# Concepts for an Enactive Music Pedagogy:

## Essays on Phenomenology, Embodied Cognition, and Music Education

**by**

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# Abstract

This thesis consists of an introduction and seven essays that develop possibilities for philosophy of music and music education through the lenses of phenomenology and the 'enactive' approach to mind. The phenomenological-enactive perspective presents a compelling alternative to dominant *information-processing* or so-called 'cognitivist' models by embracing an embodied and relational understanding of perception and cognition. It therefore offers new opportunities for exploring the nature and meaning of music and education that have both ethical and practical implications. While the essays may be read as stand-alone pieces, they also share a number of concepts and concerns. Because of this, they are organized into four parts according to the general themes they develop. Part I provides a general introduction to the basic ontological questions that motivate the essays. Here I discuss my path as a scholar, introduce the phenomenological and enactive perspectives, and briefly consider how they align with pedagogical theory. Building on these concerns, the following essay adopts a 'critically ontological' orientation. It draws out a number of reductive assumptions over the nature of music, education and what human being and knowing entails. In response, it posits a general framework for a music pedagogy based in enactive bio-ethical principles. Part II explores the nature of musical experience in more detail. Here knowledge in embodied cognitive science is developed towards an enactive approach to musical emotions, and to reconsider the problematic notion of (musical) 'qualia'. Part III discusses practical applications of phenomenology for music and arts education—first in the context of private music instruction (drumming pedagogy), and then through the development of multimedia arts-inquiry projects. Part IV draws on enactivism to explore the deep continuity between music, improvisation, and the fundamental movements of life. The first paper suggests possibilities for curriculum development and self-assessment in improvisation pedagogy. The concluding essay brings together many of the insights discussed in the previous papers—recasting them in light of Eastern philosophy to reassert the relational, holistic, and "life based" understanding of mind, music and education that lies at the heart of an enactive music pedagogy.

**Keywords**: philosophy of music education; embodied music cognition; phenomenology; enactivism; critical ontology.

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# Foreword

The essays presented here represent the majority of my published output during my doctoral studies in arts education at Simon Fraser University (Spring 2013 to Autumn 2016). They explore, from various perspectives, how phenomenology and the so-called 'enactive' approach to cognition may lead to richer understandings of what music and education entail. Before moving on to a proper introduction a few brief remarks about the format of the thesis may be in order. This document is an example of what is referred to as a 'thesis by publication' or an 'article thesis', which is comprised of a collection of published research papers and book chapters (this is not to be confused with an 'essay thesis' or a 'compilation thesis', which may include unpublished and sometimes thematically unrelated documents). The thesis by publication format is fairly common in the medical and natural sciences, and is becoming an increasingly popular option in the humanities and social sciences. In contrast to the standard monograph approach, this route offers the PhD student opportunities to gain valuable professional experience with the academic publication process (i.e. peer-review and revision) and to engage in collaborative co-authored work. This option also results in higher visibility for the student's work, which will be important down the road in terms of applying for positions and funding.

There are a number of models for formatting the thesis by publication, many of which are offered by Nordic universities where this option is becoming widely accepted across disciplines. I have chosen here to adopt the most straightforward approach, where the publications are ordered thematically and are preceded by an extended introductory essay, or the 'kappa' as it is sometimes called. The kappa outlines each essay; explains how they are related to one another; and situates the collection within the relevant literature. Because my PhD program encourages students to "tell their story" as part of the thesis, I have attempted to introduce key literature and themes in the context of my own development as a scholar, musician and educator. In this way, I hope to explain the core concepts that inform the essays more generally, and, at the same time, outline the personal journey that led to their discovery and development.

I should also note here that textual formatting of the papers has been altered for the published versions to bring them into consistent APA referencing style (the bibliographies

have been compiled into the References section at the end of this document). Font type, spacings and figure numberings have also been changed to adhere to SFU's institutional specifications. Beyond this, the content of the papers remains consistent with the published versions (as per the requirements for reprinting dictated by publishing contracts). Because of this, readers will notice that there is some variation between spelling systems from paper to paper (UK, Canadian, US). Other small inconsistencies remain related to the style of the journals, such as the use of double or single scare quotes and so on. The appropriate permissions have been obtained to reprint these papers and are available upon request. The citations for the essays are as follows:

- van der Schyff, D. (2015). Music as a manifestation of life: Exploring enactivism and the 'eastern perspective' for music education. *Frontiers in Psychology,* 6:345. doi: 10.3389/fpsyg.2015.00345
- van der Schyff, D. (2016). From Necker cubes to polyrhythms: fostering a phenomenological attitude in music education. *Phenomenology and Practice, 10*(1), 4-24.
- van der Schyff, D. (2016). Phenomenology, technology and arts education: Exploring the pedagogical possibilities of two multimedia arts inquiry projects. *Interference: A Journal of Audio Culture, 5*(1), 38-57.
- Schiavio, A., van der Schyff, D., Cespedes-Guevara, J. & Reybrouck, M. (2016). Enacting musical emotions: Enaction, dynamic systems and the embodied mind. *Phenomenology and the Cognitive Sciences.* doi: 10.1007/s11097-016-9477-8
- van der Schyff, D., Schiavio, A. & Elliott, D.J. (2016). Critical ontology for an enactive music pedagogy. *Action, Criticism & Theory for Music Education, 15*(4), 81-121.
- Schiavio, A. & van der Schyff, D. (2016). Beyond musical qualia: Reflecting on the concept of experience. *Psychomusicology: Music, Mind and Brain, 26*(4)*, 366–378.*
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# Part I

# The Ontological Perspective

# 1

# Introduction

What does it mean to be and become musical? What does teaching and learning music entail? How do various cultural and scientific assumptions direct our responses to such questions? And how might alternative theoretical frameworks be applied to help us gain richer understandings of the experience of music and music education? The essays collected here explore these questions across a range of contexts including critical pedagogy, philosophical and psychological musicology, multimedia arts inquiry projects, as well as percussion and improvisation pedagogy.

The essays develop their respective concerns independently and may be read as stand-alone pieces. Taken together they support and extend each other in various ways by exploring the areas mentioned above through the lenses of *phenomenology* and the interdisciplinary research program in cognitive science known as *enactivism* (Stewart et al., 2010; Thompson, 2007; Varela et al., 1991). In doing so, they contribute to knowledge in philosophy of music and music education by offering a number of mutually reinforcing frameworks for thought and action. These include: (i) an 'enactive' and 'critically ontological' orientation for music education; (ii) embodied and enactive perspectives on musical perception and experience (emotion and qualia, respectively); (iii) discussions on the uses of phenomenology and related embodied-ecological approaches for music and arts education; and (iv) explorations of the deep continuity between improvisation, musicality and the primary movements of life. In line with this, the essays may also be understood to offer theoretical grounding (from cognitive science and theoretical biology) for recent critical perspectives that seek to decentre or loosen a number of engrained assumptions about the nature and meaning of music and musical learning (e.g., DeNora, 2001; Green, 2002, 2008; O'Neill, 2012, 2014; Small, 1998).

In a moment I will offer an outline of each essay. First, however, I would like to explain how the broad interdisciplinary approach that characterizes the work collected here

reflects my own development as a scholar, educator and musician. In the process, I will also provide a brief introduction to the enactivist-phenomenological perspective that is developed in various ways in the essays.

## Laying down a path in music and education

I have spent a substantial amount of time in institutional music education programs as both student and teacher, and I have learned a great deal in these environments. However, the kind of learning that characterizes the most important aspects of my musical development resonates less with the standardized forms of training and practice that one finds in most academic contexts, and more with the kinds of exploratory, collaborative, and improvisatory environments and processes discussed by researchers who explore 'non-formal' or 'post-formal' learning contexts (e.g., Green, 2002, 2008; Kincheloe, 2003, 2008).

In other words, much of my musical learning took place in self-directed ensembles and communities of creative musicians outside of institutional environments. Some of the first ensembles I played with outside of school explored traditional genres (e.g., jazz, rock), developing their own compositions and frameworks for improvising in these contexts. However, as time went on I began to collaborate with musicians who explored music-making in more radical ways. These ensembles experimented with unusual juxtapositions of genre and style, techniques and sounds drawn from various non-Western traditions, and with boundary crossing between noise and music (e.g., with electronics and 'extended techniques'). A number of them also engaged in cross-disciplinary work where music making was developed in collaboration with dance, film and other media. In brief, these experiences required that I seek out and develop a wide range of knowledge and skills. They also instilled in me the need to keep such knowledge 'in play'—to be flexible and adaptive in my music making—so that my understandings would not become fixed or sedimented but remain open to new possibilities afforded by the moment at hand. Importantly, thanks to my ongoing involvement with such ensembles I was able to see firsthand how creative musicians self-organise into unique ensembles, communities, and 'microcultures'—each with their own ways of communicating musically, which sometimes

depart radically from established norms. In line with this, I also began to see how the collaborative processes associated with creative music making (and other expressive activities) can contribute to the enactment of personal and social identities, and afford new ways of perceiving and knowing the world. It is these formative experiences as a collaborative, improvising musician that lay the ground for the 'biological' or 'bio-cultural' approach to the meaning of music that I developed later on in association with the enactive approach to cognition.

As I became more involved with teaching music—mostly as a percussion instructor and small ensembles coach in jazz programs—I began to think a lot about how my experiences as a performer and collaborator could be developed in pedagogical settings. And although I did have a number of early successes as a music educator there were also many disappointments. Decades of adapting to and helping to create diverse musical environments and ensembles had indeed resulted in a rather open-ended and flexible approach to music. But my understandings were very intuitive and highly personal; they emerged clearly in the act of music making, but were very difficult to articulate in any other way. I had very little practice and limited intellectual resources for discussing music-making in terms of the socio-cultural, psychological, and indeed, *phenomenological* contexts that were required to become the kind of educator I aspired to be. Put simply, I had not developed a philosophy of music and music education that would guide my thinking and teaching, and help me communicate difficult (and sometimes seemingly 'ineffable') concepts, experiences, and possibilities to others.

I needed to broaden my intellectual horizons. But returning to music school did not seem to be the answer. More technical training in analysis, theory, instrumental technique and music history might have been beneficial for other reasons, but this was not what I was looking for. The truth is, at the time I wasn't exactly sure *what* I was looking for. So, at the suggestion of a trusted friend and colleague, I decided to enroll in an interdisciplinary MA in the humanities, the Graduate Liberal Studies program at Simon Fraser University. This course of study allowed me to explore a wide range of ideas. I also discovered that the ways of thinking I had developed as an improvising musician served me very well in creatively integrating knowledge drawn from a number of disciplines and historical contexts. I researched and published papers on political, ethical and musical topics. And I

became very interested in Greek philosophy—a significant portion of my final project from this program is dedicated to exploring the ethical significance of Aristotle's theory of nature for the 21st century (see van der Schyff, 2010). Here I traced the influence of Aristotle and other Greek philosophers through thinkers in the phenomenological tradition. I became fascinated by the ideas of Husserl (1960, 1970) Heidegger (1982, 1998, 2008) and Merleau-Ponty (2002), as well as more recent thinkers like Don Ihde (1976, 1977), whose approach to 'experimental phenomenology' is developed in two of the essays presented below. Most importantly, perhaps, this research got me thinking about *ontology*—or the question of *being*—and how the ways we understand or 'frame' being guides the ways we experience and 'know' the world and ourselves.

For example, consider the observation Aristotle makes between the ontological status of natural and artificial entities, or the living and the made (McKeon, 2001; in particular see *Physics II.* 192b8-25). For him, living creatures are not 'created' as such. Rather, their coming-into-being involves an innate principle of change special to the living organism itself. In other words, living creatures are essentially *self-moving* and *self-making* entities that actively reach out to the world as they strive to maintain a flourishing life—they are intrinsically meaningful. By contrast, an unnatural or 'made' entity carries no such principle of change or movement within it. A table, a house, a ship, or a computer has its principle of motion and being outside of itself—humans move these objects into existence through craft (*techné*) and give them the attributes that make them what they are, both in the physical and abstract sense. As Heidegger (1998) writes in his analysis of Aristotle's conception of *phusis* (nature),

> [Plants and animals] are beings only insofar as they have their essential abode and ontological footing in movement. However, their being-moved is such that the *archê*, the origin and ordering of their movedness, rules from within those beings themselves. (p. 190)

And indeed, Heidegger (1982) develops such insights into a powerful critique of the modern world view. He argues that because we have become so focussed on the mode of being associated with technology—the procedures and methods associated with making (*techné*)—we have adopted an ontology that reduces all of being to a rationalizing and

instrumental framework. Here living beings, and 'nature' more generally (plants, animals, people, rivers, forests and so on), become 'resources' to be exploited towards ends that are externally imposed upon them. Their ontological status is reduced to accommodate a human system of production, consumption and 'progress'. Importantly, the central mode of being (or rather, the way being is revealed) in the modern world involves the 'rational' processes, methods, or technologies that transform the natural into the artificial and optimize the systems of exchange.[1]

In connection with this, I also began to explore writers involved in cognitive science and philosophy of mind who, following Heidegger and other phenomenological thinkers, argue that the human proficiency and fascination with technology has led us to see our own minds in the same light as the most impressive objects we create—that is, as computers (Dreyfus, 1979). This orientation has had considerable implications for how we understand the nature of perception and meaning construction. Indeed, from this perspective the mind is understood as an essentially rule-bound information-processing machine (a meat computer; Clark, 2001) that is in a sense once removed from the world it makes representations of and reasons about. Here, cognition is understood to involve a linear, mechanistic and wholly 'in-the-skull' process involving i) the transduction of sensory input, ii) information-processing of such input into representations via abstract symbol manipulation that proceeds according to the rules of mental syntax (computation), and iii) the production of behavioural outputs—experiences and actions that correspond to a pre-given 'external' reality.

Put simply, it is claimed that this technological "enframing" (*Gestell*) of being, as Heidegger (1998) calls it, has "blinded us to nature" and a number of more fundamental modes of being and knowing. Indeed, it is argued that this orientation—and the related information-processing or 'cognitivist' approach to the mind just discussed—has instilled a reduced understanding of what human being-in-the-world entails. By contrast, thinkers in the phenomenological tradition highlight the central role the body plays in perception

[1] The next essay discusses the relevance of this critique in more detail. To get a quick idea of what this involves in the context of education readers might consider this short animated talk by Ken Robinson: https://www.ted.com/talks/ken_robinson_changing_education_paradigms

and cognition. Heidegger (2008) and Merleau-Ponty (2002), among many others, have shown that we are not primarily detached 'rational' thinking beings, but rather are, first and foremost, embodied entities who come to understand and *care* about the world, most fundamentally through the ways we move, feel, and *interact* with the environment (see also Johnson, 2007; Sheets-Johnstone, 1999, 2010). From this perspective, information, experience, knowledge and understanding are not framed in a stimulus-response or a representational correspondence-based schema. Instead, 'mind' and 'meaning' are rooted in the *relational embodied activity* that occurs within a contingent milieu. In other words, perception and cognition cannot be understood as strictly limited to the brain—cognition, the body, and the environment are inextricably enmeshed. Phenomenology thus highlights the active role that living, situated, and embodied cognizers play in bringing forth worlds of meaning.

This way of thinking about perception, cognition, and consciousness has important implications across the range of human being and knowing. As the essays explore, the 'phenomenological attitude' informs a number of important critical approaches to aesthetics and pedagogy, as well as new perspectives on issues related to society, culture, and self-hood (Benson, 2001; Varela et al, 1991; Zahvi, 2006). And indeed, at the time I began exploring these ideas I was very interested in how they might be developed in the context of environmental ethics—i.e. through the work of thinkers associated with 'deep ecology' and 'ecological phenomenology' (Everernden, 1993; Kohak, 1984; see van der Schyff, 2010). This said, the possible relevance of phenomenology for music was never far from my mind. Many of the core insights associated with phenomenology resonated closely with my own experiences as a creative musician. And, in line with this, I began to think about how musicality might fit into Aristotle's ontological framework. Could it be understood in terms of human *self-making*, as rooted in a biological, organic being? Or is music best understood as a technology, as something wholly artificial? And, likewise, what might critical ontologies, such as Heidegger's, reveal about our current understanding of music?

Some of my early readings in philosophy and psychology of music had introduced me to the discussion over the meaning of musicality for humanity, including Pinker's (2009) controversial claim that music has no biological relevance for the human animal—that it is

merely a pleasure technology, or "auditory cheesecake" as he (in)famously puts it. Like many people, I felt in my heart that this just could not be true. But Pinker's assertion is based in a well-developed and (until relatively recently) widely-accepted research program—engaging critically with his position would require more than sentiment and intuition.

Pinker's position is informed by the orthodox information-processing or 'cognitivist' approach to mind introduced above, as well as the so-called Neo-Darwinist or 'adaptationist' conception of biological evolution. These perspectives are mutually reinforcing as they both understand the functioning and origins of the human mind in terms of a large array of cognitive modules—each of which is adapted by natural selection over deep evolutionary time to process specific types of information in ways that correspond with a pre-given external environment, and that thus contribute to the survival of the individual and its genes. And indeed, because this *cognitivist-adaptationist* perspective has been so widely accepted it is sometimes referred to as a "dual orthodoxy" (see Varela et al., 1991). Importantly, this approach sees environmental factors (culture, experience and so on) as exerting a negligible influence on the genome. As a result, it seeks to make firm distinctions between the products of nature (i.e. natural selection) and those of culture in the human phenotype. This leads Pinker and others (e.g., Sperber, 1996) to argue that music is a wholly cultural construct that "tickles" cognitive modules that evolved over deep evolutionary time to perform properly adaptive mental functions (computations) related to our survival and well-being—e.g., those associated with language, auditory scene analysis and so on. Music, however, has *no biological relevance* for the human organism. It is, again, the auditory equivalent of cheesecake: enjoyable but essentially meaningless.

Once I completed my liberal studies MA I decided it was time to turn the focus back towards music and attempt to deal with some of the challenges raised by writers like Pinker. But engaging critically with such issues would require a deeper understanding of the 'musical mind', and with it an immersion in the fields of cognitive science and theoretical biology. To pursue this, I enrolled in the Psychology for Musicians program at the University of Sheffield (MA in Psychology for Musicians), where I was introduced to a wide range of fascinating research and theory.

In the course of my readings I noticed that much of the research in cognitive

musicology tended to (sometimes tacitly) adhere to the representational-computational or cognitivist approach to mind just discussed. I also noticed that this orientation fit very well with a number of traditional assumptions associated with Western academic musicology and its focus on the composed 'work'. While much of this research does offer useful insights into certain aspects of musical cognition, I found that it did not resonate fully with my experience as a creative, improvising musician, collaborator and *active* listener. Indeed, this orientation seemed to limit research and theorizing in music cognition to a stimulus-response framework—where music cognition is often restricted to the (largely disembodied) production of representations in the brain that correspond with the (supposedly) objective features of the 'music itself'; and where, again, such processing of musical information is assumed to proceed in a hierarchical and rule-based way through various domain specific 'neural mechanisms' (e.g., modules) that are the product of natural selection (but which, as Pinker agues, may have been selected originally for *non-musical* reasons).

Fortunately, my readings also introduced me to other thinkers who do not simply take such frameworks for granted. For example, I discovered a number of critically-minded scholars who question the assumed superiority and autonomous status of the Western musical canon. These writers discuss this orientation in terms of cultural developments associated with European colonialism, mechanical reproduction, commodity fetishism, the rise of a capitalist bourgeois society, and, again, the technology driven ontology discussed above (De Nora, 2011; Goehr, 1992; Lines, 2005a&b; see also Elliott & Silverman, 2015). In doing so, they also consider how such attitudes have marginalized certain forms of musical activity (e.g., improvisation) and other cultural perspectives; and how they have thus led to *reified* notions of what music entails—i.e. the assumption that music is a *thing* to be reproduced or consumed (Small, 1998). Other thinkers, like Clarke (2005), have shown how such assumptions have been reinforced by the standard information-processing approach to cognition discussed above, leading to a reductive understanding of musical experience as a kind of "reasoning or problem-solving process […] bearing little relationship to the essentially exploratory function of perception in the life of an organism" (p. 15). Along these lines, I also encountered recent research that explores the deep relevance of musicality for human ontogenesis and socialization (e.g., Trevarthern, 1999,

2002, 2012); as well as similar insights from the areas of evolutionary musicology and bio-musicology, which explore various possibilities for explaining the role of 'musicality' in the development and survival of the human species and (possibly) other animals (Cross, 1999, 2001, 2010; Mithen, 2005; Patel, 2008; Wallin et al., 2000).

This all got me thinking about the meaning of music in a much more nuanced and critical way. Importantly, I began to see that because music spans such a wide range of human action and experience a proper account of what it involves could not rely on standard mind-body and nature-culture dichotomies. What was needed, I thought, was an alternative framework for cognition and evolution that could look beyond the reductive cognitivist-adaptationist perspective and embrace a richer 'bio-cultural' conception of what musicality entails—one that engaged the *actual experience* of music as an embodied, relational, self and world-making phenomenon.

### *Enter enactivism*

Just before I began my studies in Sheffield I came across the seminal text on the enactive approach to cognition, *The Embodied Mind: Cognitive Science and Human Experience* by Francisco Varela, Evan Thompson, and Eleanor Rosch (1991). This fascinating and challenging book draws on the ideas of key thinkers in phenomenology and ecological psychology—especially Husserl (1960, 1970), Merleau-Ponty (2002), and Gibson (1966)—along with basic concepts drawn from Eastern philosophy. The authors develop these insights in conjunction with the (then) emerging alternative perspectives on biological evolution and ontogenesis based in *developmental systems theory* (see Oyama et al., 2001), as well as the new mathematics of complex systems (i.e. *dynamic systems theory*; see Port & van Gelder, 1995). In doing so, they break down (or seek a "middle-way" through) classic mind-body, nature-culture dichotomies. Most importantly, they attempt to ground (or 'naturalize') the insights of phenomenology in cognitive science and theoretical biology, and, in the process, reconcile the *objective* and the *subjective* by developing an "*entre-deux*" between science and lived experience. In all, the enactive perspective offered by Varela and colleagues (1991) presents a powerful critique of the cognitivist-adaptationist orthodoxy and draws out an alternative—and increasingly influential—embodied approach to the nature and origins of 'mind'.

The enactive approach can be contrasted with the cognitivist orientation in that it does not see cognition as primarily involving processes of computation and representation limited to the brain. To be clear, this perspective does not posit that humans are incapable of computational or representational forms of thought. However, such forms of cognition are not seen as characterizing *all* forms of thinking, nor are they understood as primordial. Rather, they are seen as derivative—as based in our fundamentally embodied nature (Johnson, 2007). In other words, instead of understanding the mind first in terms of abstract mechanistic-computational processes limited to the brain, the enactive perspective begins with the basic life processes that allow an organism to survive and flourish in a contingent environment. In brief, the enactive approach traces the origins of cognition and 'mind' to the ways living organisms interact corporally with the (physical and social) environments they are embedded in—and how in so doing they bring forth life-worlds that are meaningful, most fundamentally in terms of continued survival and well-being. For enactivists the paradigmatic example of such processes is found in the living, *autopoietic* cell.

The term 'autopoietic' was coined by Maturana and Varela (1980) to describe the *self-making* or *self-organizing* nature of living organisms. Interestingly, this resonates in many ways with Aristotle's ontological distinction between the 'natural' and the 'artificial' discussed above, where organic being brings itself into existence and thus finds its ontological grounding in movement—or *perceptually guided action* (Nöe, 2006)—related to its survival and well-being. And indeed, the 'movements' of single-celled and other simple creatures, for example, are 'concerned' with those primordial activities (e.g., nutrition) associated with developing and maintaining their structural integrity (i.e. a bounded metabolism). Such activity allows the creature to (temporarily) sustain itself as an autonomous entity in the world—to enact a primordial 'self' (Thompson, 2007). However, while this involves the development and maintenance of an asymmetrical relationship with the world (a point of view) no fundamental separation exists between the organism and the environment it emerges from and that sustains it. Put another way, organism and environment are understood to stand in a circular, mutually specifying relationship and are thus *co-arising*; world, body, brain and mind are aspects of the *same complex dynamic system*. Importantly, at the most basic levels such processes *cannot* involve computations

and representation as simple organisms do not possess the complex 'neural hardware' for algorithmic (symbolic-syntactic) processing to occur. Instead, cognition (or 'mind') depends on the ability of the organism to move, interact, and in the process *enact* valenced relationships with the environment that are relevant to its continued existence—i.e. to *make sense of the world*. And of course, more complex creatures will engage in ever-richer repertoires of embodied sense-making activity, including the *shared* or *participatory* forms (e.g., musicking) associated with highly social creatures such as ourselves (De Jaegher & Di Paolo, 2007).

In my MA research at Sheffield I contrasted the enactive approach to cognition with a number of standard (cognitivist-adaptationist) assumptions in music psychology. In doing so, I explored how this perspective might extend to the musical activities of humans (and perhaps other animals)—where, from the enactive perspective, musicality may be considered as a fundamental human sense-making capacity that spans the biological, the social and the cultural. In line with this, I also considered how the enactive approach might offer a biological grounding for many of the alternative and critical approaches to the meaning and nature of music for the human animal I began to outline above. For example, this approach posits a perspective on evolution that differs rather sharply from the one that informs Pinker's "cheesecake" understanding of the biological meaning of music. In contrast to his strict adaptationist approach, the enactive perspective draws on the recent research associated with developmental systems theory mentioned above, which sees evolution as involving a more complex set of interacting factors (see Oyama, 2000). Put very simply, this approach does not focus on the individual or gene (Dawkins, 2006) as the fundamental unit of selection, but rather explores the complex ways genes, proteins, and environmental factors—including behavior and experience (e.g., culture)—interact with each other to guide the functioning of cells and the formation of phenotypes (Lewontin, 1983; Varela et al., 1991). Again, this approach explains how organisms and environments *co-arise*, but now across evolutionary time.[2] Importantly, from this perspective the notion of evolution as adaptation to a pre-existing environment—where genes and corresponding

[2] The symbiotic and co-emergent relationship between honey bees and flowers is an excellent example of this. Here autonomous organisms exist as environments to each other—the development of their phenotypes are inextricably enmeshed over evolutionary time (Hutto & Myin, 2014; Varela et al., 1991)

traits are selected on the basis of the 'optimally' with which they fit the environment at hand (i.e. survival of the fittest)—is traded for an approach that includes the active role living creatures play in shaping the worlds they inhabit. This occurs through development of contingent and 'sufficing' (but not necessarily 'optimal') relationships with the environment that involve ongoing cyclical processes: short term epicycles of organism-environment interactivity feedback and influence the long term development of the organism (Oyama et al., 2001; Varela et al., 1991). In brief, this perspective supports a *bio-cultural* (Tomasello, 1999, 2008) perspective on human evolution[3]—one that offers a way to explore musicality as a central means by which human beings develop important embodied and emotional-affective relationships with the environments they continually co-enact and thereby engage in the developmental processes just mentioned.

### *Enactivism, phenomenology, and critical arts pedagogy*

The enactive approach to cognition and biological evolution looks beyond the dichotomous mind-body, organism-environment, nature-culture, and inner-outer frameworks that characterize the cognitivist-adaptationist orthodoxy. Because of this, the 'enactive lens' enabled me to begin to develop a coherent alternative to the standard cognitivist orientation towards the musical mind; and (contra Pinker, 2009) to consider the deep relevance of music for the development and well-being of complex social creatures such as ourselves (see van der Schyff, 2013a). Once my MA dissertation was complete I began to think about how the enactive perspective might be applied in practical areas such as music education. Indeed, in the conclusion of the dissertation I offer some preliminary suggestions about what this might entail but go no further than this. The focus of my doctoral studies have been on developing the possibilities of this phenomenological-enactive perspective for music pedagogy.

My PhD coursework has introduced me to a wealth of fascinating research and ideas in education. For example, while I had already begun to employ phenomenological methods with my music students, the readings and discussions facilitated by my program helped me to situate and develop these ideas alongside existing pedagogical theory

[3] For a recent musical application of the developmental systems approach to evolution see Tomlinson, 2015.

(Dewey, 2005; Freire, 2000; Greene, 1995) and to develop much richer understandings of the practical relevance of phenomenology for music and arts education (see essays 5 and 6). I also began to delve more deeply into the literature in philosophy of music education, and the work of researchers who explore musical learning in 'non-formal' contexts (e.g., Green, 2002, 2008). In connection with this, I became very interested in the so-called *praxial* approach to music education (Elliott & Silverman, 2015; Silverman, 2012; van der Schyff, 2015b). This perspective, draws on a number of ethical themes introduced in the writings of Aristotle, Dewey (1997, 2005) and Arendt (1993), among others. In doing so it develops a philosophy of music education that looks beyond the standard Western focus on the (composed) 'work', revealing music education as a "socially rooted, complex, coherent and cooperative activity that grows over time into its own ethical world" (Higgins, 2012, p. 224).

Here I also explored writers associated with *critical pedagogy,* who draw on the phenomenological tradition (among other areas) to offer an alternative to what they see as a standard "banking model" of education (Freire, 2000; Giroux, 2011; Kincheloe, 2001, 2008). The so-called banking model describes what many critical pedagogues see as a rather depersonalized and dehumanizing (i.e., technologizing) approach to knowledge and learning that dominates education in the modern world—where facts and information are "deposited" into the student, who is then tested according to standardized criteria. This orientation resonates in many ways with the assumptions of the cognitivist approach to mind as it involves a mechanistic and depersonalized input-output understanding of what learning entails—where students are *trained* to perform and think according to standardized practices and pre-determined outcomes; and are thus assumed to be essentially passive consumers, processors and reproducers of information.

Here I was fascinated to discover the work of Kincheloe (2003, 2008), who develops the core insights of critical pedagogy in conjunction with the basic principles of enactivism towards a "critical ontology" for education. In many ways Kincheloe's thought builds on critical insights similar to those of Heidegger (above) when he discusses how our current orientation tends to ignore our fundamental ontological status—imposing a reductive, instrumental and mechanistic ontology on to what are fundamentally living, creative, *autopoietic* beings. Put simply, Kincheloe argues that our understanding of human being

and knowing has been driven by mechanistic and dualistic Cartesian world view; and that the "life-based" orientations introduced by enactivism and a number of indigenous and non-Western perspectives may help us regain richer ontological understandings—thus opening up more life affirming perspectives on education. I was also very interested to learn that Kincheloe's approach to education was greatly influenced by his early experiences with improvising musicians (see Kincheloe, 2008). In all, Kincheloe's work provided a way to tie together many of the ideas and concerns discussed above. As a result, many of the core insights associated with his *critically ontological* orientation inform the enactive-phenomenological approach to music and music education discussed in the essays.

## The Essays

As I mentioned above, the essays are published (or are forthcoming) as stand-alone pieces. There is, therefore, some repetition and overlap as core enactive, phenomenological and pedagogical concepts are introduced in the context of each paper. This said, each essay develops these ideas in different ways. Because of this I hope that these necessary reintroductions of key ideas will not become tedious for the reader, but rather lead to a more complete understanding of these principles and their possibilities for music and arts education. I should also point out that while some of the papers focus on developing enactivist ideas as a grounding for pedagogical theory more generally, others are concerned with articulating the practical relevance of phenomenology and enactivitist frameworks in specific contexts (private music instruction, the development of creative projects, improvisation and assessment). Additionally, two of them focus on difficult philosophical and psychological issues associated with the nature of musical experience—although relevant, they do not address education directly. As a result of all this I have grouped the essays in four parts that reflect shared themes. Before I go on to outline each part, I would like to briefly express my admiration and gratitude to my collaborators on the three coauthored papers included here, and especially to Dr. Andrea Schiavio (Ohio State University and University of Sheffield) who makes substantial contributions to all of them. (Full citations for each paper may be found in the Foreword).

### *Part I: The ontological perspective*

Part I consists of this introduction and the following essay entitled 'Critical Ontology for an Enactive Music Pedagogy'. This paper was co-authored with Andrea Schiavio and David Elliott (New York University) and appears in the journal *Action, Theory and Criticism for Music Education.* Here we develop the critical ontological perspective introduced above—drawing on the thought of Kincheloe and Heidegger, ideas from Ancient Greek philosophy, care ethics, and basic concepts associated with the enactive perspective. In doing so, we critique the mechanistic, or "technologically enframed" ontology that underpins the so-called banking approach to education; and introduce some related problematic assumptions associated with Western academic music culture. In response to this, an alternative 'life-based' ontological framework is introduced for music education. We ground this perspective in insights drawn from enactive cognitive science, arguing that this enactive-ontological orientation embraces more primordial ways of knowing and being; and that it thus highlights the agentic, creative, improvisational and fundamentally autopoietic nature of the embodied musical mind, as well as the deep relevance of musicality for human well-being. This perspective is then contrasted with constructivist approaches and is developed through the lens of care ethics. Here we draw on more recent work in enactivist theory and research associated with social cognition to offer some general possibilities for what an enactive musical pedagogical environment might entail. To conclude, we consider the importance of critical ontology and the enactive perspective for music teacher education.

### *Part II: The embodied experience of music*

The two essays that comprise this part depart from pedagogical concerns to explore the question of musical experience from the perspectives of cognitive science and theoretical psychology. The first essay is entitled 'Enacting musical emotions: Sense-making, dynamic systems, and the embodied mind'. This is another collaborative effort involving Schiavio, as well as Julian Cespedes-Guverra (University of Sheffield), and Mark Reybrouck (KU Leuven). It is published in *Phenomenology and the Cognitive Sciences*. As its title suggests, this contribution explores the relationship between music and emotion.

We begin by critically reviewing a number of influential perspectives on the subject, arguing that many standard approaches remain (sometimes tacitly) committed to reductive information-processing models of cognition, as well as to assumptions associated with the Western score-based orientation. We suggest that these approaches offer only limited perspectives on what musical emotion entails and, in response, offer preliminary grounding for an alternative *enactive* approach. Here we draw on recent theory and research in cognitive science (e.g., dynamic systems theory) that explores emotions not in terms of fixed, categorical, or 'programmed' responses to external stimuli, but rather as properties that emerge from and motivate the adaptive and relational ways living creatures enact and make sense of the contingent worlds they inhabit. We then develop this perspective in connection with the more biologically and developmentally relevant perspective on the meaning of music introduced in Part I. Here we argue that our emotional involvement with music is continuous with this deeper understanding of musicality as a fundamental human sense-making capacity; and that, as such, it may be far more complex, contextual, and idiosyncratic than many standard models imply.

The second paper, co-authored again with Dr. Schiavio, offers a detailed critical analysis of the notion of *qualia.* It is entitled 'Beyond Musical Qualia: Reflecting on the Concept of Experience' and is published in *Psychomusicology: Music, Mind and Brain.* The term 'qualia' is often used in philosophy of mind and aesthetics to refer to the subjective qualities of experience associated with a specific (sensory) event. There is, however, little consensus as to just what this entails. Some argue that qualia are best understood as pre-given attributes of the musical environment, whereas others insist that they are products of information-processing confined to the boundaries of the skull. We critically examine three of the most pervasive approaches to qualia in the context of musical experience. Following this we explore two important 'eliminativist' perspectives––those of Dennett (1979, 1988, 2001) and Raffmann (1993), respectively—that essentially seek to do away with the notion of qualia altogether. Here Raffmann's approach is especially relevant as her discussion critically extends Dennett's position using musical experience as a paradigmatic example. Following this, we introduce another perspective based in a phenomenological-enactive framework. In doing so, we argue that while this approach is also eliminativist with regard to qualia, it nevertheless avoids a number of

reductive assumptions associated with the perspectives of Dennett and Raffmann—and that it also sidesteps a number of problematic issues associated with the three standard notions of qualia discussed at the outset of the paper. In doing so, we explore how an approach to musical experience based in the idea of the 'phenomenological body' (Merleau-Ponty, 1945; Gallagher & Zahavi, 2008; Jonas, 1966) offers a more relational and holistic perspective that better accounts for the diverse ways people actually engage with and talk about music in the course of lived experience. We conclude by considering how this embodied perspective may point the way towards richer models for theory, research and practice.

### *Part III: Phenomenology for music and arts education*

Here the focus returns to pedagogical concerns with two papers that explore the relevance of phenomenology in practical contexts. The first of these—'From Necker cubes to polyrhythms: Fostering a phenomenological attitude in music education'—discusses the ways that phenomenological methods may be developed in the context of private music instruction (drum kit). As I mentioned above, by the time I wrote this paper I had already been exploring similar approaches with my percussion students. However, thanks to the readings and discussions facilitated by Professor Susan O'Neill's doctoral seminar in arts education, I was encouraged to develop these experiences and insights into a paper, which became an early draft of the version that was finally published in *Phenomenology and Practice*. Similarly, the second paper, 'Phenomenology, technology and arts education: Exploring the pedagogical possibilities of two multimedia arts inquiry projects', originated in early attempts at developing music technology curriculum. The first draft was produced in a graduate seminar led by Dr. Celeste Snowber, where we were asked to explore and discuss the pedagogical possibilities of arts-inquiry projects. A second draft was presented at the 2015 conference of the American Educational Research Association in Chicago. The final version is published in *Interference: A Journal of Audio Culture.*

Both essays are concerned with how the cultivation of a "phenomenological attitude" may help students and teachers develop more "reflective, imaginative and *participatory* ways of being-in-the-world, while simultaneously developing deeper historical, cultural, technical, and aesthetic understandings of the art forms they are engaged with." The first

essay shows how basic phenomenological insights may be gained through the investigation of multi-stable visual and auditory phenomena—the Necker cube and African polyrhythm, respectively—by developing the relationships between the bodily, auditory and situated or 'ecological' aspects of perception. The second paper develops similar approaches in a multimedia context. It explores the relationship between the visual and auditory dimensions; discusses the relevance of phenomenology for critical arts pedagogy; and relates how such insights may be applied to the creative use of technology and the creation of digital media projects. Among other things, these papers resonate with and develop the embodied and 'gestaltist' perspective on musical experience discussed in the 'Beyond musical qualia' paper introduced in Part II.

### *Part IV: Music, education, and the act of living*

This final part reengages with the enactive perspective to develop richer accounts of the relationship between human musicality and the continuity of mind and life. The first essay, 'Improvisation, enaction, and self-assessment', explores the challenging question of curriculum and assessment for music improvisation pedagogy. Here I offer a critical review of a number of standard approaches to improvisation, arguing that they often neglect the processes of discovery and collaboration that more open or 'free' approaches to improvisation afford. I then discuss the challenges that free improvisation poses to traditional educational modes of practice and assessment, and consider the perspective that such forms of musicking cannot be taught or assessed according to standardized models. In other words, I explore the idea that improvisation in its fullest sense may not be best understood as something to be inculcated in students, but rather as a fundamental disposition that should be nurtured. I consider these insights in conjunction with recent developments associated with the enactive perspective, where living cognition is explored as a '4E' phenomenon—as fundamentally *embodied*, *embedded* (in an environment), *enactive*, and *extended* (cognition is not limited to the brain but extends into the physical and social environment). Here I suggest that because the ways a living agent engages with such factors are not pre-given, but rather reflect the adaptive processes associated with autopoiesis and (participatory) sense-making, there is a very strong sense in which cognition may be understood as an improvisational process even at the most fundamental

levels. With this in mind, I then explore how a 4E model might guide curriculum development and offer a framework for forms of self-assessment involving collaborative processes of creativity and reflection. To conclude, I offer a few final suggestions drawn from a number of existing musical communities and my own experience as an improvising musician (see above). This essay is forthcoming in *The Oxford Handbook of Philosophical and Qualitative Perspectives on Assessment in Music Education* (publication due in 2017).

The concluding essay, 'Music as a manifestation of life: Exploring enactivism and the Eastern perspective for music education', was actually the first essay in this collection to be published. It appears in *Frontiers in Psychology* as part of the research topic entitled 'Music and the embodied mind: A jam session for theorists on musical improvisation, instrumental self-extension, and the biological and social basis of music and well-being.' Indeed, this paper represents my first attempt to develop the enactive concepts I encountered during my MA studies in a pedagogical context. I should note here that this paper was written and published before I decided to pursue the thesis by publication route. As a result, it contains a number of passages that originally appeared in my unpublished MA thesis, *Music, Meaning, and the Embodied Mind: Towards an Enactive Approach to Music Cognition* (2013 University of Sheffield). However, this material is developed significantly in this essay, most notably through the lens of Eastern philosophy. Thanks to my early interest in Japanese martial arts, I was already familiar with various approaches to meditation and mindful awareness; and I had experimented with introducing basic principles associated with these practices into my music instrumental teaching. I was fascinated to discover, however, that this orientation also lay the at heart of the enactive approach offered by Varela and colleagues (1991). Additionally, in the course of my PhD studies I was fortunate to participate in two excellent seminars led by Professor Heesoon Bai, where we explored the relevance of the 'Eastern perspective' for education, most notably though the remarkable work of Yoshiharu Nakagawa (2000). This encouraged me to develop many of the principles of Buddhist psychology associated with the enactive perspective in the context of music education. In all, this essay brings together many of the themes discussed in the other papers and recasts them in relation to an ancient (but still vital) conception of being and knowing—one that prefigures the ethical, phenomenological, enactive, and critically ontological perspectives developed in the other

essays. Because of this it serves as a concluding statement that asks us to look beyond the rationalizing, mechanizing, technologizing, and dualist assumptions associated with Western[4] thought and embrace a more holistic, life-based understanding of mind, music, and education.

## A few final remarks

In this introduction I have attempted to share the basic concerns, insights, and personal history that informs and motivates the essays presented below. This research has contributed greatly to my understanding of music, education, and the human condition more generally. It has provided a number of conceptual tools, as well as general frameworks for thought and communication that continue to be of great use to me as an educator and musician. I should make it clear, however, that the essays are not intended to serve as the final word on anything.

Indeed, the enactive approach is not without its critics. Some argue that a fundamentally non-representational and embodied approach to cognition cannot properly distinguish between bodily activities that are cognitive and non-cognitive; and that choice and action necessarily require the interaction of propositionally formatted representations (e.g., Matthen, 2014). Enactivists have responded to such concerns in various ways (see Wallis & Wright, 2009). Nevertheless, many critics remain unconvinced and continue to insist that cognition and consciousness are best understood as confined to the brain—with some claiming that at best the body can be understood only as a mediator between inner and outer realities (Adams & Aizawa, 2009; Rupert, 2004). Others have suggested that because enactivism has developed largely through discursive theorizing, it has tended to ignore empirical data that might refute some of its central claims (Wallis & Wright, 2009). It is also claimed that because enactivism is now applied across so many domains it cannot be properly understood as a research program (although it is often referred to in this way).

[4] It should be noted that the term 'Western' is used here not simply as a geographical descriptor. Briefly, it now signals and implies notions of modernity, which are framed according to a set of ideals and beliefs such as democracy, free-markets, technological progress, economic growth, consumerism and so on. Importantly, because of the pressures of cultural and economic assimilation associated with globalization, the assumptions and practices associated with the term have been adopted widely and are now part of the current historical conditions of postmodernism or late modernism.

As an aside, it should be noted here that enactivist frameworks are now being developed in a number empirical contexts (Bermejo, 2015; Chemero, 2009; Froese & Fuchs, 2012; Fuchs, in press; Martinez-Pernia et al., 2016; Pessoa, 2014; van Elk et al., 2010).[5] Readers should also be aware that there exist various schools of thought that differ in just how phenomenological and enactivist ideas should be understood and applied (Käufer & Chemero, 2015; Hutto & Myin, 2014). For example, 'enactivism' now involves three (overlapping) orientations: *autopoietic* enactivism, *sensorimotor* enactivism, and *radical* enactivism (for an overview see Hutto & Myin, 2014). However, these approaches tend to be mutually supportive, differing for the most part in how they emphasize and develop a shared set of basic principles. The essays draw on all of these perspectives, but are most closely aligned with the original autopoietic (or 'life-based') approach introduced by Varela and colleagues (1991; see also Thompson, 2007).

This is all to say that although the enactive-phenomenological perspective has indeed established itself as an important part of the intellectual landscape in cognitive science and philosophy of mind, it is certainly not unproblematic. Its merits, drawbacks and possibilities continue to be debated and explored across a range of contexts. With this in mind, it is understandable that while some readers may be sympathetic with many of the themes developed in the essays, they might also be reluctant to adopt the enactive-phenomenological perspective 'wholesale'. This does not mean, however, that every insight offered here must therefore be categorically rejected. Indeed, if the enactive perspective is in anyway correct—if the ways we experience and come to know the world is not limited to simply representing and responding to information in the environment, but rather involves a process where we play *active* roles in shaping the worlds and experiences we live through—then it may have profound implications for education. At the very least, then, its central insights deserve serious consideration.

I have already mentioned how the enactive orientation resonates with critical pedagogy, especially through the work of Kincheloe (2003, 2008). As he shows us, enactivism's claims about the central roles of the body, emotion, and (adaptive-creative) organism-environment interactivity for cognition offer an important *critically ontological*

[5] For an interesting overview of uses of enactivism as framework for empirical research in the context of mathematics education see Reid, 2014.

*perspective*—one that ask us to reconsider what kinds of creatures we are; and, as a result, whether our current notions of education embrace the full possibilities of human being-in-the-world, or if it in fact imposes a reductive, mechanistic and instrumental ontology on what are essentially creative self-making entities. In other words, the enactive focus on the primacy of the body, emotion, and the situated nature of cognition poses a challenge for many current orientations towards pedagogy and curriculum development. It calls for an approach that goes well beyond the acquisition of facts and techniques, highlighting the fundamentally autonomous and world-making status of teachers and students.

With this in mind, one might summarize the main 'findings' discussed in the essays in the following way. The next essay posits a general ontological and ethical framework for music education based in enactivist principles—one that eschews technically-driven, mechanistic, or input-output "banking" (see above) approaches for more relational 'life-based' perspective that highlights the autonomous, creative, self- and world-making status of living musical beings. The essays in Part II, though not pedagogical in tone, support this view by showing how our emotional involvements with music—and musical experience more generally—may not be best understood in terms of an (input-output) cause and response schema (i.e., as mental 'affect programs' or 'in the skull' information-processing that simply respond to pre-given environmental stimuli). Rather, as outlined above, we argue that musical experience emerges and transforms relationally, and in unique ways, though active embodied engagement with the environment. Such processes, we suggest, may be traced to the basic ways living creatures reach out to the world and thus enact viable life-worlds. The essays in Part III develop these ideas in practice-based contexts, attempting to show how the cultivation of a 'phenomenological attitude' may help students and teachers gain a greater awareness of their perceptual possibilities—how they may advance and transform their understanding of themselves and the environments they inhabit through engaged music and arts practice. The essays in Part IV expand on the ontological and phenomenological perspectives introduced above by exploring the continuity between musicality and the basic movement of life. They consider the deep relationship between improvisation and cognition, as well as the pedagogical potential of music for highlighting the non- or pre-linguistic modes of communication that ground our being-in-the-world as embodied social creatures. In doing so they offer possibilities for

(self)assessment and reflection based in core enactivist principles (and in important precursors found in non-Western schools of thought).

As some of the essays are intended for (relatively) specialised audiences, it is likely that readers will find some of them to be more accessible and relevant than others depending on their background and interests. However, because of the continuities I have just described, I hope that, for example, a reader more concerned with the practical implications of non-formal musical learning might find something of relevance in the non-pedagogical papers concerned with emotion and qualia.

Here I should also say a few words about the current uses and limitations of enactivism for music education, and suggest some possibilities for how this orientation might be developed in future work. While phenomenological methods are by now an integral part of educational research and theory, the introduction of the enactive perspective is a relatively new development. Interestingly, the pedagogical area where enactivism appears to be most developed is not music but mathematics, where it is becoming increasingly recognised as a useful framework for empirical research and practice (see Reid, 2014). In recent years, however, enactive perspectives have begun to be developed in the music cognition, music therapy, and music education literature (Borgo, 2005; Bowman, 2004; Krueger 2011b, 2013; Reybrouck, 2001, 2012; Schiavio & Altenmüller, 2015; Silverman, 2012; Walton et al., 2014). As I suggested at the outset, this approach may offer theoretical support to existing research methods associated with non-formal learning (I touch on this again in the essays in Part III and IV). And indeed, a number of prominent music education scholars are beginning to develop this relationship, some of whom have adopted enactivism as a philosophical guide to (ethical) practice and research in music education more generally. This can be found in recent work associated with the so-called *praxial* approach to music education mentioned above (more on this in the following essay) (Elliot & Silverman, 2015; Silverman, 2012; van der Schyff, 2015b). The essays are intended to contribute to this project. However, because the enactive perspective is a relatively recent development in musical contexts, the theoretical work presented here is largely exploratory in tone. As such, a number of areas are left under-developed (or untouched). For example, the essay that follows this introduction discusses the ethical relevance of the enactive perspective for music education. However, it offers only preliminary thoughts about what this could mean

for music teacher education, and it has nothing to say about policy making. These are important areas that need to be addressed in future research.[6] Other areas of investigation that remain to be explored from an enactive perspective include the development of musicality in infancy and the question of 'creativity'. Again, these themes are touched on throughout the essays but are not considered in great detail.

Perhaps what is most needed is an enactive framework that will provide a clear "guide to discovery" (Chemero, 2009) for empirical research and practice in musical contexts—one that will allow us to model hypotheses, develop research environments, and guide *praxis* in a more systematic way. Along these lines, the recently introduced 4E model—which, as I mentioned above, sees cognition as an *embodied, embedded, enactive,* and *extended* phenomenon—may be well-suited to fill this gap. Each of the 'Es' offers its own focal points and criteria for investigation, which may then be combined to better describe and understand cognitive activity in a given context. Developing this approach for music cognition and education could result in interesting comparative perspectives where differences and similarities between subjects and contexts may be examined across the Es, from both fist and third person points of view. This framework could also offer a coherent way to guide the kinds of reflective phenomenological practice discussed in Part III.[7] (I discuss such possibilities in more detail in Part IV, where I make some preliminary suggestions for an improvisation pedagogy based on a 4E framework.)

Another promising way to develop the enactive perspective for music is through the use of modelling techniques associated with dynamic systems theory (Port & van Gelder, 1995). This approach is introduced in Part II in association with the discussion of musical emotions. Put very simply, DST offers (theoretical and mathematical) tools that allow researchers to describe how complex self-organising systems emerge and develop over time. While this approach has been used to offer useful descriptions of a range of non-organic self-organizing systems (Clark, 2001; Haken, 1977), more recently it has also been explored in biological contexts associated with coordinated movement, communication (semiotics), learning, problem solving, neural activity, and cognition more generally (see

[6] Some connections between enactivism and policy may be found in Elliott & Silverman, 2015.
[7] Krueger (2015a) discusses the relevance of a 4E perspective for the *praxial* approach to music education (i.e., in response to Elliott and Silverman, 2015).

Chemero, 2009). In brief, DST allows for the development of general models that may be applied across a range of musically relevant domains, affording the development and testing of hypotheses. Moreover, because this approach explores how self-organizing systems interact with each other to form "higher-order autopoietic systems" (Deacon, 2012; Walton et al., 2014) it might also be used to model musical ensembles.[8] DST could therefore be of great use in musical contexts, especially when developed in conjunction with 4E and phenomenological perspectives. Currently, my coauthors and I are exploring ways of utilizing 4E and DST approaches in the context of musical creativity and the development of musicality in infancy. In doing so, we hope to extend or enhance the concepts discussed here and provide more concrete possibilities for research and practice.

In short, the enactive perspective offers a number of possibilities that remain to be fully explored. In the years to come it may therefore open new ways of understanding our relationship with music and its pedagogical significance. With this in mind, I hope that readers will see the essays as introductions to further thought and dialogue, as explorations of possibility. This is why I have entitled the collection *Concepts for an Enactive Music Pedagogy*, as this is intended to describe the rather open-ended way these ideas are offered. Readers may draw out concerns and ideas that are particularly relevant to their musical and pedagogical activities, research and thought; and in doing so, develop their own perspectives that may feedback into the ongoing dialogue over the meaning of music and education for the human animal. Indeed, developing a definitive enactive music pedagogy might not be something that is desirable or even possible when, by this light, music, mind, and education are understood as ongoing, living and contingent processes that must be enacted by students and teachers themselves. These essays, then, simply provide concepts that may guide, support, and inform an enactive-phenomenological orientation towards music education and suggest possibilities for future inquiry. With this in mind we may now move on to the first of the published papers, which develops the critically ontological perspective discussed above and offers some general possibilities for what an enactive music pedagogy might entail.

[8] Over the past decade a handful of authors have begun to explore DST perspectives for music, mostly in the context of musical improvisation (see Borgo, 2005; Laroche & Kaddouch, 2015; Waltion et al., 2014; Walton et al., 2015).

# 2

# Critical Ontology for an Enactive Music Pedagogy

> [A] critical ontology positions the body in relation to cognition and the process of life itself. The body is a corporeal reflection of the evolutionary concept of autopoiesis, self-organizing or self-making of life. [I]f life is self-organized, then there are profound ontological, cognitive, and pedagogical implications. By recognizing new patterns and developing new processes, humans exercise much more input into their own evolution than previously imagined. In such a context human agency and possibility is enhanced. (Joe Kincheloe, 2003, 50).

## Introduction

The *enactive* approach to mind poses a growing challenge to traditional 'information-processing' or so-called 'cognitivist' models of cognition and meaning-making (Stewart et al., 2010; Thompson 2007; Varela et al. 1991). Put simply, the enactive approach sees the mind as deeply continuous with the basic processes of life. As such, it does not understand cognition as reducible to 'in the head' processes of computation and representation, but rather in terms of the self-organizing or *autopoietic*[9] activity that characterizes the co-emergent relationship between an autonomous living being and its environment. As a theoretical framework, enactivism explores such interactivity in the context of a living system's generation of 'meaning,' showing how the relationship between a living creature and its environment involves a circular, self-generating, and dynamical structure that allows the system to bring forth or 'enact' a world that is relevant to its continued survival and well-being (Froese and Di Paolo 2011; Thompson 2007). From this perspective living cognition cannot be understood as causally driven by the environment. Nor is it reducible

[9] In this context the term 'autopoietic' describes a self-organizing cognitive system that enacts a meaningful world through an ongoing history of embodied interactivity with the environment in which it is embedded (Maturana & Varela, 1980, 1992).

to information-processing in the brain. Indeed, the enactive approach eschews traditional dualistic frameworks rooted in inner-outer dichotomies and mechanistic metaphors (e.g. the input-output 'mind-as-a-computer' approach to cognition that understands the mind as 'software' run by the brain 'hardware'). Instead, it sees bodily, affective, and cognitive development as continuous with each other; and it highlights the perceptual autonomy of the organism with regard to the kinds of relevant relationships it enacts through its history of structural coupling with the environment (Noë 2006; Varela et al. 1991). In brief, the enactive perspective does not conceptualize mind and cognition as distinct categories detached from the body and world. Rather, it sees them as embodied and ecological phenomena that emerge from the basic life processes and behaviors observable in even the simplest biological systems in their constant relational coupling with the world (Varela 1979; Weber and Varela 2002).

As Kincheloe (2003) discusses, the enactive perspective has deep ontological implications for human being and knowing, where "human agency and possibility is enhanced" (p.50). It offers an alternative embodied and relational model of cognition that may help us reconnect with fundamental self and world-making aspects of our existence that are essential to a flourishing life. As such, enactivism also supports a critique of a number of problematic pedagogical assumptions, and is thus highly relevant to how we engage with music in educational contexts. Importantly, the enactive approach allows us to reexamine the meaning of musicality and education beginning with the embodied and affective origins of cognition, self-hood, and intersubjectivity (Colombetti 2014; Krueger 2013, 2014; Reybrouck 2001; Trevarthen 1999, 2002). From this perspective 'music' need not be understood simply as a kind of "pleasure technology" (Pinker 2009). Instead, it may be explored within the broader ethical context of human development and well-being—as a fundamental, empathic, and embodied sense-making capacity that plays a central role in how we enact the personal and socio-cultural worlds we inhabit (Krueger 2013, 2014; van der Schyff 2013b). As we discuss below, such insights lend support to past and present attempts (e.g., Bowman 2004; Elliott 1989, 1991, 1993, 1995, 2005; Elliott and Silverman 2015; Lines 2005a) to critically decenter traditional Western academic approaches to music education—which, it is argued, often tend to rely on reductive, disembodied and depersonalized assumptions about the nature of communication, learning, knowledge,

aesthetics, and what musical experience entails.

We begin with a brief look at some problematic assumptions central to Western academic music culture and consider the rather instrumental and 'technologizing' view of human being and knowing they imply. In connection with this, we then consider Martin Heidegger's conception of 'ontological education.' We explore the valuable critique it offers of the modern Western world-view; and discuss the more primordial and situated understanding of knowing, learning, and being it opens up (Pio & Varkoy, 2015; Thomson, 2001; van der Schyff, 2015b). These insights are then developed in connection with the concepts of 'autopoiesis' and 'autonomy' central to enactivism. Here we briefly consider how the enactive perspective departs from (or extends) similar approaches to human cognition and development by contrasting it with classic constructivist frameworks. Following this, an enactive-ontological approach to music education is developed in the context of 'care ethics' (Elliott & Silverman, 2015; Gilligan, 1982; Held, 1993; Noddings, 1982, 2012; Silverman, 2012). We outline in general terms what an enactive and care-based music education environment might entail, and consider how the emerging enactive approach to interpersonal ethics (as a possible enrichment of care ethics) might help music educators develop pedagogical perspectives based in the primary bio-ethical principles of 'participatory sense-making' and 'relational autonomy (Colombetti & Torrance, 2009; De Jaegher & Di Paolo, 2007; Urban, 2014). As we go, we suggest that this turn towards such ontological concerns may prompt music educators to look beyond prescriptive 'technicist' points of view and develop more adaptive, co-operative, communal, and 'life-based' perspectives that embrace possibility, creativity, and the unique sets of relationships that develop in the pedagogical environment. To conclude, we return to the thought of Kincheloe to discuss the need for critical ontology in music teacher education if we as a society are to open up to the full possibilities of musical experience and its deep relevance for human well-being and world-making.

Although our approach may sometimes seem polemical, our intention is not to assert an anti-Western agenda, nor to prescribe what or how educators should teach. Rather, the wide range of ideas and concerns we discuss below are meant to loosen taken-for-granted attitudes and decenter standard approaches. Above all, we hope to offer possibilities and concepts that may be developed through the creative imaginations of critically reflective

teachers—who, in the spirit of the autopoietic perspective that guides our discussion, might be inspired to engage more fully in the ongoing process of enacting their own paths towards being and becoming music educators.

## Questioning standard assumptions

In recent decades a growing number of authors have argued that the Western academic orientation towards music and music education is based in a problematic disembodied and decontextualized approach to cognition (Thompson, 2007; Varela et al., 1991; Hanna & Maiese, 2009), as well as in related 'technicist' approaches to teaching and learning (Elliott 1989, 1991, 1993, 1995, 2005; Elliot and Silverman, 2015; Lines, 2005a; Regelski 1998, 2002, 2012, 2016a).[10] Indeed, until recently the taken-for-granted superiority and autonomous status of the Classical canon went largely unquestioned in Western culture (Nettl 2005) and the locus of musical expressivity and meaning was thought to be found in, or to be 'possessed' by, the formal structural relationships of the 'music itself' (Bohlman, 1999; Clarke, 2012; Schiavio, et al. 2016; Small 1998). This perspective went hand-in-hand with a highly rationalizing, objectivist, and disembodied approach to meaning and aesthetics that was championed in the Enlightenment and that continues to drive many of our current assumptions. Here, 'meaning' is understood largely in terms of abstract linguistic propositions and concepts; and aesthetic experience, accordingly, involves a detached contemplation of the formal relationships intrinsic to the (supposedly autonomous) musical 'work' itself. Because of this, (and until recently) the situated, embodied and affective aspects of (musical) cognition have been largely ignored (Colombetti, 2014; Johnson 2007; Powell 2007).

Put simply, this orientation has resulted in the (often-tacit) assumption that a proper aesthetic account of a musical work has little to do with the actual lives of individual listeners. Rather, what matters is possession of the appropriate cognitive apparatus and technical knowledge to correctly perceive and reproduce the putatively objective formal relationships encoded into the score by the composer (Sloboda, 1985; c.f. Small, 1999).

[10] Regelski (2016b) discusses this very effectively in terms of a 'hegemonic ideology' that often obscures the meaning of music as social praxis.

This perspective has developed alongside the orthodox information-processing approach to human cognition mentioned above. As a result, in psychological contexts music cognition is often framed in terms of a representational 'correspondence-based' schema, leading to the widely held assumption that the perception of musical relationships or 'meanings' is causally determined by specific musical antecedents intrinsic to the 'music itself' acting on a range of pre-existing cognitive mechanisms that respond via prescriptive rule-based processes (Pinker, 2009; Scherer & Couthino, 2013).

A growing number of scholars are expressing dissatisfaction with this view. For example, Clarke (2005) argues that this perspective reduces musical cognition to an "abstract reasoning or problem solving process" where "perception is treated as a kind of disinterested contemplation with no connection to action, bearing little relationship to the essentially exploratory function of perception in the life of an organism" (p.15). Similarly, both Elliott (1989, 1991, 1995) and Elliott and Silverman (2015) point out that the Western academic focus on the primacy of the 'work' has contributed to a problematic decontextualized approach where music education, especially at the secondary and post-secondary levels, is generally seen as *aesthetic* education (Reimer, 1970)—where the term 'aesthetic' is understood in the abstract, highly-rationalizing and disembodied sense that follows from a number of "eighteenth-century axioms" (see Elliott, 1995).

Other writers argue that the global dominance of the Western perspective amounts to a form of cultural and epistemological 'colonialism' in music education—that it maintains a kind of hegemonic status over indigenous musical traditions (Bradley, 2012; Imada, 2012) and that it marginalizes certain musical practices (e.g. improvisation; Bailey, 1993; Nettl, 1974). Likewise, this 'colonizing' orientation may also be understood within the context of Western culture itself. Indeed, this depersonalized and homogenizing view of music and music education is seen by some as symptomatic of a highly bureaucratic 'culturally administered' bourgeois society, which led to "the construction of the musical canon as a cultural-entrepreneurial strategy" (DeNora 2011, p. 48; see also Adorno, 1973; Adorno & Horkheimer, 2002; Goehr, 1992). Others add that it may also be associated with what has been referred to as a problematic "technological enframing" of being and knowing that emerged in the modern era (see below), where individual agency, the diversity of human experience, and the primacy of feeling are devalued (Heidegger, 1982; Lines,

2005b; van der Schyff, 2015b; Sheets-Johnstone, 1999). This may be observed, for example, in the objectivizing and technological-mechanistic ways we often talk about and understand cognition, education and human development in the modern world (Johnson, 2007; Kincheloe, 2001; Thompson, 2007; Varela et al., 1991).

In brief, this disembodied, bureaucratic, and technologizing conception of human being and knowing has had a profound influence on Western academic music culture—where musical development, cognition, and education are often framed in terms of externally imposed rules and conventions, and where students are trained to perform and think according to standardized practices (Lines, 2005a, 2005b). Because of this, musical knowledge is often transferred to students in a more or less uncritical and decontextualized fashion reminiscent of the mechanistic "banking" model of education critiqued by Freire (2000). And thus, musicians, teachers, students, and listeners risk becoming part of the cultural 'standing reserve,' mere resources or consumers in the corporate techno-culture (Giroux, 2011; Heidegger, 1982; Marcuse, 2004; Thomson, 2001). As we will discuss, from the enactive-ontological perspective this orientation may be seen as unethical when it downplays the autonomous, embodied, creative, and self-making capacities of (musical) learners and teachers, and when it therefore reduces their ontological status to passive and essentially anonymous receivers (consumers), processors, and reproducers of information.

## Ontological education

On the face of things, it might seem obvious that such ontological concerns should be central to music education. After all, how teachers pursue education should be closely tied to how they understand themselves and their students—that is, to some evolving conception of what kinds of beings are involved and what being-as-learning and being-as-educating entails. Unfortunately, such fundamental questions are rarely explored with any depth in music teacher education. Likewise, little consideration is given to the development of critical perspectives that might encourage teachers and students to question the received cultural, philosophical, and scientific assumptions that guide our understandings of music, cognition, and education in the first place. We should be aware that ignoring such concerns may perpetuate a kind of 'false consciousness' (Eagleton, 1991) that promotes reductive

and prescriptive assumptions, and thereby curtails the possibilities of human being and knowing.

In order to better understand and look beyond such limited points of view, we begin by considering the conception of 'ontological education' developed by Heidegger (1998) as a counter to what he sees as an impoverished technological 'enframing' (*Gestell*) that dominates human understanding in the modern world (see also Flint, 2012; Thomson, 2001; van der Schyff, 2015b). Here it is important to note that, for Heidegger (1982), 'technology' does not first and foremost concern machines, nor is it necessarily a negative aspect of human existence. Rather, it is a basic human potential, a central aspect of how we reveal the world to ourselves and make it intelligible as rational beings. However, a serious problem arises in the modern world when a fascination with 'reason,' technology, and 'progress' obscures other ways of knowing and being. Marcuse (2004) puts it well when he writes:

> Rationality is being transformed from a critical force into one of adjustment and compliance. Autonomy of reason loses its meaning in the same measure as the thoughts, feelings and actions of men are shaped by technical requirements […]. Reason has found its resting place in the system of standardized control, production, and consumption. (p.49)

And indeed, such a perspective lies at the heart of the Neo-liberal educational agenda when it seeks to train students to simply maintain the free market culture that now masquerades globally as democracy (Giroux, 2011; Kincheloe, 2008).

However, as Heidegger discusses, this dehumanizing and instrumentalizing rationality is not rooted in some pre-given or universal aspect of human cognition. Rather, it is a historical development (see also Dreyfus, 2002). As he points out, the Greek conception of *techné* involves a more complex range of concerns than the modern view affords. Most notably, *techné* is enmeshed with the notion of *poiēsis* or 'being-as-production.'[11] Again, the use of the term 'production' should not be confused with a modern industrial notion of the word. Rather, the Greek idea o*f poiēsis* revolves around the concept of bringing-forth

[11] For further discussion of these terms in an ontological context and in relation to the *praxial* approach to music education see van der Schyff, 2015b.

or disclosing that (good, excellence, potential) which is immanently present, and where the agents of being-as-production are enmeshed in the process as a continuous system. By this light, technical knowledge is not seen simply as an end in itself, but rather as serving the wider existential project associated with human flourishing.

According to Heidegger (1998), this can be seen in the process of dialectic in Plato's dialogues, where the art (*techné*) of education (*paideia*) is shown as a critical truth-disclosing (*aletheia*) process involving student-teacher-world *relationality*—a *praxis* (see below) of self-revealing where the entities involved are intrinsically meaningful. Heidegger (1998) develops this in the context of Plato's Allegory of the Cave:

> Plato seeks to show that the essence of *paideia* does not consist in merely pouring knowledge into the unprepared soul as if it were a container held out empty and waiting. On the contrary, real education lays hold of the soul itself and transforms it in its entirety by first of all leading us to the place of our essential being and accustoming us to it. (p. 217)

Following Plato, Heidegger claims that the art of a true ontological education (as opposed to mere training) requires a "turning around" to face and reexamine the origins of one's thought and being. As such, Heidegger's conception of education involves both a negative and a positive moment (see Thomson 2001). On one hand, it requires a critical examination of taken for granted or *historically sedimented* attitudes that obscure essential possibilities of being-in-the-world. On the other, it looks to what this clearing away reveals about the essence of human being and develops possibilities that point the way to the future of education as a means of self and world making—whereby the possibilities of one's being-in-the-world may be 'brought forth' most fully.

What is revealed here is that education need not be understood simply in terms of the transfer, processing, and reproduction of fixed information according to standardized procedures. Instead, it may be embraced as a shared activity where educators and students, through their unique histories of interactivity and discovery, disclose the *praxis* of learning itself (Elliott & Silverman, 2015; Freire, 2000; Kincheloe, 2008). Ontological education's primary concern, then, is not simply with knowledge of 'this or that' (technical facts and procedures), but rather with developing deeper ethical and self-reflective understandings

of what it means to *be* and *become* a learner and teacher. Importantly, from this perspective 'the educator' cannot be understood simply as a repository of facts and information. Rather, he or she becomes a 'master of learning' who strives to empower students to critically inhabit their own self and world-making processes as fully as possible, and thus become master learners themselves (Thomson, 2001).

## *Phronēsis*, autopoiesis, and autonomy

As we have just considered, ontological education draws on a number of ideas introduced in Greek philosophy. This includes Aristotle's conception of *praxis*, which has played an important role in much recent music education philosophy (Elliott 1995; Elliott and Silverman 2015). Put simply, *praxis* entails more than simply 'doing' and 'making.' Rather, it highlights the ethical meaning of our actions in specific contexts, and therefore goes beyond technical forms of knowledge. From a 'praxial' perspective, all truly meaningful technical or theoretical modes of revealing (of thinking, acting and making) are underpinned by, and contingent on, the practical, empathetic and action-based ways of knowing associated with the notion of *phronēsis* (see Elliott and Silverman 2015; Regelski 1998, 2002, 2012, 2016). If *techné* describes the principles and methods of production, then *phronēsis* involves the active and 'care-full' concern with one's own life and with the lives of others; it refers to the fundamentally *caring* way we orient ourselves in the world. The knowledge (and action) associated with *phronēsis* is therefore inherently embodied and affective; it includes the ongoing development of pragmatic 'knowing-how' that takes relevant circumstances into account. Because of this, *phronēsis* gives living contextual meaning to technical and theoretical knowledge.[12] It allows us to open up to the world; to project certain possibilities 'ahead-of-ourselves' (Heidegger 2008); and may be cultivated into forms of reflection that reveal the richness of being in a given situation. In brief, *phronēsis* embraces the deep continuity between embodied action, imagination, and thought; between movement, empathy, affectivity, feeling and motivation, and how we

[12] As Elliott and Silverman (2015) discuss, when a focus on *techné* obscures the other three elements (*poiēsis*, *theoria*, *phronēsis*) all connection to *praxis* is lost. In such situations *techné* is stripped of its ethical responsibility, "as technical skills are not, by themselves, individuating, self-actualizing, creative, or personal growth experiences" (p. 46).

frame the world in rational and ethical terms (Johnson 2007). It is therefore central to how we develop meaningful relationships within the contingencies of life, which is crucial for well-being and the authentic bringing forth of the self (autopoiesis).

This all resonates rather closely with the enactive perspective. As Varela and colleagues (1991) write, "[t]he greatest ability of living cognition [...] consists in being able to pose, within broad constraints, the relevant issues that need to be addressed at each moment" (145). And indeed, the enactive approach may be understood to offer a deep biological grounding for *phronēsis* when it describes the origin of mind and self-hood in terms of the self-generating activity of living creatures as they strive to enact sustainable and flourishing relationships with the contingent environments in which they are embedded. Importantly, this can only occur when a living system is able to remain dynamically open to the environment (its interactivity) while simultaneously maintaining its autonomy (Varela et al. 1991; Thompson 2007). To clarify what this means, one might consider how a computer, while apparently requiring interactions to function meaningfully, has no way of doing so autonomously. This is because it is not a self-making entity and therefore has no intrinsic way (or motivation) to reach out to the world, to move and make itself. It does not and *cannot* 'care'—it is unable to 'frame' the world phenomenally or morally and therefore has no access to contextual, ethical or (*phronēsis*-based) praxial understanding. Put simply, a computer has its 'ontological footing' outside of itself; and thus the meanings of its 'cognitive' operations depend wholly on the *external* entities (i.e. humans) who use and interpret them.

Living organisms, by contrast, maintain an autonomous and highly valenced (i.e. affective; see Colombetti 2014) relationship with the environment—one that distinguishes itself through difference and interactivity, whereby a basic metabolic perspective of value, a point of view, or indeed, a 'self' may arise, develop, and flourish (Barbaras 2010; Di Paolo 2005; Thompson 2007).[13] This inseparable asymmetrical relationship between the bounded (e.g. skin, cellular membrane) networks of self-generating metabolic processes and the open sensorimotor dynamics of the organism's 'sense-making' activity shows that

[13] This is echoed in Heidegger's (1998) reading of Aristotle when he writes, "[plants and animals] are beings only insofar as they have their essential abode and ontological footing in movement. However, their being-moved is such that the archê, the origin and ordering of their movedness, rules from within those beings themselves" (190). Thus as, Heidegger asserts, nature (*phusis*) is "self-revealing."

living 'meanings' are 'emergent' transforming phenomena that depend on the different layers of self-organization (autopoiesis) of the whole organism as it continually enacts a world that is relevant, most fundamentally, in terms of its continued survival and well-being.[14] This occurs through a history of structural coupling with the environment—i.e., via body, actions, language, socio-cultural, and physical interactions, emotions, and so on. Interestingly, this also recalls Aristotle's important, but little-discussed, conception of *órexis*—which concerns his observation of how all living beings continually 'reach out' to the world in order to realize their potential as fully as possible; and how, as a result, organic being necessarily finds its ontological grounding in bodily and spiritual (*psuché*) *movement* (Nussbaum, 1986, 2001; van der Schyff, 2010).[15]

Importantly, from the enactive perspective the generation of meaning by living cognitive systems is not externally driven (as with computing devices). Rather, cognition is intrinsically rooted in organism-environment *relationality*. It is therefore impossible to reduce living experience and cognition to objective inner or outer structures (Varela et al. 1991). By this light, living organisms (people) may be understood to *participate* in (musical) learning processes through circular and contingent patterns of action and perception that continuously shape and renew the coupling's (organism-environment; musician-ensemble; student-teacher-educational ecology) own structural networks (O'Reagan and Nöe, 2001, Maes et al. 2014; Matyja and Schiavio, 2013; Schiavio, 2015). Again, information is not objectively 'out there' in a pre-given world waiting to be 'processed' or 'deposited' into the student. Meaning and knowledge are not wholly generated according to prescriptive rules, nor are they simply 'in the head.' Rather, they are brought forth through the contextual sensorimotor interactions that develop within a living organism-environment system (Oyama, 2000; Thompson, 2007). In this way,

[14] In enactive theory this is often discussed in association with the difficult notion of 'operational closure' or 'organizational closure' (see Varela et al., 1991). This term has proven to be problematic because, at first glance, it seems to contradict the fundamental relational orientation of enactivism. In order to avoid confusion we have not used the term in this paper. For a useful discussion of this concept see Vernon et al., 1993.

[15] Following Aristotle's notion of *órexis*, Martha Nussbaum remarks, "we all [(natural beings)] reach out, being incomplete, for things in the world. That is the way our movements are caused" (2001, 289). She goes on to examine in detail, how our ethical selves are formed from birth by this reaching out with our senses, our souls and our minds to the world (nature, things, our parents and siblings, our friends and colleagues; our society, other societies) in order to feel, intuit, imagine and rationally understand our needs, desires, and reasons.

musical development may begin to be understood as a 'distributed' phenomenon, where the musical mind is necessarily embodied and ecologically 'extended' (McGann et al., 2013; Krueger, 2014) into the dynamic adaptive relationships and *phronētic* practices (e.g. musicking and education) that emerge between people and their environments, which includes other cognitive agents (other students, teachers, bandmates and so on).

## Enactivism and constructivism

From the enactive perspective, the capacity to interact with the world in an open-ended, relational, autonomous, situated, and self-making way becomes the fundamental bio-ethical principle of a flourishing life, *eudaimonia*, or the ability of the organism to reach its own potential as fully as possible. This insight is shared by critical pedagogue, Kincheloe, who writes, "In both its corporeal and cognitive expressions the autopoietic life process reaches out for difference, for novelty, to embrace its next ontological level" (Kincheloe 2003, p. 49). Thus, while an enactive pedagogy strives to create the most fertile ground for such growth to occur, it is also careful about imposing strict developmental agendas on the pedagogical environment. It remains committed to the notion of autopoiesis as a guiding principle and thus seeks to foster a critical attitude towards cultural forces, institutions, power structures and *sedimented attitudes* that impose prescriptive and instrumental ontologies. It demands, as Jardine (2012) puts it, *a pedagogy left in peace*.

With this in mind, it may be useful to briefly contrast the enactive perspective with related approaches to cognitive development. For example, at first glance the enactive approach may recall Vygotsky's model of intersubjective learning (Crawford 1996), where students play an active role in learning, and teachers act as facilitators who aim to foster the construction of meaning in the pupil. Similarly, we may also find resonances with enactivism in the thought of Piaget (1952), who sees human development proceeding according to a "self-organizing principle inherent in life itself" (p. 19). For Piaget, it is this primordial function of autopoiesis that is essential or *a priori*, not the structures and categories that emerge from it.[16] In line with this, his program of 'genetic epistemology' explores how a child moves from a biological organism equipped with only a sensory

[16] This is to say Piaget essentially reverses Kant's categories from their original *a priori* status in order to consider them as the potential outcomes of relational processes of development.

motor system to a creature capable of abstract thought; that is, how basic sensorimotor intelligence develops into a rich understanding of a 'self' as a being in a world of objects, creatures and other embodied minds.

This said, Piaget remains committed to a dualist conception of an independent knower and a pre-given world, where the laws of cognitive development, "even at the sensorimotor stage, are an assimilation of, and an accommodation to, that pre-given world" (Varela et al. 1991, p. 176). In connection with this, he also understands cognitive development to proceed stage by stage towards a logical endpoint—namely, a Kantian notion of detached, objective, scientific (anonymous) reasoning as the highest potential of human development or 'maturity' (see Jardine, 2005).[17] Thus, as Varela and colleagues (1991) point out, in Piaget we find a curious tension: "an objective theorist who postulates his subject matter, the child, as an enactive agent, but an enactive agent who evolves inexorably into an objective theorist" (p. 176). And similarly, the learning advocated by the Vygoskian form of constructivism sees cognitive development as finally determined by the dynamics of thinking and speaking (Vygotsky, 1987).

Such classic constructivist frameworks offer many important insights. However, in the end they may have little to tell us about the sophisticated kinds of embodied and emotional-affective ways of knowing and being musical development and engagement require (Bowman and Powell, 2007) when, finally, they privilege such linguistic and objectivist forms of knowledge. And so, while the enactive approach does resonate with constructivism in many ways, it remains wary of constructivist claims that imply distinct developmental stages and pre-given outcomes, where primary embodied ways of knowing are progressively usurped by rationalizing, propositional-representational, and objectivist modes of thought. Rather, an enactive approach to music pedagogy sees organism and environment as a continuously co-arising process characterized by its *open-endedness* (Varela et al., 1991)—where primordial forms of embodied-affective sense making continue to inform all aspects of knowing and being even as we 'grow up' and begin to

[17] This way of understanding development has been placed in the context of a racist 'colonial logic' associated with the theory of 'recapitulation', which assumes that human ontogenesis follows a pattern from the savage to the civilized (Fallace, 2012). In line with this, music education is often understood as moving from more 'primitive' practices (i.e. the child as primitive) associated with non-Western musical cultures and instruments towards the full realization of human potential in Western art music (see Abril, 2013).

engage in more explicitly linguistic and rational (e.g., propositional) modes of communication and meaning-making (Johnson, 2007; Sheets-Johnstone, 1999). Indeed, this is a central reason why musicality is so important for education and human well-being—it affords a way of reconnecting with and developing such fundamental embodied and emotional ways of being and knowing (Bowman 2004; van der Schyff, 2015a, 2015b).

## Toward a 'care-based' pedagogical ecology

In light of the ontological and developmental concerns discussed above, the music education environment can no longer be understood simply as a training ground, where pre-given information and techniques are transferred to otherwise anonymous students through standardized procedures. Nor can musical development be seen as leading towards fixed, objective understandings abstracted from the contingencies of life and the range of embodied-affective and social engagements that constitute our being-in-the world. Rather, from an enactive perspective, the educational environment is revealed as consisting of a group of interacting autopoietic entities, reaching out to each other and drawing themselves together through their mutual care for being-and-becoming musical.

From this 'life-based' perspective the learning environment becomes an ecology of salience, where the relationships and meanings enacted go deeper than depersonalized technical musical knowledge or detached aesthetic appraisals; it represents the unique conditions of satisfaction for the (musical) organism's self-organizing development as it strives towards a flourishing existence. This reaching out to the world through music is guided and given meaning, most fundamentally, by the interactivity of the agents involved. The role of the educator is to reveal, encourage, and nourish this process. She engages her students by creating rich open-ended environments and projects where relational learning can be explored and where *techné* and *theoria* can be framed and developed in a living, contextual, and interactive *praxis*-based context. In doing so she introduces new elements, modes of communication, and ethical ways of perceiving into the environment that challenge students, both collectively and individually, to develop new ways of embodied, adaptive, situated, or contextual knowing (Elliott and Silverman, 2015)—to uncover new dynamic patterns and variations that foster development at the micro (individual) and macro levels (ensemble) (Granott and Parziale, 2002).

Not surprisingly, such an environment does not rely on traditional 'authoritarian' models associated with a 'banking approach' to education (Freire, 2000). Nor may it be understood in terms of the problematic 'child centered' perspective that is often wrongly associated with the thought of Dewey.[18] Rather, because the teacher must help students reveal possibilities[19] that they cannot yet open for themselves—all the while maintaining an open-ended attitude about how such possibilities may be developed collaboratively—the enactive music education ecology may be understood as *asymmetrically relational* and thus 'care-based.'[20] As Noddings (2012) reminds us,

> In care ethics, relation is ontologically basic and the caring relation is ethically (morally) basic. Every human life starts in relation, and it is through relations that a human individual emerges. […] Care ethics emphasizes the difference between assumed needs and expressed needs. From this perspective, it is important not to confuse what the cared-for wants with that which we think he should want. We must listen, not just 'tell', assuming that we know what the other needs. (p. 771–3)

From this perspective the relationship between teachers and students is no longer grounded in a fixed or depersonalized hierarchy, where the meaning of 'information' (what is taught) is externally imposed on the pedagogical system—and where the 'how' of teaching involves "blind faith in and devotion to a technicist method" (Regelski 2002, p. 111)[21] or some kind of curricula for all students everywhere (Noddings 1995). Rather, students and teachers engage in an open-ended, communal, and dialogical process of mutual specification whereby knowledge and understandings emerge from the relational and co-operative (musical) pedagogical ecology they co-enact (Reybrouck, 2005; Schiavio and Cummins, 2015).

[18] For a brief discussion see Elliot & Silverman, 2015, 131-136. See also Kimpton, 1959.
[19] This might be understood in terms of musical 'affordances'. See Krueger, 2014; Menin & Schiavio, 2013; Reybrouck, 2012.
[20] Writers in care ethics have noted limitations in Heidegger's conception of care (Noddings, 1995). We therefore turn to care ethics where the Heideggerian approach appears to fall short.
[21] As Regelski warns, from this decontextualized *technicist* approach "good teaching is simply a matter of the standard use of 'good method'. And since method is deemed good before the fact of use, and the training and delivery of method is standardized, any failure of students to learn […] is attributed by default to 'uncontrolled variables'" (2002, 111).

## Enactive relational autonomy

As we began to consider above, the enactive approach understands that (unlike computing machines) autonomous, self-making, *living* creatures necessarily engage in shared or participatory forms of sense-making (De Jaeger and Di Paolo 2007) and thus constitute evolving and meaningful environments for each other (Oyama, 2000; Varela et al., 1991). Here the well-being of such intersubjective ecologies is not understood to be based in some facile sense of consensus or conformity, but rather in terms of the ongoing *dynamic of difference* inherent in larger autonomous systems (e.g., a class or ensemble). Indeed, the caring, critical, and compassionate exploration and negotiation of such difference allows the individual and group to understand that its fundamental ontological status is relational, interpenetrative, and transformative (Nakagawa 2000). Bateson (1972) reminds us that difference is 'the pattern that connects'—reaching out to difference (*orexis*) both asserts the existence of a self or a point of view, while at the same time showing that the 'self' cannot be extricated from the complex system of organism-environment interactions it emerges from and that sustains it (see also Small, 1998). As Ihde (1977) writes, the self is continuously transformed "through its encounter with things, persons, and every type of otherness it may meet" (p. 51).

It follows, then, that the idea of 'cooperation' need not be based in 'higher' or representational-conceptual modes of knowledge or communication. Nor is it necessarily motivated by some pre-given goal. Rather it may be understood as emerging from the embodied-affective interactions of the individuals involved, and the shared needs, desires, and actions that result from such contingent inter-subjectivity (*phronēsis*). In this way, a social group may be understood to enact their own goals and ways of coordinating action through dynamic adaptive processes (Fantasia et al. 2014). As Hubley and Trevarthen (1979) write, "cooperation means that each of the subjects is taking account of the other's interests and objectives in some relation to the extra-personal context, and is acting to complement the other's response" (p. 58).

While such cooperative processes may come to involve complex social dynamics and representational forms of communication (e.g. language), they can also be discerned, for example, in the primordial musical-emotional interactions that occur between infants and primary caregivers (Dissanayake, 2012; Trevarthen 1999, 2002). It is important to note

here that although the caregiver provides the basic embodied and affective 'scaffolding' for such fundamental social interactions to occur, the infant cannot be understood as simply responding passively to pre-given stimuli in the environment. Rather they make "specific preparatory body adjustments that facilitate the mother's movements […] (Fantasia et al, 2014, 8; see also Krueger, 2013; Reddy et al., 2013; Service, 1984). That is, the infant and caregiver reach out to each other where "intentions and goals are not searched before or behind the communicative action as its 'cause', but [rather are] shaped and adjusted as the interaction unfolds" (Fantasia et al., 2014, p. 6).[22] This is an excellent example of the interactive-autonomous dynamics that characterize all relationships enacted by living beings (see above). These intersubjective behaviors also lie at the heart of what enactivists term 'participatory sense-making' (De Jaegher and Di Paolo, 2007), a central concept for the emerging enactive approach to social cognition and interpersonal ethics (Colombetti and Torrance, 2009).

From the enactive perspective, our capacity to engage in and develop such primary embodied-affective relationships forms the basis of our social and ethical selves, as well as our ability to make sense of the world more generally (Johnson, 2007). However, as we began to consider above, similar embodied-affective and cooperative forms of interactivity and sense-making may move beyond simple dyadic contexts and extend to the larger social group as a living self-organizing entity in its own right—one which may be understood to constitute the very ground from which 'persons' emerge and return to in an ongoing process of mutual, co-operative transformation. Put simply, the enactive approach emphasizes the origins of ethics, meaning and self-hood in such relational, cooperative, and interactive behavior (Urban, 2014; (Thinkers in care ethics discuss the limitations in Heidegger's conception of 'care' (Noddings, 1995). We thus draw on care ethics where the Heideggerian notion falls short.). In doing so, it allows us to look beyond standard assumptions about human agency and autonomy, which are often considered in a detached and highly rationalizing context. Indeed, the received 'cognitivist' perspective handed down from Enlightenment thinking continues to permeate current notions of self-hood and

[22] Readers may note here the deep relevance of improvisation in such processes, which though marginalized in Western academic music, may, from the enactive perspective, be understood as a central aspect of social cognition—which perhaps explains its ubiquity in most other musical contexts and cultures (Bailey, 1993; Berliner, 1994; Monson, 1997; Nettl, 1998).

cognition, where 'autonomy' is assumed to involve "primordially lone individuals [merely] extending their cognitive reach" (Urban, 2014, 4). This is generally understood to occur within contexts that involve various social institutions characterized by certain normative modes of behavior and thought (see De Jaegher, 2013). Here a further problem arises when such normative contexts are understood in a prescriptive functionalist light. That is, when they are reified and thought to exist "in a special normative realm independently of the actual lives of people" (Torrance and Froese, 2011, p. 46), which makes it impossible to see how our institutions and received ways of being and thinking could be criticized or changed. This resonates with our critique (above) of the way Western academic music culture often dictates how we think about and do music and music education; how we often uncritically formulate our ideas about music cognition and learning within a taken-for-granted framework (Cross 2010).

By contrast, the enactive perspective prefers to explore how normative contexts "are embedded in the ways people conduct [their] lives—their continued existence requires that they be continually (inter-) enacted, in either word or deed" (Torrance and Froese 2011, p. 46). In brief, the enactive approach to *relational autonomy* and social cognition highlights the origins and potential fluidity of normativity (De Jaegher, 2013) in the complex embodied, contextual, and cooperative processes associated with participatory sense-making (De Jaegher and Di Paolo, 2007). As Urban (2014) argues, this insight "can help us explain how a criticism and transformation of social structures, institutions, and norms can materialize. And [that] this is precisely what has been at stake in the ethics of care since soon after its conception" (p. 2) (see also Cash 2010, 2013). This has great relevance for the project of critically revitalizing established practice and thought in music education when it loosens our understanding of 'the normative' and allows us to see how it may be transformed. That is, how new ways of knowing may emerge through critically reflective, relational-empathetic, creative and cooperative music *praxis* (Elliott and Silverman 2015).

## The enactive music educator

Given what we have discussed thus far, the enactive-ontological or autopoietic educator may be understood as one who discloses being-as-learning as an ongoing, transforming, and interactive process of self and world-making (Elliott and Silverman 2015). As we

considered above with Heidegger's ontological education, this means that the teacher can no longer be considered as an authoritarian repository of facts and techniques. Rather, as someone who embodies learning—and who provides the appropriate developmental 'scaffolding' for students (Lajoie 2005; van de Pol, Volman, and Beishuizen 2010)—the educator may be better understood as a kind of *attractor*[23] around whom the pedagogical system organizes itself. In order to keep this dynamic relationship healthy, however, she must remain (interactively) open to the group as well as the contingent needs, developmental processes, and unique ways of knowing and doing that emerge in the individual students who constitute it (Noddings 2012; van de Pol, Volman, and Beishuizen, 2009). The pedagogical techniques and theories she develops must be adaptive and contextually relevant—simultaneously emerging from and informing pedagogical practice; and all the while embracing the embodied-affective and participatory nature of human musicality (Elliott and Silverman, 2015).

Moreover, teachers, students and the pedagogical system they jointly enact (i.e. improvise) will also need to remain open to, and continually seek out new possibilities for understanding and engaging with, the wider cultural milieu they participate in. With this in mind, an enactive music educator will foster a dynamically open relationship between the 'class' (as a living system itself) and the world at large. Here students may be encouraged to contribute to the educational ecology by bringing ideas, critical and cultural perspectives, and musical practices drawn from their everyday lived experiences (see Green, 2008). The class or ensemble will also creatively interact with musicians and cultural communities outside of the school environment. In this way, the development and meaning of the pedagogical system remains open-ended, relevant to the lives of those who constitute it, and is limited only by the general constraints of the possible.

Developing such self and world-making potentials in a critically reflective pedagogical environment may help to enhance, personalize and, indeed, vitalize, more traditional or codified musical and pedagogical practices and theory. However, this approach also strongly implies the exploration of 'alternative' approaches to creative *musicking* that

[23] This term is borrowed from dynamic systems theory to describe how complex self-organizing systems emerge and develop. For a brief overview in an enactive context see Colombetti (2014) and Varela et al. (1991).

develop the unique possibilities of a given group or individual. This may involve improvisation and experimentation, the exploration of wider cultural perspectives and practices, as well as the development of creative collaborative projects that *decenter* the Western academic approach (e.g. Korsyn, 2003; Powell, 2005). Advocates of ethnomusicological and improvisational pedagogy have shown that such elements may be introduced early on to foster open, culturally aware, and creative attitudes in children (Campbell, 2009). Along these lines, a number of highly promising pedagogical possibilities already exist in marginalized music practices associated with the so-called avant-garde and free improvisation (Bailey 1993; Borgo 2005, 2007; Lewis, 2009; Thomson 2007; van der Schyff 2013a). The development of arts-inquiry projects in music education associated with 'sonic ecology' and 'sound studies' also hold great potential for developing deeper critical and affective (see Mathews 2008) understandings of the 'natural' and urban-cultural environments (Krause, 2012; Powell and Lajevic, 2011; Schafer, 1994, 1986; Sterne, 2012). Additionally, students may be encouraged to engage in enhanced or non-traditional forms of creative musical activities and analysis that develop multi-modal and cross-disciplinary perspectives (Clarke, 2005; DeNora, 2000; Kress, 2010; Machin, 2010), as well as the creative use of technology (Burnard, 2007; Macedo, 2013; Nijs et al., 2012; O'Neill and Peluso, 2013; Slater and Martin, 2012; Wilson and Brown 2012; van der Schyff 2016b). Importantly, this open-ended, exploratory, and collaborative orientation takes the unique lives, interests, and creative potentials of students and teachers seriously in the ongoing process of curriculum development (Campell, 2010).

As Bowman (2004) writes, an enactive approach to music education embraces the great pedagogical significance of music when it highlights music's ability to reveal the "co-origination of body, mind, and culture" (p. 46). And indeed, the types of activities and relationships this orientation encourages may open up exciting new contexts for theorists and empirical researchers who wish to better understand and develop the transformative possibilities of music and arts education for self and society (Karlsen, 2011; O'Neill, 2012; Westerlund, 2002). Lastly, because an enactive-ontological approach to music education places an emphasis on such life-based, embodied-empathic, creative and relational (i.e., *phronēsis*-based) ways of learning it will also necessarily involve encouraging students and teachers to examine and share their unique embodied emotional-affective involvement

with, and motivations for, music-making. This is to say that exploring the deep possibilities of music for human flourishing will also entail a radical opening up to one's own affective-emotional life in order to better understand it—not simply as a fixed group of basic responses to, or appraisals of, external stimuli (see Schiavio et al., 2016), but rather as a primordial embodied way of contextually situated knowing that grounds our being-in-the-world as self-producing, caring social creatures (Johnson, 2007; Krueger, 2013).

## Conclusion

Above all, an enactive-ontological approach to music education does not treat teachers and students as anonymous transmitters, receivers, and *reproducers* of knowledge. Rather, it asks them to look at the world with a critical eye, to loosen sedimented or taken-for-granted attitudes, and thus imagine and explore possibilities for new and more ethical ways of being and knowing as the autonomous, embodied, social and creative creatures they are—"to be personally present to their own learning [and teaching] processes and self-reflective with regard to them" (Greene 1995, p.181). Not surprisingly, however, developing such awareness in the modern educational environment is easier said than done. As we have considered, the modern perspective often obscures the rich possibilities of other ethical, ontological, and epistemological possibilities, both within the Western tradition and from other indigenous perspectives, leading to a rather disenchanted world-view (Thompson, 1998; Wexler, 2000). Therefore, as we discussed at the outset, an enactive music pedagogy will necessarily be a critical one. This demands a new perspective on what music 'teacher training' entails—one that strives to develop the kind of 'critical consciousness' or 'conscientization' advocated by Freire (2000) and other critical pedagogues as a counter to the instrumental and dehumanizing modes of 'training' and 'conditioning' that often pose as education in contemporary society.

Kincheloe (2003) writes that, "too infrequently are teachers in university, student teaching, or in-service professional education encouraged to confront why they think as they do about themselves as teachers—especially in relationship to the social, cultural, political, economic, and historical world around them. […] Mainstream teacher education provides little insight into the forces that shape identity and consciousness." In order to address this problem, Kincheloe (2003) offers 23 basic ideas that underpin the development

of critical ontology in teacher education. These ideas are framed in terms of specific needs related to "conceptualizing new, more just, and more complex ways of being human" (p. 1). They include the need:

- to move beyond mechanistic metaphors of selfhood.
- to appreciate the autopoietic (self-producing) aspect of the "self" in order to gain a more sophisticated capacity to reshape our lives.
- to understand the importance of socio-historical consciousness concerning the production of self.
- to recognize dominant power's complicity in self-production vis-à-vis ideologies, discourses, and linguistics.
- to conceptualize new ways of analyzing experience and apply it to the reconstruction of selfhood.
- to move schools to examine the ontological realm of self-production and the myriad of forces that affect it.
- to become cognizant of the cognitive act as the basic activity of living systems—the process of establishing relationships and new modes of being.
- to grasp the notion that this ontological process of cognition constructs the world rather than reflecting an external world already in existence.
- to realize that the nature of this world, the meanings we make about it, and our relationships with it are never final—thus, humans are always in process.
- to see that the self is not pre-formed as it enters the world—that it emerges in its relationships to other selves and other things in the world.
- to realize that the nature of the interactions in which the self engages actually changes the structure of the mind. (pp. 1–2)

Such concerns point the way to a new, complex, critically ontological approach to music teacher education—one that develops a much wider range of philosophical, scientific, historic, cultural, critically reflective, therapeutic, and praxis-based concerns than have been entertained in traditional approaches. Following the Platonic-Heideggerian 'turning around,' this orientation demands a deepened interest in the nature of musical being and becoming as it relates to identity formation and personhood, individual and cultural development, as well as human flourishing beginning at fundamental embodied and emotional-affective levels. It involves fostering a phenomenological and critically

contemplative attitude towards music, education, self, and society and a love for the broad range of knowledge this implies. Indeed, the critical-enactive educator must develop the skills to look beyond the information traditionally associated with his or her field of knowledge and develop an open, interdisciplinary perspective to help reveal the deep interpenetrations between the subject at hand and the world at large. Noddings (2012) writes that, "teachers need a richer, broader education" (776); they need the "latitudinal knowledge" that allows them to draw on diverse areas of understanding "in ways that enrich their teaching and offer multiple opportunities for students to make connections with the great existential questions, as well as questions of current social life" (Noddings, 1999, p. 215). This speaks to the great intellectual challenges and commitments an enactive educator is asked to make. However, it also suggests the transformational impact a rich, critically ontological pedagogy can offer, not only for the lives of individual students and teachers but also for the society at large.

Thomson (2001) points out that as a new ontological understanding "of what and how beings are takes hold and spreads, it transforms our basic understanding of what all entities are. Our understanding of education is 'made possible' by the history of being, then, since when our understanding of what beings are changes historically, our understanding of what 'education' is transforms as well" (248). With this in mind, a critically ontological approach also situates music education within the wider ecological, socio-political, and economic concerns related to the meaning and future of human-being in the modern world—as well as the associated transformations in culture and consciousness that will be required for our continued survival as a species (Mathews, 2008). This invites opening up to indigenous and other marginalized ways of knowing in order to move beyond the alienating and 'disenchanting' machine metaphors of the Cartesian world-view (Thompson, 1998; Wexler, 2000). It also asks us to rethink the instrumental view of teachers and students as 'human resources'.[24] Until recently, many of these perspectives on life, experience, music, and meaning have simply been seen as 'primitive' by the modern techno-culture. However, they are increasingly recognized as offering important ways of regaining "our belongingness to the world and the other people around us"

[24] Neil Evernden (1993) writes, "By describing something as a resource we seem to have cause to protect it. But all we really have is a license to exploit it" (23).

(Kincheloe 2003, p. 11). And indeed, in today's increasingly multi-cultural environment music offers an unparalleled 'meeting place' for individuals to come together from different backgrounds in order to experience each other in a non-threatening environment (Cross 1999)—to imagine, develop shared understandings (Greene 1995; Sparks 2014), and form new intersecting cultures.[25]

A critically ontological perspective offers a fresh way of exploring what education entails. It asks us to 'turn around' and consider the origins of mind, self, and cognition beginning with our primordial engagements with the world (Dewey, [1938] 1991; Thompson, 2007). In doing so, it reveals education as an open-ended, creative, intersubjective or, indeed, an *enactive* process—one where we may cooperatively engage in a critical restructuring of thought, feeling and action that affirms our fundamental nature as autopoietic creatures. In this way, an enactive-ontological pedagogy continually strives to open new possibilities for being and becoming musical when it asks us to question taken-for-granted ways of thinking, doing and being; and to understand that what may first appear as imposed or pre-given may in fact be transformed through critical and creative *praxis*.

Of course, such possibilities are challenged by the highly bureaucratized contexts in which many educators strive to make a difference. But even here, opportunities do present themselves for critique and transformation. As Foucault (1980) points out, while we often tend to think of these bureaucratic environments in homogenous or monolithic terms (a necessary 'truth' requirement for normalization), the institutions and modes of discourse that govern them emerge historically in a piecemeal fashion—"a complex play of supports in mutual engagement" (p. 159). This resonates with the 'fluid' conception of normativity discussed above in the context of enactive relational autonomy. It also strongly suggests that if educators and students are encouraged to develop the skills and awareness to maintain a vigilant critical perspective (see Flint, 2012) they may better understand how such mechanisms of power are formed and interact—all the while searching for the cracks and gaps, the loosely formed intersections where they may make a difference.

Thus, here and there, teachers may find and foster moments where the technicist and

[25] For example, music as a means of developing the "third space" (see Bhabha, 2005). Along these lines, see the exploration of Bakhtin's (1981) notion of 'heteroglossia' in Powell's (2005) discussion of improvisation in a cross-cultural Taiko drumming ensemble. O'Neill's (2009) cultural diversity theory of difference also resonates closely with these ideas.

depersonalized agendas may be subverted (Elliot and Silverman, 2015) and where more personalized, collaborative and creative pedagogical approaches may be enacted. In this way, an enactive and critically ontological shift in music teacher education may slowly open up richer life-based or autopoietic environments in schools, which will then deepen students' understandings of the meanings and transformative possibilities of music for their lives and the socio-cultural milieu they inhabit. When music students then go on to become performers, teachers, and active cultural citizens they will arrive with a caring, relational, and self-making perspective that encourages imagination, creativity, and collaboration rather than conformity. This may then feedback into the teacher training system as the cultural consciousness of music (re)opens to its deep and diverse epistemological and world-making potentials.

# Part II

# The Embodied Experience of Music

# 3

# Enacting musical emotions: Sense-making, dynamic systems, and the embodied mind

## Introduction

Philosophy of music has focused on the relationship between music and emotion as a principal issue since its beginnings in Ancient Greece (Cochrane et al. 2013). In recent years, this inquiry has been joined by psychologists and cognitive scientists, who have enriched the field with an impressive array of cross-disciplinary research and theory. This work has affirmed that the sphere of emotions is present in all fundamental aspects of musical experience (Juslin & Sloboda 2001; Zentner et al. 2008). But while the intimate connection between music and emotion is now widely accepted, the precise nature and meaning of this relationship remains a subject of controversy. As a result, discussions over musical emotions have adopted many forms, assumptions, and arguments (Thompson & Quinto 2011). Despite this diversity, however, the literature has been dominated by two main points of view, which attempt to understand musical emotions in terms of what have been referred to, respectively, as the internal and external locus problems (Schubert 2013).

The internal perspective investigates the 'how' of musical emotion. That is, it aims at providing an answer to the question of how music induces or causes emotions in listeners (Cochrane 2010a, b; Juslin & Sloboda 2010). The external perspective is mostly concerned with answering 'where' questions—e.g. do emotions belong to the music, the performer, the score, or the listener (Davies 2010; Juslin & Timmers 2010)? Put simply, the external 'where' problem is mainly associated with emotion perceived as 'expressed by', 'possessed by', 'attributed to' or being 'located in' the music itself (i.e. the score and/or performance); while the internal 'how' problem generally seeks to understand the causal sequences whereby musical stimuli act on body and brain mechanisms and thus generate emotions *in*

*listeners* (Scherer & Coutinho 2013; Schubert 2007). These orientations, however, are not always mutually exclusive and sometimes inform each other in various ways to produce more refined approaches.

This juxtaposition of 'external' and 'internal' points of view has resulted in several influential frameworks (Fabian et al. 2014; Schubert 2013); and has provided important insights across a range of musically-relevant domains such as music therapy (Baker et al. 2007) and music performance (Scherer & Zentner 2001). There are reasons, however, to question whether relying on the external/internal dichotomy represents the best way to shed new light on music and emotions. Indeed, many of its underlying assumptions are increasingly challenged by new research that looks beyond such inner-outer schemas to explore emotion as an embodied phenomenon (Maiese 2011). Along these lines, researchers have increasingly drawn on the so-called 'enactive' approach to cognition (Varela et al. 1991) to investigate musical experience in more holistic ways. From this perspective, musical-emotional phenomena cannot be reduced to pre-given outer and inner structures, nor are they best understood in terms of sequential causal chains of events. Rather, the enactive approach understands both emotion and cognition to originate in the embodied activity that simultaneously emerges from and motivates the dynamic interactions between an organism and its environment (see Colombetti 2014; Reybrouck 2005, 2015).

In this paper we explore these concerns in more detail in an attempt to frame an alternative enactive approach to musical emotions. While various interpretations of embodiment and enactivism have been put forward, our perspective is more in line with the classical 'autopoietic' or 'biological' proposal that originates in the work of Varela et al. (1991), and that has been developed by Thompson (2007) and Colombetti (2014) among others. This said, our goal here is not to contrast this framework with similar accounts such as sensorimotor enactivism (O'Regan & Noë 2001a, b) or radical enactivism (Hutto and Myin 2013). Rather, we adopt conceptual tools and models (e.g. dynamic systems theory) that are shared among these perspectives in an attempt to develop the common orientation of these points of view in the context of musical emotion.

The paper is structured as follows. We begin by reviewing a number of influential theories on musical emotions, which are then critically assessed in terms of their

problematic commitment to the above-mentioned inner-outer schemas. Here we consider how the pervasive (and often tacit) influence of the standard information-processing model of cognition supports such dualistic perspectives and downplays the importance of personal agency, embodied interactivity, and creative engagement that musical experiences involve (Krueger 2009; Reybrouck 2010; Schiavio 2014). Following this, we offer theoretical grounding for an enactive approach to musical emotions. To do this we develop a range of cross-disciplinary support, most notably drawing on developmental perspectives and related research in affective science and dynamic systems theory (Colombetti 2014). To conclude we consider in more detail how such insights might impact our understanding of musical emotions, offering possibilities for future research and practice.

## Theoretical and historical background

Despite the advent of a very influential theory of emotions in the late 19th century—put forward concurrently by James (1890) and Lange (1887) (see also Lang 1994 for discussion)—the study of emotions occupied only a secondary role in the subsequent history of psychology, regaining its importance only in the last few decades (see Damasio 1994; Plamper 2015). This may partially explain why the topic of 'musical emotions' has been confined traditionally to philosophical and musicological rather than to psychological discussions. However, since the publication of a seminal book by Juslin and Sloboda (2001) on music and emotion, the scientific interest in this domain has expanded greatly, resulting in a rapidly growing body of contributions that demonstrate the current significance of this challenging field (e.g. Clarke et al. 2010; Dibben 2004; Juslin & Västfjäll 2008). In spite of historical and methodological differences, however, philosophical and psychological perspectives on musical emotions coincide in a number of general assumptions. One of them is the distinction between two broad categories of investigation: the expression and recognition of musical emotions on one hand, and the induction and elicitation of emotions on the other (Cochrane et al. 2013; Sloboda & Juslin 2001). As stated above, the former refers to the 'where' problem (exploring musical emotions as externally located), the latter to the 'how' problem (exploring musical emotions as internally located in the listener).

### *The external locus problem: philosophical and psychological claims*

It has often been stated that musical experience appears to involve an 'emotional message' that is somehow communicated through the musical sounds, even when the music does not include any lyrics (e.g. Juslin & Laukka 2003). However, this assumption entails a kind of paradox. Music, indeed, is not a sentient being, which makes it difficult to imagine how it could feel and express emotions at all. It can be asked, therefore, to whom these emotions belong. Who is the owner of the emotional message? Musicologists, philosophers, and music psychologists have attempted to answer these questions in various ways, but one common assumption remains: whatever the music expresses, it is to be found 'outside' of the listener. This general orientation is in line with a number of traditional beliefs central to Western musicology, where the answer to the 'where' (or 'whose') question has been taken for granted: musically expressed emotions belong to the composer, who has skillfully imbued his or her private feelings into musical materials so that a competent performer can reproduce it and an educated listener can decipher it (Bohlman, 1999; Cook, 2001). And indeed, because the strong empirical orientation of music psychology may often overshadow theoretical issues (Eerola & Vuoskoski 2013), such assumptions are often taken-for-granted. As a result, methodology and outcomes in music psychology are often framed according to the tacit belief that musically expressed emotions necessarily belong to the composers or musicians who compose and/or perform the music (Martin, 1995).[26]

This assumption has been challenged by a number of philosophical musicologists who point out that neither composers nor performers need to enact in themselves the corresponding emotional state to produce emotionally-expressive music (e.g. Budd 1989; Davies 1994). As a result, three alternative solutions to this 'ownership problem' have been proposed: (i) emotions are perceived in music because we have an illusion of a virtual persona to whom they belong, i.e. they are owned by the music, but not necessarily by the composer (e.g. Cone 1974; Levinson 1996); (ii) the perception of emotions in music is a case of misattribution, since the emotions we hear are aroused in ourselves, but are ascribed to the music; in other words, musically-expressed emotions should be attributed to the

[26] This idea underlies for example Juslin's Expanded Lens Model (2005). According to this model an emotional message is encoded by the composer; performers manipulate different musical parameters so that their combination increases the probability that the listener will identify the 'right' emotion intended by them.

listener (e.g. Matravers 1998; Nussbaum 2007); and (iii) in order to experience music as expressing emotions there is no need to find a subject that owns them (Davies 1994, 1997; Kivy 1999); the mere fact that musical sounds sometimes resemble human behaviors that are emotionally expressive (e.g. vocal utterances, bodily movements, gestures) should suffice to perceive musical expressions of emotion in the music. In brief, the question of the 'ownership' of musically expressed emotions is seen in terms of some combination of the (inner) psychological disposition of the listener in reaction to the (external) structure of the music, leading finally to the experience of perceiving emotions *in the music*.

### *The internal locus problem: routes and mechanisms*

In addition to the claim that we may perceive emotions as communicated by or as 'in' the music itself, there is also the issue of how music allows us to be 'moved' emotionally—i.e. how 'internal' emotional states are caused and experienced as a consequence of attending to musical sounds. In line with this, a long-standing assumption in the psychology of emotions suggests that we should distinguish between two possible 'routes' that lead to the elicitation of emotions (e.g. Chaiken & Trope 1999). The first route involves the appraisal of the significance of a stimulus for the realization of our goals. It is grounded in 'appraisal theories' (e.g. Lazarus 1982; Solomon 1976; Scherer 2005) and is generally thought to proceed according to rule-based forms of processing. The second route involves associative processing that does not explicitly involve appraisal. Among other things, this entails the reactivation of past emotional states because of their resemblance to aspects of the present situation—including bodily conditions and facial gestures (e.g. Strack et al. 1988; Niedenthal 2007). As we discuss next, both routes have been developed in a variety of ways in order to explain how music may be understood to cause emotions *in listeners.*

Adherents of the appraisal route have attempted to explain how certain aspects of musical stimuli might be appraised as goal-relevant despite the common assumption that music may have no immediate (or evolutionary) biological relevance for the realization of our goals in the context of survival and well-being (Juslin et al. 2010; Scherer & Coutinho 2013). This approach is found, for example, in Meyer's (1956) and Huron's (2006) expectation theories. Here the claim is that music affords the building of perceptual wholes,

which may evoke expectations (goals) about how the music will sound next.[27] By contrasting these expectations with the way the music actually unfolds, it is suggested that different emotional states are elicited like anticipation, tension, surprise, relief, disappointment, and so on. Another proposed mechanism within the appraisal route involves a more 'primitive' type of appraisal. Sudden, loud, dissonant, or fast events in the music stimuli, for example, are thought to trigger innate sensorimotor connections that function like reflexes (e.g. Panksepp & Bernatzky 2002), which act on several subcortical areas of the brain that process appraisals of danger or urgency.[28] These preconscious appraisals are then experienced as feelings of surprise, increased arousal or unpleasantness (Juslin & Västfjäll 2008; Khalfa & Peretz 2004). Here, the chronometric perspective on aesthetic experience, as described by Brattico and colleagues (2013), is also important to consider. This approach explores the temporal order of how the various stages of perception and appraisal interact. For example, primordial engagements with music may be understood to have a place in the early stages of the aesthetic experience, with more explicitly cognitive evaluations occurring later.[29] In line with this, the chronometric perspective may help us better understand how aspects that range from rapid reflex-like responses and bodily-affective changes, to slower and more explicit evaluations, interact with each other and with the situational and individual characteristics of a given (musical) event in time.

The second route for the induction of emotional states stimulated by music bypasses

[27] Huron (2001) has considered the evolutionary status of music from both adaptationist and non-adaptationist perspectives; he adopts a highly informed but relatively open position on the subject. Nevertheless, he appears to remain committed to explaining musical emotions largely in terms of evolved appraisal mechanisms, which permit statistical forms of learning that allow the cognizer to form representations that correspond with the features of the 'external' world (Huron 2006).

[28] We acknowledge that the notion of appraisal as quick, primitive and automatic may appear controversial. However, we endorse here a rather 'broad' definition of appraisal, as proposed by a number of contemporary emotion theories: appraisal is a process that takes a stimulus as its input and produces values for one or more appraisal variables as its output (Moors 2013, p. 133). This means that appraisals are processes by which a stimulus is evaluated and values are produced (i.e. how good/bad, safe/threatening, expected/unexpected, beautiful/ugly, good for my goals/bad for my goals, a stimulus is). Thus, evaluation is performed both by basic and quick mechanisms—such as the novelty check, that is produced in less than 500ms by primitive mechanisms, including the amygdala—; and by slow mechanisms—like the aesthetic evaluation of a piece of music's beauty, which depends on slow, propositional, cortical processing (for more details on this inclusive definition of cognitive appraisals see Clore & Ortony 2000, and Sander et al. 2005).

[29] However, as we will see, the stages of engagement with music should not be understood as discreet, but rather as integrated and relational.

the need for appraisal. It involves the involuntary activation of past emotion-laden memories though associative processing mechanisms—music that has been previously associated with an emotional experience reinstates that original emotional state without the need for any conscious awareness of the link between both stimuli. This can be seen in cases of evaluative conditioning, where positive or negative responses to a given piece of music are generated because in the past the listener experienced the music as occurring simultaneously with events that were valued as being positive or negative. Similar responses may also occur when listeners have complete awareness of such associations—as in the case of episodic memories, where pieces of music evoke specific emotional life events (Juslin & Västfjäll 2008). Other non-appraisal approaches involve the principle of activation spreading. Here emotions are understood to be organized as networks of nodes (in the brain) connected by associative pathways so that the activation of one of these nodes also triggers the remainder of the network (Innes-Ker & Niedenthal 2002). In the case of music, this principle is thought to underlie the mechanisms of rhythmic entrainment and emotional contagion. The former describes a process whereby the listener's movements and physiological rhythms synchronize with the periodicity of the music, which in turn increases arousal and/or induces feelings of pleasure (Labbé & Grandjean 2014). The latter describes how listeners unconsciously mirror the emotional expression of the music, and how this mimicry leads to the induction of the same emotion (Scherer & Zentner 2001).

It should also be mentioned that two of the most important (and complex) psychological theories include aspects of both routes. Juslin's (2013a; Juslin & Västfjäll 2008) approach integrates a range of factors including Brain stem reflexes, Rhythmic entrainment, Evaluative conditioning, emotional Contagion, Visual imagery, Episodic memory, Musical expectancy and Aesthetic judgement (BRECVEMA for short). And likewise, Scherer's CPM-based approach (Component Process Model; see Scherer 2004; Scherer & Zentner 2001) develops a wide range of interacting features. These involve formal, performance, listener, and contextual factors, which are discussed in terms of five possible mechanisms—appraisal, memory, entrainment, emotional contagion and empathy—that permit the production of emotion in listeners (Scherer & Coutinho 2013, p.139). Additionally, both theories involve an evaluation of the aesthetic value of the music, which may lead to the induction of so-called 'aesthetic emotions' such as wonder,

transcendence, nostalgia, tension, or awe (Zentner et al. 2008).

## Critical assessment of existing theories

In this section we provide a critical assessment of the above-mentioned theories and claims. Our main points of contention are threefold: these approaches (i) often rely on a dualistic and mechanistic inner-outer approach to human cognition; (ii) they tend to ignore developmental concerns; and (iii) they mostly play down the emotional relevance of music for human socialisation and well-being—i.e. the primordial forms of interactive, adaptive, and embodied meaning and world making that musicality affords (Krueger 2013; Schiavio & Cummins 2015). This, we argue, results in reductive views unable to capture the complexity of what emotion and musical experience entails.

### *Inner-outer dichotomies*

Despite their differences, an overriding assumption of the above-mentioned theories is that musical emotions are caused by external structural antecedents (intrinsic to the music itself), which act on specific internal psychological predispositions of the listener ('mechanisms', the 'affect programs', or 'emotional coding'). To put it another way, the musical world 'out there' is understood to contain information that corresponds with the inner domain (the processing mechanisms) of the music user,[30] allowing him or her to develop an internal model of the world by means of a relevant (set of) representation(s). Music, in this view, is understood to cause emotions by acting as an external stimulus that provokes a particular response.

In external locus theories, this sets up a kind of discontinuity between the music and the listener, assuming that emotional 'content' is always reducible, in some way or another, to an external category—to something distinctly 'other' than the listener—that correlates with (hypothesised) innate emotional coding that allows listeners to pick up the emotional messages 'in the music'. Inner locus theories also rely on these inner-outer dichotomies.

[30] The concept of music user is to be considered as a generic term that encompasses all agents that deal with music in some way or another (listeners, composers, learners, performers, and so forth) (see Laske, 1977; Reybrouck, 2005).

However, they are more focused on what goes on 'in the head', which means that they are more specific about the neural mechanisms involved. For example, approaches that seek to explain how music sets up goal relevant 'appraisals' through the thwarting and satisfaction of anticipation, or through the activation of memory associations all tend to posit, with varying degrees of complexity, a kind of linear causal schema for emotional responses, whereby 'external' information gives rise to 'internal' representations through information processing. Huron's (2006) model, for instance, describes the mental mechanisms involved with the statistical induction of environmental regularities through algorithmic processing. These basic mechanisms may be triggered at various levels and in different ways through learned (cultural) processes to form different types of representational outputs and associated expectations. Listeners' expectations, accordingly, are therefore 'weighted sums' drawn from many representations. Non-appraisal based approaches also make distinctions between a pre-given outer world of musical structures and the pre-given inner domain of innate mechanisms that respond to and process musical data. Thus, to varying degrees, both approaches assume an information-processing conception of cognition, where emotional responses are understood as outputs of computational processes that take place 'in the head'.

This general orientation resonates strongly with the so-called orthodox computational or cognitivist approach to mind (Dennett, 1978). From this perspective, we have no 'direct' cognitive connection to the world; we can only access it via a process of representational recovery. This involves sequential chains of events that start with the raw data (input) provided by the environment, which are then converted into representations that are manipulated (computed) in a hierarchical way in order to create ever more complex representations. These lead, finally, to behavioural responses (outputs) that correspond with situations in the world 'out there'. Importantly, all information is understood to be represented 'in the head', giving rise to a discontinuity between inner and outer (Varela et al. 1991). Thus, generally speaking, musical emotions are assumed to involve responses to environmental stimuli; little attention is given to the agency of the listener or the role of the body, which is often reduced to a physical entity that does not participate directly in

the constitution of lived experience (Husserl 1989; Merleau-Ponty 2002).[31]

Here it should also be noted that although Basic Emotion Theory (BET) proper[32] has not played a major role in musical emotion studies (see Juslin, 2013b), many music psychologists and philosophers use (as we mentioned above) rather loose ad-hoc 'basic' emotion categories, assuming that real emotions actually come in such categorical forms (e.g. see the discussion of 'garden variety' emotions in Kivy 1989). There is, however, an ongoing debate about whether or not musical emotions are best described in terms of discrete and supposedly pan-cultural basic emotions (e.g. happiness, sadness, anger, and fear), and if so, how these may relate to more complex emotional experiences.[33] In brief, the theories discussed so far all make various assumptions about the independence of pre-given inner and outer domains, the mechanistic and disembodied nature of cognition, and the categorical or discrete nature of what emotions should entail.

At first glance Scherer's Component Process Model (CPM) may seem to offer an exception to this last concern. However, while the CPM model is indeed critical of theories—such as Juslin's (2013a; Juslin & Västfjäll 2008)—that endorse the idea of basic emotions it nevertheless imposes its own hypothesized affective categories, three of which are claimed to be 'properly emotional' and thus relevant to music. These include the utilitarian, the epistemic and the aesthetic categories, respectively. Moreover, we may recall here that one of the principal motivations behind many of the above-mentioned appraisal theories is to explain how music can cause emotions when it is assumed that musical experiences are not explicitly goal-based because they lack the immediate personal

[31] We should here distinguish between cases in which the body displays active, motivated behavior—for example when playing a musical instrument—and cases in which its participation is merely passive—for example when the movements employed do not exhibit clear goal-directedness. This latter kind of movements, such as intransitive limb gestures for example, has been shown to be less effective in action understanding (e.g. Iacoboni, 2008; Rizzolatti et al., 2001) and its role in musical sense-making is still an object of controversy (See Leman and Maes, 2015, and commentaries). In this sense, we think the role of rhythmic entrainment for embodied and enactive music cognition remains unclear.

[32] The idea that emotion should involve a set of discrete universally recognised response categories imposed by natural selection.

[33] Juslin (2013b) argues for the adoption of Basic Emotion Theory (BET) proper in music emotion studies—i.e. that we should build our theories of complex emotions around the 'core layer' of 'iconically coded basic emotions'. Indeed, BET resonates with Juslin's findings in many interesting ways; his approach is compelling and continues to offer important new insights. However, many researchers in affective science (see Colombetti, 2014; Barrett, 2006) have begun to offer alternative perspectives that are critical of BET while nevertheless attempting to account for how emotions are experienced as patterned and recurrent (this includes Ekman himself who has distanced himself from BET in recent years; Ekman & Cordaro, 2011).

relevance (i.e. for survival and well-being) required for most forms of emotional response to occur (Juslin et al. 2010; Scherer & Coutinho 2013). In line with this, the CPM approach focuses on what it refers to as the 'aesthetic' and 'epistemic' categories that are thought to correspond more closely to this supposed lack of personal relevance. Indeed, such forms of emotional response are presumed by CPM to partially account for the ambiguity found in studies that attempt to correlate the psycho-physical responses associated with musical emotions with those of (non-musical) everyday emotions. However, as we discuss below, recent research and theory strongly suggests that the assumption that musical experience is not relevant for our personal well-being may be based on a narrow conception of music—one that largely ignores the crucial role of musicality in ontogenesis and socialization. Despite its complexity, CPM explicitly takes a Kantian (aesthetic) stance towards musical emotions that conceives of musical experience as a kind of abstract, decontextualized and disembodied perceptual process that, like many of the other perspectives considered, is very much in line with the 'cognitivist' model of mind and the detached Western academic approach to music listening and analysis.

While the approaches discussed thus far all offer useful insights, we suggest that the inner-outer schema they assume—and the disembodied notion of cognition this entails—may be problematic. The main issue that emerges here is that these approaches have difficulty addressing the actual experience of music, which arguably involves more than response processes, internal processing or detached aesthetic appraisals. Put simply, these theories tend to suspend the actual living experience of music in order to explain it; and, in the process, reduce it to various categories and loci. To be clear, we are not claiming that such approaches should be abandoned. Rather, our suggestion is that by critically contrasting (and supplementing) their methods and insights with perspectives that attempt to offer more holistic views we may gain richer accounts of what human musicality entails.[34] For example, we have seen how many of the approaches discussed above assume that music is not essential for human survival and well-being. As we consider next, this is increasingly challenged by a growing body of evidence that reveals the central role

[34] Here readers may wish to consider approaches that are neither traditionally cognitivist nor enactivist, such as predictive processing (Gentsch & Synofzik, 2014; Seth & Critchley, 2013).

musicality plays for human development and socialisation. Further on we will explore how these and other concerns may be better addressed through an embodied and enactive approach to musical emotion.

### *Embodied interactivity and developmental concerns*

The assumption that musical experiences are not explicitly goal-based, and thus not personally relevant, has been questioned by research that stresses the deep significance of musical activity for human well-being. This research embraces an extended conception of what music and musicality entails, exploring the ways it spans biological, social, and cultural modes of being. Indeed, this highlights the primordial necessity of musicality for embodied, pre-linguistic and emotional-empathic forms of understanding, communication and social cognition, beginning with the fundamental interactions between infants and primary caregivers (Cross 1999, 2001; Krueger 2013; van der Schyff 2013b). This may be understood in terms of what Trevarthen (2002) refers to as the primary intersubjectivity necessary for developing social bonds. Similarly, musicality is increasingly understood to play a major role in the process of participatory sense-making (De Jaegher & Di Paolo 2007), which describes the way autonomous living systems co-enact meaningful relationships through embodied-affective means. This can be seen, for example, in the way caregivers and infants realize a shared world of meaning through embodied-emotional interactions. Here meaning is not pre-given but rather unfolds in a circular and co-operative fashion, where both parties actively participate in developing a repertoire of (musical) gestures and utterances that are intimately linked to strengthening the relationship (Fantasia et al. 2014; Johnson 2007). In line with such insights, a number of neuroscientists have become increasingly cautious of explaining emotions in purely mechanistic and inductive terms (Ramachandran 2011). And indeed, Koelsch (2013) has argued that music is in fact explicitly personally relevant as it helps to fulfil basic social needs related to survival and well-being.[35]

[35] While Koelsh (e.g., 2013) often uses 'inductive' or 'mechanistic' terminology, he seems to adopt a somewhat more cautious stance towards this approach in recent years, preferring to explore how emotions are 'evoked' rather than 'induced', which leads to attachment and forms of social bonding. Likewise, a range of scholars have considered the centrality of music for human evolution and well-being (Cross 1999, 2001; Patel 2008; van der Schyff 2013a).

In brief, one of the key problems that motivates many appraisal-based theories (i.e. music's putative lack of personal or goal-relevance) loses its significance when the focus shifts towards exploring the role of musicality and emotion in interactive developmental contexts. From this perspective the body plays a central role (both explicitly and covertly) in shaping the way we experience music (Leman 2007; Reybrouck 2006). Indeed, the insights offered by the developmental-relational perspective go beyond inner-outer frameworks, and weaken assumptions of fixed pre-given 'affect programs' in-the-skull. They describe our musical-emotional lives not as depersonalized input-output responses, but rather in terms of processes of embodied interactivity—as ongoing histories of organism-environment coupling that afford the enactment of meaningful worlds. With this in mind, an embodied, relational and developmental approach to human musicality may offer the starting point for an alternative perspective—one that considers music, mind, body, and emotions not as distinct categories, but rather as interpenetrative and co-arising aspects of being that emerge and develop through active involvement with the physical and social world (Clarke & Clarke 2011; Matyja & Schiavio 2013; van der Schyff 2015).

## Toward an enactive alternative

In what remains, we attempt to develop this holistic and embodied perspective through the lens of the enactive approach to cognition. Put simply, this approach to mind is not based in mechanistic metaphors or dualistic loci, but rather in the fundamental life processes through which living systems arise and flourish. As we will discuss, this perspective may offer an innovative way to explore musical emotion and cognition in the context of the dynamic embodied self-making processes common to all autonomous living creatures. In doing so, it may help us better understand musicality as a primordial and universal human sense-making capacity, while simultaneously embracing the great range of experiences and activities it entails.

### *Fundamental enactive principles: sense-making, autonomy, and autopoiesis*

Enactivism is a cross-disciplinary perspective on human cognition that integrates insights from fields such as phenomenology and philosophy of mind, cognitive (neuro)science,

theoretical biology, and developmental and social psychology (Stewart et al. 2010; Thompson 2007; Varela et al. 1991). Most centrally, it explores the deep continuity between mind and life, considering cognitive processes as originating in embodied perceptually guided action. In other words, rather than understanding cognition only in terms of skull-bound structures (representations, neural activations, computations), the enactive approach sees it as an *activity* constituted by circular interactions occurring between an organism and its environment. These interactions modify and are motivated by the internal norms of the organism's adaptivity, and emerge from the nervous system, which establishes a sensorimotor coupling with the world (Maiese 2011). Through these continuous sensorimotor loops (defined by real-time action-perception cycles), the organism (including the music user) enacts or brings forth his or her own domain of meaning (Colombetti & Thompson 2008; Thompson 2005), with no actual separation existing between the cognitive states of the organism, its physiology, and the environment in which it is embedded. Cognition, from this viewpoint, originates in a continuous interplay between an organism and its environment as an evolving dynamic system (Hurley 1998). This may be understood in terms of three main interrelated concepts: sense-making, autonomy and autopoiesis.

The first concept, *sense-making*, describes an organism's adaptive capacity to develop a repertoire of meaningful relationships with the world to achieve a viable existence (Thompson & Stapleton 2009). In order to survive, develop and maintain its own identity, an organism is required to make sense of its world according to its metabolic needs and its degree of complexity. For example, while a simple single-celled organism, in its relation with the environment, would be mainly concerned with values such as 'nutrition', a complex organism (e.g. a music user) may bring forth a much vaster array of meanings to flourish in the richer socio-cultural world he or she inhabits. Sense-making, then, concerns the organism as a whole, from its neural, thermoregulatory, metabolic, and social requirements to the types of relevant sensori-motor skills it develops to establish a concerned point of view that generates meaningful experience (Di Paolo 2005, 2009).

The second concept of *autonomy* concerns the intrinsic demands of a living system's own organization—its physiology and metabolic needs—which in turn shapes, and is shaped by, its environment (Dumas et al. 2014). In this view, a living creature is

autonomous because, although constrained by its niche, it is not completely determined by it (Thompson & Stapleton 2009). Autonomy and sense-making are therefore deeply related: a creature's sense-making has its roots in the circular ways of acting and sensing required to preserve itself under precarious conditions (Varela 1979); this process of perceptually guided action generates its autonomous identity.

The third and over-arching concept, *autopoiesis*, refers to the way living organisms may be understood as 'self-producing' entities that bring forth, and continually strive to maintain a viable and thus meaning-laden life-world via the interactive processes described above. This may be contrasted with non-living 'cognitive' systems such as computing devices, which are not self-making and are thus dependent on external entities (i.e. humans) who bring them into existence and imbue their operations with meaning. Living cognitive systems, rather, are autonomous, autopoietic and therefore intrinsically meaningful (Varela et al. 1991).

Taking these three concepts together, the organism may be understood as continually striving to maintain a healthy relationship with its environment—one that permits the continuation of its bounded metabolic processes. This describes the origin of 'mind' in the embodied-affective processes through which a given organism continually reaches out to, makes sense of, and thus enacts a viable world according to its metabolic needs. In other words, as organisms shape their world into a place of salience they must affirm their own autonomous identity. They do this by constantly compensating for real-time environmental perturbations that impact their metabolic state and adaptive relationship with the environment. Accordingly, in light of the complex and changing demands of the environment, such self-regulation (stabilization) must be realized via 'circular', non- linear, processes, rather than in a 'causal' or linear way. Such dynamical coupling, in this sense, may describe not only the recurrent patterns of action and perception that dynamically link the living system with its environment (Von Uexkull 1934, see also Barrett 2011), but also the web of relational interdependencies that are displayed by the inner biological properties of the system itself. In this way, the dynamics of the organism-environment relationship cannot be understood as having a starting or ending point. Rather, each component depends on the other in a network of constant interactions—i.e. an ongoing 'history of structural coupling' between organism and its environment. Importantly, the sense-making activities

that support such dynamic processes are always relevant to the life-world of the organism and are thus emotionally motivated—from the 'primordial affectivity' of simple organisms to the more complex individual and socio-cultural self-organization of humans (Colombetti 2014). From this standpoint—and given the developmental concerns discussed above—each music user may be understood as a sense-maker who actively 'brings forth' an autonomous identity when engaging with music.

Put simply, we suggest that it is the relational and affectively-emotionally motivated dynamics of embodied 'sense-making' that most fundamentally characterize musical experience, and that such musical sense-making occurs in ways that are relevant to the life-world of the musical 'organism' as constituted through its unique developmental history. And indeed, because the actions of living beings cannot be performed or described in a fully detached or unemotional way (Sinigaglia & Sparaci 2010), musical emotions may be understood to emerge from the complex and recurrent patterns of interaction that unfold between music users and their environment. With regard to this point, it may be helpful to consider the (explicit and covert) sensorimotor trajectories of active engagement that originate in the adaptive and bodily activities required to seek out and make sense of the world: a number of empirical studies have shown how music listening may enhance motor facilitation (e.g. D'Ausilio 2007, 2009; Novembre et al., 2014; see Schiavio et al., 2015 for a review), allowing a music user, within the limitations of his or her motor repertoire, to re-enact the same motor actions required to perform the musical stimulus. With this in mind, it may be suggested that music users participate emotionally in the perception of music through motor engagement. Thus, preparing for action, resonating with music, and making sense of the musical world in personal, meaningful ways may help us describe musical emotionality without necessarily recruiting computations, or reducing such experiences to structures 'in the head'.

For improvisers, composers, listeners and interacting performers, musical experience emerges through dynamic affective-motivational processes, which play out in unique ways depending on how musical environments interact with the developmental histories of the participants involved. Modes of engaging with music differ not only with regard to the single individual (e.g. two listeners may display diverse emotional experiences, despite having the same background, expertise, etc.) but also in terms of the specific sensorimotor

interactions adopted to engage with the musical material. For example, while a performer and a teacher may have very similar embodied engagements with their instruments, they may adopt different sense-making modalities to enact their domain of meaning (either serving a desired educational purpose, or emphasizing a critically expressive passage in a concert). Such phenomenologically rich contexts may reveal interesting features of this approach. Indeed, musicians explore and play with the dynamic and interactive processes of sense-making in diverse ways, sometimes adjusting their performance and expressions to produce consensus between performers or shared embodied states between interacting listeners (e.g. dancers). At other times they initiate radical shifts that demand new emotional-bodily-cognitive relationships and a heightened adaptability to the sonic environment (e.g. free improvisation). And while the measurable physiological effects of the emotions involved in such diverse settings may cover a relatively limited range of parameters, the actual experience of such emotions may take on a wide range of characteristics and meanings given the situatedness of the music user. That is, while musical emotional episodes may bear striking physiological similarities to one another, they may also involve important phenomenological differences that reflect the contingencies of existence and adaptation.

To summarize, from the enactive perspective we defend, musical emotions may be best understood not in categorical terms, but rather as episodes of experience associated with the ongoing process of maintaining adaptive, self-sustaining, dynamical stability. Therefore, we suggest that while the traditional focus on expectation, appraisal, and the relationship between form and expressivity remain important elements to consider, our perspective allows us to cast things in a broader light—one that highlights the fundamentally embodied, relational, transformative and unique agentic status of the musical organism. As such, it requires new approaches for analysis. With this in mind, we now turn to explore dynamic systems theory (DST) as a possible way to make sense of such complexity.

### *Making sense of complexity: dynamic systems theory*

The enactive notions of autopoiesis and autonomy resonate with the broader phenomenon of 'self-organization' found in complex dynamic systems in general, including non-

biological varieties. Exploring such phenomena is the domain of *dynamic systems theory* (DST), a branch of mathematics that studies how complex systems—from weather and climate patterns to insect colonies (Strogatz 1994, 2001)—maintain structural unity and generate recurrent patterns of behavior through networks of mutually influencing processes (Beer 1995; Thelen and Smith 1994). Put very simply, DST attempts to describe how complex systems change over time. This is expressed mathematically in terms of differential equations,[36] which means that the characteristics exhibited by such systems are not necessarily considered as discrete events or fixed properties, but rather in terms of continuous temporal trajectories (Chemero 2009; Kelso 1995). The latter have tendencies to converge and to deflect, resulting in the development of various relationships and patterns that characterize the state of the system. The term phase portrait has been used to refer to the set of all possible trajectories of a given system. It is represented as a topological space that shows areas of convergence (attractors), areas where the system's state will evolve towards a particular attractor (attractor basins), and areas of deflection (repellors).

Over time perturbations to the system can lead to phase transitions—qualitative shifts in the total state of the system that is described by a new topology. The perturbations that bring about such transitions result from changes in the constraints that influence the state of the system and can be refined to describe the temporal characteristics of self-organizing systems in terms of circular forms of causality, referred to as first and second order constraints (Thompson 2007). A classic example is how changes in heat added to an oil-filled pan perturbs the local interactions of the oil molecules (first order constraints), which, in turn, affect the global behaviour of the oil in its totality (second order constraints). Such macro-level patterns, which are observable as changes in the amplitude of convection rolls of the oil, then impose further reciprocal constraints on the movement of the molecules (Haken 1977). The term 'emergence' is used here to refer to distinct properties or patterns of behavior that emerge (often recurrently) from the temporal interactions of such complex systems (Friston 2009).

[36] Differential equations allow the functions of dynamic a system to be mathematically expressed in relation to its derivatives (or its rates of change). In contrast to static point slope equations, for example, differential equations can thus be used to model how a system develops continuously over time. This permits researchers to map a much wider range of relationships between variables, as well as make distinctions between local and global features in ways that are not possible with linear modelling.

There is of course much more to DST than the brief gloss provided above. However, for the purposes of this paper it suffices to note that this theory offers a mathematically coherent way of describing how self-organizing systems develop, stabilize and transform according to the reciprocal influences of local and global factors. Along these lines, it should also be noted that recent work in cognitive and affective science based on DST has weakened the standard assumption that cognition and emotion proceed through fixed programs and brain mechanisms that function according to a decontextualized, linear representational input–output schema (e.g. Kiverstein & Miller 2015). Because of the inclusion of temporality in DST, the circular interaction of local and global factors, and the complex interactions of the multiple trajectories involved (attractors and repellors), these models are necessarily non-reductive. As such, they are well-suited to explain emotion in terms of the circular constraints, entrainments, and emergent patterns and properties that arise as the dynamic brain-body-world system continually enacts itself through adaptive interactions. Not surprisingly, recent DST approaches to emotion adopt developmental points of view, understanding emotional episodes not simply as outputs of neural programs, but as emergent properties of ongoing embodied dynamics. The latter include synergistic muscular linkages, neural self-organization (Freeman 1999, 2000), metabolic processes (Thompson 2007), and environmental factors (Granic 2000; van Gelder & Port 1995). In brief, from this perspective, emotions are not understood as fixed phenomena, but rather as developing over time and in context, highlighting the plasticity of the organism-environment relationship.

Along these lines, DST also describes how the trajectories of two or more dynamic systems may interact with each other, leading to richer networks of mutually influencing constraints, which may result in the development of still larger systems (shared phase portraits, attractors, and repellors). A (relatively) simple example is how wall mounted pendulums mutually constrain one another, resulting in synchronization or 'entrainment' over time (see Clark 2001). A number of researchers have explored such phenomena in the context of emotional interactivity between individuals, and especially in developmental contexts, revealing that emotions do not simply inhere in the individual but develop relationally (Laible & Thompson, 2000; Fogel et al., 1992). This implies, for example, that emotions may be understood as 'socially extended' phenomena (see Krueger 2014a, b, c,

for musical applications). Thus, given the contingent relationship between environment and individuals, similar dynamic patterns may emerge that can be understood as affording 'recognizable' or recurrent states of being—i.e. viable ways of interacting and bringing forth a world (Menin & Schiavio, 2012). For humans and other social animals, such states emerge in infancy and develop through histories of valenced embodied experiences—both in a positive and negative sense—resulting in 'basins of attraction' (and deflection) that are shared with, and influenced by, the activity of all those that are involved (Sheets-Johnstone, 2010, 2012). In this way, emotional interactions may be understood as both plastic and patterned-recurrent (Colombetti, 2014). This resonates with the social and developmental significance of musicality discussed above. It also implies that assumed pre-given or discrete emotional categories may not be so clear-cut after all. In other words, the states of being we refer to with specific emotional signifiers may be far more complex, contextual, and idiosyncratic than is suggested by our language. For example, what we categorize as 'fear' in a given instance may in fact involve a complex range of relational entailments that make this or that fear unique to its context and the person experiencing it. Thus emotions may be considered as dynamically emergent phenomena, which may bear likeness to previous states of being and to episodes experienced by others who share similar metabolic needs and physiologies.[37]

With this in mind, we suggest that DST may provide useful tools for making predictions and developing models of musical emotions without recruiting categories such as 'inner' and 'outer' and without relying on linear causal models. Indeed, by emphasizing the mutuality between music users and living musical environments, the dynamic-enactive approach may offer new possibilities for empirical research and for developing richer theoretical frameworks. For example, empirical research might focus more on the real-time dynamics of interaction among complex systems (e.g. musical environments involving multiple interacting participants) to better understand how manipulations of certain musical parameters may perturb the stability of such a system, and how such perturbations correlate

[37] Some readers may note similarities with constructivist approaches (Russell 2003; Barrett 2006), which argue that emotions cannot be understood in terms of discrete regions in the brain, but rather result from dynamic interactions between large-scale networks involved with domain-general processing (Barrett & Satpute, 2013). However, it should be noted that such approaches tend to downplay of the role of the 'biological' in episodes considered properly 'emotional'.

with shifts in the individual and shared 'emotional' states of the participants involved. These data could be situated within the developmental histories and phenomenological accounts of the participants to develop answers to a number of questions. For example: can the emergence of emotional states be predicted by the musical expertise of music users? How do the characteristics of emotional states change as the history of structural coupling between the music user and the musical environment evolves? Does familiarity among music users play a role in this context? How do certain types of perturbation affect the autonomy of each sense-maker, and the self-sustaining properties of the coupled system as a whole? How do participants adapt and interact creatively to maintain the musical system?

## Conclusion

We have argued that emotions are not simply responses to an environment, but active engagements involving a wide range of dynamically interacting trajectories. As such, they are central to the ongoing process of embodied sense-making that characterizes autonomous and self-organizing living systems in their continuous striving to bring forth and maintain a viable life-world. With this in mind, it should be noted that, while emotions might be described as more or less episodic emergent events (Lewis 2000), other related but longer-lasting psycho-physical phenomena such as moods (Scherer 2005) may be included in the broader primordial sphere of affectivity. This is to say that while specific emotional events may come and go, there is a very strong sense in which life is always fundamentally 'emotional' in a primordial context. Indeed, because each organism must enact its world of meaning in order to preserve its autonomous identity, the complex dynamics of living self-organization necessarily involve a valenced existence not shared by non-living self-organizing systems. Thus, if cognition is sense-making (as many enactivists have argued; see Varela et al. 1991; Thompson 2007) and sense-making entails the embodied and affective coupling with the environment that enables self-regulation, then cognition and affectivity cannot be separated from each other.

From the enactive/DST perspective, emotional experiences are not solely the result of a combination of discrete or fixed categories related to genetically determined cognitive mechanisms and affect programs; nor can they be reduced to pre-given external features.

Rather, the enactive/DST approach embraces the centrality of affectivity for understanding the adaptive and creative nature of living creatures as active, autonomous sense-makers. Again, this resonates strongly with the developmental and social meanings of musicality considered above, where music users enact their world of meaning by actively participating in musical behaviors in a variety of ways that are relevant to their well-being. And indeed, this may also include metabolic and automatic processes that are not conscious. As such, the musical mind and its emotional components may best be understood as continuous with the same circular dynamics of autonomy and sense-making that ultimately define the autopoietic nature of life itself: music users develop different ways of interacting meaningfully with the physical, social and cultural worlds they inhabit. Multiple examples can be given, such as listening, performing, learning, educating, worshipping, imagining, interacting with children and caregivers, enacting social and cultural environments. Such forms of structural coupling between organism and environment may be understood as adaptive (and empathic) sensorimotor engagements shaped by the dynamic history and degree of acquired musical skills of the individual music users (Overy & Molnar-Szakacs, 2009; Schiavio, 2012).

The point we would like to stress is that musical actions (including listening) are always motivated (goal-directed) and hence are also essentially emotive-affective. In other words, the roots of musicality, in a broad sense, may be found in the dynamic interplay between an organism and its environment, with an emotionally motivated cognitive system participating actively in the enactment of its own domain of (musical) meaning. Musicality, from this perspective, may be understood as a primordial way human (and perhaps other) organisms reach out to the world in order to survive and flourish. This claim is supported by research and clinical work in music therapy (see Schiavio & Altenmüller, 2015; van der Schyff, 2013b). With this in mind, music cognition may be understood as fundamentally affectively embodied as it relies on the bodily power of action in context, rather than being an abstract computational process implemented by a decontextualized, 'naked' brain (Barrett, 2011; Barrett et al., 2010). This strongly suggests that the whole sphere of 'affectivity' and embodied behavior—including valenced action, moods and emotion—must be taken into account when we consider musical sense-making and cognition in general. Put simply, our view is that musical sense-making is an emergent property of the

agent-music relationship and as such it is co-created. The agent is never the sole decider of musical meaning because the agent itself is always fundamentally embedded in a world (or, in our case, a musical environment) that presents affordative structures ready to be (en)acted upon and within.

The enactive approach considers musicality beginning at the fundamental levels of embodied sense-making, primordial affectivity, and selfhood; at the origins of our existence as complex bio-cultural beings. As such, it may shed light on the often-ambiguous results produced by research that attempts to make psycho-physical correlations between 'musical' and 'non-musical' emotional 'responses' (e.g. Krumhansl, 1997; Lundqvist et al., 2008). Indeed, while research has shown that (when given the appropriate categorical prompting) listeners may consistently attribute specific emotions to a given passage of music, it has proven much more difficult to demonstrate that music actually produces such emotions in listeners. In brief, such observations have led some to suggest that musical-emotional experiences may be emotionally 'cue impoverished'; that they are merely representative of, diminished versions of, or somehow different from, other types of 'proper' emotions (see the discussion of CPM above; Sloboda, 2000). As we have seen, however, the issue may not be the impoverished state of 'musical emotions', but rather that our current categorical and inner-outer conceptions of what both 'emotion' and 'music' entail lack the descriptive and explanatory richness required.

The enactive approach to music emotions and cognition may also shed new light on the early sense-making abilities of the music user: if human engagement with music arises from the dialogue between the music user in action and the dynamics of the musical environment, rather than being considered as an invariant that is already given, the complex mutuality between active experience, emotion, and skill acquisition can be studied from early infancy as basic aspects of human musicality (Phillips-Silver and Trainor 2005). This insight is particularly significant when considering how traditional approaches to infants' musicality typically focus on activities such as the recognition of pitch (Clarkson and Clifton 1985), harmony (Trainor & Trehub, 1994), rhythm (Trehub & Thorpe, 1989) or timbre (Costa-Giomi, 2013), which are often considered as discrete, unemotional, and disembedded phenomena. Moreover, because our perspective challenges common and often reifying assumptions about the pre-given and categorical nature of emotions (such as

those associated with Basic Emotions Theory), it suggests that we may have a good deal of perceptual autonomy with regard to how we develop affective-emotional interactions with music, and how such engagements may develop in the context of music as a history of embodied experiences. This insight has a number of implications for musicological research (e.g. Leech-Wilkinson, 2013) as well as for music education (Bowman 2004; Elliott & Silverman, 2015; van der Schyff, 2015a&b). The enactive approach also calls into question existing philosophical and research methods by demanding a more nuanced and phenomenologically sound approach that integrates the subjective and the objective, thus moving towards an *entre-deux* between scientific methods and direct experiences.

Other examples of existing music scholarship inspired by such frameworks can be found in the work by Joel Krueger (2009, 2011, 2015a, b). While his research is mostly concerned with music listening, it embraces a number of issues related to the current proposal—integrating insights from phenomenology, philosophy of music education, and affective and cognitive science. With regard to musical emotions, he defends an externalist view (2014c), which considers how environmental resources may become coupled with one's mental processes, giving rise to otherwise-inaccessible forms of cognition and behavior (2015b, p. 92). In particular, just as we offload into the environment certain cognitive processes to free up internal resources and generate real-time engagements with new problem-solving possibilities, music, as he argues, may play an analogous role in terms of emotional regulation. As such, his work resonates strongly with our focus on the bodily power of action and the importance of the environment in driving cognitive processes and emotionality. Similar ideas have also been put forward by three authors of the present contribution. Schiavio, for example, investigates (both empirically and theoretically) the enactive roots of human musicality starting from early infancy (Schiavio and Gerson, 2015; Gerson et al., 2015). His research is situated at the crossroads of neurophenomenology, psychology, and embodied approaches to cognition (Schiavio, 2012, 2014), exploring how the insights emerging from such interdisciplinary work may impact musical learning, therapy and performance (Schiavio & Altenmüller 2015; Schiavio and Cummins 2015; Schiavio & Høffding 2015). Similarly, research by Reybrouck puts together semiotics and theoretical biology in order to inspire a richer understanding of what human musicality entails, with particular focus on the notion of musical sense-making

(2001). More recently, his work explores the fields of music education and neurology through the lenses of embodied cognition (Gil et al. 2015; Reybrouck 2014; Reybrouck and Brattico 2015). Theoretical approaches to embodied and enactive cognition have also been developed by van der Schyff, whose work includes the relationship between enactivism, critical ontology and the *praxial* philosophy of music education (van der Schyff 2015; van der Schyff et al. 2016). He has also examined the enactive approach to biological evolution in the context of human musicality (2013c).

Much more could be said about the relevance of the enactive perspective for the wide range of activities and experiences we refer to with the word music. This said, we hope that the basic groundwork developed here will continue to be explored in various ways so that new and richer perspectives will continue to emerge. While a definitive model of musical emotions may not be forthcoming in the foreseeable future, the enactive perspective may help us rethink taken-for-granted assumptions about what music and emotion entail, and move towards more holistic perspectives that embrace music as a primordial aspect of what it means to be human. It will be very exciting to see how the growing interest in enactivism across a range of fields (e.g. neuroscience, social psychology, linguistics, biology, education) may impact our future understanding of music, emotion, and the embodied mind.

# 4

# Beyond Musical Qualia: Reflecting on the Concept of Experience*

## Introduction

How is it that a diminished seventh chord played on a piano, or an open E string plucked on a guitar, give rise to the experiences they do? How can we explain the feeling of closure evoked by a cadence in tonal music? Answers to questions like these have been sought in association with the notion of *quale*. In its original usage, the term 'qualia' (the plural form of 'quale') refers to the intrinsic qualities of the subjective experience associated with a given sensory event (Jackson, 1982). But its usage in current research has come to describe subjective experience more broadly (Nagel, 1974; Haugeland, 1985), including musical varieties (see Huron, 2006; Zentner, 2012). For the latter, it is common to refer to *musical qualia* (Dowling, 2010; Goguen, 2004). In this paper we take a critical look at three standard notions of qualia (in general) and musical qualia (in particular). While our main goal is to contribute to a richer understanding of what musical experience entails, we draw from the broader context of *cognitive science, philosophy of mind* and *Gestalt psychology*, presenting arguments that go beyond the sole domain of music. Indeed, because music spans such a wide range of human activity, it offers a rich experiential context where theories of cognition may be put to the test. For this reason, our musically oriented

discussion may have implications for assessing the validity of the notion of qualia in general.

We begin by considering three main philosophical perspectives on qualia. Here we critically discuss their explanatory power using examples drawn from musical contexts. Following this we examine the alternative proposals of Daniel Dennett (1979, 1988), and Diana Raffman (1993), respectively. As we discuss, both thinkers deliver compelling 'eliminativist' approaches to the notion of qualia, with Raffman offering a critical extension of Dennett's position using musical experience as a paradigmatic example. While these two approaches are certainly fascinating, we suggest they are also problematic as they rely on models of the mind that provide only limited accounts of what musical experience entails. In response to this, and the three main perspectives on qualia previously discussed, we then explore another possibility, drawing on the notion of 'phenomenological body' (Merleau-Ponty, 1945; Jonas, 1966; Gallagher & Zahavi, 2008), research in Gestalt psychology, and the 'enactive' framework to cognition originally developed by Varela and colleagues (1991; see also Thompson, 2007; Stewart et al., 2010). Here we suggest a richer, relational, and more holistic model of music cognition that embraces the way people actually engage with and talk about music in the course of their lived experience. We also explore how this approach impacts the concept of qualia and consider its relevance for musical research and practice. Before embarking on this, however, let us start with a brief discussion over the three most common perspectives on the notion of qualia to clarify their significance for musical research.

## Three perspectives on Qualia

The three most common approaches to the study of qualia can be summarised as follows:

(i) the 'non-intentional, non-representationalist' view (*NINR*)
(ii) the 'intentional, representationalist' view (*IR*), and
(iii) the 'intentional, non-representationalist' view (*INR*)

The first option (*NINR*) is probably the most pervasive one. It has been described in terms of a 'quartet of attributes', where qualia are understood as ineffable, intrinsic, private, and

directly apprehensible [but not directly describable] in consciousness (see Dennett, 1988). In this view, qualia are not explicitly 'of' or 'about' something (which means—in classical phenomenological terms—they are *non-intentional*).[38] They are, rather, just phenomenal properties present *in the perceiver*. As an example, consider the sensation of being depressed. This feeling is not literally 'about something'. It is rather a certain experiential property of the agent's being-in-the-world (see Fuchs, 2009). Put another way, from this perspective "for something to look red to someone is for it to give rise to an experience with a certain qualitative or sensational property. Its looking red consists in the fact that it gives rise to that qualitative state *in a person*" (Noë, 2004, p. 133; italics added). Here it should be noted that, from the *NINR* perspective, the experience and its *sensed properties* are understood as two different features that may be present independently from each other. For example, while we can have a conscious experience associated with the subjective sensation of hearing a glissando, the phenomenal qualities of such an experience may not be reducible to the environmental 'sense data' associated with such an event. In other words, the physical properties of the *events themselves* (i.e. the changes in air pressure impacting the auditory system) are not enough to capture how the actual experience feels *in the perceiver*. It is suggested that this explains why we often cannot talk about such experiences in the same way we would when asked to describe an object of perception in an objective or 'direct' way (e.g., by using conventional units of measurement: the box is 10cm in height, 9cm wide, 12cm deep and weighs 5kg)—even the most accurate quantitative analysis of the sound waves created by a performance of a piece by Mozart, for example, cannot fully capture the listener's subjective experience of it. Because of this, the conscious states qualia give rise to are understood to be 'ineffable', with no direct correlation with the 'objective' features of the stimuli. That is, the correlation between the physical attributes of a glissando (its timbre, its duration, amplitude changes etc.) and the feeling it evokes does not admit any direct causal claim: the same stimulus (or stimuli) could potentially generate different experiences in other perceivers—or even in the same

[38] In the long-standing tradition of phenomenological philosophy, the notion of 'intentionality' is often adopted to refer to the 'directedness towards' or the 'aboutness' of a particular (mental or non-mental) object of experience (Husserl, 1931). The relationship between a subject (e.g. me) and the object of that subject's experience (e.g. the music I am listening to) could therefore be defined as 'intentional' (see Schiavio, 2012)––i.e. my experience is directed towards, or is about the music.

perceiver in a different context.

Despite the prevalence of the *NINR* approach, a number of thinkers remain doubtful about its universal validity. Consider the following scenario, where an imaginary subject (name her Susan) is listening to a concert in a club. One might argue that if Susan's attention shifts from the perceived object (the music) to *the awareness of having a perceptual experience of it*, she will not find new qualities that were not present in her 'naïve' (without introspection) engagement with the musical environment. In other words, the claim could be made that being consciously aware that one is having a certain experience does not necessarily entail discovering *new qualities* of that experience.[39] It follows from this that qualia are *not* actually present within us, nor intrinsic to consciousness as the *NINR* approach claims; and thus it is argued that experience must be *transparent* with regard to qualia (see Tye, 2014). Such concerns have led a number of authors to endorse the second option (*IR*) we introduced above. Here qualia are not understood as properties of private or 'inner' experience (Dretske, 1995; Tye 1995), but rather are thought to originate as *features of the environment*. In other words, qualia are *about* certain properties of the external world (that is, they are 'intentional'), where such externally located characteristics are recovered internally, through mental *representations* (Lycan, 1996).

So, to summarize, while advocates of the *NINR* approach would argue that qualia are internally located but do not necessarily involve representations, proponents of the *IR* view maintain that qualia originate in the environment, and that the perceived qualities of a certain experience depend on how we cognitively represent the 'objective' features of the world in our head.

A classic argument against the *IR* approach proposes that while two subjects may share the exact same representational content constructed from the same external properties—e.g. the glissando—the experience might also possess different phenomenal characteristics for each subject (Block, 1990, 1994). Consider, for example, the famous 'inverted spectrum' thought experiment originally conceived of by John Locke (1690). It asks us to

[39] It should be noted here that a number of phenomenologists have shown that the conscious analysis of experience *does* in fact lead to new and richer perceptions and understandings. (e.g. Ihde, 1977; Merleau-Ponty, 1945).

imagine two persons (name them Martin and Mike) who are qualitatively inverted with respect to the colours they experience in the world, although their brain and visual system work in the very same way. Both Martin and Mike refer to green apples as 'green'. When Martin sees green apples, his experience is similar to what everyone would consider as 'green'. However, when Mike sees green apples he has, for unknown reasons, a reddish experience. It is thus possible to imagine that "two individuals who are identical in all behavioural dispositions (including their sensorimotor skills and discriminatory capacities) could differ in what it is like for them to experience something red looking" (Noë, 2004, p. 124). Interestingly, *IR* assumptions may be also drawn into question in more empirical contexts by observations made by Gestalt psychologists, who have shown that many simple experiences cannot be reduced to objective features of the environment, but rather depend on the motivations, history, and sensory system of the perceiver (more on this below; see Käufer & Chemero, 2015). This recalls the issue discussed earlier regarding the lack of *direct correlation* between the objective features of a given stimulus in the environment and the experience one has. Indeed, this sends us back to the *NINR* position as the seemingly better option, despite its possible shortcomings.

In response to this, a 'moderate' (*INR*) approach has also been proposed. This third option suggests that although qualia do display intentional properties (i.e. they are about something), they are not best captured wholly in representationalist terms (see Block; 1996; Palmer, 1999; Papineau, 2013; 2016). That is, qualia are not identifiable with what they represent, but rather with their physical *vehicle*—for example, the sets of neurons that become active under particular circumstances. Thus, when we are listening to a glissando, our brain responds in certain ways, and such neural activity *is identical with* the experience we are feeling. Susan has a particular experience while attending the concert not because she is dealing with a 'virtual copy' of the concert in her head (we will probably never know if that is the case), but because her brain responds in a specific way, with different populations of neurons firing. Such neural activity, it is argued, simply *is* the experience that she feels. Here there is no external scaffolding, no representational mediation, and no possibility of dividing qualia from the physical system that realises them—qualia *are* populations of neurons. It may be argued, however, that in adopting such an approach one might end up with a category mistake—where one attributes properties to *X* (in this case,

neurons) that instead belong to *Y* (in this case, experience). Thompson (2007) points this out very clearly, noting that while experience is in fact intentional (world-presenting, or 'about' something), it is also holistic (i.e. it is constituted by the constantly-working networks of perceptions, intentions, emotions, and actions) and can often have an intransitively self-aware (or a non-reflective) character. However, neural activity, as standardly described, has none of these features (see Thompson, 2007, p. 350).[40]

The three main perspectives we just introduced may be further clarified drawing from Block's (1996) 'painting' analogy, where he considers what we labelled as *IR* and *INR* views. From an *IR* perspective, qualia are reducible to what the painting represents (i.e. a sunny landscape). From the *INR* view, qualia are instead reducible to the canvas, the paint, and so forth (i.e. the physical vehicle). To be clear, however, such a vehicle would need to be identified with the neuronal network involved in perceptual activity to fit the range of examples we provided (i.e., how the brain responds when perceiving a glissando, or attending a concert). To this comparison, we add the *NINR* view: here qualia are not identifiable with the objective properties of the canvas (or the neural discharge evoked by its presentation), nor with what the painting represents. Rather, they are essentially the (irreducible) internal sensation of the agent's perceiving a painting; they are *intrinsic* to the viewer, and again, *ineffable*. These three positions represent the most well-known approaches to qualia. There is, however, also a more radical fourth possibility. As we will see in the next section, this involves an 'eliminativist' position, which basically admits no qualia at all.

## Pips and nuances: Dennett and Raffman

The 'eliminativist' approach to qualia has been famously adopted in differing ways by Churchland (1985), and Dennett (1988; 1991), both of whom suggest that current theories maintain unresolvable (and unnecessary) issues associated with the so-called 'hard

[40] Another way to critique such an account is through the use of 'modal arguments' (Kripke, 1980; Kirk, 1974; Nagel, 1970). These include the notorious 'zombie argument', which has also been used to support dualistic approaches (Chalmers, 1996). In brief, this argument develops the logical possibility of an imaginary world dominated by creatures who behave exactly like normal human beings, but who lack consciousness. If, in this imaginary world, bodies with no consciousness (zombies) were physiologically indistinguishable from human beings, then, even its logical conceivability would be a sound argument to posit that qualia are non-physical entities.

problem of consciousness'. The difficulty, in a nutshell, revolves around explaining how qualia, whether originating in the environment, through sensory stimulation, or from neural activity, emerge into the daylight of consciousness. Arguably, the *NINR* and *IR* positions described above maintain regress problems concerning the relation between inner mental content and experience—e.g. the 'inner theatre' problem. And, as we have just seen, the *INR* approach conflates brain states with experience and may thus be lacking in terms of its explanatory richness. Churchland argues that future research on the brain will shed light on such issues and actually allow us to substitute the term 'qualia' with a much more accurate description based entirely on synaptic connections and brain networks. Dennett offers many compelling arguments to dismiss 'qualia' as a purely philosophical (and, as he argues, unnecessary) creation. Let us now consider his perspective.

### *Dennett's 'propositional' proposal*

Attempting to offer a purely materialist account of consciousness and qualia is a tricky business. Because of this, many cognitive scientists turn towards examining what is assumed to be a necessary connection between consciousness and linguistic competence (i.e. that conscious access always includes verbalizability; see Churchland, 1983), "while questions about the nature of consciousness itself [the hard problem] are left judiciously to one side" (Raffman, 1993, p. 125). Dennett, however, has developed a *linguistic approach* that goes to the heart of the consciousness question - one that attempts to tackle and effectively do away with the hard problem, and with it the popular notion of qualia commonly understood as "ineffable, intrinsic, private and directly [and incorrigibly] apprehensible in consciousness" (Dennett, 1988). Indeed, one of the major issues he seeks to overcome concerns the mental space, or the 'inner theatre' we discussed above, in which experience is assumed to take place—i.e. the 'hard' problem of how physical states in the brain give rise to conscious experience, or how the lower-level representations are presented to consciousness. Here, Dennett argues that while many of our day-to-day experiences appear to involve "momentary, wordless thinkings or convictions", it is illusory to think that this is indicative of some kind of inner "phenomenological manifold" that corresponds qualitatively with the public verbal reports we issue. In other words, Dennett claims that contrary to our assumptions there is in fact no 'inner' theatre at work–

–the raw feelings we have and the stories we tell about experience are essentially "convenient fictions". In reality, consciousness entails a series of propositional episodes, judgements, or "intentions-to-say-that-*p*" (or thinking that *p* is the case; see Dennett, 1979). Such propositional judgements are understood as outputs of sub-personal (non or pre-conscious) mechanistic processes in the brain, which involve the manipulation (computation) of abstract markers (symbols) that are physically instantiated through patters of neural firing. A key point to note here is that although such propositional episodes are understood to *represent* external reality, they are also thought to be 'non-*presentational'*. That is, their propositional nature extends to both their format and content, without necessarily being isomorphic with the formats of the things in the world they are about. In this way, no analogous 'image' or 'quality' needs to be *presented* to some internal eye (or ear). For example, the neural firing that results in propositional judgements about the tuning of this or that pitch do not in themselves possess the qualities of being sharp or flat; the 'redness' of an apple does not involve some instantiation of 'red' in the neural activity of the perceiver.

Put simply, the *inner domain* involves no qualitative aspects at all. Here we find only the complex "storm" of firing patterns associated with the neural mechanisms that process sensory information to produce relevant judgements about the 'outer' world. Indeed, it is important to recognize that, for Dennett, "the 'properties' of the thing experienced are not to be confused with the properties of the event that realizes the experience" (1988, p. 71).[41] Because of this, he argues that (as far as introspection is concerned) beyond such propositional episodes of our awareness and our verbal reports of them there can only be "darkness". In reality "there are no colours, images, sounds, gestalts, mental acts, feeling tones […] to delight the inner eye; only featureless—even wordless—conditional-intentions-to-say-that-*p* for us to be intimately acquainted with" (1979, p. 97).

This *propositional* conception of consciousness underpins Dennett's (1988) rejection of qualia as standardly conceived. His alternative is to understand conscious access to perceptual states in terms of "acts of apparent re-identification or recognition". Again, this is accomplished entirely through physical causal processes in the brain involving the

[41] This is similar to the relationship between the icon that appears on the screen of a computer and the coding that produces it.

computation of propositions (judgements) about a given (neural) state and how it compares to other states, or previous states of the same kind.[42] He refers to the physical patterns of neural activation that result in such judgements as "phenomenal information properties"—or *pips* for short. Simply put, *pips* are understood as unique neural pattern-recognition devices that develop through experience. This results in "discrimination profiles" that allow properties to be (re)identified as causally connected to an original stimulus (or set of stimuli).

Processes of identification and recognition are essentially those of type and identity. As such, they are expressed propositionally—in this case through the 'syntax' of neural computation brought about through patterns of physical activity in the brain. However, Dennett argues that such processes should be directly translatable to other propositional formats, such as spoken and written language. Because of this, he thinks that with enough practice we should be able to verbally describe the judgements that result from our pips and discrimination profiles *directly*—that is, without recruiting the use of metaphors, analogies or other *indirect* forms of description. In brief, Dennett sees 'ineffability' *not* as a fundamental aspect of qualitative experience, but rather as something that may be overcome with sufficient training and linguistic expertise.

While this approach may appear rather stark, it does allow Dennett to question the classic quartet of attributes that are supposed to characterize qualia—suggesting, for example, that the assumed private nature of qualia is really just the result of the "idiosyncrasy of our discrimination profiles" (1988, p. 69); "the physical difference between someone's imagining a green cow and imagining a purple cow might be nothing more that the presence or absence of a particular zero or one in one of the brain's 'registers'" (1988, p.71; see the 'inverted spectrum' discussion above). Indeed, while there is much about Dennett's approach we might not *want* to accept—e.g. that the seeming richness of phenomenal experience should be reducible to patterns neural firing—it is very difficult to clearly articulate exactly what he leaves out.

[42] In a brain, this could initially be brought about through electro-chemical responses given off by sense receptors in response to inputs coming from the environment. According to Dennett (1988) this could result in frequencies of (binary, on-off, 1-0) neural activation leading to the activation of repeatable and thus recognizable patterns.

### *Raffman and the problem of musical nuances*

As we have seen, one of the major problems Dennett seeks to overcome is that of the mental space, or the 'inner theatre', in which experience is supposed to take place. Following Dennett, Raffman (1993) also attempts to deal with this issue. However, for her, what is left out in Dennett's approach is a convincing account of *nuances*. In order to address this omission she develops examples of musical timing and pitch; and, in doing so, offers a compelling extension to Dennett's approach. As Raffman discusses, nuances are generally understood as qualities of musical experience that are available to conscious perception while not being explicitly conceptualisable—i.e. they cannot be properly notated or *directly described*[43] with language (for a brief overview see also Roholt, 2014). Indeed, experience is generally thought to be full of such *non-conceptual* content, which is understood to be too fine-grained for our conceptual or descriptive capacities to deal with. Here the visual analogy is that because we may experience many more colours that we could possibly name individually (Tye, 1995, 2000, 2002), the concept of 'redness', for example, is used to roughly describe what in reality entails a range of possible colour experiences. In musical contexts, such fine-grained nuances are generally discussed in terms of discrete categories (pitch, timing, timbre, tuning, and so on) and are often investigated through rigorous categorical measurements. Such processes are thought to somehow clarify the phenomena at hand by reducing it to "an objective set of properties in the music, which can be defined functionally" (Roholt, 2014, p. 27). However, while such attempts to quantify musical stimuli are useful in certain contexts, they are of little help in describing the actual musical experience in natural language, and thus do little to erode the assumed ineffability of musical qualia. Put simply, *inherent ineffability* remains a central assumption of modern aesthetics in general (Kennick, 1961).

As we saw above, however, for Dennett the notion of ineffability simply reflects a lack of descriptive skills and training on the part of the perceiver—with sufficient time and work

[43] The usage of the terms *direct description* and *indirect description* should not be confused with the idea of *direct perception* in ecological psychology (e.g., Gibson, 1966). As Kennick (1961) writes, direct forms of description involve "the sort of [verbal or written] description one might find on a 'wanted' poster in a post office: 'Height, 5'11"; weight, 170 lb.; color of hair, dark brown; eyes, blue; complexion, ruddy; small horizontal scar over the right eye'. This kind of description *can* be given of feelings, but usually it is not, either in daily life or in novels. More frequently we employ a sort of 'indirect' description which includes a description of the circumstances in which the feeling is felt" (p. 317-318).

one should be able to describe exhaustively the judgements that arise from our *pips* as they are always propositionally formatted *a priori*. Such an approach, however, has been problematized by Raffman (1993). She argues that musical nuances are in fact too fine-grained to allow for the kind of propositional schemas Dennett endorses. Instead, she develops a hierarchical conception of musical perception: at the 'higher' schematic level (e.g. compositional structure) we may conceptualize experience and thus report on it verbally, possibly in the same way Dennett suggests. *Nuances*, however, are processed prior to schemas and are thus thought to be inaccessible to language. Put another way, nuances are those aspects of pitch, timing, and so on, processed outside of the schemas that allow for conceptualisation. Because of this they are unable to be remembered, re-identified, and categorised; and thus are not able to be *described directly*. In other words, nuances are deemed 'ineffable' because they are not able to be expressed verbally in wholly objectivist (formal, functional, or quantitative) terms. As Raffman writes, "the limits of our schemas are the limits of our language, and *qua* perceivers we are designed that the grain of consciousness experience will inevitably be finer than that of our schemas, no matter how long or how diligently we practice" (p. 136).

Put simply, Raffman claims that while certain aspects of musical experience are schematized and thus accessible to direct linguistic description, others at the nuance level (or 'N-level') are not. Thus, according to her, we can objectively describe the structure of a musical work, and even make protocol statements, for example, about a given pitch: now it sounds like an E-natural; now it sounds like a slightly high E-natural; now it sounds like an E-natural about a quarter tone high (see 1993, p. 135). However, "no number of increasingly refined judgments, nor even the conjunction of them all, will suffice to specify the *particular determinate* E-natural that is the content of our conscious awareness" (p. 135; *emphasis added*). In brief, Raffman sees the N-level as the 'shallowest' level of representation of the musical signal to which the listener has conscious access. That is, there is no prior level of representation in the information processing chain and thus nuance representations arrive 'unheralded' to consciousness.

In explicitly 'cognitivist' conceptions of music cognition, like Raffman's, such N-level representations would have to be physically instantiated in the 'hardware' (the brain in this case). This raises the issue of just how such representations could emerge *unheralded*

directly from the shallowest level of information-processing into the daylight of experience. The question of how such non-conceptual content becomes *knowable*—as Raffman claims it does—remains a (*the*) problem. Moreover, she makes a clear distinction between the structural and non-structural features of music. As Roholt (2014) points out, one of the defining characteristics of musical experience in Raffman's view is that structural features are conceptualisable—or in her terminology 'type-identifiable'—and the non-structural features are not. Put simply, this means that, although the nuances themselves are non-conceptualisable, the *objectives of nuances are.* This is because they are concerned with highlighting the structural elements of the musical composition. For example, tuning pitches (nuance) to introduce a new key (structure), tempo variations (nuance) to highlight cadences (structure) and so on. Beyond such structural concerns, however, nuances (on their own) appear to have no relevance—for Raffman *there are no non-structural nuance objectives* (Roholt, 2014).

We suggest, however, that this reveals a bias towards the Western musicological tradition and its focus on the composed 'work', which increasingly draws criticism from a range of perspectives (Elliott & Silverman, 2015; De Nora, 2000; Small, 1999). Indeed, the majority of musics of the world do not share this focus on structure. For example, in Indian music, blues, rock, African drumming, and jazz, the notion of 'form' is often understood in a much more open and fluid way, where the meaning of a given performance is characterized by the dynamic moment-to-moment shifts in nuance as the performer improvises the content (Borgo, 2005). As Roholt (2014) discusses, these musics are characterized by *non-structural objectives* where the immediate qualitative aspects of musical experience are of central importance. Importantly, these musics are no less coherent than Western composed music. They are taught and discussed; and their traditions and techniques are passed on and developed with each new generation that engages with them. But if nuances are indeed non-conceptualisable and inherently ineffable—and non-schematisable and thus inaccessible to memory as Raffman suggests—how could this be possible?[44]

[44] Here it is possible that Dennett might use this insight in support of his theory—perhaps arguing that because people already talk about these experiences in metaphorical or indirect ways, non-structural objectives could also eventually be described directly with enough work. Our discussion further on will challenge this possibility.

## From objectivity to anxiety

Raffman's understanding of nuances as inherently ineffable centers on her insistence on objective *direct description* as the only philosophically respectable form by which an account of experience may be given (see Roholt, 2014). However, as she points out, although the sonic (physical) instantiations of nuances may be accurately measured using various instruments, the actual e*xperience* of nuance apparently eludes this type of direct description (which, as mentioned above, seeks a functionally defined set of objective properties). What we would like to suggest here is that this may *not* be the result of where nuances are processed and represented in the mental hierarchy, as Raffman claims, but rather reveals that experience cannot be adequately understood in wholly objectivist terms; and, importantly, that *indirect* forms of description may actually reveal important aspects of experience not considered by Raffman or Dennett. Indeed, actual *living* experience is situated—it involves experiences of familiarity, transformation, and novelty; the moment-to-moment relationships and interactions between people, things and places, and the contingent desires, needs, actions, and interpretations that motivate such interactions. If we wish to accurately describe a given experience we must include such contextual factors (Rey, 1997), otherwise all we are left with is a kind of detached list of (possibly) objective—but essentially meaningless—features abstracted from the rich nexus of *embodied* activity that characterizes actual living experience.

Along these lines, Wittgenstein (1998) argues that *indirect* forms of description are actually more efficient if we wish to bring to mind specific lived experiences and the circumstances in which they play out. Indirect description is not limited to simple forms of categorical 'naming' associated with direct description; rather, it involves the use of comparison, metaphor, and even gesture and emotional expression to get the point across. It requires, for example, comparative phenomenological clarification of what subjective experience, familiarity, and interaction, entail. Moreover, this form of description is often most successful when developed in situations where interactivity is possible—where levels of description and understanding may be refined in the process of communication between subjects. Interestingly, it is precisely this kind of interactive indirect description we find occurring between actual musicians and listeners (Borgo, 2005; Monson, 1996), who *are* able to communicate effectively about nuances through comparisons and the use of cross-

modal metaphors that describe the experience of music in terms of (among other things) movement, space, and texture (Eitan & Timmers, 2010; Johnson, 2007).

With regard to this point, it may be very useful to explore the descriptions of timing and interactivity experienced by jazz performers provided by Monson (1996) and Berliner (1994), as well as the accounts of improvisers performing and interacting in a range of cultural contexts reported by Bailey (1993). Consider, for example, the following account by jazz bassist, Calvin Hill, who describes the experience of hearing a "refreshing performance" by his colleagues, bassist, Richard Davis, and pianist, Jaki Byard:

> Richard started changing things all around. At one point, everything was getting very shaky. The tempo was about to fall apart, and the drummer was trying to keep up with Richard, trying to figure out what he was going to do next, which way he was going to go. It got very chaotic for a minute as they were coming to the end of the chorus. It was like an airplane coming in for a landing that was about to crash. No one knew what was going to happen or how they were going to get out of that. At that point Jaki was coming to the end of his solo, and he played this really strong rhythmic figure on top of what everyone else was playing, which brought all the different tempos back together and led everyone right into the "one" of the next chorus. […] In that instance, Richard deliberately introduced something rhythmically into the music that made the other players feel uneasy. People will do that sometimes. They might play something that goes against the established tempo, or they might play polyrhythmic things […] that makes the music feel unstable. (quoted in Berliner, 1994, p.378)

We suggest that such observations stand in contrast to Raffman's *ineffability* claims. Indeed, in striving for objectivity and the direct forms of description this entails, the analytical schema she adopts requires that subjectivity is suspended—where the 'listener' is understood as a decontextualized receiver and processor of information. We maintain that this approach, although useful in many ways, is necessarily limited in discussing musical experience because it is not grounded in any *phenomenological reality*. That is, it does not take into account the complex ways musicians and listeners actually engage with music and how they talk about such experiences (see Schiavio & Høffding, 2015). Likewise, if one could describe the event recounted by Hill in the ways Dennett suggests (which seems unlikely) the amount of information that would have to be conveyed verbally

would be completely impractical.

As we have just considered, the actual *living* experience of music is not necessarily driven solely by (pre-given) structural objectives and the propositional-representational forms of mental activity that (supposedly) allow them to be schematized—more than the structural elements, it is the holistic experience, the shifting relationships, and affective-emotional contours that we attend to in everyday listening. It may also be argued that we do not first attend to music categorically, in terms of 'pitch', 'timings', 'tunings', 'timbre' or 'chords' (Clarke, 2005). Such categories, useful though they may be in certain heuristic contexts, are products of the theorist—again, they are what is left over when lived experience is inhibited. In other words, the elements that characterize a given musical experience cannot be properly understood as *occurrent* and discrete—as objectively out there in the world—nor can they be *reduced* to mental processes and mechanisms in the head. Rather, they are experienced in an embodied-ecological context—as enmeshed within the relevant interests, meanings, contingencies, and social relationships we actively live through. As such, musical experiences are not strictly localizable—they are emergent properties of the *relations between* cognizers and the world.

Accordingly, we suggest that when Raffman and Dennett assume they are revealing some objective features about the nature of consciousness, they are in fact inhibiting lived embodied experience. In the process, they reduce the structure of experience to discrete categories and to limited (i.e. propositional) conceptions of what cognition entails. Again, while such approaches may be useful in certain contexts, they can only play a limited role in understanding experience when they maintain a categorical, objectivist, and functionally deterministic perspective that ignores the relational, contextual, transforming, embodied and *indeterminate* features that characterize the actual *living* experience we are trying to understand (Roholt, 2014). It may therefore be argued that when researchers in music psychology ask experimental participants to focus on categories such as pitch or timing—which they often assume to function in a determinate fashion (i.e., towards pre-given structural objectives)—they should be aware that the results they receive may not reflect the ways people actually engage with music, and should therefore be contrasted and developed in conjunction with phenomenological approaches in order to avoid overly reductive or idealized views (Clifton, 1976, 1983; Ferrera, 1984; Roholt, 2014; Schiavio,

2012; van Manen, 2014).

More generally, it has been recently pointed out that many of the problems associated with our understanding of 'mind' result from the reluctance to let go of a traditional dualist schema, resulting in what has been termed the *Cartesian Anxiety* (Bernstein 1983; Varela et al., 1991). The 'anxiety', it is argued, comes from the idea that without a fixed and stable foundation—an absolute ground—*true knowledge* of the world is unattainable. As Varela and colleagues write: "by treating mind and world as opposed subjective and objective poles the Cartesian anxiety oscillates endlessly between the two in search of a ground" (Varela et al., 1991, p. 141). Torrance (2005) discusses the consequences of this perspective very well: on the one hand, in order to provide a plausible description of a given phenomenon, cognitive science feels obliged to give a reliable account of our internal mental content (e.g. representations), as this supposedly portrays the concrete and objective properties of the world that we experience; on the other hand, however, the focus on such mental objects (and their content) leads the investigation to a domain that is not objectively measurable (i.e. the phenomenal character of a certain experience). This contrast generates an unsolvable tension: no account of human cognition has ever provided a plausible and falsifiable explanation of how a physical entity could generate a representation (Nagel, 1974).

## Toward an embodied approach to musical consciousness

The phenomenological richness that an inclusive and pluralistic perspective on music involves makes *living musical experience* a special challenge for all the perspectives on qualia we have considered thus far, including Dennett's eliminative position. Despite their differences, each one assumes distinctions between 'inner' and 'outer' realities and tends to see mind and consciousness strictly in terms of internal processes and content, which may lead to the 'anxiety' we just described. The two major problems we find in the tradition are thus the (i) *locationist* problem, which concerns whether qualia are properties of inner experience in the head, of the physical vehicles, or of features in the environment; and (ii) the *categorical* problem, which pertains to the relationship between mental content and phenomenal character of experience. We have attempted to show how the actual experience of music—and how people actually talk about it—goes beyond such problems.

Musical experience is an emergent, transformational, and temporal-historical property involving the complex and inseparable (or 'continuous') relationships that develop between active, living, embodied agents and the contingent environments (physical, social, cultural) they are embedded in. As such, a firm distinction between mental content and phenomenal character cannot be fully accounted for as it perpetuates an initial (and possibly false) dichotomy between subjective and objective aspects of experience. With this in mind, we would like to suggest that while humans are certainly capable of propositional and representational forms of cognition, such forms do not characterize *all* mental activity, and do not represent the best explanatory tools for understanding mental life. Rather, one may argue, it is the relational, comparative, situated, embodied, and metaphorical processes that characterize everyday *indirect description* that are indicative of the fundamental ways we make sense of the world as embodied social creatures. As we will see shortly, this has specific consequences for the notion of musical qualia.

Unlike cognitivist perspectives, an embodied approach to cognition necessarily adopts a developmental and ecologically situated stance, maintaining that the way an organism experiences and develops understandings of the world cannot be wholly separated from its history of interaction with the environment[45] (Barrett, 2011; Lakoff & Johnson, 1999; Shapiro, 2011; Wilson & Golonka, 2013). Johnson (2007) summarises such an approach by stating that: "[t]he core idea is that our experience of meaning is based, first, on sensorimotor experience, our feelings, and our visceral connections to the world; and, second, on various imaginative capacities for using sensorimotor processes to understand abstract concepts" (2007, p. 12). Indeed, Johnson sees sense-making as inherently "metaphorical"—where this term is understood not simply as a linguistic device, but rather as characterizing the way the embodied mind continually enacts a meaningful world through the development of cross-modal relations. This view is supported in different ways by the work of a number of neuroscientists. Damasio (1994, 1999, 2003) and LeDoux (2002), for example, have demonstrated that even what we may consider 'high-level' cognitive processes depend on more basic bodily systems that allow us to maintain a state

[45] As Oyama (2000) puts it, 'biological persons are constructed, not only in the sense that they are actively construed by themselves and others, but also in the sense that they are, at every moment, products of, and participants in, ongoing developmental processes' (p. 180).

of well-being and that constitute the most fundamental ways we become aware of and involved with the world—i.e., metabolism, basic reflexes, the immune system, pain and pleasure responses, basic drives, emotions, and feelings (see also Pessoa, 2014; Schiavio et al., 2016; van der Schyff, 2013). Along these lines, Ramachandran (2011) sees the development of the brain and mental processes as dynamically co-arising with bodily interactivity with the world. This results in complex plastic webs of neural activity that overlap in various ways and that allow us to form the cross-modal relations (movement, shape, colour, sound, touch, smell) that are central to how we build relevant (as he calls them) "metaphorical" understandings of the worlds we inhabit. Likewise, many scholars working on *embodiment* maintain that cognition is not fully realised in the head, but rather is distributed across different autonomous structures and properties of our body and the world (see Gallagher 2011; Hanna & Maiese, 2009; Rowlands, 2010).

If cognition is defined by such embodied modes of engagement *between* organisms and environment—rather than by the representational recovery of a 'world out there'—then mental life cannot be reduced to propositional or proto-linguistic operations 'in the head'. Rather it may be explored in relation to the concrete patterns of action that allow a living system to establish a dynamic relationship with its world (Colombetti, 2014). In this sense world, body, and brain, may be understood to constitute a complex dynamic system that operates in non-linear terms. That is, each component influences and is influenced by the others without a clear input-output, but rather in a *circular* way (Gallagher et al., 2013; Kelso, 1995). Importantly, from this perspective the appeal to mental representations is not required to account for all forms of cognition because the living system's ability to act and make sense of the world is captured by its interactive dynamical properties, and not through the outputs of particular 'internal' mental operations (see Gallagher et al., 2013; Hutto & Myin, 2013). Again, the point here is not to deny that we are capable of representational or propositional thought, but rather to suggest that such forms may in fact be derivative and *not* primary. As Carman writes, to perceive is "not to have inner mental states but to know and find your way around in an environment. […] Perception and movement are not related to one another as causes and effects, but coexist in a complex interconnected whole" (2008, p.87; see also Merleau-Ponty, 1945).

With this in mind, we might consider recent empirical work by Dowling and Tillmann

(2014). They report results suggesting that the real-time experience of listening to novel music is systematically different from what listeners remember when asked about the experience later on. This, we argue, is consistent with the idea that cognitive processes are best understood in terms of the situated and meaningful relationships that unfold in real-time between subjects (i.e. listeners) and objects (i.e. novel music). Indeed, their study implies that the experience of a given event may be understood to transform through time in the broader context of a perceiver's ongoing life experience; and therefore a full account of it cannot be limited only to the immediate physical stimuli associated with the initial event.

As 'experience' is not an abstract property separated from the body and from the history of interactivity with the social and physical environment, it always presents some sense of novelty. This insight may also explain why some listeners often listen over and over to music they already know very well, or why some performers may play the same piece many times—besides practice or concerts. Perhaps they do so not to simply *re-enact* the very same (e.g. emotional) experiences they found in their first engagement with that music, but also to give novel meanings to every new listening (or performing) context, and live though different (possibly richer, deeper, etc.) experiences. Here a relevant example comes from Pablo Casals, who, at 93 years old, was asked by an interviewer if he had not grown tired of playing Bach's 48 preludes and fugues every morning as he has done for the previous 85 years. The great cellist's answer was that he found fresh beauties in them each time he was playing, for every performance was like an act of discovery (see Sacks, 2007).

Moreover, as situated agents we develop a repertoire of attitudes and skills that emerge from the need to interact with the world in ways that lead to well-being or successful engagement across a range of contexts (see Dreyfus, 1992). We suggest that such interaction involves the mastery of tools and actions that may enhance and facilitate understanding given experiential contexts. For example, the development of musical skills allows one to open up to the experience of music in richer ways and thus develop new embodied, emotional, social, aesthetic, and abstract-rational understandings (Molnar-Szakacs & Overy, 2006; Schiavio et al., 2014; Schiavio & Timmers, 2016). In line with these insights, Roholt (2014) asks us to "[c]onsider the boxer's understanding of the speed

bag or a runner's grasp of the treadmill. Consider the timing, the groove of sex; this is not only a relevant example but an historically important touchstone for rhythm and blues, rock and roll and jazz grooves. In such cases as these, the knowledge we possess is not cognitive but in the body" (p.100). Thus even in *seemingly* inactive contexts—such as listening to music at home or in a concert hall—our engagement with music entails a range of *active* forms of experience that depend deeply on our sensorimotor expertise (Clarke 2005; Gerson et al., 2015; Phillips-Silver & Trainor, 2007). A number of empirical findings support this idea by showing how, during listening tasks, the activation of sensorimotor networks (Overy & Molnar-Szakacs, 2009) are facilitated in performers who have the practical skills to actually play the auditory stimuli presented to them (D'Ausilio et al., 2006; Haslinger et al., 2005; Haueisen & Knösche, 2001; Novembre & Keller, 2011).

Indeed, we move and are moved by the shifting and indeterminate relations that characterize musical experience—relations we actively evoke and develop; and that are ultimately grounded in our embodied, affective spatio-temporal existence (Sheets-Johnstone, 2009, 2012). Importantly, from this standpoint, such experiences cannot be understood in terms of the standard conceptions of qualia - or as instantiations of brain processes and mental content (Hutto & Myin, 2013). As we have begun to discuss, the very possibility of meaning-making depends on organism-environment interactivity—and centrally the social variety that occurs between agents who engage in communication and understanding where both linguistic and pre or non-linguistic embodied metaphorical process play a central role. The qualities that characterize a given musical experience are thus not wholly ineffable or private; nor can they be understood as strictly intrinsic and directly accessible when, as we have considered, they emerge from a complex web of indeterminate features, whose relations are developed in a contingent, situated contexts and often develop though ongoing intersubjective processes (Barrett, 2015; Krueger, 2014; Reybrouck, 2001, 2005, 2012). Let us now compare such insights with the previously discussed positions on musical qualia.

## Beyond Qualia

If experience is holistic, embodied, and situated, then it seems counterproductive to endorse an *IR* stance on musical qualia. Listening to a glissando, to keep the example we used

above, cannot be simply a matter of how I represent it. The nature of the physical stimulus itself, my emotional state, the way in which the glissando is presented, the bodily resonances obtained through the meaningful engagement with the stimulus, as well as many other complex variables cannot be reduced to a 'virtual copy' about the event in the head. Indeed, the body itself presents different levels of autonomy that participate as part of a *continuous dynamic system* with the brain and the environment in generating experience (Chemero, 2009; Favela & Chemero, 2016). In a similar vein, embracing bodily motion, agency, and situatedness, also looks beyond the limitations of the similarly reductive *INR* stance. If musical qualia (and musical experience) are simply neural firing, then it could be theoretically possible to build a neural simulation with artificial neurons recreating the conditions of that particular neural discharge. But would the machine built in this way actually have *the same* experience that I am having while listening to the glissando? Would, in other words, an artificially generated network be able to re-create the feeling of being in such a particular state? Many scholars are sceptical of this (see Cosmelli & Thompson, 2010), claiming that without an actual body historically immersed in an actual environment, the conditions of possibility of such a potential experiment are essentially null. Facing such problems, we can then turn to either *NINR* or to *eliminativism.* Here we are faced with a radical alternative. Would musical experience be better understood without the notion of qualia? Or would it be better to keep using the word 'qualia' to define the intrinsic properties of my subjective 'what-is-like' to have a particular musical experience?

To answer to this question consider first the embodied perspective we discussed above: it reveals current notions of qualia to be rooted in problematic dualist assumptions associated with 'cognitivist' approaches to mind. As such, we suggest that developing an *embodied* approach to human musicality may offer new conceptual tools to investigate the complex dynamics underlying musical experience, without needing to postulate any strict 'inner locus' for it. As we saw, musical experience cannot be reduced to structures 'in the head', because what happens within the boundaries of the skull is part of the *broader system involving body and environment that evolves over time.* Thus, any attempt to characterise qualia simply in terms of inner properties of the animal—or pre-given features of the environment—will inevitably fall short because it downplays the dynamicity of such a

system (i.e., across a range of interacting components and time scales) to focus on a single component of it. In other words, without positing clear relationality with the world—that is, without the histories of structural coupling that link subjects with their environment in a mutually influencing way (see Lewontin, 1998)—the notion of qualia as internally located does not do full justice to the complex flowing of embodied experience: it misses the active, ecologically situated, emotional, and shared or participatory forms of sense-making that characterize musical activity, experience and life more generally (Thompson, 2007; Weber & Varela, 2002).

Because hard and fast distinctions between 'inner' and 'outer' may be impossible to define—as well as what really contributes and what does not in generating experience—some operational definition of qualia may not, finally, be relevant or useful. Indeed, musical experience—with its interplay of subtle nuances, bodily movements, embodied interactivities, and personal experiences—is a perfect example of such ambiguity. We suggest, therefore, that a more holistic (or *gestaltist*) perspective may be better suited to exploring musical experience. Such an approach is critical of the assumption that experience begins with the perception of a 'bundle' sense data—"a finite number of real, separable (although not necessarily separate) elements, each element corresponding to a definite stimulus or to a special memory-residium" (Koffka, 1923, p.533). It also questions the related idea that each discrete or atomic sensation corresponds with some objective feature of the world, which assumes a *constancy* whereby an external stimulus acting on a 'normal' sense organ determines what *bundle* of sensations will constitute a given experience (*ib.*, p. 534). Indeed, while the assumptions associated with these so-called *bundle* and *constancy* hypotheses continue to influence theories and research designs, they have been challenged by a number of early studies in Gestalt psychology involving visual and auditory phenomena that do not maintain a direct correspondence between stimulus and experience (Koffka, 1923; Köhler, 1959; Wertheimer, 1938; see also Käufer & Chemero, 2015, pp. 79-91 for a useful overview). These involve, for example the experience of 'multi-stable' images such as the Necker Cube, the equivocal experience of pulse associated with polyrhythm (van der Schyff, 2016), or the fact that melodies may be transposed and still retain their identity. These observations strongly suggest that experience is not determined by some objective stimulus, but requires the *active*

participation of a situated perceiver. The printed lines that constitute the Necker Cube and the objective *bundle* of sonic stimuli associated with a repeating polyrhythm *do not* entail a constancy with the transforming experiences viewers and listeners have. Rather, these examples highlight the way a perceiver engages with the stimulus—the stimulus remains constant but the experience varies (see Ihde, 1977; Roholt, 2014). It is also possible to vary the properties of the stimuli while retaining a recognizable experience—e.g. when we transpose a melody we retain the experience of the song (Ehrenfels, 1988). In brief, this approach sees experience as involving, first and foremost, the recognition and/or enactment of perceptual and behavioural *forms* that are not simply reducible to the environmental stimuli they are associated with (see Merleau-Ponty, 1942).

This orientation offers a more holistic approach to the empirical investigation of musical experience—one that trades the problematic notion of 'qualia' for rich phenomenological description (Johnson, 2007). And indeed, examples of this approach have been developed in musical contexts by a range of authors who have produced compelling and highly nuanced accounts of what musical experience entails (Clifton, 1976; 1983; Ihde, 1976; Krueger, 2011; Roholt, 2014; Schafer, 1994; Sudnow, 1978). Here it should be noted that this orientation resonates closely with the embodied perspectives just discussed—where the *forms* enacted by the living body in relation to its environmental milieu constitute the very basis for what it means to be an experiencing being (Barrett, 2015; Merleau-Ponty, 1942; 1945; see also Reybrouck, 2004; 2014). Likewise, this approach also offers an alternative to other eliminativist positions, such as Raffman and Dennett's—who arguably maintain assumptions associated with the bundle and constancy hypotheses mentioned above when they assume that experience involves the representational recovery of discrete external events, which are then somehow combined into an experience.[46]

In all, the discussion over the idea of qualia has certainly played an important role in developing a number of influential philosophical perspectives on consciousness and the mind. However, this idea may now be the cause of more confusion than clarification. As

[46] With this in mind, readers may be interested to explore Dennett's (1988) account of the experience of plucking an open E string on a guitar. Here Roholt (2014, pp. 46-49) offers a critical reading of Dennett that is very much in line with our position.

such we suggest that it may be time for philosophers, musicologists, psychologists, and neuroscientists to turn towards more relational, embodied, phenomenological, and dynamically interactive frameworks to gain richer understandings of what (musical) consciousness entails.

## Conclusion

We have suggested here that a rich and inclusive perspective on musical experience poses special problems for many approaches to qualia, and mind more generally. It asks us to look beyond traditional cognitivist assumptions, in favour of a more holistic and embodied stance towards human experience. Indeed, the embodied musical perspective we have begun to offer here attempts to reconsider 'inner' and 'outer' dichotomies; to see organism and environment, mind and world, not as fundamental duality but rather as deeply continuous with each other—as, in fact, part of the same dynamic system. In doing so we have questioned the plausibility of traditional views on qualia and the approaches proposed by Dennett and Raffman in the context of musical experience. Importantly, the shift away from such perspectives is not just a sort of 'theoretical exercise' but may help researchers implement new models and strategies that will shed light upon the embodied roots of music cognition. In qualitative research, for example, such frameworks may help scholars identify particular metaphorical passages in interviews, highlighting the deep inter-dynamicity of our experience in non-reductionist terms (see Ravn & Christensen, 2014; Ravn & Hansen, 2013). At the same time, it could help the interviewer develop richer questions that point more directly to the core of the problems of experience, without assuming an initial dichotomy between inner subjectivity and an objective world. Asking performers and listeners to discuss their personal engagements with music (historically and culturally) in conjunction with their moment-to-moment descriptions of musical experience—involving cross-modal correspondences, embodied metaphors, and so on—could lead to interesting new insights. In quantitative research, a shift away from 'information processing' accounts to explain cognition may inspire the development of new experimental tools and designs to address the question of musical experience in new ways.

With regard to this last point, we should make it clear that while our approach is 'non-reductionist', it is not against the use of fMRI, TMS, MEG, or other techniques that enable

the examination of the brain. Although we maintain that cognition is not simply 'in the head' and should be understood in an embodied and ecologically situated way, brain research is, of course, an incredibly valuable resource if we want to understand how experience works. Claiming that cognitive processes go beyond the boundaries of the skull does *not* imply that the brain does not participate in it (Fuchs, 2011). In this sense, our approach may be situated within recent non-reductionist trend in critical neuroscience (Fuchs, 2005a; 2005b; Slaby 2015; Slaby & Gallagher 2015), which emphasises the role of bodily and extra-neural factors in driving cognitive processes (Colombetti, 2014; Thompson, 2007). The brain, as a part of larger system including body and world (Gallagher et al., 2013) remains a fundamental area to be explored. The difference, as we—and many others—suggest, is that it cannot be studied as the sole explanatory unit. Consider, for instance, how Kiverstein and Miller (2015) show how given brain functions, being context dependent, can be understood better when included in a large-scale network with other brain areas, the body, and the world (Chemero, 2009) including other agents. In other words, to appreciate what musical experience entails we need to investigate more than just the brain, or just the body, or just the world. And indeed, we predict that through an exploration of their mutual, circular, and recurrent interactions (as we discussed it in the section "Toward an embodied approach to musical consciousness"), current theories involving notions of musical qualia may be replaced by more holistic and phenomenologically inspired approaches (Maturana & Varela, 1980) that do not reduce experience to inner mechanisms, representational recoveries, or neural firing.

As we have considered, this will involve radically reforming the notion of qualia, or more likely, doing away with it altogether. Through this embodied paradigm we expect to gain richer understandings of musical experience as it emerges at the *dynamic intersection of brain, body, and world*. Indeed, if our experience of the world is not assumed to be wholly dependent on pre-given environmental attributes and/or preconscious brain mechanisms, but rather on embodied (inter)activity, then human agency and the unique relational histories of individuals, groups, and environments come to the fore as constitutive of consciousness. Again, this looks beyond the passive, input-output, cause and response framework assumed by many standard approaches to mind, highlighting the active and creative, the self and world-making potentials of the human mind. In practical

contexts, this may open the way for new ways of thinking about the relationship between musicality and learning (Schiavio & Cummins, 2015; van der Schyff, 2015), rehabilitation (Schiavio & Altenmüller, 2015), how we listen to and perceive the sonic worlds we inhabit (Schafer, 1984, 1996; Wilson & Brown, 2012), as well as how we conceive of and construct the acoustic environments and 'sounding objects' we live with and through (Blesser & Salter 2007; Sterne, 2003).

# Part III

# Phenomenology for Music and Arts Education

# 5

# From Necker Cubes to Polyrhythms: Fostering a Phenomenological Attitude in Music Education

> The ability to perceive oneself during the process of participation is an essential quality of the aesthetic experience; the observer finds himself in a strange, halfway position: he is involved, and he watches himself being involved. However, this position is not entirely non-pragmatic, for it can only come about when existing codes are transcended or invalidated. The resultant restructuring of stored experiences makes the reader aware not only of the experience but also of the means whereby it develops. Only the controlled observation of that which is instigated by the text makes it possible for the reader to formulate a reference for what he is restructuring. Herein lies the practical relevance of aesthetic experience: it induces this observation, which takes the place of codes that otherwise would be essential for the success of communication. (Iser, 1980, p.134)

## Introduction

This quote from Iser's phenomenology of reading draws out a necessity common to all modes of aesthetic activity. Indeed, “text” and “reader” could just as easily be replaced with “painting” and “viewer” or with “music” and “listener.” Whatever the case, imagination and reflexive involvement are prerequisites for fully experiencing and appreciating all forms of art. This insight implies even deeper commitments in the context of creative praxis and education: if the function of the arts is to open up previously unrecognized possibilities for experiencing, understanding, and engaging with the relationships that constitute the physical and socio-cultural environments we inhabit, then arts educators must develop pragmatic ways of sharing this phenomenological responsibility with students (Greene, 1995). This is particularly challenging in music education. In order to participate effectively musicians must seamlessly integrate and develop a wide range of embodied experience: large and small motor actions; affective-emotional responses; complex and changing patterns of sound; as well as interactions with

the immediate physical and social environment in which they find themselves. The musician must also comprehend, on some level at least, the larger socio-cultural implications of what it means to participate in a given musical event, as well as the relevance of this for their own identity and sense of self. For educators, this means that simply transmitting technical knowledge and getting students to play things "correctly" is not sufficient. Involved creative music making requires the musician to become acutely aware of the process of participation from multiple perspectives and to be able to develop new understandings of the shared musical worlds being enacted. Otherwise, the impressions, embodied activities, and evolving interplay of forms and emotions that constitute the aesthetic experience will remain vague and unrefined, and the musician will continue to depend on narrow, codified or externally dictated ways of understanding. As Dewey (2005) writes,

> There is work to be done on the part of the percipient as there is on the part of the artist. The one who is too lazy, idle, or indurated in convention to perform this work will not see or hear. His "appreciation" will be a mixture of scraps of learning with conformity to norms of conventional admiration [...]. (p. 56)

What can we offer our music students so that they may better deal with such challenges? What kinds of conceptual tools can we present in the context of music instruction that will help students become more reflective, open minded, creative and engaged interpreters, composers and improvisers? How can we help them "see" beyond standard practices and codified understandings to develop their own unique approaches to music making and thus participate more effectively in society as the cultural agents they are? These questions seem more relevant than ever in today's fast changing world, where the development of flexibility of mind is so necessary in order to deal with the conceptual boundary-crossing and creative innovation students will need in their later professional practice. As Greene (1995) writes, we need to find ways of enabling students "to be personally present to their own learning processes and self-reflective with regard to them" (p.181).

As a philosophy of experience, phenomenology would appear to be a good starting place for examining musical experience and learning, and for developing such creative flexibility. Indeed, phenomenology is sometimes referred to as a philosophy of pure

possibility (Casey, 2000). However, much of the core literature in phenomenology is notoriously difficult. Like any established intellectual endeavor, phenomenology has developed its own unique "tribal language," making its central texts (e.g. Husserl, 1960, 1970; Heidegger, 1962; Merleau-Ponty, 2002) almost impenetrable for the novice reader. In response to this problem a number of educators (e.g. Ihde, 1977) have developed "experimental" approaches to learning phenomenological methods, where students are first introduced to phenomenology by actually doing it. In this way, when theory and terminology are introduced they are discussed within an experiential (and experienced) context and key ideas and vocabulary are much easier to grasp. This experimental approach to phenomenological inquiry receives little attention in music education. However, as I discuss below, it offers a useful way of initiating a reflective approach to musical practice that may developed by the student as a life-long project.[47]

I begin by introducing a simple exercise in experimental phenomenology involving multi-stable visual phenomena (the Necker Cube) that can be explored without the use of complex terminology. In doing so I discuss how the phenomenological attitude may open up a deeper appreciation of the structure and modes of consciousness. To develop this further, I then consider the central role the body plays in how we experience and form understandings of the worlds we inhabit, with a special focus on rethinking received notions of what "aesthetic" experience entails. Following this, I explain how the phenomenological attitude may serve as a starting point for music students and teachers as they begin to reflect on their involvement with music as co-investigators. Here I draw on my teaching practice as a percussion and drum kit instructor in an undergraduate music program, developing the pedagogical possibilities of multi-stable musical phenomena (African polyrhythm) in line with the phenomenological framework explored in previous sections. While I do not discuss a "study" as such, the reader may nevertheless begin to explore the examples on offer immediately and evaluate the process for themselves within the reflexive phenomenological context I provide. Furthermore, although my discussion is mostly situated within the context of postsecondary instrumental music education, I hope

[47] While phenomenological approaches form a major part of qualitative research in the social sciences, psychology and education (Creswell, 2014; van Manen, 2014), my goal here is to introduce how phenomenology may be applied in a more "radically empirical" context—how it may offer a useful way of researching one's own lived experience and for expanding the possibilities of what that might entail.

that many of the ideas I put forward here will be adaptable across a range of contexts. With this in mind, I conclude the paper by briefly considering how the phenomenological approach might be developed beyond the practice room to examine music's relationship to the experience of culture, imagination and "self."

## Practicing phenomenology with "multi-stable" images

Students enter undergraduate music programs with varying degrees of skill and musical understanding. By this point they will all have had some experience playing in ensembles, taking lessons, and engaging in some sort of private practice. Many will also have participated in so-called informal musical practice and learning with friends and family members. For the most part, students come to understand the process of music making in terms of what works—what will get them through the performance and win them the approval of teachers, band-mates, and friends. Put simply, music making at this stage is pragmatic (in the more superficial sense of the word) and in many ways it makes sense that it should be so. However, students may become locked into ways of understanding musical experiences that are vague, narrow, repetitive, or even dogmatic. Indeed, while many early childhood music education programs maintain a rather playful and creative approach to musical development, in high school and university more conformist attitudes tend to dominate. This often involves a focus on prescriptive (and often competitive) performance practice associated with the "correct" reproduction of "works" (Elliott & Silverman, 2015). As a result, students often enter private music lessons and ensemble situations at the post-secondary level seemingly oblivious to the idea that there might be a myriad of possibilities for experiencing and understanding even the simplest of musical activities. Others appear to have more awareness of possibilities but have no idea where to begin. Whatever the case, as music educators it is our task to help open new possibilities for musical experience whereby students will be able to develop new knowledge and understandings—to help raise conscious awareness beyond taken-for-granted ways of experiencing the world, develop the creative imagination, and thus foster a sense of agency. In brief, we must be able to help our students better understand the nature and structure of (musical) experience so that they may engage with it more fully as the creative, world-making beings they are.

One way to begin this project is through the introduction of simple phenomenological

exercises involving "multi-stable images" (see Ihde, 1977; Merleau-Ponty, 2002; Roholt, 2014; Christensen, 2012). For example, Figure 1 shows a form known as the Necker Cube (Necker, 1832). This image is well known in psychological circles as an example of a "bi-stable" phenomenon—perception of the image spontaneously reverses itself between two three-dimensional spaces (Attneave, 1971; Morris, 1971). Very often, viewers will first experience the cube as if they are oriented above it with a square on the left facing "forward" (A). This is not surprising as similar objects in our day-to-day lives (tables, bricks, chairs, boxes) are generally viewed and interacted with from such a perspective (i.e. above). However, the cube may also be perceived from "below" with a square facing towards the viewer's right (B) and when looked at for a period of time it will often appear to "shift" unpredictably between the above and below perspectives. With a bit of practice, the viewer can hold on to and learn to move willfully between the above-left and below-right points of view.

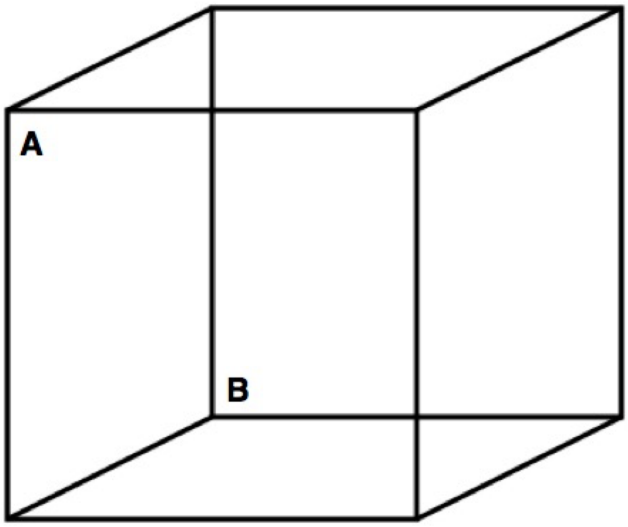



**Figure 1**. The Necker Cube

The phenomenological approach allows us to develop our experience of the image still further. By suspending (pre)judgements and explanations, and by focusing on a clear description of the phenomena at hand, the viewer may begin to develop a deeper awareness

of the possibilities of the experience, as well as the process of experience itself. I have already suggested that our tendency to experience the Necker Cube first as a "cube" and not in some other way is indicative of the *natural attitude* (Husserl, 1960; Merleau-Ponty, 2002) we adopt in our encounters with analogous objects in our day-to-day lives. However, by identifying this taken-for-granted perspective we may attempt to suspend or "bracket" it (*epoché*) and thus open up previously unrecognized possibilities. By suspending the form's "cubeness" the viewer may explore, experiment with and describe the object of experience from a variety of new focal points; by moving habitual perspectives into the background other relationships and interpretations may begin to come forward. One possibility that emerges is that the intersections of lines may now be experienced in a two dimensional context (Christensen, 2012; Ihde, 1977). From this perspective one may notice the vertically oriented rectangle at the center of the image, which is bounded by two right triangles, on the top left and bottom right respectively, and trapezoidal figures above, below, left and right. The result is a strange "belt" shape with a hexagonal exterior and rectangular interior; an abstract image with no deeply *sedimented* relationship to everyday experience. Interestingly, this "flat" perspective is "uncomfortable" and considerably harder to maintain than the cube experience. However, with practice the viewer can learn to make controlled movements between above-left and below-right cubes and the two dimensional "belt." One can blend the three together in in-between states or hold various features of each in place while allowing the rest of the figure and the viewer's relative "position" to move to other orientations. What was formerly bi-stable now becomes multi-stable and transitional states may be identified. More experimentally minded viewers may now catalogue the results of such investigations in order to build up a richer description of the possible experiences the Necker Cube affords (see Ihde, 1977; Mereau-Ponty, 2002).

Although more could be said here about the Necker Cube and other multi-stable images, what has been discussed thus far already allows us to investigate some fundamental aspects of experience that might normally not be considered. First, we tend towards *naturalized* ways of organizing the relationships that constitute experience. These are informed (*sedimented*) by our histories as embodied and ecological (i.e. "located" or "situated") creatures—e.g. the tendency to position ourselves in relation to the image (above, below, facing). Thus a sense of movement and/or bodily orientation in space

(whether actual or imagined) is a central aspect of experience (Benson, 2001; Dewey, 2005; Johnson, 2007). Second, the awareness of even the simplest phenomena may be extended beyond the initial taken for granted perspective (*the natural attitude*) through a reflexive open-ended exploration of possibilities. And third, conscious experience is not simply the retrieval of a preexisting environment (the attitude of *objective thought*; see Merleau-Ponty, 2002, pp.77-83), rather it is an emergent, constructive or "enactive" process (Maturana & Varela, 1998; Varela et al., 1991). This last point is especially relevant when we consider that the Necker Cube is not a cube at all but rather 12 lines that intersect in various ways and that the mind projects in three-dimensions. Nevertheless, from a radically empirical point of view the *experience* of "cubeness" (as well as its variations) is quite real and requires no further proof of validity; we can return to it repeatedly (the phenomenon is *apodictic*).

## Intentionality and the modes of experience

In addition to the points outlined above we may now discuss a perhaps even more fundamental observation, namely that there appears to be a "directedness" to experience (*intentionality*) —i.e. "if I experience at all I experience something and do so in a certain way" (Ihde 1977, p.43; Merleau-Ponty, 2002). Or, to put it another way, consciousness is always consciousness of some thing *as something* (Gallagher, 2012). Indeed, we began with an awareness of the "cube," which was experienced literally as such. However, an exploration of *how* we consciously attended to the cube expanded the possibilities of experience to the point where the image was no longer experienced as a cube at all. We began to move from the *prescriptive* "literal mindedness" of the *natural attitude* or taken-for-granted stance (non-reflective/constrained) towards the "polymorphic mindedness" (reflective/open to possibilities) of the phenomenological attitude (Ihde, 1977).

The first thing we may note about this move is that a certain degree of self-awareness or reflexivity was needed in order to recognize the taken-for-granted stance and to develop alternative points of view. It brought into play *my* location in relation to the object (and/or the object's location in relation to me); it entailed *my* struggle to develop other perspectives and *my* awareness or involvement in the exploration and construction of experience. This said it is also important to recognize that the "I" is not always explicit or *thematized* in

experience (Ihde, 1977; Benson, 2001; Varela et al., 1991). Indeed, in most mundane experience we are often outside of ourselves "in the world of [our projects]" (see Ihde, 1977, p. 47; Merleau-Ponty, 2002). This is to say that in most of the everyday activities we engage in require the development of a repertoire of skills (seeing, hearing, doing) and ways of thinking that we come to take for granted—e.g. cooking, chopping wood, playing and listening to music. Such modes of experiencing (skillful coping) are not lacking in awareness *per se* but are not those in which we are explicitly self-conscious. Moreover, intense modes of experience where one is almost completely immersed in the experience itself can be pleasurable and rewarding; they may lead to "positive modes of absorption" that are central to aesthetic experiences and that may ultimately afford an expanded and shared sense of self, as well as the cultural and therapeutic benefits that follow (Benson, 2001). By contrast, modes of experience where acute self-awareness dominates can be uncomfortable. Such experiences may be associated with boredom, loneliness, isolation, as well as with physical and psychological pain. Extreme examples of this are found in experiences of forced confinement and torture—under such conditions one might say that the system of experience is narrowed, confined, or trapped within the self: extended consciousness is restricted; descriptive, imaginative, and narrative capacities are reduced; and a sense of dislocation or alienation from one's social, physical or bodily milieu dominates (Benson, 2001).

Everyday experience tends to move between the objects of experience, an awareness of the situations we find ourselves in, and a shifting sense of our own agency (the *noematic* to *noetic*; see below). Indeed, we engage in alternating periods of absorbed consciousness and self-consciousness often without reflecting deeply on how such states of awareness arise or where they could lead. For example, we may consider here how a more reflexive or self-aware mode of experience may emerge out of a state of absorption due to an unforeseen occurrence. This might involve a breakdown in whatever tools one is using (a broken string or hammer; see Heidegger, 1962), or an unexpected event in the environment (a dropped glass; the sound of an alarm; a wrong note played in the woodwind section; a dropped beat by the drummer; an audience member creating an annoying disturbance). It may also be noted how a heightened and uncomfortable level of sustained self-awareness, and even temporary feelings of alienation, and psycho-physical discomfort often emerge

when we are required to learn new skills—i.e. new ways of thinking, perceiving and doing. We saw this in a very simple context when we tried to advance the possibilities of the Necker Cube (more on this shortly in a musical learning context). Although such experiences may not always bring the "self" to mind explicitly, they nevertheless involve a shift in the mode of experience and therefore demand a level of phenomenal reflection. Such reflection moves towards the *how* of experience and highlights the agency of the experiencer (What's going on? What am I doing here? How can I fix this? What am I doing wrong? Why is this so difficult?).

Thus, while the starting point of experience is the "something" that is experienced (e.g. the "cube"), the conscious agency of the "I" moves towards the foreground of awareness when we are encouraged to examine and interpret experience. This, in turn, allows experience to be developed beyond its initial state. And indeed, we need not wait for dramatic events such as I have just described to initiate reflexive shifts in our awareness or modes of experiencing—one may actively and creatively choose to develop the mode of experiencing from one that is more absorbed to one that is more reflexive and back again. Again, Dewey (2005) puts it well when he writes:

> [A]bsorption in a work of art so complete as to exclude analysis cannot be long sustained. There is a rhythm of surrender and reflection. We interrupt our yielding to the object to ask where it is leading and how it is leading there. (p. 150)

Likewise, one may also actively shift the focus of attention to differing areas within the field of experience and consciously work on developing new relationships between them. Recall that in order to advance the experience of the Cube the viewer was required to develop new focal points and to practice moving others into the background. However, although the focus of experience may have been on developing the "topography" of the image itself, some residual awareness of the total field of experience was never far off. Thus a central aspect of phenomenological analysis involves making distinctions between those things that lie in the *foreground* or core of experience, those that lie in the *background*, and those that occupy the fringes of perception (closer to the *horizon* of experience). Here a viewer might experiment with expanding, shifting or sharing the core of experience with other objects present in the environment at large; he or she might try

viewing the image at distance while simultaneously-alternately attending to other objects, sounds, physical movements and so on while noting changes in character of the experience.

To summarize, phenomenological inquiry may be understood as an examination of the structure or "directedness" of experience that begins with the *what* of experience as it appears in the "literal," non-reflective, or taken-for-granted experience of things (*the natural attitude*). This inquiry then questions retrogressively from the *what* of appearance to the *how* (conscious-reflective development of the possibilities and modes of experience); and that ultimately develops back to the *who* of experience (an awareness of the "self" as an active embodied agent in the construction of experience). The schema in Figure 2 is adapted from Ihde (1977).

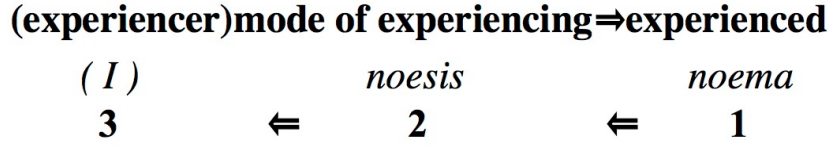



**Figure 2.** The circularity of experience.[48]

By this view, consciousness is understood as a "circular" process that continually moves between the poles of "experiencer" and "experienced,", where the "I" as a full-blown embodied awareness of self comes "late" to experience. In other words, the "situatedness" of the self and its sense of being is an ongoing reflexive process; its relative significance is enacted "through its encounter with things, persons, and every type of otherness it may meet" (Ihde, 1977, p. 51; this is why it is placed in parentheses in Figure 2). The self therefore cannot be pinned down as a fixed entity, but rather appears as an emergent phenomenon, inextricable from embodied organism-environment interactions that give rise to it (Thompson, 2007; Varela et al, 1991).

Put simply, phenomenology provides a means by which we may begin to develop the

[48] The terms *noesis* and *noema* originate in the Greek word *νόημα*, which refers to the "aboutness" of a given thought. They were introduced in phenomenology by Husserl (1913) to distinguish the basic (and inseparable) elements of conscious thought or "intentionality." Put very simply, *noesis* (or the *noetic*) refers to the mental act of perceiving something in a certain way, while *noema* (or *noematic*) concerns the intended object of experience. These terms have been developed by various ways by a range of thinkers (Woodruff Smith, 2007, pp. 304-306; see also Sokolowski, 2000; Solomon, 1977).

experience of any number of phenomena through a recognition of the taken for granted ways we attend to them, and therefore open up alternative possibilities. And of course, this may involve the integration of many more perceptual modes (auditory, tactile, bodily, emotional, social and so on) than the almost purely visual dimension that characterized our exploration of the Necker Cube. Indeed, creative engagement with music necessarily involves cross-modal, embodied and intersubjective forms of awareness and attention sharing (Clifton, 1976; Johnson, 2007; Leman, 2007). For example, as a listener one might decide to focus on specific instruments in an ensemble—perhaps one that normally plays a background role—and thus develop a new perspective on a well-known piece of music. In doing so one could also actively seek out new aspects (overtones, harmonics, rhythmic and dynamic nuances and so on) in order to develop the experience of the sounds one engages with (Roholt, 2014). Additionally, one could attend to the sonic properties of the space one occupies (acoustics, reflections, reverberation, diffusion; Ihde, 1976; Blesser & Salter, 2006). Along these lines, a "focus, core, field and fringe" delineation similar to the one discussed above is taken up in an auditory/musical context by Ihde (1976; see also Schafer, 1986, 1994; Machin, 2010), who points out that unlike visual experience, the auditory field is omnidirectional and explicitly temporal. In this way, musical experience arguably surrounds, permeates and transforms our being in a way that visual experience does not; even in seemingly "passive" listening contexts it actively engages the body and does not first impose a strict subject-object separation. This observation is taken up by Clifton (1976) in a listening context, "I intend, or tend-toward the object of feeling, but at the same time submit to it by allowing it to touch me. Possession itself is thus two-directional: I possess the music, and it possesses me" (p. 76).

This all adds an interesting musical dimension to the rhythm of absorption and reflection described by Dewey (above). It also highlights the fundamental existential experience of actuality and potentiality, of coming-into and going-out of being—the continually transforming nature of experience (van der Schyff, 2015). Among other things, such insights may encourage a more nuanced awareness of time perception, where the focus may shift from the narrow (onsets and the "trailing off" of sounds) to the broad (the evolution of a tone or form). This may also involve an exploration of the relationships between the "just past" to the anticipation of what is to come next, the *retentions* and

*protentions* that characterize the temporal nature of intentionality (Husserl, 1991; Merleau-Ponty, 2002). In connection with this, one could examine how perception of the various attributes of the musical sound develop in relation to bodily-emotive states (i.e. synaesthetic perceptions of movement, location, space, texture, feeling; see Clifton, 1976; Johnson, 2007, Merleau-Ponty, 2002). Similarly, as a performer, one might explore how experience is transformed through the embodied agency of those with whom we co-enact musical worlds (Reybrouck, 2005; Krueger, 2014). Or indeed, one could begin with an examination of *sedimented* conventions and attitudes in the cultural context (e.g. Small, 1999; Clayton et al., 2011), examining one's relationship to them and considering alternative ways of thinking.

In brief, all of these activities involve a process of moving from taken-for-granted ways of listening, perceiving and thinking towards a more reflective, present or "mindful" attitude—one that may foster more pluralistic, relational and imaginative ways of attending to the world (van der Schyff, 2015). What is important to recognize here is that while the phenomenological attitude seeks to draw out such previously unrecognized aspects of experience it does not reduce experience to such aspects. That is, in contrast to the categorizing trends in empirical science, phenomenology maintains a holistic and relational perspective that strives to develop a greater understanding of the unity of experience as a complex, living, transforming, embodied-ecological phenomenon—albeit one that may be attended to and developed from a range of interacting perspectives (Clifton, 1975).

## Embodiment and the primordial meaning of aesthetic experience

As I have begun to consider, phenomenological inquiry affords a deeper understanding of how experience happens in a relational, ecological and living-embodied context (Benson, 2001; 1966; Krueger, 2011, 2013, 2014; Merelau-Ponty, 2002). This reveals that what is experienced (*noema*) cannot be separated from the mode(s) of experiencing (*noeisis*) as well as the embodied "I" (*ego*) who reflects upon experience and who forms the (interpretive) historical background narrative that gives it meaning (Gallagher, 2012; Benson, 2001). By this light, the what, how and who of experience stand in an evolving, reflexive, and co-emergent relationship to each other and to the background context with which they are inextricably enmeshed. As Benson (2001) points out, the self, body and

world are "of a piece, albeit a very big piece" (p. 31).

Here it should be noted that while *conscious* experience may be understood as explicitly "object directed," phenomenological inquiry also reveals that there is a strong sense in which all experience may be understood as *passively motivated*. It is important to understand that in this context the term "passive" is not synonymous with "inactive." Rather, it refers to a fundamental openness to the world—to how the lived body actively constitutes its relationship to the environment though primordial, affectively motivated (or affectively valenced) activity, resulting in patterns of behavior, dispositions and moods, recurrent affective episodes (i.e. emotions), memories, habits and so on (Colombetti, 2014; van der Schyff, 2015). Phenomenologists sometimes use the term "passive synthesis" to describe this process, which is explored to better understand how the object-directed (or "intentional") structure of experience discussed above (*I-noesis-noema*) emerges from more primordial ways of being-in-the-world that do not always entail an explicit correlational subject-object structure (Thompson, 2007, pp. 28-31; see also Carman, 2008; Gallagher, 2012; Merelau-Ponty, 2002).

Among other things, this (re)reveals an understanding of "aesthetic experience" that goes much "deeper" than the rather detached, rationalizing and analytical approach inherited from Enlightenment thinking (Johnson, 2007). It brings us closer to the original Greek notion of *aesthesis*, which is grounded in the senses. Indeed, from the phenomenological perspective, aesthetic "sense-making" is primordially rooted in our embodied nature—in feeling, moods, emotion, movement and affectively motivated action; in our non or pre-linguistic capacities for developing relational cross-modal understandings of the worlds we are involved with (Johnson, 2007; Sheets-Johnstone, 1999). It is thus understood as a fundamental way we structure experience as embodied, empathic and social animals beginning at the earliest stages of life. Increasingly, musicality is seen as a primary example of such aesthetic forms of primordial meaning-making, including the embodied forms of "participatory" musical sense-making that occur between infants and caregivers[49] (Jaegher & Di Paolo, 2007; DeNora, 2000; Trevarthern, 2002). Put

[49] In such interactions infants are no longer understood as simply responding passively to (or simply imitating) pre-given stimuli in the environment. Rather, they actively co-create a repertoire of (musical) sounds and movements that facilitate meaningful interactions with the primary caregiver (Fantasia et al., 2014; see also Krueger, 2013).

simply, such research highlights the interpretive, empathic-relational, embodied, and improvisatory character of such primary forms of aesthetic meaning-making. In doing so, it reveals a much more nuanced and embodied view of what musicality entails, as well as its deep significance for human development and well-being beginning at the earliest stages of ontogenesis.

The point I would like to stress here is that even at the primordial origins of embodied awareness associated with "passive synthesis", experience (musical or otherwise) is not pre-given. It does not simply involve things "out there" with objective relationships and meanings that are to be perceived and processed "in the head." Rather it is an *enactive* process that develops though the embodied interactivity between an organism and its environment (Thompson 2007; Varela et al., 1991). And as I have just mentioned, "environment" may also include other agents, where experience and meaning-making becomes a co-operative or "negotiated" process (Fantasia et al., 2014). Again, this speaks to the "extended" nature of musical cognition as a shared phenomenon, where worlds of meaning are brought forth though embodied intersubjective (musical) action-as-perception (see also Reybrouck, 2005).

Despite the primacy of such relational aesthetic-embodied processes, however, our awareness of such modes of being-in-the-world often becomes obscured. This is partially due to the fact that while our embodiment provides the very means and context by which all experience takes place, in much of day-to-day life the body tends to "hide out" (Johnson, 2007) or retreat into the background of consciousness as our intentionality is directed "out into the world" (Polyani, 1969; Gallagher, 2005). This may also be exacerbated by what Heidegger (1962) sees as our reluctance to own up to our fundamentally interpretive way of being. This involves the anxiety associated with the realization we are not objects with fixed essences and relationships to the world, but rather fundamentally self-interpreting creatures "all the way down" who are nevertheless socialized into particular understandings of being (Dreyfus, 1991). Thus the often-tacit fear of the groundlessness inherent to human existence leads us to become attached to certain ways of being-in-the world that come to be seen as normative—as wholly constitutive of a given experience (the *naturalized* ways of attending to the world I began to discuss above).

Of course such naturalized attitudes are, in many ways, necessary for day-to-day

coping in the world—they are an essential part of the structure of human being (Heidegger, 1962; Dreyfus, 1991). However, when simply taken-for-granted they may also narrow the possibilities of human experience. In this way, our fundamental embodied openness to the world becomes *sedimented* into rigid ways of perceiving and knowing that come to be misinterpreted as having some kind of essential or fixed ontological status. This often involves the formation of reified notions of what are in reality relational dynamic processes (e.g. mind, self, music, education, culture, emotions, knowledge and so on; see Bai, 2001, 2003; van der Schyff 2015). With this in mind, encouraging a deeper phenomenological awareness of the embodied and transformational processes and perceptions that allow us to make sense of the world may help raise our consciousness to see that experience need not be understood simply in terms of the mental recovery of a pre-given world out there—fixed ways of doing, thinking and perceiving—but rather as arising from our histories of interaction with the (physical, social, and cultural) environment. Indeed, from this perspective experience may begin to be explored in an *active* and *relational* context—i.e. in terms of shared *worlds* that we "open up" or "disclose" for ourselves and each other, and that we may transform through interactive and transformative practices like art and music making (Dreyfus & Kelly, 2011; Borghman, 1984; Greene, 1995). As the words of Iser and Dewey (above) suggest, such activities allow us to consciously participate in the imaginative *restructuring* of experience beginning at the most fundamental levels of embodied being-in-the-world—where, again, experience is revealed as a situated, *enactive* embodied-ecological circularity (Varela et al., 1991; Thompson, 2007).

Importantly, this embodied view stands in contrast to many assumptions common to Western academic musicology, aesthetics and music psychology, which often tend to understand musical experience first in terms of depersonalized cognitive *responses* to specific (objective) features intrinsic to the musical "work" or performance thereof (Bohlman, 1999; Elliott & Silverman, 2015; van der Schyff, 2015). As Roholt (2014) points out, this standard *analytical* perspective artificially brings certain elements to the foreground and treats them as determinate quantifiable phenomena (pitch, timing, structure and so on), effectively putting other elements out of play. In musical contexts this generally involves the assumption that musical experience occurs according to a linear schema, whereby specific objective antecedents intrinsic to the "music itself" (the score or

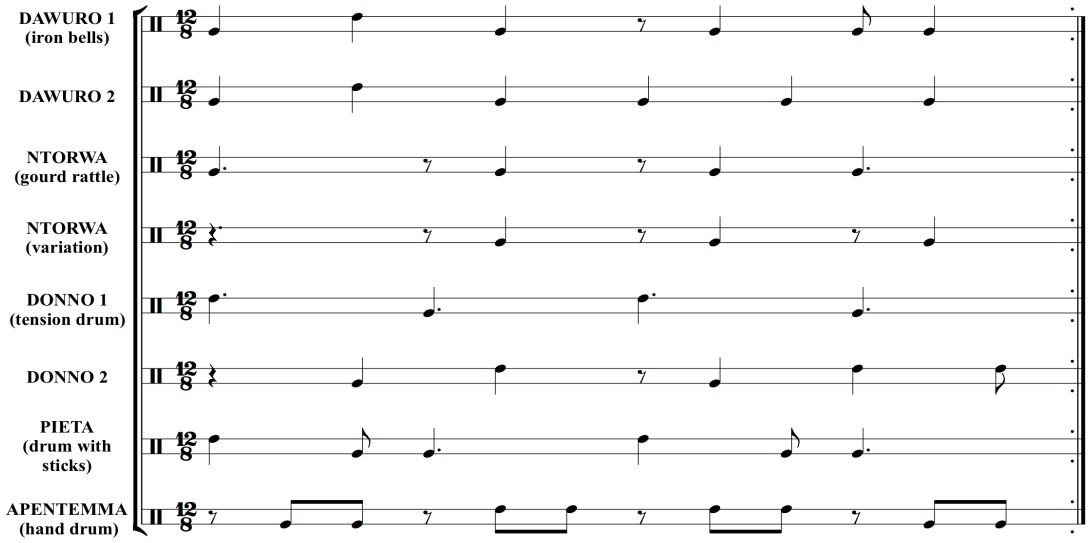
performance) are understood to *cause* responses in listeners in a more or less passive, disembodied and decontextualized sense. Put simply, the analytical perspective tends to ignore the active modes of experiencing; it focuses on developing "objective" points of view and thus can only describe the more complex *relational* qualities of subjective musical experience as "ineffable" (Roholt, 2014). This is not to say that such categorical forms of analysis, whether in psychological or musicological contexts, have no role to play in music education (e.g. as heuristic tools). However, when wholly decoupled from an exploration of the broader contextual or embodied-situated aspects of experience they offer only a limited (and often misleading) perspective on what musical experience entails. Indeed, it is important to recognize that such objectivist points of view are not based in any fundamental lived reality. Rather they are the products of the theorist—something left over when we *inhibit* actual lived involvement with the world (Dreyfus, 1991; see also Clifton, 1983; Roholt, 2014).

As we saw with the Necker Cube, and as we will see shortly with African polyrhythm, the features that contribute to the experience of music are not simple, fixed or discrete. Rather they are *indeterminate* or equivocal—their relative meanings shift due to the active and embodied nature of perception (Bowman, 2004). Thus while the phenomenological approach does seek to draw out and analyze the manifold elements that constitute a given phenomenon, it does so in order to build up a rich account of experience as a *relational* process that unfolds in time and in specific contexts. Indeed, phenomenology describes the transforming quality of experience through the careful use of metaphor and comparison (see Clifton, 1976; Johnson, 2007; Roholt, 2014; van Manen, 1990, 2014). In the process it embraces the active circular relationship between action and perception (Nöe, 2006), highlighting the purposive, creative and interpretive nature of musical behavior (listening, performing, composing, improvising); as well as the interactive bodily or "motor intentionality" at the root of all experience and meaning-making (Merleau-Ponty, 2002; Johnson, 2007).

## Multi-stable musical experiences: African polyrhythm

Students tend to enjoy exploring the Necker Cube and similar images, as well as the analyses, discussions and speculations that ensue. But while the image of the Cube provides

a convenient way to begin developing a phenomenological perspective, its utility is limited and it quickly becomes time to examine more complex phenomena that engage us in the more explicitly embodied, affective and intersubjective ways I have just described. A relatively easy jump can be made from the more abstract experience of the Necker Cube to the living world of musical practice through the introduction of multi-stable musical phenomena such as repeating polyrhythms. These are roughly analogous to the visual example of the Necker Cube in that they are comprised of patterns whose relations may be experienced in multiple ways (Christensen, 2012).




https://soundcloud.com/dylan-van-der-schyff/adowa-rhythm-study-for-phenomenology-practice

**Figure 3.** West African rhythms (adapted from Hartigan, 1995, p.33).[50]

[50] The sound file link demonstrates the 3:2 pattern and some of the Adowa rhythms presented in the figure. Listeners will first hear the bass drum playing the "2" associated with the *donno 1* and the cross-stick playing the "3" associated with the *dawuro 2.* The tom-tom drums enter playing a simplified version of the *donno 2* pattern. Shortly after this the cowbell and bongo drum add variations of the *ntorwa* and *apentemma*, respectively; and the *dawuro 1* is introduced on a woodblock. A maraca is also added to reinforce the "2" of the bass drum. The sound file concludes with an improvisation on a high drum. It should be noted that this example uses Western percussion instruments; a traditional African ensemble will sound quite different. Also, these patterns are usually played at a much faster tempo and a number of additional rhythms are involved. Listeners may tap along, first with the "2" of the bass drum, and then with the "3" of the cross stick. Following this they may try using both hands and/or feet to play both pulses along with the example, or even attempt to play some of the rhythms simultaneously. In doing so one might explore some of the phenomenological insights discussed above.

Consider the example in Figure 3, a partial representation of the Adowa rhythms played by the Ashanti people of Ghana in West Africa (see Hartigan, 1995, p.33-56). When I work on these rhythms with drum-kit students I choose groups of two or three rhythms, play them together and ask the student to attend to them in various ways. For example, the combination of the *dawuro 2* and the *donno 1* rhythms creates a simple 3:2 (*hemiola*) relationship that many students will have experienced previously (the "2" pulse is a represented as dotted quarter notes in the *donno 1*, while the "3" pulse is represented as quarter notes in the *dawuro 2*). However, many students soon discover that the way they initially experience the two pulses is limited to a certain culturally *sedimented* way of listening. Indeed, Westerners are accustomed to encountering triplets over binary groupings or duple subdivisions of a central beat—i.e. "3" "against" or "over" the grounding "2;" we experience this both in how we listen to music and represent it in notation. Factors such as tempo and relative dynamics and timbre of the pulses may bias perception towards the "3" pulse (see Handel, 1984). But whatever the case, we in the West often tend towards a hierarchical perception of polyrhythm, where one pulse is often understood as central—a conditioned representation that African musicians would not necessarily share.

And indeed, one of the reasons I choose to introduce these rhythms early on with drum students is because they offer an opportunity to discuss other cultural alternatives to the taken-for-granted ways of thinking about and perceiving meter, rhythm and time keeping in the West (this may help students better understand their own *naturalized* ways of listening and doing and thus begin the process of discovering new possibilities). Students are asked to shift the focus of their attention between the two pulses, maintain a "neutral" position between the two, and to attend to how the experience develops. They recognize this as somewhat analogous to developing the possibilities of the Necker Cube, and may draw on the insights into the structure and modes of experience that exercise offered. The "flipping" back and forth between the up and down position of the Cube image is recalled by alternatively attending the "3" and "2" (or "slow" and "fast" perhaps) perspectives of the polyrhythm. Likewise, both pulses may be encountered equally, which may be seen as analogous to developing the "flat" (or 2D) experience of the Cube. The addition of more

complex rhythm, such as the *ntorwa*, develops things further.

As the new rhythm emerges against the background polyrhythm, students see how they can transform the experience of this rhythm depending on which of the other pulses they associate with it. For example, the dotted quarter pulse of the *donno 1* pattern with the *ntorwa* maintains a *hemiola* quality. However, in association with the quarter notes of the *dawuro 2* pattern, the relationship takes on a distinctly even eighth note flavor. As before, students are asked to bring the various rhythms and combinations of rhythms to the foreground (the focus); to clap one of the rhythms while I play the others; to move between states of absorption, reflexivity and analysis; and to note the developments in the experience. They are also encouraged to develop evolving narratives of the experience—to describe the aesthetic effect of the combinations of rhythms with metaphors of movement, tension, space and location (e.g. speed, density, position in a rhythmic landscape; see Johnson, 2007). Most importantly, students are asked to embrace the inherent ambiguity and multiplicity in how these patterns may be experienced, and to reflect on how such experiences are enacted and developed through their own agency.

This work becomes even more interesting when students begin to practice such rhythms themselves. As students work to simultaneously develop the physical coordination and aesthetic understandings that will allow them to enact the various rhythms individually and in various combinations, they are required to break from habitual ways of thinking about and physically interacting with their instrument. For kit drummers this challenge involves incorporating the bodily extremities—the feet and hands must work together and independently; the voice may be included as a fifth element. This phase of learning is generally accompanied by a certain amount of discomfort and frustration. Interestingly, what makes this initial process of exploration so uncomfortable is precisely what makes it so informative.

Here students are confronted with a diverse range of new focal points and relationships that must be attended to and advanced reflexively without losing contact with the larger musical-polyrhythmic context from which they emerge. These are spread across the audible, visual, bodily, and abstract fields of experience; and each may reveal naturalized inclinations that must be identified and developed. The phenomenological attitude encourages the student and teacher not to ignore or rush through this process, but rather to

attend to it carefully. Initially the experience is frustratingly disjointed and the awareness of one's own body and its relationship to the new musical environment it is involved in creating is uncomfortable. However, a reflexive analysis of this state may help the student become more aware of the body's proclivities—its *sedimented* ways of doing and being—and thus develop more nuanced ways of experiencing their embodied musicality. In the process, students may begin to see that what was once taken-for-granted as "naturalized" may be better understood as a historical process of embodied and conceptual sedimentation; and that new possibilities may emerge with sustained phenomenological work—new musical worlds in which they may come to feel increasingly "at home."

Once again, students are asked to shift and share the focus of attention between various bodily, auditory and musical relationships as they play more complex three or four part groupings; and to incorporate the musical activities of others into the shared musical ecology (Reybrouck, 2005). Students may also be encouraged to explore the various and shifting relationships they enact between the musical tools they employ. That is, how new forms of awareness (and extensions of "self") may occur through "instrument-embodied perceptions" (Heelan, 1967; and Ihde, 1974).[51] In doing so, they may come to better understand the central role the body plays in enacting the (musical) worlds they inhabit (Benson, 2001; Gallager, 2005; Johnson, 1987, 2007; Merleau-Ponty, 2002; Nöe, 2006; Sheets-Johnstone, 1999). Additionally, such investigations might also open deeper insights into the situated and intersubjective (or extended) nature of cognition, learning and musical meaning-making—including the primordial forms of the "aesthetic" and "participatory" sense-making I began to discuss above (De Jaegher & Di Paolo, 2007; Johnson, 2007; Krueger, 2013, 2014). In brief, the cultivation of a phenomenological attitude may help students better understand and discuss the embodied and dynamically relational nature of musical experience. That is, how the evolving experience of the musical ecology is characterized by the ongoing interactivity between one's own actions and thoughts, and the tools, spaces and other agents that co-constitute it (Borgo, 2005, 2007; Mathews, 2008; Reybrouck, 2001, 2005, 2012).

To summarize, as students develop richer phenomenological skills and understanding

[51] See also Heidegger's notions of *present-to-hand* and *ready-to-hand*, and equipment; Heidegger, 1962; Blattner, 2006, Dreyfus, 1991).

they gain the ability to orient themselves within the music from different perspectives and in a controlled manner. They may now play with different interacting, and embodied musical relationships (e.g. sonic-environmental, embodied-instrumental, interpersonal and abstract) and learn to reflect creatively on what they are doing as they do it—i.e. to play "in the moment." In this way students may be encouraged to develop the ability to fluently shift and share attention between multiple focal points; to imagine and develop new relationships with greater ease; to improvise; and to become more mindful of the process of musical experience as creative agents—crucial skills for the development of high-level musicianship. Indeed, it is extremely rewarding for students when they begin to realize that they are capable of imagining and enacting multiple approaches to their musical experiences and activities. They now begin to "look" at familiar musical experiences in a new light; and may be encouraged to develop the phenomenological attitude, as well as other approaches to reflective practice and mindful-awareness across the range of their musical practice (Biswas, 2011; Gibbs, 1998; Lowe, 2011; Lyons, 2010; Gyamtso, 1986; Sarath, 2006; van der Schyff, 2015). [52] In doing so they may begin to discover that the path to musicality does not lie in fixed approaches and *sedimented* ways of acting and thinking, but rather in flexibility, freedom, the ability to maintain multiple perspectives—in a kind of open-minded readiness to participate reflexively and imaginatively in an ongoing process of relational and transformative experience (Small, 1999; Bateson, 1979/1980).

## Conclusion

Due to restrictions of space I have given here only a brief sketch of what phenomenological analysis entails. Readers familiar with the phenomenological literature will note that I have basically adopted a simplified Husserlian/Merelau-Pontian approach—these core ideas offer a good place to begin phenomenology, even if eventually other approaches become more relevant to the inquiry at hand. Moreover, the speculative examples of phenomenological analysis I have offered have been abbreviated; and my practical examples have been limited to one (important) aspect of my practice as a music educator.

[52] The Alexander technique is also relevant here. This practice involves becoming more mindful about one's movement and posture, with the goal of revealing and correcting unhealthy habits and promoting well-being (see Gelb, 1996).

Other writers have offered related analyses from different musical perspectives (e.g. Clarke & Clarke, 2011; Christensen, 2012; DeNora, 2000; Ferrara, 1984; Ihde, 1976; Krueger, 2009, 2011a&b; Pio & Varkoy, 2015; Sudnow, 1978; Small, 1999; Roholt, 2014). Additionally, a number of excellent introductory texts have appeared in recent years that may help readers gain a wider perspective of the relevance of phenomenology across a range of domains (e.g. Gallagher, 2012; van Manen, 2014). This said, I hope that what I have discussed here will resonate in various ways with broader aspects of musical experience and learning. At the very least, I hope it will provide a useful introduction to the kinds of insights phenomenology may afford with regard to the project outlined in the introduction—namely, the challenge music and arts educators face in getting students to become more aware of their active participation in the process of embodied aesthetic experience.[53]

For philosophers, phenomenology offers ways of exploring the structure of experience and developing new knowledge about it. Likewise, researchers in psychology and the social sciences may employ phenomenological methods to include first person perspectives in qualitative empirical research. For artists, musicians and arts educators, however, phenomenology may be explored directly in the context of creative (pedagogical and aesthetic) *praxis.* As I have considered, fostering a phenomenological perspective may aid in developing a certain open, reflective and *agentic* attitude towards experience—an attitude that every artist must cultivate in someway or another if they are to open themselves up imaginatively to the world and thus participate effectively as the cultural agents they are. In line with this, I have discussed the ways phenomenological reflection can help us better understand how meaningful relationships may be developed and transformed through a structuring and restructuring of the equivocal (e.g. multi-stable phenomena; Merlau-Ponty, 2002). Such a process is central to all imaginative and creative activity. Indeed, the arts "practice possibility" (Ihde, 1977) through imaginative aesthetic explorations of auditory, visual, spatial, linguistic, bodily-kinetic, and self-world interactions (Bowman & Powell, 2007; Johnson, 1987, 2007). They naturally develop their

[53] I would also like to point out that much of what I have considered above resonates with the remarkable insights and practices introduced by the composer, R.M. Schafer (1986; 1994), whose pioneering work in 'soundscape studies' is highly relevant in pedagogical contexts. Readers who wish to develop the phenomenological attitude further in sonic-musical contexts will find much that is useful here.

own forms of suspension (*epoché*) of the taken-for-granted. And they strive to instill a sense of transformation—new ways of seeing, hearing, feeling doing and understanding that often "shock" us out of our more complacent modes of being-in-the-world (Greene, 1995).

With this in mind, I would like to conclude by pointing out that the phenomenological approach to musical practice I have begun to develop here may be extended well beyond the private lesson, the practice room, or performance situations. This is to say that practice-based approaches to phenomenological inquiry in the arts may in fact serve as the foundation for more far-reaching, comparative and critical investigations into the discourses and activities that constitute self and society. For example, as I suggested earlier, the West African rhythms considered above might be employed to initiate a discussion and exploration of differences in how music is understood and used in other cultures. Along these lines, a growing number of writers are developing phenomenologically based approaches to the experience of culture and self (e.g., Benson, 2001). Such work may further aid students in moving beyond *sedimented* ways of understanding the socio-cultural milieu they participate in; it may afford them an opportunity to consider their own cultural relationships more deeply—and with a more critical eye—and to imagine transformative possibilities for creative expression. This might result, for instance, in new conceptions of what constitutes an "ensemble", or new ways of collaborative composing. It might also inspire a deeper interest in integrating music with other expressive and academic disciplines—e.g. social-cultural studies, perhaps in conjunction with forms of critical multi-modal media analysis (see Kress & van Leeuwen, 2001; Machin, 2010).

Perhaps most importantly, the phenomenological attitude also has important ethical and critical implications when it seeks to develop richer and more authentic ways of being-in-the-world (Heidegger, 1962). Indeed, by encouraging our students to open up to the interpretive, creative or, indeed, *enactive* nature of their own embodied consciousness we may help them see that what is often taken as "normative" is in fact a product of various *sedimented* socio-cultural relations or "conditioning" that may be re-conceived in new ways (Krishamurti, 1970; Nakagawa, 2000; see also De Jaegher, 2013). In this way, the phenomenological attitude also resonates strongly with the so-called *praxial* philosophy of music education, which sees music education as a deeply social and cooperative activity

that is (ideally) concerned with human flourishing (Elliott & Silverman, 2015; Higgins, 2012; Silverman, 2012). By this light, the phenomenological insights students develop in their musical studies may be extended to the broader context of their social and cultural life-worlds. This may help them develop more empathic relationships with the people, things and the "natural" ecology that make our lives possible (Mathews, 2008; van der Schyff, 2015). With this in mind, the phenomenological attitude may also inspire a more general life-affirming orientation that seeks to continually renew itself though imagination and the exploration of new ways of thinking and being.

> [T]he human mind thrives on variation, even as it seeks unification; and imagining, more than any other mental act, proceeds by proliferation: it is the primary way in which the mind diversifies itself and its contents. Mind is free—indeed most free—in imagining. (Casey, 2000, p. 200)

In brief, phenomenology and the arts ask us to open up to the world as we find it and develop new ways of perceiving, understanding and communicating our experience as the embodied, social and cultural beings we are. They both demand that we confront the limitations imposed by our complacent and taken-for-granted attitudes and look towards the possible. Greene (1995) reminds us that it is this *releasing of the imagination*—this critical embracing of the possible, the heterogeneous, and the transformative—that is so central to the role of the arts in education. And indeed, as Casey's words convey so well, it is precisely in those moments when we catch ourselves in the creative act of imagining, restructuring and transforming our experience of the world that we may truly sense what freedom means.

# 6

# Phenomenology, Technology, and Arts Education: Exploring the Pedagogical Possibilities of Two Multimedia Arts Inquiry Projects

## Introduction

The field of arts-based research involves examining the process of creative practice (often from the first-person perspective) to gain better understandings of a range of concerns that impact human well-being (Barone & Eisner, 2012; Knowles & Cole, 2008; Leavy, 2015). In pedagogical settings, such forms of inquiry may be developed in collaboration with students as a way of helping them engage critically and aesthetically with the worlds they inhabit (Bresler, 2007). At its best, arts inquiry for education does not focus on adhering to a fixed set of practices and outcomes—a curriculum for everyone everywhere (Noddings, 1995)—but rather strives to foster an understanding of arts education as a critical and transformational process of self and world-making. Increasingly, arts-based inquiry develops alongside the growing field of research and theory that explores the applications of technology for music and arts education. Indeed, there now exists an impressive range of literature that examines multimedia technology at the intersection of pedagogy and creative practice, including the use of iPods, cell phones and other readily available devices and software (Finney & Burnard, 2010; O'Neill & Pesulo, 2013; Simoni, 2013; Slater & Adam, 2012).

In general, the growing use of new digital technologies in music and arts education is seen as a positive development. For example, Burnard (2007) discusses the important roles of technology and creativity for promoting pedagogical change, arguing for an understanding of "creativity as an essential human attribute lying at the heart of all

learning," and where technology is understood "as tools that mediate how creative activity occurs" (p. 37). And indeed, a number of recent studies have examined how the creative use of technology may afford new understandings of the dynamic interaction between sound, image and space (e.g. Wilson & Brown, 2012). This said, some thinkers remain cautious, suggesting that a non-critical celebration of new technologies may contribute to a passive reliance on digital devices, a false sense of one's own creative engagement, and to the commodification and marketization of education (Taylor, 2011; Wishart, 1992). As a result, it is argued that our engagement with technology for education should be subject to on-going critical analysis—that we must remain careful not to let technology simply drive our perceptions and desires, but rather use technology critically and creatively to challenge taken-for-granted attitudes and develop new ways of engaging with the world that are meaningful and relevant to our lives. In line with such concerns, a number of thinkers have begun to develop approaches to arts research, creative technology and education that are based in phenomenology and critical pedagogy (e.g. Macedo, 2012).

In what follows, I attempt to contribute to this project through an exploration of two multimedia arts inquiry projects. I begin by offering a basic outline of what phenomenological inquiry entails. Here I examine Ihde's (1976) phenomenology of the 'auditory dimension' as an introductory example that is relevant to creative multimedia studies. Following this, I develop the relationship between phenomenology, critical pedagogy, and creative praxis in the arts. Drawing on the resulting insights, I then present the multimedia projects and discuss the possibilities they offer for developing richer understandings of the creative multimedia process, as well as the pedagogical meaning of art making more generally. Most importantly, I attempt to show how such projects might open arts educators and students to more reflective, imaginative and participatory ways of being-in-the-world, while simultaneously developing deeper historical, cultural, technical, and aesthetic understandings of the art forms they are engaged with. I conclude by suggesting a few additional possibilities for educational praxis and research.

## Phenomenology and arts education

Phenomenology is a philosophy of experience, of consciousness, perception, knowledge and being. It has antecedents in a range of ancient and modern philosophical traditions.

Phenomenology proper, however, is generally understood to begin with the work of the Moravian logician, Edmund Husserl. Writing at the end of the 19th century, Husserl became concerned that the successes of the positive sciences had resulted in a worldview that was increasingly focused on technological progress, thus obscuring "the questions which are decisive for a genuine humanity" (1970, 10). In response to this he sought to re-establish the human element by developing a new 'science', which takes human experience as its explicit basis. Indeed, it should be noted that Husserl's phenomenology was critically motivated—an orientation that continues to characterize the thought of many phenomenologists working today.

Throughout its development in Husserl's writings, and in the work of the many impressive thinkers that followed him (e.g. Heidegger, 1962, 1982; Merleau-Ponty, 2002), the phenomenological approach has been adapted and transformed in various (and sometimes quite radical) ways to explore a wide range of phenomena (Gallagher, 2012). And although many of these inquiries employ difficult theoretical concepts and complex terminology, the basic approach initiated by Husserl can nevertheless be described fairly clearly. The phenomenological perspective recognises that our conscious experience is always directed towards things and events (including our own bodies, thoughts and imagination). That is, it shows that experience is intentional—it is always the experience of 'something' and that that 'something' is always experienced in a certain way (Gallagher, 2012). The real importance of phenomenology, however, lies in the way it examines the structure of consciousness and intentionality (Ihde, 1976, 1977). Indeed, an important early step taken in phenomenological inquiry involves an attempt to 'suspend' or 'bracket' (epoché) assumptions and judgements and attend to the phenomenon at hand in the most open and direct way possible. Put simply, this process reveals how many of our perceptions and understandings are in fact the products of ways of attending to the world that have become so ingrained that they appear to take on a fixed reality of their own. This results in the development of so-called 'natural attitudes' (Merleau-Ponty, 2002) towards the things, activities and relationships that characterize our lives; attitudes we often simply take-for-granted as the way things are.

Phenomenology examines such assumptions in terms of the processes of historical (personal, cultural) sedimentation that give rise to them so that new understandings and

possibilities may be revealed. In doing so, it initiates a process of inquiry into the structure of consciousness that begins with the what (*noema*) of experience as it appears in the non-reflective context of the natural attitude. The inquirer then attempts to identify and bracket (epoché) assumptions and judgements in order to move from the prescriptive 'literal-mindedness' of the sedimented natural attitude and better attend to the phenomena as it is given directly to experience. This leads to an examination of the 'how' of experience, revealing the modes of experience (*noeisis*) and the way the shifting interplay of such modes may reveal new understandings and possibilities. The phenomenologist then questions back to the who (I-ego) of experience, disclosing the 'self' as a transforming embodied agent who plays an active role in the on-going construction of experience. Importantly, this process may proceed in an on-going 'circular' way to reveal ever richer (polymorphic) ways of attending to the phenomena at hand.

In brief, while the dominant intellectual trends associated with positivist thinking have emphasised an objectivist approach to experience, phenomenological inquiry affords a rather different story. It reveals experience not in terms of some kind of dualist schema where a fixed or pre-given 'world out there' is represented 'internally' in the mind—an essentially passive cause and response process. Rather, it is explored as a recursive, circular or oscillating phenomenon, where self and world engage in an on-going, relational process of co-constitution. In other words, phenomenological inquiry highlights the active, adaptive, exploratory and creative nature of perception and consciousness. And it shows how through sustained reflective analysis we may build up deeper understandings and open new possibilities. There are, of course, many phenomenological accounts that demonstrate how this is so. For the sake of brevity, however, I consider next just one example that will be relevant to the multi-media projects I discuss further on.

## The auditory and visual dimensions

In chapter four of Don Ihde's (1976) monograph, *Listening and Voice*, he offers a brief, yet highly illuminating introductory reflection on the experience of sound, which also reveals fundamental insights into vision and the experience of movement. He begins the chapter by asking, "What is it to listen phenomenologically?" His response follows the basic method of inquiry I began to sketch out above.

Ihde starts by identifying and "deconstructing" certain "beliefs" that may intrude into his attempt to listen "to the things themselves" (p.49). In the process he reveals a common tendency to atomize the senses—a tendency that results, for example, in the abstract 'pairing' of sight and sound as two seemingly distinct (comparative) dimensions within experience. With this assumption noted, Ihde initiates an exploration into the modes of visual and auditory experience to develop a richer understanding of how they relate to each other. Initially, Ihde concerns himself with the 'mute' objects that occupy the office where he writes. These consist of mundane things like chairs, tables and a box of paper clips resting on the desk in front of him. But the sudden appearance of a fly in the room introduces a new type of material entity—one that is characterised by movement. Ihde observes that the fly's movement is "etched" against the stability of the room—"if it may speed its way at all it must do so against the ultimate foundation of a stable background" (p. 50). But what, he asks, does this mean for sound? Here he notes that if silence marks the boundary or horizon of sound, then the static mute object (e.g. the box of paper clips) stands "beyond this horizon", while nevertheless remaining "silently present." He also observes that the introduction of movement brings sound with it (e.g. the fly's buzzing and so on). Phenomenologically, sound and movement belong together and thus the experience of sound 'overlaps' with the visual dimension of moving entities.

Developing these insights further—now in the context of space—Ihde describes walking into the Cathedral of Notre-Dame in Paris for the first time. Here he notes the initial experience of space in terms of the monumental visible architecture that defines the cathedral in its (almost) empty state. Ihde then discusses the experience of returning later to attend a high mass. Now the space is filled with people and the sound of singing, "the mute walls echo and re-echo" (p. 51); the space has been brought momentarily back to life, and "the 'paired' regions of sight and sound 'synthesize' in dramatic richness" (p. 51). However, Ihde also notes that even though the descriptions of the office and the cathedral reveal the 'overlapping' and 'synthesis' of the visual and auditory dimensions in movement, space and time, there nevertheless remains an "excess" of sight over sound in the realm of the mute object (the silent walls of the cathedral and the non-moving objects in the office). He then asks, if there is a comparable 'region' where sound exceeds vision, an "area where sight cannot enter, and which, like silence to sound, offers a clue to the

horizon of vision" (p. 51).

In response to this question, Ihde then considers the experience of walking along a dark country path, where the visual dimension is severely curtailed. Here he becomes keenly aware of every sound and notes that the darkness renders the presence of sound more dramatic when he cannot see. However, he questions whether darkness can really be considered as marking the boundary of the visual horizon. This is clarified through a meditation on the experience of wind. As Ihde observes, although the wind is heard and felt, it is not visible directly. Rather, it is only 'seen' in its effects, in "what it has done in passing by" (p. 51). He notes, "I hear its howling and I feel its chill but ... no matter how hard I look I cannot see the wind...." The experience of wind extends beyond the horizon of sight. This leads Ihde to suggest that it is invisibility, and not darkness, that characterises the boundary of sight. Indeed, darkness and invisibility are not synonymous; darkness is a characteristic of the visual modality, but sonic experiences of movement, location and space can and do occur without seeing (or being able to see) anything (including darkness). Thus, the activity of "listening makes the invisible present" in a way similar to how looking makes the inaudible 'mute object' present in the visual dimension (p. 51).

Through these observations Ihde is now able to make several summary approximations about the relationship between the auditory and visual dimensions that may advance the abstract pairing of sight and sound mentioned above (pp. 52-54). He suggests that it is now possible to map two 'regions' that overlap, but not perfectly so (see Figure 4). Indeed, each region may be understood to maintain its own horizon within which a range of entities may be discerned. In the visual region we find entities that are stable and most often mute (x); and those that are in motion and often "accompanied" by sounds (→y→). This visible region may be understood as bounded by the "horizon of invisibility." Within the auditory region we also find two categories of sound presence, which are bounded by "the horizon of silence." There are those sonic entities that "accompany" moving visual entities (→y→) and those for which no immediate visible presence is found (–z–)—e.g. the kind of entities that characterize 'acousmatic' listening (Chion, 1994). However, as Ihde points out, inasmuch as all sounds are perceived as occurring in time, as "events", they are all likely to be associated with action and thus with the "realm of the verb" (p. 51).

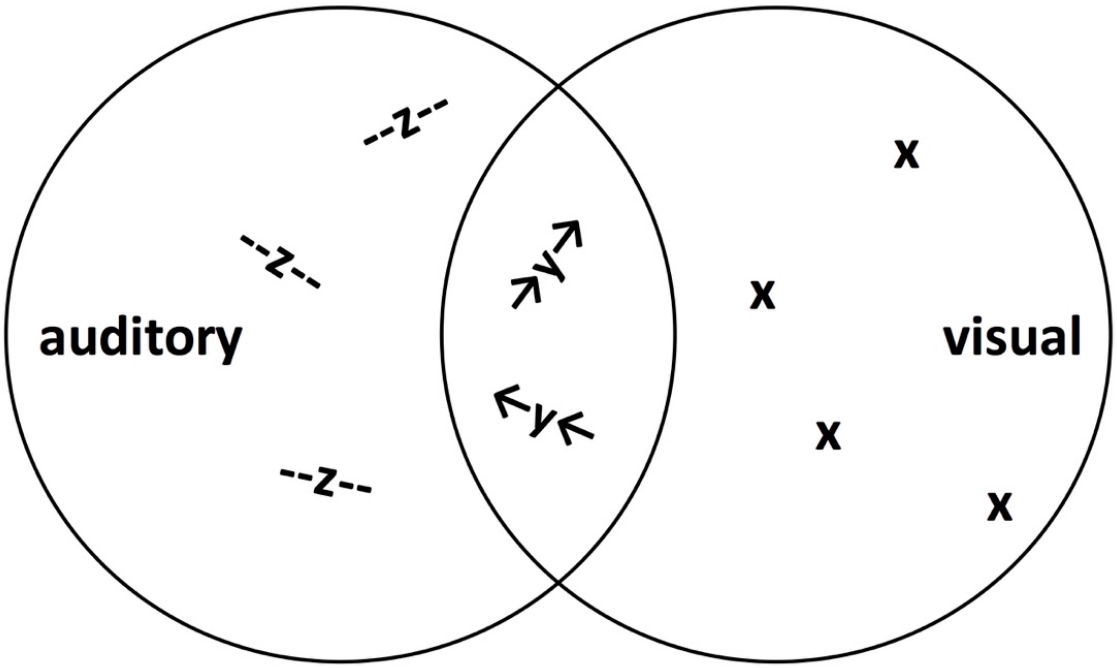



**Figure 4.** A summary of Ihde's mapping of the auditory and visual regions (1976, p. 52-54)

In brief, this preliminary phenomenological 'mapping' of the auditory and visual dimensions allows us to see that "what is taken as horizontal (or absent) in one 'region' is taken as a presence for the other" (p. 54). Entities of type x that appear in the visual region also lie within the field of silence and are thus 'closed' to auditory experience. Likewise, entities of type –z– emerge in the auditory region, but are not present to the visual dimension. However, presences of category →y→ involve a perceptual "synthesis" of both regions. It is also important to note that the perception of a –z– type entity in the acoustic environment often initiates a search to transform –z– in to →y→ (see also Chion, 1994). Here Ihde uses the example of the bird watcher, who most often hears the bird first and then seeks for it visually—as he writes, "sounds are often thought to be anticipatory cues for ultimate visual fulfilments" (p. 55). Additionally, x type entities may be manipulated in space, thereby momentarily transforming their phenomenological status from mute objects to sounding objects; through experience we come to recognize the sounds of such normally static mute objects when they are put into motion by some external chain of events. Here Ihde brings to mind how one might, while hanging a picture on the wall, know

where to search for a dropped tack by the sound it makes as it rolls under the piano (p. 55). Lastly, Ihde notes that through the use of technology the auditory dimension may be explored in a number of new ways. For example, through amplified listening we may experience sonic worlds that were previously silent (e.g. insects). Additionally, various 'hermeneutic' devices afford the 'translation' of sound into the visual dimension, making the invisible visible (e.g. oscilloscopes, sonography, echo-location, radar and sonar, ultra-sound, spectrograms and so on).

Following this chapter, Ihde goes on to explore the 'I' of auditory consciousness. Here he reflects on how his experience and understanding has begun to transform thanks to his analysis, and he develops a range of fascinating new perspectives. But while the introductory inquiry discussed above provides only a very general approximation of the auditory and visual dimensions, it nevertheless asks us to begin to attend to experience in new ways. Indeed, even this brief account offers a much more nuanced model of the what and how of experience than we usually entertain in non-reflective day-to-day engagements. And once in possession of such understandings we may begin to develop them both philosophically and aesthetically. That is, we may begin to apply them to a range of phenomena in order to move beyond the taken-for-granted perspectives (fixed, prescriptive, non-reflective) towards a more open, reflective phenomenological attitude—one that actively explores the possibilities of experience, thus opening new ways of engaging with the world. It follows, then, that the fundamental insights offered by an inquiry like Ihde's may have a great deal to offer creative artists working in multimedia contexts, for whom a deep understanding of the relationship between the auditory and visual dimensions is essential.

In my discussion of the multi-media projects below I will develop the insights into the visual and auditory dimensions just discussed, and introduce a number of other relevant phenomenological perspectives. First, however, I would like to outline the significance of phenomenology for education to better ground the pedagogical considerations that follow.

## Arts education and the phenomenological attitude

The discussion above offers only a very basic outline of what phenomenological inquiry

may entail. Ihde's texts (1974, 1976, 1977) contain many more useful insights. And a number of other authors offer excellent and accessible introductions to phenomenology. Like Ihde, some (Clifton, 1983; Ferrera, 1991; van der Schyff, 2016) engage readers in actual phenomenological experiments that involve the exploration of visual and auditory phenomena; others introduce and explain the historical development and uses of phenomenology in various contexts (e.g. Gallagher, 2012; van Manen, 2014). While such texts are essential for anyone wishing to gain a proper understanding of phenomenology, it is beyond the scope of this paper to discuss them in detail. The main point I would like to consider here is the important role the cultivation of a 'phenomenological attitude' may play for education, and, more specifically, for developing practice-based curricula in creative sound and media production.

While examinations of sensory experience, such as Ihde's, are an essential starting place for developing a phenomenological attitude (Merleau-Ponty, 2002), this orientation may take us much further to explore and critically rethink our experience of cultures, places and institutions we live through. With this in mind, it is important to note that the phenomenological perspective challenges a number of standard Western pedagogical assumptions, most centrally, the idea that learning and 'knowledge' can be reduced to the depersonalized transfer of pre-given (objective) information, facts and procedures from teacher to student. Indeed, the phenomenological attitude has influenced the thinking of a number of critical scholars who problematize this assumption (Arendt, 1993; Bowman, 2004; Greene, 1995; Kincheloe, 2003, 2008; Thomson, 2001).

This can be seen, for example, in the work of Paulo Freire (2002; Freire & Illich, 1975) whose concept of critical consciousness or 'conscientization' draws on phenomenology (see Torres, 2014). Here Freire examines the varieties of social consciousness, and discovers that they may be organised into three main categories. These involve, firstly, the "semi-transitive" state associated with thinking that is dominated by social conditioning. This level of consciousness is characterized by its quasi adherence to an assumed 'objective reality'—its epistemic possibilities are prescribed by that imposed reality, and thus it does not possess the critical distance to authentically engage with reality, to act on it in order to transform it. Second, Freire suggests a "transitive-naïve" type of consciousness that exhibits, among other things, a tendency for facile explanations and over simplification in

the interpretation of problems; as well as a preference for rhetoric and reification over dialectic. Third, he posits what he refers to as the "transitive-critical" consciousness. This form of consciousness affords the development of richer structural perceptions; it allows us to look beyond taken-for- granted or imposed ways of perceiving and thinking and engage with experience in new ways. As such, transitive-critical consciousness may be understood to resonate closely with the phenomenological attitude.

In brief, developing the transitive-critical consciousness is liberating when it allows us to see that "the epistemological cycle does not end at the level of acquisition of extant knowledge, but continues through the stage of creation of new knowledge" (Freire & Illich, 1975, 28; see Torres, 2014). This orientation lies at the heart of critical pedagogy, which seeks to identify and decentre the assumptions and power relations that obscure such possibilities, and to thus reveal education as a process of self and world-making (Giroux, 2011; Kincheloe, 2003). By this light, education may only be understood as 'authentic' when it engages and empowers this critically creative potential of the human mind—i.e. "when the practice of revealing reality constitutes a dynamic and dialectic unity with the practice of transforming reality" (Freire & Illich, 1975, 28).

Following the thought of Freire, a number of writers have demonstrated the enormous role the arts may play in realizing these potentials (e.g. Greene, 1995). While creative practice in the arts, critical pedagogy and phenomenology are not simply synonymous with each other, they do overlap and reinforce each other in important ways, with each seeking richer and transformational understandings of human experience. As Ihde (1977) writes, the arts practice their own forms of epoché (ways of suspending taken-for-granted attitudes and perceptions). Indeed, if perception is understood as the foundation of knowledge, then the arts may also be understood to explore and illuminate the most basic ways we make sense of the world. However, the arts also extend into the cultural and historical worlds we inhabit (Benson, 2001). It follows, then, that the cultivation of a general phenomenological attitude through the arts may indeed support the development of the transitive-critical consciousness and social conscientization discussed by Freire (2002).

Put simply, the arts may initiate, reflect and extend phenomenological and critically-transitive insights when they transform the mundane, introduce new perspectives and thus challenge taken-for-granted ways of perceiving, knowing and being. Maxine Greene

(1992) discusses how the arts have the power to "shock" us out of our complacent attitudes—to "release the imagination" so that we may engage more fully with the possibilities of our own experience and thus develop more open, reflective and empathetic relationships with other agents and cultures. Along these lines, a number of thinkers (e.g. Smith, 1979) have suggested phenomenologically-inspired frameworks for education that begin with students' analyses of direct perception, that proceed through the development of theoretical concepts, often involving (critical) discussion and guidance from teachers, peers and other sources (e.g. readings), and that then involve the integration of new concepts with existing understandings. From this perspective new knowledge and categories are not imposed, but rather emerge through phenomenological analysis and praxis (Clifton, 1983; Ferrera, 1984, 1991).

Here it is also important to note the relevance of this last concept, *praxis*, which looks beyond the idea of the arts simply as 'practice'—as something one does to achieve some specific end. Rather, praxis involves the development and integration of a range of technical, theoretical, cultural, and ethical understandings that are relevant to the lives of students and teachers in order to reveal music and arts education as "a socially rooted, complex, coherent and cooperative activity that grows over time into its own ethical world" (Higgins 2012, 224). Importantly, praxial pedagogical approaches take the unique lived experiences of students and teachers seriously as a central aspect of any curriculum (Elliott & Silverman, 2015; van der Schyff, 2016). This notion of praxis also resonates with a number of phenomenologically-informed perspectives on education—most notably perhaps with the idea of 'education as formation' or *Bildung*. While this concept has been developed in a number of ways (Brook, 2009; Peters, 2009; Silander et al., 2012), it essentially involves "a creative process in which a person, through his or her own actions, shapes and 'develops' himself or herself and his or her cultural environment" (Silander et al., 2012, 3). From this perspective a fundamental role of education is to create environments where students may begin to engage in this process—where students and teachers may express themselves authentically; becoming self-aware of their own development not simply as externally dictated or as the result of some fixed method (Regelski, 2002), but rather through the formation of new ways of perceiving and thinking that afford richer ways of being-in-the-world. This involves the development of caring

(Noddings, 1995) and open-ended educational 'ecologies' where teachers encourage such development through the introduction of a range of relevant activities that challenge students to participate actively in their own learning processes.

Importantly, by this view, educators cannot simply 'teach by the book'. Rather they must acquire a deep first-person understanding of the perceptual and reflective processes they seek to initiate and explore with their students. In other words, they must continually develop their own practice as creative learners so that they may introduce effective projects that engage their students critically and phenomenologically. This, as I began to discuss in the introduction, is why arts-based research is so important for education. More than an academic exercise, arts inquiry projects—developed in connection with relevant critical and phenomenological frameworks—may afford new perspectives and possibilities for the educator, allowing her to more effectively introduce, develop and discuss similar projects in collaboration with students. Indeed, by developing richer understandings of the experience of learning through art-making the teacher may become more than a simple repository of facts and techniques. She may, in her own unique way, come to more deeply embody the process of learning itself, and thus, by example, encourage students to explore their own potentials and become 'master learners' themselves.

## Two multimedia arts inquiry projects

With these concerns in mind, I now turn to consider the two creative multimedia projects mentioned above. For the first piece I created sound for a pre-existing silent film; for the second I created both the visual and auditory dimensions. Additionally, because I wanted to explore how similar projects might be developed in educational contexts, I decided to impose a couple of simple parameters. First, I would have to use technology that would be easily available and relevant to the lives of students. For example, while music and sound students might be encouraged to develop their skills on a more advanced, but easily available, digital audio workstation (DAW), they could start by collecting video and sound with common everyday devices such as iPods, cell phones or tablets, or by researching public domain internet sources. Second, because art and culture do not exist in a vacuum, I decided that in the process of developing each project I should attempt to 'dialogue' with particular art movements, artists, and/or places. In this way, I could explore first-hand how

such projects might foster a more engaged, 'phenomenological attitude'. That is, how they might help students move from "onlooker consciousness" to "participatory consciousness" (Bortoft, 1996; see also Cascone, 2014), and thus offer effective ways of exploring the relationship between sound, image, movement, culture and place through their own critical and creative engagements with the world.

### *Ghosts before breakfast*


https://www.youtube.com/watch?v=UhGea8UwTSc

**Figure 5.** Still from the opening of Richter's film *Ghosts Before Breakfast.* Click link to view the entire film with the electro-acoustic score.

For the first project I chose to score a silent film by the German artist, Hans Richter (Figure 5). Richter is closely associated with the Dadaist movement that developed in Europe during World War I. And his short film, Ghosts Before Breakfast (1927), beautifully captures its political and aesthetic spirit. As I watched the film over and over I was struck not only by its originality, and the wit and virtuosity with which it was constructed, but also by the message of Dada itself and its relevance for the 21st century. As a highly playful but nevertheless subversive art movement, Dada strove to shock people out of a complacent attitude towards the world in which they lived. For the Dada artists, this was the same

attitude that led to the humdrum drudgery, consumerism and regimentation of modern bureaucratised life, as well as the increasing use of rational (technological-scientific) means to realise and justify irrational ends (which culminated in the horrors of the War). And Indeed, an art movement such as Dada can be seen as encouraging 'transitive-critical' consciousness when it abstracts and aestheticises the mundane objects, activities, and institutions we live with and through, thus loosening the sedimented or natural attitudes that tend to frame non- reflective experience. Here one might consider Marcel Duchamp's 'readymades' or the politically-charged collages of Hanna Hoch and John Heartfield. And likewise, in Richter's film even inanimate material objects are possessed by a spirit that moves them to break free of their taken-for-granted functions and relationships: fire hoses dance; falling teacups reassemble themselves; firearms refuse to aim; targets refuse to be aimed at; and the dehumanizing march to war or the factory becomes a playful absurdist choreography.

With this in mind, Ihde's (1976) phenomenology of the auditory and visual dimensions (above) may offer a useful framework for analysing the perceptual and creative processes involved in scoring a silent film like this. For example, we may note, most obviously perhaps, that although the experience of viewing the unscored film is characterised by movement there is no accompanying auditory dimension. That is, the experience seems to be characterised by those moving →y→ type entities that normally involve a synthesis of both sight and sound. Here, however, the auditory dimension is not given and must be 'found' (or imagined and created). Interestingly, this inverts the habitual phenomenological relationship between →y→ and –z– type entities (those moving sound-making entities that are not initially present in the visual dimension, but that are often sought after). Moreover, many of the moving entities in Ghosts Before Breakfast are the types of inanimate objects that we normally experience as mute (x types) unless they are moved by some external force (i.e. they are not entities that move themselves). In the film, however, such objects do move, and apparently by their own volition, or by some force that remains within the horizon of invisibility (e.g. the wind, or in this case, ghosts). Again, Richter uses the technology available to him brilliantly, playing with and transforming these relationships we take for granted in day-to-day life. In doing so, he opens a world of possibilities for those of us, who, a century later, wish to accept the task of bringing an auditory dimension

to his film.

For me the challenge was not simply to accompany Richter's imagery, but to create a sonic world that would dialogue with it. Following the Dadaist aesthetic, I would have to develop a sonic pallet that introduced sounds that were both absurd and familiar, but that (like the film) always placed the familiar in an unfamiliar context. Moreover, the sound world I created would have to 'animate' the moving imagery—it would have to 'make present' the invisible forces that bring the otherwise 'mute objects' to life. Additionally, I also wanted to give the flavour of what I imagined to be a mix of sounds and music that resonated with the historical context of the film, but that were also integrated with sounds closer to today. For inspiration I turned to the work of early Musique Concrète and electronic music pioneers like Pierre Schaeffer (2014), Pierre Henry and Edgar Varèse, as well as recorded performances on early electronic instruments (e.g. the Theremin). I also refreshed my understanding of the historical context of both Dada and early experimental music through various readings (Ades, 2006; Dack, 2013; Holmes, 1985; Manning, 1985; Richter,1997; Wallace, 2011).

Collecting and organising the sonic material I was going to use was both challenging and revealing. I spent a few days simply searching for sounds by experimenting with the parameters of various software synths, collecting anything that caught my ear in my large library of sound effects and by recording an array of 'found' sounds (I kept a portable recording device with me much of the time as I didn't want to miss anything). This last process was perhaps the most informative. As I experimented with the relationship between these sounds and the moving images of the film I discovered that many of the environmental sounds that I had previously taken-for-granted, ignored, or found annoying, could be appreciated in new ways: a truck idling outside; a phone ringing; a creaky door closing; a jet flying overhead. As a number of field or 'soundscape' recordists have noted, even the simple act of capturing audio can afford valuable new perspectives (Cascone, 2014; Cox, 2015; Lane & Carlyle, 2013). And indeed, it was just this heightened sense of possibility that I needed if I was to join Richter in the process of transforming the mundane into the novel. In the end, I developed a mix of sound effects (e.g. race car engines, fax machines); recorded sounds from my day-to-day environment (bicycle wheels, traffic and household sounds, radio noises); synthesized models that echoed electronic instruments

developed in the first half of the 20th century; as well as a solo recording of the great early jazz drummer, Laurence 'Baby' Dodds (1946).

The process of scoring Richter's film afforded me the opportunity to push my skills with the audio software (Logic) and to explore new creative possibilities for recording techniques (e.g. extreme close miking) and mixing-editing (juxtaposing seemingly unrelated sounds in order to develop new ones or to discover previously unconsidered relationships). It also allowed me to play with expected causal relations between the visual and auditory dimensions by associating images and sounds that do not normally belong together. With this in mind, Schaeffer's (1966) phenomenological listening techniques—which were set in motion through his interactions with emerging mid-20th century audio recording technologies—may offer many useful insights. Schaeffer offers numerous ways of attending to and analyzing sounds (or 'sonic objects') that have been abstracted from their sources and contexts (i.e. acousmatic listening). Along these lines, readers may also wish to consider Michel Chion's (1994) modes of (cinematic) listening. Extending many of Schaeffer's insights, Chion draws out a number of interesting reflections on the experience of causality in the auditory dimension, with a focus on developing the 'active' forms of perception associated with what he calls 'reduced listening' (see also Chion, 1983; Smalley, 1986, 1997). Put simply, Chion argues for the phenomenological importance of reduced acousmatic listening when it allows us to bracket assumptions about visual causes and attend more closely to the sounds themselves, thereby revealing sonic traits that might normally remain hidden.

Developing similar projects in pedagogical contexts might, among other things, offer ways to explore the idea of sound recording as a creative process—that is, to look beyond recording simply as a replicating or 'repeating' function and explore it as a 'compositional' activity (Attali, 2014); as a way of developing an "imaginative perception" (Cascone, 2014; Droumeva, 2015). Indeed, such projects may foster new understandings and possibilities for sound and meaning-making, especially in terms of attending to and transforming taken-for-granted perceptions. This could involve developing old methods and assumptions in new ways, as well as the recycling of older documents and technologies in new contexts (e.g. through sampling, looping etc.; Sterne, 2003). Equally importantly, the process of researching and creatively 'dialoguing' with artists and their works, as well as with

aesthetic-political movements and relevant historical factors might accomplish a number of more general pedagogical goals that resonate with the phenomenological and critical concerns discussed above. These include: i) breaking down dualist assumptions by explicitly enmeshing the student-artist in the research as an active participant, as opposed to a detached onlooker; ii) decentring language and text as the primary tools of learning and meaning-making; and iii) highlighting the meaning of art-making as a way of attending to the world in new ways, where radical shifts in aesthetic perceptions, and critical engagements with historical movements, may lead to important inquiries into self, culture and society (Benson, 2001; Johnson, 2007; van der Schyff, 2015).

***Berlin HBF***


https://www.youtube.com/watch?v=5mKCEosd7SM

**Figure 6.** Still from Berlin HBF. Click the link to view the video.

The footage (audio and video) for Berlin HBF was collected with an iPod during a two-hour stop over at an enormous multi-level train station in Berlin (Figure 6). At the time I captured the video I was very interested in early 20th century film and photography (e.g.

the Russian Constructivists, German Expressionists, and the American, Paul Strand). In the spirit of what we now refer to as 'modernism', the artists of this period used the camera to develop new ways of experiencing the world. Their imagery often explores everyday themes viewed from unusual vantage points and in unusual contexts: extreme angles and close ups; slow, stop and reverse motion; animation; juxtaposition of images; over exposure; negative images; montage or 'jump cuts' (see Wallace, 2011). The Berlin station provides an excellent place to gather such footage. It is constructed in such a way that one can gain simultaneous views of its various levels; its glass and metal floors and barriers make for a wonderful play of reflection, shadow and perspective. As per the self-imposed parameters mention above, I edited and manipulated the video footage using only the tools available to me through iMovie.

Not surprisingly perhaps, this location also offers an outstanding acoustic environment—where the local 'soundscape' (Schafer, 1994) and the 'aural architecture' (Blesser & Salter, 2007) it plays out in are highlighted by the heightened forms of phenomenological awareness associated with sound and video collection. In this space the interplay of 'noise' and the meaningful (iconic, indexical, and symbolic) audio signals provides a fascinating play of sound and image: words, music, and other sonic markers presented through loud speakers; the movements and voices of people waiting, going here and there; the arrival and departure of trains; as well as the continuous reflection, reverberation and mixing of such sounds throughout the station.

I decided to develop a rather minimalist sound score to accompany the imagery—one that would not force specific emotional responses. Instead, I hoped to keep the feeling of the work 'open' so that the audience might be invited into it—to look, listen and develop their own relationships rather than be shown. In the end, I used the sounds of the station environment itself mixed with electronic manipulations that play with the various hums, rumbles, rhythms and ringings of the trains themselves. To conclude I added an 'epilogue' view from the train inspired by the bold colours and shapes of expressionism—one that moves increasingly towards total abstraction in the visual modality; and where the auditory field finally takes over and approaches something more like 'music'.

Similar 'environmentally-based' projects might provide an excellent opportunity for students to reflect on the urban spaces they live through—which, like the Berlin train

station itself, may be understood as multi-layered, relational and constantly transforming thanks to the various ways people inhabit them (Hosokawa, 1984). And here again, Ihde's reflections on sound, vision and space are illuminating. As with the experience of the cathedral discussed above, the train station may also be explored in terms of the unique way its architecture interacts with the entities that move within and through it—the sources of sounds may be searched for, but not always found; movement, objects and space may be attended to and juxtaposed in a range of ways. The process of developing such projects with students could thus inspire more pluralistic, phenomenological (Ihde, 1974; Macedo, 2013) or 'enactive' perspectives (van der Schyff, 2015; Varela et al., 1991) on what the experience of sonic environments entails, as well as a deeper recognition of sound as a primordial backdrop to social existence.

This all resonates with R.M. Shafer's (1994, 1986) original vision for 'soundscape studies' as an interdisciplinary field with strong pedagogical (and phenomenological) aspirations in applied contexts. And indeed, Schafer's broad historical, architectural, geographical, and cultural surveys of the human and natural soundscapes, as well as his phenomenological exercises for 'clairaudience' or 'ear cleaning', continue to hold great relevance for education. Today, however, artists, students and teachers have access to unprecedented creative opportunities afforded by technology—most notably the ability to collect relatively high-quality video and audio from user-friendly devices that fit in the palm of their hands. 'iPod culture' (Bull, 2008) has rapidly developed into a distinctly multi-media and multi-modal phenomenon. In brief, we may now easily bring images and sounds of the city home with us, and through creative projects such as I have discussed, transform how our environments are perceived (see also Droumeva, 2015). With this in mind, a project like Berlin HBF could be developed further by feeding the video and sound material back into the original environment as a multimedia installation, perhaps spread across multiple screens, projections and audio outputs.

## Conclusion

The process of scoring Ghosts Before Breakfast involved a direct encounter with a specific work (Richter's film) and a cultural movement (Dada). By contrast, Berlin HBF developed

image and sound through the lens of a more general aesthetic sensibility (modernist film) in an environmental context. In different ways, however, both initiated an investigation into the space where lived experience—the sounds, places and perceptions of everyday life—meets culture, history and 'the aesthetic'. In pedagogical contexts, similar projects could integrate a wide range of concerns that are traditionally approached separately if at all in contemporary education. As I have suggested, this may afford teachers and students a means of developing knowledge of various historical figures, works and cultural movements, and living environments in ways that do not divorce such inquiries from creative practice. Indeed, exploring these themes in the context of lived experience highlights their relevance for the life of the artist-student, potentially encouraging a more critical, transformative and culturally literate understanding of what art making entails. Along these lines, this praxis-based approach might also aid students and educators in developing useful theoretical-aesthetic understandings that might otherwise remain obscure when their relevance is not immediately apparent for the creative life of the student. In other words, this approach could help educators introduce complex critical and phenomenological concepts through practice, thereby allowing them to be grasped more efficiently and comprehensively—i.e. from a range of lived intellectual, embodied, emotional, social and aesthetic vantage points.

Lastly, such projects may offer a way for students to develop technique in media production within the living context of art making and to explore the techniques and challenges facing artists who work in other disciplines. This could foster a broader and more inclusive appreciation of the creative process, as well as a more open-ended and collaborative aesthetic sensibility. Indeed, the next step for the approach I have outlined here will involve documenting how such projects might be developed by phenomenologically and critically engaged students; and what new understandings are revealed in the process. Along these lines, it would be very interesting to explore similar projects in the context of theatre, music and dance, interdisciplinary improvisation and ecological and environmental studies (e.g. bio-acoustics; see Krause, 2013), or to attempt larger scale multi-person collaborative works that bring together students, artists and researchers across a range of disciplines, including, for example, architecture and the sciences. This would also add an important social aspect to such creative research

projects—one that is lacking in the more or less solitary processes involved in developing the works discussed above. In brief, such projects could form an important part of the collaborative, interdisciplinary and creative pedagogical environments associated with the idea of education as 'formation' (Bildung) discussed in this paper (Macedo, 2013).

Of course, many more possibilities remain to be explored. Nevertheless, I hope that the processes and ideas I have explored here might contribute to richer accounts of how sound and media studies may be developed in creative, critically reflective, praxis-based pedagogical contexts; that they will be useful to artist-teachers who wish to introduce multi-media projects into their educational practice; and that they might inspire emerging creative 'sound students' (Sterne, 2012) who are just beginning to develop and share their sonic imaginations.

# Part IV

# Music, Education, and the Act of Living

# 7

# Improvisation, Enaction, and Self-Assessment

## Introduction

Every human culture engages in activities that we recognize as musical. And, in various ways, such behavior is often characterized by spontaneous acts of sound-making. While these "improvised" expressions occur within melodic, rhythmic, sonic, harmonic, and social frameworks that evolve culturally, they also vitalize traditional practices keeping the music (and the culture) alive. Through improvisation the practitioner may explore his or her embeddedness in a given milieu, while simultaneously making unique contributions to the living enactment and transformation of that same socio-cultural environment. And sometimes this may involve making radical breaks from established practice and ways of thinking and doing (Bailey, 1993; Borgo, 2007; Elliott, 1996; Lewis, 2004). Indeed, there is a strong sense in which improvisation may be seen as a meeting place for the present and the ancestral, the individual and the group, tradition and innovation. In many ways, the phenomenon of musical improvisation may also be understood to reflect the adaptive and relational nature of human meaning- and world-making more generally. As Higgins and Mantie (2013) write, "improvisation is a distinctive way of being in and through music that reflects the fact that the act of living is largely improvisatory" (p. 38). This insight is echoed by thinkers such as Iyer (Miller & Iyer, 2010) and Nachmanovitch (1990), who argue that there is no essential difference between human experience and improvisation, and Lewis (2009a), who suggests that the human condition *is* the condition of improvisation.

However, despite the fact that improvisation is central to most *musicking* (Small, 1998)—and may be an important characteristic of human cognition—it has been essentially eliminated from Western classical music practice and largely ignored in scholarship (Nettl, 1974). Saywer (2007) notes that although improvisation was common in European art music well into the nineteenth century,

> [t]he current musical culture in Western countries—one in which a highly skilled instrumentalist may be completely incapable of improvising—is historically and culturally unique. Today, in Western cultures, improvisation is almost completely absent from the high art tradition and, consequently, is almost completely absent from the music education curriculum.

As a result, improvisation now "enjoys the curious distinction of being both the most widely practised of musical activities and the least acknowledged and understood" (Bailey, 1993, p. ix).

This is beginning to change, however, and a growing number of scholars are exploring musical improvisation from a range of philosophical, psychological, historical, and cultural perspectives (Heble & Caines, 2014; Lewis & Piekut, forthcoming). Likewise, critically minded thinkers in music education have begun to develop approaches that place improvisation at the core of the curriculum (Sawyer, 2007; Heble & Laver, 2016; Hickey, 2009; Lawrence, 1978). In doing so they argue that, as a situated practice that embraces adaptivity, contingency, and the unexpected, improvisation challenges many standard ways of thinking about knowledge construction, meaning-making, and cognition in general (Kanellopoulos, 2011). Indeed, it is often said that musical improvisation cannot be taught (see Borgo, 2005; Hickey, 2009). Nevertheless, people do learn how to do it. And most often such learning occurs collaboratively and outside of predetermined formal methods or institutional contexts (Green, 2008; Wright & Kanellopoulos, 2010). It follows, then, that a non-reductive and open-ended exploration of improvisation may reveal new perspectives on teaching, learning and assessment that could have profound implications for the future of education, musical or otherwise (Sawyer, 2007).

With such concerns in mind, this chapter develops a number of threads drawn from pedagogical theory and embodied cognition in an attempt to contribute to a better understanding of the meaning of improvisation for music education. I begin by considering a number of pedagogical perspectives on improvisation, and examine the challenges they pose to taken-for-granted assumptions on teaching and assessment. Drawing on these ideas, I then develop the insight introduced above, regarding the deep continuity between

improvisation, life, and cognition. Here I consider improvisation in the context of an alternative but increasingly influential *enactive* approach to mind (Varela et al., 1991; Stewart et al., 2010; Thompson, 2007)—a perspective, I suggest, that allows us to explore the primacy of improvisation in a way not available through standard information-processing models of cognition. Following this, I consider how the recent "4E" model associated with enactivism (which sees living cognition as essentially *embodied*, *embedded*, *enactive* and *extended*) may provide a useful framework for developing self-reflective and collaborative ways of exploring and assessing improvisational experiences in music education. I conclude by offering suggestions for improvisational practice and assessment in pedagogical settings drawn from a number of existing musical communities and from my own experience as a performer and educator.

I should make it clear that my goal is *not* to offer some kind of repeatable or fixed method for the assessment of improvisation in music. Rather, through a critical exploration of what improvisation entails I hope to draw out a general theoretical orientation that might aid educators and students in developing approaches that are relevant to their lives, goals, and shared experiences. As a result, I will not focus solely on assessment, but will also explore issues related to pedagogy and praxis.

## Improvisation and music education

In recent decades, a range of thinkers have begun to critically examine taken-for-granted attitudes on music and music education. For example, while the score and the composer continue to hold privileged places in Western music culture, this is increasingly problematized in the context of a range of recent historical developments. These include, among other things, the rise of romantic notions of the elite composer-genius, the concert hall and the institutionalization of the Classical cannon, mechanical reproduction and commodification, and the bureaucratic-capitalist cultural environment that characterizes modern life (Denora, 1986; Goehr, 1992; Small, 1999; van der Schyff, 2015b). Likewise, a number of scholars have suggested that the dominant euro-centric view of what "serious" music entails has exerted a colonizing (Bradley, 2012) influence on music education around the world—one that often obscures the rich improvisational characteristics of indigenous musical traditions in favor of the "gold standard" offered by the Classical canon

(Imada, 2012; Nettl, 1974, 1998).

According to many writers this perspective downplays the importance of situated and creative activities associated with non-classical music—i.e., playing by ear, improvisation, and the creation of original music (Rodriguez, 2004; Creech et al., 2008). As such, it does not encourage the development of unique ensembles and approaches to music-making that reflect the day-to day lives of individuals, social groups, and indigenous or marginalized cultures. Because of this it is claimed that the standard focus on the reproduction and analysis of Western musical works tends to leave little space for the exploration of personhood, as well as the expression and exploration of difference and diversity that is so crucial for understanding and navigating the complex heterogeneous world we live through in the 21st century (Elliott & Silverman, 2015).

In response to this, recent years have seen a growing call for the (re)introduction of improvisation—not only for music education, but also for pedagogical theory and practice more generally (Campbell, 2009). For example, Sawyer (2003, 2006, 2007) sees the focus on "the composition" as a residue of industrial era thinking, where, as with other aspects of life and work, agents in the modes of production became isolated from each other. This, he argues, led to a situation in the musical domain where performance and composition became two separate activities:

> [where] the creation of new music is almost exclusively associated with composers; and where a performers' primary role is to execute those compositions. In this division of labor, instrumentalists do not need to be capable of creating new music, nor do they need the correspondingly deeper conceptual understanding of music that underlies composition. […] [I]n our culture's stereotypical view, we do not think their creativity is of the same order as the composer who generates the score. (2007)

Here, Sawyer (2003; 2007) develops comparisons with the "decontextualized and compartmentalized" industrial era approach to education where students are simply trained to memorize and reproduce existing knowledge; and where they study and are tested essentially in isolation. He argues that we need to leave this "production line" approach behind as it tends to isolate and instrumentalize teachers and students, affording little

practice in developing "the deeper conceptual understanding[s] and adaptive expertise that allow them to generate new knowledge" (2007).

To meet this last concern, Sawyer (2006, 2007) draws on research associated with learning science, outlining four key and overlapping cognitive-pedagogical goals that reflect the creative possibilities of the human mind. These involve the development of (i) *deep conceptual understanding*, where facts and techniques are not simply learned for their own sake, but rather are explored within complex and evolving conceptual frameworks. Related to this is the development of (ii) *integrated* knowledge, which highlights the relational nature of knowledge building—where understanding does not result from the possession of "compartmentalized knowledge," but emerges from the way knowledge is integrated in practice. Central to this process is the notion of (iii) *adaptive expertise*, which involves developing the ability to draw on previous experiences and skills in ways that are flexible, that adapt appropriately to the contingent demands of the moment. Lastly, he considers the importance of (iv) *collaborative skills*, where "unlike the hierarchical corporation of old, where everyone's job description was quite specific, the boundaries between each team member are fluid, and many tasks require the simultaneous and joint contributions of multiple experts to be successfully accomplished" (2007).

Importantly, these four pedagogical goals are also necessary requirements of effective musical improvisation. Indeed, improvising musicians must *understand*, *integrate* and *adapt* a wide range of skills and knowledge. And often this is done in *collaborative* environments (Azzara, 2002; Monson, 1996; MacDonald et al., 2011)—where outcomes are not pre-given; where unforeseen challenges continually emerge and are met in various ways; and where working relationships between people are not rigidly defined. Likewise, as Sawyer (2006, 2007) points out, the new learning environments for general education proposed by learning science explicitly embrace an improvisational attitude—"they place students in loosely structured environments, where they work together in a relatively unstructured, improvisational fashion. […] In these learning environments, different student groups can develop different solutions to the same problem, which is exactly what you would expect if they were truly given the freedom to improvise" (2007).

In brief, it is argued that involving students in collaborative improvisational activities

may help them not only develop new ways of engaging with music, but also open ways of thinking, doing and being that are relevant across a range of domains. Here it is also important to note that such perspectives do not necessarily imply that the study and practice of Classical music should be simply done away with. Rather, it is suggested that this field (and the composition and interpretation of notated music more generally) may be critically resituated within a richer understanding of what human musicality and creativity entails (Lawrence, 1978; Sawyer, 2007).[54]

### *Teaching and the question of "improvisation"*

While improvisation is increasingly recognized as an important aspect of music education, the question of just how it should be introduced and developed continues to be debated. Some authors assert that while improvisation is important, the chief focus should remain on composition (Paynter, 1992). Others argue that improvisation should come first in music education; and that it should remain at the core of the music curriculum, with part reading and score analysis taking on an important but secondary role only later in the educational process (Hickey, 2009; Sawyer, 2007). Perhaps more problematically, a growing number of writers suggest that, by and large, the way improvisation is currently understood and practiced in music education does not always embrace the full possibilities of what it entails, and thus current curricula may not be able to meet the kinds of cognitive-creative potentials outlined above (Hickey, 2009).

To better understand such concerns, it may be useful to consider the shifting pedagogical attitudes towards improvisation that have developed over the last century. For example, some of the earliest research and literature on improvisation and music education in the United States emerged in the early and middle 20th century (Coleman 1922, 1927a, 1927b, 1939; Moorhead & Pond, 1941/1978). Importantly, these early studies embrace an open (and interdisciplinary) approach, where pupils are free to develop their relationships

[54] While several studies have explored how the two processes differ (Sarath, 1996; Azzara, 2002), it has been suggested that composition and improvisation should no longer be understood as opposites, but rather as mutually reinforcing aspects of the creative musical process (Biasutti, 2015; Marsh, 1995; Sessions, 1941). Indeed, in Swanwick and Tillman's (1986) studies of how young children "compose" music, improvisation and composition are essentially indistinguishable. And likewise, as Burnard (2000) writes, "our aim as music educators should be to facilitate a form of music education that focuses on genuine experiences of children *being* improvisers and composers rather than acting out a pre-defined model" (p.21).

to various instruments and each other in ways that are not strictly prescribed. As Moorhead and Pond (1941/1978) write, "[t]o produce his own music a young child's first need, we find, is freedom—freedom to move about in pursuit of his own interests and purposes, and freedom to make the sounds appropriate to them" (p.33). This research remained relatively marginalized, however, and it was not until the 1970's that "improvisation as a real learning outcome in American schools first appeared […] mostly in the form of jazz improvisation, as jazz was beginning to be accepted as a legitimate music ensemble in public schools" (Hickey, 2009 p. 289; see also MENC, 1974). But this new approach to improvisation was not based in the free processes of discovery that characterized earlier research. Instead, improvisation is understood here as consisting of a set of (objective) skills, which are first to be acquired by the teacher and then passed on in a systematic fashion to students (e.g. Konowitz, 1973; Lasker, 1971; see also Pressing, 1988).

Generally speaking, these approaches tend to follow a linear schema, where the learner moves from one stage to the next in a controlled fashion. Often this begins with embellishing (or completing) existing melodies and musical phrases. This is followed by exposure to patterns (e.g., the licks or riffs that may be played over certain harmonic cadences), which students become adept at deploying in stylistically appropriate ways (e.g., Aebersold, 2000; Baker, 1988; Coker, 1997; Gordon, 2003; Azzara & Grunow, 2003). Such skills are then applied to solving larger musical problems (e.g., improvising through longer and more complex harmonic forms), which may be supplemented by transcriptions and imitating by ear. More open ways of improvising—if they are considered at all—are generally introduced (i.e., permitted) only once such skills have been acquired. Many jazz methods proceed in this way. And likewise, early music education approaches (e.g., Orff-Schulwerk) that claim to teach improvisation use similar linear frameworks to provide students with the appropriate "building blocks" to proceed through clearly defined stages of learning and assessment (see Abril, 2013).

Of course, the assertion here is *not* that such technical forms of training are valueless. Learning to navigate musical compositions and genres—and understanding the theoretical frameworks (e.g., tonal harmony) by which they are constructed and analyzed—is extremely important. And practicing within defined parameters can help with the development of instrumental control and ensemble awareness. However, critics argue that

improvisation involves much more than this (Borgo, 2005, 2007; Elliott, 1996; Hickey, 2009; Lewis, 2007). Indeed, it is suggested that the focus on a standardized and technically driven music improvisation pedagogy ignores the informal, exploratory, or "free" processes of discovery, collaboration, and adaptation that result in new situated forms of knowing and doing. It only asks students to understand preexisting knowledge and methods, and (re)produce musical "products" that are deemed to be functional (or "correct") within such pre-given frameworks. As such, it is often assumed that students are necessarily subordinate to these frameworks and that their development must therefore be controlled—i.e., that they are incapable of improvising "correctly" without supervised interventions. The possibility is rarely entertained that, given the appropriate environment and encouragement, students could (and will) adapt and transform such frameworks (and the skillsets and understandings that characterize them), and thus collectively develop new approaches (their own ways of *musicking*) that resonate with and express their individual and shared experiences in unique and sometimes unexpected ways. Researchers who explore "informal learning" have shown that it is just these kinds of collaborative and socially relevant processes—i.e., the adaptive acquisition and development of skill and understanding through situated praxis—that characterize creative musical activity outside of formal contexts (Green, 2002, 2008; Musical Futures, 2008; O'Neill, 2014; Price, 2006; Wright & Kanellopoulos, 2010).

In brief, it is argued that the highly "technicist" (Regelski, 2002) orientation of much formal music education imposes a reduced understanding of improvisation, which is assumed to simply consist of a set of "carefully prescribed technique[s] centered around tonal harmony and regular rhythms, but is devoid of both context and freedom" (Hickey, 2009, p. 290). In many ways, this orientation reflects the same trends towards standardization associated with Sawyer's (2003; 2007) critique of industrial age thinking where the possibilities of human creativity and understanding are curtailed. Not surprisingly, however, this approach does make assessment a relatively straightforward affair whereby a student's progress may be mapped against a list of externally imposed criteria (i.e., technical requirements).[55]

[55] See, for example the K-4 improvisation assessment strategy in MENC, 1996, p. 39 (also in Hickey, 2009)

### *Improvisation and the question of "teaching"*

I mentioned above how the technical and product driven approach to music education is often out of touch with how students frequently engage with music outside of school environments (Green, 2008). Equally problematic is the observation that the emerging pedagogy of improvisation in the last three decades of the 20th century has essentially ignored the living forms of improvisation that are actually occurring in the world at large––e.g., the remarkable developments in jazz and free improvisation (Bailey, 1993; Berliner, 1994; Hickey, 2009, 2015; Lewis, 2007); and how such developments intersect with cultural and critical perspectives, as well as a range of new technologies (Borgo, 2014; Borgo & Kaiser, 2010). For example, most often large ensembles (big bands) dominate jazz education, where improvisation fills out areas within a composition. However, such improvisations are always subservient to the framework imposed by the composer/arranger, and generally involve sedimented hierarchies within the ensemble that interact in highly prescribed ways (e.g., soloist-rhythm section).[56] Moreover, as Szekely (2012) argues, all of this reflects a trend towards codification, institutionalization, and commodification of the "language" of jazz, where the insistence that jazz should somehow be understood as "America's classical music" has resulted in a range of problematic assumptions. Thus, while there are many important skills that may be developed in more codified contexts, the resulting musical products often have little to do with the lives of the students who perform them; and the processes involved resonate only superficially with the collaborative and often highly idiosyncratic ways jazz musicians actually go about creating the music they do.

Along these lines, a number of writers discuss improvisation not in terms of products or outcomes, but rather as an activity to be pursued for its own sake[57]—often exploring the relevance of so-called "free" or "non-idiomatic" improvisation for education (Borgo, 2007; Kanellopoulos, 2011; Wright & Kanellopoulos, 2010). As Attali writes, free improvisation

[56] Such codifying tendencies have also dominated small group pedagogy. As Bailey (1993) writes of be-bop, "the mechanics of this particular style - its somewhat stylistic rigidity, its susceptibility to formulated method - created a field day for the educators. […] It has proved to be one style of improvising which can be easily taught" (p. 49).

[57] Perhaps a loose distinction should be made here between "free improvisation" as an open-ended pedagogical approach and "free improvisation" as a specific musical movement that developed in Europe in the mid-twentieth century.

is "NOT undertaken for its exchange or use value. It is undertaken solely for the pleasure of the person who does it […]. Such activity involves a radical rejection of the specialized roles (composer, performer, audience) that dominated all previous music" (1985/2006, p. 135). Likewise, as Bailey (1993) remarks, "Diversity is its most consistent characteristic. It has no stylistic or idiomatic commitment. It has no prescribed idiomatic sound. The characteristics of freely improvised music are established only by the sonic-musical identity of the person or persons playing it" (p. 83). Following these insights, Hickey (2009) points out that,

> [f]ree improvisation is a form of improvisation that is ultimately the most open, non-rules bound, most learner directed, and, consequently, the least (if ever) approached in schools. It is not a free-for-all approach, as it requires attentive and sensitive listening to the environment and others involved. However, it is an improvisation that *cannot* be taught in the traditional sense, but experienced, facilitated, coached, and stimulated. […] There is no right way to do it, and the process often requires more attention than the product. (p. 249)

Indeed, because free improvisation highlights process, diversity, and the unique evolving relationships enacted between situated musical agents and their environments, it does not fit neatly into the standardized practices and prescribed outcomes that often characterize music curricula and assessment. Thus, as Wright and Kanellopoulos (2010) point out,

> [I]mprovisation becomes a means for unsettling dominant conceptions of music learning and for engaging with informal learning practices. Improvisation not only offers a way of active engagement with music, but also is situated […] in an epistemology that does not regard knowledge as "an accurate representation of a pre-existing reality" (Biesta & Osberg, 2007, p. 16) but emphasizes the situatedness of knowledge construction as a form of creative socio-cultural praxis. (p. 82)

With such concerns in mind, a number of writers argue that improvisation, in its fullest sense, should not be understood as something to be inculcated, but rather as a kind of

fundamental "disposition" that is to be nurtured and cultivated. This resonates with the insights mentioned above regarding the improvisatory nature of life itself (more on this shortly). I suggest, therefore, that it should be this "improvisational disposition" that is initially recognized in music education so that students may develop a strong sense of their own creative potentials as self-making beings (Hickey, 2009). In other words, I argue that free improvising should be introduced first and encouraged throughout the student's development. In this way, when technical and genre-specific concepts, practices, and cultural models are introduced to students, they may be encountered from the outset not as prescriptive, but rather as tools and possibilities for creative engagement with the (musical) worlds they co-enact.

Importantly, this all leads back to the suggestion articulated above by Hickey (2009): namely, that true improvisation may not be "teachable" within the rather narrow didactic (or "industrial") understanding of what education involves. Indeed, embracing this deeper understanding of improvisation in pedagogical contexts demands a new and more complex understanding of the relationship between teachers and students, one that looks beyond rigid hierarchies and predetermined outcomes. Here the teacher must become more than simply a source of information, facts and skills. Rather, he or she takes on the status of a facilitator and collaborator—providing the "scaffolding" (Lajoie, 2005; see also Elliott, 1995, pp. 278-280) for fertile creative environments to emerge and grow, where students are encouraged to think critically, creatively, and collaboratively. From this perspective, teaching involves knowing when to play an active role and when to stand back and let the students take charge of their own learning; when to introduce a new cultural model or a conceptual/technical challenge, and when to let students explore without intervention (Green, 2008; Wright & Kanellopoulos, 2010).

Of course, this all demands a good deal of critical reflection, creativity, adaptive flexibility, and the ability to engage with the needs of students (Laroche & Kaddouch, 2015; O'Neill, 2010; Silverman, 2012). Indeed, to be effective, teachers cannot simply teach by rote; they must develop the ability to integrate and adapt their knowledge to the contingent demands and opportunities that arise in a given situation; and perhaps even engage in the kinds of "subversive" teaching that looks outside of the standard curriculum (Elliott & Silverman, 2015). Put simply, this means that teachers must actually embody the

kinds of adaptive, creative, and collaborative learning that improvisation involves so that by example they may reveal the kinds of processes they hope to encourage in their students.

Shortly I will return to these concerns to explore possibilities for assessment and praxis. First, however, I would like to further develop this idea of *improvisation-as-disposition*—where "the act of living itself is largely improvisatory" (Higgins & Mantie, 2013). Here I will examine how emerging embodied or "enactive" approaches to cognition (Stewart et al., 2010; Thompson, 2007; Varela et al., 1991) may offer support for this insight, and thus help to inform and ground new ways of thinking about improvisation, learning, and assessment.

## Cognition and improvisation

Until recently, our understanding of how the mind works has been largely framed by a standard "information-processing" or so-called "cognitivist" approach to cognition (Pinker, 2009). Put very simply, this approach understands the mind as analogous to a computing machine, where "mind" is the software to the brain's hardware (Damasio, 1994). Here cognition is confined to non-conscious information-processing *in the head*; it is understood to occur in a mechanistic or rule-based fashion that begins with the *input* of sense data and proceeds hierarchically through the development of evermore complex *representations*. This results, finally, in *outputs*—responses, behaviors and "knowledge"—that correspond with a pre-given "world out there." Importantly, by this view, we have no direct access to the world; our "experience" is of the representations (or "mental content") formed in the brain. Thus our "knowledge" of the world may be "assessed" in terms of the degree to which our mental content and resulting behaviors (outputs) *correspond* with a supposedly pre-existing reality (see Varela et al., 1991). It is also important to note that this approach does not see the body as playing a significant role in cognition as such—it simply provides necessary biological scaffolding "where brain and body are related but only in the sense that the former cannot survive without the life support of the latter" (Damsio, 1994, p. 48).

In many ways, this orientation has informed and reinforced the ways we think about and do music and education in the industrial and post-industrial eras. As a number of critical pedagogues have discussed, many modern approaches to education adopt a

mechanistic or, indeed, a "banking" approach to education (Freire, 2002; Giroux, 2010). Again, this involves a rather depersonalized and mechanical input-output understanding of human cognition where students are trained to perform and think (and are assessed) according to standardized practices and outcomes; and where, as result, the critical and creative potentials of teachers and students (and performers and listeners) are downplayed (see Kincheloe, 2003, 2008; van der Schyff et al., 2016).

The cognitivist perspective increasingly draws criticism from thinkers across a range of disciplines who argue that it tends to reduce human cognition to an abstract "in-the-skull" problem solving process that largely ignores the exploratory, embodied and creative nature of perception (Clarke, 2005; Kincheloe, 2003). These concerns are central to the interdisciplinary research program known as *enactivism*, which, by contrast, explores the mind as a fundamentally situated, embodied, and ecological phenomenon.[58] The enactive approach does not reduce cognition to the representational recovery of a pre-given environment. Nor does it first understand the mind in mechanistic or computational terms. Rather, it explores cognition as originating in the basic biological processes of life itself—in the ways even the simplest organisms move, interact and thus actively shape the environments they inhabit. Put simply, the enactive perspective sees mind and world (organism and environment) not as a fixed duality, but rather as continually co-arising in an *improvised* way—like "a path laid down in walking"[59] (Varela et al., 1991). As such, it may help us to understand the deep continuity between cognition and improvisation, and thus better account for (and lend support to) the conception of improvisation-as-disposition introduced above.

### *Cognition as embodied, embedded, enactive, extended, and… improvised*

Despite its broad interests and its openness to integrate itself—most notably as a theoretical

[58] In the course of its development enactivism has produced a number of schools of thought, with each positing contrasting perspectives that originate in a shared group of basic principles (Hutto & Myin, 2014). As space does not permit a full treatment of each of these perspectives, the brief outline I offer here draws mostly on the original *autopoietic* approach introduced in the early 90's by Varela and colleagues, and that has recently been updated by Evan Thompson (2007) and others (see Stewart et al., 2010).

[59] As Varela and colleagues (1991) elaborate, "there is always a next step for the system in its perceptually guided action [. . .] the actions of the system are always directed toward situations that have yet to become actual. Thus cognition as embodied action both poses the problems and specifies those paths that must be tread or laid down for their solution" (p. 205).

framework—within a range of research programs (see Stewart et al., 2010), enactivism can be defined, broadly speaking, in two ways. First it may be approached according to the basic qualities it identifies as characterizing cognition. Recently, these have been referred to as the "4Es," which describe the mind as fundamentally:

- **Embodied**: mind is an embodied phenomenon involving a deep relationship between action and perception (neural + extra-neural factors).
- **Embedded**: mind is situated within a contingent milieu.
- **Enactive**: mind involves a process of bringing forth or "enacting" a meaningful world.
- **Extended**: mind cannot be reduced to "in-the-skull" processes, but rather includes an "extended" cognitive ecology involving objects, technologies, socio-cultural engagements, and other agents (organic + inorganic factors).

Secondly, the enactive perspective may also be distinguished by three overlapping principles that explain the quartet of characteristics just mentioned. The first of these, *autopoeisis*, describes how a living creature self-organizes its own existence in conjunction with the environment it emerges from and that sustains it; how it actively develops "sufficing" relationships within the contingent constraints and affordances of the given milieu it is *embedded* within according (most fundamentally) to its biological requirements. Importantly, living organisms are not seen as mere responders. Rather, they actively "reach out" to their environment to "seek out" and *enact* a world that is relevant to their continued well-being (Thompson, 2007). This involves an ongoing recursive or "circular" process of embodied interactivity and adaptivity that occurs, most primordially, through affectively motivated action-as-perception (Colombetti, 2014; Nöe, 2006; Schiavio et al., 2016).

Such *embodied* processes are central to the second principle, *sense-making*, which concerns the active ways living creatures disclose unique worlds of meaning that are informed and transformed by their interactions with every kind of otherness they encounter (Ihde, 1977; van der Schyff, 2015b). Indeed, while an organism may be differentiated by the bounded metabolic, self-regulative processes associated with the living body and its "inner" milieu, the same organism (if it is to remain a living individual) must also

simultaneously maintain the dynamic organism-environment *interactivity* that allows it to make sense of its world in relation to its intrinsic needs. Thus, living cognition, mind, "identity," and "self" are necessarily *relational* and thus *extended* phenomena at the most primordial levels (McGann, et al., 2013; Weber & Varela, 2002).

This brings us to the third principle, *autonomy*, which describes how an organism's world and the "meanings" that arise from it are not externally imposed, but emerge through unique histories of interactivity with the environment (Di Paolo, 2015). This is to say that unlike computing machines—which require external entities (i.e., humans) to provide inputs and give meaning to their outputs—living cognitive systems *actively* and *autonomously* participate in the construction of their own life-world (Varela et al., 1991). An important further consequence of this is that "information," "knowledge" and "meaning" can no longer be reduced to pre-given features of an external environment. Rather, they are seen as *ontogenic*—i.e., as growing from the relevant relationships and valences that emerge as a *dynamic organism-environment system* constitutes a life-world (Oyama, 2000; Thompson, 2007). Along these lines, Varela and colleagues (1991) write that living cognition is based in the adaptive and embodied learning processes that enable not simply knowledge of "this" or "that," but rather "knowing how to negotiate our way through a world that is not fixed and pre-given but that is continually shaped by the types of actions in which we engage" (p. 144). With such insights in mind, I suggest that there is a very strong sense in which the enactive perspective reveals living cognition to be fundamentally improvisational.[60]

In recent years the enactive approach has been developed across a range of human activity and experience, including the field of social cognition. This has resulted in interesting new dimensions to the enactive perspective, including the notions of *participatory sense-making* and *relational autonomy* (De Jaegher, 2013; De Jaegher & Di Paolo, 2007). These concepts have been developed, for example, in the context of the pre-linguistic and embodied modes of communication and understanding that occur between infants and primary caregivers. Importantly, such basic social activity is no longer understood simply in terms of imitation or "hardwired" responses. Rather, infants are

[60] For an interesting supporting discussion that considers musical improvisation in the context of the enactive biological principles discussed above see Walton et al., 2014.

observed to play active roles in shaping the relationship by developing a repertoire of utterances and bodily movements that facilitate the enactment of a unique shared ecology of meaning (Krueger, 2013; Reddy et al., 2013; Service, 1984). Again, this may be understood as continuous with the adaptive and improvisational character of living cognition. It also expresses the relational conception of autonomy just mentioned, where "the self" cannot be reduced to some kind of fixed status, but rather is seen as an ongoing 4E-process of (improvised) *social and cultural enaction*.

Moreover, a growing number of scholars are exploring the importance of musicality for such fundamental intersubjective forms of self- and world-making, including the primary forms of communicative movement and sound-making just discussed (Krueger, 2014; Trevarthern, 2002; van der Schyff, 2015a). Indeed, musicality, broadly understood, is increasingly seen not simply as a cultural (pleasure) technology (Pinker, 1997), but rather as a "primordial, empathic, and embodied sense-making capacity that plays a central role in how we enact the personal and socio-cultural worlds we inhabit" (van der Schyff et al., 2016). Put simply, from this perspective improvisation and musicality go hand-in-hand as essential aspects of the human mind. And thus, the marginalization and codification of improvisation in formal Western music education may be seen as repressing fundamental aspects of what it means to be the kinds of beings we are.

## Improvisation and assessment

As I discussed at the outset, musical improvisation often occurs within social and cultural contexts (Azzara, 2002; Hickey, 2002). Such contexts are characterized, with varying degrees of specificity, by certain historically enacted ways of doing and knowing—culturally sedimented techniques and understandings that allow a given music to be identified with a place, time, or social milieu. With this in mind, there are certain aspects of improvisation that can be seen as correlating with existing standards, and that can be assessed more or less "objectively."[61] For example, within current modes of improvisation *training* a teacher can assess knowledge of a given scale by asking a student to improvise

[61] However, it is important to understand that such normative or institutionalized ways of thinking and doing also emerge from historical processes of human enactment, and thus need not be understood as entirely fixed (De Jaegher, 2013).

a melody with it, and by deducting a mark for every wrong note played. Likewise, the teacher could "test" a student's ability to play by ear by asking the student to repeat melodic, harmonic and rhythmic passages that are played for them; or get the student to "outline" a set of chord changes by choosing from a given set of genre-based patterns and scales.

These examples are relatively easy to assess and reflect current modes of *training* that characterize improvisation pedagogy. However, as I have noted, we must be careful not to let our understanding of music, education and assessment be limited to those aspects that are simply in line with "national music standards" or reductionist and/or false concepts of what improvisation and assessment entail. In other words, I argue that while such technical forms of learning and assessment are important, they need to be decentred and take their place as one aspect of more open-ended, adaptive and collaborative learning environments that embrace the concept of improvisation-as-disposition. But what new approaches to assessment might accompany the richer models of cognition, improvisation and music education I have explored above? And what kinds of activities might be associated with them? What we are looking for, of course, is not simply another "method." Rather, what is needed is an open-ended framework for thought and action that may be developed by teachers and students as an ongoing project.

As I discuss next, a 4E approach offers a way of decentring the "isolationist," "technically driven" and externally imposed forms of assessment associated with "industrial thinking" (see Sawyer, 2007). As we will see, from this perspective 'self-assessment' involves developing a deepened awareness of the reciprocity of the personal *and* collective processes that contribute to the development of a unique musical-cognitive ecology. Here 'self' may refer both to the individual and the shared reflective capacities of the ensemble or class as a whole. As such, this framework may better suit the kinds of contingent, collaborative, and open-ended forms of self-assessment a more complete improvisation pedagogy requires.

### *4E'S and an I… or improvisation and self-assessment*

I suggest that if we can use the 4Es to describe the fundamentally improvisatory nature of

living minds, we can also use characteristics of the 4E model to guide an approach to assessment and praxis that applies the concept of improvisation-as-disposition. While such forms of assessment need not exclude the technical or skills-based aspects of music making, they will necessarily be more concerned with reflecting and fostering the kinds of creative potentials and collaborative environments described above (Sawyer, 2007; van der Schyff et al., 2016). This will involve encouraging students be attentive to and reflect on how relationships form and develop with the people (ensemble mates), things (instruments), and places that constitute their reality; how their "selves" extend into the environment and play a role in constituting the lives of others; and how their sense of musical identity is continuously transformed through the activities of their peers. This reflects the *relational* conception of autonomy that I explored above—one that goes far beyond the Enlightenment notion of "a lone individual merely extending [his or her] cognitive reach" (Urban, 2014, p. 4) and towards a vision of self-hood as a communal project (Benson, 2001).

Of course, such processes cannot be assessed simplistically and objectively, but require an open, cooperative dialogical approach that involves shared processes of action and critical reflection. Praxis and assessment should be understood as continuously guiding one another in a reciprocal fashion that reflects the bio-cognitive principles of *autopoiesis* and participatory *sense-making*. From this perspective, "goals" and "outcomes" are not simply pre-given criteria, but possibilities that emerge from the needs, desires and relevant self-assessments of the individual and group as they evolve dynamically. Thus, while the best way to begin improvisation in educational contexts may be, as Lewis suggests (see Borgo, 2005), to simply "throw" students directly into doing it, teachers must also be able to help students begin to critically examine and share the experiences that result; and through such forms of self-assessment, help students recognize the problems they wish to overcome, as well as open up new possibilities to be developed.

With this in mind, students may be encouraged to engage in open-ended explorations of their relationship with their instrument(s), and bring their discoveries to the ensemble. This will necessarily involve self-assessing the deeply *embodied* aspects of improvisation and instrumental practice (Berkowitz, 2010; Iyer, 2002, 2008). It will also include examining how the "resistance of the instrument" (Cochrane, 2013) plays a role in shaping

the kinds of music one makes, as well as exploring the kinds of complex dynamics and embodied feedback loops that occur between the performer, instrument, acoustic environment, and other performers (Biasutti & Frezza, 2009; Borgo, 2005; Pressing, 1998; Walton et al., 2015).[62]

Central to such reflective processes will be developing in-the-moment assessments of shifting bodily-instrument-environment relationships, and a growing awareness of the kinds of cross-modal, emotional-affective, self-regulatory, and "flow" experiences that characterize and motivate the improvising process (Csikszentmihalyi & Rich, 1997; Johnson, 2007; McPherson et al., 2014; Wopereis et al. 2013). Here, the development of a "phenomenological attitude" will also be important (see Schiavio, this volume; van der Schyff, 2016). Indeed, as a number of authors have demonstrated, phenomenology offers a coherent means of analysing and discussing first-person experience and is thus highly useful in musical contexts (Clifton, 1983; Ferrera, 1984, 1991; Ihde, 1974; Krueger, 2011; Roholt, 2014; Sudnow, 1978). Along these lines, the introduction of mindful awareness and meditation, as well as aspects of the Alexander technique, may also be very useful in developing such direct, embodied forms of self-assessment (Biswas, 2012; Sarath, 2013; van der Schyff, 2015a).

Teachers should also recognize that students do not come to musical improvisation as detached and decontextualized onlookers, as "blank slates." Rather, they are already *embedded* within a milieu that has developed historically. However, as I have discussed above, the enactive perspective does not conceptualize the cognitive activity of people as simply determined by their environments—rather, we actively shape the cognitive ecologies we inhabit; mind and world stand in a circular, co-emergent relationship to each other (Varela et al., 1991). With this in mind, students and teachers should also be asked to critically examine the social, cultural and gendered worlds they participate in, as well as the musical-sonic spaces they "live through"—and to reach out to the worlds of others

[62] Developments in musical semiotics may also offer useful ways of exploring and discussing how communication develops in such contexts. Here a range of recent research has drawn on embodied-enactive cognition and dynamic systems theory in order to explain how sonic, kinaesthetic, and ecological factors contribute to the enactment of meaningful signals in improvising ensembles (Iyer, 2002, 2004; 2008; Reybrouck, 2001, 2005; Sawyer, 1996; Walton et al., 2014). Although some of this literature involves complex terminology and detailed empirical studies, it is certainly not beyond the ability of a dedicated educator to draw out and introduce the key areas of inquiry for use in collaborative assessment.

through empathy, action and imagination (Greene, 1995; Silverman, 2012). In this way, students may gain a better understanding of the world in which they find themselves. And in doing so, key aspects may be "put into play," forming material for improvisations and the enactment of new relationships.

Such processes are likely to highlight the autonomous activities of individuals in the critical assessment of the worlds they inhabit and enact. At the same time, these processes may also encourage participants to embrace the collaborative interactivity of the ensemble or class in creatively exploring such materials in improvised contexts. At advanced levels, this will involve: (i) developing highly nuanced understandings of, and the ability to deconstruct, a wide range of existing musical practices, styles and techniques; (ii) advancing deeper understandings of the relational nature of sound,[63] movement, and space (Ihde, 1974); (iii) developing ways of musicking that are unique to the individual and group; and (iv) gaining the ability to reflect and (collaboratively) self-assess across multiple timescales (e.g., reflecting *in* action and reflecting *on* action; Schön, 1991)

With all of this in mind, a 4E framework for individual and collaborative forms of self-assessment asks students and teachers to consider questions such as:

- **Embodied:** What new instrumental challenges have emerged and what new body-instrument relationships and understandings have developed in the process of meeting them?
- **Embedded:** How have our musical activities explored and developed our understandings of the broader physical, sonic, historical, social, cultural, and gendered world(s) we live through as individuals and social groups? What roles does the socio-cultural environment play in shaping the ways we improvise?
- **Enactive:** What new meanings have we opened up through our music making? What new relationships have emerged? And how have they transformed the ways we engage with the world musically, sonically, socially, emotionally, and so on?

[63] Here the introduction of sound studies into the music curriculum becomes important (Sterne, 2012). R.M. Schafer's (1986; 1994) writings on music education and soundscape studies offer an excellent starting place.

- **Extended:** In what ways have my creative possibilities been enhanced or made possible through my interactions with co-performers, technologies, and other non-organic ecological factors? And how have I helped to facilitate the creative development of others?

As I have suggested, the 4E's may be juxtaposed with the four-part criteria that Sawyer (2007) lays out (see above) in relation to learning science. In this way, a 4E approach may offer ways for students and teachers to collectively assess to what degree their activities have met such potentials, and to what new levels of understanding and activity have emerged as possible goals. And of course, these categories may also provide a starting place for more explicitly critical forms of assessment—i.e., with regard to recognizing what kinds of behaviours and conditions might hinder creative development.

Again, such understandings can only be properly developed, discussed, and assessed through the kinds of active, adaptive, and integrative praxis associated with a critically engaged approach to improvisation—i.e., where practice and self-assessment become part of the same ongoing process. Indeed, the focus here is not simply on the products of training, but rather on assessing the process of creative development as it happens in an ongoing way (Dewey, 1997; Tarasti, 1993). And so, for example, while students might indeed be asked to self-assess a performance they have given according to various criteria, much of these criteria will have emerged through the reflective-creative processes of the students themselves. Here, assessment is framed less by externally driven standards, and more by issues relevant to the development of the class (ensemble) itself as an autonomous self-making system in its own right.[64]

The kinds of collaborative reflective processes a 4E improvisation pedagogy requires may also draw on (and help develop) the distinction between so-called "authentic" and

[64] By now it should also be apparent that from a 4E perspective distinctions between reflection and self-assessment necessarily become less clearly defined. Reflection is sometimes associated with the goal of "knowing," while the goal of self-assessment is "growing." The former involves "a personal process that can deepen one's understanding of self and can lead to significant discoveries or insight," while the latter is often understood as "a process that involves establishing strengths, improvements, and insights based on predetermined performance criteria" (see Desjarlais & Smith, 2010, p. 3). However, because the conception of improvisation discussed here goes beyond such "predetermined criteria," a 4E understanding of what self-assessment entails will necessarily involve an overlapping or reciprocal relationship with critical reflection and with the creative *praxis* of the larger musical ecology.

"inauthentic" forms of assessment—i.e., the critical and reflective (self)assessment that is concerned with the creative, contextual and process-based learning, as opposed to the depersonalized, isolationist and technically-driven approaches associated with objectivist or standardized forms of assessment (see Weil, 2001). Importantly, a range of possibilities already exist for such "authentic" or "formative" types of assessment, including, for example, "folio-based" approaches. Here reflections and ideas, teacher-student and student-student interviews, descriptions and critiques of class activities, practice diaries, listening-viewing logs, performance reviews, the results of collaborative and self-directed research projects, and more may be collected and used to further enhance class dialogue (Elliott & Silverman, 2015; Gardner, 1991). And indeed, such materials could be organized and discussed according to the 4E framework presented above. Moreover, thanks to developments in digital technology such "process-folios" may also be easily supplemented with video and audio recordings.[65] Likewise, a range of previously difficult to acquire documentary films and performance footage of improvising musicians are now readily available online. These offer a range of real-world examples for students to consider. In this way, the process-folio itself may be understood as a kind of *bricolage* (Kincheloe & Berry, 2004)—a creative and critical pedagogical project where a range of material and ideas are collected, organized, and expressed in various (and often-unpredictable) ways that contribute to the development of the student and the class or ensemble.

## Conclusion

While the enactive approach to improvisation explained above does not offer a fixed method of assessment, it nevertheless resonates with a rich pool of ideas and research that informs possibilities for integrating creative practice, reflection, and self-assessment. Indeed, this orientation aligns most closely with ongoing research and theory associated with critical, "post-formal," and *praxial* approaches to education (Bowman, 2004; Kincheloe, Steinberg & Villaverde, 1999; Kincheloe, 2003; Elliott & Silverman, 2015). It also encourages teachers and students to "reach out" to experienced improvisers, and to improvising communities and cultures, in order to explore living, real-world models

[65] For an interesting approach to the analysis of recordings of free improvisation see Canonne & Garnier, 2012.

(Bailey, 1992; Berliner, 1994; Borgo, 2007; Lewis, 2009; Monson, 1996).[66] In the process, a wide range of possibilities may be discovered that resonate closely with the many concerns and insights discussed above.

Consider, for example, the free jazz and free improvisation movements that developed in the 1960's in America and Europe respectively. Both produced a range of unique ensembles, performers and creative communities; and both were in many ways politically charged. Free jazz strove to spiritually transform an oppressive and racist society in the U.S. (Monson, 2007). And among other things, free improvisation took on the bourgeois capitalist-consumerist culture that characterized post-war European society (Borgo, 2005; Lewis, 2004, 2007). Many of the artists involved in both movements developed highly original approaches to their instruments, as well as ensembles that expanded understandings of what "music" can entail. Today, a range of texts, recordings and films document these artists. These will be useful to students and educators in reflecting on their own relationships to music and culture (Bailey, 1992; Corbett, 2016; Lewis, 2009; Litweiler, 1990; Toop, 2016; Watson, 2013; Whitehead, 2000; Stevens, 1984).

More excellent examples can be found in Chicago's Association for the Advancement of Creative Musicians (AACM), and St. Louis' Black Artists Group (BAG) (see Lewis, 2009). These organizations emerged to support important but highly marginalized communities of African American musicians, and to encourage creative musical practices that reflect the lived experiences and creative possibilities of Black culture more generally. Importantly, in these communities the idea of culture, and the individual identities that constitute it, is not seen as pre-given; and the kinds of musical activities that these artists engage in are not strictly prescribed. Rather, culture and identity involve fluid, improvised processes where various musical, mythological, historical, social, and sonic relationships are deconstructed and reconstructed. Individuals are encouraged to develop their own unique approaches to music making, which draw on and simultaneously transform and inform both the ensembles and the broader cultures they participate in.

The unique ensembles and "compositions" that emerge from such environments

[66] Readers are especially encouraged to explore the four-part documentary series, *On The Edge*, hosted by improvising guitarist Derek Bailey and presented by Channel 4 (UK).

reflect these processes of improvising culture and identity—they are largely determined by the unique improvising abilities of the individuals who constitute and perform them. For example, readers may wish to explore the Art Ensemble of Chicago (the AACM's "flagship" ensemble) and the ways they draw on, integrate and adapt "Great Black Music, Ancient to Future," as well as their own individual approaches to sound making and musical form. Of course, the idea here is not simply to reproduce AEC's music, but to gain a better perspective on what improvising *praxis* entails in living contexts so that students and teachers may begin developing their own musical worlds.

Likewise, the music of the so-called "downtown" scene that emerged in New York City in in the 1980's provides another important model. These musicians explored a range of new approaches that often involve improvising with genre itself. Here, otherwise disparate types of music are juxtaposed, and musicians from diverse backgrounds are thrown into performances together. One important development of this community involves the "game pieces" and improvised "conductions" associated with John Zorn (2004) and Butch Morris (Monga, 2012).[67]

Such communities of creative musicians offer useful models and practices for beginning to engage with improvisation (see also Stevens, 2007). Indeed, in the course of my career as an improvising musician, I have been fortunate to work with and learn from such artists, and in my teaching I have developed a number of activities and approaches informed by these experiences. For example, a "game piece" like Zorn's *Cobra* offers an excellent framework for exploring basic aspects of improvisation in pedagogical contexts. Put very simply, the game consists of a series of "prompts"—open frameworks for improvising within certain parameters that include memory, different ensemble groupings, dynamics, and so on. Importantly, it is up to the ensemble members to develop their own strategies and material for effectively engaging with such prompts, which are initiated in various ways by the ensemble itself through a system of hand gestures (Brackett, 2010). While the complete game is very complex, it can be simplified for beginning improvisers. Moreover, *Cobra* does not require specific instrumentation or knowledge of a specific style of music—all instruments and backgrounds are welcome. Most importantly, the game is

[67] Of course, there also exist a range of possibilities for exploring improvisation across a range of non-Western traditions (Nettl, 1974; Nettl & Russell, 1988).

enjoyable, and it affords a coherent but nevertheless open framework for participants to explore and discuss basic aspects of improvisation.[68]

Another activity involves a process I sometimes call "modular composition." It is inspired by the range of improvising communities discussed above, and was developed collaboratively with improvising ensembles in Europe and Vancouver, Canada. It involves getting participants to research and bring to the ensemble (among other things) forms, melodies, chord structures, rhythms, field recordings, new and old technologies, other media, sound making and new instrumental techniques, and concepts derived from their listening and reading. The material is then developed and given forms by the ensemble through an improvisational, exploratory process where it is integrated, juxtaposed, and adapted in various ways (bricolage). This can result in fixed forms, where the musicians eventually improvise within and against an overarching structure they have developed collectively; or it can involve a mobile form, where the various materials and ideas are cued and structured by the ensemble members in real time and in accordance with the flow of the music. The way such collaborative processes develop over time (i.e., through processes of experimentation, negotiation, self-assessment, and the adaptive development of techniques and embodied understandings) can lead to distinct ensemble approaches, and the enactment of strong musical identities and extended musical communities.

The wide range of concerns, ideas, and possibilities I have discussed above are intended to inspire richer and more open-ended approaches to improvisation pedagogy, curriculum, and assessment. In the end, however, it is up to educators themselves to engage in the kinds of ongoing critical reflection that will help them decide how to develop and address these issues in praxis. With this in mind, I hope that, in the years to come, a diverse range of new accounts will emerge about how improvisation may be implemented and assessed in pedagogical contexts. Moreover, it will be very interesting to see how such accounts align with the growing body of theory and research that explores the musical mind as an embodied, enactive, or 4E phenomenon (Borgo, 2005; Krueger, 2011a&b, 2014; Matyja & Schiavio, 2013; Reybrouck, 2001, 2005, 2006; Schiavio et al., 2016; Silverman, 2012; van der Schyff, 2015a&b). Lastly, although free improvisation remains a

[68] Elsewhere (van der Schyff, 2013) I discuss a rehearsal and performance of *Cobra* in detail and briefly consider my experience developing it in an educational context.

marginalized practice, it has nevertheless spread around the globe. Today, most urban centres have an improvised music scene, where artists from diverse backgrounds collaborate and develop new approaches to music and sound making. Likewise, many contemporary communities are constituted by a range of indigenous and immigrant subcultures that engage in more traditional forms of musical improvisation. And so, if they are willing to search, educators and students may find substantial living resources of improvised music(s) in creative musical communities close to home.

# 8

# Music as a Manifestation of Life: Exploring Enactivism and the Eastern Perspective for Music Education*

## Introduction

In recent years there has been a growing interest among music psychologists and philosophers of music and music education to explore the embodied and world-making aspects of human musicality (DeNora, 2000; Bowman, 2004; Reybrouck, 2005; Krueger, 2009, 2011a,b; Elliott & Silverman, 2015). This has involved a critical decentering of Cartesian models of cognition, Enlightenment esthetics, and related Western academic assumptions of what music and music education entail (Small, 1998; Johnson, 2007). Indeed, it is increasingly recognized that affective-conative and synergistic activities such as *musicking* afford pre-rational openings to empathic, embodied and ethical ways of knowing and being when our 'inner' realities shape, and are shaped by, those of others– thus highlighting the deep continuity between movement, feeling and the 'extended' or interpenetrative nature of cognition and 'mind' (Mathews, 2008; see also Clark and Chalmers, 1998; Nakagawa, 2000; Menary, 2010; Colombetti, 2014).

This renewed interest in the deep relevance of musicality for human development and well-being is revealing music as a 'focal practice' that supports a total 'ontological'

* Please note: This paper contains passages that first appeared in an unpublished MA thesis (van der Schyff, 2013a). This material has been developed significantly in the pedagogical context of the present text.

education (Thomson, 2001; Dreyfus, 2004). This means that a music educator dedicated to developing a wide range of interdisciplinary knowledge in a critically reflective, praxis-based context may accomplish much more than getting students to develop technical fluency or to listen and perform according to pre-given standards and conventions (Elliott & Silverman, 2015). She may help students to see music not merely as a thing to be reproduced or consumed, as a product or a 'pleasure technology' (Pinker, 2009), but rather as an opening to the world and with it a range of scientific, philosophical, ecological, ethical, socio-cultural and 'self' knowledge not traditionally associated with music education in the West. Along these lines, an 'ontological 'music education may also play an important role in developing much needed forms of global ecological and 'holistic' thinking that look beyond the reductive, reifying, instrumental, and commodifying tendencies often associated with the Western perspective (Bai, 2001; Kincheloe, 2003, 2008; Giroux, 2011).

With this in mind I discuss here the relevance of what Nakagawa (2000) refers to as the 'Eastern perspective'[69] for (music) education. Despite the geographical denotation, this view is not limited to Asian philosophy and psychology. Rather it encompasses a range of thinkers, Eastern and Western, who in various ways understand mind and consciousness as fundamentally embodied and ecological phenomena; and who discuss ontological issues in the context of contingency, transformation and the interpenetration of dynamic systems. Over the past decades this perspective has become associated with the interdisciplinary research program known as enactivism,[70] which draws on Buddhist psychology as well as thinkers associated with Western cognitive science, phenomenology, and existential philosophy (Varela et al., 1991; Thompson, 2007). As I go, I develop this general perspective in the context of a life-based philosophy of music education in order to decentre the Western focus on objectivist or third person didactic approaches. To conclude, I consider possibilities of a contemplative-enactive music pedagogy for (re)connecting students and educators with their lived, embodied realities (Bai, 2003).

[69] Other thinkers have coined similar phases with the goal of developing a 'global' holistic philosophy of life that incorporates the best of Eastern and Western perspectives, as well as indigenous knowledge from around the world (see Nakagawa, 2000.

[70] For a review of enactive music cognition see Matyja & Schiavio, 2013.

## The biological origins of mind and meaning

Generally speaking, the 'Eastern perspective' may be understood in the context of a holistic 'life philosophy' (Miller, 1997; Nakagawa, 2000). As its name suggests, life philosophy embraces an 'animate' ontology (Bai, 2013) and thus a pedagogical practice based in such an approach "conceives of education as an integral part of the greater Life processes; that is, education is a manifestation of Life and at the same time a vehicle in the service of reconnecting human life with the fundamental life" (Nakagawa, 2000, p. 79). This means that an 'Eastern' approach to music education requires a radical opening up to the fundamental organic processes that afford communication and meaning-making beginning at the most primordial levels of embodied being-in-the-world.

In order to better understand what this entails we may begin by considering the work of a range of ecological and life-minded thinkers who understand cognition and 'mind' as a relational or 'enactive' process (Bateson, 1972; Varela et al., 1991; Thompson, 2007; Stewart et al., 2010). This perspective understands creative, living cognition not as a distinct disembodied category or in terms of dualistic-mechanistic Cartesian metaphors (e.g., the mind as computer). Instead, it sees mind as a relational process that is ontologically continuous with basic processes of life itself.[71] Here communication and meaning-making are explored in terms of the deep relationship between action and perception – where a meaningful world is 'brought forth' or 'enacted' from a background of understanding that develops through an ongoing history of structural coupling between organism and environment (Varela et al., 1991; O'Regan and Nöe, 2001; Nöe, 2006). Biologist Richard Lewontin (1983) explains,

> Just as there is no organism without an environment, so there is no environment without an organism. The organism and environment are not actually separately determined. The environment is not a structure imposed on living beings from outside but is in fact a creation of those beings. The environment is not an autonomous process but a reflection of the biology of the species. (p. 99)

And therefore,

[71] This view has an antecedent in Dewey's (1938/1991) principle of continuity where "rational operations grow out of organic activities without being identical with that from which they emerge" (p.26).

> [...] there is always a 'next step' for the system in its perceptually guided action […] the actions of the system are always directed toward situations that have yet to become actual. Thus cognition as embodied action both poses the problems and specifies those paths that must be tread or laid down for their solution. (Varela et al., 1991, p. 205)

Put simply, this conception of cognition allows us to consider organism and environment not as a pre-given duality, but rather as dependently co-arising through the activity of the organism as it brings forth a world. By this light, living cognition is necessarily contextually adaptive and creative—like a "path that exists only as it is laid down in walking" (Varela et al., 1991, p. 205). Thus while the enactive approach asserts the inseparability of the organism and environment, it also highlights the organism's autonomy—or its ability to enact a world in ways that are not completely driven from the side of the environment. This means that the organism-environment relationship is necessarily asymmetrical; that living cognition is based, first and foremost, in the affectively motivated (valenced) sensory-motor activity of organic systems that exhibit 'operational closure' (Varela, 1979; Di Paolo, 2005, 2009; Thompson, 2007; Colombetti, 2014).

In order to better understand what this entails, one might consider how the input-output functions of a computer depend on externally imposed designs (hardware and software), information processing rules (system language), and interpretations of outputs; it is not self-making and thus cannot function meaningfully in an autonomous fashion; its operations are dependent on, and must remain open to, the external (human) forces that impose meaning, functionality and form. In living systems, however, the meaning of this or that interaction is "not prescribed from outside but is the result of the organization and history of the system itself" (Varela et al., 1991, p. 157). Here it is important to recognize that while the meaningful world enacted by the organism-environment couplings of living systems are 'operationally closed' (intrinsically meaningful), the relationship between organism and environment must remain dynamically open so that the 'information' developed by the system maintains its contextual relevance (Bateson, 1972). As Thompson (2007) puts it,

> […] information, dynamically conceived, is the making of a difference that makes a difference for some-body somewhere. Information here is understood in the sense of informare, to form within. An autonomous system becomes informed by virtue of the meaning formation in which it participates, and this meaning formation depends on the way its endogenous dynamics specifies things that make a difference to it. (p. 57)

By this light, information does not first consist of abstract symbols, nor is it simply 'out there' to be anonymously processed. Rather it is ontogenic—it grows from the relevant relationships and valences ('primordial dynamism'; Thompson, 2007) that emerge as a dynamic organism-environment system constitutes a life-world (Oyama, 2000). Thus cognition and meaning-making are not first understood as rule-based 'problem solving' on the basis of optimizing correspondence with a pre-given world, but rather as an ongoing creative process through which a viable or 'sufficing' world is brought forth (Varela et al., 1991; Di Paolo et al., 2010; see also Merleau-Ponty, 2002; Heidegger, 2008).

Put simply, this mode of meaning-making goes deeper than fact-based knowledge, technical knowledge or knowing 'this or that.' Rather, it is based in the adaptive and embodied learning processes that enable, "knowing how to negotiate our way through a world that is not fixed and pre-given but that is continually shaped by the types of actions in which we engage" (Varela et al., 1991, p. 144). Thus, given the variety of transforming environments in which human beings and other organisms live and interact, the enactive approach embraces the consistencies of experience, but also, crucially, the differences. As Bateson (1972, 1979/1980) points out, it is this ability to perceive and communicate the "news of difference" that binds the living world together.[72] And indeed, it is just this conative, affective, and communal reaching out to (and mutual transformation through) difference that characterizes the asymmetry of the dynamic organism-environment relationship I began to discuss above—whereby a basic metabolic perspective of value, a point of view, or indeed, a 'self' may arise, develop and flourish (Jonas, 1966; Di Paolo, 2005; Thompson, 2007; Barbaras, 2010).[73]

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[72] Critical pedagogue Kincheloe (2003) echoes this insight when he writes, "In both its corporeal and cognitive expressions the autopoietic life process reaches out for difference, for novelty, to embrace its next ontological level."

[73] However, once such asymmetry (i.e., the permeable boundary and metabolic processes that occur inside it) can no longer be supported the organism-environment relationship, like any other complex dynamic system, dissolves into non-differentiation. This may come about through a disruption in the ability of the

As Maturana and Varela (1980, 1992) demonstrate, such autopoietic (self-making) histories of dynamic organism-environment couplings may be observed in even the simplest single celled organisms. While such creatures clearly do not possess the neural complexity to support abstract representations, they nevertheless move purposefully, communicate, develop viable relationships, and thus maintain a life-world in the transforming environments they inhabit. Although it would certainly be premature to understand such creatures as conscious, these basic forms of life nevertheless exhibit the origins of cognition and mind as valenced, affective, perceptually guided action (Thompson, 2007; Colombetti, 2014).

Here we may also consider how such simple autopoietic organisms may reach out to each other and thus function collectively as interpenetrative dynamic environments—resulting in more complex systems such as multi-celled organisms; nervous, respiratory, and immune systems; brains; social organizations; and the emergence of 'reason,' language, culture, and consciousness (Varela et al., 1991; Oyama, 2000; see also Johnson, 2007; Froese & Di Paolo, 2011). It follows, then, that for highly complex organisms such as human beings autopoiesis entails a lived developmental history including social or bio-cultural embodiment within a domain of "consensual action and cultural history" (Varela et al., 1991, p. 149; see also Hutchins, 2010; Cuffari et al., 2014).[74] With this in mind, we may begin to consider musicality as a manifestation of such inter(en)active life processes. That is, as a fundamental participatory (De Jaegher and Di Paolo, 2007) sense-making capacity of human beings; one of the principal ways we reach out to, and orient ourselves relationally in the world as dynamic, self-making creatures who span physical, biological, emotional, cultural, and rational modes of being.

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organism-environment coupling to engage in the dynamic, adaptive behavior necessary to maintain a viable life-world, which finally leads to sickness and death. As Di Paolo and Thompson (2014) write, "Basic cognition, on this view, is not a matter of representing states of affairs but rather of establishing relevance through the need to maintain an identity that is constantly facing the possibility of disintegration. From this perspective, the body is not just the means but also an end of being a cognitive system. To put the point another way, basic cognition is more a matter of adaptive self-regulation in precarious conditions than abstract problem solving" (p.73).

[74] As Johnson (1987) writes, "meaning includes patterns of embodied experience and pre-conceptual structures of our sensibility (i.e., our mode of perception, or orienting ourselves and of interacting with other objects, events, or persons). These embodied patterns do not remain private or peculiar to the person who experiences them. Our community helps us interpret and codify many of our felt patterns. They become shared cultural modes of experience and help to determine the nature of our meaningful, coherent understanding of our 'world"' (p. 14).

## From reification to music-in-(en)action

The enactive perspective has profound implications for how we might begin to (re)conceive of music and music education as a manifestation of life. As I have considered, this is an ontologically continuous and radically non-reductive approach to cognition that embraces complexity, difference, and the feeling-emotional body. It highlights the dynamic, creative, and interpenetrative nature of living meaning-making as it develops through direct embodied experience (Cuffari et al., 2014). As such, enactivism offers a radical shift in perspective from the disembodied, depersonalized, and rather prescriptive conceptions of cognition, knowledge and esthetics we in the West have inherited from Enlightenment thinking (Johnson, 2007). Indeed, it asks us to consider how many of our common epistemological and ontological assumptions may in fact be based in sedimented modes of (dualist) thinking and perceiving that associate 'meaning' and cognition solely with language and abstract representation. As I will discuss, such assumptions are problematic when they lead to reductive and reified ways of knowing the world, which often come to prescribe not only how we talk and think about esthetics and science, but also how we think about emotion, nature, or any number of dynamic and transformative phenomena and states of being that we attempt to pin-down with words and categories like love, anger, happiness; or, indeed, education, mind and self (Bai, 2001, 2003).

> Reification is seeing the world through conceptual categories which, if not carefully seen through, gives the seer the illusion that reality inherently comes in these categories. Categories are, by nature, discontinuous, dichotomous, linear, and most often, dualistic. Hence in seeing reality through categories, we risk the ability to see the intrinsic connectedness behind all phenomena and phenomenal beings (an ability that ecological consciousness demands). In particular, we risk the ability to see the co-arising of the perceiver and the perceived, the subject and the object (Bai, 2003, p. 8).

Reified notions of music emerge from and reinforce engrained cultural ideologies—such as those surrounding Western classical music's putative autonomy and superiority, where its universal relevance, meaning and legitimacy is thought to be independent of those who experience and perform it (Small, 1998; Bohlman, 1999; Clarke, 2012). This perspective imposes a reductive, linear, and depersonalized conception of musical communication:

there is a musical object that possesses certain objective formal and/or emotional qualities, a performer who interprets and transmits them, and an anonymous subject who perceives them; 'a view from nowhere and nobody' (Nagel, 1989; Dibben, 2012). This view places whatever music expresses 'in the music' a priori; it assumes music to be an objective 'thing' rather than an interactive, relational, multi-modal activity; and it creates a rather fixed boundary between some notion of what the music is on one hand, and the environments in which it is created and experienced on the other. This conception is especially prevalent in Western academic music education, where the focus remains on producing faithful reproductions of 'works' (Elliott & Silverman, 2015); as well as on prescriptive, codified, and hierarchical approaches to analysis and ensemble performance.

Put simply, this perspective has tended to promote an anonymous status for the musical participant; it ignores the necessity of personal agency and embodiment for esthetic experience (Benson, 2001; Bowman, 2004; Dewey, 2005; Johnson, 2007); and it downplays the importance of praxis and personal histories for the development of musical meanings.[75] As such it is clearly at odds with the enactive approach to cognition when it ignores the interactive, adaptive, and transformative possibilities of the musical organism. And indeed, from this reifying and decontextualized perspective it is not difficult to see why music is often understood to be biologically meaningless – a cultural product or pleasure technology (Pinker, 2009) that plays with our emotional faculties in ways that are not personally relevant (Koelsch, 2013; c.f. Krueger, 2013; Scherer & Coutinho, 2013). Lines (2005) sums up the influence of this perspective on music education well and is worth quoting at length,

> The nihilistic state or condition that maintains a 'valueless' music (music disconnected from our changing life events) is, however, present in the day to day business of music education. Musical nihilism […] perpetuate[s] a culture of musical impotence, where only a few survive the difficult and detached ride to musical 'perfection.' In addition to the effects of such culturally selective traditions, musical nihilism is more generally

[75] This point of view also shows itself in the broader consumer culture where musical conventions, the score (in both the physical and the abstract sense) and, more recently, the recorded product, become what is signified by the word 'music.' Along these lines, a number of critical theorists have pointed out how this attitude is in line with the continuing process of reification associated with the development of mechanical reproduction and commodity fetishism in Western capitalist society (Lukács, 1971; Adorno, 1973; Adorno & Horkheimer, 2002; Benjamin, 2008).

> found in the limited role music plays in the lives of busy urban-dwelling people. To many, the musical sphere is now an area that is forgotten, unused, and neglected. Education in music has come to be seen and regarded by many as an inactive sphere. The conceptual frames–the ways of thinking that support musical inactivity–revolve around several other (not unrelated) key discourses including the cult of the elite musician, music as a commodity-end and the widespread neglect of non-verbal or non-written communication in education. (Lines, 2005)

This orientation has received a good deal of criticism in recent decades, most notably perhaps from music educator, Small (1998), and sociologist, DeNora (2000). DeNora (2000) sees musical meaning as a process that plays out in the evolving ecological, socio-cultural and bio-cognitive contexts of lived experience–music as action, as a therapeutic "force for bio-cognitive organization," and as part of an esthetic environment through which cultural and individual identities may be constructed and deconstructed (e.g., see Willis, 1978). Small (1998) argues that music is best understood as a verb rather than a noun; his theory of musicking considers human musicality as a multi-faceted, relational activity.[76] This view resonates with the fact that most musical activity around the world is dynamically enmeshed with the activities of life—with work, play, social life, religion, ritual, politics, healing and so on (Blacking, 1976, 1995). In such contexts, music often begins very early in life and is associated with, and often inextricable from, other modes of expressive behavior like dance and storytelling (Green, 2012; Campbell & Wiggins, 2013). Here, music retains its status as a transformative communal experience-activity and is meaningful in terms of its relationship to the events and contexts in which it functions (Green, 2012).

Along these lines, a much deeper and more complex conception of what musicality means is emerging in Western scholarship—one that embraces its deep bio-social, ecological and transformative significance for human wellbeing beginning at evolutionary and ontogenetic levels (Cross, 2001, 2010, 2012; Mithen, 2005; van der Schyff, 2013a,b; Croom, 2014). Such research explores how, beginning in infancy, meaningful musical experiences emerge from and support our innate proclivity to seek out and enact

[76] Small (1998) writes, "The fundamental nature and meaning of music lies not in objects, not in musical works at all, but in action, in what people say and do. […] To music is to take part, in any capacity in a musical performance, whether by performing, by listening, by rehearsing or practicing, by providing material for the performance (what is called composing), or by dancing" (p.9).

meaningful worlds through adaptive embodied kinesthetic interactions with the physical and social-cultural environments (Johnson, 2007; Barbaras, 2010; Gapenne, 2010; Sheets-Johnstone, 2010; Krueger, 2013). For example, musicality is increasingly understood as a form of 'joint sense-making' between infant and caregiver, where it is thought to play a major role in the development of empathy and other forms of social cognition (e.g., 'participatory' sense-making; De Jaegher & Di Paolo, 2007). For many researchers, this demonstrates the primordial necessity of musicality for embodied and pre-linguistic emotional forms of understanding and communication (Trehub & Nakata, 2001; Parncutt, 2009)—including what Trevarthen (2002) terms the "primary intersubjectivity" that is so necessary for developing social bonds. Such insights resonate closely with the enactive approach to development and cognition; they draw standard dualistic, idealist and objectivist assumptions about the nature and meaning of musical experience in to question; and they place a greater emphasis on understanding how people become involved with music in terms of enacting individual and socio-cultural economies (Green, 2001, 2008)—not as passive listeners, reproducers or 'consumers' but rather as autonomous, active and collaborative participants in the construction of meaning (O'Neill & Green, 2004; Reybrouck, 2005; De Jaegher & Di Paolo, 2007).

## Reconciling the 'double articulation'

The enactive perspective also allows us to decentre the Western focus on language, symbol and representation as the fundamental arbiters of communication and meaning. Indeed, because language and music are both auditory modes of communication—and because the great works of Western Classical music appear (post facto) to be constructed largely according to the 'generative' or 'grammatical' rules of tonal harmony (Lerdahl & Jackendoff, 1996)—a major focus has been placed on the relationship between music and language as cognitive systems (Patel, 2008; Rebuschat et al., 2012).[77] This dominant language-centered conception of cognition and meaning has even lead some philosophers to assume that wordless music, as an 'object' of perception, cannot properly be understood

[77] Along these lines, some psychologists argue that human musicality is biologically meaningless; that it is dependent, or 'parasitic' on, cognitive information processing mechanisms that evolved to support language (e.g., syntax, auditory scene analysis and so on; Sperber, 1996; Pinker, 2009; c.f. van der Schyff, 2013a).

as meaningful because it contains no semantic content (Kivy, 1990, 2002). Nevertheless, by this view the locus of musical expressivity is still understood to be found in the 'thing,' the work itself' (Small, 1998; Bohlman, 1999; Clarke, 2012); and the esthetic forms of cognition associated with music are often thought to be the product of detached rationalistic (i.e., Kantian) appraisal processes (cf. Johnson, 2007; Scherer & Coutinho, 2013). In brief, such assumptions demonstrate the degree to which seemingly disembodied forms of propositional, conceptual or 'correspondence-based' meaning-making associated with language, symbol and representation have become privileged in the modern Western psyche[78] —thus reinforcing the reified and depersonalized approaches to music I began to critique in the last section.

A useful analysis of this orientation is offered by Eastern thinkers, such as Maruyama (see Nakagawa, 2000), who describe contemporary human existence in terms of a problematic 'double articulation.'[79] Here the 'primary articulation' may be understood in terms of the fundamental autopoietic life processes I discussed above. That is, the dynamic 'functional circle' by which an organism enacts a bio-cognitive milieu (Umwelt) by means of its receptor and effector systems (von Uexküll, 1973; see also Varela et al., 1991; Reybrouck, 2001, 2005). This biological world is, of course, as real for humans as it is for any other life form. However, humans may also be understood to inhabit a 'symbolic world' (the 'secondary articulation') that "articulates reality in accordance with its own categories" and that over time comes to be seemingly "independent of biological dispositions. In this way, human beings dwell in apparently "double biological and symbolic worlds" (Nakagawa, 2000, p. 38).[80] This means that although the biological-somatic articulation is primordial, it nevertheless becomes overshadowed by the dominance of the secondary or linguistic-symbolic articulation—i.e., while "the 'secondary articulation' is genetically second" it comes to be "factually and existentially

[78] As Johnson (2007, p. 216) writes, "On one side of the dualistic gap we have concepts, thought, reason and knowledge. On the other side we have sensations, feelings, emotions, and imagination. What has been so fateful about this dualism for contemporary philosophy is the way it *aligns meaning with the cognitive and thus dismisses quality, feeling, and emotion from any account of meaning."*

[79] A similar insight is shared by Cassirer (1944): "Man has, as it were, discovered a new method of adapting himself to his environment. Between the receptor system and the effector system… we find in man a third link which we may describe as the *symbolic* system. This new acquisition transforms the whole of human life.

[80] Enactivists make similar distinctions between 'first' and 'second' order sense-making (Froese, 2012).

'primary"' in human consciousness (Nakagawa, 2000). Because of this the world often presents itself to us as a collection of seemingly fixed (i.e., reified) independent categories and objective things, pre-given social structures and institutionalized ways of thinking and interacting (Bai, 2013).

According to Johnson (2007), this is exacerbated by the fact that in non-reflective day-to-day life, the body (our 'biological selves') tends to "hide out." That is, how the body tends to retreat to the background as our intentionality is directed 'out into the world'—while nevertheless tacitly providing the very means and context by which all our perceptions and engagements take place (see also Polyani, 1969; Gallagher, 2005). Such insights have prompted a range of interdisciplinary research that is developing a much more nuanced and embodied view of what communication and meaning-making (musical or otherwise) entails (Searle, 1967; Streek, 1980; Runeson & Frykholm, 1983; Davidson, 2005, 2012; Johnson, 2007; DeNora, 2011). Above all, this work highlights the fact that meaning is not communicated solely through linguistic abstractions, and that action, feeling and lived embodied histories involving participatory forms of sense-making are central to the construction of meaning in creative living communication (Sheets-Johnstone, 1999, 2010; De Jaegher and Di Paolo, 2007; Jensen & Cuffari, 2014).

In line with this, one of the goals of the enactive program is to heal the ontological-epistemological gap of the 'double articulation' by demonstrating how so-called 'higher order' cognitive capacities (e.g., language) may be explained in a continuous fashion through processes such as coupling, autopoiesis, movement and embodied action-as-perception (Stewart, 2010; Froese, 2012). Neurological support for this project comes from the discovery of so-called mirror neurons, which appear to activate both in the brains of those performing actions and in those of onlookers (Gallese & Goldman, 1998; Rizzolatti et al., 2002; see also Tomasello, 1999, 2008). This reinforces the idea of a primordial 'corporeal intentionality' where cognition originates in interactive adaptive behavior that involves affectively motivated movement, corporeal articulations, and embodied-empathic states of being (for a brief overview see Thompson, 2007, p. 393–395). Moreover, this research also suggests that while cognition may emerge first through 'manifest motor activity' (i.e., actual physical movement and expressions; perceptually guided action),

embodied-affective experiences also inform our thinking in 'covered' ways.[81] As Johnson (2007) explains, "The core idea is that our experience of meaning is based, first, on sensorimotor experience, our feelings, and our visceral connections to the world; and, second, on various imaginative capacities for using sensorimotor processes to understand abstract concepts" (p.12) . Thus even in physically inactive and reflective states, our multi-sensory and affectively motivated embodied existence appears to ground how we attribute valences, goals, and intentionality within the social-esthetic environments we inhabit; it underpins our ability to engage in the ongoing process of enacting the meaningful relationships with the people, activities, ideas and things that constitute the complex fabric of our lives as social animals.

## Embodiment, musical sense-making, and the 'metaphorical' mind

Recent studies suggest that mirror-neurons may be spread throughout the brain, implying that they function inter-modally (Leman, 2008; Ramachandran, 2011). This may be considered in the context of further observations, which show that brain areas usually associated with specific bio-cognitive functions may actually engage in cross activation (extreme instances of which result in experiences of synaesthesia; see Ramachandran, 2011).[82] This has led a number of researchers (e.g., Lakoff & Johnson, 2003; Johnson, 2007; Ramachandran, 2011) to describe the way we develop understandings of the world in terms of 'metaphorical' processes—a notion that goes deeper than the common linguistic-conceptual usage of the term in order to describe the embodied-ecological and often pre-reflective (non-linguistic) processes that allow us to enact meaningful esthetic experiences through the development of cross-modal relations (Eitan & Granot, 2006; Eitan & Timmers, 2010; see also Croom, 2012). Such insights are further supported by a

[81] For example, Molnar-Szakacs and Overy (2006; Molnar-Szakacs et al., 2011) have developed an action based perspective on musical communication they refer to as the shared affective motion experience model (SAME). Put very simply, this model offers a way of understanding how the proposed mirror neuron system in humans allows music to access emotional faculties: depending on the listener, movement is 'extracted' at different levels of the motor system; and emotional intentions are thought to be inferred directly from this motor-activity, whether actual or simulated.

[82] This process does not involve the neat sharing of resources via the inputs and outputs of 'cognitivist' computational modules, but rather a more plastic process whereby neural 'webs' develop in complex interpenetrating ways that allow for deep and sometimes highly ideographic relationships to form between seemingly disparate areas of experience (e.g., color and number, sound and texture; see Ramachandran (2011).

range of research in neuroscience that has demonstrated how cognitive-esthetic potentials depend on the basic bodily systems that allow us to maintain a state of well-being and that constitute the most fundamental ways we become aware of and involved with the world—i.e., metabolism, basic reflexes, the immune system, pain and pleasure responses, basic drives, emotions, and feelings (Di Paolo, 2005; Thompson, 2007; Barbaras, 2010; see also Damasio, 1994, 1999, 2003; LeDoux, 2002). Meaning-making is thus increasingly understood to be based in such complex interactive soma-sensory processes where body and brain, world and mind, form an integrated evolving system. That music deeply affects such processes has been well documented in clinical literature and is, of course, evident in everyday experience (Bunt, 1994; DeNora, 2000; Berger & Turow, 2011; van der Schyff, 2013b; Croom, 2014).

All of this highlights the apparent autonomy of our sensory and metabolic systems while at the same time embracing how they develop co-dependently—that is, how experience and meaning arises relationally (this resonates with the Buddhist conception of the aggregate mind I will discuss shortly). As Johnson (2007) points out, this upsets the rationalizing Enlightenment view that associates esthetics and meaning solely with 'detached' forms of 'higher' representational or appraisal-based cognition. Rather, from the enactive perspective, our esthetic capacities emerge early in life as the primary way we engage meaningfully with the world. Here, Johnson (2007) draws on Stern's (1985) notion of 'vitality affect contours'—a concept that employs embodied-kinetic terms (surging, fleeting, fading away, and so on) to describe how as infants we strive to create a secure, coherent and meaningful existence through primordial cross-modal esthetic processes (see also van der Schyff, 2013b). Such processes, Johnson (2007) suggests, are based on the developmental coupling of the organism and the environment through action; they allow us to recognize and create 'metaphorical' relationships between cross-modal perceptions, affective-emotional responses and feelings as we reach out to the world and thus develop and move (and are moved) through time and space. As such, he argues that this primordial embodied-esthetic capacity is the origin of meaning-making and 'mind' itself, and therefore grounds all rational thinking and 'higher' cognition. Importantly, Johnson (2007) claims that these primordial esthetic ways of meaning-making continue to shape the contours of our experience—and how we meaningfully orient ourselves in the world—

even as we grow-up and engage in more abstract, symbolic, categorical or propositional ways of thinking (see also Sheets-Johnstone, 2010; and Nunes, 2010).

In brief, Johnson (2007) argues that traditional 'cognitivist' assumptions have led to distorted and reduced understandings of both linguistic and musical communication; and he calls for an approach that allows us to discuss music first in terms of the actual experiences it affords. These, he argues, are grounded in the basic logics of space, time and movement that, via the cross-modal, metaphorical and embodied nature of human cognition, give rise to the fundamental ways we get involved with music within the physical, social, and cultural ecologies we inhabit. Thus, as Johnson (2007) suggests, we would do better to describe musical experience first in embodied-ecological terms such as 'moving music,' 'moving times,' 'musical landscape,' and 'music as moving force'; or image schemas that describe paths of motion (e.g., source-path-goal; Johnson, 1987; Lakoff & Johnson, 2003; see also Croom, 2012).

From an enactive perspective, then, music is not, first and foremost, an 'object' of experience—a 'thing' or 'work' whose significance is necessarily pre-determined. Nor are musical experiences best understood as fundamentally representational, rule-based or abstract-symbolic phenomena. Rather, they are first sensed as patterns of feeling, emotion and movement; they are experienced directly; and their meanings are enacted in various ways, both shared and personal, by the people, communities and cultures involved (Johnson, 1987; Dewey, 2005). Thus, as Thompson (2007) writes, music "has a subjective character that makes it immediately manifest, without observation or inference, as one's own experience. In this way we experience our listening implicitly, without it becoming an object of awareness" (p.326). This insight articulates the need to move beyond the dualistic and objectivist assumptions implicit in many current approaches and embrace a developmental and phenomenological perspective—one that looks beyond mind-world, subject-object dichotomies to explore how the complex, transforming, living, first-person experience of music emerges from its ecologically situated and (inter)subjective nature, and not first from some kind of "object consciousness" (Thompson, 2007, p. 326). Indeed, from this perspective we may better understand how musicking affords the possibility of (re)engaging with the world directly—from the perspective of the somatic-biological 'primary articulation' of fundamental life—and thus help to reveal human cognition as an

ontologically continuous bio-cultural continuum, whereby meanings developed at the level of symbolic or 'secondary articulation' no longer retain a fixed or decontextualized status, but may be seen as continuous with primary forms.

There are numerous musical examples that demonstrate how this is so. However, for the sake of brevity, I ask the reader to consider only one of them—namely, Jimi Hendrix's ground breaking performance of the 'Star Spangled Banner' at Woodstock (see also Clarke, 2005; DeNora, 2011). This performance radically reframes a cultural icon by placing it in the context of a sonic enactment that expresses the brutality of the Vietnam war and the hypocrisy of the hegemonic American foreign policy that supported it. Here Hendrix creates a violent (and ironic) soundscape where the symbol of patriotism incarnate in the Anthem is deconstructed through its interpenetration with chaotic noise—out of which arise sonic episodes that evoke gunfire, falling bombs, and human screaming. What is so remarkable about this performance is not only how Hendrix enacts new understandings of what musical performance and guitar playing entail, but also how his return to the primal cross-modal ('metaphorical') origins of music in sound, affectivity, movement, space and empathy allows the evocative 'musical' episodes to be experienced as more than simply symbolic. Rather they may be witnessed as transformative phenomena that are lived through (Thompson, 2007)—visceral evocations for critical, emotional, and compassionate imagining that emerge from and simultaneously 'inform' and transform the interpenetrative system of performer, listener and the (dissenting) socio-cultural ecology being enacted. Indeed, this wonderful example goes well beyond musical 'communication as correspondence' and reveals the meaning of music as a deeply communal activity (Krishnamurti, 1970). It also suggests possibilities for new forms of multi-modal (e.g., Kress, 2010) and critically embodied musical analysis (e.g., phenomenological-contemplative) that may have profound pedagogical implications.

## Cosmic thinking and the expanding musical mind

The enactive position I have outlined above sees musicality as deeply continuous with the primordial embodied-esthetic forms of sense-making that afford a flourishing autopoietic existence. As I have argued, musical experiences entail direct kinds of involvement and understandings that are not always categorical, fixed, or 'self' focussed; musical

'information' and knowledge is distributed between embodied minds and environments (Sutton, 2006), and emerges via the interpenetration of manifold biological, social, and cultural processes. Thus our musicality affords the possibility of engaging in embodied-ecological forms of knowing that representational modes of consciousness may not be able to afford. And as I began to discuss at the end of the last section, reconnecting with this 'primary articulation' as artist-educators may also help us to critically express and examine cultural-political constructions and loosen sedimented ways of thinking beginning at the most primordial levels of sense-making.

For students in an otherwise language and image driven society exploring such possibilities is, of course, extremely valuable. Indeed, because of its deep bio-cultural relevance music has the potential to help us reengage with what Huxley refers to as "first order psychophysical experience" (Huxley, 1965, p. 37). As Bowman (2004) points out, it is precisely music's ability to make us more aware of the "co-origination of body, mind and culture" that makes is so valuable in education. Unfortunately, the 'non-verbal humanities' that are essential for a truly comprehensive liberal education are often not given the attention they deserve in the modern technology driven society (Huxley, 1965). Early childhood music education in the West does tend to encourage such embodied exploration through sound making, improvisation, empathic social enactments, and by maintaining the deep connection between music, dance, song, and storytelling. However, when music student's move on to formal music education at secondary and post-secondary levels they often risk losing this primordial connection to why and how they became involved with music in the first place. The focus shifts to 'training,' conformity, authenticity, competition and performing 'correctly.' In this way they become 'conditioned' by the Western academic model of music making that, as I have discussed, tends to see music as a 'work' to be (re)produced or achieved through technical means (Elliott & Silverman, 2015). Far less attention, if any, is given to creativity, embodiment, unique shared and individual experiences, and to understanding what music means for self and society.[83]

[83] Lines (2005) writes, "The problem with technically driven conceptions of music is that they fail to adequately attend to the changing and transient character of music events. Rather, the technicism of teaching methods that reinforce reductive conceptions of music obscures music's relationship to humankind and the qualities of musical experiences that engage the character of that relationship."

However, as Lines (2005) reminds us, "humans, as music experiencing beings, have the capacity to re-interpret and follow lines of de-territorialisation if they so wish, and in doing so create new musical (and cultural) opportunities of value" (see also Deleuze and Guattari, 1980). This echoes Krishnamurti's (1970) appeal for humanity to break away from 'social conditioning' and the present day pedagogical perspective "aimed at making you conform, fit into and adjust yourself to this acquisitive society […] You are educated to fit into society: but that is not education, it is merely a process which conditions you to conform […]." As critically ontological educators, it is our job to understand and share how such conditioning occurs that prescribes the possibilities of being and becoming teachers, musicians and human beings so that we may develop new open-ended pedagogical possibilities. This requires the development of a pedagogical perspective that is non-conformist—one that is much more open and emotionally, empathically, and critically aware; and that takes the unique communal experiences of students and teachers seriously as the foundation for fostering an ethical and compassionate world (Jardine, 2012).

With this in mind, Eastern philosophy may have a great deal to offer when it affords practical ways of 'reawakening' to richer, animate ontological possibilities (Bai, 2013) than those imposed from the perspective of 'naive realism' or what phenomenologists often term the 'natural attitude'—i.e., the non-critical acceptance of the taken-for-granted ways we come to perceive the world, which may lead to sedimented, reified or highly conditioned ways of knowing and being (Husserl, 1960, 1970; Merleau-Ponty, 2002). Like the pedagogical move initiated by Socrates in Plato's Republic (Heidegger, 1998; Thomson, 2001), opening up to the deeper meaning of music through the 'eastern perspective' involves a radical 'turning around' to face deeper dimensions of reality than the one received by symbolic constructs. As I have discussed, the linguistic-symbolic reality associated with the 'secondary articulation' is, of course, an important practical aspect of how we organize our senses in day to day life (Di Paolo et al., 2010; Stewart, 2010). However, as I have also attempted to demonstrate, the belief that this mode of knowing is somehow separate from our embodiment, or is itself wholly constitutive of meaning, is illusory and leads to an impoverished ontology. Without an awareness of more primordial dimensions of existence we may be led to believe that linguistic constructs are

something more than signifiers and descriptions of temporary relations between transient categories and things; we may fail to see that they are fundamentally relational and emergent themselves and thus fall into the trap of making false ontological commitments—for example, that "we are living in an objective world of concrete things independent of us" (Nakagawa, 2000, p. 23).[84]

Fortunately, music, enactivism and the Eastern perspective can help us open up to a deeper cosmic reality that goes beyond semantic articulation and sedimented ways of thinking and knowing. They may reconnect us with the dimensions of the body, feeling and nature–where 'mind' emerges as part of fundamental self-organizing life processes (Thompson, 2007; Colombetti, 2014). From this holistic perspective we may begin to understand the "realm of spatio-temporal interconnection in which everything is dynamically and organically interconnected" (Nakagawa, 2000, p. 32). Where nature, life, embodied mind and the universe are,

> [O]rganic wholes, inseparably connected, and form a cosmic world. The interconnections between things on this level are neither linear causal relations between objective beings nor the fixed codes of meaning of the social world but relationships that are perceived in synchronic mutual causality and interdependence. [T]he cosmic world is not structured in a static manner but in a fluid process of constant metamorphosis. In this sense, it is the world of Becoming, which includes both relative being and non-relative being taking place in the flux of self-organizing, self-renewing processes of the universe. Ceaseless processes of birth, growth, decay, and death–the cycle of being and non-being–are the essential aspect of Becoming (the evolutionary process of the universe). (Nakagawa, 2000, p. 32)

Here the grasping for a solid ground in some pre-given reality of fixed things and a stable unified self is exchanged for a 'groundless'[85] (*sunyata*) universe, where the ever-changing, relational, and interpenetrative experience of being and becoming is embraced as an

[84] This resonates with James' (1996) famous dictum: "[…] nothing real is absolutely simple, that every smallest bit of experience is a *multum in parvo* plurally related, that each relation is one aspect, character, or function, way of its being taken, or way of its taking something else […]."

[85] It is interesting to note here that the ancient recognition of the inability to find stable, objective, or pre-given epistemological foundations, either 'internally' or 'externally,' associated with the Buddhist conception of *sunyata* actually prefigures much so-called continental philosophy–where 'groundlessness' is often assumed to be a distinctly post-modern issue associated with scientific and cultural developments in the 20th century (Rorty, 1979; Putnam, 1987; see Varela et al., 1991).

'emergent' or 'rising and falling' phenomenon (Varela et al., 1991). This concept of groundlessness or 'no-self' leads to the heart of the Eastern conception of infinite reality––the fundamental non-being, non-differentiation, or 'no-thing-ness,' from which 'being' itself continually emerges and returns to.[86]

Indeed, a growing awareness of the phenomenon of 'being' (thing-ness; identity; thought; the differentiated) as continually emerging from and returning to 'non-being' (the born from the unborn; differentiation to non-differentiation; thought into no-thought; life into death) can help us understand that the kind of information, knowledge, understandings and perceptions we develop in real life interactions cannot be properly understood in a strictly functionalist framework because they are not in fact rooted in some kind of *substantialist* reality.[87] Rather, as we saw with the enactive approach to bio-cognitive development, they may be better understood as emergent properties of complex relational dynamic systems (Varela et al., 1991)—where 'entities' and meanings may be understood as 'knots' of various relations, which includes the perspective of the experiencing 'subject' herself as constituted by a unique and ongoing history of such relational processes (i.e., the asymmetrical and adaptive co-arising organism-environment relationship I discussed at the beginning). This view decentres the traditional Western preoccupation with categorical fixed (intrinsic or innate) notions of, among other things, identity, drives, emotions, motivations, and intellectual physical and creative abilities (Nakagawa, 2000; Colombetti, 2014). From this perspective such aspects are understood not simply in terms of "something-or-other inside a person" (e.g., pre-given cognitive mechanisms; biological 'programming') but rather in the shifting relational context of what happens between people and things (Bateson, 1979/1980).

In much of Eastern thinking developing this relational perspective involves a progressive awakening to a multidimensional ontology (see Nakagawa, 2000) that

[86] A number Eastern thinkers have discussed how the void tends toward self-organization–i.e., how the universe itself possesses a primordial autopoietic tendency (Nakagawa, 2000). Interestingly, such processes have been explored with computer modeling where virtual structures self-organize from milieu whose initial state is random and non-differentiated (see Varela et al., 1991; Thompson, 2007).

[87] This is echoed from the enactive perspective by Froese (2012): "[…] the living body is the ultimate source of significance, but it can only serve this role because it is a continually actively constructed body that is always precarious and vulnerable to disintegration. The core meaning that derives from the ever-present potential of death, an eventuality which can be negatively defined as the cessation of all functioning, cannot adequately be captured in functionalist terms" (see Di Paolo et al., 2010).

includes:

- the objective world (the experience of independently existing things)
- the social world (conventions and symbols)
- the cosmic universe (the interconnectedness of all things)
- the infinite universe (the primordial groundlessness; no-thing-ness)
- the ultimate reality (the interpenetration and dependent co-arising of all dimensions)

Here the taken-for-granted conditioning associated with the world of fixed objects and socio-cultural symbols and constructs comes to be understood as such through a growing awareness of the deep interconnectedness, co-dependence and impermanence of all things and experiences.

To be clear, this is not to say that as one begins to gain an awareness of the cosmic and infinite dimensions of reality the objective and cultural worlds are negated. Rather, like the philosopher returning to the cave, one learns to reengage with them with a new understanding of what they really are. Thus an awareness of ultimate reality involves awakening to the fact that the experience of all 'independent' things—culture, nature, music, social relations, emotions, feelings, identity and self, mind and world–are relational and transforming; they 'rise and fall' through interpenetrative relations. Experience of the world is thus an enactive or dependently co-arising phenomenon[88] (Macy, 1991; Varela et al., 1993; Nakagawa, 2000).

In brief, the Eastern perspective offers a framework whereby one may begin to engage in new ways of experiencing and understanding from a deeper, interpenetrative and transforming multidimensional ontological perspective. In an educational context this opens up critical and hermeneutic possibilities, where the interactive and autopoietic nature of being and becoming comes to the fore (Kincheloe, 2003; Jardine, 2012; Seidel & Jardine, 2014), and where students and teachers may move beyond externally dictated and sedimented ways of understanding and engage more authentically, reflectively, and

[88] Dependent co-arising is often understood in a complex three dimensional framework that begins to be explored in the thought of Nagarjuna and that is further developed in the ontology of Hua-Yen Buddhism (see Suzuki, 1970; Chang, 1971; Garfield, 1995; Tachikawa, 1997; Nakagawa, 2000)

compassionately with the world and themselves. Here presuppositions may begin to be questioned, conditioning may be better understood, and teachers and students may get down to the business of exploring musical development in a way that embraces the organic processes of life and the primary embodied-ecological articulation of human consciousness–which reflects their fundamental status as living, autonomous participatory sense-makers (De Jaegher and Di Paolo, 2007). From this perspective music education becomes a communal (Krishnamurti, 1970) process that reflects the multi-modal and bio-cultural nature of music-as-action—where subject-object dualities and mechanistic metaphors recede; where transformative, embodied, non-verbal and affective-esthetic ways of knowing come to the fore; and where the unique and transforming relationships between students, teachers and the musical phenomena being explored may be experienced in context of a dynamic, living pedagogical ecology.

## Exploring the Buddhist psychology of 'self' for music education

The enactive approach to cognition resonates deeply with the Buddhist mindful-awareness tradition when it claims that although phenomenal distinctions can be made between the objects of experience, nothing, including the 'self' or the 'mind,' exists as an independent entity—all experience, things, thoughts and ideas arise and evolve co-dependently (Murti, 1955; Hopkins, 1983; Gyamtso, 1986; Kalupahana, 1987). Interestingly, the juxtaposition of mindful-awareness with the enactive approach to cognition also echoes important contemporary scientific concerns regarding the notion of 'self'—where the mind is understood as an essentially pluralistic phenomenon (Varela et al., 1991). The work of Minsky (1986) and Jackendoff (1987) in cognitive science are particularly notable here as they are both willing to follow this insight to the threshold of experience to discover, as Hume (1964) and others have before them, that the notion of a fixed and unified cognizing subject appears to be a phantom (see Varela et al., 1991). Jackendoff (1987) draws out the multi-modal nature of cognition and the non-unified nature of the cognizing subject. And likewise, Minsky (1986) suggests that the self should not be understood as a "centralized and all-powerful entity, but as a society of ideas that include both the images of what the mind is and our ideals of what it ought to be" (pp. 39-40).

Indeed, this comes close to "the Buddhist distinction between the coherent pattern of

dependently originated habits that we recognize as a person and the ego-self that a person may believe she has and constantly grasps after but which does not actually exist" (Varela et al., 1991, p. 124). However, while the mindful-awareness tradition makes the distinction between the representation or concept of a fixed ego-self and the habitual ways of thinking that lead us to grasp for it (Gyamtso, 1986), no such distinction is clearly articulated in cognitive science. That is, traditional cognitive science discovers the disunity of the mind-self in the hypothesized sub-personal mechanisms (e.g., adapted modules) associated with the cognitivist information-processing approach; but because it possesses no disciplined method for examining experience it can go no further than this.[89] By contrast, the mindful-awareness tradition begins not with hypotheses, but with a rigorous examination of lived experience. It thus offers a systematic way of developing consciousness that begins with sensation, movement, feeling, as well as the needs, desires and cravings that motivate cognition as action.

From this perspective experience is attended to in the context of an interpenetrative aggregate consciousness (or 'self,' see below) that may be further specified according to how experience is sourced in the senses (which are themselves understood as 'minds'; see Varela et al., 1991). Thus the mindful-awareness practitioner is interested in examining the movements of the 'aggregate mind' from the first person perspective—not in order to grasp some fixed notion of it, but rather to become increasingly aware of consciousness as an ongoing emergent and transforming process. This involves moving awareness beyond its habitual state toward the possibilities that emerge when more fundamental, embodied-affective, 'metaphorical,' and interpenetrative aspects of consciousness and cognition are recognized and developed (a possibility not entertained by the traditional cognitivist who relegates all basic cognitive processes to the sub-personal level). As I discussed above, this allows us to embrace plurality and difference in terms of a continually transforming multi-dimensional, organic, cosmic whole.

With this in mind, Buddhist psychological concepts associated with the aggregate

[89] As Varela et al. (1991) write, "Jackendoff assumes that everyday—largely mindless—experience provides access to all relevant phenomenological evidence and that the phenomenological quest is limited to just that largely mindless state. He considers neither the possibility that conscious awareness can be progressively developed beyond its everyday form (a strange omission given his interest in musical cognition) nor that such development can be used to provide direct insight into the structure and constitution of experience" (p.54).

mind (no fixed or unified self) may hold great potential in for music education—especially in instrumental instruction and ensemble practice. As Nakagawa (2000) points out, these concepts are not meant to be taken as religious dogma (see also Garfield, 1995), rather they are simply offered as psychological (and therapeutic) frameworks, which may be developed in various contexts in order to better understand embodied experience; the manifold aspects and transforming nature of the 'self'; our relationships with people and things in the world; and how certain ways of thinking and doing may lead toward suffering in ourselves and others. In this way, they provide highly pragmatic ways of understanding the psychology of personal musical engagement in a multi-dimensional context from moment to moment, day to day, and over the course of a lifetime.

For example, when I am working with students I notice that they often struggle with some notion of what they think the music should be and how it should be realized. Sometimes this notion can be very vague, which results in feelings of inadequacy and confusion (a grasping for stable ground in some external authority). Other students arrive with a highly conditioned point of view that resists and restricts other possibilities—which may lead to arrogance or closed mindedness (clinging to sedimented conceptions of self, music and the world). Either way, there is nothing enjoyable, revealing or transformative about such closed and prescriptive orientations. Indeed, by focussing on conforming to some fixed outcome, musical identities and meanings become defined by external norms. This results in reducing student–teacher (and student-student) communication to mechanical technical issues and plays down transformative communal possibilities—the enactive, self-world making potentials of musicking are pushed aside in order to render the music (and musician) as a product that must conform to some kind of externally driven standard.[90]

In order to help understand and move beyond such conditioning, I often ask students to attend to and discuss musical experiences according to the interacting categories associated with the "five aggregates" (see Varela et al., 1991). With practice students can learn to attend closely to these dynamic aspects of self and become more aware of how the

[90] This is not to imply that musical traditions and conventions are to be ignored or rejected. To the contrary such an approach seeks to vitalize traditions by encouraging students and teachers to engage critically and creatively with them as autonomous world-makers—rather than passively allowing them to externally impose fixed ways and meanings.

relationship between them changes and develops.

- Forms (*rupa*) – the physicality (primordial embodiment) of the body-instrument-world relationship.
- Feeling and Emotion (*vedana*) – the transforming affective contours of musical action and meaning.
- Perception, impulses and cognition (*sanna*) – the primary discernment and 'directedness' of musical relationships (intentionality).
- The will and volition (*sankhara*) – the dispositional formations (habits) and desires that motivate musicking.
- Consciousness of all aggregates (*vinnana*) – musical discrimination as continuous across the aggregates; the sense of a binding relationship.

This may be developed further through an exploration of the Buddhist framework through which all co-dependent arising occurs (in a musical context see Lowe, 2011). This is often simplified to include twelve main states of being or *nidanas* (see Nakagawa, 2000).

- ignorance (*avidya*)
- volitional (karmic) formation (*samskara*; the fourth aggregate)
- consciousness (*vijnana*; the fifth aggregate)
- name and form (*nama-rupa*)
- the six senses (*sadayatana*)
- impression-contact (*sparsa*)
- feeling (*vedana*; the second aggregate)
- craving (*trsna*)
- grasping (*upadana*)
- becoming (*bhava*)
- birth (*jati*)
- aging, dying, grief, suffering (*jaramarana*)

These descriptive-reflective frameworks resonate in many ways with the autopoietic and pluralistic/co-arising perspective on "mind in life" (Thompson, 2007) I discussed at the outset. However, they need not be seen as necessarily referring to a 'life-span' in the literal sense. Indeed, they may also be understood in a 'circular' fashion in order to examine the emergent or 'rising and falling' nature of contextual experience from moment to moment;

to explore the conditioning that leads to certain desires, craving and grasping; and thus develop conscious awareness beyond its taken-for-granted state.

When practicing a difficult passage of music, a challenging instrumental technique, or a new concept, these frameworks may help students better understand and discuss the learning process from the perspective of direct embodied experience; to explore how their consciousness—their 'self'—is really a transforming multi-dimensional phenomenon. Learning new musical activities exercises the aspects of the self, which are required to reach out to and engage with the world and each other in new ways. Initially the results are never harmonious and may involve a kind of discomfort (Sudnow, 1978). In such situations the aggregates seem somewhat alienated from each other and a frustrated desire and grasping may dominate—an uncomfortable perceptual closing in on the self and away from the world where the emotional and motivational aspects of the self may find themselves in crisis. Here a caring (encouraging, compassionate; Noddings, 2012) teacher who has herself worked through similar experiences may be of great help. She may encourage the student to open up to their experience and attend to this process carefully and honestly. This may help the student become more aware of how musical knowledge develops in the context of her unique bio-cognitive economy; and how certain sedimented assumptions–bodily and cultural conditioning—may be preventing her from engaging fully with the possibilities afforded by the situation. The student may then begin to recognize how new levels of musical being may be developed as the aggregates are reintroduced to each other in new ways—and thus begin to let go of the taken-for-granted notions of self, music and meaning and open up to a relational way of musicking that values imagination, creativity and personal transformation.

Such a process reinforces the dynamic and interpenetrative (autonomous, dynamically open; see above) relationship between student and teacher. The teacher is attentive to and cares for the unique needs of the student; she shares her knowledge through example and supports the student's reaching out to becoming-musical by fostering an environment that affords the discovery of new dynamic relationships and patterns (Granott & Parziale, 2002; Noddings, 2012). As they go, student and teacher may then explore things together from more nuanced emotional, bodily and conceptual points of view. What is discovered here is that there may be many ways to approach and understand the given piece, passage,

technique, concept, or musical cultural meaning—a perspective that suffices or is viable in one context (or on one day) may not work well in another. Students thus learn to let go of fixed understandings and attend to the moment; they are encouraged to reach out for difference, transformation and they learn to avoid relying on facile or simplistic recognitions of musical relationships that emerge from conditioned, reductive or reified understandings (Dewey, 2005).

Along these lines, Biswas (2012) discusses how improvisation and the bodily exploration of repetitive musical activities (e.g., rhythmic drumming) may be combined with mindful awareness techniques (in his case *vipassana* meditation) in order expand musical awareness. Here practitioners are asked to attend to their entire bodies (breathing, extremities, parts of the body not explicitly involved in the action) as they engage in musical activities, and thus better understand the bodily conditioning (tensions, grasping, ways of doing and feeling) that may be preventing them from developing new understandings and potentials.[91] Such activities may be combined with other forms of exploration such as Alexander technique, phenomenological and multi-modal analysis (e.g. metaphorical description); and they may also be explored collectively in ensembles where students may be encouraged to extend their listening and action out into the world–to reach out empathically and compassionately and thus participate more deeply in the communal-interpenetrative mind and world-making process that music affords. Here too, conditioning and dependent co-arising may explored at the macro level and thus musicking, as Biswas (2012) suggests, may be understood as a form of "public meditation" (see also Sarath, 2006).

Developing these basic psychological frameworks through musical practice may also extend well beyond the practice room and into the life-world of the student. That is, they may help students better understand what it means to be a dynamic, creative, autopoietic creature—as well as the suffering and psycho-spirtual or creative 'death' (i.e., dynamic closure) associated with grasping for unchecked desires and predetermined outcomes (fame, money, entitlement), and fixed or detached conceptions of self and world.

[91] As a drum teacher, I often work with students in this way with repeating polyrhythms, where students are asked to attend to and describe the transforming experience of listening and playing from a range of embodied-esthetic perspectives.

Developing such awareness may help them avoid the pitfalls of pride, competitiveness and bitterness as they go on to experience both the successes and the inevitable personal frustrations and disappointments they will face throughout their career. This may also help them better understand how such grasping may affect their performance and enjoyment of music in the moment as they learn to let go and attend more deeply to what they are doing and feeling–to keep the music and themselves dynamically open, compassionate and thus, creatively 'alive.'

## Conclusion

From the Eastern-enactive perspective, music is not retrieved from a pre-given world 'out there' but rather emerges from our embodied consciousness as it reaches out to, transforms, and is transformed by the ongoing process of empathic inter(en)action with objects, ideas and other minds. By this view, the challenge of becoming a skilled (and compassionate) musician and music educator is not due to the fact that the music is 'hard' but rather because it is 'open,' equivocal and transformative (Bowman, 2004). And indeed, we might also note here how the act of listening arguably offers a more explicitly transformative and interpenetrative perspective on the world than the visual dimension usually affords. Through vision the differentiation (separation) or fixity of things, objects or events is more easily taken for granted. The auditory world, by contrast, is less obviously differentiated and more explicitly interpenetrative, affective and emergent—where events continuously rise and fall from a background of 'silence' or non-differentiation in ways that are co-dependent with our unique ways of reaching out through listening (Ihde, 2007). With this in mind, students and teachers may be encouraged take their active listening 'out' into the urban and natural worlds—creatively and reflectively—in order to better understand the origins of music as an active ecological phenomenon and thus develop a deeper awareness of the primordial, empathic, and interpenetrative experience of being-in-the-world. Mathews (2008) develops this pedagogical possibility when she points out how empathic and 'synergistic' activities such as musicking may open us up to a deeper compassionate relationship with all life and thus help "induce in humans a moral point of view with respect to other-than-human life forms" (p. 53; see also Nollman, 1990, 1999, 2000; Wallin et al., 2000; Rothenberg, 2005, 2014; Rothenberg & Ulvaeus, 2009). Here students and teachers

may be “encouraged to identify imaginatively with wider and wider circles of the [sonic] landscape, until, hopefully, the students acquire an expanded sense of identity, described in deep ecology literature as the ‘ecological self’’ (Mathews, 2008, p. 54; see Naess, 1985, 1995). In this way our musicality may reawaken us to the deep continuity between natural and human worlds—a continuity that, as I have argued all along, is beautifully spanned by the bio-cultural nature of music itself.

There is, of course, much more to say about the relevance of enactivism and the Eastern perspective for being and becoming a musician and music educator. However, I hope I have offered the reader a useful introduction and provided some possibilities for how music and music education may be better understood a ‘manifestation of life.’ As I have attempted to show, this perspective sees music education as a deeply contemplative activity that begins with an exploration of the primordial meaning of musicality as an open intersubjective form of empathic participatory sense-making–one that originates deep in our biological selves. I hope, then, that the ideas and concepts I have offered here may help music educators become more aware of the autopoietic and world-making potentials of music; move beyond nature-culture dichotomies as well as nihilistic and purely technically driven approaches; and thus reengage with music and music education as a powerful way of reconnecting human life with the fundamental life.

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