

The significance of timbre as a structural component in selected works by György Ligeti

György Ligeti is best known for his music which primarily explores texture – such as the works of the 1960s like *Atmosphères*, *Lux Aeterna* and *Lontano*. Even in his later works such as the Piano and Violin Concerti his distinctive use of texture has a prominent position in the works' structure and approachability for audiences. In this short paper I want to explore the idea that the use of timbre is just as significant for these works and can be seen to have a structural role. It is the way that the composite timbres evolve within a piece that is significant as much as the textures themselves. For example, micropolyphony is one of Ligeti's most well-known compositional techniques but it is a very simple process and in itself is not so significant in shaping the sound of a work. I suspect that the pitches of these micropolyphonic works could be changed without great detriment to the result. Harrison Birtwistle said that you could change all the pitches of his work and but not fundamentally change the result for exactly those reasons – it is the specific timbres being used that is important for the effect and impact of the work.

So how can we analyse the use of timbre in a work and how can it be used structurally? We could create a spectral graph of the work to show what frequencies are being used – but the ones I have seen are difficult to use or make much sense of other than at the macro level. We could describe how the timbres and different timbral combinations actually sound – exploring their qualities and characteristics but the danger with this is that it can become quite subjective.

Ligeti was highly influenced by the use of total serialism in the late 1950s, in spite of his public rejection of the approach, so he was aware of the idea of separating the parameters of music. The idea of timbre as one the serialised

parameters was current at the time which is related to Webern's concept of *Klangfarbenmelodie* – the creation of a melody from tone colour. The world of Webern's pointillist music has quite clearly influenced Ligeti's approach to timbre.

Jennifer Iverson (Iverson, 2010) has made some very useful observations about how Ligeti's music in the early 1960s is related to his experiences in the Cologne Electronic Music Studio. To create sound with different timbres at that time you had to add sine tones together in additive synthesis – building up each sound from the most basic building blocks. Ligeti ultimately abandoned the studio because of the time it took to create each sound but, Iverson suggests that the way that clusters are generated in works such as *Atmosphères* can be directly related to his electronic piece *Pièce électronique No. 3* which he never realised. So this suggests that Ligeti was thinking about timbre in quite controlled and structural fashion.

Pierre Boulez in an article entitled 'Timbre and composition – timbre and language' he suggests that timbral complexity can destroy the unity of the musical line. He states that 'beyond a certain speed, a succession of chords will be perceived as a mixture of timbres rather than as a superimposition of pitches' (Boulez, 1987, 168). Therefore he is suggesting that a fast succession of chords will not be heard as a harmonic progression, but rather as a series of timbres. This is certainly the case with Messiaen's chains of harmonies which are really colouristic or timbral rather than functional as they are essentially static. Boulez states that 'to me the functional possibilities of timbre only seem valid if they are linked to language and to the articulation of a discourse through structural relationships; timbre both explains and masks at the same time' (Boulez, 1987: 170). What Boulez is saying here is the timbre can only be used functionally if it is linked to the musical language and narrative, but it can mask musical structures if it is not in alignment with these aspects.

He suggests that in Webern's Symphony Op. 21 the use of *Klangfarbenmelodie* in the second canon of the first movement disrupts the identity of the line and thus the structural coherence. Therefore in this case the use of timbre does not align with the basic structure of the work.

Ligeti in an interview with Josef Häusler in 1968 states that '*Atmosphères* is a composition in tone-colours *par excellence* and is closely connected with Schoenberg's third orchestral from his opus 16 [Farben].' (Ligeti, 1983: 86). He also goes on to suggest that his later works such as the 'Cello Concerto, *Lontano* and *Lux Aeterna* that 'tone-colours no longer have predominance in articulating the form' (Ligeti, 1983: 86). The question is does Ligeti in these later works really no longer make use of 'tone-colours' or timbre in the articulation of form? Or may there still be times when the timbre has a major impact?

I am going to look at the seventh movement from his *Ten Pieces for Wind Quintet* (1966). This virtuosic work explores many different ways of developing and shaping material, and deals with the problem of how do to make micropolyphony work when you only have five lines. The seventh movement is in two halves: the first half up to bar 38 deals with five note chromatic clusters (5-1) mostly in very short note durations. The process that Ligeti uses is one in which the chord is rotated around the ensemble which has the effect of transforming its sound because the timbral mix is different. Each different iteration of the chord sounds like a new one because of the transformation of the timbral mix. It is a form of additive synthesis with each instrument functioning like one oscillator or sine – although of course their individual timbre is much more complex than this. With 5 different instruments there are 120 different variants possible (5 factorial) but Ligeti only uses 10 versions of the first chord. The chord at bar 30 is the same pitch class set but transposed. One

pattern that can be seen is a tendency for instrumental parts to move upwards in semitones until they reach the top note b at which point they move down to the bottom note g. This pattern breaks after a while and becomes less uniform although the b to g leap is still a feature of the movements. What appears to break up the pattern is when an instrument's pitch seems to stick and doesn't move – thus impacting on the other instruments. For example at bar 5-6 the clarinet's B flat sticks for A1 and A2 and then A3 and A4 as does the horn's part. A4 to A5 the bassoon bs are 'stuck' after which all the instruments' parts become more mobile but with no obvious pattern.

These observations show that Ligeti seems to be playing with the idea of using timbre as a main structuring feature. When you listen to this movement the chords do sound as if they are actually changing, but this is purely through evolving timbral mixtures and not changes of pitch. Boulez points out that Schoenberg creates a similar effect in 'Eine Blasse Wäscherin' from *Pierrot Lunaire* in which the top notes of the chords keep switching between instruments 'to form a melody of timbres which emerges from the harmony' (Boulez, 1987: 169).

Ligeti's *Hamburg Concerto* completed in 2002 is his last major work and is most notable for his use of natural horns which add untempered 'dirtiness' to the harmonic sound world. A movement like 'Spectra' has elements of the past in the manner in which it is centred on timbre as its main structural feature and is thus connected back to *Atmosphères*. The created harmony is made unclear through the combination of partials of the natural horns' harmonic series all in E apart from the solo horn which provides dissonant counterpoint against this. Each resulting chord seems to be independent and sounds quite unpredictable – it is the particular timbre that is memorable rather than the harmony. The movement is structured by chorale-

like horn passages interspersed with echo-like responses from the rest of the orchestra which are also timbral rather than harmonic. The climax is created by the horns canonically accelerating through their harmonic series of E and B flat into a high dissonant chord (F, E + flattened D) in the horns supplemented by (G flat, G, A, B flat) in the orchestra. The movement ends on a defiant orchestral D flat in octaves which creates a resolution - a throwback gesture from Ligeti's work of the 1960s.

This is a preliminary exploration of how Ligeti uses timbre as a structural element in music beyond works such as *Atmosphères* and his electronic music. I have tried to show that even in later music of *Ten Pieces for Wind Quintet* and in the *Hamburg Concerto* timbre actually plays a very significant role in determining structural elements and are not simply a surface feature. They are in fact in Boulez's words part of the work's musical language and discourse. The problem with discussing timbre is that there is a danger that we will simply describe how the music sounds to us which is a fairly pointless exercise. What is needed is methodology to deal with identifying and categorising different kinds of timbre.