

## Reflective Imagination: The Cognitive Process Underlying the Experience of Meaning through Music

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**Background in philosophy.** Over the past few decades several philosophers have drawn parallels between the engagement with music and imagination. For instance, Kendall L. Walton (1994; 1999) maintains that the same kind of imagining is involved in experiencing music as in experiencing narratives. Andrew Kania (2015) underlines that our experience of musical space and movement, much like our experience of fiction, is imaginative. Jerrold Levinson (1996) suggests that listeners experience music imaginatively—specifically, imagining others expressing emotions through the music (Gendler 2018).

**Background in cognitive science.** Anna Abraham and Andreja Bubic (2015) have recently argued that semantic memory is the root of all aspects of human imagination. Abraham (2016) proposes five categories to analyze the human imaginative mind: (i) perceptual/motor related mental imagery, (ii) recollective or intentionality processing, (iii) generative or novel combinatorial processing, (iv) exceptional phenomenology in the aesthetic response, and (v) altered psychological states such as dreams, hallucinations, and delusions (2016: 4197).

**Aims.** To shed light on the experience of meaning through music, I expand upon the assertions of philosophers who argue that the experience of music is underlain by imagination—but miss the role played by the development of memory retrieval mechanisms on this experience—and upon the findings of cognitive scientists who—while recognizing how memory retrieval mechanisms help to explain imagination—confuse aesthetic processing with artistic experience.

**Main contribution.** In this paper I argue that basic to the experience of meaning through music is the role of *reflective imagination* (Wah 2017; 2019), a process that includes the imaginative experience of narratives (Walton), the imagination of space and movement (Kania), and the imagination of one's own or others mental states (Levinson). Nonetheless, I underline that this experience is neither automatic nor unconscious, as these philosophers postulate (see Kania 2015, 166). Drawing upon research by Abraham and Bubic (2015), and on developmental theory, I point to a close link between the development of memory retrieval mechanisms and the development of imagination. By pointing out how reflective imagination underlies the experience of meaning through music, I elucidate the distinctions between *meaning* and *experience of meaning*, and between *aesthetic processing* and *artistic experience*. Such distinctions help to explain why the experience of meaning through music is characteristically human, begins in childhood, and is a highly individual and continuous process of interpretation.

**Implications.** By focusing on the cognitive process underlying the artistic experience, I offer an alternative to “unify the arts” as a category, to posit a kinship of the arts. This unification, as Ellen Dissanayake points out, would have to include the arts of all kinds, including that of music, in all times and places, including the evolutionary past, making it possible to explore their universality and probable adaptive value (Dissanayake 2015: 5).

**Keywords:** experience of music, meaning, emotion, memory, perception, imagination, metacognition, reflective imagination

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## Introduction

Scientists have aimed to explain the artistic experience, including the experience of music, on the basis of aesthetics. In what is now referred to as empirical aesthetics and neuroaesthetics, scientists have commonly overlooked imaginative accounts of engagement with music by focusing on emotional responses to the perception of formal features of stimuli (see Fechner 1860; Kawabata and Zeki 2004).

In previous publications, I have argued that the artistic experience is the characteristically human capacity to experience oneself or others in a narrative by means of music, dance, song, pantomime, drawing, pretend play, or verbal language. I have pointed out that although the artistic experience certainly begins with emotional responses to the perception of significant stimuli, it is characterized not by emotion and perception, as often stated, as by particular degrees of memory, imagination, and consciousness which distinguish humans from other species. I call this cognitive process *reflective imagination* (Wah 2017; 2019; *forthcoming*).

Based upon a theory of Francesco Ferretti et al. I have explained that reflective imagination, the cognitive process underlying the artistic experience, including the experience of music, is possible due to the human narrative ability underlain by global coherence (the capacity to relate events causally); and a triadic system consisting of mental space travel (the capacity to imagine different spatial locations), mental time travel (the capacity to imagine oneself or others at different times, distinguishing between past, present, and future), and mental mind travel (the capacity to attribute mental states to oneself or others, also referred to as mind-reading or theory of mind). The fact that the triadic system of mental space travel, mental time travel, and mental mind travel is, to some extent, present in nonhuman animals suggests that this system precedes verbal language (Ferretti et al. 2017: 111–114).

I have reconstructed an evolutionary trajectory (from *Australopithecines* to *Homo sapiens*) and a developmental path (from infancy to senescence) of the reflective imagination via the artistic experience (Wah 2019). Here, I focus on the development of the imaginative capacity to experience meaning through music. I argue that the development of this experience is closely linked to the development of memory retrieval mechanisms. By pointing out the layers of this experience I clarify the distinctions between *meaning* and *experience of meaning*, and between *aesthetic processing* and *artistic experience*. My aim is thus to shed light on why the experience of meaning through music is characteristically human, begins in childhood, and is a highly individual and continuous process of interpretation.

## Aesthetic Processing

### Emotional Responses to the Perception of Meaningful Stimuli

One may think of meaning as something only pertaining to humans, and thus related to intentionality, the use of signs, and verbal language. But one may also understand meaning as biological significance or value (Dissanayake 2000: 73; van Heusden 2009: 613–5). From this latter perspective, the environment is a world full of meaning, and its meaning is dependent on the bodily anatomy and the behavioral patterns of any organism (von Uexküll 1926). In this sense, if something has meaning it triggers an action, and without action, there is no meaning (van Heusden 2009: 612–615).

For instance, humans seem to respond with the activation of neural patterns associated with emotions when perceiving certain formal features of stimuli. Examples of such emotionally competent features are certain organizations of sounds in relation to timbres, pitches, and rhythms. According to Antonio Damasio, these formal features of stimuli arrest attention and are processed and detected by the nervous system, triggering the enactment of a body state characteristic of a certain emotion. To react emotionally to these formal features of stimuli, recognition is not necessary. The only requirement is that the organism's early sensory cortices detect and categorize the key feature or features of a given entity, and that structures such as the amygdala receive signals concerning their presence (Damasio 1994: 131).

These evolved preferences, inclinations, or emotional responses to the perception of certain formal features of stimuli presumably have adaptive value and became established in the Pleistocene (Damasio 2010: 295). Exact placement in time of responses to the perception of timbres, pitches, and rhythms has not yet been determined. Evidence from the Upper Paleolithic, at least 35,000-year-old, includes musical instruments made from bone and ivory (see Conard, Malina and Münzel, 2009). For now, no archeological evidence seems to exist to confirm the existence of even earlier responses to the perception of timbres, pitches, and rhythms. Nonetheless, the use of musical artefacts must have been preceded by the bodily expression of musical capacities through movements, sounds, and gestures (Wah 2019).

According to Ian Cross, the capacity to entrain or synchronize with others to an external perceived rhythm, pulse, or beat, characteristic of music and dance, must have arisen in the hominin lineage 5-7 million years ago (Cross 2016: 13). Proto-musical and dance-like behaviors, as well as early sing-song vocalizations seem to have characterized the behavior of *Australopithecines* and *early Homo* (Wah 2019: 62). This affective processing must have been as relevant in the early Pleistocene as it appears to be in human infancy.

There is evidence for the evolved drive and early emergence of proto-musical and dance-like behaviors during typical development in humans. Infants as young as three weeks spontaneously synchronize body movements to auditory stimuli such as

entraining beats, an effect evident throughout early childhood and replicated cross-culturally (Fitch 2006; Christensen et al. 2017: 10–11). These behaviors are referred to as “proto-musical” and “dance-like” because in human infancy interaction appears to be unintentional and unimaginative, relying only on the perception of rhythmic and coordinated sensorimotor patterns in the here and now.

Evidence suggests that during human infancy, memory is not reflective or accessible to voluntary recall, expanding over a sequence of actions and interactions (Nelson and Fivush 2000; 2004; Nelson 2005: 121–128). Infants do not create meaning as much as feel what is meaningful—security, warmth, and emotional nourishment (Dissanayake 2000, 73). They respond to stimuli in the here and now on the basis of evolved preferences, basic reflexes, basic emotional responses, and universal meanings (Wah 2019). Babies do not yet have a conception of past and future, nor the capacity to understand another’s perspective (Nelson 2005: 129).

Ellen Dissanayake traces the origins of what she calls “artification” in the adaptive mother-infant interaction and views it as a ritualized behavior in the ethological sense (see Huxley 1914; Tinbergen 1952; Smith 1977; Eibl-Eibesfeldt 1989). In the mother-infant interaction the affiliative vocalizations, facial expressions, and head and body movements of the human adult are transformed into attention-getting signals by the process of ritualization becoming stereotyped, repeated, exaggerated, elaborated, and temporally patterned (Dissanayake 2000; 2001; 2015). By means of sound patterns such as lullaby and play songs, adults appear to regulate the state of the infant through the immediate, emotive aspects of sound perception and production (Reybrouck and Eerola 2017: 5).

To study the experience of meaning through music, it appears thus necessary to consider these first emotional responses to the perception of significant formal features of stimuli. These emotional responses can be taken to constitute a first layer of meaning in aesthetic processing (Wah 2017: 49).

Even though attention is first motivated by innate preferences, it is also motivated by learned preferences and goals acquired on the basis of those innate preferences (Damasio 1994: 185, 198). To come to grips with the experience of meaning through music, it thus seems necessary to take into account that emotional responses are also closely tied to learned meaning. The senses engage memories and by means of an associative process, one learns to respond emotionally to many other formal features of stimuli (Damasio 2001: 67, 68). For instance, emotional responses to certain features of perceived stimuli appear to change through repeated encounters, going from mere exposure to habituation and sensitization, and to the co-occurrence with other stimuli (Moors 2007: 1241 in Reybrouck and Eerola 2017: 9)

Stimuli seem thus to acquire different meanings and perceptual values in different contexts, and at different times, as one interacts with them in terms of what one already knows. These learned emotional responses can be taken to constitute a second layer of meaning in aesthetic processing (Wah 2017: 49).

Be that as it may, the activation of emotional responses to the perception of meaningful formal features of stimuli, or aesthetic processing, does not as such constitute an artistic experience, including the experience of music (Wah 2017: 49). One cannot fully explain the experience of meaning through music only by studying emotional responses to perceived timbres, pitches, or rhythms.

These levels of meaning do not explain the uniqueness of the human experience of meaning through music. Responses to the perception of timbres, pitches, and rhythms are, to some extent, also present in nonhuman animals. For instance, a degree of entraining seems to be present among some species; song-like behaviors have been shown in birds, dolphins, seals, sea lions, and whales (Jordania 2011: 86); dance-like behaviors have been reported in bees, birds, a parrot, a sea lion, and an elephant (Christensen et al. 2017: 11); and gesture-like behaviors have been reported in nonhuman great apes (Corballis 2011: 162–3; Ferretti et al. 2017).

The emotional power of music seems therefore strongly linked to the evolution of basic motor and emotional systems. Most movements have distinct rhythms, and basic emotions are characterized by distinct affective sounds, at least in all mammalian species. These sounds seem to have been crucial pre-adaptations for the emergence of the melodic stream of music in humans (Panksepp 2009–2010: 229).

The difference seems to lie in that, unlike other species, humans are born with an evolved readiness to seek, engage, and respond to mutuality, and to find, make, and share meaning (Dissanayake 2000: 129). Affective processing reflects an early evolutionary form of consciousness above which more layers of consciousness can emerge (Panksepp 2005). Core affects, basic and complex emotions can be superposed by conscious interpretations (Eerola 2017; Reybrouck and Eerola 2017: 8). These cumulative layers of consciousness, of conscious interpretations, and of meaning making appear to be reflected in ontogeny.

In typical development, the course of infancy is marked by a rapid change in perceptual and motor capacities. The first level of experiential awareness in infants is that of a self, one that distinguishes the boundary between self and other; midway in the first year this boundary extends to a relation between self, other, and object (Nelson 2005: 118, 126–128). This means that the beginning of the understanding of space precedes the understanding of time (Corballis 2011: 119). The ability to mental space travel seems to be a property of semantic memory and a precondition for mental time travel (Tulving 2005: 7).

The first recognition of the self has been set towards the end of the second year, once the young child passes the mirror test (the ability to recognize the image reflected in a mirror as belonging to itself). The cognitive self is understood as the beginning of memory as a recursive or metacognitive phenomenon (Tulving 2005: 34; Corballis 2011: 83). Children begin then to respond emotionally not only to the perception of meaningful stimuli in the here and now, but also to the consciously recalled and imagined.

Imagination plays a vital role in turning sensory stimuli into meaningful experience (Thomas 2014: 158). According to Barend van Heusden what distinguishes human cognition from that of other organisms is not meaning, but the absence of meaning. Humans may recognize situations and events on the basis of matching patterns of behavior, but they may also not recognize a situation or event. This awareness of absence of meaning seems to be basic to human cognition, and to characterize the human sense of space, time, and self; although this generates doubt and uncertainty, it also frees humans from immediacy of perception, thereby allowing for imagination (van Heusden 2009: 612–615).

To analyze the human imaginative mind, Anna Abraham has proposed five categories: (i) perceptual/motor related mental imagery, (ii) recollective or intentionality processing, (iii) generative or novel combinatorial processing, (iv) exceptional phenomenology in the aesthetic response, and (v) altered psychological states such as dreams, hallucinations, and delusions which range from commonplace to dysfunctional (Abraham 2016: 4197).

The first, the second, and the fifth categories have been reported, to some extent, in some nonhuman animals, whereas the third category, the power to intentionally recall, retain, and manipulate mental patterns, including visual, auditory, olfactory, gustatory, tactile, and kinesthetic images, seems to be characteristically human (Darwin 1871: 47; Romanes 1885: 142–154; Clayton et al. 2003; Plotnik et al. 2010; de Waal and Ferrari 2012: 4, 5; Thomas 2014: 140; Harpham 2017: 94). The fourth category is problematic from the perspective of this paper, as Abraham uses the aesthetic and the artistic interchangeably. Elsewhere I have argued that aesthetic processing, unlike the artistic experience, does not require reflective imagination (Wah 2017).

The development of imagination seems to be closely linked to the development of memory retrieval mechanisms such as semantic memory (knowing), episodic memory (self-conscious remembering), and autobiographical memory (personal memories that appear repeatedly during one's life) (see Schacter and Tulving 1994; Tulving 2005: 9, 34). Anna Abraham and Andreja Bubic propose semantic memory as the root of all aspects of imagination (Abraham and Bubic 2015). From this standpoint, reflective imagination emerges from and expands beyond episodic memory, which in turn requires, but goes beyond, the semantic memory system (Wah 2019).

The development of cognition in humans becomes evident around the third year, with considerable advances in increased attention and episodic memory. Episodic memory involves conscious acts of construction and locates events in time. It is now that young children begin to reflect upon their experiences (or potential experiences) in the past, present, and future, and can mental time travel and begin to follow a storyline (Tulving 1985; Suddendorf and Corballis 1997; 2007; Nelson 2005: 128, 134; Terrace and Metcalfe 2005; Ferretti et al. 2017: 110).

Children can master narrative skills through experiencing stories by means of music. They also develop mental mind travel, the imaginative ability to predict, take

another's viewpoint, and understand their own and others' mental states, such as thoughts, feelings, actions, and intentions (Currie 1995; Thomas 2003: 81; Damasio 2010: 296). This capacity increases dramatically between ages five and eleven (Goswami 2008). This means that the triadic system of mental space travel, mental time travel, and mental mind travel underlying the cognitive capacity of reflective imagination can be fully present in late childhood (Wah 2019). I therefore argue that only in childhood do humans begin to have the reflective imaginative capacity underlying the artistic experience, and thus, to experience meaning through music.

## **Artistic Experience**

### **Experience of Meaning**

Elizabeth Margulis and colleagues have recently pointed out that instrumental music is capable of triggering the experience of narratives, without the use of words, cross-culturally. However, they underline, it is still unclear what leads to this narrativization (Margulis et al. 2019).

Here, I have argued that the experience of meaning through music does require engagement through narratives and is implicitly reflective and imaginative. This seems to mark the difference between the artistic experience and entertainment. In entertainment one perceives a situation but does not re-create oneself or others in the imagination, whereas the experience of meaning through music allows one to imagine oneself or others in a different situation, time, or mental state than the actual one. This reflective imaginative experience enables one to grasp what others may convey. The exercise in mental space travel, mental time travel, and mental mind travel sharpens the ability to infer other experiences making interpretation possible.

In humans, memory enhancement continues with major developments in autobiographical memory in adolescence. Episodic memory combined with aspects of semantic memory makes up what is known as autobiographical memory (Corballis 2011: 84). Adolescents acquire the meanings, significances, and values of their social group and develop a sense of identity. Memory is central to one's identity, and identity constructions are important because they provide orientation, guide behavior, and may lead to action (Damasio 2003: 208; Kandel 2006: 116; van Heusden 2009: 13; Damasio 2010: 294; van Heusden 2010: 159–161).

Evidence suggests that experiencing a story collectively by means of music arrests attention and instills feelings of confidence and trust, reinforcing the individual's identity within the group. This collective experience seems to release chemicals such as oxytocin that promote affiliation and suppresses cortisol released in stressful situations (Freeman [1995] in Dissanayake 2000: 163; Gebauer et al. 2016). Cross argues that entrainment, the synchronization of organisms to an external perceived rhythm, pulse, or beat, allows humans to experience a sense of "shared intentionality" or collective meaning, permitting individuals to interact even while holding to personal meanings and goals (Cross 2005; 2016).

However, these accounts appear to focus on the synchronized movement involving coordinating perception and behavior around periodic pulses or beats. They seem to overlook the role played by memory, imagination, and metacognition in establishing affiliation among individuals and thereby promoting bonding within a group. Such bonding is commonly reported during rituals, concerts, religious ceremonies, sports events, and wars. For instance, U.S.A. soldiers have said that it would have been impossible for them to fight without the collective experience of heavy, rhythmic, rock music (Pieslak 2009).

Cross adds that by virtue of its “polyvalent significances”, the experience of meaning through music can facilitate communicative interactions that, were they to be conducted linguistically, might give rise to conflict (see Morley 2013). Not only can the same patterns of sound have different meanings in different societies; they can also have different meanings within the same society because of different social contexts, an attribute of music that can be described as “floating intentionality” or “floating meaning” (Cross 1999; 2016).

During adolescence, thinking gradually becomes more abstract and more flexible (Griffin 1992: 201). Imagining reflectively via the artistic experience, including the experience of music, can trigger the development of the capacity to think about situations from different perspectives characteristic of adulthood. A concrete example on the cohesive force of the experience of meaning through music for interpersonal and intercultural dialogue is the project of musician Jordi Savall and singer Montserrat Figueras (2009). By playing music and singing together, adult musicians and singers from nations at war imagined themselves in a situation different from their actual one, marked by the learned tensions of war, empathizing with each other. This exemplifies the unique power and function of this stage of the reflective imagination via the experience of meaning through music (Wah 2019).

The stage of senescence is characterized by a pattern of cognitive decline. For instance, the pitch range that adults and older adults can perceive decreases with time. Older adults also generate fewer episode-specific details relating to past events than younger adults (Schacter et al. 2007: 658). However, imagining reflectively via the experience of meaning through music seems to trigger episode-specific details relating to past events. This experience has been proven to delay, arrest, or even reverse the detrimental effects of ageing on learning and memory capacity while recruiting attention, motor function, semantic processing, episodic memory, and autobiographical memory (Matrone and Brattico 2015: 3; Reybrouck et al. 2018: 94–96).

To what extent the experience of musicians and non-musicians, of active and passive beholders, causes similar imaginative effects remains to be established. Embodiment accounts suggest that watching a dance might engage one’s body much as if one were dancing (Christensen et al. 2017). From this perspective, distinctions between musicians and non-musicians, active and passive beholders are not fully necessary.

The experience of reflective imagination seems not limited to exceptionally creative individuals, but appears equally at work in the mind of any self-imaginative engaged beholder (see Currie in Roth 2007: xxxiii).

Solitary and passive engagement with music also appears to rely on entrainment processes, evidenced in periodic modulation of attentional load (Clarke 2005; Cross 2016). Even when we sit still the experience of music seems to activate the motor areas of the brain (Janata and Grafton 2003; Mithen 2005: 25; Huovinen and Kaila 2015). It may be that these processes become activated precisely via the imaginative triadic system underlying reflective imagination.

Whether reflective imagination is related to the so-called “default mode network” (DMN) (see Buckner et al. 2008) is still to be explored. Reybrouck et al. refer to findings that suggest activation of the DMN during listening to music, especially with emotional music and particularly with naïve listeners. They underline that the involvement of this network may be linked to the importance of music for introspective thought, and generally for the formation of self, identity, and cultural belongingness, especially in adolescence (see Saarikallio et al. 2007; Tanner et al. 2008; Vessel et al 2013 in Reybrouck et al. 2018)

Much is still unknown about how meaning is experienced through music. Immense scope remains for empirical exploration, also in light of the pressing need to investigate the success of music as a therapeutic medium. A fundamental challenge is that art therapists, including music therapists, commonly make use of institutional art instead of musical stimuli that are individually emotionally effective. I have argued that emotionally competent stimuli are a precondition for the experience of meaning. Art therapists could focus on the here proposed triadic system underlying the reflective imagination to determine which factors enhance the functions of the experience of meaning through music.

An experience that, far from being peripheral, dysfunctional, or trivial, is overwhelmingly integral to humankind (Dissanayake 1992: xvi, xix, 24; 2015; Donald 2006: 4; Damasio 2010: 294). Recognizing the cognitive process of reflective imagination can help to clarify why the experience of meaning through music is characteristically human, begins in childhood, and is a highly individual and continuous process of interpretation.

## **Conclusion**

In previous publications, I have argued that the artistic experience is the characteristically human capacity to experience oneself or others in a narrative by means of music, dance, song, pantomime, drawing, pretend play, or verbal language. I have pointed out that the artistic experience certainly begins with emotional responses to the perception of meaningful stimuli, that is, aesthetic processing, but is characterized not by perception and emotion, as often stated, but by particular degrees of memory, imagination, and consciousness. I call this cognitive process *reflective imagination* (Wah 2017; 2019; *forthcoming*).

In this paper I have elaborated on the statements of philosophers who argue that the experience of music is underlain by imagination—but miss the role played by the development of memory retrieval mechanisms on this experience—and on the findings of cognitive scientists who—although taking memory retrieval mechanisms into account to explain imagination—confuse aesthetic processing with artistic experience.

I have argued that, unlike the artistic experience, aesthetic processing does not require reflective imagination. The experience of meaning through music is an interdependent cumulative process, linked to the evolution and development of cognitive capacities. This experience begins with emotional responses to the perception of significant stimuli, but is underlain by reflective imagination—which emerges from and expands beyond episodic memory, which in turn requires, but goes beyond, the semantic memory system.

Recognizing reflective imagination as the cognitive process underlying the artistic experience, including that of music, helps to explain why the experience of meaning through music is characteristically human, begins in childhood, and is a highly individual and continuous process of interpretation.

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## **Biography**

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