

level relationships in Dhomont's Novars

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La perception d'événements récurrents dans une œuvre est souvent responsable de la sensation de structure. Les matériaux sonores récurrents (ou rappelant des matériaux antérieurs) peuvent prendre une place significative en créant une perspective temporelle et des points de repère musicaux, permettant la comparaison et l'appréhension des matériaux ultérieurs. La saillance de ces repères peut varier au fil de l'œuvre, si d'autres types de sons récurrents font leur apparition et font émerger des réseaux de relations influençant l'appréhension globale de la forme. Étudier la récurrence dans une œuvre signifie évaluer les similarités et différences entre les identités sonores qui la constituent ainsi que définir la manière dont ces identités réapparaissent et les raisons de leur importance. On trouve des identités récurrentes relevant de la mélodie, de l'harmonie et du rythme dans de nombreuses sortes de musique, sujettes à divers types de répétition et de variation. Cependant, les matériaux sonores et les possibilités de transformation sonore utilisés par les compositeurs acousmatiques sont suffisamment divers et variés pour qu'une attention particulière y soit nécessaire, de manière à mieux comprendre ce que peut être une « récurrence », comment les phénomènes récurrents s'observent à différentes échelles et comment ils contribuent aux sensations de structure et de forme. En gardant cela à l'esprit, une stratégie d'écoute pour *Novars* de Francis Dhomont sera présentée, qui s'intéressera à la récurrence des matériaux sonores à grande échelle. La stratégie analytique adoptée ici repose principalement sur l'écoute : toutes les observations seront celles d'un auditeur concentré et ne reflèteront donc pas nécessairement les intentions du compositeur.

Pour citer cet article :

Ambrose Seddon, « Higher-level relationships in Dhomont's Novars », *Musimédiane*, <http://www.musimediane.com/spip.php?article175> (consulté le 28 septembre 2015).

Higher-level relationships in Dhomont's *Novars*

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1. Introduction

A sense of structure can often be traced to the perception of recurrent events in a work. Returning sound materials, or those that remind of earlier instances, can become significant features that provide a temporal perspective, creating musical landmarks against which other material might be considered, compared and appraised. The significance of these landmarks may change as the work unfolds and as other families of recurrent sounds become established, potentially resulting in webs of correspondence that influence overall impressions of form. Investigating recurrence within a work involves assessing aspects of similarity or difference among the various constituent sound identities, considering how they function when they recur, and reflecting on why they are significant. With these ideas in mind, a listening strategy for Francis Dhomont's *Novars* will be presented focusing on the recurrence of sound material at higher, or more global, levels of structure. The analytical strategy adopted here is primarily based on listening, and so all observations are those of a focused listener rather than reflecting the intentions of the composer.

Many kinds of music feature recurrent identities founded on melodic, harmonic and rhythmic patterns and formations, which may be subject to different sorts of repetition and variation. However, the kinds of sound material and the possibilities of sound transformation available to acousmatic composers are sufficiently different and varied that concepts of recurrence within this context require specific attention in order to understand more fully what 'a recurrence' can be, how recurrent phenomena operate over different timescales, and how they contribute to impressions of structure and form.

For McAdams, form "is accumulated in the mind of a listener" [1], and "large-scale form is the shape of experience through time and its resonating reminiscences, rather than a structure out of time that one holds before the mind's ear in its entirety" [2]. The former view draws attention to the importance of time in the perception of form, of what is held in consciousness during and after listening, emphasising the experiential nature of form. In contrast, an "architectonic approach" [3] describes the events of a work in terms of sections (sonata form, rondo form) or nested hierarchies. Furthermore, for Berry, "musical structure may be said to be *the punctuated shaping of time and "space" into lines of growth, decline, and stasis hierarchically ordered* [his italics]" [4]. Thus, for clarity, the term 'structure' might be better reserved for the architectonic view because it deals with the layout of a work, suggesting a rationalization that isolates, to some extent, the constituent elements and how the music appears to be constructed. In many senses, the concepts of structure and form reflect different listening behaviours: the analytical diagnosis of the events of a work (architectonic view) on one hand, and a listening strategy receptive to resonating reminiscences and shaped experience on the other.

Recurrence will be briefly defined. Some significant aspects of sound identity will be discussed, along with select concepts regarding structural function and behaviour. The main higher-level relationship categories will then be introduced, followed by the examination of *Novars* in terms of higher-level relationships, structural function and behaviour.

[1] MCADAMS, Stephen, "Psychological Constraints on Form-Bearing Dimensions in Music", *Contemporary Music Review*, vol. 4, n° 1, 1989, p. 181.

[2] MCADAMS, Stephen, VINES, Bradley W., VIEILLARD, Sandrine, SMITH, Bennet K. and REYNOLDS, Roger, "Influences of Large-Scale Form on Continuous Ratings in Response to a Contemporary Piece in a Live Concert Setting", *Music Perception*, vol. 22, n° 2, 2004, p. 299.

[3] *Ibid.*, p. 298.

[4] BERRY, Wallace, *Structural Functions in Music*, New York, Dover Publications, 1987, p. 5.

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2. Defining recurrence

A recurrence might be considered as an event that occurs again over short or long timescales. However, the Oxford English Dictionary definition provokes further consideration regarding what to recur means:

Recur . . . occur again periodically or repeatedly . . . (of a thought, image, or memory) come back to one's mind . . . (recur to) go back to (something) in thought or speech [1].

Accordingly, musical recurrence can also be thought to account for sound materials that refer back to earlier related instances. These referrals might be based on different degrees of similarity, ranging from apparent sameness to vestiges of resemblance. This will of course include sound entities and their subsequent instances. However, acousmatic music creation affords the composer the means to transform recorded sound in various ways. Transformed sound material often exhibits traces of previous instances, and where this is the case pertinent connections may be made. Where certain features are seen to be the unifying elements among particular sounds, broader groupings can be established based on these common, recurrent attributes. Thus our notion of recurrent phenomena also includes returning states i.e. configurations and combinations of sounds; event types; and/or derivations produced through sound transformation processes.

The idea of recurrence in acousmatic music, as discussed by Seddon [2], deals with issues of (i) correspondence—how sounds appear to relate to one another, in terms of spectromorphological features and source bonding—and (ii) temporal relationships—the different time spans over which related sounds occur, and the impressions their recurrence makes on listening experience. As such, this approach concerns the ways in which the constituent sound identities exhibit common characteristics (i.e. how they are related, to greater or lesser degrees, in terms of common features) and how they are perceived to be related over time.

By taking a recurrence-based approach to acousmatic music, it is assumed that memory has a fundamental role in the musical experience, and that the remembered sound materials have a structural significance.

2.1 Attention

Dowling and Harwood propose that “what we remember of a piece depends greatly on what we have attended to in listening,” and continue: “our attention is guided by knowledge structures developed in our experience of the world, called schemata” [3]. Although their discussion deals with melodic schemata (including pitch, contour and intervals), more general kinds acquired through everyday experience may similarly guide and influence listening attention. Indeed, Bregman notes: “our voluntary attention employs schemas” [4], which are based on existing knowledge and experience of classes of signals, such as speech or machine noises. (‘Schemata’ and ‘schemas’ are interchangeable terms.) Accordingly, previous listening experience may significantly condition what is attended to and what is remembered within a work, influencing the recurrent phenomena perceived. Given that recurrence is a memory-driven formal mechanism, an understanding of how memory functions illuminates the processes through which remembered phenomena are brought into consciousness, and how these processes might affect the listening experience.

2.2 Memory

There are many differing approaches to the consideration and conceptualisation of memory. Tulving's theory of episodic memory [5], is pertinent when considering recurrent phenomena. Episodic memory is “the kind of memory that is involved in remembering past events” [6], and features two main aspects:

encoding and retrieval [7]. Encoding begins with perceiving an event, and ends with a memory trace (a bundle of features). When a cue is experienced the trace is retrieved, and information from both the cue and the memory trace is combined, resulting in ephoric information. The relative contribution of the memory trace to ephoric information correlates with the intensity of the recollective experience [8]. Significantly, memory traces can be recoded because subsequent material, similar to the original event, can change what is stored in memory about the original [9]. Thus, the memory traces of an event are not necessarily fixed, but may well become modified in response to subsequent cues.

2.3 Segmentation

Recurrence brings with it the problematic notion of units, which will have to be resolved in the mind of the listener. It is likely that sound entities imposed strongly on listening consciousness will be perceived as units to some extent, distinct from the surrounding musical texture. Indeed, McAdams suggests that “we remember discrete entities easier than continuous or unclearly demarcated ones, at least for the memory of structures” [10]. The apprehension of discrete sound entities is likely in contexts where the boundaries of those entities are easily discernible. However, the notion of the unit can become problematic because not all musical works can be conveniently sub-divided in such a way. Indeed it is questionable whether the attempt to segment a work into smaller constituent entities is always valid, or possible, particularly in acousmatic music. Recurrence is not solely unit-based, and significant recurrent features may be missed if an exclusively unit-based approach is adopted. Textural combinations, common spectral formations, or more 'abstract' notions, such as acceleration or fragmentation, may all recur, but such recurrences are not necessarily dependent on the perception of discrete sound units. Furthermore, recurrences of structural features over longer timescales may not be restricted to single distinguishable units. Therefore, a flexible view that accommodates both unit-based and non-unit-based phenomena is needed.

[1] "Recur", *Oxford Dictionaries* [Online], Oxford, Oxford University Press, 2010
[<http://oxforddictionaries.com/definition/identity> (10th September 2011)].

[2] SEDDON, Ambrose, "Recurrence in Acousmatic Music", Dissertation, City University, London, 2013.

[3] DOWLING, W. Jay and HARWOOD, Dane L., *Music Cognition*, London, Academic Press Inc. Ltd., 1986, p. 124.

[4] BREGMAN, Albert S., *Auditory Scene Analysis*, Cambridge, MIT Press, 2000, p. 667.

[5] TULVING, Endel, *Elements of Episodic Memory*, Oxford, Oxford University Press, 1983.

[6] *Ibid.*, p. 1.

[7] TULVING, Endel, "Précis of Elements of Episodic Memory", *Behavioral and Brain Sciences*, vol. 7, n° 2, 1984, p. 229-231.

[8] *Ibid.*, p. 231.

[9] *Ibid.*, p. 230.

[10] MCADAMS, Stephen, "Psychological Constraints on Form-Bearing Dimensions in Music", *Contemporary Music Review*, vol. 4, n° 1, 1989, p. 184.

3. Framework for a recurrence-based approach

The basic framework for a recurrence-based approach is illustrated in Figure 1. Sound identity correspondence deals with the possible ways in which sounds might appear to be related.

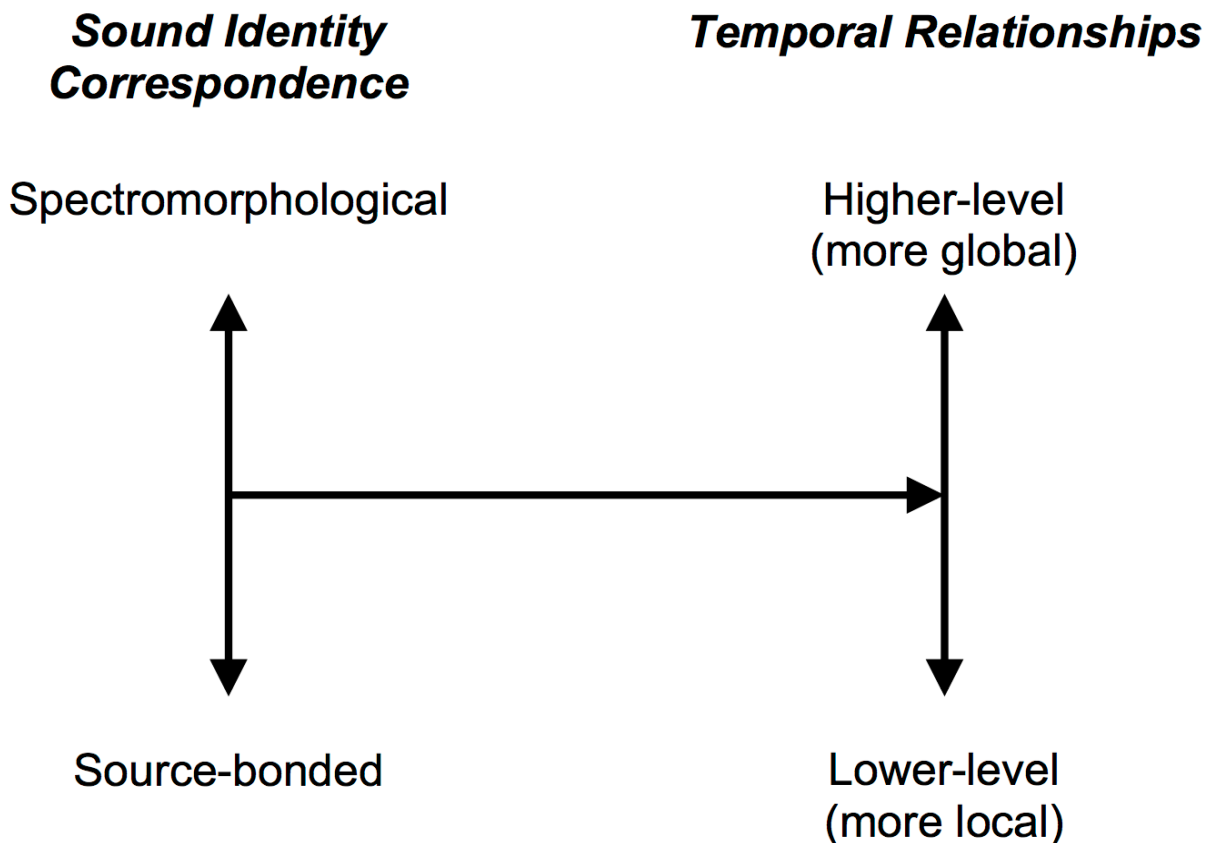


Figure 1: Basic framework for a recurrence-based approach

Temporal relationships range from lower-level (those operating over more localised timescales, based around repetition and variation) to higher-level (those operating over longer timescales). Sound identity correspondences and temporal relationships are interrelated. For example, two sounds that are perceived to correspond in terms of spectromorphology, yet appear at different points within a work, will establish a temporal relationship of some sort. In this examination of *Novars*, we are concerned with the higher-level relationships at play, i.e. those occurring among recurrent phenomena that provide a more global sense of structure. Higher-level relationships may be conveyed by discrete identities or events as well as the spatial environments of a work, and are founded on the notion of return, which implies that an earlier instance has been 'left behind' in some way. Return is defined in the Oxford English Dictionary as:

1. come or go back to a place or person . . . (return to) go back to (a particular situation) . . . (return to) divert one's attention back to . . . reoccur after a period of absence [\[1\]](#).

Meyer describes the *principle of return* in terms of an established, coherent whole that is subsequently departed from and left incomplete, prompting the expectation of an eventual return to the coherent whole. This recurrence relationship represents a delay of expectation and subsequent fulfilment [\[2\]](#).

Over larger timescales, general impressions of similarity become more significant than the accurate

diagnosis of what is a variation and what is a repetition. The fact that two events appear to be similar, and are therefore related, may be more important than whether or not they are exactly the same. Indeed, Meyer has observed that “immediate repetition tends to emphasize the differences between like events, while remote repetition – that is, return – tends to call attention to their similarities” [3]. Snyder adopts a similar view, maintaining that “the *farther* apart in time two patterns of events are, the *stronger* their similarity will have to be in order for that similarity to be *recognized*” [4].

[1] "Return", *Oxford Dictionaries* [Online], Oxford, Oxford University Press, 2010
[<http://oxforddictionaries.com/definition/english/return?q=return> (1st September 2012)].

[2] MEYER, Leonard B., *Emotion and Meaning in Music*, Chicago, University of Chicago Press, 1956, p. 151-153.

[3] MEYER, Leonard B., *Explaining Music*, London, University of California Press, 1973, p. 51.

[4] SNYDER, Bob, *Music and Memory: An Introduction*, Cambridge, MIT Press, 2000, p. 203-204.

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4. Identity

Awareness of what contributes to a sound's identity and memorability is essential to a recurrence-based approach. In order to hear a recurrence, the sound material must be striking and differentiated from its surroundings in some way in the first instance—it must be memorable. The strength and nature of individual sound identities will affect initial perceptions and the interpretation of subsequent occurrences. If sound material appears among other sounds of similar type, or if it is masked in some way, its potential to make an impact may be reduced.

The Oxford English Dictionary illuminates how identity might be considered:

Identity... 1 the fact of being who or what a person or thing is... the characteristics determining who or what a person or thing is... 2 a close similarity or affinity [1].

Thus, identity is determined by the characteristics particular to a person or thing, and the perception of recurrence within a musical work will depend on the presence of sufficient common properties among the array of the instances. In adopting a recurrence-based approach to acousmatic music, it is assumed that memory has a fundamental role in the musical experience, and that the remembered sound materials have a structural significance.

Consideration must be given to factors that might make an identity perceptually striking within musical contexts, and to how such identities might be described. Striking features might well be the significant aspects of similarity that define and unite families of identities. Significant aspects of identity can be further described in terms of contour, spectromorphology, source association and gist.

4.1 Contour

Both composers and cognitive psychologists have noted the significance of shape and contour to the identity of musical materials. For example, Schoenberg's ideas regarding composition and analysis appear to focus on rhythm and pitch relationships founded on *motives* and their variations. "The motive should produce unity, relationship, coherence, logic, comprehensibility and fluency" and should feature "intervals and rhythms, combined to produce a memorable shape or contour" [2]. Similarly, Harvey has emphasised the importance of shape in the melodic writing in his acousmatic work, *Ritual Melodies*, stating that:

I wanted something more memorable so that when it recurred after a long absence – after so many minutes – it would still be recognisable, therefore form is present. If you don't recognize it, there is no form. If it is played simultaneously with several different melodies, different musical activities, it is still recognizable, it is a strong enough shape and personality [3].

Schoenberg's and Harvey's concerns for strong shape or contour in the creation of musical identities are corroborated by cognitive research. Watkins and Dyson suggest that contour aids melodic identification, and is an important factor in musical memory [4]. Similarly, Dowling has noted that, with both tonal and non-tonal melodies, listeners find it "difficult to distinguish exact transpositions [of a novel melody] from other same-contour imitations" [5]. This, again, implies that the impression of an overall shape is a factor significant to melodic identity.

4.2 Spectromorphology

The discussion of sound 'shapes' and identities within electroacoustic music contexts requires a flexible

attitude to pitch space and contour that extends beyond conventional notions of tempered intervals and pitch combinations, due to the broad range of sounds that may be encountered. All sounds are experienced in terms of their morphological structure and spectral content, and the ways these change over time give a sound its identity. Smalley's concept of *spectromorphology* applies this view of aural perception to musical contexts:

Spectromorphology is concerned with perceiving and thinking in terms of spectral energies and shapes in space, their behaviour, their motion and growth processes, and their relative functions in a musical context [6].

The spectromorphological view provides ways to consider and describe the sonic characteristics of all manner of sound materials in terms of spectral and morphological change, which in turn illuminates how sound identities might be perceived. A sound's most dominantly perceived characteristics are fundamental to its identity, and these can be usefully described in terms of its spectromorphological makeup [7]. In many instances, the perception of 'an identity' will be determined by the striking aspects of the sound material's spectromorphology, and less by the presumed source of the sound.

4.3 Source association

A fundamental distinction between electroacoustic music and purely instrumental music is the potential to incorporate the sounds of real-world phenomena. Acousmatic musical works can feature sounds heard in 'everyday' situations that are not traditionally considered the property of musical exploration. The inclusion of such material brings with it the possibility of source recognition, which may be accompanied by various associations with real-world experience [8]. This will influence the perception of that sound's identity, and these associations may have a significant effect on the interpretation of the work. Smalley's concept of *source bonding* highlights "the *natural* tendency to relate sounds to supposed sources and causes, and to relate sounds to each other because they appear to have shared or associated origins" [9]. Such bonding will influence the perception of a sound's identity and its musical significance. Indeed, listening responses focused on the presumed sound source may be unavoidable, and this must be considered in both analytical and compositional practices based on recurrent sound identities.

4.4 Gist

The detailed description permitted by spectromorphological terminology and the consideration of source association facilitate discussion of the wide range of sound material encountered in acousmatic works. However, degrees of detail are not necessarily apprehended immediately when many concurrent events occur, yet a sense of the most striking events and their main features can still be grasped. Kendall notes that listening in detail can often make demands that exceed the listener's mental resources at that moment. Accordingly, he proposes that "even when 'events' cannot be completely assimilated, the listener can hold onto the 'gist' of 'events'" [10]. Gist can be described as "what the perceiver acquires from a brief glimpse of something and usually includes the most salient features of the situation" and "its content typically includes perceptual features and conceptual relationships" [11]. This suggests that musical contexts are quickly assessed and abbreviated based on the features that are perceived as most important or striking. Indeed, these features might determine impressions of distinctness and identity in the first instance, and influence how sound entities are subsequently appraised and interpreted.

[1] "Identity", *Oxford Dictionaries* [Online], Oxford, Oxford University Press, 2010 [<http://oxforddictionaries.com/definition/identity>] (10th September 2011)].

[2] SCHOENBERG, Arnold, *Fundamentals of Musical Composition*, edited by Gerald Strand and Leonard Stein, London, Faber and Faber Limited, 1967, p. 8.

[3] WHITTALL, Arnold, *Jonathan Harvey*, London, Faber & Faber Limited, 1999, p. 22.

[4] WATKINS, Anthony J. and DYSON, Mary C., "On the Perceptual Organisation of Tone Sequences and Melodies", in HOWELL, Peter, CROSS, Ian and WEST, Robert (eds.), *Musical Structure and Cognition*, London, Academic Press Inc. Ltd, 1985, p. 84.

[5] DOWLING, W. Jay, "Melodic Contour in Hearing and Remembering Melodies", in AIELLO, Rita and SLOBODA, John A. (eds.), *Musical Perceptions*, New York, Oxford University Press, 1994, p. 180.

[6] SMALLEY, Denis, "Spectromorphology: Explaining Sound-Shapes", *Organised Sound*, vol. 2, n° 2, 1997, p. 124.

[7] Spectromorphology addresses issues including gesture and texture, expectation, structural levels, structural functions, motion and growth process, behaviour, spectra, and space and spatiomorphology. These concepts will be defined and referred to when relevant in the forthcoming discussion.

[8] This process of recognition can be described as “the automatic activation of some particular contents of long-term memory that have some relation or association with current perception” (SNYDER, Bob, *Music and Memory: An Introduction*, Cambridge, MIT Press, 2000, p. 10). Composers have drawn on listeners’ real-world experiences before the advent of electroacoustic music by imitating natural phenomena, potentially establishing associations using conventional musical parameters. This kind of ‘figuralism’ can be found in, for example, the wave-like textures of Debussy’s *La Mer*. Such associations remain relevant within acousmatic contexts. The opening of Bayle’s *Grandeur Nature* features extreme low- and high-frequency sound materials that define the bounds of spectral space in a manner analogous to the ground and the upper reaches of the earth’s atmosphere. The integration of quotations from pre-existing works is also relevant here. Inclusion of material from Schaeffer’s *Étude aux objets* in the final minutes of *Novars* potentially connects to previous listening experience of that work (assuming it has been heard before), forming a cultural reference beyond *Novars*, as well as correspondences to material earlier within *Novars*. One might also consider the integration of national anthems in Stockhausen’s *Hymnen*, or the inclusion of *Bruder Martin* in Mahler’s *Symphony No. 1*, both similarly playing on previous listening experience.

[9] SMALLEY, Denis, *op. cit.*, p. 110.

[10] KENDALL, Gary, "What Is an Event? The Event Schema, Circumstances, Metaphor and Gist", *International Computer Music Conference*, Belfast, 2008, p. 7.

[11] *Ibid.*

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5. Structural function and behaviour

The identities that define higher-level relationships will be characterised, described and linked by their structural functions and their relationships with other sound materials within the current musical context. The structural functions and processes associated with recurrent identities may well evoke expectations based on previous instances, resulting in outcome predictions. Expectations may be evoked through both the spectromorphological directionality inherent in the sound material, and the memory of any previous instances and how they unfolded and related to the earlier contexts. In some cases the associated structural function may change over the course of the work, possibly redefining the role of that identity, even if its spectromorphology remains consistent. Conversely, particular functions and processes may recur and contribute to the sense of structure even when conveyed by different identities. For example, processes of rupture and shift might become structurally significant even if the sound identities in question are different at each occurrence.

Both Smalley and Roy have explored and defined a variety of structural function descriptions appropriate to acousmatic music contexts.

5.1 Temporal phase functions

Smalley expands three temporal phases of the note (onset, continuation and termination) into a collection of terms, which provide ways to interpret the forward-moving function-significance of an event or context [1]. Roy's *orientation* functions, developed as part of his functional analysis approach, serve a similar descriptive purpose [2], and **Table 1** illustrates where Roy's terminology fits within Smalley's broad categories [3]. The terms of both authors provide essential concepts and vocabulary for structural function description.

	Onset	Continuant	Termination
Smalley's terms	Departure, emergence, anacrusis, attack, upbeat, downbeat	Passage, transition, prolongation, maintenance, statement	Arrival, disappearance, closure, release, resolution, plane
Roy's terms	Introduction, appoggiatura	Suspension, extension, prolongation, transition	Conclusion

Table 1 : Function types defined by Smalley and Roy.

Smalley and Roy also draw attention to a variety of processes that are significant in describing or attributing structural functions regarding the directional motion and activity that they convey over shorter or longer timescales, summarised in **Table 2**.

Motion and Growth processes (Smalley)	Process functions (Roy)
Unidirectional motion <ul style="list-style-type: none"> • ascent; plane; descent Reciprocal motion	<ul style="list-style-type: none"> • acceleration/deceleration • accumulation/dispersion • intensification/attenuation

<ul style="list-style-type: none"> • parabola; oscillation; undulation <p>Cyclic/centric motion</p> <ul style="list-style-type: none"> • rotation; spiral; spin • vortex; pericentrality; centrifugal motion 	
<p>Bi/multidirectional growth processes</p> <ul style="list-style-type: none"> • agglomeration/dissipation • dilation/contraction • divergence/convergence • exogeny/endogeny 	

Table 2 : Aspects of directional motion and activity.

Smalley's motion and growth processes refer to different kinds of spectral and morphological evolution related to expectation and directionality in spectral space [4], many of which can be applied to both external contours and internal, textural details. Impressions of dissipation, for example, Roy's process functions of Acceleration/Deceleration, Accumulation/Dispersion, and Intensification/Attenuation [5] are also directional and largely self-explanatory, complementing the terms proposed by Smalley. However, there are some distinctions to be drawn. While Smalley's terms address motion in spectral space, Roy's acceleration/deceleration is not a spectral process, and intensification/attenuation may not always be. Despite this morphological emphasis, the notion of directional activity remains.

These concepts complement the temporal phase terms, and are potentially combined with them for more detailed function descriptions. For example, an emergent onset function might be attributed because of dynamic and spectral intensification, combined with spectral dilation. In some circumstances function attribution may take time, and a function may be attributed only once the directional tendency is established.

5.2 Instigation

Some of Roy's functions (for example, trigger and begetting) can be considered instigative, as can particular onset functions and *behavioural relationships* [6] (see below), so it is useful to employ the term *instigation* to account for the principles common to these ideas. Instigation actively brings about a change of some kind, such as initiating or removing sound material, or occasioning a different spectral composition, texture or spatial perspective. An *instigator* is most significantly interpreted as a motivator for change, and is characterised by a *pressured causal* behavioural relationship with the consequent sound material [7]. If the response to the instigation is too slow, the instigative relationship will be weakened.

5.3 Rupture, shift, interruption

Ruptures of, and *shifts* between, particular spaces, contexts and ongoing identities can become significant recurrent features [8]. The speed of the change will affect the degree of dramatic impact, and this provides a useful way to distinguish between rupture and shift. Rupture implies suddenness, as if the existing impression is instantaneously shattered by a change to a new state or context, a process that may well elicit feelings of surprise [9]. Ruptures can be particularly striking, and changes might move between, for example: inside/outside; distant/close; or real world/otherworld; either singly or in combination. Shift, on the other hand, implies a less sudden change from one state to another, or a less overt contrast between what is shifted from and what is shifted to.

Interruption, used in Roy's sense of the term, occurs when ongoing material is halted without a consequent [10]. Significantly, it could occur at any point, and implies neither a preparation nor a resolution [11], suggesting that interruption engenders a feeling of surprise. In contrast, *deflection*, a concept which Roy borrows from Meyer, occurs when "the continuity of a main process is interrupted by another process which aims towards a new goal"

[12]. While it may be sudden, it is of course possible that a deflection can be a graduated process.

5.4 Behavioural relationships

In the spectromorphological sense, “the metaphor of behaviour is used to elaborate relationships among the varied spectromorphologies acting within a musical context” [13]. Applicable at various structural levels, behaviour addresses horizontal relationships (*motion coordination*, concerning concurrence) and vertical relationships (*motion passage*, concerning movement between contexts as well as issues of causality i.e. situations in which “one event seems to cause the onset of a successor, or alter a concurrent event in some way” [14]). The notions of *conflict/coexistence* and *dominance/subordination* are the basis of the *relationship modes*, which provide ways to interpret behavioural relationships. These modes are: equality–inequality; reaction–interaction–reciprocity; activity–passivity; activity–inactivity; stability–instability [15].

[1] SMALLEY, Denis, "Spectromorphology: Explaining Sound-Shapes", *Organised Sound*, vol. 2, n° 2, 1997, p. 112-113.

[2] ROY, Stéphane, *L'analyse des musiques électroacoustiques : modèles et propositions*, Paris, L'Harmattan, 2003, p. 340-365. Stewart has produced a complete translated summary of Roy's functions (STEWART, Ian, "Functional Analysis and Electroacoustic Composition: Theory, Extensions and Implications", Dissertation, City University, London, 2007).

[3] Both authors use the terms transition and prolongation.

[4] SMALLEY, Denis, *op. cit.*, p. 115-117.

[5] STEWART, Ian, *op. cit.*, p. 93-94.

[6] SMALLEY, Denis, *op. cit.*, p. 117-118.

[7] *Ibid.*, p. 118. Smalley's behavioural notion of *motion passage* concerns the movement between contexts, illustrated by the *voluntary–pressured continuum*. These terms describe different impressions of causality, “where one event seems to cause the onset of a successor, or alter a concurrent event in some way” (*Ibid.*).

[8] The definition of space is taken to involve source-bonded, spectral and perspectival aspects (SMALLEY, Denis, "Space-Form and the Acousmatic Image", *Organised Sound*, vol. 12, n° 1, 2007, p. 56). In combination these may convey additional cultural associations.

[9] The continual presence of sudden ruptures throughout a work may reduce the sense of surprise as the listener becomes accustomed to the recurring process.

[10] ROY, Stéphane, "Functional and Implicative Analysis of *Ombres Blanches*", *Journal of New Music Research*, vol. 27, n° 1-2, 1998, p. 181.

[11] STEWART, Ian, *op. cit.*, p. 93.

[12] ROY, Stéphane, "Functional and Implicative Analysis of *Ombres Blanches*", *op. cit.*, p. 180. Roy's more recent definition of deflection, translated by Stewart, provides additional detail: “a *Deflection* is a unit that interrupts the progression of another unit while itself implying a new musical direction. Typically the *Deflection* occurs just before a point of resolution, in order to maximize tension. It need not be an *Interruption*, since the sonic fabric need not be ruptured; it may be sufficient simply to reorient the listener's attention to a previously backgrounded constituent of the unit being *Deflected*. The *Deflection* is assigned only to the unit initiating the new progression” (STEWART, Ian, *op. cit.*, p. 95-96).

[13] SMALLEY, Denis, "Spectromorphology: Explaining Sound-Shapes", *op. cit.*, p. 117.

[14] *Ibid.*, p. 118.

[15] *Ibid.*, p. 119.

6. Higher-level relationships

6.1 Identities as carriers of structure

An identity can act as a carrier of structure by providing a central point of focus that recurs, characterising particular moments or passages throughout a work, and drawing attention to the related sound material over longer timescales. To carry structure in this way, the sound material must make a memorable impact, and exhibit considerable spectromorphological consistency among recurrences so that related instances are perceived to share a common spectromorphological typology. Degrees of change are feasible, creating impressions of development and forward motion within and across the various occurrences.

6.2 Space and settings as carriers of structure

The Oxford English Dictionary defines a ‘setting’ as “the place or type of surroundings where something is positioned or where an event takes place,” emphasising both configuration and location. In musical contexts, acousmatic images [1] will appear both fleetingly as well as existing for more extended durations, so the concept of the setting as used here includes not just configuration and location, but a sense of temporal permanence and, in turn, the establishment of a spatial feel.

Settings, defined by the constituent spectromorphologies and the impressions of space that they convey, can be significant carriers of structure, characterising sections and defining recurrent environments of musical activity. The constituents may not be continually audible (the balance among them may shift) and may appear to vary and evolve. However, it is the overall impression residing in memory that remains significant, based on a particular spatial ‘feel’ and a sense of homogeneity that is memorable and can be recalled when the setting recurs. Thus, the memorability of the spatial attributes of a setting will be key to its structural significance.

Whatever the character of a setting (which might range from ‘highly realistic’, such as seemingly unaltered field recordings, to those that are ‘remote from reality’, bearing few real-world references and defined more by spectromorphological design), its temporal permanence can make it significant at higher structural levels by establishing particular spaces and moving among them. Indeed, recurrent settings can create high-level structure through impressions of spatial contrast, and spatial change may serve as an important structuring principle, establishing, returning to, or perhaps elaborating particular settings or types of setting.

6.3 Higher-Level Relationship Categories

The various higher-level relationships will now be described. These categories were developed during the author’s Doctoral research [2] by analyzing existing works and by experimenting with the observed ideas when composing as a means to evaluate their analytical and creative potentials. Each category stands alone, yet different higher-level relationships may be observed among the same sounds e.g. a Marker relationship might also operate to Reinforce the sound identity in consciousness. They will be illustrated within the subsequent discussion of *Novars*.

(a) Marker

Markers are recurrent identities that operate at higher levels of structure by drawing attention to temporal position, marking sections or particular points within a work. They exhibit distinct spectromorphological and/or typological correspondences, and recurrences encourage the appraisal of what has happened in

between by jogging memory and creating a sense of perspective during the unfolding of the piece. From the higher-level viewpoint, markers help delineate the structure of the work and might be considered recurrent musical landmarks.

As they recur, markers will exhibit different degrees of *contextual congruence*. For example, in one instance a marker identity may appear to be integrated into the immediate setting, while in other instances its occurrence may seem more separate from the ongoing context and be a relative surprise. The degree of congruence will depend on the spectromorphological relatedness to the surrounding setting and, in source-bonded instances, on the feasibility of the identity's existence within, or how relatable it is to, that context. Accordingly its structural function may change. Once a marker identity has been perceived due to its recurrence, its presence is unlikely to be a complete surprise in subsequent instances.

Markers can display dual functionality by fulfilling additional roles specific to the contexts of each instance, and recurrences of a marker might also carry out, for example, *instigation*, *termination* or *rupture* functions. To remain active as a marker, the impression of higher-level recurrence must continue. Markers may also signal that a particular change or outcome is going to occur, particularly if earlier occurrences have resulted in, and reinforced the likelihood of, that same outcome. Accordingly, markers can condition expectations.

(b) Reinforcement

Recurrences may *reinforce* earlier instances, both strengthening the spectromorphological impression in consciousness and increasing the perceived significance of the identity within the work. While reinforcement can apply to single, striking identities, it is particularly relevant to settings at higher structural levels; in the latter case, recurrences can strengthen the impression of a particular atmosphere or spatial 'feel', in turn cementing the environment of the piece. The occurrence and recurrence of different settings will define the scope of this environment. Additionally, function-types and processes, carried by similar or different spectromorphologies, may recur and striking functions may accordingly be reinforced.

(c) Clarification/elaboration

Recurrences may *clarify* initial impressions by allowing further consideration of their characteristics, and facilitating a potentially clearer, more coherent view of the sound material. *Elaboration* concerns the apprehension of further significant detail, which may simply occur through the similar recurrence of earlier material (encouraging more extensive listening and appraisal, and allowing the assimilation of increased detail). In this sense clarification and elaboration overlap. However, elaboration also occurs through spectromorphological additions or developments that expand the scope and detail of the identity or setting, and which provide a more extensive overall impression of the sound material while remaining clearly connected to the earlier instances.

(d) Delayed significance

The significance of an identity may be unclear until it recurs, and in this sense its significance is *delayed*. The recurrence of the identity may occur in a new context in which a new local structural function may become apparent, or in light of significant intervening material that stimulates an alternative or enhanced impression of the identity, yet it is only at the point of the recurrence that its additional significance is apprehended.

(e) Retrospective significance

Identities can attain additional significance retrospectively due to the subsequent presence of new sound material that re-contextualises those earlier identities. This can occur when new material arouses spectromorphological and/or source-bonded connections that provoke a projection backwards to what has

already been heard (i.e. to what exists in memory). However, the new material redefines that memory by stimulating an alternative or enhanced impression and by lending it a further degree of significance. As such, this involves reappraising the memory of identities already encountered in light of new sound material, but this process is not dependent on the present recurrence of those remembered identities.

(f) Sound-event chains

The recurrence of distinctive linear arrangements of spectromorphologies can establish sound-event sequences, or *chains*. The identity of such a chain will be determined by the spectromorphologies present, their structural function and the nature of the temporal relationships among them. Chains may operate at various levels of structure, such as building from lower-level relationships to generate higher-level phrases or sections whose recurrences become distinct higher-level events. For instance, a chain could be composed from a particular sequence of identities, or sequential processes of shift and rupture, either individually or in combination. Chains may also be defined by recurrent sequential shifts between sound identities or sectional settings. If a particular chain becomes familiar through its recurrence, a degree of expectation will be evoked, which may be fulfilled or thwarted upon subsequent instances of the chain.

Chains of settings may also recur, acting as a reminder not just of the earlier spatial impressions, but also of their sequential deployment in the work. These recurrences might be more fleeting, but their momentary recurrence in a chained formation may be sufficient to evoke the *memory* of the more extensive chained spaces and settings encountered earlier on.

(g) Covert correspondence

Identities may exhibit limited degrees of correspondence, yet there may still be significant aspects in common that result in covert correspondences at higher levels of structure [3]. Rather than being based on the similar repetition of a previous identity, covert correspondences maintain a sense of the previous instance(s), recalling or capturing the 'feel' or character of the earlier *parent* material in some way and creating a subtle projection backwards, though without returning to that original state.

Spectromorphological correspondences might be spectrally inclined (spectral details provide the more strongly perceived connections among sound identities) or morphologically inclined (where identities share a similar and particularly striking external morphological profile, creating a correspondence in spite of differing spectral content). In this way covert correspondences can lend coherence to the sound world of a work while potentially moving into new territory. Such correspondences may also be established with more than one parent identity, for example when spectral correspondences and morphological correspondences allude to different origins respectively. The perception of covert relationships may result from the apprehension of subtle features and connections only gleaned from multiple listenings, rather than during the first experience of the work.

[1] SMALLEY, Denis, "Space-Form and the Acousmatic Image", *Organised Sound*, vol. 12, n° 1, 2007, p. 35-58.

[2] SEDDON, Ambrose, "Recurrence in Acousmatic Music", Dissertation, City University, London, 2013.

[3] Covert correspondences may also be perceived at lower levels of structure, but the close temporal proximity of the related identities may suggest that a process of spectromorphological variation has occurred, and the relationship may be most appropriately interpreted in this way.

7. Considering *Novars*

Novars opens with a striking composite of pitch-based, attack-decay-upbeat identities. After the initial discussion of this composite of identities (which can be considered an identity in itself), higher-level relationships among its recurrences will be appraised, followed by a discussion of the two other significant recurrent identity types: volatile textural material based on door-like slams and creaks, and granular pitch textures that exhibit vocal-like spectral content. Lewis's analysis of this work includes a structural diagram that illustrates where the main identity types recur [1]. For this discussion, a similar but simpler diagram is provided, focusing on the occurrences of the main identities (Figure 2). Whilst some of the identity descriptions used in this article are similar to Lewis's (e.g. door-like slams/creaks), they often differ slightly in order to highlight the distinguishing spectromorphological features appropriate to this discussion.

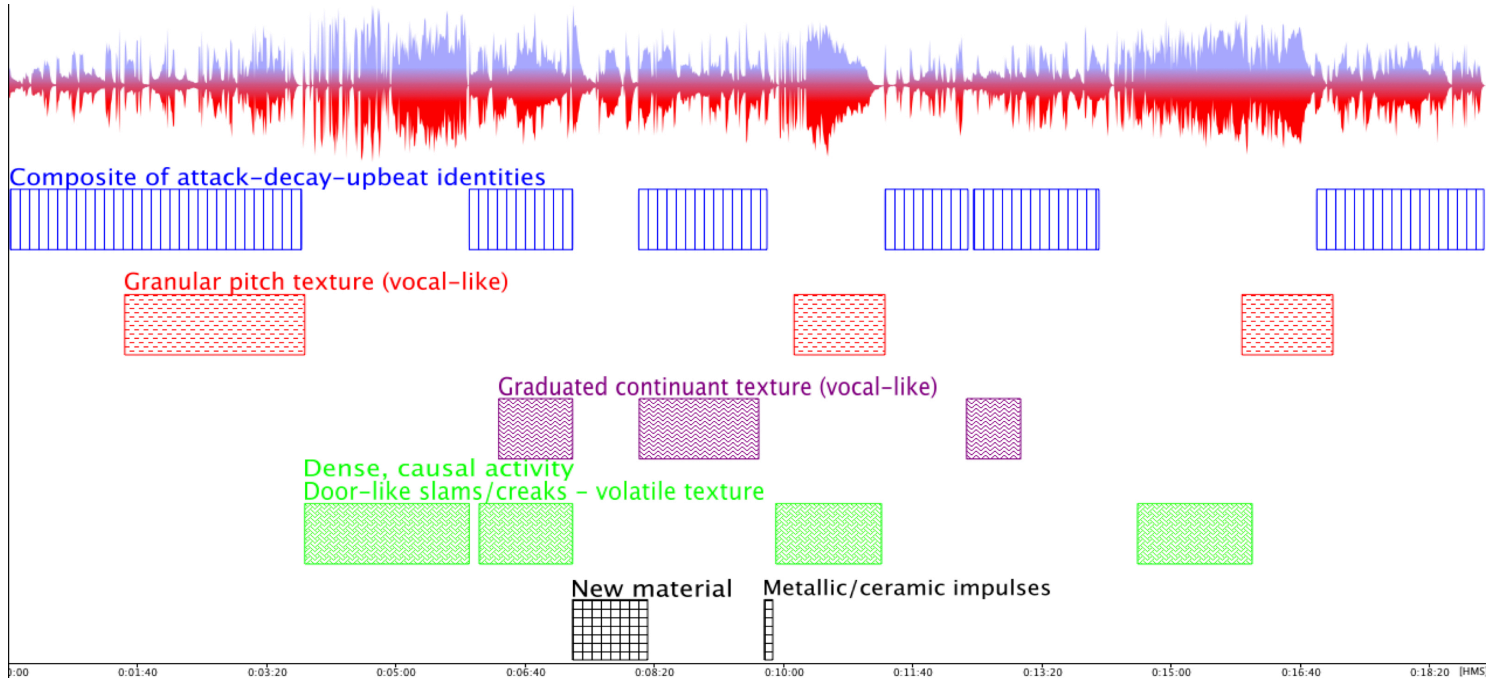


Figure 2: Overview of *Novars*.

7.1 Composite of Pitch-Based Attack-Decay-Upbeat Identities

The opening of Dhomont's *Novars* [2] features attack-decay morphologies in a variety of orientations.

Sound Example 1. Dhomont, *Novars*, 0'00–1'40.

A variety of forward and reverse versions exhibit different kinds of prolongation while also creating occasional upbeats; distinct sound shapes are easily discernible. The identities of the weakly source-bonded opening instances are defined and united by gestural impetus, morphological profile, and a pitch content that is primarily stable. Pitch stability lends the passage a sense of permanence, yet the attack-decay morphologies also exhibit spectral contours, which manifest as progressive high-frequency restriction or sudden spectral brightening. All these features contribute to the gist of these identities. Lewis has described these as "Filter-Swept Chords/Resonances" in his analysis of this work [3], and the occasionally unexpected nature of the 'filter-sweeps' further characterise the identity. High-frequency restriction often coincides with the decay of the sound, as might be expected in real-world decay phenomena (although here it is exaggerated), but occasionally the reverse-attack morphologies feature similar progressive high-frequency restriction. This subverts any sense of realism and further characterises the sound material. According to Smalley's concepts of *gestural surrogacy*, these identities can be considered third-order, tending to remote, gestural surrogates [4]; listening tends to focus on the sudden gestural action, and how the spectra progress over time in both predictable and less predictable ways.

The linear arrangement of the attack-decay morphologies, combined with the subtle changes in spectral content, focuses attention on the progression from one instance to another. The strength of identity of this sound material is reinforced by its temporal organisation, and the play on permanence (pitch) and variation (gesturally and spectrally) is a significant aspect of the passage. There is an intrinsic connection among forward-attack and reverse-attack morphological types (a form of 'source bonding'), their arrangement here suggesting an organisational process evolving from the opening attack morphology. This, coupled with the general pitch stability, creates a sense of cohesion within the sound world. Indeed, a sense of cause-and-effect exists between each attack-decay structure, and the sound material can be viewed as a series of morphological events that contribute to the perception of a longer, composite identity.

7.2 Higher-level relationships at play

This composite chain of *attack-decay-upbeat identities* [5] initially occurs on its own.

Sound Example 1. Dhomont, *Novars*, 0'00–1'40.

Subsequent recurrences establish higher-level relationships throughout the piece while fulfilling characteristic structural functions within the immediate contexts. *Shift* or *rupture* functions occur most commonly, while the behavioural relationships [6] among the identities further define the recurrences in

terms of relative dominance and degrees of coexistence.

The *granular pitch texture* then emerges from 1'30, eventually *coexisting* with the chain of attack-decay-upbeat identities.

Sound Example 2. Dhomont, *Novars*, 1'30–3'49.

The next passage features a contrasting acousmatic image of dense causal activity and volatility (3'49–5'57) dominated by the *door-like slam/creak* identities, building to a climax at 5'55. This passage features: noise-based (door-like slam source bonding) and inharmonic impulses (metallic and ceramic source bondings) with varying pitch emphasis and developing rhythmic phrases; creak-like pitch descents; and metallic, decelerating iterated impulses (entering at 5'25).

Sound Example 3. Dhomont, *Novars*, 3'49–5'57.

The opening chain of attack-decay-upbeats then recurs seemingly identically at 5'57, *reinforcing* this composite identity in consciousness as well as establishing a *marker* relationship, projecting back to the beginning and creating a sense of temporal perspective. This recurrence is striking because it contrasts spectromorphologically with the preceding material, characterising the spatial *shift* that consequently occurs. This shift is emphasised by the energetic *accumulation* of the preceding texture and by the energy dispersion conveyed by the returning chain of attack-decay-upbeats. (This could also be considered a 'tension/(delayed) release' function pattern; the activity must end at some point, and this end is confirmed by the recurrence of the opening material.) However, continuing elements of the volatile door-like slam/creak texture, along with the subsequent pitched, quasi-vocal graduated continuant morphologies *emerging* at 6'19, thwart any expectation of a complete return to the opening. So, although briefly *dominant*, the recurrent chain of attack-decay-upbeats soon *coexists* with the other elements in the acousmatic image.

Sound Example 4. Dhomont, *Novars*, 5'50–7'17.

Lewis's diagram and analysis categorises the vocal-like, graduated continuant texture as the same sound type as the granular pitch material first emerging at 1'30. However, the morphological contrast is sufficiently strong to justify viewing them as distinct identities that exhibit a spectral *covert correspondence*. Therefore the purple regions commencing at 6'19, 8'08 and 12'22 are considered an additional sound type in this discussion, and have been distinguished in terms of colour and shading accordingly.

A *rupture* to predominantly new material (impacts of variable pitch, pitch sustains, glissandi and noise-based and pitch-based granular textures in proximate space) occurs at 7'15, and the three main identities are absent.

Sound Example 5. Dhomont, *Novars*, 7'10–8'07.

However, at 8'08 the second recurrence of the chain of attack-decay-upbeat identities *ruptures* this new territory. In addition to *reinforcing* the spectromorphological imprint and shift/rupture function, and extending the *marker* relationship, the initial attack *instigates* a recurrence of the quasi-vocal graduated continuants of 6'19 at 8'08 (although with different pitch focus). This additional functionality expands the role of the recurrence while connecting to the previous shift/rupture instance at 5'57. The recurrences of the chain of attack-decay-upbeats keep it in consciousness, increasingly suggesting that this material is never 'far away'. As before, the recurrent material soon exists within a larger texture, but now features slight variation through transposition.

Sound Example 6. Dhomont, *Novars*, 8'00–8'35.

At 11'19, the chain of attack-decay-upbeat identities recurs a third time, momentarily in proximate space. The preceding granular pitch texture has *dissipated* (occurring at 10'05–11'18), and although there is a *shift* in setting, the onset of the attack-decay-upbeat morphologies is less striking than before because it does not appear to actively rupture or terminate the previous material.

Sound Example 7. Dhomont, *Novars*, 11'05–12'03.

Additionally, the chain of attack-decay-upbeat identities now features a higher frame of registral focus with changing pitch material, and the compromised spectral correspondence with earlier instances weakens the *marker* relationship, resulting in a more *covert correspondence*. However, this makes the next recurrence at 12'27 more striking. Spectrally the return at 12'27 corresponds more closely with the original version, and accordingly connects to it despite the distal location and more coexistent relationship with the other identities present.

Sound Example 8. Dhomont, *Novars*, 12'24–12'50.

The final recurrence, at 16'53, again follows the emergent granular pitch texture, yet appears before that texture has fully receded, *deflecting* away from the termination process. This heightens the impact of the recurrence and strengthens its marker relationship with the earlier instances.

Sound Example 9. Dhomont, *Novars*, 16'42–17'29.

Thus, throughout the work recurrences of this chain of attack-decay-upbeat identities are largely spectromorphologically consistent, exhibiting marker and reinforcement relationships to earlier instances. The chain of attack-decay-upbeat identities remains central to the music because its regular recurrences are a striking feature against which the evolution of the piece can be appraised. Its role is elaborated in relation to the other concurrent materials (also altering their significance) through its changing structural function and behavioural relationships.

7.2 Granular pitch textures and volatile door-like slam/creak textures

The passage of rhythmic door-like slams/creaks at 3'49 recurs and is *reinforced* at 9'54. Both of these instances result from a *shift*, but from different contexts. The first instance at 3'49 shifts from the chain of attack-decay-upbeats coexisting with the granular pitch texture.

Sound Example 10. Dhomont, *Novars*, 3'30–4'09.

The second instance (9'54) also shifts from the chain of attack-decay-upbeat morphologies, but now alongside *disappearing* quasi-vocal graduated continuants.

Sound Example 11. Dhomont, *Novars*, 9'30–11'18.

Additionally, this later shift is *instigated* by iterative inharmonic impulses at 9'45 (possible metallic/ceramic origin), which *rupture* the existing texture (0'15 in the extract). The similar spectromorphology and shift function of the recurrent door-like slam/creak texture creates a *marker* relationship whilst *elaborating* on the original by *reinforcing* and developing rhythmic figures. The granular pitch texture (first heard at 1'30) then recurs at 10'00–11'18 alongside the door-like slams. This *reinforces* the granular pitch texture identity, yet in this instance it gradually dominates the acousmatic image. These two recurrent identities thus create a new context, combining and recalling two previously separate settings, while also providing a new perspective on each identity due to their redefined behavioural relationships. The emergent granular pitch texture now becomes dominant (at 1'30, it emerged to become coexistent), while the door-like slams gradually become subordinate and immersed, rather than building to a climax.

At 14'10 the rhythmic door-like slam identities recur, *shifting* from and *rupturing* the preceding chain of attack-decay-upbeat morphologies.

Sound Example 12. Dhomont, *Novars*, 13'53–14'31.

The spectromorphological correspondence and similar structural function of the rhythmic door-like slams maintains the *marker* relationship with those at 9'54, while reinforcing their rhythmic aspects. Although additional identities are present, the rhythmic door-like slams remain a dominant feature, characterising the section. The *emergent* granular pitch texture reappears by 15'57, *reinforcing* the two earlier instances (1'30 and 9'54) due to its spectromorphological and functional similarity.

Sound Example 13. Dhomont, *Novars*, 15'45–16'40.

Notably, both of the passages spanning 9'54–14'10 and 14'10–19'05 feature the door-like slams at the onset, then the emergent granular pitch texture, and terminate with the returning chain of attack-decay identities. This results in a recurrent *sound-event chain*, but latterly of slower progression.

Further covert correspondences are present. In his analysis, Lewis points out that the final passage features untreated sections of material from the first movement of Pierre Schaeffer's *Étude aux objets*, as well as a cadence from Machaut's *Messe de Notre Dame* [7]. For listeners familiar with these works, these quotations may provoke impressions of *retrospective significance* and *covert correspondence* with the composite of attack-decay-upbeat identities and the granular pitch texture, alluding to their potential origin. For listeners unfamiliar with these works, the quoted material could solely be the source of a *covert correspondence*.

Sound Example 14. Dhomont, *Novars*, 16'50–19'05.

[1] LEWIS, Andrew, "Francis Dhomont's *Novars*", *Journal of New Music Research*, vol. 27, n° 1-2, 1998, p. 71.

[2] DHOMONT, Francis, "Novars", *Les dérives du signe*, CD, Empreintes Digitales, 1989, IMED 9608.

[3] LEWIS, Andrew, *op. cit.*, p. 69. Lewis further asserts that the pitch structure of the resonant sounds is based on "a quasi-fundamental, above which float other 'partials' based on a modal arrangement" and that, on occasion, this harmonic pitch set is disturbed by resonances foreign to the modal scheme (*Ibid.*).

[4] Smalley suggests that sound-making gestures (whether of human, animal or environmental origin) can be seen to create spectromorphologies. Conversely, any perceived spectromorphologies may be indicative of specific gestural events, which are identifiable to varying degrees of accuracy. Thus, the degree of perceived connection between a spectromorphology and its gestural origin can be described in terms of its *gestural surrogacy*. The categories are: *first-order surrogacy* (sound-making prior to musical organisation); *second-order surrogacy* (traditional instrumental play/performance practice); *third-order surrogacy* (imagined gestures and questionable reality of the source or cause); and *remote surrogacy* (source and cause are unknown, and human gestural origin is absent) (SMALLEY, Denis, "Spectromorphology: Explaining Sound-Shapes", *Organised Sound*, vol. 2, n° 2, 1997, p. 111-112).

[5] The configuration of chained structural functions varies, but for clarity, the generalised description of *attack-decay-upbeat* will be used in this discussion when referring to this composite of sound material.

[6] SMALLEY, Denis, *op. cit.*, p. 117-118.

[7] LEWIS, Andrew, *op. cit.*, p. 73.

8. Conclusions

Dhomont's *Novars* exhibits a variety of higher-level relationships. From the higher-level perspective, the identity types often remain spectromorphologically consistent, but their changing structural functions and behavioural relationships determine their developing significance, which in turn affects the interpretation of those higher-level relationships. These identities fulfil a plurality of functional roles. Many of the sectional changes in this work are characterised by rupture or shift processes whose dramatic nature helps establish or reinforce new and recurrent territories. While the antecedent and consequent pairs are rarely exactly the same, these recurrent processes of change become a significant feature of the work.

Higher-level relationships often depend upon considerable degrees of spectromorphological correspondence, reinforcing identities over intermediate timescales or making their recurrence clearly apparent over longer periods. The structure of *Novars* is conveyed through a restricted number of distinct settings, whose contrasts make them striking when they recur. Spatial characteristics (in spectral, perspectival terms and/or source-bonded terms) are embedded within the settings, resulting in a spatially-oriented structure. While the spaces and settings in *Novars* are not always source-bonded, they retain a sense of contrasting spatiality through varied impressions of spectral space, impressions of causal gesture (with a degree of source-bonded space) and morphological detail. Covert correspondences are significant features, providing the means to expand the established sound worlds through novel identities and new perspectives that are rooted in, but distinct from, the other sound material(s) of the works.

Interpretation of the higher-level relationships in *Novars* is fundamentally linked with structural function and behavioural relationships. While recurrent identities and settings create structure through spectral and morphological correspondences, notions of change or variation at higher levels relate to *how* identities recur and *what happens* as a result of their recurrence, i.e. the circumstances and manner in which they reappear. This strongly influences their perceived significance, with structural function and behavioural relationships articulating the more detailed nature of higher-level relationships. Of course, structural function and behavioural relationships may change, stimulating fresh interpretations, as will also occur when identities recur in new contexts. However, some structural functions are carried by different identities, yet the functions noticeably recur. For example, spatial ruptures, shifts and interruptions play a significant role in articulating sectional change and contrast, the dramatic recurrences making the higher-level relationships particularly apparent. These processes are clearly significant in *Novars*, contributing to the character of the work, yet they may also be observed in much acousmatic music, and might be considered a unique and defining stylistic feature.

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