thirdness cannot entirely be escaped" (CP7.653);

(8) a theoretical synthesis of pragmatism and tychism (the doctrine that chance events occur);

(9) the fallibilist view that our scientific facts are continually subject to revision;

(10) "a purely scientific philosophy [that] may play a part in the onement of religion and Science" (CP 7.578).

rather involve a minimal threshold of dissimilarity, or isomorphism, as Sebeok specified above.

What is additionally made clear and emphasized by Thom's descriptions of iconicity, is that this transformation occurs *only* to such a degree that the organism is *capable* (that is competent) enough to absorb and integrate the iconic imprinting with its existing internal structures (innenwelt). Thus, such primary iconicity is deeply tethered and dependent upon forces of indexcalilty (the effector cue) and is in fact only realized through the dynamical imprinting of iconic forms *upon a* receptor system. It is in this sense that we can follow Sebeok and Ayer in insisting that "there are no pure iconic signs; in fact, 'no actual sign is an icon' (Ayer 1968, p. 140)" (Sebeok 2001[1994], p. 110), another prominent reminder of that central aspect of Peirce's categories we just mentioned, that "firstness can be precinded (logically) from secondness but cannot occur in its absence" (Eco 2000, p. 190).[94] Iconicity and Indexicality are deeply tethered in sense perception; and it is only the synthesis of their interaction that ensures the conditions for the subsequent creation of habits of perceptual action that form the basis for symbolic forms.[95]

4.2.4. Primary Iconism and Abduction

Primary iconism is distinct from relative forms of iconicity, as it is merely the presupposition to correspond, and not yet an established relationship of similarity; "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). It is a pure Firstness and therefore not something that can ever be intentionally realized in awareness, yet however still profoundly impacts upon perception and cognition in the form of the semi-automatic and sub-conscious inferential process known as abduction.

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[94] See also Ransdell (1979, p. 59).

[95] Within the domains of neuro-anthropology this has been referred to as the *symbolic function* (cf. Laughlin et al., 1990; Laughlin, 1992) which put 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).

In *Kant and the Platypus* (2000), Eco, in a brilliantly detailed study, addresses this hypothesized firstness of experience and how we may come to learn of it, concluding that all knowledge (even knowledge of primary iconism) must be attained through resource to a text, "an organizing principle whereby an element can be identified insofar as it is not the other, which by evoking it, it excludes" (2000, p. 111). This is to say that learning—in its most simple form—cannot occur without this encounter with the *other,* a minimal level of primary indexciality, and that it is through this responsibility to meet this 'other' that unrealized potential is realized and 'educative' events are created and enacted. Abduction represents this "move from what is known to the unknown" (Stables and Semetsky 2015, p. 25). Unlike deduction or induction, abduction merely tries to realize what is possible. Abduction reflects a tri-relative sign-model that paradoxically, through its constant *closing in* on itself (its circularity and self-reference), always *opens* new (virtual) possibilities. Kull (2009, p. 82) explains this reaching into the possible that constitutes the semiosic event:

> The sign vehicle, or representamen (or sign, sensu stricto), stands for an Object. This is the relation that is created by semiosis. The object, thus, has an interesting duality—it is both there and is not there—because it is both connected and anticipated. The relation of standing for is possible owing to the absence of what is referred to (the object) and, concurrently, there cannot be semiosis without the existence of a reference (an object) […] Semiosis is what makes anything plural.

What we realize through Peirce's semiotic is that potential states weigh upon learning just as much as actual or future states do; these virtual 'absential phenomenon' (Deacon, 2011) are very *present* and ontologically 'real' in both biology and experience, despite their semiotic immateriality. Eco's (2000, 2014) explorations of primary iconism remind educational philosophy that what we in fact uncover through the fallibility of indexicality, is that there was something inside us (yes, a pure potential to react and respond) that called out for us to attend to and learn about the world. The 'will to carry on living' is here co-dependent with the 'will to learn' (cf. Dewey 2005[1934]). Conceptualizing this metaphysical concept of firstness allows a vantage point from which to envision a beginning, a *terminus a quo* of learning (a beginning that precedes

cognitive awareness), or more precisely, **to an imprint**; an impression left by an impresser that is no longer accessible to us.[96]

4.2.5. Meeting the unknown

Thus, realizing an "implicit philosophy of education" (Chiasson, 2005; Olteanu, 2015) in the Peircean corpus, involves in large part cultivating what I have previously called "a pedagogy of novelty" (2016, 2018a). This stems from the understanding that all learning-growth is the result first and foremost of a student's willingness and ability to rise and meet the unknown; to find, through an *abductive leap*, the familiar in the new: "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…" (Stables and Semetsky, 2015, p. 20). Within this pedagogical orientation, a teacher's primary role is to develop an attention and receptiveness to the *indexical rub* of learning; "that initial friction or resistance felt when meeting a new experience" (Campbell 2016, p. 17). Peirce's philosophy reminds us that the art of teaching involves, not principally the transmitting of knowledge, but fostering this basic receptivity in learners. Learners who are receptive to novelty, to ambiguity, to risk, will continue learning their entire lives.[97]

MST posits that the way organisms model their *innenwelt* (inner model) after the umwelt (outside model) is iconic, in the sense that a model is "essentially a reductive analogy, and therefore ultimately a kind of icon" (Sebeok 2001[1994], p. 140). Petrilli (2003, p.71) explains this notion of 'diagrammatic reasoning' that was so central to Peirce's (post 1890s) thought:

> [T]he model is an icon, a kind of diagram, where the most pertinent relations
> are of a spatial and temporal order. These relations are not fixed once and
> for all but can be mixed and modified and fixed again, in correspondence
> (a resemblance relation) with the innenwelt… of the human organism.[98]

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[96] These ideas are expanded upon in my article "In Search of Our Beginnings: Locating Firstness in Arts Education in the Service of Advocacy" (2018c).

[97] See Yu (2017, p. 374), for more on how edusemiotics when coupled with MST strongly suggests the "inevitability of life-long education".

[98] See also Legg (2017) for more on diagrammatic teaching and learning.

It is through this impression-caste *metaform*[99] (cf. Danesi, 2013) outlined above that we can understand semiosis as the modelling competence of a species, that is, "as the capacity of a species to produce and comprehend the specific types of models it requires for processing and codifying perceptual input in its own way" (Sebeok and Danesi, 2000, p. 5).[100] I have shown elsewhere (2016) through the specific examples of 'learning music by ear' and 'learning new words' (building from Nöth, 2010), that the goal of a *pedagogy of novelty*, is in large part to encourage and guide students to reflect deeply on their own resistances to novel experiences and feelings, by honing their creative powers of abduction, the capacity to imaginatively infer a frame of reference to account for the new learning. As represented by Fig. 2 below, this involves finding, through continual attention and 'dwelling in' this resistance, points of similarity (or *iconic imprints*):

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[99] A metaform is essentially the non-verbal component of a conceptual metaphor: 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" (Danesi, 2013, p. 35).

[100] This is concurrently the general picture that emerges from Piagetian approaches to development, which purport that "all stimuli in the external world are defined and given meaning in terms of their relationship to existing internal structures" (McManus cited in d'Aquili et al. 1979, p. 188).

N=novel stimulus/phenomenon
Ec=cognized environment
Eo=operational environment

Iconic relationship of likeness

Ec)(→ Eo

(Innenwelt)

(Umwelt)

N

Indexical relationship of resistance/contiguity

Ec → Eo

N
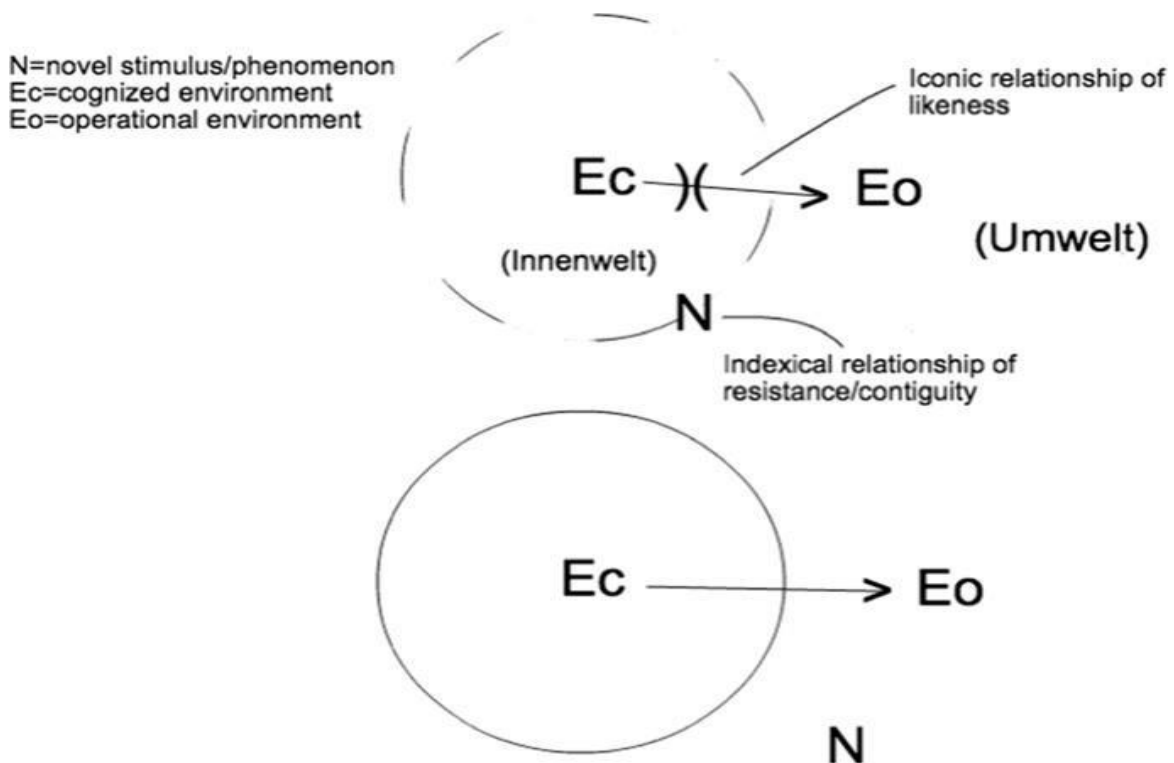
Figure 4.2.   How learners adapt to novelty (adapted from Campbell 2016, p. 26)

> After a space and state of mind is created that enables the student to live in and tolerate this indexical rub they must raise themselves to the challenge of meeting it. This type of education requires us, student and teacher, to reach into the entirety of our personal acquired experiences for similarities and resemblances to what we are experiencing (Campbell, 2016, p. 27).

The bottom-bounded circle (in contrast to the porous top one) represents how novelty will remain on the outside, and unrelated to an organism's internal world of experience (innenwelt) unless this basic receptivity to novelty is cultivated. This receptiveness is educated, not through detached observation, but through collectively (teacher and student) acting upon the environment/umwelt and being acted upon by it. In line with Peirce and Dewey, learning in this understanding emerges through the principle of habit. It is in this sense that we may follow Dewey and locate learning and education in the emergent growth of habits that enable future habit taking; "the result of the educative process", he says, can only ever be a "capacity for further education" (1966, p. 68), and Semetsky replies "The more an organism learns the more it still has to learn:

education means more education and becoming more developed signs" (Stables and Semetsky 2015, p. 81).[101]

The learner *tunes* her perceptual-action to her surroundings through a process of being *in-habit*, through active *doing-undergoing* (to use another Deweyian notion). As we will be further elaborating, we can only realise the impact of firstness upon our learning and life through a *rupture* in the regularity of habit, and such rupture can only contribute to the growth of future habits (to learning) through a perpetual attunement to the unknown. It is quite directly, the creation of habits that enable future semiotic unfurling; the opening of possibilities and variations in our umwelt.

The basic orientation of umwelt, reflects what anthropologist Tim Ingold calls an *'ontology of dwelling'* (2000, p. 42, 2009, 2017).[102] A 'dwelling perspective' takes as its starting point for understanding the human condition direct perceptual engagement within an historically specific environment. This approach represents a swift in thinking about learning as is often expressed in both constructivist and behaviorist accounts, which generally explain that a learner's perceptual engagement is mediated through representations or schematic/formal reductions. The mind processes and constructs sense data into schemas or 'ideas'. According to Ingold, these approaches reproduce an implicit nature/culture (and corollary mind/body dichotomy); the idea of a depersonalized environment which presents the raw materials that learners use to construct meaning out of. A theory of umwelt in contrast reminds us that learning occurs through co-participation in a shared environment; by 'pointing out' (indexing) significant events and possibilities in shared and overlapping phenomenal worlds (umwelten).

4.2.6. The principle of assumed similarity

What we are in fact describing through these basic accounts of how iconicity and indexicailty function within perceptual learning is another foundational aspect of edusemiotic pedagogy: *to assume fundamental similarity instead of difference* (see

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[101] See Nöth in Stables et al. (2018, pp. 80–81) for a treatment and elaboration of my theory of indexical learning.

[102] Ingold himself has drawn significantly on the work von Uexküll (1957[1934]) as well as the ecological psychology of James Gibson (cf. 1979).

footnote 16). This is presented here as the **Continuity Principle (CP)**. This orientation can only be explained through a relational (triadic) ontology, where emphasis is placed on the relations that bind people to the world around them. What is important in such iconic accounts of learning is "not the thisness of a that", as in the western (/Aristotelian) notion of metaphor, but rather "that this *is* that" (Jackson as cited in Ingold 2000, p. 50). The continuity principle has major implications for how we as humans engage with the world around us. Ingold (2000, p. 50) explains how such a relational philosophy is especially present for those people anthropologists have traditionally called 'hunter-gatherers' and specifically within the Cree lifeworld, clearly perceptible in their relation to animals and the broader more-than-human world:

> Whereas Western thought sets out from an assumed dichotomy between the human and the animal and then searches about for possible analogies or homologies, the Cree trajectory… 'seems rather the opposite: to assume fundamental similarity while exploring the differences between humans and animals' (1989, p. 195) […] The move, if you will, is not from the literal to the figurative, but from the actual to the potential—for personhood, at root, is the potential to become a man, a goose, or any other of the innumerable forms of animate being.

This assumed similarity is concurrently the dissolution of a prevalent culture/nature dichotomy in Western approaches to understanding cognition and learning. As Deely (2001, 2009) extensively tracked through the history of Western philosophy, this results from an idealist denial of relation (semiosis) as a modality of being in itself 'over and above' reductions to mind-dependent (*ens rationis*) or mind-independent being (*ens reale*). Such idealist and constructivist leanings implicitly suggest "that meaning does not lie in the relational contexts of the perceiver's involvement in the world, but is rather laid over the world by the mind" (Ingold 2000, p. 51). To recognize the role of mediation (thirdness) in learning, is to concurrently recognize how potential (firstness') continually impact upon the present as a *field of possibility* (cf. Eco, 1979; Campbell, 2018b). In terms of the science of anticipation, this is the recognition 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). Such a philosophical orientation has deep implications for pedagogy: helping to reveal an understanding of learning that doesn't take as its foundation an "initial separation between human persons, (as meaning-makers) and the physical environment as raw material for

construction" (Ingold, 2000, p. 55). Such a philosophy of learning and teaching, suggests that knowledge of the world is not learnt through systematically building up and transmitting representations in the mind to account for sensory information, but rather through *direct perceptual engagement with others in a shared world*. That is, it is through the processes and habits of *en‑skillment* that learners establish their basic perceptual relationships to their environment. It is these *action‑relationships* that form the basis for the way we see and feel and move in the world. Ingold explains further: "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 with its constituents, human and non-human, animate and inanimate" (2000, p. 55).

Thus, it is essential for edusemiotics to take seriously the reality of this world of direct relational entanglements, which is precisely what is presented to us in the rich concept of *umwelt*.

4.3. Umwelt

As I have argued so far, the most fundamental place a Peircean edusemiotic can begin its search for foundations is with the phenomenal world that is sensibly and experientially available to the learner, the *umwelt*. Umwelt was a concept developed for ethology in the early part of the twentieth century by the Estonian-German scientist Jakob von Uexküll.[103] As Sebeok (2001[1994], p. 144) notes the term umwelt itself "is notoriously recalcitrant to translation, although 'subjective universes,' phenomenal world,' and 'self-world' variously approximate the author's intent. However, 'model' renders it more incisively, especially in view of his credo that 'every subject is the constructor of its Umwelt' (Uexküll 1982, p. 87)". The umwelt is the world that is *actually* available to an organism, with its own unique species-specific modelling competences.

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[103] Cf. von Uexküll (1957[1934]). See Olteanu (2015, Ch. 1), Cunningham (1988) and Shank (1998) for a review of the concept's relevance to education.

4.3.1. Correcting subject-object duality

Applying John Deely's "umwelt philosophy" (1990, 2001, 2004, 2010) to education, allows us to conceptualize learning—not solely as something *subjective* happening within the mind or skull of the learner, nor solely in the verification of *objective* truths radiating from some hypothetical operational environment—but rather, as relational signification processes radiating *between* the environment and organism. Such an orientation calls for an inversion of the modern dichotomy of subject-object relations. In this late Latin perspective, what is 'subjective' are the *things* that 'are what they are regardless of what anyone thinks them to be', while the term 'objective' here refers to the process by which "things" become objects within an organism's umwelt. That is, *objects are only objects if they enter within the **objective awareness** of the leaner*; if they have significance and meaning to them. This helps to elucidate how edusemiotics is decidedly a rejection of nominalist leanings in contemporary scholarship. Learning theory must come to account for more than the 'particular' (and more than the mechanical universe of cause and effect, or secondness) to embrace the ontology of unactualized potential (firstness), and how potential is realized differently by different organisms, but is yet still generalizable in the form of habits (thirdness). Thus, edusemiotics purports to study, not psychological states, nor subjective mind-independent states, but rather, the *relations* that mediate learner and world:

> On the contrary, there are no such thing as psychological states disconnected from objectivity. Objectivity precisely depends upon psychological states which give the subjective foundation or ground for the relations which terminate in the publicly experienced interpretations that are precisely what we call objects. The key to the whole thing is relation in its unique being as irreducible to its subjective source always terminating at something over and above the being in which the relation is grounded (Deely 2004, pp. 19–20).

Signs constitute a mode of ontology, that is, as per the scholastic semiotic of Poinsot (1985[1632]), not solely subjective, nor solely objective. They are *supra-subjective*, dependent on subjective mind-independent 'things' as fundaments for their signifying relationships, but in no way reducible to any dyadic order. Thus, we have the *principle of suprasubjective relation* (for more on the **PSR** and its relevance for education see Campbell, 2017; Olteanu, 2015).

Of course, sustaining these relations underlying the learner's umwelt, is the protosemiosic interaction of *Primary iconicity* and *primary indexicality*. This coupling of iconicity and indexicality is already suggested by Uexküll's functional cycle: An animal perceives its umwelt (and thus renders it meaningful) by acting, moving and reacting within it. It is through this circularity of action and reaction that the animal continuously attunes its internal perceptual systems to the outside environment (its innenwelt to its umwelt).[104]

> Figuratively speaking, every animal grasps its object with two arms of a forceps, receptor and effector. With the one it invests the object with a receptor cue or perceptual meaning, with the other, an effector cue or operational meaning. But since all of the traits of an object are structurally interconnected, the traits given operational meaning must affect those bearing perceptual meaning through the object, and so change the object itself" (von Uexküll 1957[1934], p. 10)

Ecological approaches, as informed by umwelt theory, maintain the general understanding that perception is a process not strictly of *detection,* but rather of *attuning* to objects, and more specifically, of engaging in processes of *semiotic objectification*. "Every action that consists of perception and operation imprints its meaning on the meaningless object and thereby makes it into a subject-related meaning-carrier in the respective Umwelt" (Uexküll 1982, p. 31). Dewey (2005[1934], p. 108) expresses it poetically in *Art-As-Experience*: "In their physical occurrence, things and events experienced pass and are gone. But something of their meaning and value is retained as an integral part of the self. Through habits formed in intercourse with the world, we also in-habit the world." Unlike the directness of perception stressed by Gibson (1979), which could never fully account for symbolic or extensional forms of semiosis, an *ecosemitoic* (cf. Nöth 1998, 2001) approach maintains the primacy of the organism's continuous involvement in the environment through the constant 'reading', anticipating, and use of meaning-bearing sign vehicles. Edusemiotics is ecological in the same orientation.

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[104] This reoccurring circular feedback loop of umwelt becoming innenwelt, is explained through what von Uexküll called the functional cycle. Although there will be no time to explain the enormous intellectual wealth of this model, the functional cycle can be understood as a particular incarnation of the proto-semiosic cycle of primary iconism realized through primary indexicality explored in this study, and the corolary notion of Dewyian 'doing-undergoing'

4.3.2. Abducing significance?

An umwelt-model of learning, requires a concept that accounts for the process by which an organism anticipates, both intuitively and deliberately, the world around it. Yes, we are again talking about *abduction*:

> As already explained, abduction is at its root an adaptive perceptual process by which an organism infers (subconsciously *or* consciously) a *frame of reference,* in the form of an action-possibility to account for *both* virtual (potential) as well as actual novelty. Failure to account for abduction in many dominant models of learning and cognition has resulted in the proliferation of an ill-informed pedagogical assumption: that one cannot educate for or teach these processes of subconscious intuitive cognition. This has, as I've argued elsewhere (cf. 2018c, Chap 6 of this thesis), seriously reduced the impact and relevance of educational research and arts education in particular. We know from ordinary experience, that our ability to respond intuitively and instinctively to the surprising events and experiences we are presented with is constantly being developed (or *tuned*) by our active perceptual activity in the world. That is to say that although abduction is largely sub-conscious and automatic, it is still alterable through conscious reflection and action (cf. Paavola, 2005). This is an important point, for the neglect of such primary (non-representational, non-conceptual) forms of semiosis (the kind represented by abductive inference) have resulted in the systematic devaluing of learning processes associated with the arts: processes like creativity, imagination and intuition. This devaluing has resulted in a diminishing emphasis on arts education in the design of curriculum and educational national standards (cf. Jorgensen 2003, Ch. 2).

> Peirce explains that Abduction is the process of exploratory and creative hypothesis and the only way to account for the growth of new knowledge:

>> It is the only logical operation which introduces any new idea; for induction does nothing but determine a value, and deduction merely evolves the necessary consequences of a pure hypothesis. Deduction proves that something *must be*; Induction shows that something actually is operative; Abduction merely suggests that something *may be*. (CP 5.172)

It is this distinction from deduction and induction that allows authors like Nesher (2001) to show that abduction is the only inferential process that properly accounts for *learning as growth*. A neglect of abduction in educational research leads to *computationalism*

(see Danesi, 1994, for more on the *computationalist fallacy*), where learning is considered the result of entailing information from baseline algorithms, often presumed to be implanted in the brain. This is the idea that there are basic inherent schematic structures that orient learning, like, to use a popular example, Chomsky's theory of universal grammar. As abduction also produces new information, it is inherently creative; *it begins with an imaginative act*. However, this creativity is a matter of degree, depending on the level of innovation or riskiness behind the inference, for abduction is also the very "ground state of cognition" (Shank 1991, 1998), of coming to terms with environmental novelty in the broadest possible sense. That is to suggest that, at its most primary level, abduction is the very process that enables us to cognize the environment: to structure and perceive patterns and affordances from the amorphous continuum of sense experience.

Abduction is exercised in action and movement, in a constant dynamic of reaction and anticipation (cf. Campbell, 2017). Edusemiotics maintains that this abductive capacity is not passive, and therefore cognition and learning are not passive activities, even when not explicitly conscious or *intentional*. And although this basic level of *attentionality* (cf. Ingold, 2017) may be what we could call subconscious, it is not fundamentally insusceptible to being transformed and developed in subsequent experience. This *already thereness* of our consciousness may not be explicitly learned at all, in the sense that it is *neurognostic* and present prior to birth (cf. Laughlin et al., 1990; Laughlin 1992, 1996), but being 'already there' does not exclude it from the fact that it is constantly being refined and adjusted through a constant engagement (a dialogue) with the umwelt we inhabit.

What we are in fact talking about, is the *very readiness to learn* that an umwelt approach reveals, and the general importance of understanding and conceptualizing this for philosophy of education. It corrects 'bottom-up' approaches to learning that maintain the sequential transition from sense impression to concept, by emphasizing instead *the essential circularity of the functional cycle*. "It means that every stimulus presupposes a readiness to react, and it is this readiness that 'selects' as a stimulus a phenomenon of the environment which had been neutral up to that point" (Reybrouck 2012). Hence, behind even the simplest stimulus response events are actually complex anticipatory dynamics. In more explicitly Peircean terms, we can speak of a dormant thirdness in

what is seemingly an entirely pre-inferential process of stimulus–response sensory engagement (cf. Campbell 2018c).

4.4. Concluding Remarks

4.4.1. Recapitulation and Future Research

We have now sketched the interaction of primary iconism and primary indexicality, demonstrating that (1) a sub-conscious and automatic level of attention and response (explained through the concepts of primary iconism and abductive inference) is essential to explain the fullness of 'what happens in learning', and (2) that mal-adaptation (indexical rubs) are necessary to develop and refine this basic perceptual capacity in learners. Attention to this primary stage, may help to bring nuance to many debates within learning theory, which as mentioned, often pit disembodied computational approaches against overtly idealist and constructivist approaches.

The following schemas track the theory I have elaborated, demonstrating how these foundational pre-intentional semiotic processes form the basis for primary, secondary, and tertiary modelling systems (which, at least in the human use of signs, come under the purview of *existential* thirdness as they concern representational phenomenon). This is how largely sensorimotor processes form the embodied foundation for concept formation and abstractive, analogical thinking (Fig. 3).[105]

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[105] Expressed by the general degree of *sign stipulation* (see Deely, 1990)—that is, signs being stipulated from their context of occurrence, and to this extent, more symbolic/conventional.

{Sensorimotor non-verbal perception}

[primary iconism]
-the presupposition to correspond
(as realized through the dynamical reaction of:)

|
|
|

[primary indexicality]
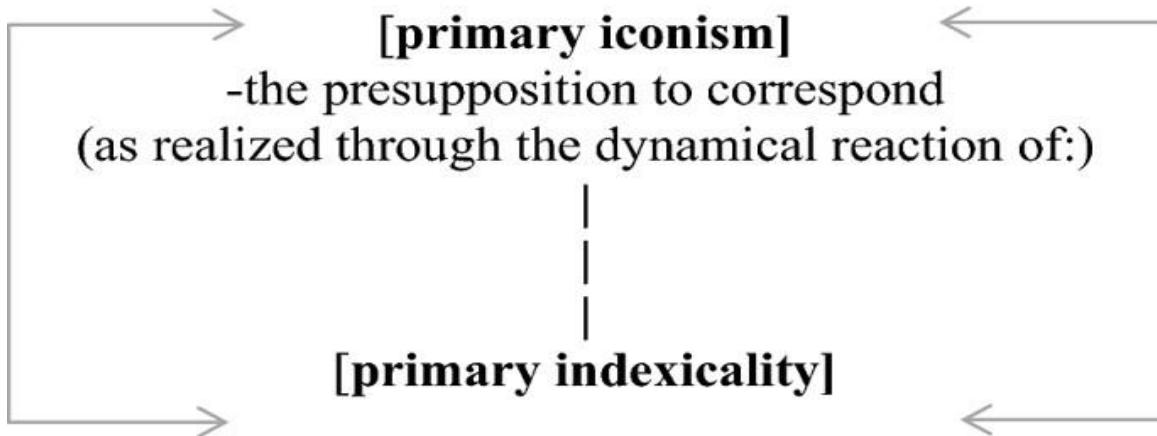
Figure 4.3.   The circularity of iconic and indexical learning

These two processes (underlying iconic forms being realized through indexical 'dynamical' reactions which constitute a circular feedback loop) constitute the *Proto-semiosic sustainment of umwelt.*

The organism, interprets/processes these initial proto-semiotic interactions through a process of perceptual *habitualization*. This is the process of how the organism adapts to environmental complexity by drawing upon previous cognition and perceptual activity (the generalizing tendency of Thirdness), thus forming what we can here for simplicity (with the risk of implying a bifurcation of sub-conscious and conscious processes) we call the *surface level of cognition.*[106]

To reflect upon initial sensory impressions and the role of automatic pre-intentional consciousness involves realizing the *imprint* of primary iconism upon the surface level of cognition. Applied to a Peircean theory of learning this constitutes:

- an [**abductive**] inferential movement, which is fundamentally an act of attending to our;

- **primary modelling system (PMS).** This abductive learning is a process of consciously shaping our largely automatic/instinctual perceptual activity

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[106] As informed by Danesi (1993), while fully recognizing that cognition, and indeed consciousness, has varying levels of awareness/absorption, warps and phases. See Laughlin (1992) for a summary of a neuro-anthropological account of consciousness.

through reflective and contemplative practice: this is how the organism discovers and shapes its *umwelt*. From here it is a logical (and pedagogical) task to study how these primary (iconic) modelling processes are extended into the environment through the;

- **[Secondary modelling system (SMS)].** And finally, how these indexical and iconic signs are gradually stipulated from their context of occurrence, through habitualised social conventions, and form the basis for the thinking-at-a-distance characteristic of (abstractive) symbolic thought, or the:

- [**Tertiary modelling system (TMS)**]

Semiotic analysis allows us to understand how primary perceptual processes form the basis for all forms of learning and modelling behaviour, and, in alignment with MST, conceptualize how these primary processes become extended into more abstracted forms of learning and knowing.

4.4.2. Conclusion

Education is a *shared* human endeavour (as Ingold, advances in his 2017 book *Anthropology and/as Education*).[107] The process and rituals that determine how knowledge is passed down within a human community concern the discovery of shared meaning between generations. This meaning is expressed in *objective relations* that mediate the observer, the observing, and the observed, according to a triadic (semiotic) logic. Orienting around the notion of umwelt, edusemiotics as a research agenda is not concerned with understanding learning as/through internal psychological states, but rather learning as/through semiosis, as an 'objective' relation of *complementarity,* and continual emergence. Edu-semioticians focus on how signs, as *suprasubjective* relations, mediate learner's relations to the world (PSR). Signs are not just considered here for their referential function –how they refer to things –because signs don't only refer to things, but rather, a way of *being in relation* with an umwelt. Modernist philosophy (culminating in Kant) located *being* within the mind of the subject. A semiotic perspective locates being in *relation* itself.

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[107] See also my interview with Tim Ingold here: https://philosophasters.org/blog/2018/4/15/tim-ingold-on-improv-writing-and-the-future-of-education.

This basic consideration of umwelt and supra-subjectivity, as educational scholar Shank (1998) tells us, takes us right to the basic philosophical orientation necessary for edusemiotics:

> When we consider the world not as a compendium of facts but as a web of meanings… then we go beyond concepts like environments and settings, to concepts like the world as an umwelt (Von Uexküll 1982). An umwelt is a "lived world," where the things we observe take on significance. It is our job to read those observations in order to determine their significances. This act of reading consists of treating observations not for themselves, but as signs of other things. Since we don't know for sure what they signify, we can only guess. Therefore, if we live in a world of signs, our most basic actions consist in reading those signs. Therefore, the process of abduction runs through our very act of living in a world that makes sense. Where that sense breaks down, our abductions need to be explicit and reflective.

It is clear, that through this emphasis on the reality and ontology of relation, edusemiotics purports an embodied and inquiry-driven approach to education. Although this article has focused primarily on the basic conceptual and philosophical frameworks of this new research movement, edusemiotics has tremendous implications for 'actual' educational practice, outside of the world of theory. In my own career and life this semiotic perspective has provided me with endless new ways of making sense of my own educational experiences as a teacher and student. Unlike analytic philosophy, the tradition from which the modern professional/academic incarnation of philosophy of education derives from, we are assuming no dichotomy of concept from image. (Hirst and Peters say this outright in their seminal text: "What is a concept? It obviously is not the same thing as an image" (2012[1970], p. 3). As we have been discussing, the image (or icon) is primal and foundational to edusemiotics, for semiosis always stems from such sensory-schematic beginnings. It is from a place of primary iconism that learners establish their modes of habitual responsiveness to the world. Of course, sign systems, as they become extended beyond these primary forms of modelling, becoming more abstracted and symbolic, can increasingly lead to error. "Semiosis explains itself through itself" Eco (1979) reminds us.

This is essentially what has occurred in much formal schooling and educational theory, which, in the interest of operationalizing learning and exercising standardised control over educational processes, have essentially removed the embodied (iconic and indexical) aspects of learning. This means quite practically that embodied forms of learning and knowing, often associated with arts education in particular have been

increasingly devalued in favour of instilling competence in deductive forms of computation and inductive measurement. Through this lens, the teaching and curriculum of formal music education (as one example) has greatly suffered, often reducing complex and deeply layered musical experiences to a form of symbolic processing (i.e. standardized musical methods, such as the Royal Conservatory of Music in Canada). If the reader has taken anything away from this study it is hopefully that, from a biologically rooted Peircean edusemiotic perspective, symbols do not spring up out of nowhere and therefore cannot simply be shuttled around between mind and world. Rather, they emerge from a place of direct perceptual engagement in a historically situated environment. When we privilege the concept over the image we effectively divorce the body from the sign, perpetuating our Cartesian heritage and stripping learning of its experiential import. It is in this sense that edusemiotics represents a comprehensive anthropology; a return to holism in how we 'do' and 'undergo' both life and education alike.

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Chapter 5.

Indexical ways of knowing: an inquiry into the indexical sign and how to educate for novelty

> *As to things invisible and things mortal, the gods have certainties, but as far as men may infer ... men must proceed by clues.*
>
> —Alcmaeon (Eco, as cited in Sebeok, 1994, p. 51)[108]

5.1. Clues, Clouds and Conjecture

Alcmaeon, the Greek fifth century B.C. doctor, describes humankind's most foundational form of knowing—the primordial epistemological unit written into footprints, stars, droppings, soil, fingerprints, clouds, texts, our bodies—the books of nature and culture in their multifarious manifestations. This refers to the procedure of obtaining knowledge by way of provisional conjecture, the reading of what C. S. Peirce called "indexical signs," and what Sherlock Holmes called "clues." As Carlo Ginzberg (1980) suggested in his essay "Clues: Morelli, Freud, and Sherlock Holmes*,*" it is this simple and innate epistemological model that we see embodied in humankind's prehistory; "lurking behind the symptomatic model is the gesture which is the oldest, perhaps, of the intellectual history of the human race: the hunter crouched in the mud, examining a quarry's tracks" (as cited in Bondanella, 1997, p. 110).

Indexicality, as I present it in this discussion, is the modality of actuality, of cause and effect, of physical force. An index is something that indicates (literally indexes) through a contiguous relationship a particular experiential pattern. Indexicality marks the contextual domain of meaning construction that relies on actual existential relationships between objects and signs that exist apart from any sort of interpretative convention. According to the American philosopher C. S. Peirce's (1868) doctrine of categories, the indexical sign is the domain of *secondness* (of resistance, action, contiguity, volition) and

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[108] This citation I couldn't help but call attention to; a beautiful intertextual meshwork of three of the world's great men of signs.

thus the domain where subjectivity and consciousness are established. Much mainstream education (to speak generally) enters learning from what Peirce refers to as *thirdness* or the symbolic realm. We bypass attention to the activities and contexts out of which knowledge emerges (*secondness*) and often outright ignore the aesthetic (pre-conceptual) dimension of experience (*firstness*).

Throughout this discussion, I will use Peirce's categories to provide a conceptual lens from which to understand the learning process. This "way of knowing" centered on the indexical sign is very much in line with ideas from research in situated cognition (Brown, Collins, & Duguid, 1989). Common to both these approaches is the understanding that education cannot begin with the dissemination of determined and conventionalized conceptual knowledge.

> All knowledge is … like language. Its constituent parts index the world and so are inextricably a product of the activity and situations in which they are produced. A concept, for example, will continually evolve with each new occasion of use, because new situations, negotiations, and activities inevitably recast it in a new, more densely textured form. So a concept, like the meaning of a word, is always under construction. (Brown *et al.,* 1989, p. 33)

Peirce described secondness or the coming into consciousness through indexicality as a "brute force" (CP 1.24)[109]; a confrontation with the organism that it must *struggle* to come to terms with. Like Donna West (2015), I see this resistance, characteristic of secondness, as key to cognitive development and learning.

> As such, struggle and the "confrontitial," incorporate the sudden and even startling physical experience so characteristic of Secondness. Struggle, effort and resistance materialize upon exertion in the physical surround, especially prominent in the child's early investigative endeavors. (p. 2)

This viewpoint finds strong parallels in the cognitive and neuro sciences: through structuring our *cognized environments* (the way a particular organism makes sense of its surroundings through its senses and culture), we realize the fallibility of our actions and beliefs felt through *dis*-adaptation from our operational environments (the more or less "real"/objective reality we hypothesize). We are thus forced to "suppose a self" to auto-regulate between our internal systems and these external resistances (see for example,

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[109] 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.

d'Aquili, Laughlin, & McManus, 1979, pp. 183–215). Because the index has the "being of present experience" (CP 4.447), it is a potent tool from which to understand our relationship to our bodies and the worlds, both semiotic and physical, that we navigate. It is in terms of our actions in the world that our relationship to our body is achieved and the indexical sign, being a sign that is directly affected by its object, is the site where this embodiment is received and understood.

In this discussion, I propose that the indexical sign can be used to derive a model for active (touching-and-feeling) learning. The implicit processes involved in the subtle reading of indices can help us to understand how students adapt to novelty in the learning process. I will begin by surveying different iterations of this paradigm in a variety of incarnations, showing how *indexicality* emerges in many faces and guises. I suggest that by recognizing the indexical understanding implicit in all acts of semiosis, we might encourage a pedagogy focused on the openness inherent in the interpretative act, as outlined in Umberto Eco's poetics of openness (1979; 1962/1989). Through recognition of the inferential and situated nature of signs, it is possible to view every sign as a matter of interpretation that demands the active participation of the addressee. It is this inferential model of sign functions (where a sign is seen as an instruction for further interpretation, $p \supset q$) that Eco says reflects the inherent openness of sign processes and textual interpretation. This inferential understanding of semiosis presents a challenge to the modern dominance of a "degenerate notion of linguistic sign" (1984, p. 24) related by a reciprocal model of equivalence ($p \equiv q$). It is this understanding of the sign, based on identity and verisimilitude, where a word is simply equivocated with its meaning (human equals rational animal), that I argue perpetuates a widespread commitment to univocal and quantifiable approaches to education and interpretation. This is the belief, characteristic of Western society, that we can know the world from a God's-eye vantage point—the myth of the knowing subject.

Besides looking at how indexicality functions in human ontogeny and cognition, I will also examine the human capacity for modeling our world through aggregations of representations (Sebeok, 1994). Modeling systems (with their implicit recognition that the human is a semiotic animal) help us to conceptualize how novelty is assimilated in the learning process. I posit that how we come to terms with new experiences (and new stimuli generally) is of an indexical nature. I am specifically referring to the site (marked by contiguity, resistance, actuality) where "the new" comes from the outside (like a rain

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cloud signaling the coming storm) and acts upon us. We can recognize the rain cloud as an experiential pattern (as a semiotic entity) or not; the rain is still going to bear down on us regardless of the success of our interpretations. This *existential realness* of indexical signs is precisely their power to function as a pedagogical tool, to help us deal with (to assimilate and accommodate to) novel stimulus. The concept of modeling helps us conceptualize the process in which the new stimulus is absorbed and integrated into our cultural/semiotic systems. In short, this paper explores what I call the *indexical rub* of learning, that initial friction or resistance felt when meeting a new experience. My hope is that this exploration can aid in the cultivation of a mindset in teachers, students and researchers that does not fear this resistance; rather, it uses it to propel positive absorption (in the Deweyian sense) and engaged learning. The nature of these explorations will not be systematic, but rather meandering and driven by curiosity. Through these examinations, I do not wish to present indexical learning with any architectonic or systematic ambitions. I aim to elucidate its educational value; a reminder of an alternative way of knowing that is implicit (although perhaps dormant) in any interpretative process.

5.2. The Various Faces of the Index

5.2.1. The Index and Human Ontogenesis

There is undoubtedly an indexical element to all acts of communication. This is the index of a pointing figure, a shout or a cry, any proclamation that suggests "look here," any act of *ostension*. These are our personal pronouns when we lack the same language as our interlocutor. It is this *primary indexicality* that lies behind every act of semiosis and is lurking in the gestural origins of language, in terms of both humankind's prehistory and her ontogenetic development. For example, according to Jean Piaget's (1951, pp. 270–286) theory of the pre-operational period, primary indexicality marks our entrance into language and the realm of semiotic experience.[110]

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[110] I am not denying, as Piaget did to a certain extent, that the young child does not yet possess a developed sense of self; I am just saying this subjectivity is not fully immersed in semiosis (or thirdness as Peirce would say).

As fashionable as it is to burn the bridges that Piaget built for us, his pioneering work still offers us a way of conceptualizing a child's development into a meaning-making semiotic animal. His stages of development, as much as they have been reworked and elaborated upon (especially in showing how a child does not necessarily obtain these skills in the neat temporal sequence that Piaget envisioned), do make visible how a child progresses into the semiotic realm. My aim here is to synthesize these fundamental Piagetian principles with Peirce's ontological sequencing of firstness– secondness– thirdness (or, in terms of how signs signify their objects, icon–index– symbol)—each theory a mirror that may illuminate aspects of the other. The relevance and usefulness of Piaget's conceptualizations of how the child makes the "transition from predominantly non-conventional to conventional (normative) signs" (Zlatev, 2009, p. 194), is evidenced by many recent studies in the language acquisition of children and primates (see, for example, Nelson, 1996; Tomasello, 2003; Zlatev & Andrén, 2009).

One of the basic principles of Piagetian theory is the conviction that, throughout all periods of human development, as McManus (as cited in d'Aquili *et al.*, 1979) states, "all stimuli in the external world are defined and given meaning in terms of their relationship to existing internal structures" (p. 188). According to Piaget (1971), the human cognitive apparatus' unique ability to contend with rapidly expanding possible worlds—the complexity of our semiosic processes—is rooted in our "organic autoregulation".[111]

> Cognitive processes seem to be at once and the same time the outcome of organic autoregulation, reflecting its essential mechanisms, and the most highly differentiated organs of this regulation at the core of interactions with the environment, so much so that, in the case of man, these processes are being extended into the universe itself. (p. 34)

This is to assert that the higher cognitive and semiosic processes are extensions of basic and fundamental biological functions. But what are these basic internal structures that form the foundation for a newborn's signifying potential? If, as Piaget asserts, all cognition is the result of building upon existing internal structures, then a newborn cannot be a tabula rasa. In short, what constitutes our human signifying capacity?

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[111] "Organic autoregulation" refers to the internal adaptive mechanism that allows biological systems to adjust to outside stimuli.

The answer lies in the first stage of ontogenetic development; the *sensorimotor period:* a newborn baby endowed with only her basic sensorimotor ability (essentially bodily reflexes and simple movements) constructs, or rather reconstructs, her structures of intelligence in response to her environment. Through an auto-regulative process of assimilation and adaptation, the human child achieves a certain level of mastery with her own sensorimotor apparatus and gradually transitions to the second stage of human development, the *pre-operational stage.* In this stage, the child, having fully assimilated an entire range of simple movements, is able to begin replicating gestures she sees in other organisms. These replicated movements and gestures eventually become "detached from specific contexts and form the basis for representation" (McManus, as cited in d'Aquili et al., 1979, p. 190). The child begins to communicate, not in any indexical or symbolic manner, but rather through "likeness," through imitation; what Peircean semiotics would call an example of (relative) iconicity (see section 2.2).[112]

The imitation of physical acts—as movement gradually becomes significant gesture—constitutes the first instance of the "semiotic act." With the advent of language comes the dissolution of the embodied self into a sea of preexisting and exterior structures; "(d)uring this process reality is progressively de-centered from the phenomenological perspective of the child and constructed as a system separate and outside him" (McManus, as cited in d'Aquili *et al.*, 1979, p. 190). This is the growing understanding in the child that they exist in a signifying and communicating world, where an outstretched arm is endowed with an infinite degree of meaning relating to context and a particular universe of discourse. Implicit in these first understandings is the indexical sign, a sign that contains a contiguous relationship between its signifier and its signified; a sign that is directly affected by its object (Sebeok, 1994, p. 53). Iconicity (firstness) may pave the way, but our first entry into semiosis is realized in the touching-and-feeling corporeality of indexicality. Here, signs are not conventional like they are in natural languages; they are entirely motivated by the power of contiguity. This is but another potent reminder of the active subject: "What are encoded in the child's internal

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[112] I should specify that this form of comparative similarity is not the same as primary iconism, that moment of atemporal singularity (firstness) hypothesized to be the *terminus a quo* of the cognitive process.

organization are not the characteristics of the objects he encounters, but the effects of his actions on these objects" (McManus, as cited in d'Aquili et al., 1979, p. 189).[113]

These Piagetian principles, synthesized by McManus, concur with Peirce's assertion that we possess no powers of intuition and that cognition is only achieved through previous cognition as detailed by the first three points of Peirce's "four incapacities":

1. We have no power of Introspection, but all knowledge of the internal world is derived by hypothetical reasoning from our knowledge of external facts.

2. We have no power of Intuition, but every cognition is determined logically by previous cognitions.

3. We have no power of thinking without signs. (CP 5.265)

I will be returning to these three points frequently throughout this paper. Both these schools of thought (Peirce's and Piaget's) insist that we construct and model our (real and possible) worlds not out of nothing, but through our unique species-specific sensory and cognitive abilities as well as the *grains of resistance*—the push back from our environments (Eco, 2000).

5.2.2. The Index as a semiotic object

The indexical sign is one of Peirce's three classes of how signs signify their objects (the other classes being the icon, and the symbol), which is part of his larger tripartition of all experience into three categories of being: Firstness, the *possible,* defined by atemporal singularity; Secondness, the *is*, the existentially real; and Thirdness, the *would be*, the conventional and generalized world of semiotic determinations (Merrel, 1997, p. 27).

The indexes' most palpable incarnations are natural signs (if smoke then fire) and physical symptoms (red spots on the skin being symptomatic of measles). Indeed, it was the study of medical symptoms that birthed the formal study of semiotics with Hippocrates in the ancient world; an origin that cannot be overemphasized. Peirce states

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[113] Because I do not have space to give a detailed literature review of semiosis in human ontogeny, I direct the reader to Zlatev (2009) who gives a detailed review of recent research that explores consciousness' relationship to sign function.

that "an index … is a sign which refers to the object it denotes by virtue of being really affected by that object (CP 2.248). Because of this "direct dual relation of the sign and its object independent of the mind using the sign" (CP 3:361), indexical signs constitute the first realization of semiosis in the subject.[114] Unlike the icon, which refers to its object through similarity and resemblance, and the symbol, which signifies through convention (and therefore only to general classes of object), the index is how we refer to actual states of the world. It is in this sense that "indexicality is an essential requirement for representation" (Lefebvre, 2007, p. 5), including the representation of our own self in relation to the world (as we shall see in the next section).

Thomas Sebeok, in a lecture at the *Imatra Summer School of Semiotics*, demonstrated these three classes of signs by describing the following hypothetical environments. In this lecture, paraphrased by Juha Ojala (2009), Sebeok tells us to imagine a fast road going over a hill. Behind the hill, there is a school on one side of the road, and houses on the other. Children have the habit of crossing the road just under the top of the hill. This is dangerous, because car drivers cannot easily notice them when driving up the hill from the other side. Therefore, a traffic sign is set at the foot of the hill warning the drivers. Consider three options:

- The sign is a picture of children walking right to left, hand in hand (as is customary in many European countries), with the commonly agreed-on framing and colors for warning. The desired effect is, of course, that the sign warns about the children and, hopefully, triggers the action (as an interpretation of the Sign) of the driver slowing the car down. It works for all those drivers who make the connection from the (not-so-illustrative) picture of children in a triangle (which form is arbitrarily chosen) to the predicted risk of hitting the children crossing the road. The drivers need to have the habit of action of slowing down and paying attention to children when perceiving the sign. In this case, the road sign is a Sign as an Icon, emphasizing the iconic aspect of the Sign and the category of Firstness.

- The sign—be warned, this is the morbid part—is not a road sign, as regulated by traffic legislation. Instead, brake marks, wrecks of smashed cars and victims of the accidents are left by the road side to indicate the risk, pointing at the importance of watching out for children. In this case, the sign is a Sign as

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[114] As Eco says, referencing a central aspect of Peirce's categories, "firstness can be precinded (logically) from secondness but cannot occur in its absence" (Eco, 2000, p.190). See also Ransdell (1979, p. 59).

an Index, emphasizing the indexical aspect of the Sign and the category of Secondness.

- In the third option, the sign says: "Look out! Children at play!" For those who understand written English, it warns about the children, and hopefully, again, prompts the action of slowing the car down. Those who cannot read or do not understand English probably keep speeding. The road sign in this   case is a Sign as a Symbol, i.e. in it, the symbolic aspect of the Sign and the category of Thirdness are emphasized. (p. 273-274)

In this example, the different ways signs signify their objects is illustrated cogently. It also becomes clear that it is possible (and indeed probable) for one class of sign to contain elements of other classes to varying degrees. Ojala elaborates this gradient effect as it occurs in the above scene:

> Namely, the Symbol (of the category of Thirdness) includes aspects of Secondness (it has an actual existence as a sign, and assumed causal effects on other objects, etc.), and Firstness (it manifests qualities, such as the colors of the letters versus background, etc.). The Index (Secondness) includes aspects of Firstness (qualities of the marks, wrecks, and bodies), and also Thirdness (the representation of danger, the intended mediation between actual accidents of the past and prediction of the risk of future accident, etc.). Likewise, the Icon (Firstness) includes aspects of Secondness (actual existence as a sign, as above), and Thirdness (the negotiated representation of danger and the connection between past and predicted future, as above). (p. 274)

This explanation reflects Eco's (1976) approach in his *A Theory of Semiotics* when he rejects the project of creating a typology of *signs* in favor of a typology of *sign functions,* the idea being that a particular act of communication activates certain aspects of a sign while repressing others. "We classify aspects of signs not sign themselves, because "a given sign may –more often than not does – exhibit more than one aspect, so that one must recognize differences in gradation" (as cited in Sebeok, 1994, p. 43).

Inherent in this emphasis on sign functions is the implicit understanding that meaning is never frozen but always activated through a particular universe of discourse; a belief that obviously carries much educational relevance. It also reminds us of Peirce's insistence that the sign is irreducibly triadic. As Mihai Nadin (2015) said, in a lecture at the Tartu International Semiotics Summer School, "a sign cannot be anything less than all three components; the relationship between what is represented (Object), how it is represented (Representatmen), and what is the process of interpretation (Interpretant)." This leads him to insist that in this regard there is no such thing as indexical signs, for

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they are only index to something else. Nadin recognizes signs as *constructs* that help us to deal with the constant dynamism of the universe; they present us with generalities as a means of capturing distinctions in the world.[115] This is what this paper attempts to do; not to reduce complex relationships to either indices, icons, or symbols (to fall into the trap of vicious Peircean traidism like many well- intentioned semiotic studies) but rather to remind the reader of a potent indexical element in how these multifaceted relationships manifest themselves through us (the interpreters). Recognizing sign relationships as predominantly indexical, iconic or symbolic is really just a way to capture common experiential patterns, distinctions that help us better contend with our semiotic interactions.

5.3. Coping with the new

Jean Piaget and his many disciples have long insisted on the need for novelty in ontogenetic development. We have already established that human thought is auto-regulative, that is a result of the organism's constant actions on and reactions to its environment: "human knowledge is a construction rooted in the most basic biological functions and out of which the structures of intelligence are constructed by man himself" (McManus, as cited in d'Aquil et al., 1979, p. 185). The organism adapts to and organizes its environment through an equilibration process of assimilation and accommodation. In order to create and update internal structures that better contend with an environment that is often in flux and presenting new challenges, the ability to process and contend with novelty is a necessity. Again McManus: "For transformation to occur dis-adaptation in some form must occur in the attempted match between internal structure and its environment" (p. 196).

5.3.1. The active subject

Anthropologists and cognitive scientists (e.g. Lancy, Bock, & Gaskins., 2009; d'Aquili et al., 1979) have shown how low stimulation and low complexity environments can cause phylogenic and ontogenetic stagnation. When an environment becomes overly homogeneous and no longer presents its inhabitants with dis-adaptation, the society is

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[115] A perspective, it should be noted, at odds with the biosemiotic one, which sees signs as existentially existent entities and not conceptions of mind.

forced to either generate the lost complexity—to redraw its cognitive schemas in a new light—or to reinforce its existing societal structures in an attempt to better insulate itself against the unknown.[116] Often, the individual organism or society takes this later route when it is overtly saturated with new stimuli. When faced with an overabundance of novelty, the organism shuts down—realizing that it can't possibly process such a surplus of new information, it reverts into itself and simply reasserts its existing internal structures—reinforcing the boundaries of its world. The educational significance of this is clear: one of the principle roles of the educator is to be constantly striving to determine how much novelty the student can process before he or she hits this saturation point.

One of the central tenets of this paper is that subjectivity and learning are established in an active (touching and feeling) subject. Through a Peircean lens, as we transition out of the indeterminacy of firstness—of singular and ungeneralized percepts to fully formed perceptual judgments, from initial sensation to the culturally determined conceptualizations inherent in the domain of thirdness—we experience the indexical core of secondness; here, at the footholds of thirdness (the exclusive realm of semiosis), there is a transitory state where we recognize the sensation, the *dynamical object*, as acting upon us, as resisting upon our being. This is the brute force Peirce spoke of; it is the wall we walk into and, through the shock of hitting our nose, realize that there is indeed a wall where we thought there was done (see Eco, 2000). This paper attempts to return attention to this particular domain of being, the   site where we experience our first awareness of ourselves as those separate phenomenal beings called *I*, but also the site of what Ranciere (1991) calls *universal learning;* the groping in the unknown process that characterizes the child's first knowledge and interactions.

This type of indexical subject I am elaborating can be elucidated through what Damasio (1999) calls the neural self—the type of representation "of the person in the act of perceiving and responding to what is perceived" (Benson, 2001, p. 36). This is the "third party" representation of the organism interacting with objects in a dynamic and changing environment. According to Damasio (as cited in Benson, 2001), "[o]ur individual identity … is anchored on this island of illusory living sameness against which we can be aware of myriad other things that manifestly change around the organism" (p.

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[116] Although it may seem rash I feel these two options are general enough to categorize the main phylogenetic possibilities of cultural/environmental stagnation.

36). When our conception/representations of self are static and unchanging (as they are for victims of anosognosia) we lose our ability to engage with and *model* our lifeworlds. Without this capacity for mentally envisioning active engagement with the world, the learning faculty is effectively destroyed. So, if it is out of this active dynamic subject that we construct and feel our way through the world, why should educational practice be established around the designation of static and determined knowledge? If, according to Damasio, our sense of self depends upon dynamic and malleable mental representations, why would the learning process be any different? What I am attempting to unravel gradually through this discussion, as we travel across disciplines and ideas, is that the ability to contend with novelty is a necessity for general human flourishing and central to educational praxis. Despite illusions of knowledge being something out there to be decoded (providing one can find the code)— something to be taken on authority (from somebody who already possesses it)—it is actually something *felt* through the corporeal physicality inherent in indexicality.

5.3.2. Modelling systems

As warned in my introduction, we now embark on what may appear to be a digression from our main topic, but as my friend and mentor Michael Ling frequently says "the shortest path between two points is often a digression." Maybe this isn't the shortest, but I do feel it reveals something important about indexicality not yet explored.

We accommodate and assimilate "the new" by expanding or redrawing our cognized environments—by redefining our *life worlds* to incorporate new phenomena. This can be understood as a process of modeling.[117] Modeling, in very general terms, is a way to establish relationships (congruencies and similarities) between two different systems. Interpretative semiotics informs us that the human being is a semiotic animal— that is an animal who can only know the "outer world" through a patchwork of

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[117] Modeling is a term that, these days, carries many negative connotations. These criticisms, I feel, are rightly attributed to a rigid understanding of modeling as the solidification of experience and environments (how they become operational). This understanding does not convey the complexity and dynamism evident in the foundational work of Robert Rosen and Thomas Sebeok. Since such a detailed study is not possible here, I direct the reader to Rosen's seminal books on the subject: *Life Itself* (1991) and *Anticipatory Systems* (1985). In particular, see his distinction between Natural and Formal systems. For more of Sebeok's theory of modelling, see his paper "In What Sense Is Language a 'Primary Modelling System?'" included in his 1994 book.

constructed representations. Indeed, the mathematician Felix Hausdorff made this assertion in the late nineteenth century:

> The human being is a semiotic animal; his humanness consists of the fact that instead of a natural expression of his needs and gratification, he acquired a conventional symbolic language that is understandable only through the intermediary of signs. He pays in nominal values, in paper, while the animal in real, direct values The animal acts in Yes and No. The human being says Yes and No and thus attains his happiness or unhappiness abstractly and bathetically. Ratio and Oratio are a tremendous simplification of life. (as cited in Nadin, 2014, p. 80)

This insistence on the *zoon semiotikon* is better understood by looking at the mathematician Gödel's definition of complex systems through the criteria of decidability. Nadin (2014) unpacks Gödel's definition: "[A] complex system cannot be fully and consistently described. All other systems (those that can be unequivocally specified) qualify either as simple, or at most, complicated" (p. 78). In his paper "Semiotic Is Fundamental Science*,"* Nadin spells out how the living is characterized by complexity and dynamism. The world of the living is one that we can never know in its entirety. We observe a world in flux—just as I change through this observation, the world changes me. So, we formulate representations (semiotic entities) to account for this change; these representations are predictive and anticipatory in nature. There is an assumption (rooted in Galilean Physics; see Ginzberg, 1980) that the non-living is subject to law, that it can be completely described and predicted. This is what Windelbrand called the *nomothetic*. There is no geometry in nature (no triangles or geometric planes) but this does not mean geometrical constructs cannot help us contend with reality. Nadin (2014, p. 78) shows that the world of physics is no different:

> The non-living is subject to prediction. Indeed, the knowledge acquired over time and expressed in scientific laws supports a broad spectrum of successful predictive activities: the entire exploration of outer space is based on such activities; so are the most common uses of machines (cars, TV sets, computers, refrigerators, etc.). The laws of physics and chemistry underlie such practical endeavors. Prediction applied to the living, in the form of medical assessments, for example, corresponds to the misguided notion that since the laws of physics apply to everything material, they apply just as well to life. Some are successful, some are not.

Thus, we come to construct our world through representations, selected patterns of experience of which signs are the media. This understanding of truth as construct is the *idiothetic*. The interactions we construct meaning out of are complex: "[S]ince the

living is characterized by complexity it follows that any formal representation, including the modeling of the natural system, can only be a reduction" (Nadin, 2014, p. 78). Semiotics provides us with the realization that we can only know the world through semiotic descriptions—this is the domain of meaning, and "(m)eanings do not have to be consistent" (Nadin, 2014, p. 78). We aggregate various systems of representations (those of chemistry, physics, and mathematics, for example) to contend with the constantly transforming complexity of the living. But these representations can only ever be partial. The living constantly exceeds our reach; it is changed the instant we try to pin it down. As Eco says "semiosis explains itself by itself" (1976, p. 71). Since we can only know and navigate our lifeworlds through these aggregated representations (models), the representations we construct must be flexible and porous enough to accommodate to the dynamism of our environments. In line with research from situated cognition, I believe that in order for this to properly occur (especially in an educational setting), attention and primacy must be returned to indexical signification.

> A theory of situated cognition suggests that activity and perception are importantly and epistemologically prior—at a nonconceptual level—to conceptualization and that it is on them that more attention needs to be focused. An epistemology that begins with activity and perception, which are first and foremost embedded in the world, may simply bypass the classical problem of reference—of mediating conceptual representations. (Brown *et al.*, 1989, p. 41)

Despite some common reductive interpretations, our models (natural rather than formal, see Rosen, 1985) are not primarily constructed on the conceptual level of thirdness. Rather, they emerge through "our fundamental awareness of sensory impressions" (Rosen, 1985, p.45) or percepts (firstness), and our actions in the external world (secondness).

And now that we have our feet wet in modeling theory, we return our attention to education and learning.

5.4.   Indexical learning

In what follows, I present a formalization of indexical learning (building on the pioneering work of Jordan Zlatev in cognitive semiotics) that I feel can be useful for teachers and researchers to conceptualize how students adapt to novelty. To do this, I feel it's necessary to reduce this complex process to its simplest semiotic components.

Zlatev (2009) has created a formula for conceptualizing the "barebones" conditions for meaning creation across all levels of life; from the single celled organism to the encultured human being. This conceptualization can be understood as a modeling relation:

> Extending the analysis presented by Zlatev (2003), where meaning was defined as "the relationship between an organism and its environment, determined by [...] value" (ibid: 258) the concept of meaning in the present theory presupposes (a) subject S, (b) a subject-internal value system V and (c) a world in which the subject (as being-in-the-world) is embedded, W. Thus a particular phenomenon within the world (p), which will necessarily transcend (i.e. go beyond) the subject, will have a given meaning M for S, according to the "formula" given in (1) and illustrated in Figure 1. In other words, the meaning of a given phenomenon, for a given subject, will be determined by the "type" of world (see below) in which both are embedded AND the value of the phenomenon for the subject. If either p falls "outside" W, or its value for S is nil, p will be meaningless for S.
>
> (1) M (p, S) = W(p) * V(p, S) …
>
> Subject S, world W (the borders of which are determined by the value-system of the subject, V), with phenomenon p, whose meaning is determined by its (type of) value for S. (pp. 179–180)
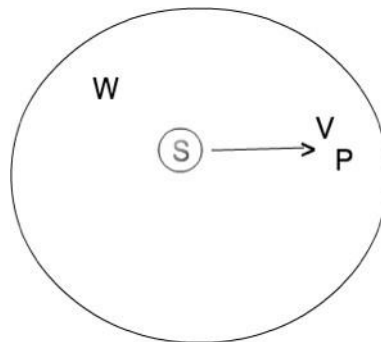
Figure 5.1 (adapted from Zlatev, 2009, pp. 179–180.)

Building on Zlatev's (2009) formalization and our previous discussion of modeling theories, it is possible to construct a conceptualization of how organisms (and communities) adapt to novelty:

Figure 5.2 How organisms adapt to novelty.

N=novel stimulus/phenomenon
Ec=cognized environment
Eo=operational environment

Ec)(→ Eo

(Innenwelt)

Iconic relationship of likeness

(Umwelt)

N

Indexical relationship of resistance/contiguity

Ec → Eo

N
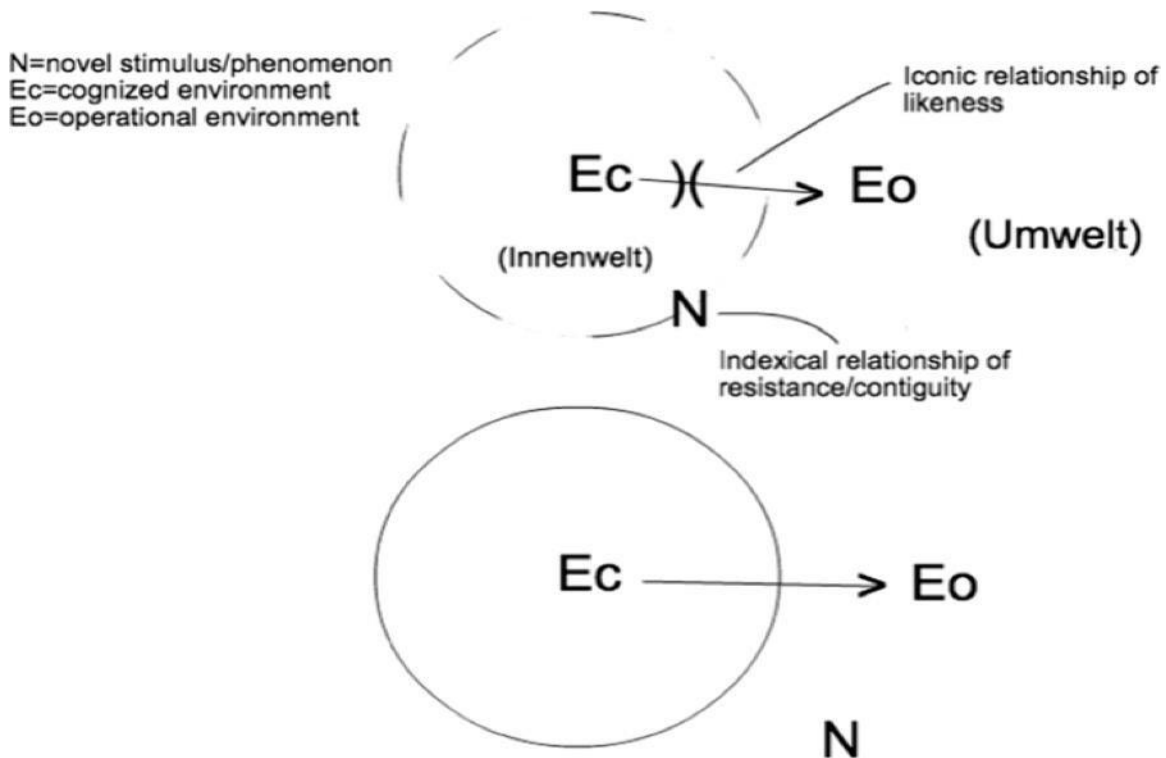
As stated above, the organism constructs its cognized environment following the principles of *fallibilism*: through the grains of resistance experienced from the operational environment. It must be remembered that we have no direct powers of intuition (Peirce, 1868) and that our modeling of the world is necessarily species specific (Sebeok, 1994). For these reasons, our modeled cognized environments (Ec's) can never be in direct correspondence with our operational environments (Eo's) but are rather bound in an *asymptotic* relationship. To assert that we can ever fully know our Eo's is to be seduced by the great myth of the knowing subject—the idea that we can (with complete decidability) know the infinite complexity of the world of the living. To believe in such a final truth is to imagine that these asymptotic lines can converge. What we learn from Peirce's pragmatism is that belief in an *ultimate final interpretant*, as he called it, is a regulative (almost religious) ideal to drive inquiry and truth seeking, quite regardless of whether or not this truth can ever be reached.

Sebeok has posited that the way a human organism structures/models its innenwelt (inner model) after the umwelt (outside model) is iconic in saying a model is

"essentially a reductive analogy, and therefore ultimately a kind of icon" (Sebeok, 1994, p. 140).

> [T]he model is an icon, a kind of diagram, where the most pertinent relations are of a spatial and temporal order. These relations are not fixed once and for all but can be mixed and modified and fixed again, in correspondence (a resemblance relation) with the innenwelt … of the human organism. (Petrilli, 2003, p.71)[118]

The novel stimulus radiating from the organism's environment calls out to be dealt with—to be either absorbed or rejected. This is a relationship of contiguity and resistance upon our being. It is a relationship that if not directly physical is of a physical nature and thus can be understood as an indexical relationship (even if we cannot detect the object of this stimulus). Recognizing and calling attention towards this primary indexicality is the first step of education; realizing that there is something kicking us, bludgeoning us to react, something out there to adapt to and learn about (Eco, 2000). I see one of the principle goals of semiotics-informed pedagogy as fostering students' ability to tolerate this space of ambiguity and indeterminacy felt when experiencing something new.

So, to reiterate: indexical ways of knowing as an educational process is centered on two main processes, the first dominated by iconicity, and the second dominated by indexicality:

5.4.1. Cultivating indexical spaces (or spaces sensitive to indexicality)

Recognizing the *indexical rub* and not shying away from it. Recognizing that it is through this resistance, this dis-adaptation, that growing occurs. Just as it is through the

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[118] The ethologist Jakob von Uexküll's concepts of Umwelt and Innenwelt, used extensively in semiotic modeling theory (e.g. Danesi and Sebeok, 2000), can be understood *in this study* as mostly corresponding to the concepts of Eo and Ec (from the pioneering work of biogenetic structuralism; d'Aquili et al., 1979) respectively. It may seem odd to link together a concept of Umwelt—which Danesi and Sebeok (2000, p. 202) explain as "the domain that a species is capable of modeling (the external world of experience to which a species has access)"—with a concept of operational environment. Suffice it to say in the limited space afforded me that, according to Sebeok's (1994) concept of primary and secondary modeling systems, a notion of operational environment is only possible as a regulative hypothesis within a species specifically *human* Umwelt. These concepts are linked so the reader may reflect on the connections between semiotics and neuro-anthropology.

tension inherent in the literary metaphor which bridges together seemingly disparate fields of discourses that language itself grows and transforms.

Gathering Iconic Imprints. After a space and state of mind is created that enables the student to live in and tolerate this indexical rub they must raise themselves to the challenge of meeting it. This type of education requires us, student and teacher, to reach into the entirety of our personal acquired experiences for similarities and resemblances to what we are experiencing.

So, building on Peirce's foundational categories, learning must begin in secondness, return to the aesthetic primacy of firstness, and finally use this to inform the symbolic and cultural realm of thirdness.

5.4.2. Indexicality towards emancipation

Following Haulseldorf's recognition that the human is a semiotic animal, we construct and search for vehicles of representations in order to process our changing environment. These representations can be culturally or personally rooted constructs. In fact, in Pragmatic education (following Peirce's three gradients of clearness; see his 1992[1878] paper "How to Make our Ideas Clear") they should be both, with the objective to instill beliefs in students that they are prepared to act upon. Through this process students find a way of capturing for themselves a particular "pattern of experience" they can return to for reflection. In *The Ignorant School Master* (1991), Ranciere, through his examination of the life of the revolutionary pedagogue Joseph Jacotot, reminds us that this process of "revealing intelligence to itself" (1991, p. 28) is always possible: "There is always something the ignorant one knows that can be used as a point of comparison, something to which a new thing to be learned can be related" (1991, p. 28).[119] A semiotic approach to education is not overtly focused on instilling in students a specific form of competence or literacy, such as math or reading comprehension. Rather, it is about first and foremost nurturing students who possess an aptitude for dwelling in novelty, who are inquisitive and engaged learners; in achieving what Ranciere calls *intellectual emancipation.* When

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[119] I have argued in previous work that the art object is particularly well suited for capturing these experiential patterns as it preserves an imprint of our initial aesthetic experience (our firstness moment) before it has been generalized through conventional language systems (cf. Campbell, 2015).

this sort of emancipated learning is achieved, the student will be receptive to new knowledge including the sets of competencies society deems necessary. However, when a student's resistance to novelty is too strong—when it is too insular, when it is too bent on updating its existing internal structures—learning cannot occur, just as meaning cannot be constructed if the organism does not recognize the phenomenon as occurring within their world as in Zlatev's diagram. This is exemplified by the contrasting circles of bounded and porous lines around the Ec in Figure 2. A student's worldview must be porous enough for him or her to see the transformative potential the new stimulus has to offer. This is why Danesi (as cited in Petrilli & Ponzio, 2005) states that the "semiotic capacities of the learner and the determination of his semiotic stage— rather than the subject matter to be learned—should be the focus of education" (p. 229).[120]

As Ranciere (1991) demonstrates, the teacher's role is not to implant a static and preformed knowledge into an empty vessel, the ignorant pupil. To do this would simply perpetuate a hierarchy of intelligences: the teachers against the student's. Rather, the educator must constantly "read" where the student is situated in her learning process, and from this determine how much direction and support she needs, all the while fostering in her the *will* and the belief that she has the capabilities of learning on her own (without the aid of a master explicator) as naturally as she acquired her first language. The only way to gauge this effectively is to join students actively in the learning process, and not stand idly by as a detached observer; to share in their struggles and tribulations, their successes and breakthroughs. Despite obvious differences in aptitudes and knowledge the teacher and student must start from a place of *equality*. The teacher must leave his or her intelligence "out of the picture" in order to allow the student's intelligence to grapple with the new learning (Ranciere, 1991, p. 13). This process is exemplified by Ranciere's dichotomy of stultification and emancipation, a useful conceptualization for any educator to hold in mind.

> There is stultification whenever one intelligence is subordinated to another.
> A person—and a child in particular—may need a master when his own will
> is not strong enough to keep him on track and keep him there. But that

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[120] For a brief discussion of the implications of Sebeok's modelling systems theory for education see Petrilli & Ponzio, 2005, pp. 223-230).

subjection is purely one of will over will. It becomes stultification when it links an intelligence to another intelligence. (1991, p. 13)

5.5. Finding a place in the literature

It is important to emphasize that Peirce himself was experimenting with his ideas of the categories of firstness, secondness and thirdness throughout his career. In this study, I am most focusing on Peirce's later period of thought—what Torill Strand (2013) aptly calls his *rhetorical turn* — where, Peirce somewhat turned his focus away from logical sign-typologies as such, towards the *action between signs*, or *semiosis* (Peirce first introduced this concept in his *Johns Hopkins Logic Seminar* of 1883). Semiosis, as many scholars have shown, is the object of Peircean edusemiotic (for more on conceptualizing semiosis as learning, see Cunningham, 1987; Strand, 2013; Semetsky, 2007, p. 209; Nöth, 2010). Such a focus on semiosis recognizes that knowledge is "a process, not a static structure to be learned and remembered" (Cunningham, 1987, p. 214). Such an orientation guides us away from reductionist and behaviourist conceptions of education and "sensitizes us to the notion that cognition always involves an interaction between the physical world and the cognizing organism" (Cunningham, as cited in Nöth, 2013, p. 3).

But how does this present study fit in with competing educational interpretations of Peirce's ideas? While admittedly, in recent semiotic literature there has been disagreement about how exactly to treat the category of firstness[121] and its possible charge of givenism, we can see some agreement emerge around the connectedness of firstness to aesthetic experience. Similarly, we can see such congruencies emerge in recent edusemiotic and developmental treatments of secondness; where despite important theoretical distinctions there is notably more agreement than disagreement about what indexicality represents for learning; mainly the recognition that secondness and indexicality offer us insights into a not yet actualized "pedagogy of surprise" (Strand, 2013, p. 801) that places lived experience in a central role (Strand, 2013; McCarthey, 2010; Nöth, 2010, pp. 2–3; West, 2015). Notably, Colapietro (2013) recognizes the role of secondness and experiential learning through the Peircean notion of contrite fallibilism, quite synonymous with the Piagetian developmental recognition that learning

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[121] One need only look at the different orientations of Semetsky's (2005) study of how *sub-doxastic aboutness*—essentially pre-interpretative cognition —can help address problems of intentionality in education and philosophy of mind, and my paper "Educating Firstness" (2015) with its focus on firstness' connections to aesthetic experience and the art object.

occurs through dis-adaptation. Perhaps the reason for such agreement is that Peirce himself frequently emphasized the educational aspects of secondness:

> The idea of second must be reckoned as an easy one to comprehend. That of first is so tender that you cannot touch it without spoiling it; but that of second is eminently hard and tangible. It is very familiar, too; it is forced upon us daily; it is the main lesson of life. In youth, the world is fresh and we seem free; but limitation, conflict, constraint, and secondness generally, make up the teaching of experience (CP 1.358).

I follow Sebeok (and indeed Peirce himself, see CP 2.305) in insisting that iconicity and indexicality are closely related, while other authors –see Sebeok, 1994, p. 88, for some examples of this – have sometimes polarized them. This is represented in Figure 2 of this paper, where the processes of modelling are clearly seen to contain both iconic and indexical components.

We know that as early as *On a New List of Categories (1868)* that Peirce was stressing the complementarity of the categories. No doubt, Peirce has confused this complementarity at times even saying such loose statements as a sign "is either an icon, an index or a symbol" (CP 2:304). Following Peirce's swift in focus away from understanding of signs as ontological containers towards recognizing processes of semiosis, he would weed out any such thinking, and insist authoritatively on the impossibility of a pure sign: "[I]t would be difficult if not impossible, to instance an absolutely pure index, or to find any sign absolutely devoid of the indexical quality" (CP 2:306).

5.6. But what's new?

But what, the reader may ask, is new in the approach to indexicality I am presenting in this paper? Like the scholars I have surveyed, I too recognize the pedagogy of surprise characteristic of the brute force of secondness. The novelty of my pedagogy of novelty can be summarized in three points:

a) **Emphasizing indexical learning's place within three successive and intertwined stages of learning.** It is common throughout Peircean edusemiotic scholarship to look at specific Peircean ideas in relative isolation, in order to explore what in each of them can be relevant and applicable to educational discourses. Unfortunately, many of these studies often fail to properly emphasize what I feel to be

the richest theoretical understanding Peirce's categories can bring: *their inextricable and fuzzy nature.* In my paper "Educating Semiosis" (in press), I survey the learning processes involved in each of the categories. This is what I have attempted to show through my exploration of Piagetian conceptualizations of ontogeny in Section 2.1: indexical learning's role in the child's formative encounters with the world, displayed alongside iconic and symbolic processes. West (2015) has also explored indexicality from a similar ontogenetic standpoint. As Nöth (2010, p. 3–4) does well to demonstrate, Zellmer (1979) pursued a similar approach to Peircean edusemiotics that emphasized the successive and intertwined nature of the categories, and even drew a connection to Piaget's developmental stages, as I have done here.

Despite notable differences (specifically in what we emphasize in each category but also in how we present them linearly), Zellmer's early study validates my own insistence that a Peircean edusemiotic should focus on what I have previously referred to as *the palimpsest nature* of the categories as they are involved in conceptualizing the learning process. This is what Nöth (2014) demonstrates in his paper "The Semiotics of Learning New Words," through a careful analysis of a hypothetical lesson from Peirce about a child learning the meaning of the word "balloon".[122] Peirce demonstrates in this passage that the learning of any new word, and indeed by extension any new learning generally, necessarily involves all three categories.

> In sum, Peirce concludes that the proper method of teaching new words requires three signs in one. First, we must learn the symbol as a symbol, that is, as a law whose rules become habits which allow us to use and interpret the symbol in the future. Second, we must learn it indexically, that is, learn to identify individual objects which it denotes generally. Third, we must learn it iconically so that the symbol can evoke a mental image of it which conveys information about its qualities, its form, its materiality, how it functions, etc. It is well known that some methods of language teaching have failed because they focus only on one of the three modes of language competence involved. The method of pattern drill had its focus on the symbolic aspect of words only, the so-called direct method has its focus on the indexical aspect of words, and the audiovisual method has its focus on their iconic aspects. (Nöth, 2014, p. 243)

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[122] "A man walking with a child points his arm up into the air and says, 'There is a balloon.' The pointing arm is an essential part of the symbol without which the latter would convey no information" (CP 2.293).

Although I agree with Nöth's analysis of Peirce's pedagogical example, I would also insist that there is a more primal level of indexicality, or brute secondness, involved in the child's very receptiveness to the new concept of balloon that many edusemiotic inquiries (Nöth's included) do not fully account for. To conceptualize what this *primary indexicality* involves, I argue, recognition of the animal's lifeworld (hence my reference to literature from theoretical biology and Van Uexküll's concept of *Umwelt*).

As an aside and a bridge to my next point: Zellmer also validates my use of what many will consider outdated Piagetian theory to conceptualize the processes of semiosis in the organism. Piaget's biological approach to development, as (West, 2015) has more recently demonstrated, in many respects parallels the Peircean triadic understanding that forces in the universe progress from states of pure potentiality (firstness) to complete generalization (thirdness). Following in the wake of these studies, I believe that Peirce's categorical schema can in fact supplement certain inadequacies in the Piagetian framework, specifically Piaget's sometimes determinist tendency to present communication as a secondary process in development. Although it is common in educational discourses to pit Vygotskyian ideas against Piagetian ones, I agree with DeVries (2000) that Piaget is often *mislabeled* specifically in the judgement that his theory does not properly account for the role of social and semiotic factors. DeVries (2000, p. 6) insists that it is necessary to separate Piaget the epistemologist from Piaget the child psychologist, and that critics' inability to distinguish these different roles leads to critical misreadings (DeVries, 2000, p. 40).

b) **By drawing connections to modelling theory and theoretical biology (Nadin, 2009, 2014; Rosen, 1991; Zlatev, 2009; Danesi & Sebeok, 2000), I attempt to create a barebones formula for indexical learning—a *primary indexicality* that marks the organism's first encounters with the world—useful for pedagogical theorists.** Incorporating a Piagetian biological approach to development enables me, in the spirit of thirdness, to find new relationships. Piaget's ontogenetic framework has allowed me to connect these Peircean ideas of indexicality to biologically-oriented theories of modelling. My decision to explore the possibilities of an umwelt model of how the organism assimilates and adapts to novel stimulus can be seen as part of a *biosemitoic turn* in recent semiotic scholarship (Kull, 1999). I think edusemiotic scholars can learn much from these new understandings. As Kull (1999) points out, the biosemiotic perspective has the potential to simplify biological processes that remain

overly complex and convoluted in a classical determinist framework. Similarly, the biosemiotic perspective has the potential to reimagine certain aspects of the learning process that are not properly expressed under current constructivist or determinist frameworks. In short, Piaget has allowed me to build these bridges.

c) **And finally, by unshackling the index from the abstract domain of secondness, I attempt to address more directly the site of experiential learning; the recognition of indexical processes at work in larger semioses.** Through my research and teaching, I have come to view indexicality itself more useful for conceptualizing the learning process than the broader domain of secondness. As expressed in Figure 2, by doing this we can see indexical processes at work in even the largely iconic processes associated with primary modelling (or the construction of an Umwelt), just as we can see indexicality at play in the more abstract and symbolic process of learning new words (as Peirce's above *balloon* example attests). The type of indexical learning I put forward in this paper is found in all these processes, and thus cuts across each of Peirce's categories. *Indexical learning* as I present it here is about recognizing and treating indexicality in all signification processes.

5.7. Indexical learning in practice

A student learning a melody by ear can serve as a great example of this educational outline. The student is presented with a melody they have never heard. The melody is longer and more complex   than the student is used to. This is a crucial moment for the educator, as the student can easily be overwhelmed and resist the new learning, building up the walls of their world to block out the new stimulus. The educator's *task* at this point is in preparing the grounds so that a student will be receptive and ready to tackle the new learning. Such a receptiveness involves students who are ecologically sensitive to their environments—who can read the subtle indexical markers of their environment and are secure and comfortable in the space of learning: the intellectual and physical environment/culture of the lesson.

The teacher, being a master pedagogue like Jacotot, will have been incrementally increasing the student's receptiveness to the *indexical rub* of new learning throughout their entire relationship. The student, through an *iconic modelling process*, will know how to break down the long melody into recognizable forms they have

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encountered previously, such as recognizing a particular sequence of intervals, or even just a familiar melodic shape (i.e. ascending stepwise motion followed by a descending leap) they recognize from a piece they've studied previously. By gathering enough *iconic imprints* in the new melody the student will gradually feel comfortable *creatively inferring* (a process of creative inference, or abduction) the unfamiliar parts of the melody; the stepping into the unknown process of indexical learning. Through a continual process of fallibilism (their mistakes in recreating the melody), the student will learn how to recognize the brute force of indexicality as an important pedagogical strategy. By reflecting on the *qualities-of-feeling* of particular mistakes (the sensory dimensions of learning characteristic of firstness), they will learn to recognize in these errors iconic similarities; for example, a particular feeling of playing a third away from a melody (something young children do frequently when trying to sing unison lines) or singing flat or sharp in terms of intonation. As I have repeatedly said, and as Peirce himself frequently emphasizes (see section 3.5), iconicity and indexicality are closely intertwined in the learning processes; the student only realizes indexicality through iconic imprints.

Once these indexical resistances (secondness) are modelled iconically (firstness), they can be conventionalized into general *habits* the student can return to in future learning opportunities (representative of the tendency of all things to takes habits, characteristic of the category of thirdness [CP 6.262]). This final step is the process of recognizing what John Poinsot called the *stipulable sign* in his *Tractatus de Signis* (1631–1635/1985); that is, the processes of signification themselves outside of their emergent contexts. To realize the process of semiosis at work in the universe is what defines the *zoon semiotikon*, "the animal that not only uses signs, but knows that there are signs" (Deely, 2000, p. 21), and to realize this potential is the goal of semiotic education, broadly. Thus, just as in Peirce's example developed by Nöth (2014) (see section 3.6 above), all three categories are present. A teacher/learner who is receptive to these intertwined stages of learning can view the learning process in multifaceted ways and see how *all* categories are always present (for in the pure possibility of firstness, secondness and thirdness are always dormant), thus escaping a static and syllogized conception of linear learning stages represented by many developmental approaches (Piaget's included).

5.8. Concluding thoughts

What I have presented in this paper is nothing but a reminder of something we all implicitly realize: the site where learning occurs is messy, not easily determined, and entirely tied to the person doing the learning. This site is context dependent, marked by resistance, and realized through action, through doing, through establishing relationships to the knowledge we already possess— not through the passive consumption of preformed ideas. In a certain understanding, learning is a natural progression from firstness (the aesthetic and sensory core to experience) to secondness (realization in space and time) to symbolic generalization (inter-subjective representation and communication). But since firstness is not accessible directly (see Campbell, 2015), we must begin with the touching-and-feeling *realness* of indexicality and work our way backwards to uncover imprints of the qualities of feeling that form the bedrock of our perception. Only after this is realized can we return our attention to the conceptual realm (the general and conventionalized domain of thirdness). Although reflection on firstness is in itself unattainable, education must always try to mimic this progression as it represents our own immersion and entry into the world of semiosis through ontogenesis.

These learning processes based on the subtle reading of indices are necessarily context related. *The indexical sign is not conventional or symbolic*, and although these patterns of experience can be captured in sign processes to inform future interpretations, they are still at their core born through our engagement with the world and not something culturally induced. Similarly, education informed by these indexical ways of knowing cannot be overtly based on a plan or archetype. My own teaching practice has taught me as much; often learning cannot fit into pre-established forms or follow determined trajectories.

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Chapter 6.

How does learning begin? Locating firstness in arts education

6.1. Introductory remarks

6.1.1. 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

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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)[123] 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 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 rooted in

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[123] 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.

"direct perceptual engagement"[124] (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.

6.1.2. Argument

In this paper, I argue that If we approach Umberto Eco's (2000) *Kant and the Platypus* as an 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 consciousness[125] 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.[126] To put

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[124] 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…".

[125] What Semetsky (2005) has called *sub-doxastic aboutness.*

[126] For 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

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 schematization[127] 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.

"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).

[127] This 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).

Understanding learning-as-semiotic engagement (cf. 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 consonant 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).[128]

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).[129] My contention is that it is

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[128] 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... (CP 6.32 1891; emphasis added)"

[129] 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.

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).

6.2. Situating ourselves in the literature

6.2.1. 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 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 both 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'.[130]

My thinking is that conceptualizing this initial moment of the perceptual process[131] is the *missing link* in many student-centred theories of education, especially those that get broadly lumped under the label's 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 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.

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

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[130] 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.

[131] 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).

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 experience[132] 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 duelist) 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

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[132] Which 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).

and 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 rational, 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.

6.2.2. 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 *pragmaticism* 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.*

6.3. Invention: The discovery of materials

6.3.1. 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 for analytic philosophers, outside of linguistic description. Such is the challenge assigned to any philosophaster[133] who dares speak about beginnings[134].

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.

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[133] Cf.: www.philosophaster.org

[134] 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).

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*[135] 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, and contemplative practice, even though these first impressions are by nature, fundamentally unknowable to us.[136] 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; Nesher 2001), requires conceptual *metaforms.* From cognitive linguistics, we learn that these metaforms — that

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

[136] "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).

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).[137] 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, p. 111). This is *primary* iconism as distinct from relative instances of iconism. It is, as Eco (2000; 2014) says, merely the presupposition to correspond

> 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 processes.[138] It is not *yet* an act of inference (a syllogism) related to distinguishing between qualitative possibilities (like

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[137] 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:

[138] 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).

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.

Figure 6.1 Peirce's triadic sign model and its relation to the categories, adapted from Thellefsen (2001)[139]
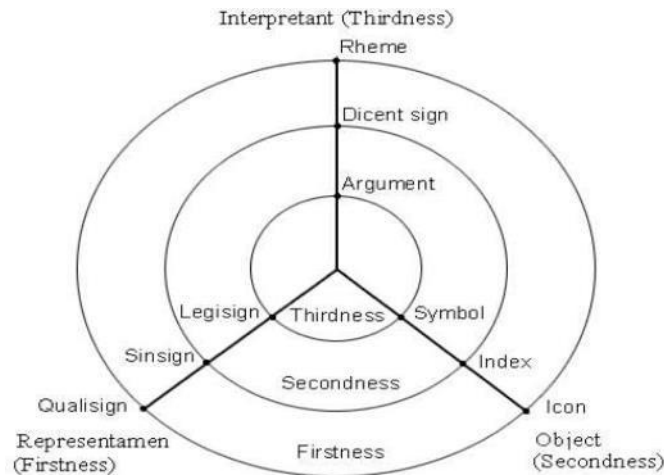
6.3.2. The wholeness of three: Situating primary iconism in the categories

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.*[140] This is explained through his cosmological outline of the universes' formation,[141] 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

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[139] 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.

[140] 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: $((P{\rightarrow}Q){\rightarrow}P){\rightarrow}P$

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

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.[142] In a certain sense then, we can say that Thirdness is always *inchoately* implicit in Firstness:

> 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.

6.3.3. 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 intuition,[143] 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

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[142] 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.

[143] This 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).

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.

6.4. Learning theory

6.4.1. Realizing firstness through abduction (iconic learning)

I now attempt a sketch of how primary iconism functions within a broader Peircean theory of 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,[144] 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

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[144] 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."

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 indexicailty, 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 *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).[145] 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 b*y 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

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[145] This quote is from an analysis of Dewey's *Art as Experience*.

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 (Secondess), where through this encounter with the new they may experience an awareness of presence (Firstness moment).

Figure 6.2 The **palimpsest** *nature of the categories*

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-Secondess.
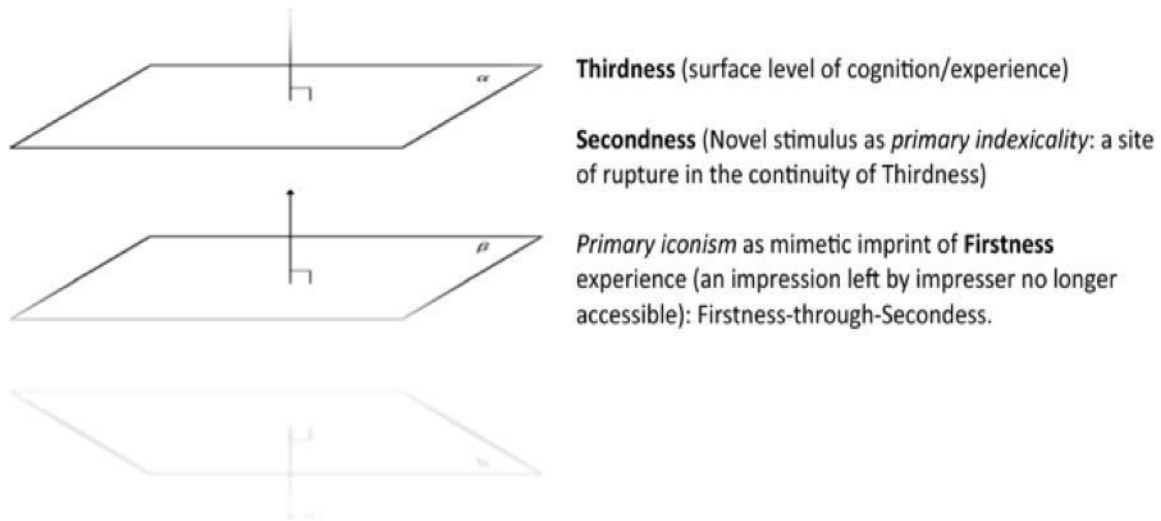
This focus on art-as-experience (broadly conceived) is justified through the central principle of Peircean category theory that "firstness can be precinded (logically) from secondness but cannot occur in its absence" (Eco, 2000, p.190). This is the idea that "we only know the potential through the actual, 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, 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 memory[146] 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.[147] This is not some purposelessness (Kantian) aesthetic object in our awareness. This is an active and motived teleological/semiosic 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*.

6.4.2. 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

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[146] See the 'ghostly reflection' of the Firstness plane in Figure 2.

[147] 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 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.)."

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 o*f 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).

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.[148] 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.

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[148] 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.
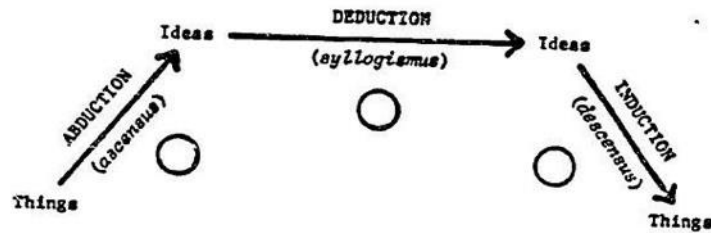
Figure 6.3 The spiraling of semiotic consciousness (adapted from Cunningham, 1988)

6.4.3. Summary of firstness concepts

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

a) **Firstness** (the general metaphysical category);

b) **primary iconism** (Firstness as a proto-semiotic component in the formation of experience); and

c) **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 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

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represent some of the best windows into these often- neglected modes of being that we have available.

6.4.4. 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.[149] This anticipatory dynamic is, per Nadin, fundamentally creative: "creativity: reaction will not do, the cause lies in the future".[150] 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 learning theory. Within a Peircean informed edusemiotic, individuals, generals as

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[149] 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)

[150] https://www.youtube.com/watch?v=ZjwVzOcQcU4

well as potentials are admitted to have causal efficacy[151] 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*.

6.5. Learning through the senses

6.5.1. 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

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[151] 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".

senses is associated neurologically with a far greater field of cognitive associations" (Laughlin, 1998). These insights about the brain 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.

6.5.2. 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.[152] 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

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[152] 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".

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 yet" (p. 100, 2.8.). For educational purposes, I feel the Ground (not the term "ground" itself, which can easily confuse things[153] 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 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

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[153] 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.

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".[154] It is my belief that these same "fugitive meanings" are the power 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.

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[154] Cf. Campbell 2017a, for a chapter dedicated specifically to this passage.

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.

6.6. 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 it's 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 only in terms of 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 and thus advocated 'art for art's sake'. I commend these authors' work in

combating 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 – nor 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.

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Chapter 7.

Learning that reflects the living: Aligning anticipation and edusemiotics

7.1. Introduction

Aligning semiosis with the living has been the great contribution of Thomas Sebeok's (1991, 1994, 2001; Danesi and Sebeok, 2000) biosemiotic project. In fact, this central idea has been referred to as *Sebeok's Thesis* by Kull, Emmeche and Hoffmeyer (2011, p. 2). This has encouraged some scholars and researchers in the emerging field of edusemiotics[155] to similarly align semiosis[156] with the learning process.

Within the edusemiotic understanding, learning is not strictly developmental, constructivist, or behaviourist, but rather based on an interaction of *complementarity* (between an organism's cognized environment and its operational environment).[157] To conceptualize something that is not in the mind-brain of the learner, nor an act of (Gibsonian-like) direct perception of external objects, requires a conceptualization that can tolerate ambiguity, under-determination and vagueness. In short, it involves the difficult task of describing learning outside the lens of the reductionist process of *fractionation*; i.e., "the reduction to components whose behavior is aggregated in the behavior of the whole" (Nadin, 2017a, p. 154). This is the understanding that learning

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[155] For some recent introductions to edusemiotics, see Nöth's (2010) thorough literature review, Semetsky's (2010) edited anthology outlining many different approaches to edusemiotics, of which Nöth's article is included; see also (Strand, 2013; Campbell, 2015a, 2016) for the relevance of Peirce's categories for philosophy of education, as well as two recent introductions (Semetsky and Deely, 2017; Semetsky, 2017). The term edusemiotics was coined by Marcel Danesi (2010) in the forward to the above-mentioned volume edited by Semetsky. It must be noted, of course, that educational semiotics has been studied (in various capacities) at least as far back as Morris (1946).

[156] Semiosis is the action between signs (CP: 5.473), this is a triadic process that contains (1) a sign, (2) its object, and (3) an actual or potential interpretant, that is in no way reducible to any one of these three parts. Sebeok (1991, p. 83) states that semiosis "particularly focuses upon the way that the interpretant is produced, and thus concerns what is involved in understanding or teleonomic (that is, goal-directed) interpretation of the sign".

[157] For the distinction between cognized and operational environment, see D'aquilli et al., (1979), and theseresearchers' broader *bio-genetic structuralism* project (1974), which may be considered a notable precursor to modern biosemiotic developments.

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constitutes a *complex* interaction (see Section 2.2), that is, an integrated embodied process characterized by continuous change and therefore not something that can be broken down into parts — with the expectation that these parts can be consistently and completely described and used to construct formalized models that purport to explain the whole of the natural occurring phenomenon. Rather, it is required within such a framework that learning be explained as a *relation* mediating observer and observed.

The American theoretical biologist Robert Rosen (whose work has been championed and developed for applications in semiotics, computer science, and artificial intelligence by Mihai Nadin) emphasized in three major books (Rosen, 1978, 1985, 1991) that the dynamics of the living were not being properly accounted for by the dominant methods of (what he broadly called) the *Newtonian paradigm* (see Section 2). He explained that the reductionist approach has – despite its successes in describing and inquiring into the properties of matter (which of course all organisms are embodied in) – proven inadequate to account for the complexity of living things. This is because the living organism *anticipates* a future state of being, and through such anticipatory action remodels its relation to the present, and indeed the past. Such a dynamics of anticipation simply does not occur in inanimate matter.

In the world of educational research, we see a similar inability to conceptualize the complexity of the learning process. Within both (more or less) constructivist and (more or less) positivist learning theories we see the same logic of materiality operative in the deterministic worldview of Newtonian causality. Nesher (2001) for example, has shown that the logic of computationalism cannot account for learning. Within such frameworks one can make inferential entailments based on a set of production rules (deduction) and check the validity of these inferences in external phenomenon that are themselves *encoded* into formal systems (induction). But one cannot account for the growth of knowledge, represented by *abductive* inference and the process of learning generally. The fact that most of the world's formal education systems rely heavily on standardized forms of evaluation is a symptom of an inability to conceptualize learning outside of both positivist and constructivist accounts. Rather, learning is nothing but a

state of transformation: a process of becoming, and not strictly an act of information processing or computation.[158]

In earlier work, I used John Deely's (1990, 2000, 2001, 2009) interpretation of Poinsot's late medieval semiotic (1632/1885) to put forward an understanding of learning, where learning is conceptualized neither as a psychological state attained *inside* an organism, nor in the perception of a *mind independent* reality, but as the learner's *supra-subjective capture* of relations that mediate organism and environment. Defining learning as semiosis is in part a recognition that the species-specific world of the organism (it's *Umwelt[159]*) is not a world of things so much as it is a world of semiotic objects: of signification processes within the organism's awareness. Learning is thus not a form of information processing, but rather the growth of semiosis within the organism; that is, the recognition of relations that enable receptiveness to novelty and continual adaptation and future growth (Campbell, 2016). This is a reminder that the world of living beings is a world of (qualitative) meanings and not of (quantitative) data, represented metaphorically by the *semiotic web* that Sebeok spoke of: "a web woven of sign relations, at whose nodes alone stand the objects of experience as experienced, whatever be their further status as 'physical' or 'real' independently of the experience within which they are given" (Deely, 2000, p. 17).

This article argues for a perspective of learning rooted in the dynamics of living beings. This calls for a theoretical perspective that transcends the realist/idealist divides that plague educational theory,[160] offering a possible middle way between the constructivist emphasis on *mind dependent* reality (*ens rationis*), and the positivist emphasis on *mind independent* reality (*ens reale*). Deely's (2004, p. 19-20) words are useful here in explaining the futility of reducing learning to an internal psychological mechanism while explaining the notion of objectivity that his semiotic is built upon:

> On the contrary, there are no such thing as psychological states disconnected from objectivity. Objectivity precisely depends upon psychological states which give the subjective foundation or ground for the

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[158] See Cunningham (1987, 1988, 1998) and Shank (1995) for how semiotics can offer a middle way between constructivism and behaviourism in educational research.

[159] The famous concept developed for ethology by the Estonian/German scientist Jacob von Uexküll (1864- 1944); see von Uexküll *(*1934/1992*) and* Kull (2011), for a historical detailing of the concept and its relevance for semiotics and biosemiotics.

[160] See Carr (1997), for a subtle reading of this divide, in the context of philosophy of education.

relations which terminate in the publicly experienced interpretations that are precisely what we call objects. The key to the whole thing is relation in its unique being as irreducible to its subjective source always terminating at something over and above the being in which the relation is grounded.

Such a theoretical approach must be able to account for interactions in states of becoming, and thus calls for a broader sort of causality than computationalism allows. This is the recognition that the integrated dynamics of reaction and anticipation, of *living creatures* — as well as semiosis generally — are expressed in action. In this spirit, the aims of this article are to suggest possible answers to the following three questions:

1. How can the processes of learning be re-conceptualized outside of a Cartesian/Newtonian framework that seeks to reduce the natural world to immutable axioms that can be modelled within purely formal and syntactic (as opposed to semantic) systems?

2. What is the relationship between the continuous flow of semiosis and the triadic relations that Peirce saw as fundamental to the origins of life, and the anticipatory processes that theoretical biologists (like Rosen and Nadin) use to define living organisms?

3. Is it possible to develop a theory of learning that can account for (a) potentiality, (b) teleological (goal-directed) processes, an (c) the complementary (or mediation) of subject-object, mind-world, culture-nature, inner-outer, and therefore recognize processes of signification themselves as essential constituents in learning?

These points can be grouped under one grand and (I'll admit) ostentatious question which takes us to the heart of this inquiry: *How can we imagine learning that reflects the complexities and dynamics of living beings.*

To address these questions, I will explore the combined relevance of two theoretical perspectives — anticipatory biology, and the edusemiotic understanding of learning as semiosis — for informing conceptualizations of the learning process. In Section 2, I explore Nadin and Rosen's notion of G-complexity, and how this contributes to an understanding of anticipation as being definitional of living systems. In Section 3, I address Peirce's notion of semiosis as it is embedded in his categorical system and overarching cosmology. Section 4 considers the confluences and differences between

semiosis and anticipation and Section 5 how these two conceptions (taken in union) can influence edusemiotic understandings of the learning process. I will close the article by articulating some of the pedagogical implications of this comparison by drawing upon my personal experiences as a musician and music educator. Following Deely's philosophical delineation of the relational quality of semiosis, my goal is to demonstrate that learning itself is necessarily a relational interaction that refuses to be segmented to one side or the other of the binary tightrope: not something *out there* in an hypothesized operational environment, nor locked away within internal psychological states.

## 7.2. Complexity and the living

7.2.1. The "modelling relation"

Rosen (1991), in his seminal work *Life Itself*, demonstrates that the persistent trend towards formalism in mathematics radically shaped the trajectory and shape of contemporary physics. With his broad knowledge of the history of Western science, Rosen explains how mathematical truth has come to possess two distinct iterations in modernity: *semantic truth* (i.e. reference to some external referent) and *syntactic truth* (i.e. coherence between the propositions that make up a mathematical system). These two different notions of truth, Rosen shows, are very much opposed to one another. The formalist school asserts that problems arise when mathematics must consider semantic factors, and argued instead that "*[s]emantic truth could always be effectively replaced by more syntactic rules*" (1991, p. 6 [italics in original]). With this underlying logic, the goal of mathematical inquiry is to create formal systems that can be entirely and consistently described without reference outside of the system: "The mathematical world is embodied in precepts but exists independent of them. "Truth" in the mathematical world is likewise manifested in, but independent of, any material embodiment and is thus outside of conventional perceptual categories like space and time" (1991, p. 6).[161]

A syntactic formal system requires three things: (1) a conventional symbolic alphabet, (2) a finite set of rules for combining these symbols into formulas, and (3) a set

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[161] But *why* does mathematics seek such absolute formalism? Rosen (1991, p. 29) explains that this is because this is what mathematicians have come to consider beautiful. In other words, it is aesthetics that drives this quest for the complete decidability of mathematical systems: "Mathematics seeks the smallest set of conditions under which mathematical truth obtains, because this is the most elegant, the most parsimonious, the most illuminating, in short, the most beautiful".

of basic axiomatic *production rules* from which anything inferred by the system, not expressed in the production rules, can be inferentially entailed (Rosen, 1991, p. 6). Through a long and elegant argument that runs the length of the book, Rosen demonstrates that this tendency for reduction into formal systems "is exactly parallel to the mechanical picture of the phenomenal world as consisting of nothing more than configurations of structureless particles, pushed around by impressed forces" (1991, p. 7). Such a view of the world represents what Rosen has referred to as the *Newtonian Paradigm*. Simply put, this is the view that there is an observable and underlying order to the universe and that our formal systems can consistently and completely describe the natural world. What this amounts to is essentially nothing less than the way that we in modernity *do* science. This is encapsulated by Rosen's famous *modelling relation* (Rosen, 1985; 1991):

Figure 7.1 The modelling relation (adapted from Rosen, 1991, p. 60)
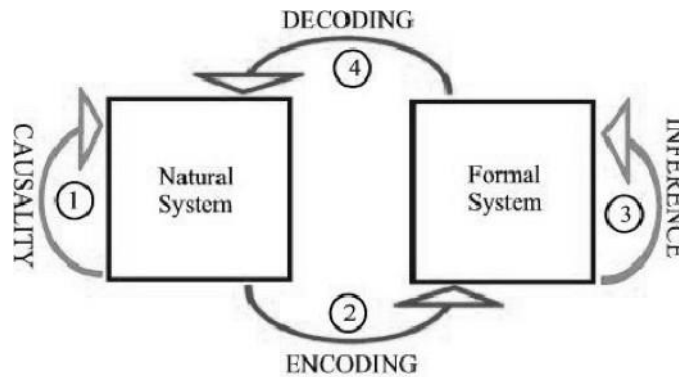
A full description of the enormous implications of this diagram will not be provided here, but a brief description should be useful: **arrow 1** represents the reality the observer perceives through *percepts* (objects within their awareness). The formal system represents a computational structure that, through inferential entailment (or implication; **arrow 3**), tries to in some way represent (analogously) the causality perceived in the natural system. The natural system must be *encoded* (**arrow 2**) into the formal system; that is, certain perceived features or aspects of the natural system are, through measurement[162] made to conform to the production rules devised in the formal system. Finally, we *decode* (**arrow 4**) the implication event (the inferences/implications arrived at

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[162] See the exhaustive treatment of all that is implied in this concept of measurement by Rosen (1978).

through our formal system) and check to verify how this conforms to the causal inferences perceived in the natural system. When this procedure is successful – when our formal systems seem to (at least asymptotically) match up – we have established the following: **1=2+3+4**

This is the understanding that the form of causality perceived in the natural system has been modelled through formal inference. Rosen says that the prevailing ideology of the Newtonian Paradigm has made the modelling relation so taken for granted that it is often operative (to greater or lesser degrees) outside of the awareness of most scientific practitioners. His general criticism is that much modern experimental science has come to consider its task as simply being the "fitting of models", without stopping to consider the underlying creative act involved in the very translation of encoding and decoding operations. The "dictionaries" we create to encode and decode the two systems are themselves independent of both formal and natural systems. This is what makes establishing a modelling relation as much an *art* as it is a methodology:

> The first matter of importance is to note that, from the standpoint of the formalisms being compared, the encoding and decoding arrows… are unentailed. In fact, they belong to neither formalism, and hence, cannot be entailed by anything in the formalisms. The comparison of the two inferential structures… thus inherently involves something outside the formalisms, in effect, a creative act, resulting in a new kind of formal object, namely the modelling relation itself. It involves art. (Rosen, 1991, p.54)

This is to say that there are always semantic elements that cannot be accounted for by syntactic elements alone, that formal models will never completely be able to describe the complex behaviour of the world, and that in fact, the encoding and decoding of models is, in a certain understanding, the construction of linkages between sign systems. This is a process/activity that Rosen associates with aesthetic sensibilities. The ideology that the universe itself can be adequately described by such formalisms is the belief that the universe is a mechanistic (and thus simple, as opposed to complex; see Section 2.2) system, and thus something that can be separated from the observer (the scholastic notion of *ens reale*).

But what specifically is this complexity that exists within living organisms that the reductionist worldview is not accounting for? What, to reference Nadin, makes the rock different than the cat when we drop it off a building?

7.2.2. Complexity and anticipation

In stark reply to this persistent and ubiquitous trend towards formalism, Gödel, in his celebrated incompleteness theorem (Gödel, 1931), demonstrated that the most fundamental theory of mathematics, number theory itself, cannot be completely formalized and explained through number theory alone (that such a mathematical system cannot be reduced to a set of base-line axioms from which every variable can be described through processes of inferential entailment). Rosen (1991, p. 35) explains the ingenuity of Gödel's theorem as follows:

> Gödel showed how to represent assertions *about* Number Theory *within* Number Theory. On this basis, he was able to show that Number Theory was not finitely axiomatizable. In other words: given any finite set of axioms for Number Theory, there are always propositions that are in some sense theorems but are unprovable from those axioms (unless, of course, the axioms are inconsistent to begin with – in which case everything is a theorem).

Rosen, and modern anticipatory scientists like Mihai Nadin, who has for decades championed the often-neglected genius of Rosen, use the incompleteness theorem to describe biological life through the *threshold of complexity* (Nadin, 2014a). With this understanding, the difference between the living and the non-living is the difference between "undecidable complexity and decidable complication" (Nadin, 2017a, p. 154). According to Gödel's theorem:

> [A] complex system cannot be fully and consistently described. All other systems (those that can be unequivocally specified) qualify either as simple or, at most, complicated. Within this view, complexity is not a matter of scale. Moreover, it does not accept degrees (the empty formula of "higher complexity" and the like). Since the living is characterized by complexity, it follows that any formal representation, including the modeling of the natural system, can be only a reduction. (Nadin, 2014b, p. 78)

Following this reasoning, we can assert that because biological systems are undergoing continuous change, and defined through an *anticipatory dynamic*, no natural (living) system can be completely described by a formal model. Nadin (2010, p. 111) explains that what we are in fact describing when we study life through the reductionist framework, is physical processes, but not "life itself":

> Indeed, all living entities, from the monocell, to vegetation, to insects, to the most complex forms (the human being, for instance) are embodied in

matter. The laws of physics (themselves subject to progressive refinement as our knowledge about the world advances) apply without any exception to the living, without fully expressing its more complex behavior. Therefore, one has to conclude that they explain only the unambiguous physics of life, but not life itself, in its ambiguous expressions.

Here we are clearly presented with something different then the mechanistic world represented by the Newtonian Paradigm; this is a world of flux and transformation, where every action and indeed every act of mind, models a possible virtual future and through this anticipatory action, remodels the past, a world where the observer is inextricably tied up in their observations:

> Within physics-based explanations, the current state of a system is determined by its past and is deterministically well defined, i.e., non-ambiguous. An anticipatory system is a system whose current state depends not only on previous states, and eventually its current states, but also upon possible future states. (Nadin, 2010, p. 112)

Figure 7.2 Anticipatory system as unity of reaction and anticipation (adapted from Nadin, 2010, p. 112)
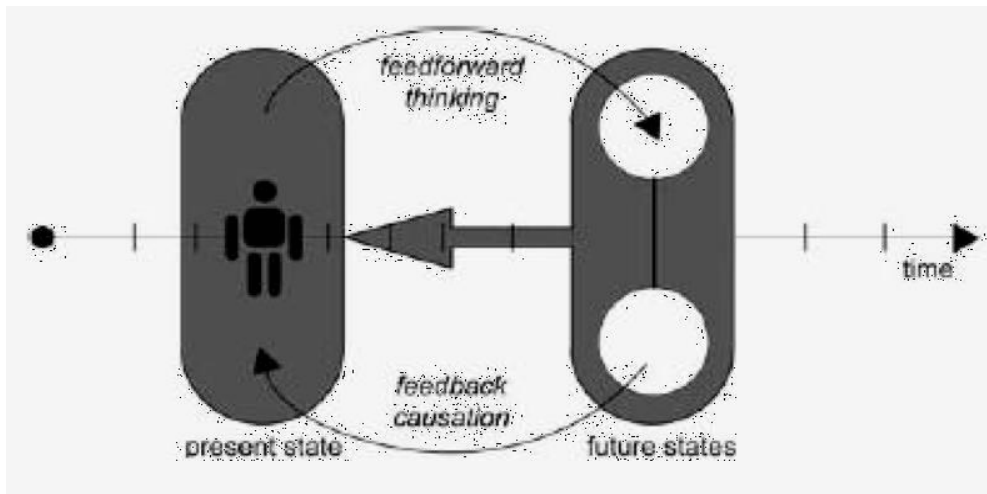
The goal-oriented dynamics of anticipation – which Nadin (2017) highlights is the domain of meaning, not of data – does not reduce neatly to algorithms or syntactic rules, and thus any such attempts at completely decidable descriptions can only be futile in understanding what is distinctive about life-processes. Even if such descriptions were possible, the Rosen/Nadin argument informs us that they would lack consistency, for the simple fact of the interactivity of subject-object relations. This is the recognition that "the

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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, 2017a, p.156). Determinist accounts cannot account for potentiality (outside of probability), nor the impact of the virtual (how something not materially present, still affects the present).

Along the lines of these ides, I would like to propose that the process of learning may be understood as a "G-complex system… endowed with self-evolving anticipatory processes in which past, present, and future are entangled" (Nadin, 2017b, p. 21).[163] In the context of applying anticipatory science to medicine, Nadin (2017b, p. 19) writes "A G- complex system is characterized by the fact that its information level is always higher than the information received from the environment; that is, a G-complex system generates information". This feature, I argue, is equally applicable in helping to distinguish the process of learning as a form of continuing adaptive growth (explored in Section 5.2), in opposition to the more narrowly "complicated" processes of computation. This insight into learning theory allows us to re-imagine the space of possibilities within the learning-teaching dynamic. An approach to learning rooted in the physical sciences (the Newtonian paradigm), emphasizes unitary descriptions. G-complex systems however are unique (Nadin, 2017b, p. 20), and thus undecidable. If we take the following statement from Nadin (2017b, p. 19) and simply replace the word medicine and physician with 'education' and 'teacher' respectively, we can gain insight into how anticipation can function as a fundamental pedagogical orientation:

> What a [teacher] "takes in" from [teacher] education... is quite different from what, on account of creativity (itself based on interaction), is expressed in the practitioner's activity. If only the effort of individualization were to be considered, this would already confirm the idea. Anticipation-driven [education] is by necessity individualized, because the living is infinitely diverse. All machines are the same; no two persons are.

As Rosen has made clear (1991, p. 20), the Newtonian Paradigm gave the western world one of its most persistent and ubiquitous metaphors: *the human being as machine*. Although the world of matter (the non-living) may be well explained by the mechanistic- reductionist method of Newtonian physics, the world of the living is not. For

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[163] This anticipatory dynamic can be expressed mathematically as: "$x(t) = f(x(t—🚴), x(t), x(t + 🚲))$" Where "$x(t—🚴)$ is previous state(s), $x(t + 🚲)$ is future state(s), and $x(t)$ is present state" (Nadin, 2017b, p. 21).

the living is a world of interaction; by simply observing, the observer is changed and they themselves change the observed. This complementarity of observer and world, is absent from "the machine metaphor (supported, of course, by the corpus of modern physics) [and what] … ultimately drives, and justifies, the reductionism so characteristic of modern biology" (Rosen, 1991, p. 21).

Part of my argument in connecting semiosis with a theory of anticipation is that the non-reductionism that is a result of considering seriously the modelling relation (and thus the complementarity of subject-object relations) reflects a *triadic* orientation. This point takes us nicely to our next topic, the details of Peirce's triadic semiosis, which I argue is the primary underlying theory that allows us to approach learning as an anticipatory dynamic and concurrently a process of semiosis.

7.3. A short account of Peirce's triadic philosophy

I propose that regardless of how it may be articulated, the recognition of a relational self-generated world – an *autopoietic* world of intertwined networks and processes – requires a triadic (hence non-dualistic) orientation. But what specifically constitutes such a triadic perspective? Three things: (a) the ability to account for: *the possible* (Firstness), defined by atemporal singularity; (b) *the is* (Secondness)*,* the materially and existentially actual; and (c) *the would be* (Thirdness)*,* the anticipatory and habit-taking process of mediation, with a first and a second coming into relation (Merrel, 1997, p. 27). The following popular "black board" analogy from Peirce illustrates this tripartition of experience. The black board is a continuum of pure potentially. Its two dimensions will signify an infinite and indefinite potentiality:

> I draw a chalk line on the board. This discontinuity is one of those brute acts by which alone the original vagueness makes a step towards definiteness. There is a certain amount of continuity in this line. Where did this continuity come from? It is nothing but the original continuity of the blackboard which makes everything upon it continuous... The whiteness is a Firstness --- a springing up of something new. But the boundary between the black and white is neither black or white, nor neither, nor both. It is the *pairedness of the two.* It is for the white the active Secondness of the black: for the black the Secondness of the white… We see the original generality like the ovum of the universe segmented by this mark. However, the mark is a mere accident, and as such may be erased. It will not interfere with another mark drawn in quite another way. There need be no consistency between the two, but no further progress beyond this can be made, until a

mark will *stay* for a little while; that is, until some beginning of *habit* has been established by virtue of which the accident acquire some incipient staying quality, some tendency toward consistency.

The habit is a generalizing tendency, and as such a generalization, and as such a general, and as such a continuum or continuity…

The whiteness or blackness, the Firstness, is essentially indifferent as to continuity. It lends itself readily to generalization but is not itself general. The limit between the whiteness and blackness is essentially discontinuous, or antigeneral. It is insistently *this here.* The original potentiality is essentially continuous, or general. (CP 6.203-207)[164]

This long passage helps illustrate how, according to Peirce's cosmology, chance occurrences give way to the generalizing tendency, i.e. to habit formation (see also CP 6.262). Potentiality is impossible to comprehend unless it is realized as *acting upon* (the brute force and dynamical nature of dyadic interactions), and to realize such Firstness through Secondess is to introduce mediation and thus reference to "abstential processes" (Deacon, 2012): to something *not present* that despite its immateriality still impacts and affects the present. Mediation requires that the organism is forming a relation to the environment, and thus, that it *means* something to it. Kull (2009, p. 82) similarly explains the Peircean triadic sign model through reference to anticipation and abstential phenomena:

The sign vehicle, or representamen (or sign, *sensu stricto*), stands for an object. This is the relation that is created by semiosis. The object, thus, has an interesting duality – it is both there and is not there – because it is both connected and anticipated. The relation of *standing for* is possible owing to the absence of what is referred to (the object) and, concurrently, there cannot be semiosis without the existence of a reference (an object)... Semiosis is what makes anything plural.

This can be understood as a reaffirmation of Sebeok's Maxim, for, as Kull also goes on to suggest in this interview with Magnus and Tønnessen (2010), the emergence of plurality is also the emergence of life, for *to mean is to be plural*. Since semiosis is necessarily a continuous flow or process, semiosis and the creation of meaning are also dependent on plurality.[165]

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[164] 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.

[165] "M [Interviewer]: What kind of plurality are we talking about? K[ull]: The difference between anything meaningful and anything that has no meaning can be described as a difference between

Relevant to our previous discussion on defining the living through anticipation, Peirce connects the irreducibly triadic nature of the universe to the problem of the origin and evolution of life itself:

> [T]he problem of how genuine triadic relationships first arose in the world is a better, because more definite, formulation of the problem of how life first came about; and no explanation has ever been offered except that of pure chance, which we must suspect to be no explanation, owing to the suspicion that pure chance may itself be a vital phenomenon. (CP 6.322)

This is in line with biosemiotics, which examines "the processes and consequences of habit-making via sign activities in living beings" (Affifi, 2014, p. 73). Biosemiotics rests upon the hypothesis (expressed by the above quotation) that "there is a semiotic core seeding the emergence of biological systems, from cells to ecologies" (ibid, p. 74). Part of this orientation concerns the "processes and consequences" of semiotic habit-making (the emergence of Thirdness) that enable growth (in terms of both ontogeny and phylogeny) to occur.[166] The dynamics of organic life are approached by the biosemiotic project as mutual webs of habit, or what Hoffmeyer (2008, p. 15) calls *semethic interaction:* "Whenever a regular behavior or habit of an individual or species is interpreted as a sign by some other individuals (conspecific or alter-specific) and is reacted upon through the release of yet other regular behaviors or habits, we have a case of semethic interaction". This is essentially how an organism's action in the world effects (through a constantly evolving anticipatory dynamic) how the organism will continue to act, and how through these actions the environment itself changes (by incorporating the actions of the organism into it and breeding semiosic plurality).

So, to recapitulate, Peirce believed that all forces progress from (1) states of pure chance, or potentiality (Firstness) to (2) states of dyadic (material) resistance, the Firstness of pure potentiality realized as *something*, and therefore asserting itself upon *something else* in terms of this initial potentiality possessing some permanence or

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the unique and the plural, or one and many. Everything that has meaning is plural. M: So what is unique or unitary, what is only one, cannot be meaningful, because being meaningful implies multiplying of what is meaningful. K: The problem is that it is almost impossible — or at least quite hard — to imagine something that completely lacks meaning. On the other hand — this is exactly what physics has to do. M: A non-semiotic approach would treat an object of biology as one objectified object only, and not as a plurality, and would thus lose a lot of the meaning involved…" (2010, pp. 77-78)

[166] The concept of pedagogical growth is central to Affifi's (2014) conception of biological pedagogy, and will be explored in Section 4.

duration (Secondness), to (3) states of relation, regularity, and generality (Thirdness). This progression from Firstness to Secondness to Thirdness – which Peirce recognizes as the flow of semiosis itself – is effectively the self-generating "tendency of all things to take habits." In a similar sense learning, in its most biologically simplistic form, can be understood as the tendency of habit taking (of forming relations between percepts, both sensory and culturally informed) that enables the growth of future habit-making.[167] Learning, in this understanding, is the realisation of qualitative potentiality (Firstness) through the material and dyadic resistance of coming into contact with some exterior-other (Secondess), and connecting this fallibilistic interaction with the continuity of our experience (Thirdness). How we notice and make use of these initial sensory engagements (Firstness-through-Secondness) determines how we form habits that we will project into the future (Thirdness) in an anticipatory dynamic. But since, according to Peirce, all experience consists in Thirdness, with only the imprint/memory of Firstness and Secondness, then it follows that all thought, all cognition and all experience is in signs (Peirce, 1868). This is synonymous with Peirce's assertion that experience itself is irreducibly triadic. A representatmen (or signifier) signifies some object (be it a physically existent thing or a thought-thing). But semiosis does not merely terminate in the organism's mental representations, as the more analytic perspective maintains (Deely and Semetsky, 2017). Rather, the sign reaches outwards to something other than itself, always to a new sign that can be further interpreted: to the wider world of semiosis and the web of relationships that constitute the world of the organism. With this innovation, a sign (or representatmen) signifying an *immediate object* (the object as actually present in the sign) no longer terminates in the private "idea" of some interpreter, but rather enters a vast web of sign relations that can be understood (again in relation) to a (hypothetical) global universe of semiosis.[168]

This is the perspective Floyd Merrell (1997, p. 11) puts forward in his zen-style dialogue between three actors; Alpha, Omega and the Master — each in themselves representing the three points of Peirce's tripod. Alpha asks the Master when discussing

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[167] Donna West (2016) has, in this journal, recently advanced a similar understanding in the context of childhood development.

[168] "[I]t Is necessary to distinguish the Immediate Object, or the Object as the Sign represents it, from the *Dynamical Object*, or really efficient but not immediately present Object" (CP 8.343).

the process of semiosis: "Must not the addressee and addresser also enter the equation?" The Master responds by emphasizing the *future memory of the interpretant:*

> While the components of the sign tripod are democratically situated, I would suggest that it is the location of the mediating interpretant that ultimately provides for meaning. As Alpha put it, meaning is not in the sign, the skull of the addressee or addressee, the air ripples between them, the object to which it relates, or black marks on white. Rather, relations between the components of the sign make way for, and engender, meaning. Although the object of the sign in a certain sense determines the sign, it is by way of further determination of the sign - it's relation to the interpretant - that it means something *for* someone. Peirce qualifies this further determination as an interpretant, or translatant, of the sign, which in turn engenders another sign. There are no 'facts' of the matter – or pure – unmediated signs. Rather, the destiny of a sign demands that it be interpreted in (translated into) another sign.

The interpretant[169], as it constitutes the relationship of a first to a second, is representative of the experiential realm of Thirdness, the modality of being in relationship to something else where semiosis and (per the biosemiotics perspectives of Hoffmeyer and Affifi) life itself occurs. "A Sign... is a First which stands in such a triadic relation to a Second, called its Object, as to be capable of determining a Third, called its Interpretant, to assume the triadic relation to its Object in which it stands itself to the same Object" (CP 2.242). Since a relation is never stagnant or determined (it is always becoming, being either sustained or destroyed) the interpretant (like the anticipatory dynamic) is always re- imagining and mediating our relation to the past, and present; it is in fact the way new possibilities (Firstnesses) are realized.

7.4. A brief comparison

In the previous section, we established that within a Peircean framework the physical world is one of dyadic processes of interaction and reaction (characteristic of the domain of Secondness) while the world of living things is irreducibly triadic. This is because the living being is constantly bringing itself into relation with its embedded and emerging ecologies. In this sense, we can say that effective anticipatory dynamics is parallel to effective semiosis, that is, being able to "read" and make use of the signs within one's Umwelt and thus to create habits that enable the future growth of habit — habits that are

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[169] It should be specified that Peirce devised multiple forms of interpretants (CP 8.343). These nuances of interpretant theory will not be addressed here.

open and receptive to future semiosis. Deely (2000, p. 36) summarizes this fundamental Peircean notion, while describing the "supra-subjective" nature of semiosis:

The relations in which signs consist according to their proper being as signs differ from physical relations in nature in having of necessity (or "in principle") three terms united rather than only two. In other words, it suffices for intersubjective instances of relation to be dyadic, whereas the suprasubjective instantiations of relations as signs (which realize the indifference in the nature of relation to provenance from physical being as such) must always be triadic. A car can hit a tree only if there is a tree there to be hit; but a sign can warn a bridge is out whether or not the bridge is out, or, for that matter, whether or not there is even a bridge there at all where the sign "leads us to believe" there is a defective one!

Both concepts (semiosis and anticipation) are defined through teleology[170]; the sign, like all living things anticipates a future state of being. The rock will always fall the same way, adhering to the same laws of gravity and resistance; the same cannot be said for a person or a cat.

This outward potentiality contained in the sign – modelled by a theory of unlimited semiosis – reflects the anticipatory drive of organisms and can thus be associated with the biosemitoic project that asserts that semiosis converges with the emergence of life. Additionally, it reflects that all learning is a potential for transformation that is expressed in anticipatory action. It is revealing how remarkably similar anticipatory biology is with the Peircean perspective. Still, we must ask, if the two can be fully equated. To some semioticians, such as Nadin, semiotics concerns problems of representation and of how knowledge is inevitably tied up in the forms it takes. In this school, semiosis is approached not so much as a cosmological force, but rather a construct within the understanding of the observer (Nadin, 2014b). But within Peirce' doctrine of synechism (and concurrently Deely's (1990) more recent speculative theories of physiosemiosis) the progression from Firstness to Thirdness, is a tangible force in the universe that can

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[170] Ransdell (1977, p. 163) reminds us that Peirce conceived of his own semiotic "as precisely the development of a concept of final cause process and as a study of such processes".

be thought of as a necessary component in the emergence of organic life from in-organic matter.[171]

Peirce's synechism refuses to consider mind or consciousness as something distinct from physical matter but also from the general universal flow of signs. In contrast, Nadin, in the interest of experimental science, would rather say something more specific. Peirce apart from opening the door for future semiotic inquiry, does not help us in the here and now locate what is distinctive about organic lifeforms. Honing in on the integrated dynamics of Anticipation has allowed Nadin and Rosen (and others) to focus on observable experimental phenomena that are, at least at our current level of analysis, clearly distinctive of biological lifeforms.[172] This research does not require Peirce's metaphysical and cosmological theories, although it does require semiotic analysis generally, specifically, the ability to account for the qualitative (meaning-driven) dimensions of adaptation (Kull, 2009). This said, and as I have argued elsewhere (Campbell, 2015a, 2016), Peirce's categories provide a relatively intuitive conceptual framework for considering often neglected aspects of teaching and learning. So, although Peirce's broad metaphysical considerations might hurt the applicability of his philosophy (to both education and experimental science) his general emphasis on the irreducibly triadic nature of consciousness and experience is important. Also important is aligning semiosis with the process of learning, and this is what we turn to next.

7.5.   Implications for edusemiotics

7.5.1. Thirdness is learning

In the remaining sections I will argue that, in the interest of philosophy of education, aligning semiosis and anticipation can be conceptually useful in demonstrating one of the basic premises of edusemiotics: how learning can be understood as semiosis.

As we have discussed earlier, formalization requires the reduction of phenomena/processes into baseline production rules (or algorithms) from which

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[171] This is expressed by the following often quoted Peircean quotation: "All this universe is perfused with signs, if it is not composed exclusively of signs" (CP 4.539).

[172] Nadin's (2017a, 2017b) recent applications of Anticipatory science into neuro-science and medicine respectively are good examples of this applicability.

information not expressed in these rules can be inferentially entailed: "there is *always* a set of parts, into which *any* material system (and in particular, any organism) can be resolved, *without loss of information*" (Rosen, 1991, p. 21). This requires a process of fractionation, which rests upon a notion that parts can be isolated from their emergent contexts and interactions, adumbrated and then used to derive information about the whole phenomenon/process. In semiosis because past states effect the present just as much as possible future states, such a reduction is effectively impossible for it would imply a dyadic (and hence *non-triadic* and non-dialogic) sign model (a structuralist model of signifier-signified, or expression plane-content plane). Similarly, Rosen believes that no structural (syntactic) modelling can describe the complexity inherent of the Living:

> Just as nobody has been able to characterize an organism in terms of a discrete list of properties, no one has been able to characterize a "natural language" (let us say English) in terms of a list of production rules. Indeed, if it were possible to do this, it would be tantamount to saying that a (natural) language can be completely characterized by syntactic properties alone, i.e., made independent of any semantic referents whatever. (1991, p. 43-44)

This is because the "code" of a semiotic system is not purely self-referencing or closed, but defined by triadic and constantly evolving sign-processes.

An edusemiotic model of cognition and learning, as opposed to an information-processing model (for the distinction, see Cunningham, 1987, 1998) insists upon an *open system*: that is, a *complex system,* in the technical sense used in this study. A triadic sign model tells us of the impossibility of reducing the complexity of the living to formalizations; semiosis does not function in a closed circuit, for the simple fact that the sign is *triadic* and not *dyadic*. It is only with such a triadic model that we can escape the dichotomous foundations emblematic of modern philosophies, as diverse as determinism (with its glaring mind-body problem) and even contemporary phenomenology, with its explicit subject-object distinction (Deely, 2001, 2009). John Dewey long insisted on the inadequacy of such approaches for understanding learning and educational contexts, reminding us time and time again that "[s]ubject and object antithetically defined can have logically no transactions with each other" (Dewey 1958 [1925], p. 239). To remedy these dualist conceptions in education is in many ways the central task of the emerging edusemiotic project. As Semetsky says (citing Nel Noddings), this task is to recognize that "relation is 'ontologically basic' (Noddings, 2010, p. 390) and therefore defies stable

substances as the furniture of the world presupposed by the analytic tradition" (Semetsky, 2014, p. 494).

In terms of Peirce's categories, the being of relation is Thirdness. Thirdness, in a Peircean edusemiotic, is a concrete learning objective. It is in fact the goal of learning in its broadest sense. Torill Strand (2013) has even declared that "Thirdness is learning", for what is learning but the ability to make relationships between objects within experience — to realize the habit-forming and generalizing tendency of semiosis? To reference Peirce's famous article (1868), it is the place where we reach beyond a basic perceptual acquaintance with an object (the first grade of clearness, in a certain sense characteristic of Firstness) and beyond a formal abstract formulation (conventionalized symbolic knowledge) towards an understanding of the relationships between the object within my awareness and such a mental formulation.[173] It must be stressed that Thirdness is not limited solely to abstract symbolic modelling, just as Firstness is not solely iconicity, and Secondness is not solely indexicality. This is important because much formal education adheres to an implicit learning theory that emphasizes symbolic formal systems often in place of (or completely severed from) their embodied iconic and indexical foundations. The Thirdness we are alluding to here is more general and experiential than what is called by modelling systems theory (Sebeok and Danesi, 2000) the *tertiary modelling system*, or "the modelling system that undergirds highly abstract, symbol-based modelling" (p. 201). Thus, we have the Edusemiotic focus on experiential learning processes which involves realizing that behind every formal symbolic system there is a sensory beginning, and that learning involves action in and to the world (Semetsky, 2014). As Dewey (1916/2004, p. 34) reminds us:

> To 'learn from experience' is to make a backward and forward connection between what we do to things and what we enjoy or suffer from things in consequence. Under such conditions, doing becomes a trying; an experiment with the world to find out what it is like; the undergoing becomes instruction – discovery of the connection of things.

A triadic orientation is similarly about recognizing all aspects of experience, not just what is easily decidable and explainable, that is, what is easily *reducible*.

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[173] For the educational implications of these three grades of clearness, see; (Campbell, 2015b).

Anticipation is central to this understanding of living-learning, since it is always expressed in action (not in stable structures or substances frozen synchronically).

This experiential focus amounts to the recognition of the irreducibly triadic nature of semiosis (ex. CP 5.473) — as opposed to the dynamic reactions of brute force, cause and effect that is characteristic of Secondness and the physical world. In this understanding Thirdness adheres neither to realism nor idealism, neither to mind-independent being, nor mind-dependent being, but occurs prior to any sort of dichotomization such a philosophical distinction implies: the observer and the observed, inner and outer, nature and culture. In regards to these limiting polarizations anthropologist Tim Ingold (2009) asks:

> Can there be any escape from this shuttling back and forth between enclosure and disclosure, between an ecology of the real and a phenomenology of experience? So long as we suppose that life is fully encompassed in the relations between one thing and another – between the animal and its environment or the being and its world – we are bound to have to begin with a separation, siding either with the environment vis-à-vis its inhabitants or with the being vis-à- vis its world.

The reach beyond the subjective-objective barrier lies in the relational dimension of semiosis. When our focus is turned away from sign vehicles (signifier-signified, representamen-immediate object) to the relations between signs and signification, we can escape such dichotomizations that work against the continuous flow in which experience presents itself to us. And now, finally, we can justify why Peirce's categories of existence are needed in education. This is because quite simply, experience is not reducible to existents or non-existents, between an "ecology of the real, and a phenomenology of experience" (ibid.). Potentiality and future mediation are always weighing upon our learning in the world.

Our ability to recognize what Deely (1990) has called the *stipulable* sign — the signification processes explicit in signs "apart from its context and circumstances of utterance" (CP 5.473) — is to effectively understand the learning process as complex (in the Gödelian sense), not as it occurs in distinct contexts or iterations or as attached to any particular knowledge content, but for its *constantly evolving potential*. This is because learning is itself a relation; it cannot be fully understood as a psychological state in the mind-brain of the learner, nor in the objects they are trying to understand, but as Deely says echoing Poinsot, something radiating "*over and above them*" (2009: 69).

Because the essential content or being of the sign is relative, the key to understanding what is proper to the sign is the notion of relativity, relation, or relative being. Without this content, the sign ceases to be a sign, whatever else it may happen to be. Stripped of its Thirdness, the sign slips back into the dyadic order of mere actual existence or, perhaps even further, into the monadic order of mere possibilities and dreams beyond which there is nowhere to go. (Deely, 1990, p.35)

The orientation that the living is complex and thus cannot be described (completely and consistently) through symbolic/formal reductions validates the edusemiotic perspective that learning be observed and conceptualized through signification processes that mediate subject-object, mind-world. Thus, edusemiotics studies *virtual* phenomena: immaterial "supra-subjective" relations that although possessing subjective/material fundaments (of the order of Secondness), transcend "over and above" such spatial- temporal terminus, reaching both forwards and backwards in time. Adopting the notion of subjectivity and objectivity revealed by semiotic analysis,[174] Deely (1990, p. 100) describes the type of objective reality that edusemiotics purports to study:

> [A]ny attempt to restrict semiosis to cognition falls short at the level of theory for the reason that nature and culture mutually penetrate one another in the constitution of experience, so the objects of experience *also* reveal themselves more suited to some significations than to others in any given context or inquiry. The objective sphere reveals itself as neither closed nor closable upon itself absolutely […] The full semiosis of experience, thus is never merely actual, but is suffused at every moment with elements and factors passing in and out of varying degrees of actuality and consciousness through the virtualities that remain in their own right semiosic (whether rooted primarily in the psychic or the physical side of subjectivity.

Less technically this is to say that edusemiotics addresses *not* directly the material effects of learning (brain states, material learning outcomes) but rather how learning is displayed in the sign-processes that learners use, and how these sign-processes enable (or disable) the learner to continually grow and flourish within their changing relationships, environment and settings.

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[174] Where a subject is 'what it is independently of what anyone thinks it to be', and thus of the order of *ens reale*; and an object is something that exists within the awareness of some organism.

7.5.2. Pedagogical growth

The Deweyian pedagogical concept of growth informs our comparative study of triadic semiosis and anticipation. Affifi (2014) has incorporated this aspect of Dewey's educational philosophy within the purview of biosemiotics, to inform an approach to learning that he calls *biological pedagogy*. As we learn from Peirce's cosmology, semiosis is unlimited and continuous, so semiotic-habit formation cannot be merely the operationalizing of behaviour and action. For Dewey, growth is about the formation of habits that will engender a receptiveness to novelty. Affifi (2014, p. 76) explains:

> For Dewey, growth occurs when possibilities open up for an organism, thereby "enhancing its ability to participate in its environment" (Gouinlock, 1972, p. 238). It is the process of developing habits that allow the organism to interact more spiritedly, responsively, and openly to arising circumstances. By contrast, a lack of growth limits possibilities of encounter, as the organism relies on preformed habits that stultify, ossify, and close it off to novelty… growth is predicated on habits that enable future habit-forming, whereas the restriction of growth occurs when existing habits monopolize the operational domain (see, for example, Dewey 1916, pp. 44-48).

In a similar sense, anticipation as a pedagogical concept is about furthering the growth of future habits that enable the organism to better navigate and expand the meaningfulness of its Umwelt. For a sign to be a sign, "reference to the future (in a third element, the interpretant) is essential … regardless of whether the thirdness is actual here and now or only virtual and "waiting to be realized" (Deely 1990: 34). Thus, the interpretant is related to and dependent upon anticipatory dynamics, in the sense that both can be understood "as a process or form of *becoming*… over and above the essential structure that nevertheless makes signification (as the production of meaning or sense) possible in the first place" (Deely and Semesky, 2017, p. 2). Interpretants do not emerge as deterministic stimulus-response reactions separated from the world in which they occur (as the formalist maintains) but are always contextual and meaning-driven (they function as objects within the web of relations that make up the Umwelt of the learner). For example, the same stimulus — the howl of a male wolf — can signify very different things, whether it occurs on a recording, in a city, in the desert, and whether I am a female wolf, a human, or a sheep. In fact, such an alignment (between anticipation and interpretation) has recently been made by Nadin (2017a, p. 158), when

he argued for a less quantitative, more semiotic (meaning-based) approach to understanding life:

> To be successful (in the evolutionary sense), action (through which anticipation is expressed) has to predate, not to follow, changing circumstances. Ergo: Evolution is predicated upon successful anticipatory action driven by the meaning of change in the world, not by quantitative variations. No living entity measures—it interprets. Measurement is a human activity associated with the construct called numbers, which define quantities. Interpretations, in a variety of forms, are part of the dynamics of life.

And if we recognize that the living itself is defined by anticipation then it follows that the potentiality for full-fledged semiosis is implied in all living things. It is in this sense that signs contain a future-memory as well as a past one: realizing the inchoate qualitative potential in interpretants is akin to realizing their potential for growth. Aligning semiosis with learning is similarly about realizing such potential for transformative growth in learners themselves.

Deely elaborates this future memory of semiosis in his seminal essay *Evolution, Semiosis, and Ethics* (Deely, 2010, p. 79) — he might as well be describing anticipation:

> Chance itself becomes assimilated in its outcomes to the various processes of semiosis whereby the meaning of what exists now is influenced by what the "now" has made possible that was not possible in earlier "nows". That influence of the future which determines the present relevance of whatever is "past", according to the ever changing boundary between "real" and "unreal"… is the essence of semiosis, the distinguishing feature which separates Thirdness as an action of signs from Firstness as 'pure possibility' and Secondness as possibility concretely determined by physical interactions here and now.

To recognize how this "action of signs" mediates the "possible" with the "here and now" – again to recognize the *stipulable sign* – is effectively to recognize learning as semiosis. To reflect on and bring awareness to this stipulability is in fact the objective of every educator. For the educator (against popular belief) is not simply the conveyor and gatekeeper of semiotic content, or knowledge — a teacher's job is not simply to ensure a student's familiarity with already determined curricular objects. This is the reductionist-mechanistic perspective towards learning we see reflected in much formal training. *The educator, in actuality, teaches students to be in relationship* — to an object or objects within their awareness, whatever that object be a literal (subjective) physical object like a

guitar, carving knife, or iPad; or to an object of thought, such as a philosophical concept, a mental representation, or a mathematical object, like the variable *x* which already possesses a purely relational identity to begin with. Student and teacher alike, *learn* from these relationships, which (in itself) involves some degree of stipulation and abstraction, in the sense that the student/teacher must recognize that there are signs, and not merely use them.[175] These relational processes always emerge from a situated sensory encounter with the environment (Firstness through Secondness); but, to carry this beyond the world of accumulated information, that is, to *learn* from these sensory beginnings, we must bring these perceptual signs into relation with our acquired experiences. The interpretant, as it is not strictly a mental mode of being (it is not a specific interpreter!), is essentially what mediates "the difference between objective and physical being, a difference that knows no fixed line" (Deely, 1990, p. 27). The learner utilises the stream of interpretants within their experience to form the foundation for habits that will (ideally) enable future habit making, habits that are rooted in embedded ecologies.

So, to recapitulate: the process of learning itself can be conceptualized as an interaction and immersion in the continuous flow of semiosis (CP 1.412) in which all our relations with the world present themselves. To do this is to realize the universe of discourse for its constant flux: signs becoming new signs in a process of unlimited semiosis. Conceptualizing learning in this way is to recognize the *palimpsest nature of experience* (Campbell, 2016). To realize the aesthetic/sensory potentiality of Firstness, and the brute realization of Secondness in every interaction, even though experience is necessarily of the nature of Thirdness. Learning, in this understanding, exists on a node, a sign in the process of translation into a new sign, but a sign not yet *become*, a sign that is always *becoming.* To imagine learning as something to be attained and possessed is to ignore that learning is a continual stream or process, and diminish it to a knowledge- object (a signifier-signified dyad, a closed circuit, not a triadic and out reaching sign). Learning is not something dug out of the ground, something unearthed, but a process to enter into relationship, something to join in equilibrium.

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[175] The fact that humans not only use signs (as all animals do) but know also that there are signs is what makes us, according to Deely (2005) "the semiotic animal".

Of course, one can fall out of equilibrium with learning. To conceptualize learning in such a relational way requires an analog that is poly-dimensional as well as flowing/continuous. Sound and wind come to mind: a sailor can harness the power of the wind to guide her boat; she can enter into balance with it, just as she can fall out of balance and find the same wind working against her vessel. If we approach learning with this conceptual analog, learning is something achieved by attuning oneself to the constant flux of the world, and in this sense, concerns a tuning to anticipation.

7.6. Closing remarks

7.6.1. Reflections of a music teacher

As a way of applying the above analysis and of tracking the scholarly journey you have kindly embarked upon with me, let me draw upon my experiences as a music teacher.

Many musical methods – such as, to use a Canadian example, the Royal Conservatory of Music (RCM) – deal primarily with mechanics already encoded into formalized systems. Students are taught the separate components of music: scales, chords, arpeggios, repertoire, theoretical rudiments, etc., as they are embedded within formalized sign-systems of harmony and notation. Even ear training is often approached in such a content driven manor, as students are generally drilled on interval recognition, and the ability to recognize individual chord qualities before they approach learning an actual piece of music by ear, or attempt to realize music already in their memory on their instrument. In the context of Rosen's Modelling relation, we can say that instead of aligning learning with the student's actual perception and experience of music-making, these more formal approaches generally begin with musical phenomena *already determined* through highly abstract formal systems. From these formal systems students are explained "basic axioms" from which musical information can be inferentially entailed. With a relational approach to music learning, the mechanics are inevitably dealt with but they are principally the medium through which the learning takes place, and in this sense, secondary to the primary goal of learning to be in relationship with some other. This "some other" can be many things; it can be the students' embodied relationship to their instrument — how they hold the instrument, how they care for it, how they play it — or it can be a musical object within the awareness of the student, such as a melody the student is learning by ear, or a new mode they are becoming acquainted

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with, etc. Again, fundamentally an edu-semiotic approach is routed in experiential learning.

Susan O'Neill's theory of *transformative music engagement* (TME) is very much in line with this basic orientation. Such a theoretical lens involves "[s]hifting our thinkingabout music learners from being to becoming", providing "a framework for engaging music learners as active agents in their own musical development" (O'Neill, 2012, p. 164). O'Neill (2012, p. 164) explains such a shift in thinking: "Whereas the idea of *being* a music learner suggests a bounded and static entity, with a nature that is prescribed, determined, or unchangeable*, becoming* a music learner is infused with notions of unfolding, openness, and dynamic potential". Related to my argument here, a theory of TME involves a turning away from positivist expectations in music education that tend to view learners "from within a deficit versus talent/expertise framework" (O'Neill, 2012, p. 166), following the standards and expectations characteristic of "formal conservatoire approaches to music learning" (p. 169).

As a jazz/improvising musician I know that being in relationship with the music you are actively creating is the primary objective of improvisation, whether in a group context or solo. All students of improvisation know these moments when your ears are wide open and receptive to the present moment, something that could somewhat misleadingly be linked with the psychological concept of *flow* (Shernoff et al, 2014). And conversely, all musicians know the shock to be returned from this transcendent relational state by a slip of the fingers, a mistakenly placed note, that all at once sends you hurtling back to *reality*. This is the fallibilistic "dynamical" reality of Secondess (CP 5.50, 5.484).

The experiential aspect of learning (embodied by Thirdness and semiosis generally), is of course not reducible to any "complexus of dyadic relations" (CP 2.274). That is, semiosis-as-experience is "not a drawn out series of steps" but an immediate cognitive event, that involves "not only the brute actuality of interaction between *two* as a pair, but also the interpretation of this interaction" (Quay, 2016, p. 83-84), no matter how automatic, pre-rational/instinctual, or anticipatory this interpretant-process appears to be. All this by way of saying that Thirdness as a pedagogical value must have a memory of the aesthetic pre-cognitive dimensions of experience embodied by the monadic consciousness of Firstness, and the embodied knowing of Secondness. But since all experience occurs in Thirdness, so must learning. The goal of a Peircean edusemiotic is

thus to begin with the *stipulable sign* (taking notice of signification processes as embedded in specific learning-contexts and *emergent* perceptual encounters), and in a sense work backwards to realize the other categories as *inchoately* contained in this Thirdness.

When, in improvisation you realize such an awareness of all categories – the proper goal of a Peircean edusemiotic – you are better able to *anticipate* the music's developments. You transcend the reactionary state of just trying to find a comfortable pocket, just trying to react sufficiently to the info the other musicians are sending your way. When in relationship to the music, you are in a state of pure Thirdness, *you are comfortably in step with semiosis*, able to anticipate interpretants as they emerge, able to "hear ahead", but also aware of the underlying sensory/qualia driven aspect of the music (Campbell, 2015a) as well as responsive to the embodied "*indexical rub*" (Campbell, 2016) of coming up against the unknown. The sign possesses a *future memory,* and is thus not reducible to a logic of cause and effect, nor to a computational model of cognition. In musical situations, this future memory is experienced poly-dimensionally, and at various levels of temporality. The ensemble collectively creates a localized ecology – an ecology in various states of flux. A bebop tune like *Donna Lee* is progressing at a more rapid pace than a monotonous dominant drone, but both are in flux, for this is the nature of semiosis. Analogously, this is the nature of the living. Each musician is constantly trying, to the best of their ability, to merge and be in harmony, in equilibrium, with this constantly becoming collective ecology, in the scholastic way of speaking characteristic of Deely: *to realize a being proper to relationship.*

7.6.2. Implications and directions for future research

The orientation to define learning as semiosis, as noted by Cunningham (1987, p. 214), sensitises us to an understanding that learning, and cognition generally, is always concerned with "an interaction between the physical world and the cognizing organism". This is a pertinent reminder for education: that, no matter how abstracted, extensional or symbolic/conventional our knowledge-systems become, learning always has a sensory origin. This is why Danesi (1998) suggests, in his monograph on Thomas Sebeok's semiotic, that we must never lose "the body in the sign" (Danesi, 1998). Learning is something that living things do to constitute their relationship to the world. As such, learning can be thought of as an extension of the complexity inherent in the living.

Learning in this understanding is not the application of a single model of the world (an act of computation), but rather the ability to form and realize the signification processes underlying all our interactions (mental, physical/mechanical, perceptual etc.).

I have here argued that the logic of the semiosis (embodied by the interpretant function) in many ways parallels the anticipatory logic that Rosen espoused in his important works in theoretical biology. This alignment is also in line with one of the principle insights of biosemiotics: that "the intentional aspect of sign processes… parallels the teleological-teleonomical aspect in life processes" (Kull, Emmeche, and Hoffmeyer, 2011, p. 15). As noted by these three leaders in biosemiotics, "Rosen's approach is a path towards biosemiotics" (2011, p. 10). Following this study, I would also insist on the need for future biosemiotic and edusemiotic studies to consider and collaborate with contemporary research into anticipatory systems (as in the *Ante Institute* out of the University of Texas).

Together these perspectives – edusemitoics, anticipatory systems, and biosemiotics can build bridges across the humanities and the "hard" sciences, for all these perspectives seek to better understand the immensity of meaning inchoate in this concept/process of learning. To address our inquiry-questions from earlier (see Section 1), such a collective and integrated theoretical understanding transcends the causal-determinist perspective and provides a lens from which to understand the complexity of the living by accounting for forces that traditional Newtonian physics cannot, such as

- continuous fluctuation and change;

- inchoate possibility (Firstness) and as well as future mediation (Thirdness) having the ability to impact upon the present;

- a continuity between *ens rationis* and *ens reale* and thus the requirement for using many different representational models to explain phenomenon;

- complementarity of subject-object relations and thus the recognition of relationality (or semiosis, or more narrowly of interpretative processes) as a tangible force in our engagements with the world.

Realizing these points are, as I see it, the goal of pedagogy that strives towards recognition of *being* (that is, ontology) in its fullest sense. The perspectives I have explored – Peirce's triadic semiotics, his categorical system, and a theory of anticipation as definitional of living beings – all realign the processes of learning with the complexity of life. They inchoately explain that if the living is not reducible to a deterministic logic then neither is learning. What I propose is (in the spirit of Peirce's pragmatism) a regulative ideal for an educational framework that recognizes the triadic nature of consciousness and learning. Recognizing the ways in which *the possible* and *the anticipatory* influence and determine how learning occurs is essential for a pedagogy that realigns with the dynamics of life. Such a triadic approach, I would insist, is the only way learning can realign with experience and be conceptualized (in the Deweyian sense) as a form of growth, outside of reductions to either constructivist notions of mind-dependent reality, or positivist conceptions of mind-independent reality. Like life-processes, learning is not reducible to even an aggregation of systems, for as we have seen, a complex system is not ever entirely describable. Learning constantly exceeds being realized in any single state or in any formal system; it constantly spills over any singular representation of the world. Hence, my emphasis on exploring an aggregation of different perspectives and approaches. Hopefully this study – by bringing things into relation – can point the way to future realizations about living and learning.

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Chapter 8.

Conclusions

8.1. Main ideas and themes

8.1.1. Conceptualizing curriculum, teaching, and learning around the unfolding event

To escape the limitations of a narrow and calculative performativity – and with it the reduction of education to what can be easily measured and accounted for in terms of 'outcomes' and 'effective techniques' – I have proposed in these articles that learning and teaching can be reconceptualised around the centrality of *significant events* that *emerge* from within the *present-unfolding* of *pedagogical practices*.

I have primarily studied this through the ecological lens of post-Peircean (bio)semiotics, arguing that approaching the dynamics of living (and learning) as broadly expressed in semiosis (sign-action) provides exploratory possibilities for developing a non-reductionist theory of learning, that implicitly implies a theory of teaching and education more broadly. Theoretically, this orientation is pragmatic and useful as it provides a conceptual framework to account for how organism-environment relationships grow and change on a qualitative (meaning-based) level. One way this is accomplished, conceptually, stems from the expanded temporality offered to us through Peirce's categories and his mutually supporting pragmatism and synechism (cf. Campbell, 2020; Esposito, 2005). We have also observed how a concept of *event* often enters Peirce's writing. For example, in the same early article "Some consequences of four incapacities" where Peirce famously discussed his idea that "every cognition is determined logically by previous cognitions" and that "we have no power of thinking without signs" (1868, p. 141), he also engaged an event-focused description of learning and cognition, suggesting that cognition is "never an instantaneous affair, but is an event occupying time" (1868, p.147)

I will now take a moment to recapitulate the basic dynamics of this educational approach, using limited technical language and keeping my analysis close to the question of *what happens within the educational process*?

Observe three familiar sites of (semiotic) activity:

The Learner; **The Teacher**, and; **That Which is To Be Learnt (TWITBL)**[176]

From this event and practice-focused perspective, **Teacher** and **Learner** are not substantive, static entities, but rather *enacted roles* that only emerge in relation to an evolving relationship with **TWITBL**. Following from this, a teacher –or professor for that matter – is not something you are, a stable identity, but rather something *you become*; particularly, when you have something to teach or profess (as Greta Thunberg and many of her generation have shown, in relation to environmental issues). Learners and teachers thus conceived, are not ontologically bounded entities – rather, they are processes and roles enacted within the context of significant *practices* and *events*. What is enacted is simply a way of being in relation to TWITBL.

I have argued that this contains basic implications for how we understand and value (cf. Chap 3) *the work* of teaching and learning, suggesting that knowledge exchange, the transmission of a corpus of representations, the preservation and administering of stable identities (learners *being* learners, teachers *being* teachers, and researchers *being* researchers, disciplines *being* disciplines) – this is *not ultimately* what pedagogy is concerned with. Instead, pedagogy principally hinges on enacting significant relationships to TWITBL through events that occur in a dynamic, continuously unfolding *taskscape* – an evolving field of meaningful possibilities for action and response, framed by collective meaning-making practices.

From such an internal perspective on pedagogy, an event is a dynamic reconfiguration of experience, that calls out to be dealt with in the context of an unfolding continuum of practice. It is important to stress that, although TWITBL is emergent and enacted, we as educators*, must still be able to articulate what it is, and what it should be*.

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[176] I am referencing a recent analysis around these three sites conducted in Stables, 2019a. I will be engaging with this article throughout this concluding chapter. The actual phrasing "TWITBL" is used in some, primarily British, educational discourses, and we'll observe it in this chapter also employed by Richard Pring (2004).

Through the values and actions we embody within our educational practice, we are continually both posing and being confronted by the question: "Is what I desire, desirable?".[177] In fact, I would claim that such an orientation perhaps requires renewed attention to our pedagogical and curricular practices – what we decide to "place on the table" for us and our students to study (cf. Masschelein & Simons, 2015, p. 88) – precisely because these forms and invitations for meaning-making are not passed on to teachers and learners *from the outside*, from specialists, academics or government, but from *within* enacted events/practices.

I have also tried to show through these articles that this basic pedagogical orientation is consistent with and follows from what we know and can observe about teaching and learning from anthropology – mainly the foundational insight that educational processes are not chiefly about administering or transmitting ready-made information, "prior to its *application* in particular contexts of practice" (Ingold, 2013, p. 13). Rather, the anthropology of education consistently reveals that **teaching channels learning-through-practice** (Chap 2), and accordingly the teacher's job is not to ensure or determine that learning happens, but only that learning *could* happen. Ultimately, this changes how we describe the educative process: through engaging in practices, teachers do not so much force or manipulate student's attention toward desirable outcomes or ways-of-doing-things, but rather, simply provide opportunities for students to *form* their attention and to *grow into knowing*. Ingold (2013, p. 13) explains this basic insight, and how it informed his own approach to teaching and practicing anthropology:

> we *learn by doing*, in the course of carrying out the tasks of life. In this the contribution of our teachers is not literally to pass on their knowledge, in the form of a ready-made system of concepts and categories with which to give form to the supposedly inchoate material of sensory experience, but rather to establish the contexts or situations in which we can discover for ourselves much of what they already know, and also perhaps much that they do not. In a word, we grow into knowledge rather than having it handed down to us.

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[177] See Biesta's (2015) talk "Being at Home in the World" (accessed: May, 4th, 2020):

https://www.youtube.com/watch?v=qUXSxGD8WmE

These simple recognitions orient us toward a philosophy of pedagogy that hinges on the possibility and propensity for educational practices to bring about (to enact) significant *events* for students.

Observe that the commitment to practices in such accounts of social learning is taken as primary – recognizing that what makes activities *educationally significant* must do with how they frame and open-up possible experience through our *dwelling-in* collective practices (cf. Ingold, 2017; Ross & Mannion, 2013). I argue with many others (cf., Carr, 1995, Pring, 2004, Stables, 2016), that learning is in large degree an empty concept without practices. Observe that this is a basic experiential fact as much as it is a theory of learning, in the sense that no single activity makes sense in itself –meaning rather only emerges *in continuity* "within a broader spectrum of activities that have a unifying purpose" (Pring, 2004, p. 28). Practices are then, in a sense, what bring continuity to events and through this, *make experience educational*.

An educational emphasis on events implicitly implies a resolving of the theory and practice bifurcation: qualitatively exploring and reflecting on practice involves the ability to recognize some singular experience as significant within the ongoing flow of experience, and thus implicitly, a sense of *what is worthwhile and valuable to learn*. A *mode of responsiveness*, a way of being *in habit* with the world, and thus perceiving it and moving within its possibilities and constraints – this is embedded within the continuing act of being-in-practice. An event-focused account also implies, more basically, that we ourselves are implicated and involved in these events. As educational researchers, this implies an ethics, or at least a broad ethos, that because learning (and teaching) are generative acts, *taken in the doing*, we must, at least in some capacity, directly enter into the messiness and indeterminacy of these unfolding events and practices. It is in this sense that scholars, such as Biesta (2016[2013]) have argued that educational processes be recognised precisely for their riskiness and essential indeterminacy. Pring (2004) refers to this vital union of events and practices in a discussion on teacher-practitioner (action) research:

> *To pick out a particular event* as an action logically implies reference to the intentions of the agent, and, through a clarification of those, to the theoretical framework of ideas to which the teacher is committed [...] To focus the analysis, by contrast, upon the meaning of educational theory and to trace from *that* analysis the connection with educational practice, as researchers have traditionally tried to do, does not do justice to this

conceptual union between thought and action which analysis of 'practice' would seem to demand. [emphasis added] (pp. 129-131)

As Pring explains in this passage, to look for reasons for actions is not to look for causation, or to ask *why certain things happened the way they did.* Recognizing events as significant within the continuity of an educational or artistic practice doesn't directly *cause* things to happen in a simple deterministic manner. Nevertheless, events *do* reconfigure our relationship to the present-unfolding and thus our relationship to the future. An event, thus conceived, is a process that we recognize as being significant, either retrospectively or 'in the moment', precisely because it frames our ongoing engagement in practices.

This is, in fact, the way I first began thinking about the educational encounter and process early on – through my childhood, developing a musical practice, and later, a scholarly writing practice. Engagement in practices, whether overtly educational in their aims or not, implicitly or explicitly carry values and meaning for the participants, and thus a supposition (maybe an unformed hypothesis, but still a meaningful 'form') of *what is valuable to learn and how best to learn it*. Following the likes of Carr (1995), and recapitulated in Pring (2004), we can understand educational practices as "a range of activities which cannot be seen in isolation but which are intelligible from an educational point of view because they encapsulate not only what should be learnt but also *how* that which is learnt should be transmitted" (p. 28). I would simply want to sub out the word "transmitted" in this passage with 'enacted'. This modification requires that we recognize that our educational aims and values are always changing as our relationship to TWITBL is constantly changing. Engagement in practices, is how we, as teachers, may be said to channel (but not ensure/determine) learning, as a *richness of meaningful response.* This has been conceptualized in these articles, ecologically, as a growth of locally and immediately meaningful interpretative possibilities (interpretants or affordances) in an environment – a modification of sign-relations that, in a particular field of activity and action, open up possibilities for an organism's future and sustained semiotic engagement.[178] Accordingly, what we 'offer up' as teachers are simply proposals for

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[178] This is further elaborated in Campbell, Olteanu and Kull, 2019 (p. 372): "[...] Hoffmeyer (2010) postulated that "one of the few general trends that can be ascribed to organic evolution is the tendency towards the production of species exhibiting more and more semiotic competence or freedom in the sense of locally meaningful interpretants" (p. 196). Such an increase in semiotic freedom can be described as the growth in the logical *richness of decision-making.* Semiotic

action and collective exploration, that in no way determine, or even ensure, that learning will happen – but are, nevertheless, oriented toward its possibility, through our continuing engagement in practices. It is in this sense that I have argued with anthropologist Michael Ling (see Chap 2) that "[l]earning *precedes* teaching, insofar as it goes on without formal teaching, often enough, and, that effective teaching *has to be* shaped by an understanding of learning, first and foremost" (Ling, personal correspondence).These ideas also resonate and perhaps extend further with Biesta (2015), who argued that learning is only one possible outcome of teaching – and that when learners are positioned differently to learning it opens up different ways of being in relation to the world and therefore different ways of existing. We observed along with Biesta in Chapter 2, some of the ways that the language of learning has become increasingly individualized and commoditized and the ways in which an overt focus on learning as the primary or even the only goal of teaching and education puts the learner at the centre of the world, with a range of consequences. It is easy to see that being at the centre of the world is inherently un-ecological. I suggest that a broader bio-semiotic outlook that sees learning as distributed throughout the meaning-making processes of an ecosystem might recover a way to exist in what Biesta (2017) calls a *grown-up* relationship to the world, "to be in the world without occupying the centre of the world" (p. 37).

So, to reiterate, this event and practice-focused educational philosophy is part of a long tradition and not necessarily original. Still, I have argued throughout these essays that semiotic philosophy provides us with a comprehensive framework to understand and think deeply about the subtle notions implicit in such a pedagogical orientation that are often not sufficiently conceptualized or integrated philosophically. I argue that this involves effectively conceptualizing how learning *emerges*, not through static transmission or top-down deliveries, but through the continuity of shared experience and shared practices. The strength of *this particular* conceptualization of educational processes, I argue, primarily stems from the broad Peircean epistemological foundation

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freedom refers here to the complexity of choice an organism has for channeling learning in a way that sustains meaningful relationships within its umwelt (see also Stjernfelt 2006, p. 23). This is not necessarily or simply an increase in choice, but rather growth of meaning. As Peirce posited, "And what is growth? Not mere increase!" (CP 1.174)".

afforded through conceptualizing learning-as-semiosis across both mind/body and nature/culture bifurcations (Campbell, Olteanu & Kull, 2019).

8.1.2. Artists and makers

As presented throughout these articles, this philosophy suggests a curricular and pedagogical orientation that incorporates and takes notice of the practices of creative practitioners – artists, scholars, researchers, crafts-people, doers and makers of any kind – and asks how this is and *can be* interpreted in the context of creative and exploratory pedagogy.

One of the central insights revealed by the work and practices of *makers* (cf. Ingold, 2013) is that there is no such thing as complete knowledge or understanding. The craftsperson isn't concerned with perfectly reproducing an ideal model/archetype, but rather continually enacting their craft – in this moment, in this place, with these materials. Consequently, the maker is not so much directly concerned with innovation but rather how to *go on* learning (Chap 2.1) within an unfolding taskscape. Sennett (2008) reminds us that the exaltation of innovation in modern consumer societies rests upon a persistent industrialist notion that talent and creativity are scarce commodities – notions, we should add, not at all in line with the way makers engage in and learn through being in practice, nor the social reality of "maker societies". Innovation as a primary and driving aim, is however, not co-extensive with the generative and ongoing act of making. Craftspeople are not interested in executing their craft one single time, perfectly – for, if they were, they would never be able to develop the requisite skills and perceptual discernment necessary to perform their craft in the first place. Craft is never complete, it is rather the flow of one movement into the next, over and over, continuously, and it is precisely through such established practices of habituation that "freedom within the event" resides (cf. Ingold, 2017; Manning, 2016). Remember, knowledge is not possessed, it is enacted (Hoffmeyer, 2018).

Andrew Stables has located this clearly for pedagogy as the *Complete/Correct Understanding Fallacy* (Stables, 2019a). Because our relationship to knowledge is always changing, being re-interpreted every time our previous experience and conditioning encounters a new context/occurrence, what we "place on the table" for collective study (TWITBL) cannot be completely or determinately understood or

misunderstood – but only increasingly inquired into and explored. This principle effects the roles of both teacher and student. Inevitably, the teacher brings to the educational encounter their own way of doing things, a personal and acquired way of approaching their field of study – quite simply, *a way of being in relation to practice*. The student does not simply reproduce (or fail to reproduce) this perspective/relation, as this is impossible. Rather, they bring their own horizon of experience to the encounter. Of course, the student, is likely less experienced and familiar with the field of study than the teacher (but by no means necessarily). Yet, from a meaning-based (semiotic) perspective, this is not an issue to be overcome, but a central and important part of the educational process. We as teachers all know the way students can suddenly shed light on an all too familiar topic, simply by approaching it with a *beginner's mind* – revealing new ways of understanding long taken for granted processes and concepts. Indeed, many of my early papers, amateurish in many respects, possessed an aspect of this guessing, meaning-seeking, indeterminacy – and herein, I would claim, resides their nascent value. Remember, it was such a beginner's ignorance of the Greek language (and consequently, also Greek conceptions of the sign and signification) that enabled Augustine to see the potential of the sign as an educational concept (see Chap 1.1; Olteanu & Campbell, 2018). Such improvising, grappling, creative methods are often behind a great discovery and a significant educational moment (and this is exactly what is described pedagogically in these articles through the Peircean notion of abductive inference, see Chap 4 and Chap 6).

Pedagogically, this has a range of implications. It implies that knowledge is never simply correct or incorrect, right or wrong, and furthermore, that problem-solving is not something distinct from problem-finding (Sennett, 2008, p. 33). Again, this is what is revealed by the work of makers and artists, in the sense, that the emergence of choice and possibility comes from dwelling in problems and resistances (see Chap 5), not swiftly and dogmatically discarding their relevance and importance for learning – as the educational model of a multiple-choice exam denotes, for example.

Such also speaks to the nature and evolution of the investigations that make up this dissertation: while I am clearly after *something* with these articles, some aim, I think it is safe to say that they are, each of them, inherently imperfect *trying* attempts – which is to say they are *essays*. Together, they showcase a logic of discovery, the imperfect *making* of scholarly artefacts, distinct from a logic of representation. Precisely because

of this, they embody materially a kind of scaffolding of my own learning and scholarly activity, and hence reflect an important insight of ecological and semiotic learning theory, well characterized by the following passage from Kull (2015), that "[…] organisms would hardly be able to make reasonable decisions without their bodies together with their ecosystems embedding earlier experience helping them to direct their future choices" (p. 232). It is in this sense that we write, not to reveal what is concealed in our skulls, but rather *to think*. Thinking, is not as often assumed, antecedent to the doing – whether that be writing, research, or teaching. Thinking is *to be led out* (2.3), to follow endings into new beginnings. I've discussed these exact ideas around the craft of musical improvisation, as well as writing and research, in an interview-discussion (Ingold & Campbell, 2018) with Ingold:

> **CAMPBELL:** As an improvising musician and a teacher of improv I am interested in the process by which improvisers realize potential and variations in music-making, not from predetermined inputs outside of the activity, but through entering into relation with an unfolding musical event/ritual. I've also seen how many educational endeavours can fall short because of a general inability to conceptualize this essential doing-undergoing, where, as you point out, 'real' freedom resides. You demonstrate that this is also what happens in anthropology, when ethnography (making studies of people) becomes its central preoccupation, in place of dynamic forms of participant observation (communing and corresponding with others). [...] Could you talk about the role this "freedom from within" - this improvisational movement - has in your own scholarly craft and practice?

> **INGOLD**: Most of my scholarship these days takes the form of writing. As in any creative activity, I commence a project of writing with only the haziest notion of what it is to be about and of how I shall proceed. And I always feel hopelessly unprepared. All I have to go on are my earlier writings, texts I may have read that are still preying on my mind, conversations which might have sparked off a train of thought, and observations of things or happenings that may have caught my attention. I am thrashing around inside of all of this. The concordant processes by which thinking crystallises into thought, and by which disorderly words settle into syntactically regular patterns, are among the great mysteries of the writer's craft. Long after a piece of work is finished (if it is ever finished) I can look back on it in astonishment and wonder, 'was that me?', 'did I really write all that?' Writing is something I definitely do – it is not being done to me – and yet in the doing I surrender myself to it: I am inside the writing process, not directing it from outside or above. I don't so much decide what to write as write what falls or comes to me. Where exactly it comes from, I don't know. And the biggest problem, always, is how to convert a line of thought and words that is coming to a close, and that looks like it will go no further, into a new opening. Indeed, writing is not about progressing from beginning to end.

Quite to the contrary: it is a constant struggle to turn endings into beginnings. It is precisely in this perpetual beginning that its freedom lies.[179]

It is in this sense that I have argued throughout these essays for the educational importance of thinking seriously about how learning is enacted from within the continuities of sensory engagement and perceptual flow – the intimate coupling of perception and action that is, as we shall see in the following sections, of the essence of craft-*skill*. We can say, to quote the title of one of Ingold's lectures, that "to learn is to improvise a movement along a way of life".[180] So, with that, I should stress once more that this openness of pedagogy-toward-events, although not essentially concerned with either competition, innovation, or 'productive outcome', is not in fact aimless, but instead aims after a *creative freedom* within practices (a richness of response) – where the end-result of education is not something to be deduced from principles (or competencies, or skills) imposed context-independent, but from *cleaving the event from within* (cf. Ingold, 2017; Manning, 2016). As Ingold illuminates, this is a freedom that comes from dwelling in habitual relations, from being in-habit with events and places – not a "hollow freedom" as an act of volition imposed retrospectively – the implementation of a pre-existing form, template or method.

Again, what makes practices properly *educational* is the recognition of *meaning emerging through continuity*, and the further implication that there are no fully objectified, and finished types of knowing – only opportunities for further study and further exploration. When understanding and 'learning' is reduced in educational practice to being simply correct or incorrect, knowledge is seen as static and fixed. This is simply not the reality of being in practice and how people cultivate freedom within a craft. With the work of makers and artists, *logos* is not defined in opposition to *praxis*, and *episteme* is not defined in opposition to *phronesis* (cf. Bourdieu, 1990[1980], p. 32; Korthagan and Kessels, 1999).

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[179] This interview is reproduced in full in Appendix A, along with an interview by Canadian poet and philosopher Tim Lilburn.

[180] Held at the LSE Department of Anthropology, April 27th (2010). (Accessed, May 4th, 2020):

https://www.youtube.com/watch?v=lDaaPaK-N5o&t=26s

8.1.3. Skill, going beyond analytic understanding

Historically, this philosophical orientation towards observer-independent formalisms stems in large part from the influence of the linguistic-turn upon 20th century philosophy, which results from an epistemology that sees the verbal (linguistic) as fully encompassing, framing, and mapping, all pre-verbal experience – expressed variously in intellectual movements towards semiotic structuralism, the influence of Chomsky's Universal Grammar, and Anglo-American analytic philosophy. Exploring the structures and implicit functions of such a modelling relation has been a major goal of this thesis (see Chap 7.2). Bourdieu (1990[1980]) highlights this type of research-relationship in his famous work of sociological theory *The Logic of Practice*:

> The illusion of the autonomy of the purely linguistic order that is asserted in the privilege accorded to the internal logic of language at the expense of the social conditions of its opportune use, opened the way to all the subsequent research that proceeds as if *mastery of the code* were sufficient to confer mastery of the appropriate usages, or as if one could infer the usage and meaning of linguistic expressions from analysis of their formal structure, as if grammaticality were the necessary and sufficient condition of the production of meaning [...] [*my emphasis*]. (p. 33)

What Bourdieu speaks to here has also been, I believe, one of the central oversights (or let-downs) of much analytic philosophy of education (often associated with the foundational work of R. S. Peters) – which has, in the pursuit of completely and decidedly reducing complex educational processes to sets of necessary and sufficient conditions, subverted the social conditions of meaning, the local and temporal aspects of knowing-in-place/practice.

Clearly prior mastery of the code is not how practice proceeds or unfolds *in situ*. The person of practical wisdom, the maker-artist, does not begin by seeking out first principles or a defining archetype before embarking on their tasks. Their type of freedom comes not from principles or sovereign rights, not from methodology, but from collectively enacted *skill*. Skill is not defined here in the precise, analytic sense presented by Robin Barrow (1987, 1990), namely "a capacity that is discrete and can be perfected through practice and exercise" (1990, p. 24). Observe how in Barrow's definition, skill is narrow and "discrete", i.e., not directly continuous with broader forms of life, but rather, distinct, but still narrowly *transferable* to other domains, however, only, within firm limits and boundaries. Indeed, this is exactly what Barrow intended and

emphasised in his definition – arguing that the concept of skill be retained only for very specific and what he calls transferable capacities, like dribbling a ball or juggling (1990, p. 24), rather than being interpreted vaguely and synonymously with *ability in general,* as was increasingly becoming the case in curriculum discourse and policy of the era (a critique, we should note, stemming largely from psychology's increased stranglehold on education and the shortcomings of cognitive psychology's notion of skill, not at all dissimilar with my Peircean critique on the limits of psychologism).

However, I argue that if we adopt such an analytically narrow and restrained definition two important implications arise: firstly, skill cannot appear as a type of knowledge in its own right – that is, if we accept knowledge in its classical conception as justified, true, belief – and secondly, following from the first, skill becomes associated with a kind of rote, bodily training (that can be "perfected through practice and exercise") consequently allowing a persistent mind/body fallacy to enter our pedagogical thinking; the notion of an educable mind, distinct from a trainable body-automaton (see 8.2.2). The big problem here, I argue, is that this is not how skill presents itself in the process of of acquiring skill, that is, of enskillment – not expressed in "the improvisation of movement along a way of life", but the transference of a static template/schema – leading to another embedded supposition that skill is simple and easy to discern and assess, in the sense that people claim 'you either have skills or you don't' (riding a bike is a skill you either possess or don't possess). Skill, in this restricted analytic conception, seems disconnected from the higher faculties of rationality and decision-making, that are, in this line of philosophical thinking, considered definitively characteristic of humans, as distinct from brute animals (Barrow & Woods, 2004, pp. 21–25). We might also observe that this understanding is not consonant with the word's etymological family tree, which precisely concerns the kind of knowledge and knowing of people who *make things*, and not those who stand back and observe: disconnected from the kinds of *knowing as discernment*, emphasised in the Old Norse *skilja, "*to divide, separate, distinguish, decide" (Ingold, 2017, p. 42) or, its relatives, such as the "Proto-Germanic *skaljo*- "divide, separate" (source also of Swedish skäl "reason," Danish skjel "a separation, boundary, limit,""[181] or the PIE root of all these words in *skel*, meaning "to cut". Ingold (2017) elaborates these etymological connections, through the example of

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[181] From (accessed May, 4th, 2020): https://www.etymonline.com/word/skill

woodcutting, drawing upon the event-focused philosophy of Canadian philosopher/artist Erin Manning (2016):

> In woodcutting the decision emerges from this correspondence of timber and metal, and from the forces pent up in each as they strike up an engagement. It is a decision taken in the cutting, not in advance of it, and it alters the course of the event, as Manning puts it, *'in the event'*. In so doing it introduces a variation, not in the movement itself, *but in the way movement moves.* [...] Every decisional cut – be it in woodwork, walking, singing or writing – entails a differential in the way of movement-moving that eventually takes it in this direction or in that. This is what skill is about: not imposing exterior form on compliant matter but finding the grain of things and bending it to an evolving purpose. (p. 42)

We will return to this issue of skill a bit later in our discussion on music and music education (8.2.2). Suffice it to say here that skill – as Ingold, Manning, Sennett, and myself all explain it – is about being inside the knowing, not outside of it. It is not about knowing the code and applying it, but an embodied and situated experience of being-in-practice. This is a type of knowing precisely and definitively concerned with continuity, not discreetness and transferability. The basic idea: knowing how to "go on learning" (Chap 2.1) within a form of living, is about finding directionality in the doing, and, put simply, teaching is about channeling this directionality.

I have observed throughout, that this educational philosophy can, if misinterpreted, be accused of feeding into simplistic constructivist conceptions of the role (or lack thereof) of teaching and teachers (see Chap 3.3). Hence, some additional clarification on the role of the teacher in these accounts is helpful: this emphasis on purpose through collective practice, is not to deny the reality, that, as a teacher, it is often entirely necessary to scaffold the learner's attention and activities – to *narrow,* in a certain sense, the frame of focus and action, until the learner can eventually evoke, enact, and most importantly, *participate* in the activity/process independently, as in Vygotsky's celebrated *zone of proximal development.*[182] The way practices are presented and carried out in the classroom by teachers provides pathways, forms (mediating artifacts in the Vygotskyian tradition) for the sustainment of collective study. This is a basic implication of semiotic theory, that is often, as Stables (2012) notes, not

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[182] We can say with the likes of Jan Masschelein that such a pedagogical orientation is not about manipulating or forcing attention, but rather, engaging in practices that "make attention possible". See, for example, the following interview (retrieved, April 2020): https://www.youtube.com/watch?v=WPK3Fffu1DI

fully recognized in education: "[i]t is an important truth little acknowledged in educational theory that that which makes knowledge and understanding possible – our interpretive frameworks including our assumptions and prejudices – is also that which limits them" (p. 46). However, we must again here emphasize that, central to this event-centered account, these forms and constraints (scaffolding structures) are not passed on from the outside, but from within enacted and shared "forms of gathering" (Masschelein & Simons, 2015, p. 85) that find their purposes through the continuity of pedagogical practices. Following from this, we as teachers do not, strictly speaking, *possess* knowledge nor precisely do we scaffold a route for our students to achieve or arrive at this knowledge. Rather, we enact it in relation and co-participation with our students.[183]

Knowledge is evoked in the very moment of use – when the phenomenal present meets a situation of logical incompatibility, where more than one possible response opens-up to the organism (see Kull, 2018). Here, at this juncture is a possible richness of decision-making, where learning-as-choice *can* emerge (cf. Kull, 2018). This is the freedom that resides within skill, *within the cut*.

8.1.4. Summary

In his recent, previously referred to article "Semiotics and Transitionalist Pragmatism" (2019a), Andrew Stables articulates the broad educational significance of conceptualizing the sign as a feature of an event versus an understanding of the sign as a pre-existing representation. He observes that not just any kind of semiotics is suitable philosophically – semiotics, "[w]here it is employed as an applied discipline in textual

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[183] This is, however, not the same thing as prescribing the same educational methods/practices simply because they are the standard, inherited, prescribed or *conventional* way of doing things. The use of the word convention here is deliberate, as it sheds light on one of the main aspects of the semiotic theory of learning that I outline: from a Peircean learning theory, signs in general (and symbols in particular) are the result of *habit-formation*, – "whereby a self that dwells in its own practices is recursively generated by them" (Ingold 2017, p. 22). – again, not the reduction of complex phenomenon to a set of conventional (or, arbitrary) signification rules (rules of decoding and encoding), from which learning can be determined and measured (chap 7). Habit-taking is thus what binds nature-culture divisions. I have argued through Part 2, that such a narrow conception of learning as (human) symbolic processing or computational learning, leads to a devaluing and lack of emphasis on embodied, pre-verbal forms of knowing. Peirce's conception of the symbol is grounded in signification becoming stable and conventionalized through the regularity of habit – not specifically in the kind of symbolic processing implicitly or explicitly associated with the human capability of *thinking at a distance,* or signification that can be abstracted from its context of occurrence (see 8.2.1 and 8.4.2).

studies, [...] often rests on representationalist assumptions, and where it is conceived theoretically, [...] often rests on a strong foundation of Cartesian mind-body dualism" (p. 786). As we have seen with Augustine, a notion or concept of sign (some way of thinking about organism-environment mediation) is often at the root of educational philosophies, whether it is overtly acknowledged or not. Stables explains that the orientation in *some* semiotic theory – often associated with a dyadic conception of the sign defined through difference and binary opposition, characteristic of semiology and language-centered structuralism – is still, implicitly or explicitly, at the epistemological root of many educational conceptualizations that stress that TWITBL is a stable, substantive entity, and thus by inference, "can be learnt and taught about... in isolation: that is, the curriculum can be atomised and stepped, and progress against curricular elements that can be validly measured" (p. 784).

In contrast to such representationalist approaches, I have argued that one of the main insights a non-dualistic conception of the sign brings to education resides in recognizing that the *event of signification* cannot be ensured, and thus pedagogy requires bringing renewed attention to the present-unfolding. With this, comes the important corollary recognition that such pedagogical events are, in large part, either harmed or destroyed by a rapacious desire for managerial control in education. Stables (2019a) explains how a conception of the sign as a representation of a pre-existing entity (objects, or data/information) is not only a theoretical issue, but has major implications for the way we understand the work of learners and teachers:

> Thus the teacher's subjectivity is not considered (or is considered as potential interference: the teacher requires skills, not judgement), and the student either 'understands' (gets right) or 'does not understand' (gets wrong) the concept being taught, [...] Meanwhile, the subject matter –that-which-is-to-be-learnt – is reduced to inertness and is not open to interpretation. The subjective must be repressed so that the objective can be acknowledged. If, however, the sign is regarded not as a gloss on, but rather as a really existing element of reality, free from specific attachment to a noumenal discrete entity (whether conceptual or material), the subjective-objective bifurcation can be dissolved. (pp. 783-784)

Education and pedagogy oriented toward enacting meaningful experiences (events) involves recognizing the *ontological reality* of signs, that is, relations, over and above reductions to mind-independent or mind-dependent reality. Hence my focus in these articles on a revised (late scholastic) semiotic conception of objectivity, as that which

enters within the 'objective' awareness of some organism (that is, carries meaning within their species-specific umwelt. See Chap 4 and 7).

Meaning emerges from out of the continuity of experiences. Furthermore, meaning is never static but the result of a changing set of relationships, enacted by the learning-subject themselves. Because of this essential flux there can never be complete understanding or complete misunderstanding in educational encounters. However, and as will be discussed further in section 8.4, this does not imply a relativist pragamatism where truth is only "what is useful to believe" as James famously asserted to Peirce's dismay, and where semiosis seems to solely and explain itself through itself (cf. Eco, 1979). Recall, that Peirce's philosophy rests on a scholastic realism, which has been discussed in chapter 3.3 (à la Eco) as a kind of *minimal* realism – which implies that, to return to the 'cutting' metaform, although there may be many variable ways to 'make the cut', there are still real grains that determine how and in which direction we make these cuts. Semiosis is a *continuous* process and as such, it is continually unfolding, as the organism's relationship to the environment is always being actively readapted.

I have argued that the flow and directions of teaching and learning must be receptive to this essential flux and indeterminacy. This implies, as Stables explains, that complete understanding or knowledge is impossible, and furthermore, that "TWITBL can never be taught or learnt in isolation: the greater the effort to atomise the curriculum, the more reduced the opportunities for learning; TWITBL can never be fully understood or fully misunderstood, but merely *increasingly explored*" (Stables, 2019a, p. 784, emphasis added). Stables' Correct/complete Understanding Fallacy puts into perspective the messy and imperfect realities of being-in-practice and, as I'll argue further in section 8.3, the necessity of fluid transdisciplinary inquiry in education. Certainly, one can be more successful or less successful in their practice, but one is only *incorrect* if we recognize success as the attainment of a pre-defined archetype (i.e. as in classical idealism or the narrow performativity of much top-down educational policy and curriculum). Recognizing the sign as a feature of an event requires the corollary recognition, that, as Peirce says in a cogent expression of pragmatism: "A sign is only a sign *in actu* by virtue of its receiving an interpretation" (CP 5.569). It represents just one point along an unfolding continuum of semiosis, the potential (firstness) becoming actual in our ongoing experience (thirdness). This site, where something can emerge, not from nothing, but from our being in practice and being in-habit, is the phenomenal site of much of my

philosophical analysis in these essays, precisely because I believe and argue that its conceptual and practical potency has been neglected by much educational theory and research.

To review our broad outline: a conception of the sign as a feature of an event implies the direct participation of both the learner and teacher *within* the unfurling *events* of an educational practice. Learning, thus conceived, is not passed down through static information or representations (rules for encoding and decoding), but rather, channeled and enacted within the continuity of being-in-practice. As such, it cannot be determined or implemented from the outside, from top-down mandates. In fact, it cannot be ensured at all. As I've continually argued in these articles, this implies the importance of developing a philosophical-educational framework that can describe and account for processes of emergence, continuity, and change, *non-deterministically.* As I have noted through these essays and reiterated here with Stables (2019a), not any kind of semiotics is suited for this task, and I am proposing that we should follow and take notice of the ecological orientation and framework of (Peircean informed) biosemiotics. I have implicitly and explicitly suggested that educational philosophy, rather than analytically reducing educational dynamics to concise sets of necessary and sufficient conditions, should inquire to understand these phenomena and concepts on a broader continuum. This research program ("of seeking continuities where discontinuities have been thought to be permanent", such as human/animal, mind/body, language/experience, etc.) is, I have maintained, precisely what is offered to us through Peirce's doctrine of continuity, or, *synechism* (see Chap 1 and 4, and what I call the *Continuity Principle* for edusemiotics). Furthermore, part of a synechist perspective toward education involves acknowledging that, because teaching and learning unfold in particular places and times with particular gatherings of people, as processes they are always historical and temporal, and thus, our relationship to what we are studying, to TWITBL, is continually open to re-interpretation.

8.2. Connections to knowledge and practice

Each of these articles (throughout Part 2, in particular) in some way highlight the foundations of this pedagogical orientation in my own career as a musician and music-teacher. As such, I will now take a moment to further explain and situate some of these insights and perspectives in reference to music learning and music education. Through

this application and presentation, I will aim to further contextualize and explicate how this meaning-based and ecological orientation toward learning contributes to contemporary knowledge on learning theory, education, as well as semiotic theory and philosophy more generally.

8.2.1. Music learning as semiosis – something more primary than symbols

In his book *Ways of Listening* (2005), Eric Clarke puts forward what he calls an ecological account of music perception. He says in the introduction (p. 4) that "[m]any previous approaches to musical meaning have adopted either a linguistic or a more generally semiotic perspective, rather than the perceptual approach that I adopt here". He goes on to describe perception as "the awareness of, and continuous adaptation to, the environment", which is to say that the object of such an ecological approach is not "musical meaning that arises out of thinking about music or reflecting on music", through re-presentations or symbols, but rather through the sustaining relationships that mediate organism to environment, as expressed through the organism's *direct perceptual engagement* (as famously presented in the ecological psychology of Gibson, 1979).

The type of semiotic approach that Clarke is critiquing here is undoubtedly the anthropocentric variety associated with linguistic structuralism, stemming from the legacy of Ferdinand de Saussure. I must again stress, that this is *not* illustrative of the much more expansive Peircean approach, of which my theory and philosophy of education derive. One of the basic principles of linguistically oriented structuralism is that signs are given meaning through their embeddedness in larger sign systems. The signifier – the English word 'tree' for example, doesn't signify an actual tree in any motivated way – but only refers to an object-signified through an 'arbitrary' social convention. Associating the former linguistically dominated *semiology* with semiotics *in general* is a result of following what Thomas Sebeok calls the *pars pro toto* error (see Sebeok, 2001) – mistaking our human linguistic modelling as being emblematic of sign processes in general (a part for the whole).

However, there is reason for Clarke's avoidance of semiotic accounts, and this is precisely exemplified by the autonomous notion of musical meaning implied in the notion that the sign is a pre-existing entity explored in the previous section. Indeed, an over

emphasis on mental representation and symbolic computation seems to create more problems than it solves when it comes to accounting for the fullness of musical experience.[184]

The action/process of *musicking* relies upon both symbolic forms of cognition, as well as primary and embodied forms of modelling that our *definitively pre-symbolic* in nature. Music can, and is, represented and communicated symbolically, but this is not chiefly how music presents itself within our perception. We can say with Reybrouck (2015), that there is with musical perception, "an element of sense-making or semiotization, that addresses two [separate but related] approaches: symbolic thinking and sensory experience" (p. 5). From an experiential perspective, perception of musical phenomenon is continuous and proceeding in time. It is experienced as part of an ongoing flow of perceptual signs, and relies upon multiple sensory systems. On the other hand, the symbolic modelling of music (i.e., notation) "reduces temporal unfoldings to single representations with an all-or-none character, which lend themselves to symbolic computations" (Reybrouck, 2015, p. 5). This is notably a top-down process that, in one sense, makes communication more directly efficient, by making indeterminate and complex sensory-signification processes more determinate and thus, general. Reybrouck clarifies that these two approaches are complementary and not opposed in music, and it is possible to think of this kind of symbolic thinking as being essential to re-*cognizing* sound as patterned and musical in the first place. As evolutionary musicologist Gary Tomlinson (2015) explains, "music may be described in the broadest sense as organized acoustic informational flows not in themselves symbolic but always constrained by the surrounding operation of symbols" (p. 177).

Symbolic processing relies upon the application of discrete labels that can be interpreted outside of the perceptual flux. The conversion of musical phenomena into symbols is essentially the reduction of complex acoustic and social events to representations, or atemporal 'production rules' from which information can be inferentially derived (Chap 7).

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[184] This is still too often the approach taken by much social semiotic analysis. See Olteanu and Campbell (2018, p. 252) for a short critique, with reference to the relevant literature. Cf. Campbell *et al.*, (2020) for connections and analysis of the relation between biosemiotics and social semiotics.

The problem here is that *musicking* always involves embodied agents creating and perceiving it and does not proceed outside of time.

8.2.2. Skill, not rudiments

In terms of our broader conversation, I am proposing that theories and practices of music education should be able to account for 'emergent signification processes', explained outside of information processing accounts (often conceptualised through a narrow, non Peircean notion of symbolic learning) and a discussion of cognitive ability, or developmental stages. These accounts of learning and teaching fail to recognize that pre-determined categories of understanding and ability, often and frequently in practice, function to confirm what teachers and society think already, "to see what we think", rather than, as Masschelein says (in the earlier referenced interview, see fn. 183) "to put our thinking to the test" of the world. This has sadly been my own experience in formal education: early on labeled a dyslexic and slow learner, and subsequently, suffering all the various associations and subtexts that often accompany such labels through the ways my teachers engaged with me. As Stables (2019a) articulates, escaping the limitations of prescriptive theories of development and learning is indeed implied by recognizing the sign as a feature of an event:

> This means that the teacher's task is not first to evaluate the developmental readiness of the child, but rather to find ways of encouraging the student to explore the relations that constitute the subject matter, using professional judgement in a more flexible way to make best guesses about activities that the student might find interesting. The direction of travel here is quite different: teacher introduces student to subject matter via student's initial responses to it, which prompt teacher to guide (not instruct) student in further exploration of that-which-is-to-be-learnt. (p. 785)

This reflects my own approach to teaching creative improvisation ensembles, such as my role as a teacher-researcher in the CMPP (see section 1.2). I also believe this is why I arrived at, independent from my philosophical research, an intuitive event-focused approach to teaching musical ensembles, and subsequently, my teaching in general. The cultivation of a shared musical taskscape – from which new sonic possibilities (affordances) can be revealed through significant events – requires sensitivity as teachers to the unravelling of collective meaning-making processes: the way previous experiences grow and build upon one another through *dwelling in* shared practices. "Professional judgement", with such an approach to teaching and learning as Stables

describes, can't help but be flexible and emergent in the act – reflecting again the practices of makers and artists.

This implies a different curricular orientation to much conservative music pedagogy. Musical representations are not instilled from outside the student's experience but discovered and formed collectively within the act of habitualized music-making processes. What emerges from such shared experience are not general concepts, but *generalized possibilities* rooted in *singular events* that we have experienced together in class. This receptiveness and responsiveness to the unknown – to open flights of signs not yet determined – is central to learning to improvise and it is central to what I have described in these articles as a *pedagogy of novelty*. Curriculum in this understanding is, in large degree, emergent, but, as discussed earlier (8.1), this isn't to imply that TWITBL does not possess emergent *structure and form*: in many of the creative ensemble classes I teach including the CMPP, call and response activities naturally lead to more open-ended and exploratory improvisational activities, and this naturally occurs proportionately with the classes collective ability to absorb, adapt to, and anticipate new experiences.

The basic argument of much edusemiotic research, that both the life and learning process can be approached through semiotic-engagement (Stables, 2006) implies a collapsing of distinctions between 'knowing' (or intentionally) interpreted *signs*, and 'unknowing' automatic responses to *signals*. This orientation helps expose some of the lingering body/mind dualism implicit in much conservative pedagogy, specifically in regards to the discontinuity between conceptual/theoretical knowledge and embodied and pre-verbal knowing. This is exemplified by the conversion of embodied musical-*skill* (technique) into formalized rudiments. Again, important in this basic conceptualization is that we don't "differentiate between a 'mind' that processes 'signs' and a body (in the broadest sense) that responds unthinkingly to 'signals'" (Stables & Semetsky, 2015, p. 147).

As touched on earlier, this dualism is both implicitly and explicitly operative within conservatory-style music education practices, which often "take for granted the existence of an 'educable' inner intelligence distinct from a 'trainable' bodily organism" (Stables & Semetsky, 2015, p. 33). The implied model of music-learning is: concepts and musical information are *encoded* in formal symbolic systems to be *decoded* by the 'higher'

cognitive faculties, while actual technical acumen is largely represented as a rote bodily process that is educationally transmitted through systems of *rudiments.* The body is dumb and severed from the higher processes of intellection. It is with these higher conscious and rational processes (and decidedly *not* more embodied and intuitive forms of perceptual 'knowing') where artistry is philosophically 'located', often signified in the ideal form of the master composer and the text-based composition. Musical cognition in this estimation is largely a *deductive* process of computation, internalized by an underlying and instinctive *bodily automatism*, that mainly learns through rote repetition and conditioning. The embodied aspects of music-making are certainly present, but they are severed and disconnected from symbolic aspects of learning.

This is regrettably the way ear training and theory are often approached in formal classical programs such as the Royal Conservatory of Music (RCM) method in Canada: where the emphasis is placed heavily on recognition drills (interval, chords, etc.), and melodic and rhythmic dictation.[185] Such approaches inevitably focus on the *mechanics and skiils* of ear training as they are translated and represented through western systems of music notation, as well as highly systematized programs of rudiments and theory.

For example: to perform well on an RCM *Harmony Grade 3* exam, the student need not even be able to *hear* baroque (choral) harmonies in the style of Bach, but instead (and I've seen many students and teachers adopt this exact approach) simply memorize certain baseline production rules (algorithms) and from these, derive (deductively) certain necessary musical inferences. The students in these cases will write Bach-style choral harmonies, but not consider aesthetic and qualitative components of harmony and composition, nor necessarily even 'hear' (that is, embody) or imagine their creations in any meaningful way. Unfortunately, such focus on mechanics and computation often comes at the neglect of the ways in which sound and

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[185] See the account in Jorgensen (2003, pp. 35-40), of the national standards movement and its effects in proliferating 'a banking model' in music education; see also David and Jordan (2007) for a tracing of the "learning-pathways" of the typical western classical music student; cf. the interesting history and development of the RCM in Schabas (2005). Finally, see the theory of *transformative music education* (TME) put forward by O'Neill (2012), and the application to edu-semiotics in Campbell, 2017, pp. 19-21). Related to my argument here, O'Neill's TME involves a pedagogical turning away from positivist expectations in music education, which tend to view learners "from within a deficit versus talent/expertise framework" (O'Neill, 2012, p. 166), following the standards and expectations characteristic of "formal conservatoire approaches to music learning" (p. 169).

music are actually perceived and felt by learners,[186] and are thus generally divorced from the activity of playing music itself.[187]

Thus conceived, rudiments (whether they are conceived in terms of instrumental technique or theory) are not pathways for musical growth and development, but rather, a sequential series of calculations to be deductively enacted, and once mastered can be narrowly transferred to other (higher) domains of musical knowledge. I have been continually arguing throughout this thesis that adhering to curricular models of these sorts is to assert implicitly that "there can be no direct transmission of information from one context of enactment to another without rules of encoding and decoding that are themselves context-independent" (Ingold, 2017, p. 10). These encoded representations of musical phenomena are (to reference Freire's banking-model) deposited into the passive pupil, taking no consideration of the local and singular dimensions of education nor the continuity of experience characteristic of an educational/artistic practice. Although no doubt derived in origin from traditional forms of social learning –of keeping skills alive from one generation to the next— these standardized and instrumentalized methods of teaching do nothing to recognize that "[n]either verbal [or musical] sounds nor graphic marks… come with their meanings already attached; rather, they gather their meanings, in the same way that things do, from their enrolment in the shared experience of joint activity" (Ingold, 2017, p. 11).[188]

In terms of the Peircean framework I have articulated, the emergence of new firstness from the regularity of habit, of thirdness, represents the enacting of learning as

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[186] That is, a more phenomenological perspective on music learning, such as theorized in Ford and Green (2015), or in van der Schyff *et al.,* (2016), for example.

[187] The ecological approach I'm presenting, as informed by biosemiotics and the corresponding *Modelling Systems Theory* (Sebeok and Danesi 2000) recognizes that all human knowing is initially grounded in sensory interactions and embodied forms of cognition. Thus, before we have symbolic representations, we have iconic and indexical forms of knowing that are rooted in our species-specific embodied morphology. These are affective and quality-driven action-habits, that gradually become more self-referential and general through continual use, eventually forming the basis for more abstractive and conceptual modelling – the "thinking at a distance" so characteristic of modern humans, with their capacity to not only use signs, but to know that there are signs. (cf. Tomlinson 2015, p. 15).

[188] Learning to hear and perceive music, not as/through symbols or notes, but as *sonic/vibrating events* in a *shared signifying environment* (see Reybrouck, 2013, 2015), is a process that both student and teacher jointly engage in. Therefore, it is logical to assume that approaching and conceptualizing music pedagogy more ecologically may help us as teachers develop less striated and bounded music-learning ecologies (as presented in O'Neill, 2017) for students.

"a richness of decision making" that is cultivated through being-in-practice. To return to Ingold (2017), this is not a process by which we learn solutions to problems *outside of the event,* but rather, how to "cleave the event from within" (Ingold, 2017, p. 42). This orients us to the 'cutting' metaform (cf. Danesi, 2013) revealed by the PIE origins of the 'skill' concept, discussed earlier. The woodworker remains a fitting example: It is only through entering into habit with the wood, and the extension of the body through tools, and the 'cutting' movement itself, that this activity becomes intimately integrated with the perception of action-possibilities within the woodworker's phenomenal world (umwelt). "The *skilled* woodworker cuts the wood, not as mere matter to be succumbed to our volition, but through *following its natural grains*." Remember from earlier: "It is a decision taken in the cutting, not in advance of it, and alters the course of the event… '*in the event'*" (Ingold, 2017, p. 42).

We can see how such an approach to education, rooted in collective enskillment processes is not coextensive with the broad and over-reaching 'skill-talk' of many a curriculum document, nor Barrow's discreet and precise analytic definition. Rather, enskillment is precisely non-discreet and concerned with establishing continuity: continuity from one moment to the next, between teacher and learner, and ultimately between learner and their part in a changing *ecology of relations*. Technique, content, knowledge, are not extrinsic or outside of these rituals and events. They are not in this sense *re*-presentations of knowledge at all, but rather, *moments of presence* that emerge within a shared signifying environment, and a shared taskscape – where through collective *doing-undergoing*, knowledge, and also attention, presence (nowness), becomes possible. I have also shown that such an internal pedagogical perspective, 'within the event', exposes the overt dualism of traditional academic models of social learning, that separate mind from world, body from mind, and importantly knowledge from knowing/doing. Ingold's (2000) words help illustrate this important distinction as it is expressed in his classic *The Perception of the Environment:*

> Traditional models of social learning separate the intergenerational transmission of information specifying particular techniques from the application of this information in practice [...] Now I do not deny that the learning of skills involves both observation and imitation. But the former is no more a matter of forming *internal, mental representations* of observed behaviour than is the latter a matter of converting these representations into manifest practice[...] Through repeated practical trials, and guided by his observations, he gradually gets the 'feel' of things himself [...] in this

process, each generation contributes to the next not by handing on a corpus of representations, or information in the strict sense, but by introducing novices into contexts which *afford* selected opportunities for perception and action [...]. (pp. 353–354)

Through engaging in practices together, students learn what it means (and what it feels like) to cleave the event *from within*. That is, these rituals of practice present opportunities, affordances, for getting inside the process – this helps students learn, not established protocols for action/response, nor representations, but more directly, how to 'go on' learning, within a particular form of living (a practice; a way of being in relation).

8.2.3. Summary

So far in this concluding chapter (section's 8.1 and 8.2) I have outlined the central aspects of the philosophy of educational practice implicitly and explicitly sketched in these articles through the framework of event-focused education. This focus on three familiar sites (Teacher, Learner, and TWITBL) has helped me to keep my analysis focused on the actual work of teachers, learners and what they choose to study (recognizing that this choice is continually being taken with each new educational experience and encounter). Important in such a conceptualization is that it remain non-prescriptive, and thus describe the educative process openly and generally, with attention to the most basic signifying dynamics being continually sustained through teacher, learner, and TWITBL.

Note that this broad-spectrum orientation is not to imply that this account of educational practice does not contain normative assessments. There are, rather, clear values and orientations being expressed, regardless of the fact that they are essentially non-prescriptive. For example, I have tried to articulate these pedagogical values through a reinterpretation of Umberto Eco's poetics of openness, as detailed in Chapter 3, which is in itself a radical commitment to engaging critically with what we "place on the table" to study, as both artists and educators. I have also tried to describe this pedagogical responsiveness through the lens of musical improvisation, to better understand *teaching and learning as an improvisatory act* (see Chap 7.6). I argue with Ann Chinnery (2015) and Gert Biesta (2017) for a particular kind of pedagogical responsibility, that involves being in and with the world without being the centre of the world, and that questions the essential taken-for-grantedness of those totalising orders

that decide (often in advance of educational events) what kind of knowledge and learning styles are acceptable and desirable to reproduce. As Chinnery (2015) observes, this involves questioning what voices and perspectives are being forced into the margins, into precarity:

> Pedagogical responsibility as a response to precarity thus means that we need to examine the educational systems, policies and practices that render some students unnecessarily vulnerable, and which categorize certain ways of being as inherently at risk. It is not about denying difference, but rather about what we *do* with those differences. (p. 8)

I have also maintained that the arts show a path toward acknowledging and enacting this kind of pedagogical responsibility – not inherently because they provide opportunities for self-expression, but rather because they present a way of sustaining ongoing dialogue with the world. Biesta (2017) explains:

> The ambition [with art-making] is not to master or domesticate – which would ultimately lead to the destruction of the reality one is encountering – but to come into dialogue, to establish dialogue, to stay in dialogue. Encountering the reality of paint, stone, wood, metal, sound, bodies, including one's own body, encountering resistance, in order to explore possibilities, meet limits and limitations, and out of this create forms, establish forms, and find forms that make existing-in-dialogue possible, that is what I see in the doing of art. (p. 66)

The connections here to ecological thinking (remember Bringhurst and Zwicky's (2019) "thinking like an eco-system" and their related notion of "poetic thinking") are made apparent if we bring in Jan Zwicky's distinction between domesticity and domination: "Domesticity involves use, but does not equate use with domination – it is, instead, the way a technological animal can express itself in relation to its environment without domination" (Zwicky, cited in Bringhurst & Zwicky, 2019, p. 35). Art and making processes present a way of being from which we can come to live in and with resistance without domination; to stay in that liminal space without succumbing to either world-destruction on the one hand or self-destruction on the other (Biesta, 2017, p. 65).

Following from this event and practice based account, I have also emphasised that close attention to the anthropology of education and the practices of makers and artists demands a corresponding learning-theory that doesn't separate embodied skill from intellectual/conceptual knowledge, and consequently, doesn't see knowledge itself as narrowly symbolic/computational but rather semiotic, relational and ecological. I have

shown throughout these articles how a Peircean informed, bio-semiotic theory of learning, is useful in addressing certain theoretical and philosophical deficiencies in other accounts of educational practice, which tend to be either materialist-behaviorist leaning or simplistically constructivist-idealist. Important in this conceptualization, I have argued, is a refined notion of symbolic signification (and consequently any conceptions we form of symbolic cognition) as revealed through Peirce's late semiotic philosophy, which doesn't see symbolic processing as narrowly human (associated with 'cultural' learning) and disconnected from the broader ecological continuum. In Section 8.4 we will reflect more deeply on what exactly is significant to take notice of in this reconceptualization of symbolic-learning that is revealed by late Peircean philosophy.

I will now explore some future possibilities and implications of this research, before going on to address possible limitations and criticisms.

8.3. Implications and possibilities for future research

8.3.1. transdisciplinary teaching, environmental literacy and education

A Peircean informed philosophy of education, meaning-based and ecological in its approach, has a range of research implications. In this section, I'll argue that by focusing *on what things mean* for experiencing subjects, and not what things supposedly *are* in an abstract and formalized definition, semiotic philosophy can serve to function as a bridge between science and arts-based education with strong implications for environmental literacy and education and even, as we'll discuss in conclusion, local/community based, place-based and Indigenous approaches to pedagogy.

Of course, focusing on what things mean for experiencing subjects is the aim of most qualitative research, and phenomenological and social semiotic research in particular. However, I have throughout these essays followed and highlighted a different (biological and ecological) tradition of semiotic research, that is, in several important respects, divergent from the text-based and language-centered approaches characteristic of much social semiotic research. Social semiotics derives from the foundational research of Halliday (1978) on the socially situated uses of language. In the nineties and early noughts, scholars associated with the New London Group extended Halliday's work and semiotic theories on language-use, to other (non-linguistic and pre-

verbal) *modes* of signification, while still preserving to a large degree Halliday's original emphasis on sign-processes associated with human linguistic modelling such as abstract-conventional signification and combinatorial complexity. This kind of thinking and methodological approach is highlighted in the following passage from the editorial article "Multimodality: methodological explorations" (Flewitt *et al.*, 2019):

> Hodge and Kress (1998), and Kress and van Leeuwen (1996, 2006) draw on Halliday's theorization of how people exchange meanings through socially situated uses of language, but they extend the focus beyond speech and writing to consider all semiotic modes with the same attention to detail for each mode. A key focus for multimodal research in this area is systematically to document and map the relationship across and between modes in texts, interactions, social practices, artefacts and spaces. The methods used in a social semiotic approach to multimodality therefore involve breaking down the object of study into its component parts, working out how the components – or modes – work together to make meaning, and understanding in what ways particular modal choices are shaped by the interpersonal, social and cultural contexts of their use. (p. 3)

This turn towards multimodality is indeed fruitful and important in educational discourses. However, we must note that biosemiotics challenges the implicit glottocentrism of social semiotics, by considering animal learning and environmental modelling (rooted primarily in processes of iconicity and indexicality) as a common frame for understanding semiosis (meaning-making) in general.

The interrelated ecological-educational conceptualizations researched in these articles directly entail these understandings by explaining and emphasizing processes and dynamics by which organisms engage, interact, and co-develop within their broader eco-systems. The future relevance and importance of this nexus of biological and educational theory that I have focused on in this collection is well exhibited by the fact that over the last several decades a set of conceptual tools have begun to be shared and utilized by both the life and the social sciences. As mentioned in the introduction, I have recently, with Kalevi Kull and Alin Olteanu, developed a conceptual framework that seeks to redefine cognitive/learning concepts as part of a transdisciplinary theory of knowing (Campbell, Olteanu & Kull, 2019). We have identified these as the shared ecological/educational conceptions of *scaffolding*, *affordances, resources* and *competences*, and the more foundational concepts of *umwelt* and *learning*. Part of this work involves redefining socio-culturally defined semiotic terms (such as, in particular the concept of resources, as stemming from social semiotics, and of scaffolding, from social-

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constructivism) within a more general and all-encompassing biosemiotic framework –
hence our sub-title "extending the conceptual apparatus of semiotics" (Campbell,
Olteanu, & Kull, 2019).

The integration of these variously used ecological and educational concepts into
a transdisciplinary framework stemming from both the social and life sciences will, I
believe, constitute an important contribution to educational research, which is currently
grappling with the need for more ecological and environmentally minded approaches
(Affifi, 2017; Fazey *et al.*, 2007; Gough & Stables, 2012; Lloro-Bidart & Banschbach,
2019). Recently, many semioticians and educationalists have observed that modern
educational practice in itself requires strong *transdisciplinary* inquiry that fluidly
integrates many subjects and approaches (e.g., Deely and Semetsky, 2017; Ingold,
2017; Seif, 2017). My next step as a researcher, will be to explore the implications of this
biosemiotic framing of learning for educational research, theory and praxis, specifically
through: creating interdisciplinary frameworks and approaches for curriculum and
pedagogy (e.g., Nikitina, 2006; Ross & Mannion, 2012); exploring ways of fostering
interdisciplinarity in university teaching and research (e.g. Kull, 2008; Lattuca, 2001;
Olteanu *et al.*, 2018); and bridging arts and science teaching through outdoor and
environmental education (e.g., Bunting, 2006).

As will be unraveled through this last chapter, this research provides
conceptual/philosophical possibilities for weaving science education, arts education, and
Indigenous place-based knowledge into holistic educational programs and curricular
approaches. Precisely through its broad ecological approach, this research suggests
strong implications for re-vitalizing often bounded and atomized classroom subjects,
mainly through emphasizing that knowledge is never fully *abstract*, but always rooted
and enacted within experiential encounters (events) that occur in/through locally-
meaningful places and practices.

For instance, Grade 6 students may spend class time learning about a river's
ecosystem. Arguably, this knowledge will be learned at a deeper level if connected to a
specific river in the school's community that students and teachers can actively explore
and experience together as a class. Further pedagogical opportunities can be gleaned if
the significance of this river to a local indigenous group is taught by a community elder,
or explored through arts-based inquiry (songs, dances, drawing, etc.). People, after all,

enact science—and people are not merely rational processors of abstract knowledge but *a*rational (more than rational) meaning-makers (Stables, 2019b). Within a meaning-based (synechist) approach to educational research, special emphasis must be placed on the way *continuity is enacted* between differing pedagogical practices and the broader learning ecologies students inhabit – see the work done by O'Neill (2017) in this area, and recent biosemiotic informed educational research on school-design and school experiences (Daniels *et al.,* 2019).

One of the central points of this research is that attention to learning as environmental modelling (meaning-making across nature and culture) is frequently neglected in educational theory and practice, with its often-implicit anthropocentric assumptions that privilege symbolic processing, and the types of human(-cultural) learning associated with it. Following my stay at Tartu (see Chap 1.2.2), supervised by ecologist Timo Maran, my most recent research has begun to more directly turn to the fields of environmental education, environmental literacy, and environmental humanities.

Ecosemiotic (ecological semiotics, a branch of biosemiotics) developments (Maran & Kull, 2014; Maran, 2018; Nöth, 1998, 2001) highlight and suggest new approaches and orientations for environmental education, specifically in emphasizing the dynamics and importance of humans' (sign-mediated) relations to animals and the environment. As a Cree elder put it, in the context of a public talk on declining northern caribou populations and what can be done about it – "don't worry about the caribou, worry about the human, worry about our relationships".

By approaching meaning-making processes ecologically, these conceptualizations may be of service in developing a *strong sense* of environmental literacy, whereby students recognize their place and impact in a wider ecology of relations and cultivate the conceptual toolbox to adequately interpret and engage with these relations (see Stables & Bishop, 2001). See Table 1, below for a summary of this distinction between weak and strong conceptions of literacy and the importance of a notion of literacy-as-semiotic engagement in this conceptualization.

Table 1. Summary of strong and weak conceptions of environmental literacy (adapted from Stables & Bishop, 2001, p. 94)

Strong environmental literacy	Weak environmental literacy
Broad view of literacy (literacy as semiotic-engagement)	Narrow view of literacy (literacy as reading and writing)
Broad view of text (everything can be seen as text)	Limited view of text (e.g. landscape cannot be seen as text).
Environmental literacy is broader than environmental education.	Environmental literacy is subset of environmental education.

If life and learning are understood as semiotic-engagement, then environmental literacy constitutes *all* the interpretative competences for meaning-making in relation to environmental phenomena and issues. This literacy/competency is undergoing constant change through the learning/life process itself. This suggests an approach to environmental education that could transcend narrow disciplinary boundedness and "incoherent cross-curricular approaches that reduce environmental education to one subject among many [...]" (Stables & Bishop, 2001, p. 96). For example, Stables (1998) early on argued that the arts and humanities have not been traditionally incorporated into conceptions of environmental literacy, stemming from and also contributing to a *weak* sense of literacy – where environmental issues, and human (sign-mediated) relationships to the environment are viewed as not fundamentally open to interpretation, or involving the direct experiences and meaning-making of learners.[189]

As Timo Maran (2020 [in press]) has explored in his recent chapter "Applied Ecosemiotics": "by analysing sign processes, semiotics has a very special contribution to offer to other environmental humanities for understanding the roots of human induced environmental change". Timo goes on to outline that ecosemiotics locates *three main activity centers* within the *ecosemioticsphere*: "Semiotic potentiality of the material environment; 2. Communicative relations between individuals and groups belonging to different biological species (including humans); 3. Human cultural texts with their structure and memory". These three activity centers combine into *two main contact zones,* "1. The material environment as a vehicle of mediated communication; 2. Cultural representations of environment as means for social communication" (see Table 2). My

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[189] "An environmental education which runs independently of an exploration of cultural, aesthetic, personal and even irrational views of the environment will prove insufficient to our needs, as it will harness not 'hearts and minds' but merely part of the mind, in a limited range of contexts, and with a limited view of the Earth as essentially mechanical and liable to breakdown (the catastrophic view of nature) but not to improvement. The development of a strong conception of environmental literacy thus has the potential to result in an increased care for the world in a way that conventional models of environmental education alone cannot" (Stables & Bishop, 2001, p. 96).

hypothesis, informed by my conversations with Timo, is that this framework is of practical educational relevance: by focusing on these sites of activity and contact zones (as well as their corresponding conceptual tools[190]) students may interpret and make sense of different, and often contradicting, environmental texts, discourses, and meta-languages, as expressed variously for instance in: environmental policy; media and journalism; in art and popular culture; in curriculum discourse; in environmental social movements; and within Indigenous(/long-standing) cultures, etc. Each of these signifying systems imply different ways of relating to the *more-than-human world*. Students need to be receptive to the kind of *cultural cover up* of environmental issues, as Maran calls it, that can occur within highly self-referential, positive feedback systems (i.e., symbolic systems). Traditional environmental education and literacy does not adequately or sufficiently emphasize the importance of being able to recognize, interpret and engage with this essential multiplicity of environmental communication. Here, I argue, that ecosemiotics and ecological (biosemiotic) learning theory has strong methodological potential: first and foremost by offering a transdisciplinary and pedagogy-guiding conceptual/philosophical framework, but also, potentially even a method for conceptualizing and conducting new forms of qualitative research (see, for instance, Maran's (2020) "event-repertoire analysis" as an example of qualitative, observer-dependent ecological methodology).

Table 2. Types of ecosemiotic activity centres, their contact zones and the placement of conceptual tools (adapted from Maran, 2020 [in press])

2.1. *Semiotic potentiality of the environment*	2.2. *Environment as a vehicle of mediated communication*	2.3. *Direct communicative relations among humans and animals*	2.4. *Environmental representations as means for social Communication*	2.5. *Human cultural texts in their relations with environment*
Perceptual affordances Resource criterion Ecofields Environmental signs	Environmental mediation Semiotic pollution Semiocide Semiotic allowance	Biotranslation Umwelt transition Ecological codes	Semiotic modelling Transposition of meaning Dissent	Replacement of 0- nature Nature-text Representational / Mimetic / Complementary / Motivational relations

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[190] See table 2 for interesting and educationally relevant ecosemiotic concepts, such as for example, "semiocide", or, the destruction of the signifying environment and communicative mediums necessary for the life of non-human species (such as, for example, many small animals in cities unable to hear or perceive predators due to increasing traffic and city noise).

8.3.2. Local, Indigenous pedagogy

Besides these connections to environmental education and literacy, I strongly believe that this research has relevance and connections to emerging practices of Indigenous and local pedagogy. What I offer here in this section and further in section 8.5 in relation to Indigeneity represents a kind of preliminary thinking of what I hope will become a much larger project. This orientation is driven by the understanding, articulately presented in Hern, Johal and Sacco's (2018) *Global Warming and the Sweetness of Life,* that any understanding of an "ecological politics, the politics required to answer global warming, must acknowledge that the domination of other-than-humans and the land is made permissible by the domination of humans by humans" (p. 94). This is to assert that the projects of decolonization, indigenous land soverighty, and ecology are essentially interconnected.

My contention is that such a way of thinking through education, and how humans enact it from the inside, could in effect contribute to a de-colonized and locally-based approach to educational practice and curriculum, particularly relevant in a settler nation like Canada (cf. Battiste, 2019; Greenwood, 2019; Stables, 2019b).

Before launching into the specifics, I should mention, that, though not detailed explicitly in these articles, the twin work of de-colonizing the self and the exploration of pedagogy-as/through-place has been a fundamental aspect of this research journey.

This is, in short, the difficult contemplative work involved with coming to terms with the intellectual and spiritual poverty that comes from being a settler and living in settler culture. At a basic level, I think this has always been upsetting to me, born and raised on the West Coast of Canada— how we are often completely dim to the land we inhabit and living next to mountains, rivers, and places, with their names and stories removed, unaware of their broader spiritual, ecological and historical significance.[191]

We have already observed that "forms of gathering" and "study" are always enacted *in and through places* – notably places with their own stories, peoples, histories and unfolding trajectories. To study in places involves looking, not only outwardly, but also at our own internal resonances and conflicts with the places we dwell in. Therefore, I would argue that (critical) pedagogies of place (cf. Bowers, 2008) must confront not only the outward manifestations and legacies of colonization (often proliferated through schooling) but also, the arguably more foundational work of *de-colonizing the self*. Part of this work involves acknowledging what has been rejected or silenced through the school and through education. Lilburn (2017, p. 5) says, referencing the words of poet Robert Duncan, "[t]he community that is the school of the truly formed self […] is very large […] This is a gathering that includes everyone, especially 'all-the excluded orders' […]".

For some scholars and activists, fully acknowledging the ongoing legacies of anti-indigeneity, land-theft, and displacement (as well as the concordant exploitation of the natural environment), deeply entrenched in settler cultures, necessitates a moving away from *place*-based education to *land*-based education in environmental education research (see Scully, 2012; Greenwood, 2019, p. 368). This shift is well observed by the 2014 special issue of the journal *Environmental Education Research,* "Land and

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[191] Interviewing and dialoging with people has been an integral part of how I have come to address this spiritual lack, along with being a fervent student of PNW anthropology and art. See, in particular, my sound-poem documentary interview with Indigenous painter and activist Yuxweluptun:

https://philosophasters.org/blog/2018/4/9/lawrence-paul-yuxweluptun-philosophasting-philosopher).

Also, see my interview with poet-philosopher Tim Lilburn (reproduced in Appendix A), who says, contrary to top-down mandates such as the Truth and Reconciliation commission, that we are, as of yet, still in a stage of "pre-conversation" — unable to even dialogue with this land and the people who have taken care of it for millennia, until we reach deep into our own interiority as well as our own spiritual and contemplative traditions. See https://philosophasters.org/blog/2019/8/12/an-interview-with-tim-lilburn-interiority-place-de-colonization).

education: Indigenous, post-colonial, and decolonizing perspectives on place and environmental education research" (Tuck *et al.,* 2014).

Land education, these editors observe, calls us to more explicitly recognize indigenous connections to land as central to environmental education, to recognize "both the role of Indigenous cosmologies in practices of land education, as well as the necessity of centering historical and current contexts of colonization in education on and in relation to land" (p. 1). Calderon (2014), in his contribution to this special issue, accentuates the problem clearly, stating "land education takes up what place-based education fails to consider: the ways in which place is foundational to settler colonialism" (p. 33).

That place is foundational to settler colonialism and functions through settler culture – particularly in obfuscating and erasing the lived realities, knowledge and educational practices of indigenous peoples – is indeed important to understand and grapple with, and I will return to this issue again in Section 8.5. However, what I am further emphasizing is that behind the immigrant or settler's inherently distorted notion and perception of the place/land they have come to inhabit, is a profound inability for what Lilburn describes as *autochthonicity* – an inability to be in the world as if it were home. This kind of more foundational, contemplative and interior work is vital for the meaningful possibility of decolonized, land-based education. This is *decolonization as soul work* (Greenwood, 2019).

To be in the world "as if it were home" involves acknowledging the significance of land; not only rhetorically – as through for example, land acknowledgements – but also existentially and spiritually. Place-based pedagogies must deeply confront issues of land rights and sovereignty but also, the entangled and overlapping histories and ecologies that make up our personal relationships to place.

If this is your land than where are your stories? (Chamberlin, 2003). I remember relearning that "the Lions" – the majestic twin peaks visible from most of Vancouver – were "the Sisters" for the local Squamish peoples, and symbolised a peace treaty that occurred between the Squamish and the northern Haida people after twin sisters married Haida twins, ending a multi-generational feud between the nations. I remember first reading about this in E. Pauline Johnson's (1913) book of stories told and retold by Chief

Joe Capilano, *Legends of Vancouver*. This continuity was important to me, as I formed a relationship with the legacy of Haida art spread throughout the city, in particular the awe-inspiring collection at the UBC Museum of Anthropology and the Bill Reid sculptures spread throughout important city buildings (e.g. YVR Airport, Simon Fraser University), and especially, when I later had a chance to travel to Haida Gwaii in my adulthood. For instance, more recently I have formed a relationship with the language itself, as well as classical Haida poetry and storytelling, in particular the work of the blind, poet Ghandl (see Bringhurst, 2000).

Central to this conceptualization, is an expanded notion of pedagogy and schooling – where education is primarily about establishing connections to land and local community. Through cultivating a (synechist) understanding of education, as a *continuing* human practice, Indigenous pedagogical orientations like a notion of *place-as-pedagogy*, (or landscape-as-pedagogical-text) appear as central, not peripheral, to the educational enterprise.

As already touched on, this research has involved me turning to the anthropology of education and to reflect on and study seriously the educational practices of Indigenous peoples. This line of inquiry is not in anyway new. For instance: in the 1943 article "Our Educational Emphases", anthropologist Margaret Mead poses a very simple and direct inquiry, asking what constitutes education in "the broadest sense" of the term (p. 633), as a *continuing human activity* and process. More specifically, Mead is asking, *how, and from what basis, can we understand the educational processes of traditional Indigenous societies as continuous with the forms of education practiced in modern industrialized society?* Not what separates or distinguishes, but rather, what *connects* the child in Manhattan with the child in a South Pacific tribe? For Mead, the primary connection is that, *"both [children] have everything to learn"* (1943, p. 633, *[emphasis added]*).[192] In Mead's account, education is premised on the pragmatic and concrete realization of a *regulative ideal.* Not a utopian ideal, but an open-ended aim to guide us in our pedagogies, the basis of which can be expressed in the simple aphorism '*anyone can learn anything'* – or, put differently, *we don´t know* what children (or people

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[192] "Despite the tremendous difference in what the New York infant and the New Guinea infant will learn, there is a striking similarity in the whole complicated process by which the child takes on and into itself the culture of those around it. And *much profit can be gained by concentrating on theses similarities*..." (Mead, 1943, p. 633)

generally) *are capable of learning.* This is for Mead the necessary and basic pedagogical and generative commitment and responsibility, which is simply, a love for the young and a love for the world. To hold knowledge, to study it, is to take care of it.[193]

The focus of Mead's early 20th century critique is clear and direct, and it rings true to this 21st century historical moment: for her, it is precisely this basic pedagogical creed that has been co-opted by technocratic educational reforms, which demand that – due to a host of colonial, industrial, economic, and societal pressures – *learning be productive* and teachers (in particular) be accountable to this productivity. Mead argues that pedagogical processes in human societies are broadly defined by the fact that *an emphasis on learning is more primary and foundational than an emphasis on teaching* (existentially, but also culturally and biologically). By contrast, she observes that in modern *globalized* society "our concepts of education have been shaped by the will to teach, convert, colonize, or assimilate" (1943, p. 63) students, rather than to channel or foster the process and action of *learning* itself. Based on the ethnographic insights of her time, Mead concludes that the consistent meaning of education in human cultures is *to create forms of continuity* (in particular, intergenerational forms). Mead explains that, in stark contrast to the pedagogical practices and aims of colonial education – which enforce standardized modes of thinking and doing and radical forms of *dis*-continuity between family, community, and environment – this kind of *pedagogical* continuity is performed and enacted in the service of encouraging **adaptive responsiveness to future uncertainty** by connecting learners with the (locally) meaningful knowledge and practices of their community and place. Mead's approach, like the educational philosophy that I present in these pages, requires that we recognize *the essential continuity of learning, teaching, and schooling.*

To outline the significance and continuity of this conceptualization with Indigenous practices of education, and in particular the notion of pedagogy-as-place, I will briefly

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[193] We can observe these values at the intersection of anthropology and education in Ingold's recent title (2017) *Anthropology and/as Education,* and his proposal that the telos of anthropology is ultimately educational. See my interview with Ingold about this book and his views on education and practice (also reproduced in Appendix A):

https://philosophasters.org/blog/2018/4/15/tim-ingold-on-improv-writing-and-the-future-of-education

describe and reflect on a particular and time-honored enacted school/pedagogy, one only 160km from my home in Vancouver: The sacred Stein River Valley – where two great rivers meet, the Fraser and the Thomson — is recognized, by many peoples of the Pacific North West, interior as well as coastal, as an important pedagogical and spiritual site/school (see, for example the rather extensive ethnographic account in York, Daly, & Arnett, 1993; cf. Wickwire, 2019). People travel to this mountainous valley from all over the region to *suspend* themselves from everyday life and its demands (in the sense of scholé, or *time free from the demands of productivity,* cf. Masschelein & Simons, 2013); *to study*, through a variety of practices (fasting, praying, learning about plants and wildlife, engaging in practices of collective dreaming) at local sites of significance. This is the basic idea that *dwelling-in* and the *coming to know* important local landscapes and ecologies – etched with significance through continual human involvement and practices – is central to the educational enterprise. These *significant places* represent *sites* of a learning-course or curriculum and contain essential knowledge (curricular materials) that students learn from – as part of their progress through graduated educational stages, with the aim of eventually obtaining an important societal and worldly position (a healer/doctor, a shaman, a hunter, etc.). Pedagogy is enacted in place, through accessing shared modes of dwelling in an environment of significance. Living, thus conceived, is not reified or separated from learning: "Living is semiotic engagement (Stables, 2006), a process of engaging with signs, each of which has different significance for us. Signs operate in space and time, and when spaces are occupied and used at particular times they become places. We are always in places*: places are the sites for the events that constitute our lives*" (Daniels *et al.*, 2019, p. 3, [emphasis added]).

In the Stein River Valley, some of this place-based knowledge is accessed and enacted through interpreting and contributing to the dozens of often hidden rock-writing sites, that mark caves and remote sites throughout the valley: painted onto the rock with red ochre paint, by previous students; establishing pedagogical continuity and offering important lessons to guide (channel) future learning-in-place (see Figure 8.1).
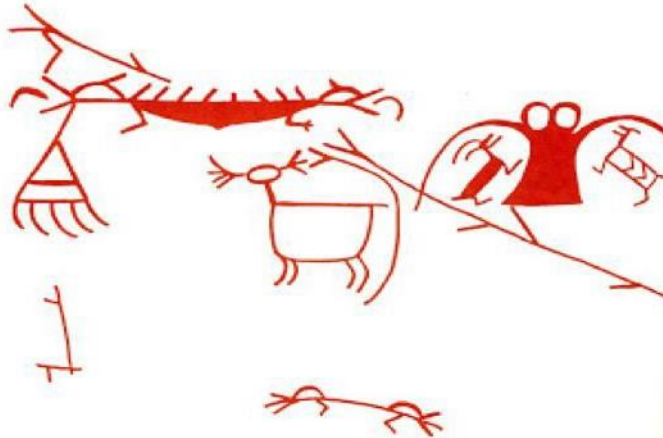
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Figure 8.1 Klu'bist, 'Nlaka'pamux pictographs, Stein River Valley. York, Daly, & Arnett (1993, p. 156).

This sign-system displays a mainly pictographic (iconic) orthography, although one with a complex system of symbolic (combinatory and self-referential) syntax, and therefore in some respects analogous to hieroglyphic writing. The positioning and spatial-temporal arrangement of lines, shapes, characters, and symbols, contain/index important information about the narrative structure and content of each writing-site/text.

Louis Phillips (Nlaka'pamux elder, Lytton, BC) recalls this particular educational practice of rock writing and this enacted site (or school) of learning, touching on many of the themes we have discussed:

> K'ek'awzik is over here, across the river, behind these hills. Can't see it from here. Powerful place. It's our school… K'ek'awzik is where you graduate from… Our young people were sent up there to K'ek'awzik for ten days. No food no water. If they stuck it out, they come out, graduated. [*A making public; establishing societal continuity*.] The mountain, that place talks to you. Some it doesn't talk to. Some are not successful. Sometimes it's like that place doesn't want to teach anybody. [*Learning and teaching can't be fully determined and reductively delivered.*] It hides away in rain and snow and fog. Even in summer time. That Wendy Wickwire and her husband, they wanted to take youngsters – 14 or 18 year old in there, as a learning thing. That place didn't want them. Either it wasn't ready for them, or they weren't ready for it. You were looking for those footprints, in the rocks. It's the same. Either you're ready to see them, or they just don't want to be seen now, not today. Sometimes they are ready to be seen, sometimes not.

> When you go in any time to train, and you stay ten days, you listen to what nature says to you. You listen and learn and you can come out strong and protected. That's real Indian education. Kids today go to school. They don't know anything about listening to the land. Wherever you go in the mountains, the plants and herbs tell you what they are good for. You tell them what you need to know. Talk to each other. Every tree in that place has something to teach. [*Learning from the more-than-human world;*

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ecological education.] You stay and learn all there is to learn in that place. Next time you go somewhere else and talk to all the plants in that place. You get knowledge and grow strong. K'ek'awzik is the place our young people went to learn […] Did they write their learning on the rocks? [*Establishing continuity through curricular materials.*] Maybe some did, in some of the places. [*Learning cannot be determined or ensured.*] Lots of writings in this country [*The importance of forms for meaning-making*].

Some come to me now and want to be Indian doctors. You want to be an Indian doctor? They want answers right away. I laugh at them. Tell them to go out and sit on the mountain…

For training to be an Indian doctor, it takes close to four years of going out and staying up in there. You go to a place and stay without food and water. You build your sweathouse there and you go in and spend the night. You learn there too. You can sing, you pray in the sweathouse. In the morning you put on your clothes and travel around that place and listen to the plants and the living things (Do this for about ten days). [*Shared practices in environments/places of local significance*]

The next time you do this, you go five or six miles further. Do it again and learn all there is to learn at that place. You stop one time on top of K'ek'awzik, after that on M'kip and other places. It's powerful too. Then you move up the valley, five or six miles maybe, all the way up to Cottonwood, learning the power of each creek and the peaks in the area. After about four years you are trained. You have your powers. You tap into the power of the river and all the creeks and mountains. When you come back you've learned a lot of what the land can teach you. (Phillips, as cited in York, Daly, & Arnett, 1993, xvi)

Quite obviously, much formal educational practice has not followed Mead's call, and has failed to take seriously or even recognize the importance of Indigenous, place/land-based educational practices and what they can offer educational thinking. It would be misguided and ignorant not to associate this obdurate lack of attention with the more general and comprehensive denial of indigenous educational systems, vital to the process and aims of colonization. With this, I have suggested, comes a rejection of local knowledge and pedagogy (cf. Stables, 2019b). Clearly, the "school" Phillips speaks of, and its accompanying practices (praying, fasting, collective dreaming, rock writing and reading, learning from the plants and animals, etc.) is not to be compared to the kind of genocidal indoctrination Canadian indigenous peoples were forced to endure in the infamous residential school system. Some would probably object to Philips and Annie York's referral to these sites as types of school in the first place. If school is, to follow a morphological approach (Masschelein & Simons, 2013, 2015, 2019), primarily the enacting of a type of space-time-matter arrangement, it is always connected to and

happening in significant places. Thus, such significant environmental/cultural sites, without having walls or administration, are I would maintain, a kind of school in which forms of *study* can be enacted.

Unfortunately, I will not be able to elaborate at all fully on these rich, land-based educational traditions. Suffice it to mention here, that a whole new perspective on these Salishan (interior and coastal) practices and their relationship to colonization (and thus the prospect/promise of *de*colonization) is unveiled, if we consider these educational practices, not as part of a "essentialized cultural practice", but rather as *historically contingent acts* (Arnett & Morin, 2018); critical educational interventions used to preserve and communicate cultural teachings and place-based knowledge in anticipation of the arrival of European settlers to the West Coast of North America (see Arnett, 2016).

In the final section (8.5) I will return to touch on how discourses and practices around decolonization have been significant, both philosophically and existentially, to me, but also in terms of the broader research journey chronicled through these articles. However, a quick side stop is first in order to address more fully some possible *theoretical lacks and misconceptions* that could arise in relation to this research orientation.

8.4. Some Limitations and Possible Critiques

8.4.1. The charge of givenism

In many ways the greatest obstacles to the theory of learning that I have outlined resides in conceptualizing how *the possible* weighs upon the present-unfolding in a way that can escape the charge of givenism. The charge of givenism is often weighed against any theory that tries to address the reality and impact of firstness. Givenism refers to the existence of taken for granted axioms within a philosophical theory, such as for example the supposed discontinuity between mind-body, nature-culture, etc. assumed *as given* in many common philosophical frameworks. Alin Olteanu (2019) has recently turned his attention directly to this common reading of Peirce, in the context of some renewed interest in the relevance of pragmatism for philosophy of education, in part stemming from Colin Koopman's (2009) call for a new wave of 'transitionalist' pragmatism. To quote Alin at length:

Peirce himself often openly criticized modern dualism and what is now termed givenism (e.g. CP 5.381-2). Also, it is a common consensus among Peirce scholars that his semiotics entails an isomorphism of mental and material processes (e.g. Pape, 1997), dismissing body/mind dichotomies. Nevertheless, in some regards Peirce is suspected of accepting givenist assumptions (e.g. Koopman, 2009). I consider that what might appear to be a supposition of a priorism in Peirce is rather a lucid and critical assumption that at each point within the stream of existence a knowing subject finds herself to start from something. This primum cognitum is not a logical or ontological a priori but, as Peirce explained, the simplicity of spatio-temporal existence." (Olteanu, 2019, pp. 788-789)

From a Peircean perspective, cognition, begins with a fundamental irritation of trying to make sense of a structure that is more complex than what can directly be derived from present experience. Such a charge is the result of denying the phenomenal present into our modelling of reality. Here, I have argued for a more comprehensive understanding of the temporality of experience, or, "a notion of experience more comprehensive than that of modern empiricism" (Olteanu, 2019, p. 793).

I have argued throughout that learning starts from the continuity of our interactions with the environment, not from nothing – and this is precisely what I have attempted to address in Chap 6 of these essays. As Alin goes on to argue, such a perspective, generally derives from the influence of the linguistic turn upon late 20th century philosophy, which results from understanding the verbal (linguistic) as mapping the pre-verbal (reflective of the *pars pro toto* error mentioned earlier, 8.2). Herein lies another feature of what is often called neo-pragmatism, as distinct from the earlier experience-based pragmatism, associated with Peirce, James, and Dewey. Peirce's philosophy precisely involves recognizing that experience, if it is considered as proceeding along a *continuum*, cannot be reduced to component parts. Reality itself is complex (chap 7), and thus not reducible to determinism. What may appear as givenism through a neo-pragmatist lens, upon fuller analysis, in fact appears simply to be a recognition of the reality of chance (what Peirce called *tychism*), and thus the reality of firstness – regardless of the fact that firstness can never be directly located or isolated within the ongoing flow of experience (see Chap 6). Remember, symbols are not the result of a production rule, but the result of habit-formation, that is, *tendencies*. This involves a rejection of substantialism and with it the rejection of the *necessity of definite probability*, central to recognizing reality itself as evolving along a continuum (synechism), in the sense "that a given species of event considered as belonging to a

given genus of events does not necessarily have any *definite* probability"(CP 5.21, [emphasis added]). Olteanu (2019) explains further that this insight, stemming from Peirces's synechism and mutually supporting pragmatism

> leads to Peirce's revolutionary idea, arguably the same which Einstein was later concerned with, that universals (laws) are, actually, tendencies. That if something is universal it means that it tends to happen and not that it happens every single time in the same identical way. The latter is Newtonian mechanistic modernity, from which Peirce distanced himself in a number of regards. (p. 796)

8.4.2. MST Implying a hierarchy of signification – another form of givenism

This issue discussed above, in fact connects to another possible charge of givenism against some features of the philosophy I have articulated. These articles have made some alignment to Sebeok and Danesi's MST (modelling systems theory) as a methodological orientation. As explored, mainly throughout Chap 4, MST has popularized a reading of Peirce where "representational activities" are "undergirded by three different, but interrelated, modeling systems present in the human brain, corresponding grosso modo to what Charles Peirce (1839-1914) called firstness, secondness, and thirdness" (Sebeok & Danesi, 2000, pp. 9-10). Modelling here, has mostly been thought of as ascending from simple, basic sign types to complex ones. In chapter 4, this assumed progression was referred to as the *Natural Learning Flow Principle.*

It must be addressed that, while clearly relevant and applicable in a range of cognate research areas (particularily, within the burgeoning field of cognitive semiotics as an emprical discipline, cf. Zlatev, 2009, 2013), philosophically, this method can entail the further acceptance of *an unexamined a priori correspondence between complexity of cognition and complexity of signification*. This naturally leads to a perspective that sees the abstract and combinatorial complexity of human language (explored earlier as symbolic learning) as the natural apex of meaning-making and semiotic evolution.

It needs to be said that, such a methodology, though clearly Peirce-inspired, is actually contrary to Peirce in several respects – particularly, in regard to this presupposed hierarchy of complexity, from icon to symbol, and with it a non-Peircean view of symbol as a sign abstracted from its context of enactment. Although, I will not be able to go fully into it here, such a temping reductionism of Peircean theory can result in

a dualist and language-centered perspective that places embodied experience on one side of the binary tightrope (and with it, icons and indexes) and human language (and symbols) on the other.

In a recent co-authored article called *"Naturalizing Models: new perspectives in a Peircean key"* (Olteanu, Campbell, & Feil, 2020), we engage in a discussion with regards to the methodological and theoretical limits of this approach, drawing from Peirce's late, post-1900 philosophy. In this article, we derive a more fully Peircean perspective, that affords understanding the practice of modelling as a reciprocal interplay between (top-down) decomposition of complexity into simple signs, and the (bottom up) recombination into further complexity. Here, I will just represent a brief summary of the argument advanced in this article as it pertains directly to Peirce's late thought.

Much of this theoretical orientation, involves recognizing the primacy of iconicity in signification. As has been discussed in Chap 6, this recognition carries significant implications for how we conceptualize the arts and creative learning in relation to formal education. In a rather nuanced contrast to the 1, 2, 3 (discrete) reading of modelling characteristic of MST, for Peirce, it is icons and not symbols that give reality its structure and 'realness' (see Chap 6). The organism, the learner, through moving and acting in the environment, forms (and enacts) prior habits of relationship, so that its actions in the environment become more in tune with its needs (Hoffmeyer, 2007). This process of habit and relationship formation stems from the organism's embodied morphology, and a basic presupposition to correspond to the world, represented by Eco's notions of primary iconism (explored in Chap 6). According to Peirce, it is the primary modelling characteristic of the iconic sign that provides signification with its objective basis, or Ground as he called it, and this is because what is most characteristic of the icon 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). Peirce stated directly that an icon is a sign "… from which information may be derived," (*Syllabus* 1903, CP 2.309). This is what we might call *Operational Iconicity* (Stjernfelt, 2014, pp. 206-211). Divergent from the common relativist definition that an icon signifies based on similarity or resemblance, the operational notion of iconicity asserts "icons as the only sign type able to provide information. This is why all more complex sign types must involve or lead to icons in order to convey information" (Stjernfelt, 2014, pp. 207- 208). This is to assert that Iconicty is a central part of signification, and is thus, consequently for learning theory, not simply a stepping stone to the *thinking at a distance* characteritic of symbolic cognition.

The icon is embedded within existing (primarilly embodied and biological) forms. It is in this sense that learning is situated in the relationship between the organism's phenomonal world (umwelt) and the environment it corresponds with. Later on in the *Syllabus*, Peirce explained that "An Icon, however, is strictly a possibility involving a possibility…" (CP 2.311). Stjernfelt (2014, p. 208) elaborates this formula, and how it actually refers to both notions of iconism: the first possibility refers to the icon as being a *possible* sign of what resembles it, as it is emphasized in a particular semiotic process (only later connected to an object or class/genus of objects through an index, combined to assert a truth-claim functioning within a proposition). The second possibility however, refers to "the fact that similarity characteristics defined by the first possibility in themselves involve possibilities that are not explicit and that may be further developed" (p. 208).

Therefore, as discussed in chapter 6, according to operational iconicity, the essential aspect of the icon, is not in fact mere likeness, but rather *structural resemblance*. Perhaps the clearest example of iconic signification then, is not the classic picture or drawing, but rather a map, or model. Put simply, "Icons are thus signs with implicit information that may be made explicit" (Stjernfelt, 2014, p. 208) in future (potential) semiotic unfurling. This is in itself a recognition of the reality of firstness, as poential (and thus virtual and "absential" (Deacon, 2011) phenomena, impacting upon the actual-unfolding. This objective basis of iconic signification characterizes what Peirce calls *diagrammatic reasoning*. It is this iconic 'mapping' of the new through the known that gives our experience shape and dimension, and allows us to derive meaningful 'truth' from our interactions with the environment.

As mentioned, for Peirce, cognition and learning begin with a fundamental irritation of trying to make sense of a structure that is more complex than what can be derived from present experience (hence the importance of recognizing the *indexical rub* as a pedagogical concept). The argument is that symbols are embedded in icons – that the *esse in futuro* characteristic of the symbol – with the power of bringing together in continuity previously unconnected signs through the establishment of habit – was there in the very beginning in the icon, albeit, in general, unarticulated shape. Thus, while any type of semiosis supposes or leads to growth, it is most accurate to claim this about *the habitual use of icons*. That is to say with Peirce that "symbols grow" (CP 2.302). From this understanding we can arrive at new understandings of the continuity of human language with pre-verbal forms of signification: "semiotic compositionality can be said to

rely upon the progressive de-structuring of the parts and components of propositional structure, to achieve greater combinatory possibilities" (Olteanu, Campbell, & Feil, 2020, pp. 191-192). Such lines of inquiry are actively being forged in a range of research areas, such as the evolutionary and biological account of the twin development of music and language in homo-sapiens and our hominin ancestors offered in Tomlinson's (2015) *A Million Years of Music*. A fully *symbolic* competency that may bypass indexical and iconic embodiments, could be seen to "find its highest degree of articulation in human language", however, a fully Peircean perspective, requires that we recognize this as "an important achievement rather than a possible starting principle..." (Stjernfelt, 2014, p. 159).

Herein lies the basic power of the edusemiotic perspective: considering learning as the growth of signification broadly across nature and culture (semiosis) means that that we can account for learning without reducing it to anthropocentric, gluttocentric, mentalistic or computational accounts. Therefore, it is imperative that any theory or method that implictly or explictly asserts human symbolic cognition as a kind of philosophical, developmental, or evolutionary apex must be carefully unpacked and engaged with – *including in fact my own connections to MST*. Again, from a post-Peircean biosemiotic perspective, semiosis and perception are not to be equated – perception is dependent upon semiosis, but semiosis represents a more primary process, that is hypothesized by biosemiotics to be co-extensive with the life-process (as opposed to non-living, inanimate matter). This distinction between perception (and thus related notions like consciousness) and semiosis is not to imply that these signification processes occur separated from their very real embodiment in an organism – as Clarke indicates in his diagnosis of semiotics (or more properly, semiology) and its usefulness to understanding musical perception (see 8.2.1). I am arguing instead that this bio-semiotic perspective recognizes that human experience occurs within an expanded temporal unfolding and, as such, learning cannot be reduced to a form of synchronic reductionism, which translates experience into symbols. Olteanu and Stables (2019, p. 421 [my emphasis]) clarify further why this type of anti-psychologism is important in semiotic theories of learning:

> from its beginning, biosemiotics was defined by [Thomas] Sebeok […] as a modelling theory and, while useful for cognitive theories as well, it does not impose any particular assumption about cognition. Thus, from this perspective, a theory of learning does not necessarily imply a discussion on cognition. *An educational theory and system can conceive learning in terms of signification only.*

8.5. A Final Reflection

8.5.1. *Who am I?*

The final limitation I'll draw attention to is simply the limitation of being myself, and living in the society and time that I do. This clearly follows from other limitations, the reality of spatial-temporal *situatedness* that Peirce's philosophy calls us to notice. However, this is, in itself, not exactly a limitation; rather, the simple reality of semiosis – that all signification necessarily occurs through physical forms and mediums (an interpretant needs a representamen to be sustained into the future), and that all significant information, anything that means something to some organism doing something, is necessarily the constraint of something.[194] I am constantly trying to dialogue the limitations of my own perspective with the recognition that my place in a broader ecology of relations is not something to be transcended, but a central part of what makes me who I am. This is the never ending hermeneutic labour of being a scholar-in-relation. It is also the reason I engage in scholarly and artistic documentary and interviewing, mostly through the site/organization which I co-run (philosophasters.org) – interviewing around a dozen or so artists, scholars, and community organizers, over the last several years.

So, who am I?

I'm from Vancouver, born and raised on Commercial Drive, in East Vancouver. As should be clear by now, continuity and commitments to land and place are an important part of my personal and scholarly journey. This has recently been documented in an article I co-wrote with Marion Benkaiouche, entitled "Vancouver Accelerates, thirty years

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[194] This is essentially a description of the basic requirements for *interpretative competency*, as defined recently, in a lecture at the University of Tartu (2019), by Terrence Deacon: "Interpretation is defined as a process that changes state with respect to intrinsic signal features because of their association with some extrinsic features potentially able to directly or indirectly affect the future of this interpretative disposition". Semiosis, as a type of second order causation, is dependent on physical constraint, for the basic fact that information is embodied in physical forms. As Pearson says, to interpret is to be confronted by a complexity that requires "acting on the habits embodied in the constraints" so that an organism's actions in an environment become more in tune with its needs (Hoffmeyer, 2007). Deacon (2019) continues this thinking when he claims "all sign info, anything we take as being a significant something in the world, is the constraint of something". This basic biological principle is central to the bio-existentialist pedagogy outlined here. Learning requires constraints, for this is how signs grow and meaning is channeled.

of dwelling".[195] Apart from 5 years' residence in South Burnaby, most of my life has been spent living "along the no. 20 line" – to reference the name of the streetcar line (now bus) along which this streetcar-suburb was constructed, and the title of Rolf Knight's (1980) history of the neighborhood.

I am also a life-long pedestrian – who has never learned to drive. Walking and hiking are an essential part of how I discover meaning in my world and it has deeply informed the way I live and experience my life. I was fortunate to grow up sheltered from the voracity of North American car culture, in a central and walkable neighborhood. I continue to walk on average, two hours a day, and more if I can. I've never been entirely comfortable around cars and car culture – the ways in which auto-mania creates isolated and disconnected people and communities. It has often appeared to me that the umwelt of a driver is distorted – the result is that sprawling, disjointed, built environments have expanded across Turtle Island to correspond to this disjointed perception, with massive ecological and social consequences. Walking has been a way for me to cultivate the unique aesthetic feeling of space and time that stems from the human umwelt and my own embodied morphology. With walking, I believe we can enact community and place – the conviviality of encountering neighbours (animals *and* humans) and enacting *forms of gathering* in public space.

I strive to live my life in accordance with my philosophizing.

But how did this philosophizing passion and scholarly journey begin in the first place? Writing has always been a means of inquiry for me, *of learning*. I wrote to learn about the world, to discover myself in-relation. I think this is the reason I started engaging in scholarly writing in the first place. As a music student craving words and books in a predominantly sonorous environment – I would read an exciting quote and be compelled to write it out in my notebook, and concurrently continue the path of the quote myself. Not the prose itself but rather the chain of interpretation this little slice of text induced in my reading of it. All I was doing at this early stage was reading: literature, poetry, philosophy, music theory, musical scores, biography, auto-biography, *anything*. I was reading and simply writing about what I read. I started gradually reading more

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[195] Retrieved (April, 2020): https://philosophasters.org/articles/2019/6/25/vancouver-accelerates-thirty-years-of-dwelling

contemporary scholarship and copying it. I couldn't see what was fundamentally different from the way I wrote from the way Eco, or Peirce, or Kundera, or Illich, or Levi, or Calvino, or Langer, or Miłosz wrote (an incomplete list of some early influencers). In my ignorance, I saw a continuum of what was fundamentally the same basic inquiry process: all either of us could do (me or these venerable scholars and authors) was write about what we read, and write about the ways in which we *lived through and with* the things that we read. All that separated *me* from *them* was a unique acquired experience and a distinct cultural and historical prejudice – a different set of reading and listening under my belt.

It was in this sense that reading and writing became inseparable activities, and in fact, completely indistinguishable from one another; *to **read** was to **write** and to **write** was to **read***. To write, to *do*, to read, to *undergo*. Novice and stumbling as it was, the process was vindicating. Soon, a strange mass of writing amassed in notebooks and files, and with it a strange feeling of accomplishment: a kind of guileless protestant satisfaction with the very act of production itself (probably understandable from a musician whose preferred musical practice had been prominently improvisational).

I would even venture to say that this strange form of writing-reading intertwined process/action is not essentially different than the practiced skill of playing-thinking improvised paths through song-structures. At least, I did not perceive them as different. My scholarly reading and writing practice was entirely based on the way I practiced music. This has indeed influenced my current (far less technical) musical practice routine, which is concerned primarily with learning (and, in a sense, re-learning, after years of formal training) how to play music *by feel*: to perceive and re-cognize sounds through the way my body engages the instrument; the 'habits of feeling' developed through movement around the fretboard, or sensing the vibratory force of the string, or responding to the signs and signals radiating from an *unfolding musical event*.

Finally, learning, as I've alluded to, also involves struggle and despondency:

Philosophy and education for me, like Socrates suggests in the Republic (book VII, 518d), is the process of *turning the soul around*. It is how I have come to understand myself in relation to a world that can often be alienating and disheartening. As an educator, I'm interested in how we can practice a pedagogy of hope within global

structures that often seem (and are) repressive, reductive, impersonal, and instrumentalized. These days, I often see my own students and friends flirting with cynicism, anxiety, and despair, but I realize this may be, as Tim Lilburn (2017, Ch. 2) says "The Start of Real Thinking". Still, it can also be predominantly paralyzing and self-defeating. My experiences as a young person have often been disillusioning: to wake to a world that feels decidedly not my own — a world created for others, with a different set of opportunities and values that I can't seem to fully make use of — a world that seems to be the final spinning out of cycles and processes that were created long before I was born. These cycles will ensure our collective eco-destruction and societal disintegration, we've been told from a young age, but still, they are, paradoxically, all that is afforded to us as young people. A mass dis-imagination machine (as Henry Giroux might call it) is at work: media tells us every day to imagine the end of the world; not the end of our current globalist trajectory.

There is also the crushing existential weight of colonialism and the impoverishment of settler culture, I touched on earlier. This was something I was confronted with close up, living near the Downtown Eastside (DTES) and attending a school with a large urban Indigenous demographic (Britannia).[196] Maybe there is some hope suggested from the fact that we seem to have entered a new stage in Canadian Settler-Indigenous relations, represented by the movement, and calls, for *Truth and Reconciliation*.

But are we on the road to reconciliation? Just this morning, a few blocks from my home in East Vancouver, I watched protestors in solidarity with the Wet'suwet'en of Northern BC, forcibly arrested by the RCMP, for resisting the construction of a pipeline through their sacred territory. We must ask, are we even in a place where conversation, let alone reconciliation, is even possible? This is a central point in Lilburn's (2017) recent *Contemplation and Place*. He says, contrary to top-down mandates such as the Truth and Reconciliation Commission, that we are, as of yet, still in a stage of "pre-conversation" — unable to even dialogue with this land and the people who have taken care of it for millennia, until we reach deep into our own interiority as well as our own spiritual and contemplative traditions. This is ongoing and continuous work for me. As

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[196] When I was a child, my father, Bart Campbell worked and volunteered in a soup kitchen and drop-in centre in the DTES. These experiences are chronicled in his book, "The Door is Open" (2001).

Western Canada is still defined by many through the extraction of resources and wealth, and not our commitments to contemplation and place, how do you sustain hope that this conversation is even possible? In an interview (Lilburn & Campbell, 2019 [reproduced in Appendix A]) I conducted with him, Lilburn sheds some perspective on this dilemma:

> Colonialism has many causes – greed, racism, a rampant will to power. I would add to this list certain epistemological allegiances and the deficits in one's being-in-the-world they foster. European culture's post-Cartesian proclivity for a certain form of knowing, a certain form of what many take to be cognitive rigour, has caused the closing down of the contemplative tradition in European thought. This has meant, because of the pedagogical attachments that mark this seemingly lost tradition, that conversation, attention, interior transformation have undergone a complete loss of philosophical significance. It is not surprising that settler culture does not comprehend where and what home is, since it does not know how to see, to take in, individualities and their relationships. So, yes, people like me are in a state of "pre-conversation" in the matter of reconciliation, hoping to learn, if one is lucky, intellectual humility—Keats' negative capability—so that a space may grow in the self where the actual world might appear. Another aspect of the pan-cultural injury, or poverty, in which folks like me live is that, not truly taking in where I am, I cannot be bound to that place, making autochthonicity difficult, if not impossible, for me. Placeless even when at home, I cannot occupy the larger self, which is the atomic self leagued to, elongated by, the joy and sufficiency of one's place. I float over a land I do not know, in an intellectual tradition offering no sapiential rooting. Anxiety, fret, drifting are to be expected under these conditions.

The question this poses for education and educators is: has this "pan-cultural poverty" been sufficiently acknowledged, not only within our institutions, but more foundationally, by ourselves, to even speak about *truth and reconciliation*, or for that matter decolonizing and *place*-based education? Pedagogically, being receptive and open to place involves confronting the pain and anxiety caused by this rootless-drifting – our own discontinuities and disillusionments with land and place.

Such rootless, drifting, anxiety clearly connects to the restless desire for accumulation central to a capitalist way of being. Michi Saagiig Nishnaabeg scholar Leanne Betasamosake Simpson remarks in interview, that "[d]evelopment is related to anxiety because accumulation is never enough in capitalism. Which ultimately is about shame – this idea that Indigenous people and our societies, our knowledge is less developed than Western ideas is a very prevalent, Canadian idea" (in Hern, Johal, & Sacco, 2018, p. 69). Earlier, in this same interview with Matt Hern and Am Johal, Simpson reflects on her relationships to her ancestors and remarks on how another way

of being in the world, not linked to extractivist logics, is suggested by Indigenous political systems and traditions:

> My ancestors didn't bank capital as a way of maintain security, as a way of mitigating fear and anxiety – they banked relationships. My ancestors had very intimate and strong relationships with the land, with plant nations and animal nations and neighboring families and neighboring Indigenous nations. In times of hardship they relied on those relationships. They couldn't bank capital; they couldn't kill 600 moose and have a rainy-day fund. They had to rely on a different way of being in the world.
>
> It's a different relationship with the world. In Indigenous political structures, You've got systems of governance that mirror how I govern myself in the world. That same system of values and processes governs how you make decisions as a family and then amplifies across scales – that's a much different relationship with the world. It's more difficult for me to think about how to transition from a capitalistic-greed-accumulation model based on violence than thinking about regenerating the system of my ancestors. The sites where I see this happening are in families. It's small collectives and these islands of resistance [...] My kids are growing up very different than I grew up. They're growing up more embedded in the Indigenous systems that I'm talking about, so the questions they're going to ask and the answers they're going to find are different. The idea behind Indigenous resurgence and on-the-land education is that you re-embed people in this system. You grow humans up in this nest of relationships, and there's a shift that occurs that we can't really predict because of the disconnect created by the violence of colonialism. (p. 65)

How do we embrace that which is truly emergent and uncertain; teach what has not yet been taught? The importance and value of this logic of relationality and improvisational becoming is one thing these essays have tried to unravel. Similarly, like Lilburn and Simpson, through my teaching, scholarship, musicianship, and living, I have endeavoured to cultivate a space, an opening, "where the actual world can appear" –not a hidden world of ideal forms, or decided outcomes, but *real resonant relations* stemming from my embodied experiences in places of significance.

In the face of this rootless drifting and anxiety I am continually inspired by human creativity. I can only hope, that here, in this liminal place – brought into even sharper focus with the ongoing COVID-19 pandemic, where our current values and structures present themselves as being manifestly unsustainable and a new order and new values have not yet fully shown their form – here is nothing but opportunity.

Increasingly sterile and standardized institutions and policy can be reconsidered from a perspective that is rooted, not in top-down implementations from outside, but in

terms of how people find meaning and agency in their local communities and local situations. Indeed, the city, the village, land, place and the community itself, are ultimately the sites for such re-imaginings – for their structure and potency frames and channels the way we come together, to learn and to teach.

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Appendix A.

Talking with Tims

'Talking with Tims' has been an important part of this research journey.

 Please enjoy the following two interviews with Tim Ingold and Tim Lilburn, both originally published on philosophasters.org, and edited by Marion Benkaiouche and myself.

Educational freedom, the craft of writing and the university – an interview with Tim Ingold

Tim Ingold explores the entangled relations between human beings and the environments they inhabit. Over the last 30 years, he has written and taught widely on how embodied processes of enskillment (learning to hunt-fish-forage, weave or sing, making and expressing art and craft alike) fundamentally determine and shape the diverse ways in which we perceive, understand, and 'dwell' in the world.

An anthropologist by training, Ingold has explored such diverse things as the use, expression, and centrality of 'lines' in human culture, the inter-connections between anthropology, archaeology, art and architecture (the '4 A's), and, in this most recent book *Anthropology of education* (2017), the fundamental equivalence between education and anthropology. Here he argues that "there is more to education than teaching and learning, and more to anthropology than making studies of other people's lives" for both are more primarily processes of 'leading life' and 'studying' with others in a shared world.

In this interview, Cary Campbell asks Ingold about his own personal entanglements with the processes and ideas he explores in his research, and what led him to his recent consideration of education and pedagogy.

CAMPBELL: In this new book "Anthropology and/as Education", you talk much about the distinctive type of freedom that education (as a process of leading life with others) necessitates. You've said that "Education... is about what it means not just to live life but to lead it. The word comes from the Latin compound ex (out) plus ducere (to lead). Thus to educate is literally to 'lead out'." Obviously, this is quite different from the dominant (strong) sense of education, which emphasizes the instilling and transmitting of socially

approved knowledge into the mind of the novice (as in the latin educare). Without going too far into it here, the type of educational freedom you describe is a freedom from "within the event", from "dwelling in habit", not a "hollow freedom" from outside, as an act of volition imposed on events retrospectively. It is the freedom to embrace the essential indeterminacy and openness (the 'weakness', as Biesta says) of educational encounters.

As an improvising musician and a teacher of improv I am interested in the process by which improvisers realize potential and variations in music-making, not from predetermined inputs outside of the activity, but through entering into relation with an unfolding musical event/ritual. I've also seen how many educational endeavours can fall short because of a general inability to conceptualize this essential doing-undergoing, where, as you point out, 'real' freedom resides. You demonstrate that this is also what happens in anthropology, when ethnography (making studies of people) becomes its central preoccupation, in place of dynamic forms of participant observation (communing and corresponding with others).

I have a few interrelated questions that follow from these observations.

Could you talk about the role this "freedom from within" - this improvisational movement - has in your own scholarly craft and practice?

INGOLD: Most of my scholarship these days takes the form of writing. As in any creative activity, I commence a project of writing with only the haziest notion of what it is to be about and of how I shall proceed. And I always feel hopelessly unprepared. All I have to go on are my earlier writings, texts I may have read that are still preying on my mind, conversations which might have sparked off a train of thought, and observations of things or happenings that may have caught my attention. I am thrashing around inside of all of this. The concordant processes by which thinking crystallises into thought, and by which disorderly words settle into syntactically regular patterns, are among the great mysteries of the writer's craft. Long after a piece of work is finished (if it is ever finished) I can look back on it in astonishment and wonder, 'was that me?', 'did I really write all that?' Writing is something I definitely do – it is not being done to me – and yet in the doing I surrender myself to it: I am inside the writing process, not directing it from outside or above. I don't so much decide what to write as write what falls or comes to me. Where

exactly it comes from, I don't know. And the biggest problem, always, is how to convert a line of thought and words that is coming to a close, and that looks like it will go no further, into a new opening. Indeed, writing is not about progressing from beginning to end. Quite to the contrary: it is a constant struggle to turn endings into beginnings. It is precisely in this perpetual beginning that its freedom lies.

CAMPBELL: As someone who as devoted great attention to the ways in which processes of enskillment (like writing and research) are central to the way humans act and perceive their environments, *could you speak about your own personal relationship to skill and craftsmanship, scholarly, artistic, or otherwise?*

INGOLD: Do I practice what I preach? Sometimes I feel like a bit of a fraud, since in many of the fields of craft that I have written about, or used as examples, I have no skill at all. In woodwork, pottery, weaving and calligraphy, I am a complete novice. I am a useless cook. I can walk, but so can just about everyone else! Outside my own scholarship and writing, there's really only one thing I can do that is not common to almost everyone, and that is play the cello. I have played the cello since I was twelve years old, and it has hugely influenced the way I think and write about things. Actually, there was a gap of about twenty years, while our children were growing up, when I scarcely touched the cello. I played the piano instead. But now it is the piano that sits forlorn and neglected. It is virtually impossible to keep both instruments going simultaneously, not only because there is never enough time to practice even one, but because the cello (as a gestural instrument) and the piano (as a digital instrument) entail entirely different ways of being. To keep both going is like trying to be two completely different people at the same time. But writing, too, is a skilled craft, and it is about the only other skill I have. I used to write everything by hand, and must have been among the very last to transition to the horribly named 'word processor'. I found – and still find – the idea of writing as processing words utterly abhorrent. But nowadays I find that I am writing at the keyboard more and more. I feel rather ashamed of this. Because I know I am doing it for one reason alone: that I am pushed for time. It is a short-cut. And that is not a good reason. There should be no short cuts. Writing should be allowed to take its time.

CAMPBELL: Do you have any observations or insights into how we might practice this "improvisational creativity", this freedom from within that is revealed by the "perceptual

acuity of practitioners" (p. x) in a academy and educational climate that increasingly strives to 'pin things down'; to operationalize learning, teaching, and knowledge production. That is, to reference Ch. 3. Of your book, *how might we resist these pulls of the Major over the Minor in our lives, practices, and jobs?*

INGOLD: It is becoming more and more difficult to do this. The educational environments in which we work are increasingly dogmatic and oppressive, and worse still, dogma and oppression are being delivered in the name of freedom and creativity! This is a travesty of both. Our universities are now at crisis point – perhaps they have even passed that point. Those who pretend to 'lead' them have much to answer for. But I have learned two things. The first is that we cannot wait for others to turn the system around on our behalf. We have to do it ourselves: in what we do, how we teach, what we write. The amount that any one of us can achieve might seem small, or merely local in its effects. But together, we can change the world. The other thing is that the current system is manifestly unsustainable. If it is not already collapsing around us, it very soon will. That's why we have to start thinking *now* about the kind of educational future we want. It is no good simply waiting for the collapse to happen. By that time it will be too late. Only recently, and none too soon, has this sense of urgency really begun to take hold, not just in my generation but in younger generations as well. They are our future.

CAMPBELL: What sparked your more explicit turn to educational philosophy for this book? I know from my own circles that your work has been read by educationalists for some time, and clearly there is much relevance in your research into the questions we ask in education. But here in this book, you finally address these questions head on, and turn explicitly to educational philosophers like Masschelein, Biesta, and obviously, Dewey. *Could I ask you how this "educational" turn came about in your work, and how you came to see education as being central to the aims of anthropology?*

INGOLD: This is something that had been growing on me for a while. It came particularly from my experience of teaching the '4 As' course (*Anthropology, Archaeology, Art and Architecture*). This was a deliberate attempt to introduce principles of studio-based learning, common in art schools, into anthropology. I taught the course, on and off, from 2004 to 2011, and then it morphed finally into a book, *Making*. It was the first time I had tried to put into practice my idea of anthropology as an art of inquiry, which is both speculative and experimental, and in that sense opposed to descriptive ethnography.

The penny really dropped, for me, when I was challenged to explain what anthropology, so conceived, would deliver in terms of concrete results. Ethnography yields monographs, studies of this or that people that others can read. 'What does your kind of anthropology produce?' I was asked. And my answer was that such anthropology would be worthless if the anthropologist, transformed by his or her field experience, did not also teach, thus transforming others in their turn. Teaching is not an add-on to anthropological practice, I argued, but an integral part of it. What anthropology produces, then, is a *new generation*. It must therefore be a practice of education, not of ethnography; one in which research and teaching are absolutely inseparable. It was then that, quite by accident, I bumped into the work of Jan Masschelein, and realised that his rethinking of what education could be held the key to what I was after. I think it was Jan, in an email, who put it to me that what I really wanted to prove was that anthropology's fundamental imperative was educational. And it was he who gave me the sense of education – as a leading out into the world calling for attention and exposure – that I needed to prove its purpose for anthropology. The new book started from there. It led me to Biesta – whose work I also came across by accident when we both found ourselves at the same conference in Norway – and thence, through Biesta's writings, to Dewey. Of course I had known of Dewey's work, but I had not before read it properly. It was a revelation.

CAMPBELL: You also try to rethink conventional conceptions of the university and the academic discipline in this book: reimagining disciplines and their corresponding paths of inquiry, not as diced up and divided "fields of study", but rather as "a tangled mesh of ongoing pathways or lines of interest" (p. 74). *Do you see space emerging in the modern academy for this sort of "anti-disciplinary interdisciplinary" you speak of? And correspondingly, do you see avenues for encouraging the broad and open-ended notion of "study" you articulate in this text, in both the academy and formal education more broadly?*

INGOLD: So far, I see very little space for this kind of thing within the universities. People who are doing it are forced to the margins, or outside altogether. Of course everyone is banging on about 'interdisciplinarity'. There's money and space for that. But all interdisciplinarity does is to reinforce the notion of the discipline as a bounded territory of knowledge. The important thing, as you say, is to think again about the real meaning of study. The issue of interdisciplinarity arises precisely because conventional ways of

thinking about study are defective. They suppose that study is about the acquisition of knowledge content rather than about the cultivation of skills for attending to the world and to what is going on there. However, even in the increasingly micro-managed university of today, it is possible – under the radar, so to speak – to do things differently. It is worth taking the risk. If enough of us do, we have a chance to turn things around.

Placeless drifting, colonization and reconciliation as interior journey – an interview with Tim Lilburn

Tim Lilburn is a Canadian poet, philosopher, and essayist — from Saskatchewan, and a longtime West Coast resident (Victoria). He is the author of several critically-acclaimed collections of poetry, including *Kill-Site*, *To the River*, *Moosewood Sandhills*, and *Orphic Politics.*

The dialogue that follows expands upon themes and ideas presented in his 2017 book of essays, *The Larger Conversation: Contemplation and Place,* which details the interior and contemplative aspects of de-colonization and ecological philosophy-as-practice. I first reviewed the book for subTerrain magazine and afterwards struck up an extended conversation with Lilburn, some of which you will find below.

Campbell: In "Contemplation and Place", you speak at length about how the proposed reconciliatory conversation between settlers and indigenous peoples in Canada can have no hope of occurring without a recognition of the deep spiritual and intellectual poverty that afflicts North American settler culture. At a basic level, I think this has always been upsetting to me, born and raised on the West Coast — how we are often completely dim to the land we inhabit; living next to mountains, rivers, and places, with their names and stories removed, unaware of their broader spiritual, ecological and historical significance. You say, contrary to top-down mandates such as the Truth and

Reconciliation commission, that we are, as of yet, still in a stage of "pre-conversation" — unable to even dialogue with this land and the people who have taken care of it for millennia, until we reach deep into our own interiority as well as our own spiritual and contemplative traditions.

As an educator, I'm interested in how we can practice a 'pedagogy of hope' within global structures that often seem (and are) repressive, reductive, impersonal, and instrumentalized. These days, I often see my own students and friends flirting with cynicism, anxiety, and despair, and I realize this may be, as you say, an important first step (i.e. chapter two in your book entitled "The Start of Real Thinking"), but it can also be paralyzing and self-defeating. As Western Canada is still very much defined by many through the extraction of resources and wealth, and not our commitments to contemplation and place, how do you sustain hope (or, rather what keeps you from despair) that this conversation is even possible?

Lilburn: Colonialism has many causes – greed, racism, a rampant will to power. I would add to this list certain epistemological allegiances and the deficits in one's being-in-the-world they foster. European culture's post-Cartesian proclivity for a certain form of knowing, a certain form of what many take to be cognitive rigour, has caused the closing down of the contemplative tradition in European thought. This has meant, because of the pedagogical attachments that mark this seemingly lost tradition, that conversation, attention, interior transformation have undergone a complete loss of philosophical significance. It is not surprising that settler culture does not comprehend where and what home is, since it does not know how to see, to take in, individualities and their relationships. So, yes, people like me are in a state of "pre-conversation" in the matter of reconciliation, hoping to learn, if one is lucky, intellectual humility—Keats' negative capability—so that a space may grow in the self where the actual world might appear.

Another aspect of the pan-cultural injury, or poverty, in which folks like me live is that, not truly taking in where I am, I cannot be bound to that place, making autochthonicity difficult, if not impossible, for me. Placeless even when at home, I cannot occupy the larger self, which is the atomic self leagued to, elongated by, the joy and sufficiency of one's place. I float over a land I do not know, in an intellectual tradition offering no sapiential rooting. Anxiety, fret, drifting are to be expected under these conditions.

I wonder if there can be some joining of traditional contemplative practices and teaching at the post-secondary level. I'm mulling over this possibility these days in an essay I am working on called "Contemplative Practices, Contemplative Pedagogies." For me, because of my background and reading, most of these practices come from the Platonic tradition in its Christian, Islamic, Judaic and Neoplatonist forms, but other sources of interior shaping are also possible. The conversation I yearn for is a long-shot, but hunger tells me there might be a way.

Campbell: You also speak about the need for a *pedagogy of attention*, a deep sensorial "feasting attention". Today, it seems that so often, and perhaps increasingly so with technology, our attention is being taken away from where it needs to be, from the places we dwell in and the relations that sustain us. As a teacher yourself, is this something you notice with your students, and if so, how do you cultivate and awaken people to what it even means to be attentive (something, I think I myself have only recently begun to understand)?

Lilburn: Hunger is the great teacher. Plato tells us (*Symposium*) that eros is half lack, half cunning. This description works for philosophical eros, political eros, eros connected with attachment to and identification with a place, as it does with most sorts of longing. Hunger and ingenuity: I have confidence in these powers to draw at least some of us along. Also, it's important to remember that the savouring of haecceity is deeply delightful. Eros and sorrow, in my view, are ways ahead, and one should resist any persuasion to abandon them.

Campbell: One reason, why I have been attracted to your work, is how you show philosophy-as-practice, emphasizing, as Socrates-through-Plato did, that philosophy is what turns the soul around. But I still often wonder, what is the place of philosophy and philosophers in this hurried and fractured historical moment, where people seem to be left with little time for philosophizing or even realizing what it is and what it does? Furthermore, philosophy has become institutionalized and its wisdom increasingly fragmented and dispersed through different fields and specializations.

At the risk of posing a stupid question, how do you describe and explain the significance of philosophy for the everyday, as something that we can live with, and something that can be a part of us?

Lilburn: Philosophy is fulsome attention – which can occur in a moment – and conviviality, the willingness to engage in conversation about what one notes and what one yearns for or most deeply fears. That's a pretty light toolkit. The monastery, says Zen, is wherever you are. The same could be said about contemplative philosophy and the hermeneutical circles that grow from it.

Campbell: As the North American university has become increasingly corporatized and globalized, and as someone who works in college and university settings, do you think that the university can continue to be a site for the sustainment of wisdom traditions and meaningful practices? And furthermore, in your estimation, what kind of study and re-search is needed for this to occur?

Lilburn: Can the sort of undertaking I have been describing go on in the academy? Only, I think, on the edges, behind the surrounding shrubbery. Because the erotic, contemplative interiority I've been talking about and what gets us there, are transgressive, heterodox, not just in a university context, but throughout the culture. But there are pockets of practitioners here and there in most institutions, as I am sure you have found, and a handful of students are acutely aware of the philosophical poverty at the center of their lives and the thought-world they inhabit. Pandemic anxiety reports this poverty to us daily.

Campbell: As we stand at the precipice of an uncertain and deeply frightening global climate emergency, there has been a lot of increased talk and writing about ecology and what it *should* offer us. In my estimation, much ecological writing lacks significance for two main reasons: it doesn't seem to stem from or be rooted in a recognition of self (and the journey of becoming we undergo); and furthermore, the actual dynamism displayed by living eco-systems doesn't seem conveyed in the structures and form of the texts themselves. Your writing seems to possess both these qualities -- through your emphasis on interiority but also the bringing together of diverse themes and voices from throughout time, history and place.

Can I ask you what the ecological essay means for you, and the extent to which you think writing as a practice can mirror or, in fact *be* ecological?

Lilburn: [to attempt an answer-in-progress:] I do believe more careful thinking around gardening, and the political economy that arises from community gardens, needs to be

done, focusing possibly on what sort of citizenship might be appearing within this activity. I also suspect more thought should go into what could be called dialectic, Plato's meaning of it, and its maieutics, or could be called "spiritual direction," this inquiry leagued to the thinking about gardening. I also like Peter Maurin's/Dorothy Day's notion of the agronomic university. But aside from all this, I have nothing sure to offer. I capture much of this rumination on gardens and maieutics (I hope) in a new essay: "interiority and Climate Change," which is still in design.