The Feeling Blend:
Feeling and Emotion In Electroacoustic Art

Submitted to Organised Sound

Gary S. Kendall
Stockholm, Sweden
garyskendall@me.com

Abstract

Starting from the assumption that meaning in electroacoustic music is a product of the listener's mental processes, it is the goal of this essay to explicate the mental processes whereby feeling and emotion contribute to meaning when listening to electroacoustic music. The essay begins with a broad consideration of feeling and emotion with an eye toward artistic experience, spanning from basic emotions to nuanced phenomenal properties. It then introduces the concept of mental layers in support of the multi-leveled nature of meaning, especially in this case, meaning that is *felt* as well as comprehended. These two preliminary topics precede the introduction of the *feeling blend*, an extension of blend theory as presented by Fauconnier and Turner (2002). Core issues for blend theory, such as what constitutes a mental space and what triggers a blend, are re-considered in the light of practical examples from the electroacoustic literature. In conclusion, the feeling blend is proposed as an essential concept to understanding artistic experience and an intrinsic aspect of being human.

1.0 INTRODUCTION

Consider what happens when a listener first encounters an unfamiliar work of electroacoustic music. Whether novice or expert, the listener spontaneously starts orienting themself, finding landmarks, catching the gist of things—experiencing feeling and emotion. Whatever sense the listener makes of it, whatever the listener experiences, that is the meaning for that listener, whether novice or expert. This pragmatic view locates meaning within the listener, expressly in the listener's mental processes. By this definition, meaning must be evidenced in human perception and cognition. This view also steers clear of privileging one form of listening or one kind of thinking over another, but it does leave open for examination the exact mechanisms by which the phenomenon of meaning arises when listening.

Electroacoustic music, sonic arts, in fact, all arts intend to produce a result, often a new sense of possibilities even if that sense is ineffable—ineffable because the integration of new experiences becomes an unobservable part of the listener's cognitive unconscious, a change in the cognitive-perceptual capacities of the listener. And while we all undergo changes in the course of our everyday life (welcomed or not), we invite to ourselves the changes that art fosters in us. Whether it is shifting our mood or shocking our senses, we open the door for art. And feeling is an intrinsic part of new artistic integrations. In fact, for art, feeling qualities are often at the very core of what is new and meaningful. The new integration could be as simple as a surprising gestural shape. I experienced this the first time I heard the filter sweeps in the opening section of Francis Dhomont's *Novars*. Or, it could be originality in the overall conception of a work. I had this experience the first time that I heard Barry Truax's *Riverrun*. These experiences are absorbed into our blood stream, so to speak. They seemingly become part of our body. They expand our world, not just with new information, but, most importantly, with new feeling capacities.

How surprising then that when we come to the role of feeling and emotion in electroacoustic music, professional discourse has been so aloof. Its historic literature is dominated by technical discussions and inclined toward abstract theories of sound that preference a detached intellect over feeling and emotion. If anything, feeling and emotion are not to be trusted as too subjective, too illusive, or simply not the point of the matter. This predisposition has its roots back in the genesis of electroacoustic music after World War II when cultural currents carried a deep distrust of emotion into the arts. Discourse on electronic music was wrapped in the vocabulary of acoustics, philosophy, math or other dispassionate, and therefore trustworthy, endeavors (Born 1995). The music's capacity for meaning was a captive of the objective sound. Equally distorting is the notion that we can disassociate feeling

and emotion from the act of perception. Perception is sometimes depicted as a recording system for physical events, albeit an imperfect one. The physical-acoustic perspective as an objective window on electroacoustic music can thus be stretched to incorporate a translation from physics to psycho-physics. But, in the flow of human mental activity, perceiving and feeling are simultaneous, co-mingled, and fused in the cauldron of experience.

It is the goal of this essay to explicate the mental processes whereby feeling and emotion become meaningful in listening to electroacoustic music. In support of this goal, we will introduce the concept of the *feeling blend*, an extension of blend theory as presented by Fauconnier and Turner (2002). In fact, listening to a piece of music illustrates just how integrated feeling and emotion can be in the flow of on-going experience, and how emergent feelings and emotions propagate within the tapestry of musical events and patterns. And while it may seem useful to some kinds of cognitive research to isolate and study just one component of the emotion-feeling complex at a time, the experience of art illuminates how these components coalesce into larger, emergent units. Listening to music gives rise to a confluence of feelings and emotions, sensations and thoughts all at once and constantly changing. In large part, this on-going confluence occurs because mental activity unfolds in multiple, simultaneous layers.

The essay that follows is divided into three sections. The first surveys a broad range of ideas and research about feeling and emotion with an eye toward artistic experience. The second reviews a model of mental layers developed for electroacoustic listening and introduced elsewhere (Kendall 2014). The third section introduces and develops the concept of the feeling blend.

2.0 FEELING AND EMOTION IN THE CONTEXT OF THE ARTS

2.1 Essential Definitions

Let us start by describing how we will use these often-overlapping words: *feeling* and *emotion.* Generally, *feeling* is defined to be the subjective experience of *emotion* and other affective qualities. We will use *feeling* as an umbrella term for all these qualities experienced as part of our internal state and available to conscious awareness, including both what are commonly regarded as basic human emotions and what we will later discuss as phenomenal qualities. This is intentionally a rather broad definition that opens up space for our consideration of a wide range of subjective sensations that can be elicited by artistic experience.

2.2 Emotion

Importantly, we know that *emotion* is intimately connected to biology (Damasio 2000). Emotions affect our heart rate, skin conductivity, breathing, etc. (Hodges 2010), and they arguably have a biological function, which is to aid survival by shifting the state of the physical body in alignment with perceived circumstances. In this way, basic human emotions can be viewed as having roots in evolutionary biology. And even though emotion has this fundamental biological connection, our emotional state can be clearly influenced by high-level cognitive activity such as what we choose to think about. As Frijda (1999:191) says, emotions are about something. We can also recognize that our emotional responses are sometimes conditioned by past experiences. Thus, even unconscious mental processes can evoke emotional responses. And, while emotion can be viewed as a primitive survival mechanism, it is also a key element of our ordinary, everyday life.

At a fundamental level, basic emotions are broadly categorical, probably reflecting a neurological differentiation (LeDoux 1998). This is probably reflected in how quickly we are able to recognize basic emotional states in other people by reading their facial expressions (Ekman 1994). It is no surprise then that emotions are an integral part of our social life, especially in attuning our emotional state to the people around us. And even when we encounter artistic depictions of emotions in other cultures or from other historical periods, we recognize some essential commonality with our emotional experience, a commonality that appears anchored in our shared biology. Sylvan Tomkins (1962) describes the basic emotions of facial expressions as falling under eight primary headings: *surprise*, *interest*, *joy*, *rage*, *fear*, *disgust*, *shame*, and *anguish*, while Ekman, Friesen and Ellsworth (1972) identified six: *happiness*, *sadness*, *fear*, *anger*, *disgust* and *surprise*. So, we see that the vocabulary of the basic emotional categories and their number is an unresolved issue, even if certain emotions are always present (*fear* and *surprise*) and others expressed with different words

(*joy/happiness* and *rage/anger*). These basic emotions are integral to common mammalian activities, but experiencing music is not in itself one of those activities that we have in common with other mammals. When listening to classical and popular music, the most frequently reported emotions produce yet another list: *happiness*, *calm*, *nostalgia*, *love, sadness, interest*, *hope*, *excitement*, and *longing* (Juslin 2009). Especially in the case of terms like *nostalgia, longing* and *hope*, these emotions appear to be linked certain archetypical circumstances, that is, these emotional terms encompass circumstances as well as feelings.

One way of resolving all this apparent inconsistency is offered by Robert Pluthik (1980) who proposes that many emotions for which we have words and which are a part of social life are in fact blends of basic emotions. His idea is similar to a color wheel in which there are primary mixtures of closely related emotions (*joy + acceptance = friendliness*) ranging to more distant combinations called secondary (*sadness + anger = sullenness*) and tertiary mixtures (anticipation + fear = anxiety). Terrance Duncan (2006: 38-9) echoes this idea and further suggests that mixtures of typically oppositional emotions produce '*emergent* emotional states' that 'are transformed by their interactive relationship'. For example, 'awe may juxtapose both the joy of appreciation and the terrifying recognition of fragility'. That complex emotional states are, in fact, blends touches on the broader topic of feeling blends to be addressed below.

An important insight into the emotion of everyday life is to view it as reflecting an assessment of how our perceived circumstances affect our wellbeing (Arnold 1960, Prinz 2004). In this sense, our emotional state is often a read-out of how we assess our personal situation. In our everyday lives, we may or may not be overtly conscious of our on-going assessment, but it is most certainly influencing us from within our cognitive unconscious where it helps to shape the scope of our conscious thoughts. And, while we may experience emotions 'in the moment', assessment necessarily draws upon previous experience and our long-term memory. It might be that features of the current situation evoke a conditioned emotional response, or that patterns based on past experience predict future outcomes with emotional significance. In either case, assessments must be made within the context of domain knowledge that includes such factors as the environmental and social backdrop. From this perspective, we can see how useful it is to characterize emotions in terms of their *arousal* (intensity level) and *valence* (pleasure or negativity) (Lang, Bradley, & Cuthbert 1997).

In musical contexts, assessment has been related to musical expectation (Meyer 1956, Huron 2006). In fact, music's manipulation of expectation is central to its experience as a temporal art. Musical anticipation would appear to evoke an emotional response that is akin to anticipation in everyday life. But, while there may be rather practical consequences to anticipation in everyday life, musical anticipation is largely about musical patterns and musical outcomes. In popular and classical music, melodic, rhythmic and harmonic patterns establish the foundation for expectation. We experience the progressive stages of anticipation much like basic emotions. In fact, this is central to Meyer's (1956) theories of music and emotion (which focus on manipulating expectations of traditional musical patterns) and Huron's (2006) extended ITPRA model (Imagination, Tension, Prediction, Reaction and Appraisal). In electroacoustic music, the possible bases of expectation in assessing sonic patterns are far less well understood or discussed. Kendall (2008) suggests that the Event schema is at least one basis on which electroacoustic music takes 'part in a broad tradition in the temporal arts of manipulating anticipation as part of the artistic content'. During the flow of listening, we experience the bi-polar feelings of *certainty* and *uncertainty,* as fundamental to human experience as the basic emotions and as easily characterized in terms of arousal and valence. And, returning to biology, music illustrates how often we experience bodily sensations and emotion conjointly.

2.3 Phenomenal Qualities

It should be clear now that the listener's feelings include much more than basic emotions. Bharucha and Curtis (2008:579) put it this way:

> 'Musical feelings need not be about something, may or may not be valenced, and, unlike emotions (which are nameable, e.g., sad and happy), may not be readily nameable. Yet, they may have an affective quality in that they are felt and not just perceived.'

I want to use the words *phenomenal qualities* for those subjective sensations that first and foremost lack the categorical property of basic emotions. Think of phenomenal qualities as the way in which the mind is able to integrate complex sensations without pigeonholing. Phenomenal qualities eschew the categorical generalizing of basic emotion in favor of particularity and continuous gradations. Like emotions, we can relate *phenomenal qualities* to a biological basis, especially in assessing sensory information about the body. And, phenomenal qualities are themselves generally a blend of sensations, and the resulting compression facilitates sensations being more easily perceived and remembered as blended qualities rather than as a collection of components. Pooling together many diverse sensations enables the mind to make qualitative assessments about the state of the body. For example, I recognize the blend of sensations I feel in my legs as something I call fatigue, and I can also sense the degree of the fatigue. And by shifting my attention, I can access the sensations in just my toes. The frame that delimits the blending could also be more conceptual such as the blend of sensations that one experiences as a summer wind. In this way we see that framing a group of sensations and discriminating the qualities of the blend is fundamental to experience.

We perceive these phenomenal qualities whether they are internal or external to the body. Consider that I could dip my hand into a stream to feel the dynamic quality of its energy flow, or I could simply listen to the flow. In this way, we recognize that phenomenal qualities are also intrinsic to how we comprehend auditory sensations. When I listen to an event in the environment, I automatically have a phenomenal sense of its energy flow, a feeling of how energy interacts with physical objects, etc. Auditory scene analysis (Bregman 1990) tells us a great deal about how the ear typically frames auditory sensations and registers phenomenal qualities. And, while much basic auditory organization is involuntary, within this organization the listener has the voluntary capacity to attend to a particular auditory stream while ignoring others.

In this view, the range of phenomenal qualities includes *qualia*, the components of perception sometimes described as raw sense sensations: color, pitch, warmth, etc. But whereas qualia are often discussed as singular, static properties, what we are describing as *phenomenal qualities* also includes a wide range of dynamic sensations associated with the temporal flow of experience. Especially important for electroacoustic music is the in-the-moment flow of acoustic energy, what Kendall (2010:66) calls *flow dynamics*, 'a sense of the texture of the energy flow that could be captured with words such as *rough*, *bumpy*, *grainy*, *smooth* or *flowing*'. Energy flow can also be related to Lakoff's and Johnson's *image schemas,* which capture our recurring patterns of forces, objects and motion as assimilated in a body-mind combination (Johnson 1987; Lakoff 1987; Lakoff and Johnson 1999). Importantly, these are *felt* as well as understood as patterns. For example, the image schema *Removal-Of-Restraint* is understood as an embodied pattern of tension and release interacting with physical objects. Once the pattern is codified as a schema, it can be associated with events that persist beyond the normal time frame of physical gesture. So, for example, a section of music might be understood in terms of *Removal-Of-Restraint* and still retain its sense of physical tension and release even if it is minutes long.

3.0 THE FIVE MENTAL LAYERS IN RELATION TO FEELING

3.1 The Model of the Five Mental Layers

As with all human endeavors, the listener's mental activity takes place in numerous simultaneous layers. Most activity is part of the cognitive subconscious and largely unobservable. Up to this point, we have been discussing feelings that originate in different layers of mental processing without clarifying their relationship to these layers. Making these layers explicit is important to addressing the multi-layer nature of how feelings become blended. We will employ a model of five mental layers that provides a simple framework for unpacking mental activity and makes explicit what is often opaque. The question is not whether five is the right number, but simply that layering needs to be taken into account. Quoting from Kendall (2014), the five layers can be summarized as follows:

> 'Layer 1. **Sensations** - *Perceptual organization and constancy of immediate sensation.*
> Layer 2. **Gist** - *Framework of things and space extended over several seconds enabling sustained awareness in the short-term.*
> Layer 3. **Locus** – *Self-governing actions in response to situations in the 'perceptual present' and slightly beyond.*

Layer 4. **Contexts** - *Framework for enlisting and assessing medium- and long-term, event-oriented schemas and expectations over an extended time frame.*
Layer 5. **Domains** - *Frameworks of background knowledge providing long-term constancy.'*

The five layers start with the simplest sensory layer, here called *Sensations*, which aggregates the processes by which immediate sensation is organized. (See figure 1.) In audition, these processes include the largely involuntary perceptual binding and grouping processes that result in perceptual events, auditory streams and their perceptual attributes (Bregman 1990). The 'auditory present' has a time frame of around 250 msec. and the apparent constancy of perceptual organization depends on the very short-term memory called sensory hold.

Each seceding mental layer can be characterized by the unique kinds of mental productions it manages proceeding up to the most synoptic and abstract layers. The second layer, *Gist*, can be related to the kind of mental organization that would be captured in a brief glimpse: objects, activities, foreground/background relationships, other spatial relationships, etc. *Gist* connects sensory organization with schemas for things and space. Thus, an auditory event that was high pitched and bright would be understood by *Gist* as a trumpet. This kind of knowledge is accessed from long-term memory, and the present moment's active schemas are held in short-term memory.

Locus is the name for the mental activities of immediate self-governance. We can think of *Locus* as the mental layer in which we respond to the immediate situations and we execute gestures or similar responses. It is also the level at which we anticipate patterns on the timescale of gesture. *Locus* accesses schema from long-term memory that are then held in working memory and by which we apprehend and respond to our current situation. This is the layer in which people are focused in most everyday tasks, and importantly for us, the layer that manages immediate listening strategies. The functional time frame of Locus is the 'perceptual present', which varies between 2 and 8 seconds depending on the processing load and demand on short-term memory (Pöppel 1997, 1998).

An extended view of our current situation is managed by the layer named *Contexts*, which provides continuity in the flow of experience beyond the perceptual present. Thus, just as in everyday life we have schemas for extended events like work and dinner, in listening we have schemas for musical and auditory patterns that can extend beyond the perceptual present. These schemas are stored in long-term memory and held in working memory while *Contexts* evaluates how well these extended-term schemas match current situations. *Contexts* is also the layer in which we generate predictions and expectations about the extended future. *Domains* is the layer of long-term, background knowledge, that is, meta-knowledge that provides the broadest sense of context. So, a sense of what is normal in city life or what to expect in the music of Stockhausen would be domain knowledge of this kind. *Contexts* and *Domains* both have functional time frames much longer than *Gist* or *Locus*.

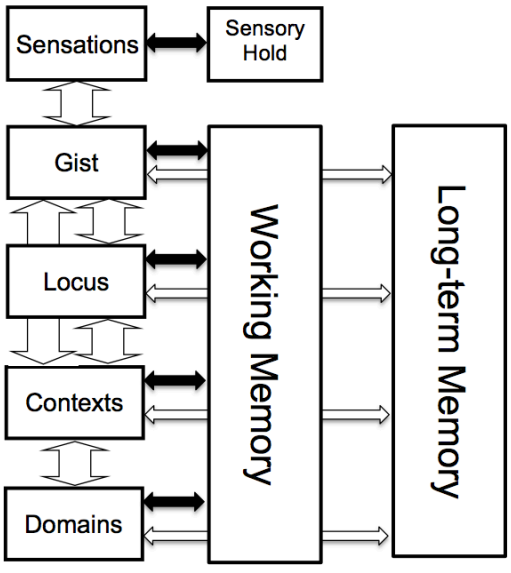

Figure 1. Five layers in relation to memory systems (from Kendall 2014).

Thus, from this perspective, we can see that each layer constructs meaning in a different way. Each layer has typical productions, usually instantiated schemas of a certain kind. We can also see that each layer is transforming and compressing the productions of the previous layer in a particular way. For example, sensory input is compressed to schemas for object-events (*Gist*), and configurations of object-events trigger schemas for actions (*Locus*), etc. But for on-going experience to have any consistency, these 'meanings' must be harmonized to create a self-consistent view. As figure 1 illustrates, the layers are seen to be dynamically interacting with one another. And as figure 2 shows, we can view one side of the process as driven by the onrush of sensory stimulation and another driven by the systemization of internal representation. Each layer is producing potential meanings, some of which will be reinforced by neighboring layers. (*Locus* rather sits astride a direct connection between *Gist* and *Contexts*.) From within the interaction of these dynamic processes, tentative productions are constantly percolating, out of which dominant meanings will emerge.

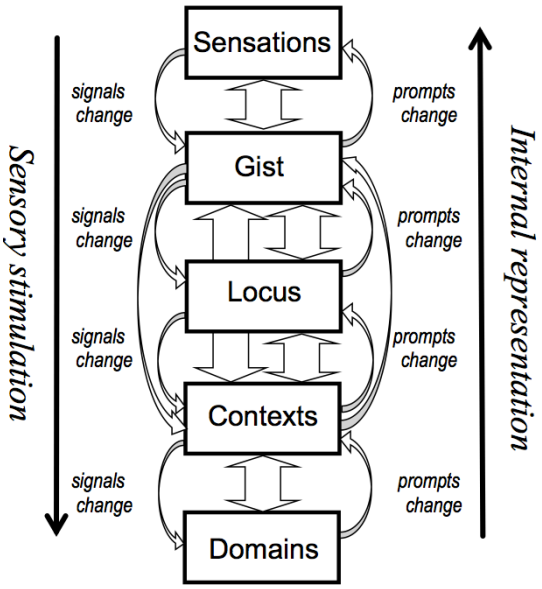

Figure 2. Harmonization within the Five-Layer Model (from Kendall 2014).

3.2 Differentiation With Respect to Feeling

We can now connect the mental layers with our previous discussion of feeling. Most important to our inquiry, each layer is differentiated with respect to feeling as shown in table 1. *Sensations* is the layer of immediate perception, *qualia* and *flow dynamics. Gist* receives these phenomenal qualities and links them with schemas for things as well as short-term *image schemas. Locus* registers patterns of tension and release associated with medium-term *image schemas*, especially for events whose time frame is within the scope of physical gesture. It also exhibits *certainty* and *uncertainty*. *Contexts* is the layer in which extended-term *anticipation* emerges, also the classic emotions in response to the projections about and assessment of the future. And the *consistency* of events with background knowledge is reflected in *Domains*. We can consider each of these layers to be relatively autonomous and active in parallel, while mutually affecting each other (for example, Domains influencing the kinds of feelings that are typical in a certain context). Therefore, on-going experience can give rise to feelings in all the mental layers simultaneously.

Table 1. The differentiation of the five layers with respect to feelings.

Layer:	Feelings:
1. Sensations	Qualia, flow dynamics
2. Gist	Qualia, flow dynamics, image schemas, conditioned basic emotions
3. Locus	Certainty / uncertainty, image schemas, schematic associations
4. Contexts	Emotion and emotional blends, stages of anticipation, image schemas, schematic associations

4.0 THE FEELING BLEND

> '... two ... ways in which I would augment blend theory to be in better consonance with … aesthetic cognition-emotion. The first is to link it to a theory of emergent emotional states—that is, to recognize the inescapable interweaving and interdependency of the dimensions of mind we divide into cognition and emotion. The second is to recast it in dynamic terms …' — Terrence Deacon (2006:41)

This idea expressed by Terrance Deacon is exactly what we will be pursuing here as the *feeling blend*. The feeling blend is not about linguistic metaphors for emotion as when Lakoff (1987) discusses anger. It is also not simply a *conceptual* integration as described by Fauconnier's and Turner's blend theory (2002). The *feel* of blends has largely been passed over, even though the role of blends in art itself has not (Turner 2006). In his essay entitled 'The Aesthetic Faculty', Terrance Deacon (2006) links blend theory with his notion of symbolically mediated emotion in the arts. Deacon's ideas are deeply influenced by Arthur Koestler's theory of bisociation (1964), which anticipates blend theory and also integrates some elements of particular importance to music: time and emotion.

We have already touched on blends of emotion and blends of phenomenal qualities in section 2. These precedents now open the way for a broader assessment of the feeling blend as a fundamental capacity of human beings—to absorb complex experience and to *feel* it, incongruences and all. Viewed this way, the feeling blend makes perfect sense as an advantage for human survival and also as a way of experiencing meaning that is harnessed by the arts.

4.1 Rethinking the Mental Space

Fundamental to blend theory is the concept of the 'mental space', originally introduced by Fauconnier (1994) and extended by Fauconnier and Turner (2002: 104) who say, 'A mental space consists of elements and relations activated simultaneously as a single integrated unit. Often, a mental space will be organized by what we have called a conceptual frame.' A mental space, or simply a 'space', is also a temporary working sketch that is inherently incomplete, a partial representation of domain knowledge shaped by any individual's repeated experiences. For Deacon, the contents of spaces are primarily symbolic tokens, and the simplest concept of emotional blend would be to assume that 'symbolic fusion forces a bisociation of any emotional attachments associated with the contributed . . . spaces' (Deacon 2006: 51). His main exception to the essentially symbolic content of spaces lies with music that involves 'sound iconisms and contrasts' (2006: 49) that are similar to symbolic references and may also evoke emotional blending.

Thus, any attempt to account for emotional blending points back to the key question of: What constitutes a mental space? And also: How do auditory and musical phenomena figure into this picture? To explore these questions, lets imagine an auditory sensory event and envision the mental spaces invoked progressively at each layer. The auditory event typically invokes an object-event schema at the level of *Gist*. Can we then say that *Gist's* object-event constitutes a mental space? This kind of compression of sensory information is fundamental to all perception and antecedes symbolic thinking. In fact, this may well be the Ur-ground of the mental space, because then the space of the symbolic token can be seen as a direct outgrowth of the space of the object-event. Thus, we can distinguish a particular kind of mental space at the level of *Gist* that can embody the simplest integrated unit of perception---including auditory and musical object-events that are unmediated by further symbolic compression. *Gist's* mental space may hold schematic knowledge about the object-event, as well as all of the feelings discussed earlier, including phenomenal qualities, flow dynamics, simple image schema, etc.

What to do about the content of *Gist's* mental spaces is negotiated at the level of *Locus* whose schemas are primarily response patterns to immediate events. *Locus*' mental spaces represent lines of activity, active action scripts that unfold in time. Consequently, *Gist's* and *Locus'* mental spaces are not necessarily in a one-to-one relationship. And thus, *Locus'* mental spaces contribute some

functional organization and levels of significance to *Gist's* spaces. *Locus'* mental spaces may also be connected to the emotions of anticipation and certainty/uncertainty.

Gist and *Locus* are functionally bound to short-term and near-term time spans. *Gist* changes in response to sensory information and *Locus* responds within the perceptual present. Like them, *Contexts* has schemas for object-events and sequential patterns, but these are a step removed from the immediate onrush of perceptual information and can address time spans divorced from the perceptual present, that is to say, time in the abstract. *Contexts'* mental spaces typically receive inputs from the other two layers (see figures 1 and 2), and its schemas provide broad contextualizing frames around *Gist's* and *Locus'* productions. This provides a level of abstraction, the critical step for symbolic and abstract thinking. In fact, *Contexts* is the level at which discussions of conceptual blending are typically focused. Conceptual blending in traditional music at this level has been discussed by Zbikowski (2002) and in electroacoustic music by Kendall (2010). Both cases illustrate musical thinking that is analogous to traditional domains of symbolic thinking. *Contexts* is the level at which assessments, including those of auditory-musical patterns, evoke emotions and the emotional blends previously mentioned in section 2.

Domains' mental spaces hold background information on what is normative and thereby guide the other layers' range of activity to be consistent with previous experience. It is likely the case that such background knowledge includes meta-knowledge of stylistic norms and their patterns of feeling. Thus, the listener anticipates musical and auditory patterns that fit the current context, and experiences inconsistency if stylistic and feeling norms are violated.

We have discussed mental spaces at four different mental layers. At each level, the mental space fulfills the essential definition, and at the same time there is differentiation according to the layer. Most importantly too, we have recognized how the spaces in each metal layer accommodate different properties of auditory and musical materials, varying from essential auditory events to complex musical/auditory patterns. The functional differentiation of the mental spaces of each layer plays a crucial role in how the same perceptual event can be simultaneously understood in different ways, each appropriate to the perspective of a layer. For instance, *Gist* may instantiate an object-event schema (impulsive hit on wood) that also connected to an object-event schema instantiated by *Contexts* (Japanese temple block performed in ritual). We can imagine similar dual levels of schemas for *Locus* (attention on wood-hit and follow foreground) and *Contexts* (anticipating likely patterns of continuation). Importantly, these multiple mental spaces are simultaneously available in working memory, and the listener's perspective can shift effortlessly. In fact, it is a normal and unconscious aspect of everyday experience that these multi-level spaces are connected across the layers, including their emotions and phenomenal qualities. This multi-leveled nature of experience is frequently exploited by art, for example, the artistic object can represent its literal self as well as something with a contextual meaning.

4.2 Triggers

Another key issue for blend theory is what triggers the blend? In section 2, we mentioned the grouping of bodily sensations as an example of how sensory phenomena can be framed and blended. For auditory stimuli, much sensory framing is largely automatic (Bregman 1990), leading to *Gist* where auditory events are connected to the mental spaces that instantiate schemas for object-events. A blend may be triggered at the level of *Gist* when such an auditory event invokes conflicting object-event schemas. An example is the blending of church bells and a boy soprano in Jonathan Harvey's *Mortuos Plango, Vivos Voco* (Harvey 1981; Kendall 2014), where by the magic of digital signal processing, the auditory attributes of the two sources are mixed in various combinations. What forces the blend is the singularity of the resulting auditory event. A prototypical model of these blends is represented in figure 3 where phenomenal qualities such as the physical material, the energy flow, or the sound production can be extracted from the bell, the boy, or become hybridized. At the level of *Gist*, the blended result is a bell-boy presented in many variations. *Gist's* blend is also a coincidence of the conceptually incompatible, and the singularity *Gist's* blend compels a conceptual blend at the level of *Contexts*. In this case, the boy and the church bell become symbols for the animate and the inanimate resulting in a conceptual blend in the realm of the spiritual (Dirks 2012; Kendall 2014).

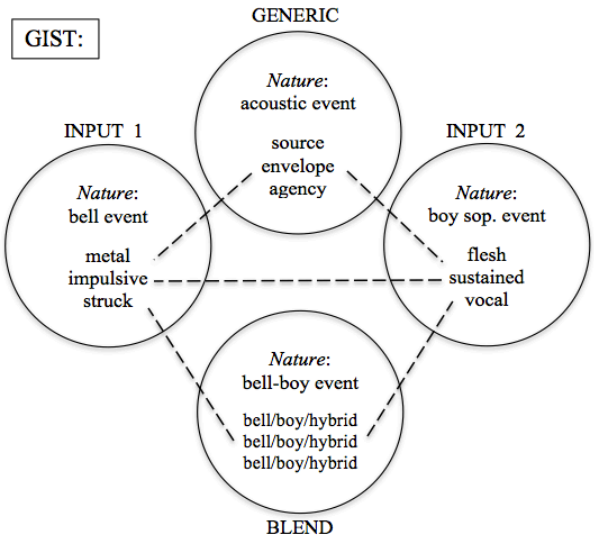

Figure 3. Prototype of the many blends of church bells and the boy soprano in Jonathan Harvey's *Mortuos Plango, Vivos Voco* (from Kendall 2014)

Lets consider another example. Figure 4 holds a sonogram of a short excerpt from Francis Dhomont's *Novars.* The essence of this excerpt is that two contrasting layers of sound are simultaneously present: one is a cloud of short snippets from Machaut's *Masse de Notre Dame* and the other is an irregular series of filter-swept chords. Each of these layers is fairly unique. The fragmentation of Machaut's music presents an interesting combination of old and new, while the filter sweeps have a novel gestural shape. The reference to Machaut in particular gives rise to a potential conceptual blend in which Dhomont and his French antecedent collaborate on an electroacoustic work (Kendall 2010). This conceptual blend might evoke some feeling (depending on how one identifies with the implicit French patriotism), but what about the actual, real-time experience of this passage? At the sensory level these two layers are distinct and automatically segregated into two auditory streams. Each has distinct phenomenal qualities. Among other things, the Machaut fragmentation is jagged and continuous, while the filter sweeps are bold and detached. Envision that these attributes are integrated within a mental space for each stream. We could envision a unique blend being formed at the level of *Gist* for these contrasting sets of phenomenal qualities, but the streams are so self-contained at this level that nothing impels us to form such a blend.

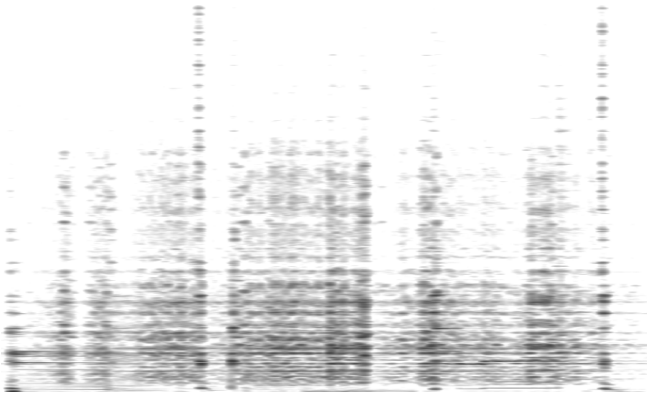

Figure 4. Sonogram of Francis Dhomont's *Novars* from 2' 58" to 3' 35".

This passage is very reminiscent of modernist works in its use of juxtaposition with irregular rhythm (see Kendall's 2006 discussion of Varèse's *Poème électronique*). At the level of *Contexts*, there is no real sense of longer-term evolution, just stasis. And the extended presentation of this material without

further elaboration communicates that the juxtaposition of the two streams is itself the principal idea. How do we make sense of their combination? It is in our attempt to assimilate and to integrate the experience of this passage that triggers a blend at the level of *Contexts*: mental spaces for each element are blended to capture the sense of the passage as a whole. The emergent feeling quality of this passage is the juxtaposition of two distinct groups of phenomenal qualities in the context of stasis, strong contrasting dynamism within a static frame. This reinforces one of Deacon's insights into such blends: 'The principal emotional architecture of the multilevel blend is . . . one of tension' (Deacon 2006: 48).

4.3 Temporal Frameworks

An important feature of Koestler's bisociation theory lauded by Deacon (2006) is how it provides a framework for the temporal evolution of aesthetic experience leading to resolution, either as a release of cognitive tension (jokes), the eureka experience (scientific discoveries), or catharsis (arts). The joke is a simple example where there is a sudden shift from one of two competing organizational frames to the other; the shift releases the cognitive tension. (This phenomenon is called frame-shifting by Coulson (2001).) In electroacoustic music, something analogous could be said to happen at the entrance of the Northumbrian bagpipes in Denis Smalley's *Pentes* (Kendall 2010).

In electroacoustic music, there are dynamic frameworks operating at multiple levels, many of which contain an element of release or resolution. We have already touched on a few of these. Some image schemas (such as Source-Path-Goal, Removal of Restraint, etc.) and event schemas embody a temporal framework that leads to resolution and possibly closure. The most concrete examples are instantiated at the level of *Gist* where they compress sensory stimulation into object-events. Very importantly, such schemas are anchored in phenomenal qualities that are evolving in time, here within the perceptual present. And image schemas and event schemas can be also instantiated at the level of *Contexts* where time may be abstracted but the sense of tension and resolution is retained (Kendall 2010). A very similar multi-leveled idea is what Denis Smalley calls 'morphological archetypes' (1986). Essential to all these frameworks is their reliance on embodied knowledge of tension and release.

Deacon believes that emotive states themselves can function like other symbolic tokens. Therefore, conflicting emotions can be held simultaneously and blended to create emergent emotions. He points to Koestler's theory that sustained juxtaposition can lead to catharsis. We might think of the *Novars* excerpt and its sustained juxtapositions in this regard: sonic resolution is withheld, that is, there is no transformative change that releases tension (at least within this section). Is the resolution in dynamic flux? This is Deacon's model of the 'blend structure of aesthetic experiences', the dynamism of conflicting emotions (Deacon 2006: 46). The stasis of the passage provides no possible resolution other than to seek a blend, a union of its conflicting elements, and that provides a sense of catharsis, even at this early stage of the piece.

But, are there conflicting emotive states as Deacon describes? For this example, I would propose that the conflict is largely one of phenomenal qualities originating at the level of Gist. There are certainly also elements of uncertainty at the level of *Locus* and anticipation at the level of *Contexts*, but there are no basic emotions to blend. If there is an emergent feeling sense of the passage (and I believe that this is true for most listeners), then it is a multi-level *feeling blend*, not a conceptual blend or simply a blend of emotions. The structure of the blend is represented in figure 5. At the level of Gist, there are two mental spaces, each of which compresses the properties of one of the perceptual streams of auditory events within an object-event schema. *Locus* invokes its listening strategy that in one way is relatively simple: attend to one stream. But the irregular rhythm of the filter sweeps (which are well within the time frame of normal gestures) makes it impossible to anticipate any pattern. There is uncertainty. *Contexts* inherits projections from the mental spaces of the two prior layers. It must instantiate mental spaces for the two contrasting elements, and it must also attempt to find a pattern beyond the simplistic dual streams, especially a pattern that anticipates the future evolution of the passage. But there are no changes in any properties that consistently point in any direction. There is stasis: anticipation is stuck in suspension. The mental space of the final blend represents a compression of feelings at multiple levels, an irresolvable admixture of phenomenal qualities, uncertainty, and unresolved anticipation, something that is very much in the spirit of Deacon's theory, here adapted to a real-life example of electroacoustic art. And if there is not the kind of catharsis that we are accustomed to in 19th-century music, there is a kind of coalescence of elements that inspires us to integrate new possibilities for artistic experience within our long-term knowledge.

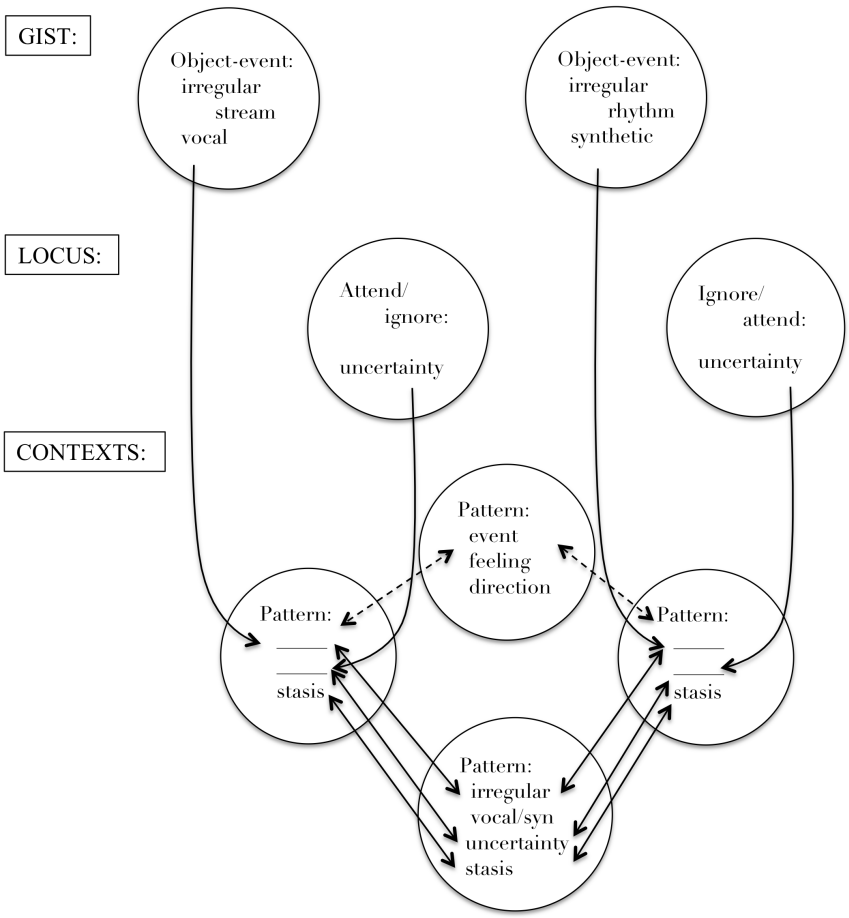

Figure 5. Structure of the feeling blend associated with Francis Dhomont's *Novars* from 2' 58" to 3' 35".

4.4 The Contemporary Sensibility

One of the important ways that historical and contemporary musics are so different from each other is in their felt quality. As a broad generalization, contemporary arts (and by this I mean the arts of the last thirty years or so) have placed much more emphasis on phenomenal qualities than on emotions. The fine discernment, differentiation and blending of phenomenal qualities have come to dominate the artistic palette. Consider that reduced listening is still an attractive concept to many young composers, probably not because they identify with Schaeffer's ambition to divorce electroacoustic music from everyday listening, but rather because the most important artistic innovation of Schaeffer's phenomenology is its privileging of phenomenal qualities over other aspects of listening (as illustrated by his *Etude aux allures*). Of course, there are counter examples, but there is a significant underlying trend here, possibly resolving the distrust of emotion in favor of phenomenal qualities.

Our discussion here has carefully avoided excluding of any kind of feeling. All feelings are grist for the mill of art, but most electroacoustic music has little connection to the basic emotional categories: happiness, sadness, fear, etc., while it is rich in feelings. And while Huron convincingly supports the proposition that music is 'motivated primarily by pleasure' (Huron 2006:373), we must acknowledge that much recent music has evolved a distinctly contemporary sense of pleasure in the exploration of phenomenal qualities. I also think that there is a distinctly contemporary sense of non-emotion as an emotional state so to speak. We can think of this in two ways. In some cases emotion may be irrelevant to the concerns of a work (like stereotypical cerebral electronic music). In other cases the listener experiences non-emotion as liberating. By non-emotion I mean that the work is free of patterns that invoke basic emotions. Take as exemplars Alvin Lucier's *I Am Sitting In A Room,* Barry Truax's *Riverrun,* or Luc Ferari's *Presque rien no2*. Free from assessment and valence, the listener

can explore emergent feelings, especially in response to phenomenal qualities, and literally transcend basic emotions.

5.0 CONCLUSION

It is a familiar adage that the answer to a question depends upon where you look for the answer. Asking questions about the nature of emotion and feeling in the domain of electroacoustic music leads to answers that might not arise in other contexts, not even in studies of music and emotion where the focus is typically on historical and popular music. Our inquiry here started with a broad examination of feeling in the context of electroacoustic music, spanning from basic emotions to nuanced phenomenal properties. We also touched on the notion of mental layers and how they help us to parse the multi-leveled nature of meaning, especially in this case, meaning that is *felt* as well as comprehended. These were necessary steps before turning to specific passages of electroacoustic music and considering how feeling participates in meaning. Audio technology's capacity to manipulate signals, and consequently auditory perception (as happens with the object-events in Harvey's *Mortuos Plango, Vivos Voco*), has enabled this art form to guide the listener's mental processes in new and unique directions. Then too, the technology's capacity to mix and juxtapose sounds from disparate origins pushes the listener to forge new mental connections and gives rise to novel, complex feelings (as witnessed in Dhomont's *Novars*). And by carefully examining how feeling participates in the meaning of such passages, we are led to a fresh outlook on feeling in relation to artistic experience, and maybe to something universal for the arts.

It is difficult to imagine how we should understand the feeling qualities of artistic experience without the concept of the feeling blend. The feeling blend appears to be an intrinsic aspect of being human, an almost obvious capacity given the human proclivity for feeling. Our large vocabulary of words for describing our feelings and inner states gives evidence to how easily we blend and label the multi-leveled feelings of everyday life—ephemeral and yet whole. We do this typically without being self-conscious and without reflecting on the richness of the feeling qualities we experience. It is the creative artists who are most adept at *thinking* in feeling blends.

Art *is* something and it *is about* something. Untangling how the '*is about* something' is embedded in the '*is* something', has led us to the feeling blend, a core ingredient of artistic experience. We all understand that art is 'representational', with the same ease that children understand that 'playing house' is representational. Importantly, we are able to enter into uncharted and extraordinary blends of feeling without getting mired in practicalities. As an important element of culture, art enables us to participate in a collective exploration of feeling qualities, especially in relation to our shared cultural symbols and patterns. In this way, art breaks free of everyday limitations and is able to create a world of feeling that is both a product and a part of culture. In fact, we expect art to have significance in this way. The arts are the primary cultural vehicles through which we engage the feeling blend as a higher mental capacity.

6.0 REFERENCES

Arnold, M. B. 1960. *Emotion and Personality*. New York: Columbia University Press.

Born, G. 1995. *Rationalizing Culture: IRCAM, Boulez, and the Institutionalization of the Musical Avant-Garde.* University of California Press.

Brandt, P. A. 2004. *Spaces, Domains, and Meaning: Essays in Cognitive Semiotics*. European Semiotics: Language, Cognition, and Culture, vol. 4. Bern: Peter Long.

Bregman, A. 1990. *Auditory Scene Analysis: The Perceptual Organization of Sound*. Cambridge, MA: The MIT Press.

Bharuchaa, J. J. and Curtis, M. 2008. Affective spectra, synchronization, and motion: Aspects of the emotional response to music. *Behavioral and Brain Sciences* 31(5).

Coulson, S. 2001. *Semantic Leaps: Frame-Shifting and Conceptual Blending in Meaning Construction.* Cambridge: Cambridge University Press.

Damasio, A. 2000. *The Feeling of What Happens*. London: Vintage Books.

Deacon, T. 2006. The Aesthetic Faculty. In: Turner, M. (ed.) *The Artful Mind: Cognitive Science and the Riddle of Human Creativity.* Oxford: Oxford University Press.

Dennett, D. 1987. *The Intentional Stance.* Cambridge, Massachusetts: The MIT Press.

Dirks, P. L. 2012. An Analysis of Jonathan Harvey's "Mortuos Plango, Vivos Voco". Downloaded on January 3, 2013, from http://cec.sonus.ca/econtact/9_2/dirks.html.

Donald, M. 2006. Music as Communication. In: M. Turner (ed.) *The Artful Mind: Cognitive Science and the Riddle of Human Creativity.* Oxford: Oxford University Press.

Ekman, P., Friesen, W. V. and Ellsworth P. 1972. *Emotion in the human face.* New York: Pergamon.

Ekman, P. 1994. Strong evidence for universals in facial expressions: A reply to Russell's mistaken critique. *Psychological Bulletin*, 115.

Fauconnier, G. 1994. *Mental Spaces: Aspects of Meaning Construction in Natural Language*. New York: Cambridge University Press.

Fauconnier, G. and Turner, M. 2002. *The Way We Think: Conceptual Blending and the Mind's Hidden Complexities*. New York: Basic Books.

Frijda, N. H. 1999. Emotions and hedonic experience. In: D. Kahneman, E. Diener & N. Schwarz (eds.) *Well-being: The foundations of hedonic psychology.* New York: Sage.

Harvey, J. 1981. Mortuos Plango, Vivos Voco: A Realization at IRCAM. *Computer Music Journal*, 5(4).

Huron, D. 2006. *Sweet anticipation: music and the psychology of expectation*. Cambridge: MIT Press.

Johnson, M. 1987. *The Body in the Mind: The Bodily Basis of Meaning, Imagination, and Reason.* Chicago: University of Chicago Press.

Juslin, P. 2009. Music and emotion: Seven questions, seven answers. In I. Deliège and J. Davidson (eds.) *Music and the mind: Investigating the functions and processes of music*. New York: Oxford University Press.

Kendall, G. 2008. What is an Event? The Event Schema, Circumstances, Metaphor and Gist. *Proceedings of the 2008 International Computer Music Conference*. Belfast: ICMA.

Kendall, G. 2010. Meaning in Electroacoustic Music and the Everyday Mind. *Organised Sound* 13:1.

Kendall, G. 2014. Listening and Meaning: How a Model of Mental Layers Informs Electroaoustic Analysis. To appear in: Eds. S. Emmerson & L. Landy, *Expanding the Horizon of Electroacoustic Music Analysis*. Combridge: Cambridge University Press.

Koestler, A. 1964. *The Act of Creation*. New York: Penguin Books.

Lakoff, G. 1987. *Women, Fire and Dangerous Things*. Chicago: University of Chicago Press.

Lakoff, G., and Johnson, M. 1999. *Philosophy in the Flesh*. New York: Basic Books.

Lang, P. J., Bradley, M. M. & Cuthbert, M. M. Motivated Attention: Affect, activation and action. In P. J. Lang, R. F. Simons, and M. T. Balaban (eds.) *Attention and orienting: Sensory and motivational processes*. Mahwah, NJ: Erlbaum.

LeDoux, J. 1998. *The Emotional Brain.* London: Orion Books.

Meyer, L. 1956. *Emotion and Meaning in Music*. Chicago: University of Chicago Press.

Plutchik, R. 1980. *Emotion: A Psychoevolutionary Synthesis.* New York: Harper and Row.

Pöppel, E. 1997. A Hierarchical model of temporal perception. *Trends in Cognitive Science* 1(2).

Pöppel, E. 1998. *Mindworks: Time and Conscious Experience.* New York:Harcourt Brace Jovanovich.

Prinz, J. J. 2004. *Gut reactions: A perceptual theory of emotion.* Oxford: Oxford University Press.

Schaeffer, P. 1966. *Traite´ des objets musicaux*. Paris: Seuil.

Smalley, D. 1986. Spectromorphology and Structuring Processes. In S. Emmerson (ed.) *The Language of Electroacoustic Music.* Basingstoke: Macmillan Press.

Tomkinds, S. S. 1962. *Affect, imagery, consciousness*. New York: Springer.

Truax, B. 2000. The aesthetics of computer music: a questionable concept reconsidered, *Organised Sound*, 5:3.

Turner, M. 2006. The Art of Compression. In M. Turner (ed.) *The Artful Mind: Cognitive Science and the Riddle of Human Creativity.* Oxford: Oxford University Press.

Wright, R. and Ward, L. 2008. *Orienting of Attention*. New York: Oxford University Press.

Zbikowski, L. 2002. *Conceptualizing Music: Cognitive Structure, Theory, and Analysis.* AMS Studies in Music. New York: Oxford University Press.

7.0 DISCOGRAPHY

Dhomont, F. 1996. *Novars* (1989). On *Les dérives du signe*, Montreal: Empreintes Digitales, IMED-9608-CD.

Ferrari, L. 1995. *Presque rien no2* (1977). On *presque rien*, Paris: INA/GRM, INA C 2008 275482.

Harvey. J. 1990. *Mortuos Plango, Vivos Voco.* On *Computer Music Currents 5*, Wergo, WER 2025-2.

Lucier, A. 1990. *I am sitting in a room.* Lovely Music, Ltd., CD 1013.

Schaeffer, P. 1958. *Etude aux allures.* On *Pierre Schaeffer – L'Œuvre Musicale,* Paris : INA-GRM, Ina G 6027/6029.

Smalley, D. 2000. *Pentes.* 1974. On *Sources/scenes*, Montreal: Empreintes Digitales, IMED-0054-CD.

Truax, B. 1980. *Riverrun.* 1986. On *Digital Soundscapes*, Burnaby, CA: Cambridge Street Records, CSR-CD 8701.

Truax, B. *Island.* 2001. On *Islands,* Burnaby, CA: Cambridge Street Records, CSR-CD 0101.

Varèse, E. 1998. *Poème électronique.* 1957-58. On *Varèse The Complete Works*, New York: London, 289 460 208-2.