Palindromic pitch-sequences in György Ligeti's *Kammerkonzert*

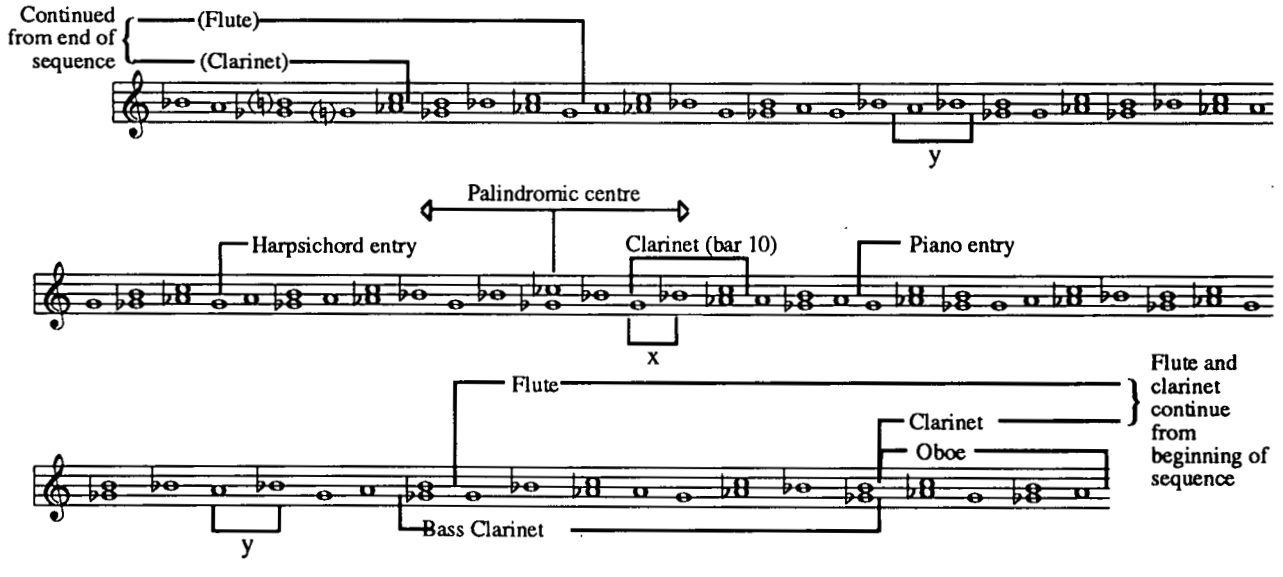
Martin Greet

Although Ligeti's *Kammerkonzert* (1969-70) is among his most frequently performed works, it does not seem to have received the same degree of analytical attention as other of his compositions from the same period. This apparent neglect is regrettable, for a study of the work's construction yields many fascinating insights into Ligeti's compositional methods. But such study also raises some difficult issues concerning the function of certain pitch structures, in particular the role of underlying palindromic pitch-sequences that occur in the first movement of the work. This paper, accordingly, seeks to demonstrate the ways in which these sequences are employed, and to give a possible explanation for their use.

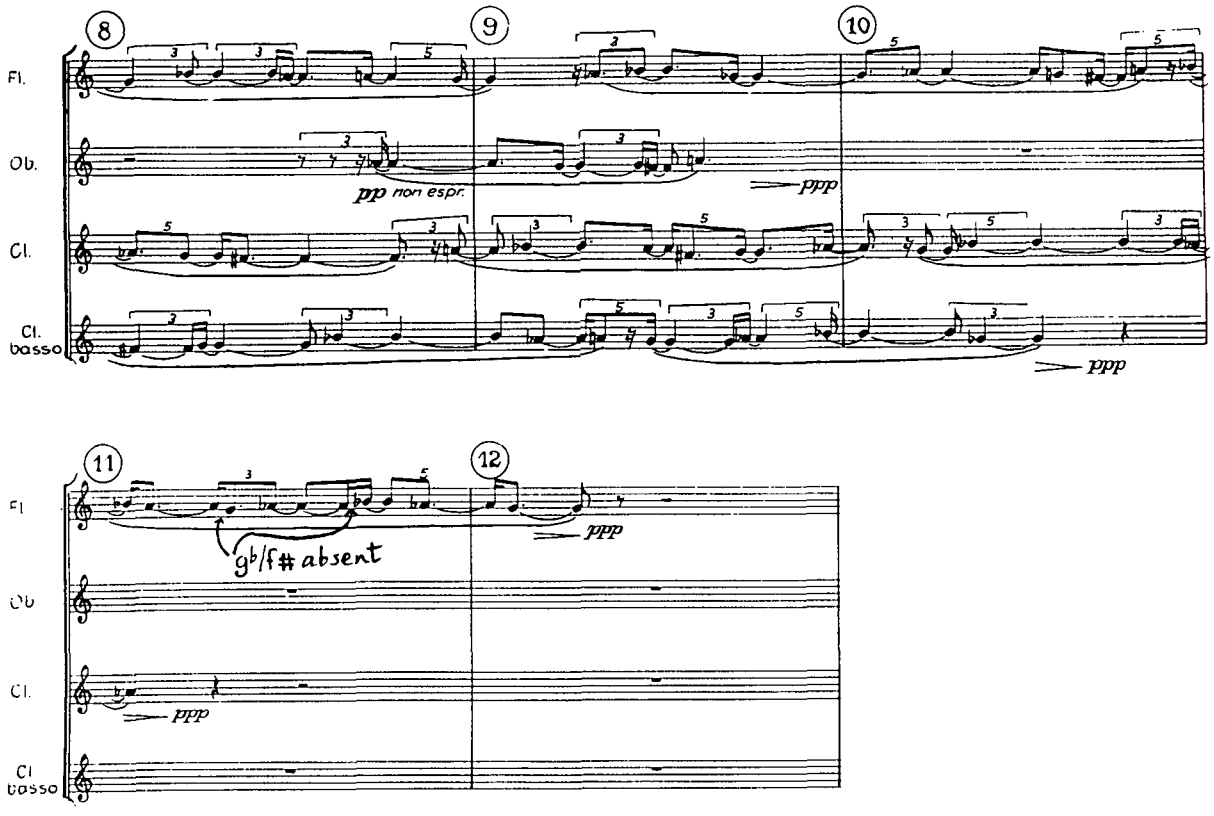
Three separate palindromic pitch-sequences operate in the first movement of the *Kammerkonzert*. The first of these, shown in Example 1 and hereafter referred to as Sequence 1, underlies each instrumental part from bar 1 to bar 24, with the exception of the celesta.[1] The two pitch-pairs evident in Example 1, g♯'/b' and a♯'/c'', indicate that these positions in Sequence 1 may be occupied by either note of the pair, as discussed below. The region from bar 1 to bar 24 may be regarded as a series of quotations from Sequence 1. The excerpts from this region given in Examples 2a and 2b illustrate this. These examples should be read in conjunction with Example 1, which is annotated to indicate the source within Sequence 1 of the instrumental parts shown in Examples 2a and 2b.

Examples 2a and 2b illustrate the way Sequence 1 is manifested in the musical foreground. In particular, it should be observed that the sequence does not influence the duration of each pitch, and thus has little impact upon the determination of texture. This is evident from the textural contrast between Examples 2a and 2b, the first characterized by weaving, shifting shapes, the second by notes of uniform duration, played as fast as possible.[2] Furthermore, it is evident from the examples that quotations from Sequence 1 can vary in length from statements that exceed one full sequence (both parts in Example 2b) to excerpts of only a few notes (the oboe in Example 2a).

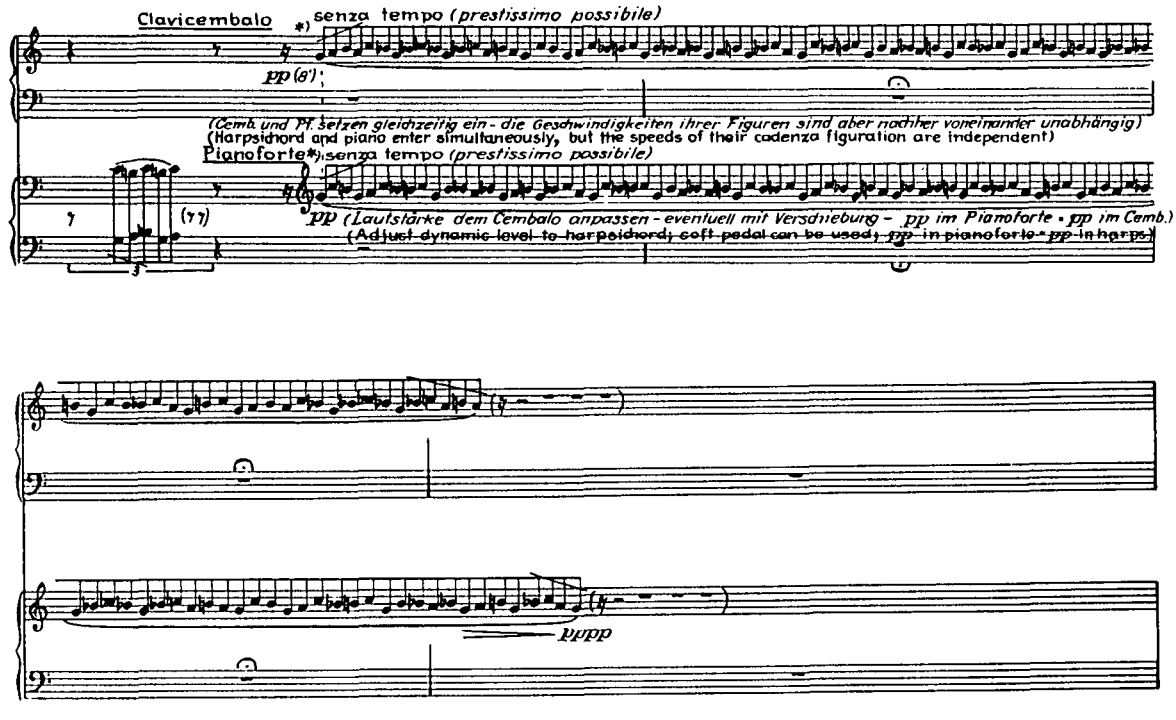
Also of importance is the relationship between Sequence 1 and the manipulations of chromatic space that form one of the movement's central



Example 1: Sequence 1



Example 2a: Ligeti, *Kammerkonzert*, first movement, bars 8-12 (woodwinds)

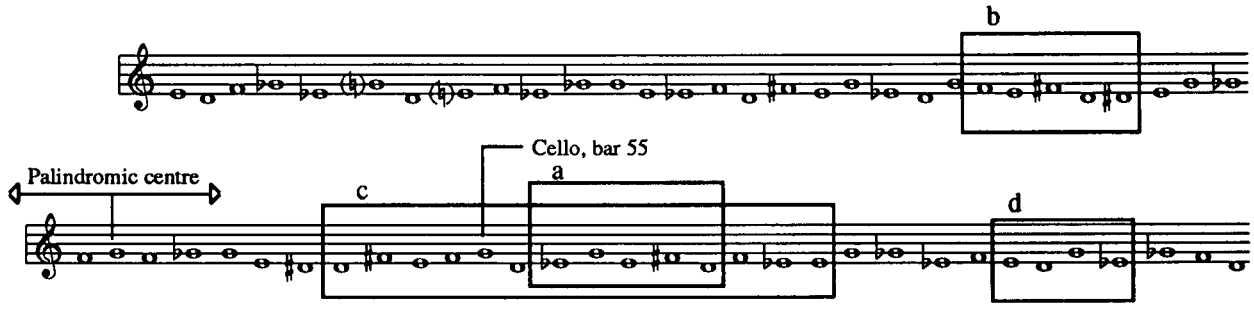


Example 2b: Ligeti, *Kammerkonzert*, first movement, bars 19-22 (keyboards)

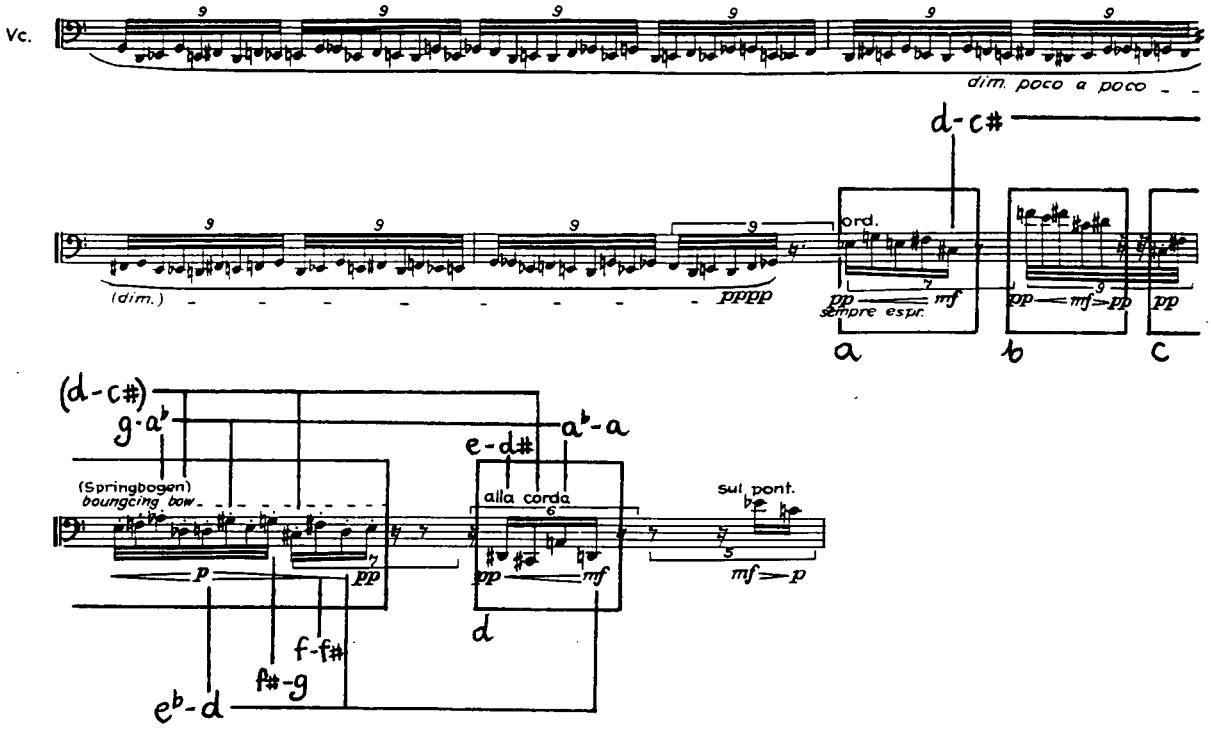
concerns, and upon which much of Ligeti's musical aesthetic is based. The opening of the work delimits a band of chromatic space, hereafter referred to as a pitch 'cluster', constituted by the pitches f#', g', g#', a' and b♭'. In bar 11, the f#' disappears from this initial pitch cluster, creating a contraction of the chromatic space originally filled. Quotations from Sequence 1 after bar 11 omit the pitch f#' (spelled enharmonically in Example 1 as g♭'), but preserve the order of the remaining pitches, illustrated in the flute part of Example 2a. In bar 15, the cluster expands to encompass the pitch b', the new arrival assuming the position within Sequence 1 formerly occupied by f#'. By bar 18, c'' has replaced a♭' in the sequence.[3] The resulting cluster is evident in Example 2b.

The foregoing observations suggest that the pitch content of the clusters is determined by the process of change that occurs in the dimensions of the chromatic space delimited, in particular its span and density, whereas the order in which the pitches of the cluster are played is governed by the sequence. Thus, within Sequence 1, f#' and b' represent alternatives for one position in the sequence, as do a♭' and c''. The pitch content of the cluster determines which (if either) of the pair is 'expressed'.

A somewhat different situation exists with the



Example 3: Sequence 2



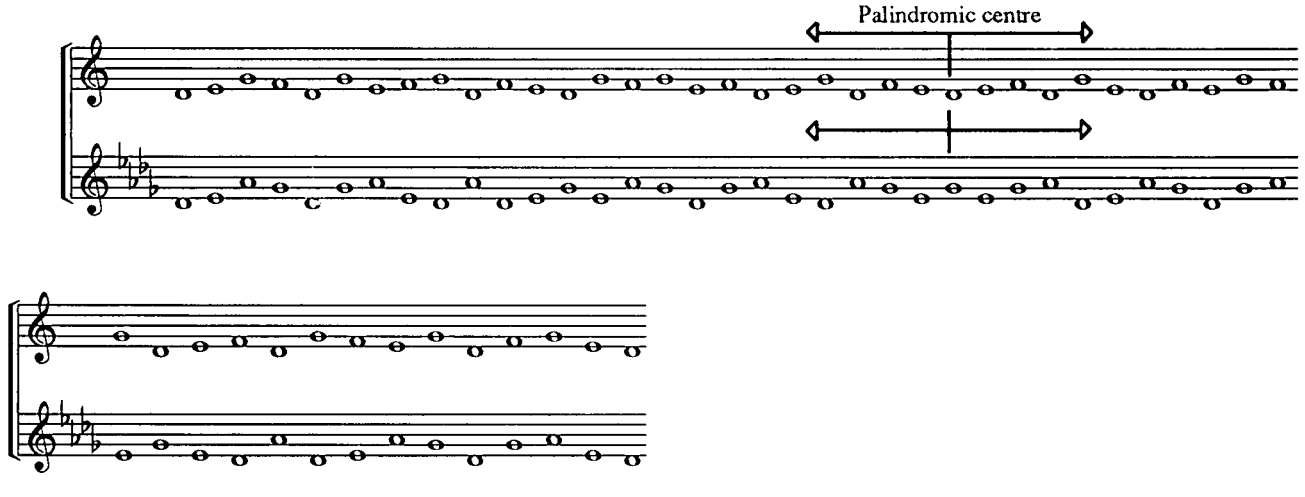
Example 4: Ligeti, *Kammerkonzert*, first movement, bars 54-57 (cello)

second sequence of the movement, shown in Example 3 and hereafter identified as Sequence 2. Its first appearance, in the piccolo in bar 47, is similar in character to the presentation of Sequence 1 shown in Example 2b, except that the cluster consists of the pitches d", e♭", e", f", f#" and g". From bar 51 until the end of the movement in bar 62, each instrumental part may be regarded as quoting from Sequence 2.[4] From bar 51 to bar 56, these quotations invariably consist of several full statements of the sequence, confined to the range from D up to G, but from bar 56 onwards become limited to brief excerpts played at various octave levels, giving rise to a highly fragmented texture.

The onset of the fragmented texture coincides with a development of the cluster by a process that may be referred to as 'chromatic-line technique'.[5] This involves the gradual movement by semitone of each note of the cluster to produce either an ascending or descending chromatic line. Example 4 shows the cello part from bar 55 to bar 57, which may be taken as representative of the process governing the entire ensemble in this region of the work. Example 3 is annotated with the letters *a* to *d*, showing the source within Sequence 2 of the similarly annotated note-groups of the cello part quoted in Example 4. Chromatic movements of the initial pitches of the cluster are indicated in the latter example. Observe that after a chromatic movement has taken place, the new pitch produced by such movement retains the position within Sequence 2 formerly occupied by its predecessor.

The third sequence of the movement, shown in Example 5 and hereafter identified as Sequence 3, governs the celesta from bar 47 to bar 50, and the organ from bar 48 to the first half of bar 50. Sequence 3 is in reality two distinct sequences, one comprised of the pitches d", e", f" and g", played by the right hand, the other of d♭", e♭", g♭" and a♭", confined to the left hand. However, since these two sequences are not employed independently of one another, but only as a linked pair, they are here considered to be a single sequence. Both the celesta and organ state Sequence 3 at least once, in notes of uniform duration played as fast as possible. Sequence 3 does not undergo pitch developments of the sort observed for Sequences 1 and 2, but remains in one form only throughout its presentation.

The most likely explanation for the occurrence of these palindromic pitch-sequences seems to be that they are functioning as pitch regulators, performing a similar function to the pitch canons employed in many regions of the *Kammerkonzert*, and throughout most of Ligeti's works of this period. Of Ligeti's canonic technique, Michael Searby has suggested that one of its principal functions is to prevent any single pitch receiving



Example 5: Sequence 3

unwanted emphasis, an important consideration in the creation of Ligeti's elusive *mikropolyphonische* textures.[6] The same appears true of the pitch-sequences discussed above, a view supported by an examination of their construction. From an inspection of Examples 1, 3 and 5, it is clear that the elements comprising a sequence appear with approximately equal frequency. Considering only the first half of each palindrome, up to and including its centre, g♯'/b' and g' appear eight times each within Sequence 1, and a♭'/c", a' and b♭' appear seven times. For Sequence 2, E♭ appears four times, D, F and F# five times, and E and G six times, whereas for Sequence 3, d", e♭" and g♯" appear seven times and the remaining elements six times each.

The employment of palindromic sequences as a means of ensuring an even distribution of the pitch material in addition to Ligeti's more familiar canonic technique seems to be correlated with regions in which the rate of pitch change is slow, relative to other regions of the *Kammerkonzert*, and in which the texture is comprised of fluid shapes. To consider the question of pitch first, it should be observed that in the region to which Sequence 1 is largely confined, the first twenty-four bars of the first movement, the cluster undergoes only a gradual development, contracting by one semitone (bar 11), then expanding by two (bars 14-16), and reducing slightly in density (the loss of a♭" in bar 18). Likewise, Sequences 2 and 3 occupy static or near-static pitch regions. Although the last part of the movement, from bar 56 onwards, is governed by Sequence 2 and appears to involve a fairly rapid rate of pitch change, the actual pitch content of the cluster develops slowly, since the chromatic-lines that determine content involve considerable overlap, producing an effect that Searby has likened to 'running on the spot'.[7] The initial statements of Sequence 2, from bar 47 to bar 55, and the whole of Sequence 3, are entirely static as regards pitch content.

This is in contrast to the regions of the first movement not governed by an underlying sequence, and the remaining movements of the work, all of which feature relatively fast transformations of the background cluster.[8] The region of the first movement that immediately follows Sequence 1, for example, is characterized by a rapid process of pitch change that encompasses an expansion of the cluster by two semitones (bar 27), an increase in density to fill the complete chromatic range from g' up to d" (bar 30), and a swift contraction of the cluster to a c#"/d" dyad (bars 31-34).

As far as texture is concerned, it can be said that despite the textural contrasts between the regions governed by underlying sequences, drawn attention to in Examples 2a and 2b, they all share the common characteristic of being composed of an essentially fluid succession of intervals. Apart from the sequence itself, there is no repeating pattern within any of these regions. This is in marked contrast to most other of Ligeti's works from this period, the *Mikropolyphonie* of which is frequently constructed from repetitions of one basic shape, often a fragment of the chromatic scale. Example 6, quoting bars 64ii to 65 of the first violin part from *Ramifications* (1968-69), demonstrates this technique. The same procedure is extensively used in the works surrounding the composition of the *Kammerkonzert*, particularly the second organ study *Coulée* (1969), *Melodien* (1971), and the *Doppelkonzert* (1972).

The foregoing suggests that the pitch sequences under discussion are employed by Ligeti as a tool to assist in the composition of prolonged regions or lengthy instrumental statements constructed from limited pitch resources, and which are characterized by a fluid approach to the succession of intervals formed by the pitch material. The sequence may be seen as a short-hand method of achieving an even distribution of pitches without resorting to repetitions of the sort illustrated by

Example 6: Ligeti, *Ramifications*, bars 64ii-65 (violin 1)

Example 6. Their use within a fairly static pitch region obviates the need for the continual invention of new intervallic patterns on the part of the composer from a limited pitch collection. Their absence from regions of rapid pitch development implies that the task of constructing varied successions of intervals is made easier by continual change in the pitch choices available.

If this view is accepted, then the palindromic construction of a sequence is explicable as a means of maximizing the preformed material, for repeating an array of pitches in retrograde produces a new succession of intervals, but maintains the same distribution of pitches.

The argument set forth above does not consider the sequences in Ligeti's *Kammerkonzert* as audible in themselves, but only in their effect on the distribution of the pitch material. However, some aspects of Ligeti's treatment of Sequence 1 complicate the view that the sequence itself cannot be heard. Specifically, the following modifications to Sequence 1 seem to compromise the role proposed for it above: in bar 19, the woodwinds replace the pitch g' in some instances with either b' or a', but leave other g''s undisturbed, the substitutions seeming to occur at random. In bars 22-23, the clarinet replaces all g''s with another note of the cluster, the replacement pitch seemingly chosen at random. From bar 22 to bar 27, the strings omit the pitch pair marked *x* in Example 1, and often omit the pairs marked *y*, although not consistently.

None of these minor deviations from the expected form of Sequence 1 alter the pitch content of the cluster. They serve only to disrupt the interval pattern that has been established by Sequence 1 from the beginning of the movement. Such disruption may be musically appropriate, for it precedes the region of the movement in which Sequence 1 is finally abandoned in favour of a more dynamic, less stable pitch region. The disruptions to the sequence seem to play no role other than to prepare for its abandonment, which suggests that they, and the sequence from which they depart, are there to be heard. Yet it is questionable whether such slight changes could actually be perceived, since they appear within passages of extreme rapidity, and reasonable textural density.[9]

The solution to the puzzling treatment of Sequence 1 described above may lie in Ligeti's desire to situate the structures of the *Kammerkonzert* just below the surface of explicit perception, creating a musical texture balanced on the threshold between imperceptible musical factors and perceptible shapes.[10] The effect, Ligeti tells us in another context, is the musical counterpart to Keats's description of 'faery lands forlorn' glimpsed through 'charm'd magic casements opening on the foam of perilous seas'.[11]

NOTES

[1] In the first movement, the celesta is largely confined to moments of textural breakup, suggesting a 'disruptive' role for the instrument. Its omission from the prevailing techniques of pitch generation and organization enhance this function.

[2] Both these textures represent alternative methods for the creation of what Ligeti describes as *Mikropolyphonie*. See, for example, György Ligeti, *Ligeti in Conversation* (London: Eulenberg Books, 1983), p. 15.

[3] The pitches a♭' and c'' in fact coexist in bars 16 and 17, the latter temporarily assuming the position of some of the a''s in the sequence. This phenomenon reinforces the notion of pitch clusters determining pitch content at a higher level than Sequence 1, discussed below.

[4] An exception to this is the double bass in bars 54-56. Since the double bass is assumed not to be able to extend to the two lowest notes of the cluster, D and E♭, its part is constructed without reference to Sequence 2.

[5] For a discussion of the chromatic-line technique applied to the whole of the *Kammerkonzert*, see Michael Searby, 'Ligeti's Chamber Concerto–Summation or Turning Point?', *Tempo* 168 (1989), pp. 30-34.

[6] Searby, 'Ligeti's Chamber Concerto', p. 32.

[7] Searby, 'Ligeti's Chamber Concerto', p. 31.

[8] The opening of the third movement is a possible exception to this, characterized by a slow rate of pitch change. But the absence of an underlying sequence in this region is predictable, due to the construction of the parts from repeated notes, as discussed below.

[9] It is also curious to note that the centre of Sequence 1 is consistently and uniquely notated as c♭'' instead of b', first observable in the first violin part of bar 15. This suggests that it may be desirable for the players to draw slight attention to the centre of the palindrome.

[10] See Ligeti, *Ligeti in Conversation*, p. 137.

[11] See Robert L. Rollin, 'Ligeti's *Lontano*: Traditional Canonic Technique in a New Guise', *Music Review* 41 (1980), p. 291.