

# RECURRENCE AND SOUND MATERIAL IDENTITY IN ACOUSMATIC MUSIC COMPOSITION

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## ABSTRACT

This paper introduces the concept of recurrence within acousmatic music, and explores its potential as an approach to both novel composition practices, and the examination of existing musical works. Notions of musical structuring or semblances of formal organisation can often be traced to the perception of recurrent phenomena within a work. The process of recognising returning sound identities and their transformations, drawing links between them, and trying to understand the various interrelationships can be a rewarding aspect of the acousmatic music listening experience. These sound material connections can be made through all manner of perceivable characteristics, including source associations, more subtle spectral attributes, or an evident process of progressive transformation. This paper will explore the concept of recurrence in terms of sound material identity and temporal relationships, and demonstrate its potential application to both compositional thinking and the critical examination of acousmatic works.

*Keywords* – recurrence, identity, acousmatic music composition, temporal relations

## 1. INTRODUCTION – THE RECURRENCE THESIS

A recurrence can be defined as a repeatedly occurring event, both in immediate proximity and over longer timescales. However, I intend to extend this view of recurrence to include the perception of sound material derivations through transformation processes. Transformation processing often leaves traces of previous states perceivable, and interesting connections may be made where this is the case. When certain features are perceived to be the unifying elements between a collection of sounds, groupings can be established. From these groupings, recurrences and structural significances may be deduced. Furthermore, recurrences may be perceived at higher structural levels in terms of textural combinations or similarity of spectral types.

## 2. IDENTITY

In order to hear that a recurrence has occurred, the sound material must have a strong identity and be memorable in the first instance. However, some sounds may be more susceptible to a recurrence-based strategy than others because their particular characteristics make them more distinct; such distinctness may well be related to the musical context in which the sound material is presented. This raises the question of what contributes to the perception of a memorable identity in the first instance.

### 2.1. Contour

Composers working with melodic materials have noted the significance of shape and contour to identity. Schoenberg's concept of the *motive* focuses on "intervals and rhythms, combined to produce a memorable shape or contour" [1]. Similarly, Harvey has emphasised the necessity for melodic shape when composing the electronic work, *Ritual Melodies*. His concern is that when material returns after a long absence "it is still recognizable, it is a strong enough shape and personality" [2] to articulate musical form. Both Schoenberg and Harvey demonstrate an interest in the memorability of their sound materials over longer periods of time; their concepts of identity in terms of strong, memorable sound shapes with personality remain relevant to acousmatic contexts. Yet, the discussion of electroacoustic sound materials requires a flexible attitude to pitch space and contour, extending beyond traditional notions of tempered intervals. The ways in which morphological structure and spectral content change over time give a sound its shape or contour, and hence its characteristic identity. Smalley's concept of *spectromorphology* "is concerned with perceiving and thinking in terms of spectral energies and shapes in space, their behaviour, their motion and growth processes" [3] and is usefully incorporated into a descriptive approach to sound identity. However, another factor significant to identity in electroacoustic practice needs to be considered.

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## 2.2. Source Links

One of the notable features of acousmatic music is the potential to incorporate the actual sounds of real world phenomena into musical works. The association of sound material to a feasible source will influence the perception of that sound's identity. Emmerson's concept of the *Darwinian Ear* proposes that the connection of sounds to possible sources is an instinctual listening behaviour, conditioned by the evolution of human survival processes [4]. Furthermore, 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" [3]. It seems likely that the degree to which a sound is lodged in memory will depend to a significant extent on the strength of any perceivable source or cause relationship or the degree to which that sound can be related to some previously experienced archetype.

The strength of identity of sounds that do *not* bear strong source or cause relationships is of particular significance in the acousmatic realm. For these cases, the most dominant spectromorphological features will define the identity, assisting the apprehension of similarities between sounds, and the recognition of recurrent phenomena. These features may possess a particular emphasis such as morphological profile, or characteristic pitch content. As a result, the sound's identity will be established separately from significant source or cause associations.

## 2.3. Continuum of identity

Given the broad range of sound material experienced in acousmatic music, I suggest that two classifications of sound material identity exist at the extremes of a continuum, ranging from *discrete identities* to *identity traces*. The placement of sound materials onto this continuum may aid the discussion of identity, and the categorisation of sounds when listening. Many identities will exist somewhere between these two extremes, and listening context will influence their placement.

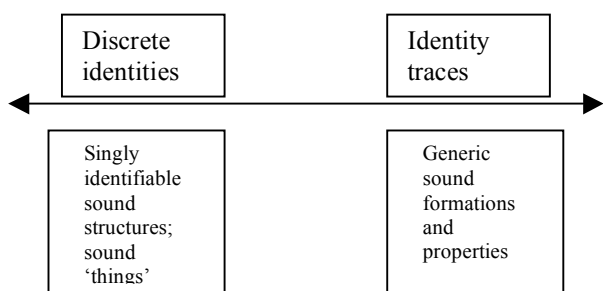


Figure 1 Continuum of sound identity

*Discrete identities* are coherent entities existing within the musical discourse as singly identifiable sound structures, and the perception of a sound 'thing' is apparent. Aural segmentation within acousmatic music contexts is not always possible, but certain characteristics encourage the perception of sounds as discrete formations, fostering a stronger sense of singularity. The defining nature of the identity may be based on strong source links or on dominant spectromorphological characteristics that lodge the sound in memory.

*Identity traces* refers to sound materials whose identity is less distinct, and more generic formations and properties are perceived; the sound materials themselves do not remain in consciousness to the same degree as specific identities. For example, a sustaining, reverberant drone sound may be significant because it gives impressions of stasis and spatial dimension even if the impression of an original event or entity is less strongly perceived. The musical significance of such sounds should not be underestimated as they may well contribute to the sound world of the piece and relate to other sound materials in less obvious ways.

## 2.4. The Perception of Units

It is likely that sound identities that impose themselves strongly on listening consciousness will be perceived as identifiable units to some extent. This raises the issue of the thresholds of unit perception; I suggest that the apprehension of units is based on the perception of spectromorphologies that are distinct from the other material within a given sound image. However, it is important to stress that the perception of recurrent phenomena may not be solely unit-based, as such an attitude assumes that it is possible to divide any work into clearly defined constituent parts in the first place. This can become problematic, especially where spectral boundaries overlap, or where a texture is populated by many sounds. I therefore suggest that recurrences may also be perceived through more general characteristics such as particular textural combinations or spectral similarities.

## 3. Musical examples

At this point, musical examples usefully illustrate the significance of the concepts of shape and contour and source connection, and illuminate the extent to which a sound's dominant spectromorphological features characterise its identity. The exact location of each of the following examples on the identity continuum will depend on each individual's listening response. The timing location of each example within the work is indicated within parentheses.

### 3.1. *Novars* by Francis Dhomont

Example 1 (0'00 – 0'48) is from Francis Dhomont's *Novars*. It features the commonly experienced attack-decay morphological archetype, presented in a variety of ways. Slightly differing forward and reverse versions can be heard from the outset, with various kinds of prolongation. The identification of an actual source is not possible; the identity of this sound material is oriented around the varied recurrence of a morphological archetype, and a pitch content that is primarily stable, creating a sense of spectral-spatial permanence. However, more subtle spectral variations to the attack-decay sounds occur through progressive high frequency restriction, or sudden spectral brightening. Lewis has described these sounds as "Filter-Swept Chords/Resonances" in his analysis of this work [5]. The unexpected nature of the filter-sweeps further characterise the sound identity. High-frequency restriction often coincides with the decay of the sound, as might be expected in 'real world' decay phenomena, but occasionally the reverse-attack morphologies feature progressive high frequency restriction as well, subverting this aspect of reality.

The linear arrangement of the attack-decay morphologies, combined with the subtle shifts in spectral content, focuses attention on the progression from one instance to another. 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. The play on permanence (spectrally) and variation (gesturally) is a significant part of the music, and the forward-attack and reverse-attack morphological types possess an intrinsic connection between themselves.

### 3.2. *Trois Petites Histoires Concrètes* by Stéphane Roy

The next examples are taken from *Ruptures*, the first movement of Stéphane Roy's *Trois Petites Histoires Concrètes*. In example 2 (0'12 – 0'40), from the beginning of the movement, a prominent metallic sound identity is present, characterised by fast attack morphologies. As the music unfolds, this sound material is explored in the rhythmic domain, instilling impressions of metallic material and abrupt rhythmic gesture into listening consciousness. The rhythmic behaviour of these spectromorphologies, characterised by repetition and sudden audio edits, is a significant factor in establishing an overall sense of identity. Relative pitch stability and spectral permanence is also evident in a similar manner to that of the *Novars* extract discussed above, and this further characterises the sound material.

In the final minute of the movement, traces of this identity can be heard. In example 3 (3'08 – 3'53), low-pitched drones are present, possessing a distinct metallic

quality as suggested by their inharmonic character. The static morphological profile is in extreme contrast to the highly rhythmic opening of the movement. However, these sustaining morphologies exhibit traces of the original metallic materials due to their similar spectral content.

## 4. TIME AND TEMPORAL RELATIONS

Temporal organisation is significant to the perception of recurrent phenomena, and proximate sounds will relate differently to distant ones, while notions of identity and musical function may shift. New attitudes to the temporal relationships within a piece will occur once previously heard material is referred to, and returning events may act as indicators of time passing on short-, medium- and long-term time scales. These events will attain different structural significances depending on their relative temporal locations within a musical work.

### 4.1. Proximate relationships

Over shorter timescales, the experience and evaluation of time passing is often based on the rate and nature of what does or does not change. For example, repeated rhythmic material will be perceived differently if other characteristics vary, such as implied spatial location, rate of spatial motion or spectral content. The use of such material can serve specific musical functions, such as increased sense of motion, tension, or inertia.

### 4.2. *Éclats de Voix* by Robert Normandeau

Immediate recurrence is significant in forming and altering the identities of sound materials within a work. The short time-scale repetitions in Robert Normandeau's *Éclats de Voix* allow for a shifting perception of the sound material as illustrated by example 4 (0'00 – 0'45). With immediate reiteration, sound fragments begin to disassociate from the initial source links, and the impression of a human vocal origin is quickly subverted. The rhythmic implication of such short and regularly repeating material creates a strong sense of identity in itself, characterising the sound primarily as a rhythmic entity. The morphological similarity of immediate reiterations creates a sense of continuity and predictability, and listening tends to focus on less obvious characteristic values, such as changes in spectral brightness, spectral emphasis, or perceived physical spatial location. In this example, a sense of long-term progression can also be perceived due to the general downwards pitch motion. This imparts a sense of expectation as the sound slowly descends and withdraws from the immediate listening space.

### 4.3. *Fouram* by Ambrose Seddon

Temporal proximity may also play a significant role in the perception of more subtle sound characteristics. This can be illustrated with an example from my own work *Fouram*, in which sustaining inharmonic resonances are characterised by slow moving spectral drifts, creating a texture of subtle yet continual motion (example 5 (4'51 – 5'27)). The intention is to give the impression of slow speed mobility and change through gradual upward and downward contouring. While this feature may not be significant enough in itself to characterise the material and make it memorable in a single instance, the close temporal proximity of the recurring drifts may be enough to instil this idea into consciousness. Subsequent referrals to this phenomenon within the work will hopefully be seized, and different versions of this sound type are used to characterise two of the sections in the structure of the piece.

### 4.4. Distant relationships

Over longer timescales recurrent phenomena can become reminders of a previous state, structural point, or event type. This has implications regarding the sense of temporal distance travelled and the listener's awareness of the present location within the music.

### 4.5. *Mimaméta* by François Bayle

For example, the reuse of a reversed attack sound within François Bayle's *Mimaméta* can be seen to function in terms of a sectional identity. It occurs at the opening of the piece, example 6 (0'00 – 0'06), and it then returns at 4'01", and in each instance is accompanied by pitch materials bearing similar harmonic relationships. This return occurs during a gesturally calm interlude, following the relatively active opening minutes. The sense of calm experienced gives the impression that the music has reached the end of a large-scale, structural gesture. The return of this distinctly identifiable sound entity gives a heightened sense of conclusion to the initial four-minute section, and the music then moves into a new phase. Temporal distance has been covered during the listening experience, and the recurrent sound reinforces the intuitive sense of sectional conclusion or ending experienced within the unfolding structure.

## 5. CONCLUSION

This paper has presented the concept of recurrence in acousmatic music as a means to a particular understanding of the perceptual connections between the sound materials within acousmatic works. It has been suggested that sound identity is key to the perception of recurrent phenomena, and the concept of identity has been discussed in terms of contour, source links, and the proposed *continuum of identity*. The problematic notion

of the unit within acousmatic music has also been acknowledged. The influence of proximate and distant temporal relationships on the perception of recurrent phenomena has been discussed. The application of these ideas has been illustrated with musical examples from acousmatic repertoire and my own work.

The examination of recurrent phenomena may further be used to gain a deeper understanding of the syntax of acousmatic works, and this approach may reveal new concepts offering alternative perspectives to listening and composition processes. This is the subject of my continuing research.

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