Proceedings of the 12th International Conference on Music Perception and Cognition and the 8th Triennial Conference of the European Society for the Cognitive Sciences of Music, July 23-28, 2012, Thessaloniki, Greece
Cambouropoulos E., Tsougras C., Mavromatis P., Pastiadis K. (Editors)

The experience of sustained tone music

Richard Glover

Department of Music., University of Huddersfield, UK
r.glover@hud.ac.uk

ABSTRACT

Background

Analysis of music created entirely from sustained tones rarely goes beyond superficial description of the performers' actions, whereas further investigation of the listeners' experience provides rich detail which supports the growing interest in this music.

Aims

To provide a model to effectively discuss the experience of experimental sustained tone music.

Main Contribution

Experimental sustained tone music lies within a lineage descending from the American minimalist composer La Monte Young. The term 'drone music' is sometimes used to describe some of the composers who I discuss; however, drone music very clearly implies music where pitches remain fixed, whereas much of the music discussed in this study utilizes glissandi and shifting textures, thereby negating what might be known as drone music (not to mention the 'fixity' of drone music is very much against the nature of the continually-transforming experience which is described in the presentation).

This study will discuss a cognitive approach to the experience of experimental sustained tone music, using recent compositions by Phill Niblock, Alvin Lucier and myself as source material. After initially outlining the kinds of harmonic transformation and global microtonal pitch structure involved in these pieces, the aural nature of sustained tones is discussed whereupon listeners are directed towards the activity within the surface layer of the sound. This activity is described in detail, comprehensively surveying the myriad acoustic and psychoacoustic phenomena prevalent.

The manner in which beating patterns, difference tones, transitory harmonics and standing waves are created (either within the sonic environment, or psychoacoustically) is described, as well as how the studied music is designed to promote a continually-transforming succession of these surface layer phenomena (for instance, through the use of close pitch clusters and loud dynamics).

As well as the specific external phenomena influencing our perception of the surface layer, there are also two gestalt grouping principles which underpin a number of structural decisions within the music included in the study, and influence our surface layer perception. Common Fate, where two gestalt units which move in the same direction are grouped together as the same gestalt, influences our parsing abilities, especially in the many gradual glissandi which appear in the studied music.

The second gestalt principle, Good Continuation, accounts for our ability to continue perceiving a predictable, unidirectional pitch pattern, even if it is hidden by another gestalt. In a number of pieces, much of the local level material employs a linear glissando which approaches a unison with a held tone, whereupon gestalt fusion within the critical bandwidth, known as 'masking', groups the two pitches as one making the perception of each individual line impossible; once the glissando continues on past the held tone and towards the limits of the critical bandwidth, the masking gradually dissipates and the glissando is perceived as a separate unit once it passes the just noticeable difference (the frequential-interval at which the auditory system begins to parse two close frequencies into two separate pitches). The instability of this perceptual experience in combination with transformational beating patterns arising from the waveform interactions provides a unique type of auditory environment.

The study then discusses the cognitive aspects of this micro-transformational perceptual environment. Due to the low informational change within primary parameters (as these tend to remain relatively constant throughout a piece), the ability to chunk these traditional signifiers becomes problematic. The presentation describes how the term 'parametric values' can also be applied to the varied extra-notational acoustic phenomena described above, including audible beating patterns, appearance of multiple harmonics, difference tones and standing waves, and it is here that our perceptual mechanisms can operate in distinguishing separate messages due to the vibrant activity of the surface layer.

The ability of our perceptual processes, when applied to these surface layer phenomena, to experience articulations within the sound is discussed (borrowing terminology from theorist Bob Snyder (2000)) as are the consequences for the listener in terms of notions of stability and instability (and the ramifications this has for the temporal experience of this music).

The presentation uses the phenomena of audible beating patterns for its discussion of articulations, whereby the chunking of these beating patterns into separate gestalts results in a single parametric change (e.g. speed of beating) constituting an articulation or variation within a section. This articulation may not significantly alter the manner in which we perceive the following information, in the way that a large intervallic change might suggest a hierarchy in comparison with smaller changes, but we certainly perceive it as an occurrence.

Snyder uses the word 'syntax' to define sets of relations between identifiable patterns (2000, p. 200), and so we can perceive that syntax generated by different beating patterns.

Returning to the idea of stability/instability, a clear dialectic is set-up between moments of pure global unisons, and sections with beating patterns. However, no new sectional boundaries are formed due to the low informational nature of the change, but there is a perceived alteration within the sound

Our own subjective perception of the passing of time is affected: moments of instability, with parametric changes occurring, are described as taking up more memory space (although this is used as a metaphor rather than a physical description) than stable moments of low information. Thus, duration experienced during instability is perceived as being shorter, but remembered as being longer, whereas the opposite holds for sections of stability – they are perceived as longer durations, but remembered as shorter. The flux between parametric change and parametric stasis ensures our perception of both experienced and recalled temporality is also in flux; to paraphrase music theorist Jonathan Bernard, this is "music that is about time" (1993, p. 122).

The manner in which this experiential process feeds into the compositional procedure for these composers is also explored, looking specifically at pitch structures employed, and how linear processes are used to create both active surface layers and a clear sense of closure within the auditory experience. Examples of large-scale pitch structures are presented for comparison, with discussion considering the various perceptual and cognitive consequences of the various pitch models, and how the composers' contrasting approaches to indeterminacy can result in significantly different experiential outcomes for the listener.

The composers involved in the study all mention their preference towards live instruments over electronic sources in performance, due to the indeterminate fluctuations which naturally arise from human performers. This leads to a short discussion of the approach taken by a performer of this music (an area which is often overlooked in these studies): should the performer aim for a more varied sound an attempt to impose 'articulations' into their playing, or should they merely adopt pianist Philip Thomas' 'non-interventionist' approach to performance, and allow surface deviation to arise naturally?

Implications

This study provides further strategies into how we might analyse sustained tone music, directing discussion towards the sounding experience and cognitive comprehension of the listener rather than solely from the score. This understanding can open up further avenues of research for composers, performers and interdisciplinary theorists.

Keywords

Sustained tone, gestalt, psychoacoustics, microtonal

REFERENCES

Bernard, Jonathan W. (1993). The Minimalist Aesthetic in the Plastic Arts and in Music. *Perspectives of New Music*, 31(1), 86-132.

Snyder, Bob (2000). *Music and Memory: An Introduction.* Cambridge, MA: MIT Press.