PREMISE AND COMPOSITIONAL WORKING-OUT: AN EXAMINATION THROUGH ANALYSIS OF LIGETI'S CHANGING STYLE

A Thesis in Two Volumes

by

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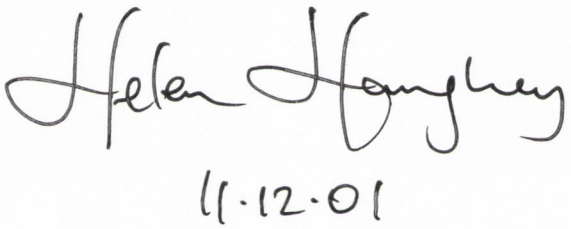

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SUMMARY

In many of his interviews and writings from the mid-eighties, Ligeti talks of a crisis in his compositional output, and his move to a simpler style. This thesis takes the form of three detailed analyses of works which span this change in style. My analytical method builds on Epstein's concept of 'premise', together with Ligeti's description of the two principal areas in his compositional approach: raw musical idea and compositional working out. The three works examined using these ideas are:

Chapter 1, Double Concerto for Flute, Oboe and Orchestra (second movement),

Chapter 2, Trio for Violin, Horn and Piano (first movement), and

Chapter 3, Etudes for Piano, Book 1, no.6 *Automne à Varsovie*.

Through an exploration of the defining relationships between musical elements at the start of each movement, it is possible to trace the accrual of process from local to global levels, as a large-scale framework evolves.

There has been a good deal of analytical scholarship published on works from this new style period and on the Etudes for Piano in particular. This study aims to present premise as a valid analytical tool for works from different style periods, and explore the links between the old and new. Alongside the significant stylistic changes in Ligeti's output at this time, my research will examine important links in compositional process between the Double Concerto for Flute, Oboe and Orchestra and *Automne à Varsovie* and assess the significance of the stylistic changes in the Trio for Violin, Horn and Piano.

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INTRODUCTION

In view of the fact that György Ligeti is viewed by performers, theorists and analysts as one of the most innovative and significant composers of the post-war era, it is surprising that his output has attracted comparatively little detailed analytical scholarship, with some of his major works quite neglected by scholars. There has been a recent flurry of interest in the Etudes for Piano, and much written about Ligeti's changing style. This study attempts to look at the evolution of this style and its links with the compositions which precede it, with detailed analyses of three works.

It is important to place the three chosen works in the context of Ligeti's overall output. More detail will be given in the relevant chapters. The Double Concerto for Flute, Oboe and Orchestra was written in 1972, a year after the orchestral work *Melodien*, and a year before Ligeti started writing *San Francisco Polyphony*. Thus it comes from towards the end of a group of works whose complex textures were still dominated by Ligeti's micropolyphonic writing, but in combination with a greater interest in individual melodic lines. Ligeti produced little in the five years after the premiere of his opera *Le Grand Macabre* in 1977. The next major work is the Trio for Violin, Horn and Piano, premiered in 1982, which marked a significant new compositional style. After the choral works *Drei Phantasien* and *Magyar Etüdök* (1982 and 1983) Ligeti's next major work was the Etudes for Piano (Book I) premiered in 1985.

Alexandra Townsend has described the principal features of this new compositional trend as including (i) the use of a characteristic 'lamento motif', a repeated falling chromatic scale fragment, (ii) the appearance of singable melody,

(iii) the use of simpler harmonies, at times suggesting diatonicism, and (iv) further rhythmic experiments, especially with polyrhythm.[1] As will be explained in more detail in the following chapters, the trend in this new period tends to be a reaction against the complex, slow-moving textures prevalent in the earlier micropolyphonic works. Such a reaction was not new:

> The transitions from atonal to dodecaphonic and from serial to post-serial music have been described by Theodor W. Adorno and György Ligeti on the lines of problem history. Karlheinz Stockhausen's development from pointillist technique via group form [*Gruppenform*] and the statistical method to moment form can serve as an example, showing clearly that difficulties which at first seemed insoluble provided the stimulus for works at a second level on which earlier problems were solved. Admittedly, others rose in their stead, but these in turn urged musical thinking forward.[2]

Ligeti has discussed his attempts to develop a new feeling for musical form outside the total serialism of the Darmstadt set:

> Integral serialism was born under the sign of the totally static . . . it would be much more worthwhile to try and achieve a compositional design of the process of change.[3]

Therefore one can perceive his perennial quest for structures and processes which are governed by decisions made by the composer, neither restricted by predetermined materials/orders, nor loosened by aleatory techniques where the overall form is shaped by the interpreter.

> (Analysis) . . . to investigate the inner relationships of (a) work and to investigate what is essentially contained within the composition . . . to become aware of a work as a forcefield (Kraftfeld) organised around a 'problem'. [4]

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[1]Alexandra Townsend, "The Problem of Form in György Ligeti's *Automne à Varsovie*, from *Etudes pour piano, premier livre*" (DMA dissertation, University of British Columbia, 1997), 16-17.

[2]Carl Dahlhaus, *Schoenberg and the New Music,* translated by Derrick Puffett and Alfred Clayton (Cambridge: Cambridge University Press, 1987), 20.

[3]György Ligeti, "Metamorphoses of musical form," *Die Reihe* 7 (1965), 5-19.

[4]Theodor W. Adorno, "On the problems of musical analysis," *Music Analysis* 1, no.2 (1982): 171.

As I began my research, my goal was to find a means of analysis that gained an insight into Ligeti's compositional process, based on his own writings. Few contemporary composers have spoken so freely, or in such detail, about their own compositional impulse and methods. Many of his interviews concern the relationship between the initial impulse and the finished product:

> Aspects of growth, of the generation of musical form departing from a conceptual "genetic code" are at the centre of my interest.[1]

I was interested in applying such ideas as part of my initial analysis, while looking behind the surface complexity of his music in an attempt to examine more long-term issues.

At first, the chronology of the chosen works was not seen as significant: I was more interested in analysing works from contrasting genres such as orchestral, chamber, etc. However, as my research continued, it became clear that these three works marked a turning point in Ligeti's output, straddling a period of 'compositional crisis', where he made a conscious decision to change his compositional approach.

> I find myself, so to speak, in a kind of compositional crisis, which, gradually and to some extent furtively, was already opening up during the seventies. And this isn't just a personal crisis but much more, I believe, a crisis of the whole generation to which I belong . . . not to go on composing in an old avant-garde manner that had become a cliché, but also not to decline into a return to earlier styles. I've being trying deliberately in these last years to find an answer for myself—a music that doesn't mean regurgitating the past, including the avant-garde past.[2]

Furthermore, in spite of this change, my analysis showed a marked similarity in the opening sections of all three works: clearly defined sets of often opposing relationships seemed to delineate means of global progression. In the analyses I termed this idea premise.

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[1]György Ligeti, interview by Richard Dufallo, *Trackings - Composers in conversation* (New York: Oxford University Press, 1986), 336.

[2]György Ligeti, interview by Monika Lichtenfeld,"Musik mit schlecht gebundener Krawatte," in *Neue Zeitschrift für Musik* 142 (1981): 471-3, trans. in Paul Griffiths, *György Ligeti* (London: Robson Books Ltd., 1997), 102.

In *Beyond Orpheus*, Epstein defines the term premise as:

> A basis, stated or assumed, upon which reasoning proceeds. This raises the question whether music is a system to which the term "logic" (of which premise is an element) can apply . . . a case could be made that music is a form of logic, if logic is understood as a system of principles of reasoning applicable to any branch of knowledge or study. If this is so, it follows that there are a plurality of logical systems; also, that the components, terminology, procedures of reasoning of each individual system are likely to be *sui generis*. [1]

He makes the distinction between a frame of reference (an historical/stylistic feature or general formal observation) and a premise:

> Basic shapes or musical ideas as a total concept—that which Schoenberg viewed as a *Grundgestalt*—are matters of premise. While "idea" in this sense may be molded or limited by conventions or reference frames, its musical embodiment is particular, exclusively involved with a single composition, affecting its specific events within or beyond norms, as the case may be.[2]

Epstein restricts his application of premise to music from the classical and romantic periods, but discusses the possibility of extending this to later music, where structural parameters such as large-scale rhythmic articulation operate in the absence of "conventional harmonic syntax and the coherence that this once provided."[3]

The dictionary definition of premise as "a proposition stated or assumed for after-reasoning"[4] can be given a more specific musical application as "a combination of musical elements containing the potentialities of the piece as a whole." Compositional working-out builds on the implications contained in such a premise, working firstly on a local level and moving, through extension and development, to a more global level, creating a structure for the movement/piece as a whole. The notion of premise and compositional working-out is an adaptation

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[1]David Epstein, *Beyond Orpheus: Studies in Musical Structure* (Cambridge, Mass.: MIT Press, 1979), 15.

[2]Ibid., 161.

[3]Ibid., 201.

[4]*Chambers 20th Century Dictionary*, 1985 ed., s.v."premise."

of Ligeti's two categories of raw musical idea and structural order, where he contrasts the naïveté of the raw musical material and the subsequent modification and refinement of the process of composition. He discusses the symbiotic relationship between the two elements:

> The two categories—musical raw material and structural order—cannot be regarded as distinct and separate areas: it is much truer to say that the linked network, or structural order, corresponds to tendencies already detectable within the raw material itself. The structural potentialities are already contained in the primitive, and the act of composition consists mainly of developing these latent possibilities.[1]

But in spite of such interaction, there is one clear distinction that must be made between the two categories: the notion of raw musical material must exist as a pre-compositional issue, and as such, one not deducible by the listener or analyst. Compositional working-out, on the other hand, is clearly discernible through analysis, but there must be a question as to what exactly is being 'worked out'. Thus there is a need for a linking element which connects the pre-compositional "initial inspiration" of the raw state and the subsequent working-out. Premise is such a linking element.[2]

The idea of premise in music is connected strongly to that of opening: something is put to the listener for consideration or after-reasoning. Links are established and relationships between elements defined. Thus the composer expresses the raw musical state as a process, a relationship, or a musical unit such as a phrase, something which establishes a framework for itself, but which also demands further working out. The listener/analyst's attention is focused towards more significant areas. Such focus is created through the controlled manipulation of musical elements such as timbre, register, rhythm, pitch, etc., establishing a means of progression for the piece.

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[1]György Ligeti, "Ligeti-Ligeti," translated by Geoffrey Skelton, in *Ligeti in conversation*, (London: Eulenburg, 1983), 124-5.

[2] Ibid.,127.

Premise should not be considered merely as a tool for the analyst, or a shortcut for the listener. All the aspects of premise, which aid in the listener/analyst's exploration of a piece, are important decisions that must be taken at an early stage by the composer. As long as musical material is in the raw state, there is a relative primitiveness in its structure.[1] When the composition proper begins, there is a need to establish a framework for the piece, one in which the main features of the raw musical material can be articulated.[2]

> The compositional process can be clearly divided into initial inspiration (i.e: the raw state), and subsequent working-out. And, in addition, there is frequently a gap between conception and working-out, due to the time lapse—perhaps of several years—that may occur between them.[3]

The possibility of a listener gaining access to the raw musical idea is much further removed.

In Ligeti's own mind, before composition begins, he has a conception, however vague, of the finished product:

> It would be quite possible for the music to be heard in this state—indeed, it is thus heard when I am improvising on the piano—but the sound, measured against the standards I regard as adequate for the structure and form of the piece, is far too primitive . . . Composition consists principally of injecting a system of links into naïve musical ideas.[4]

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[1] Ibid., 124.

[2] This transition from the raw to the structured state has also been discussed by other composers; e.g., Igor Stravinsky in *Poetics of Music* (Cambridge, Mass: Harvard University Press, 1942), 64-5.
"What delivers me from the anguish into which an unrestrained freedom plunges me is the fact that I am always able to turn immediately to the concrete things that are here in question. I have no use for a theoretic freedom. Let me have something finite, definite - matter that can lend itself to my operation only insofar as it is commensurate with my possibilities. And such matter presents itself to me together with its limitations. I must in turn impose mine on it . . . My freedom thus consists in my moving about within the narrow frame that I have assigned myself for each one of my undertakings.
I shall go even further: my freedom will be so much the greater and more meaningful the more narrowly I limit my field of action and the more I surround myself with obstacles. Whatever diminishes constraint, diminishes strength. The more constraints one imposes, the more one frees one's self of the chains that shackle the spirit."

[3] György Ligeti, "Ligeti-Ligeti," in *Ligeti in conversation*, 125

[4] Ibid., 124.

Note the parallel relationship:

(Initial inspiration)		(Finished product)
=	(analogous to)	=
Listener's experience		Analysis
(Overall effect)		(How effect is achieved)

> As a consequence of the difficulties music offers, the laws of comprehensibility must be grasped especially strictly and narrowly. Since music is (in the first place) a matter of hearing (and of reading only in the second place), and since its tempo determines the course of ideas and problems so that it is impossible to dally over an idea that has not been understood as can, for example, the reader of a novel or the observer of a picture or sculpture), every idea must be presented so that the listener's capacity to grasp it is met.[1]

In my analysis, I am interested in exploring the notion of premise: hence it is necessary to examine the opening sets of relationships in some detail, where syntactical conditions for the music are set out. Are these conditions examples of Ligeti's 'conceptual genetic code'? If so, the relationships defined at the start must be examined as they function both locally and globally across the piece. For this reason, my analysis follows the music in close detail, examining both small and large changes in the ensemble of parameters as they occur. Control of syntax on the local level articulates process. The idea is to examine the minutiae of local syntax and to define the processes, gestures and events which are created by these ensembles of parameters: then broader statements can emerge. Berry has discussed the relationship between individual parameters and longer-term development:

> In music that is composed (as opposed to music of random operations or random consequences), actions (changes, events) involving various elements (lines of pitch change, tonal and harmonic succession, rhythm and meter, texture and coloration) are so conceived and controlled that they function at hierarchically ordered levels in process by which intensities develop and decline, and by which analogous feeling is induced. Element actions may converge in collaborative, directed lines of change; or, probably more commonly, certain prevailing lines of change function toward a

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[1]Arnold Schoenberg, "Laws of Comprehensibility" from *Der musikalische Gedanke* (Los Angeles: Archives of the Arnold Schoenberg Institute [1934]) trans. in Jonathan Dunsby and Arnold Whittall, *Music Analysis in Theory and Practice* (London: Faber Music Ltd., 1988), 75.

> particular expressive end while others, subordinate to the essential functional tendency, are counteractive.[1]

Much analysis of post-war music seems to consist of an examination of a single issue, often in the context of a short section of a single piece. It is perhaps due to the richness of pitch-based analytical possibilities in tonal music that analysts of post-war music sometimes seem reluctant to look for long-term processes based on other parameters. Pitch-class-set analysis, while shown to be effective for the music of some of the composers of this time, is difficult to apply to much of Ligeti's music. While pitch selection and harmonic control is important in any assessment of Ligeti's output, his level of control of other parameters such as register, timbre, rhythm and rate of change means that analysis based purely on harmonic content is liable to be inconclusive. In works such as *Melodien*, the Double Concerto for Flute and Oboe, and *Automne à Varsovie*, control of vertical sonority often seems subordinate to the polyphonic textural layering (here again, the Trio for Violin, Horn and Piano is an important exception).

It seems to me that many of the analysts of post-war music take as their starting point the idiosyncratic technical preoccupations of the composer in question. One can think of Koblyakov's work on Boulez, Harvey on Carter, and Stucky on Lutoslawski, among others. Analysis of Ligeti's music too has focused on his preoccupations: the work of Bernard, Clendinning and Rollin concentrates on pitch-based analysis of his micro-canonic textures. Some of the recent research concentrates more on the influences surrounding the composition of the Etudes for Piano than on detailed analyses of the work. While analysis based on a composer's technical resources is valid and illuminating, there must also be room for analysis which seeks the structural resources from within the piece itself:

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[1]Wallace Berry, *Structural Functions in Music* (New York: Dover, 1987), 4

> Analysis, therefore, means much the same as the recognition of the way in which the specific, sustaining structural idea of a piece of music realises itself; and such a concept of analysis would need essentially to be derived from each work anew.[1]

I suggest that the concepts put forward in this study—the evolution of a structural framework, defined by the inter-relationship of parameters and operating across a piece—may form an effective analytical approach to post-war music by Ligeti and others, where analysis based solely on pitch/harmonic content is of limited application. I stress the important starting point for this type of analysis: the primacy of the experience of the music in time. This is not to say that all the findings of the analysis should be immediately discernible in any one or more listening(s); instead, the findings of the analysis should back up the temporal experience of the work.

> Analysis can and should enhance appreciation, or aesthetic enjoyment, and intensify rather than inhibit instinctive responses to music.[2]

In each of the three analyses I will discuss some of the broader issues, before giving a detailed analytical commentary which traces the framework of local and global relationships. In the Conclusion I will examine the positioning of these three works in Ligeti's output, and his consistency of compositional approach through significant stylistic development. I will also discuss their implications for the broader complexities of his style in the eighties and nineties.

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[1]Adorno, "On the Problem of Musical Analysis," 184-5.

[2]Dunsby and Whittall, *Music Analysis*, 5

CHAPTER 1

PREMISE AND COMPOSITIONAL WORKING OUT IN THE SECOND MOVEMENT OF THE DOUBLE CONCERTO FOR FLUTE, OBOE AND ORCHESTRA

General Introduction

During his conversation with Peter Varnai in 1978 Ligeti refers to his use of 'acoustic illusion' in the second movement of the Double Concerto for Flute, Oboe and Orchestra (1972):

> Varnai: In the second movement, I had the impression that the rapidly moving music here is somehow static.
>
> Ligeti: Yes, this is an example of acoustic illusion, a favourite topic of mine. Something similar happens in *Continuum*; it is like the wheel of a railway engine, which at high speed seems stationary. Or think of the stroboscope effect which was what you actually noticed in the second movement of the Double Concerto. Fast-moving music that seems static. It ties up again with the idea of something deep-frozen.[1]

The composition of the Double Concerto was preceded and followed by work on *Melodien* (1971) and *San Francisco Polyphony* (1973-4), two of Ligeti's largest orchestral works. His compositional procedures in these three works may be seen to synthesise many of his preoccupations from earlier phases in his output:

(i) micropolyphonic techniques, with multi-layered textures with large numbers of attacks per beat made up of interweaving lines. In spite of the rapid local linear activity, the texture is often organised into slower moving 'chords', shifting gradually, one note at a time (thus creating Ligeti's version of an Alberti bass, fast-moving surface activity masking slow-moving harmony—see *Melodien* bs.20-45 for an example of such textures). He discusses the effect of this texture in the first movement of an earlier work, the Chamber Concerto (1969-70):

> My general idea for that movement was the surface of a stretch of water, where everything takes place below the surface. The musical events you hear are blurred: suddenly a tune emerges and then sinks back again.[2]

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[1]György Ligeti, "Ligeti-Peter Varnai," translated by Gabor J. Schabert, in *Ligeti in Conversation*, 65.

[2]Ibid., 64.

Ligeti has also referred to this blurring of events in *San Francisco Polyphony*, using the analogy of fog:

> The backdrop is the fog . . . this piece starts out with a cluster full of various tunes that you cannot make out, as they are intertwined like creepers. Then slowly, a very clear melodic pattern emerges from this dense texture, it is discernible for a while before it sinks back into the billowing texture. That is the overall structural principle of the work. Another characteristic feature is that the tunes are taken up by different instruments in turn and this produces different timbres.[1]

(ii) the use of 'interval-signals' such as in *Lontano* where textures crystallise onto simpler intervals such as octaves/fifths or unisons, creating moments of local clarity which function as important structural arrival or marshalling points,

(iii) more expressive, expansive linear writing, such as the dramatic characteristic writing of the vocal lines in *Aventures* or the individual instrumental lines of the 10 Pieces for Wind Quintet.

The Double Concerto was one of the last pieces composed by Ligeti before the well-documented rigors of the composition of *Le Grand Macabre* and the following 'compositional crisis'. Retrospectively, is it possible to see it as marking the culmination and synthesis of the organic development of Ligeti's compositional methods hitherto?

From his description of *San Francisco Polyphony* as "an orchestral work that is neither a symphony nor a concerto," one can infer that Ligeti was happy to retain some of the traditional implications of such genres. At the same time, his use of the solo instruments in the Double Concerto exploits the idea of melodies emerging from, and submerging back into, a complex, blurred texture. This is achieved by blending the solo flute (FlS) and oboe (ObS) with equally soloistic Fl123 and Ob123 lines respectively, creating two focal groups of identical timbres, from which single lines momentarily project. In this Double Concerto, the soloists are rarely presented soloistically: they are rarely differentiated through

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[1]Ibid., 67.

soloistic virtuosity, as their orchestral colleagues simultaneously have equally virtuosic figuration. The absence in the orchestral forces of any violins leaves the treble register free primarily as the domain of these two shadowy groups (with significant extensions into lower registers by use of related instruments such as Flute basso and Oboe d'Amore). The juxtaposition of these two groups with the rest of the orchestra could be seen as one of concertino/ripieno rather than soloists/ripieno. The subtlety of the leading role played by the soloists, from the beginning, emerging only very slightly from this hazy background, foreshadowing the slightly more emphatic leading role in the final coda-like section, is very different to the soloists' roles in the earlier Cello Concerto or the later Piano and Violin Concerti, where he returns to the model of virtuosic soloist-on-display.

> I want to abandon equal temperament because I think it is a worn-out medium.[1]

As in the later Etudes for Piano, in which Ligeti has referred to the influence of Conlon Nancarrow, the use of microtones in the Double Concerto and earlier works was partly a result of his interest in the music of another American, Harry Partch.[2]

> The way Partch uses his instruments, all tuned differently, is that each produces perfectly pure sound with natural harmonics but, from the point of view of equal temperament, they are outrageously out of tune in relation to one another. This is what interested me, the effect of music where the tuning systems clash: it is like a body in a state of gradual decomposition. You can hear such 'Partch effects' in my Double Concerto for Flute and Oboe.[3]

Harry Partch (1901-74) rejected equal temperament as a student, and spent many years exploring the principles of just intonation, eventually formulating a

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[1]Ibid., 54.

[2]It is interesting to note that Ligeti visited Partch in America in 1972, around the time of the composition of the Double Concerto.

[3]Ligeti, "Ligeti-Peter Varnai," in *Ligeti in Conversation*, 54.

scale with 43 tones to the octave. In order to realise performances of music using this and other scales, he also designed and built his own instruments.

> Underlying the various musical systems and philosophies in our libraries is a common, basic assumption: 12 tones, equal temperament - the piano scale. But when we force acoustic intervals into the octave or x octaves, we falsify every interval involved, we effectively close all doors to any further adventures of consonance, and also, amazingly, we close all doors to any meaningful adventures in dissonance.[1]

While Ligeti dismisses Partch's actual compositions as "not particularly interesting," he was clearly interested in the 'adventures in dissonance' possible through the use of microtones. He did not see any need to follow Partch in the search for other tonal systems.

> I abhor all fixed systems; what I really want is the effect of deviation from either pure or equal temperament . . . I must repeat again: I am not dogmatic about it. The fact is that we must not expect all music to conform to equal temperament.[2]

Overview of structure: registral issues

When looking at the complete movement, it seems clear that the structure is delineated by a number of arrival points which coincide with areas of widest registral compass, often defining the ends of main sections:

Section 1 (bs.1-24)

(i) bs.22-4: In some ways this arrival point arises as an outgrowth of the previous process, but cuts off the previous texture through octave multiplication. It does not lead directly into the next section, and is somewhat divorced from surrounding activity in terms of orchestration, register and voice-leading.

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[1]Harry Partch: "Monoliths in Music," in *Bitter Music: Collected Journals, essays, introductions and librettos*, edited by Thomas McGeary (Urbana: University of Illinois Press, 1991), 195.

[2]Ligeti, "Ligeti-Peter Varnai," in *Ligeti in Conversation*, 54-5.

Section 2 (bs.25-44)

(ii) bs.43-4: An important arrival point, and one not using registral divergence. It has the dual function of arrival point for previous processes and opening out point for the next section, thus having organic links with surrounding activity.

Section 3 (bs.44-68)

Section 4 (bs.68-90)

(iii) bs.68-70: This arises from the main process of Section 3 (expansion of a 5 note motif) and functions mainly as an opening-out point for the next section, although it is not obviously linked with the next material. It has the widest registral compass so far.

Section 5 (bs.90-116)

(iv) b.105: This arrival point is the goal of a systematic registral expansion, thus having clear links with the previous material. It is somewhat incomplete, being abruptly cut off by the Trombone glissando.

(v) b.106: This is also an outgrowth of previous material, but is again incomplete, as the expansion is not coordinated in both registral areas.

(vi) b.111: Potentially the most balanced arrival point so far. Both outer limits arise as the outcome of registral divergence from a single pitch $B^{\flat}$. There is still the potential for further movement, with the reactivation of the mid-register. In bs.115-6 the registral space is filled using octave multiplication with an equal rate of change and a similar goal for each diverging line.

Section 6 (bs.117-61).

(vii) Culmination of progression towards global unison.

Fast and slow: the evolution of registral limits

Paul Griffiths has described the opening of *Melodien* as follows:

> The entire bright texture is placed in the treble, which is where the piece will have most of its existence, and these opening three bars are typical too in having three levels—sustained notes or chords, repeating figures out of *Continuum*, and the new melodies celebrated by the title—each to be observed through the other two.
> As one might expect in a Ligeti composition, these three levels are not held distinct, but are forever dissolving into one another. A melody may stand still, on a note which becomes part of a chord, or it may deteriorate into a rotating figure, and the other fundamental elements are similarly intertransformable.[1]

The juxtaposition of fast moving surface texture with slower sustained lines is also a defining relationship for the second movement of the Double Concerto. Such sustained lines often become associated with the articulation of a limit already established through the local trill activity, emerging as an abstraction of the trill's contour. As individual pitches are 'clarified' by being sustained, the rate of trill activity increases, creating a blurred texture where it is less possible to focus on specific pairs of pitches: thus the foreground/background contrast between sustained notes and trills is further heightened. Robert Rollin has discussed a similar duality in the earlier orchestral piece *Lontano*:

> In visual perception, closer objects are apprehended in greater detail. While the philosophical significance of this matter may be questioned endlessly (since it pertains in essence to the mind-body problem that has plagued generations of our greater philosophical minds), it is precisely the dualism on which Ligeti has based his structural organisation of *Lontano*. Clarity (or closeness) for Ligeti is established in unison or octave doublings of an individual pitch. Blurring or distance is set up through the employment of the canonic technique and the introduction of sustained notes.[2]

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[1]Griffiths, *György Ligeti* (1997), 80-81.

[2]Robert L. Rollin, "Ligeti's *Lontano*: Traditional Canonic Technique in a New Guise," *The Music Review* 41, no.4 (1980): 293.

The local emphasis of shifting limits (as articulated through the trills) becomes a foreground event through the sustained lines and their movement. Movement towards these limits, and their eventual breach means that they often become points of focus for the faster moving activity.

The establishment of a fixed limit defines a starting point for registral expansion. A limit may become polarised or isolated through the absence of faster figuration in its specific registral area. In this case, the limit is less likely to be heard as a goal for movement, with the listener's attention being drawn towards dynamic development in contrasting registers.

Upper and lower registral limits often serve as boundaries to the faster-moving surface activity, and tend to be linked with closely focused stepwise movement: a feature of the later sections of the movement is the evolution of more complex instrumental lines and textures independent of such boundaries.

Evolution of process

There is a recurring pattern of Linear - Vertical - Linear, where vertical structures or sonorities rapidly evolve out of linear processes and are cut off or absorbed into new/related linear movement. The most frequent appearance of this pattern usually involves octave multiplication and its converse, octave absorption. Both of these processes are used to cut off an existing process or to provide extra impetus for change. There is an important extension of this process at arrival point (vi) where the registral extremes of the octave sonority, so often associated with arrival points, arise out of local voice-leading and not simply as an elaboration or multiplication of an individual line.

There is an example of a tightly focused process involving the manipulation of pitch, timbre and coordination in bs.60-68, where a 5-note unit evolves from a 'dynamic' upward drive that gradually accumulates pitches. It

becomes 'fixed' through various processes and, most importantly, through repetition. It is used to create a vertical block, which is used to fill space and to generate movement through the manipulation of the size of the block and of the space between blocks.

The process is not allowed to proceed beyond a certain level of control, and the restriction that is placed on it results in rapid decay. During this decay, the definition of the actual vertical block is questioned, and is eventually broken down. From the detritus (i.e., the rearrangement of the groups of 5-note units), a registrally expanding line is generated, thus referring to issues established previously, and suspended due to development of other non-registral processes.

Syntax: simple patterns and microtones

> Several of my works dating back to that period start with a very simple pattern. You'll remember that the Cello Concerto starts on one note, which gradually becomes a minor second: I say gradually, because first there is a floating pitch, a slow deviation. This is also a very simple model which gradually grows more elaborate. In my music this takes the place, and quite intentionally, so to speak, of thematic development. . . . The simple models at the start of a composition may be intervals, a minor third, as in *Continuum*, a unison as in the Cello Concerto or in *Lontano* and *Lux Aeterna* or a perfect fifth as in the first Organ Study."[1]

In the second movement, Ligeti's simple model is a minor third interval D-F. Part of the elaboration of this simple pattern is the use of microtones or non-tempered pitches. These become associated with destabilisation of fixed pitches, and are used to create impetus for movement. The use of non-tempered pitch becomes associated with progression and expansion, often as part of a localised pitch process.

In the Double Concerto, Ligeti does not abandon equal temperament completely, but there are frequent moves outside of it, as he uses microtones to extend his pitch compass. In the second movement, microtones such as F𝄲 or E𝄭

[1]Ligeti, "Ligeti-Peter Varnai," in *Ligeti in conversation*, 60.

arise solely through close association with their nearest tempered neighbour: e.g., BFl, bs.1-9

F - F𝄲 - F𝄲 - F#

D - D - D𝄲 - D

Such microtones function as a way of blurring a tempered pitch, and they become associated with movement or expansion within a line as the movement progresses. The use of a microtone as an intermediate step in linear movement, e.g., F-(F𝄲)-F#, serves to intensify the arrival on the tempered pitch, creating the effect of the line going in and out of focus. While tempered pitches are the main focus, the spaces between them are being exploited, creating "a kind of microtonality, dirty patches."[1]

Within the norms of syntax for faster moving texture (repeating groups of pitches) Ligeti uses a sieving process whereby pitches are systematically eliminated. The remaining pitches become points of focus for the lines and starting points for further development. As an example, in b.43 the sustained G-D^{b} dyad clearly functions as an arrival point, having been established through the systematic elimination of pitches from a fixed chromatic line (i.e., the dyad is the goal of this particular process), and it is prioritised as an arrival point by the controlled increase in the number of attacks per beat, culminating in the dense tremolo. Yet, there is also the possibility of this dyad functioning as a starting point for further development not obviously linked with the previous chromatic line and its erosion. The precedents for such development of a two-note figure should be noted: e.g., D-F (b.1) and B^{b}-C (b.25) dyads. It also seems as though any registrally isolated points such as G-D^{b}, B^{b}-C or D-F dyads all function as areas with potential for opening out.

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[1]Ibid., 53.

The role of dyads

At several points in the movement, the whole texture is simplified harmonically to present a dyad. **Ex.1.1** shows that from bs.1-52 there are six such points or areas. These points all link up by semitone relationships, except for dyads (4) to (5), which are related only by whole-tone step (it may be posited that the D required for such a chromatic link has already appeared in a position of prominence in b.1). It is also interesting to note that a maximal heterogeneity of type is being exploited: interval 3, followed by joint presentation of octave and interval 2 (bs.22-32 is an area that explores the interval 2 sonority), interval 6, interval 1, interval 4.[1] This presents all of the possible basic types, with the exception of interval 5, which, it can be argued, is kept in reserve for a very prominent statement at arrival point (vi) in bs.111-15.

There are other prominent dyads throughout the movement (see **ex.1.1**): instances of intervals 1 and 2, and a significant linearisation of intervals 4 and 1 at arrival point (vii), b.143.

Bs.1-68, within which the six different dyads (if we permit the octave) appear, delineate an introductory area of the movement, marked by the adherence to stepwise motion. It is only after b.68 that repetitions of dyad types occur, coinciding with figuration using the new, 'freer', expansive syntax. Interval 4 is a special case, however, as it is never simultaneously struck, being evident only in 'filled-in' linear form in bs.62-8, or as a linear minor 6^{th} in b.143.

As will be described in the analytical commentary, Ligeti sets up each dyad in the introductory section with its own specific approach and succession, in terms of the details of the articulation of the overall texture; i.e. use of tempered/non-tempered sounds, registral expansion/contraction, etc. This is in keeping with the heterogeneity of the dyad types themselves, and contributes to the sense of

[1]Interval 1 = minor second, interval 2 = major second, interval 7 = perfect fifth, etc.

dynamic development and overall contrast achieved in this section. At the same time, there is evidence of longer-term harmonic control in the choice of pitch and interval type, with these dyads almost always being presented in unambiguous harmonic terms, and with the appearance of the last of the dyads occurring at the most important arrival point of the movement.

Syntax: octaves and unisons.

The striking ObS gesture of b.78 marks a significant development in the methods of local progression: that is, a move away from slow, sustained stepwise movement (juxtaposing tempered and non-tempered pitches) which is usually governed by fixed limits. New pitches within a single line have previously been introduced through expansion beyond such a fixed limit, either as part of a scale passage (e.g., bs.59-62), or other repeating figuration (e.g., bs.32-42). Jane Piper Clendinning has made a detailed study of such figuration in some of Ligeti's earlier works, terming it 'pattern-meccanico composition':

> In each of the compositions of the pattern-meccanico group, the pattern-meccanico sections are composed of several overlaid linear strands, each of which is constructed from small groups of pitches rapidly repeated in a mechanical fashion with gradual changes of pitch content. The pitches of the small groups are ordered, and, in the repetitions of the units, their general ordering does not change even if some of the pitches of the unit do.[1]

Much of the early syntax of the movement is of the pattern-meccanico type: by such radical movement outside the clearly bounded area of bs.76-7, the ObS line articulates a significant break with the syntax of progression as established thus far. Fixed limits which were so important in earlier sections, whether as starting points or eventual goals for progression, are not established

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[1]Jane Piper Clendinning, "The Pattern-Meccanico Compositions of György Ligeti," *Perspectives of New Music* 31, no.1 (1993): 194-5.

here, and the pitches in b.78, whilst having some chromatic links with one another, clearly do not fill a chromatic space. In textures dominated by these more angular lines, local synchronisation, either through unison or octave doubling, is often prioritised. Any point of pitch coordination between otherwise independent lines will always create a momentary clarification of, or emphasis within the texture.

In his 1978 interview, Peter Varnai challenged Ligeti about his use of octaves.

> Varnai: From the Cello Concerto or perhaps the *Lacrimosa* of your *Requiem* onwards octaves appear in your works, octaves and other perfect intervals, the fifth, the tritone; perfect intervals in accented positions are quite definitely a characteristic of your style.
>
> Ligeti: You mean that certain intervals appear at certain points, signalling junctures of form? I have also noticed how often I used octaves and tritones (augmented fourths) in marking off sections of formal structures. The sound gets gradually crystallised and, on reaching an octave or tritones, it comes to a sudden halt to go on again a moment later. But my 'markers' are not based on theoretical considerations or dogmas.[1]

As the movement progresses, there is a shift from textures based on stepwise movement around fixed registral limits to those with more interweaving expansive lines using non-chromatic movement. Within these more complex textures, coordination and simultaneous attack become increasingly important. There is a sense in which the various independent lines merge at increasingly frequent intervals for longer passages of coordination. In bs.105-16, there is an accumulation of gestures involving divergence and simultaneous attack. Whereas in bs.117-30 (approx.), a complex texture, achieved through maximum rhythmic independence (pitch order notwithstanding) is punctuated by local points of coordination, in bs.135-42 the converse applies, with the texture dominated by frequent passages of simultaneous attack and little rhythmic conflict. By b.143 it seems as if progression to a single (unison) line is inevitable.

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[1]Ligeti, "Ligeti-Peter Varnai," in *Ligeti in conversation*, 28.

Analytical commentary on bs.1-24

Opening elements: a very simple pattern

This movement opens with a hazy, shifting texture, where no single line predominates. Because of the consistency of texture, pitch and timbre, the listener's attention is drawn to minute changes, such as the introduction of microtones and the sustaining of pitches. Such textural consistency is maintained at a high level in bs.1-3 through limited pitch content, the constant presence of four instruments and a cycle of fluctuating rates of attack:

Instrument	Number of attacks per crotchet beat				
	Bar 1	Bar 2	Bar 3	Bar 4	Bar 5
Bass Flute(BFl)	6 6 5 6	7 7 8 8	7 6 5 5	6	
Clarinet 1(Cl1)	7 7 6 5	5 6 7 8	8 7 6 6	7 7 8 8	7
Clarinet 2(Cl2)	8 8 7 7	6 6 5 6	7 8 8 7	6 5 5 6	6
Bass Clarinet(BCl)	- 5 5 6	7 8 8 7	6 5 6 7	8 8 7 7	
Bassoon 1(Fg1)	____	____	____	6 6 7 8	8
Missing	5 - 8 8	8 5 6 5	5 - 7 8	5 - 6 5	5
Doubled	- - 5 6	7 6 8 8	7 - 6 7	6 - 7 8	--
Changes in rates of attack					
BFl	6 5 6 7 8 7 6 5 6				
Cl1	7 |6 5 6 7 8 7 6 7 8 7				
Cl2	8 7 |6 5 6 7 8 7 6 5 6				
BCl	5 6 7 8 7 6 5 6 7 8 7				

There is a semi-constant pattern of various groupings, with the fluctuations from faster to slower movement remaining consistent within each line. The overlapping of these lines means that the overall texture has a consistent number of attacks per bar and that the rate of change is always highly controlled.

In b.4 there are two changes in the texture, with the dropping out of the BFl1, and the addition of a new timbre, muted Fg1, which maintains the rhythmic pattern established in bs.1-3. The return of the solo BFl in b.5 introduces the slowest subdivisions yet (semiquavers) and a new pitch F𝄲 (**ex.1.2a**).

BFl introduces new pitches F𝄲 and D𝄲 in bs.5 and 7. These microtonal 'deviations' are 'normalised' in successive bars in the Cl1 part (F𝄲 moves to F#, D𝄲 to E♭). Each of these microtones coincides with a reduction in the number of subdivisions within a crotchet grouping. Once the F𝄲 has been 'normalised' to F#, the BFl's F𝄲 is passed to the VCl1 where it becomes the first sustained pitch, persisting through bs.7-8. By the end of b.6, the original instruments associated with the D-F tremolo have moved to D-F#, with the loss of the quintuplet subdivision from the 5-6-7-8 pattern (Cl1 and 2, BCl). The 5𝅘𝅥𝅯 grouping persists in the BFl line, alternating with 4 and 6𝅘𝅥𝅯 groupings.

In b.7 BFl, again moving more slowly than Cl, BCl and Fg lines (4 and 3𝅘𝅥𝅯 groupings), introduces another microtone, D𝄲. This is again 'normalised' to Eb in Cl1 (end of first crotchet, b.8). This time there is no 'second step' to this process, in other words, the sustaining of D𝄲 in another background line. Instead, there is an increasing amount of change in the texture, with the introduction of several new pitches (**ex.1.2b**).

It is significant that in the tremolandi, although various combinations of adjacent pitches are possible (both intervals 1 and 2: e.g., D-E♭, F-F#, F-G, E♭-F, F#-G, etc.), all the pairs of notes are at least an interval 3 apart: thus the basic shape of the opening tremolo is maintained, with the first stepwise move arising in the sustained Trombone (Trb) line (b.9 F#-G, with G then transferred to Double Bass 4 [DB4]). This can be viewed as further linear expansion of the upper limit

of the trill activity in bs.6-8. This is mirrored in b.10 by development of the lower limit in the BFl line, hitherto fixed on D.

Fast and slow: the evolution of limits

The BFl activity can be seen as an outgrowth of the Trb move, where a slower moving sustained line became associated with the articulation of a limit already established through the (local) background trill activity. Throughout the tremolo passages the BFl has never moved further from D than D𝄲. After the sustained Trb entry, the BFl returns from D𝄲 to D, flattens it and moves to C#, hence, unlike the Trb, establishing a new limit. This new pitch is transferred to Cello 3 (VCl3) and is sustained (similar to upper limit G in Trb - DB4).

As individual pitches are 'clarified' by being sustained, the rate of tremolo activity increases, creating a blurred texture where it is less possible to focus on specific pairs of pitches: thus the foreground/background contrast between sustained notes and tremolandi is further heightened. In b.11 the BFl picks up the G, which has been sustained by DB4 and VCl2 since bs.9-10, and moves to A𝄫 in b.12, thereby articulating both lower and upper limits by its sustained activity in bs.10-12. These gestures do not limit expansion in both directions: in coordination with the BFl's G, there is a new lower limit C, introduced by VCl4, and the upper limit A𝄫 is anticipated by the background trill of VCl1, and extended to A♭ in VCl2 in bs.11-12.

Thus bs.9-11 can be said to summarise much of the activity of the preceding 8 bars, with a filtering of various elements: the slowing down of some of the trill activity means that there is more focusing on individual pitches. The juxtaposition of sustained and tremolo lines, with an inter-relationship based on movement around and towards upper and lower limits, is clarified in bs.9-11.

New registers and pitches

In bs.11-22, the increasingly dense texture builds up over the sustained C introduced by VCl3 in b.10. Aurally, one's attention is drawn towards the upper registers through figuration involving pitch expansion with a clear ascending direction. Harmonically, the vertical sonorities have evolved from microtonal blurring around the two pitches D and F, to a dense, almost chromatic cluster with one small gap. This gap is then exploited, so that the lower limit is, at first, isolated, and then emphasised as a goal for the moving lines.

While the BFl's activity in bs.9-11 acts as a marshalling point focusing on both upper and lower limits, in bs.12-14 the contrast between sustained and moving lines becomes more marked. The pitches sustained in b.12 are C(VCl4), D♭(VCl3), D (DB3), E♭(DB1), G♭(DB2), A𝄫 (Fl), with a G-A𝄫-A♭ trill (VCl1 and 2) and E-G tremolo (Vlas): thus there is a small gap between the lower and upper pitch areas (no F).

There is a thinning of the texture in b.13, with the dropping out of D, E♭ and G♭, again emphasising the gap between the upper and lower areas. In b.14 C becomes further isolated by the dropping out of the sustained D♭. At the same time there is an increased weighting of the C pitch itself, which is now sustained by VCl4, 5, and 6. As the tremolo E-G (Vlas) is replaced by a sustained E-G (DB1 and 2) together with the return of a sustained E♭ in VCl3, there is further consolidation in the only moving lines, with the juxtaposition of a G-A 5𝅘𝅥𝅯 grouping with a G-G#-A 6𝅘𝅥𝅯 grouping, alternating between the VCl1 and 2 (and later Vla3) parts (**ex.1.3**). The sustained E/E♭ pitches bisect the distance between upper and lower limits.

The isolation of the lower limit means that the possibility of its being breached or even challenged is less likely. The absence of any trill or tremolo activity in the lower registral area creates a very fixed lower limit, and means that more attention is drawn towards the upper area where the movement creates a

strong sense of expansion in one direction only. In b.17, as the upper limit is further expanded with the introduction of B𝄫 leading to B♭ in Vla2, the E/E♭ pitches are eliminated, leaving only one other sustained pitch (E𝄮, Vla1), thus allowing the maximum focus so far on the upper register.

An equilibrium is maintained between the 5𝅘𝅥𝅯 and 6𝅘𝅥𝅯 lines in bs.14-17, with overlapping Vla2 and VCl4 entries maintaining the pattern while the VCl1 and 2 swap lines in b.16. This balance is disturbed in b.17 with an increase in the number of attacks per beat in both parts after the expansion to B♭ via B𝄫 as a new upper limit:

	15	16	17	18	19	20
VCl1	5 5 5 5	5 5 6 6	6 6 7 8	9 8 9 10	9 9 9 10	11 12 12 12
VCl2	6 6 6 6	6 6 5 5	5 5 6 7	8 9 8 9	10 9 9 9	9 9 10 11

	21	22
VCl1	12 12 12 12	12 12 - -
VCl2	12 11 10 11	12 12 - -

In bs.17-22 the VCl1 line is always the first of the two to increase in speed, and it reaches the fastest grouping (12𝅘𝅥𝅯) by mid b.20. As well as setting the agenda with respect to the speed of events, the VCl1 line introduces most of the new pitches, with only last minute movement in the VCl2 line.

In spite of the increasing speed of events and the many changes in pitch groupings seen in both VCl lines, the rate of expansion in the upper limit is relatively slow: e.g., B♭ remains fixed in bs.17-20, coinciding with the passage of rhythmic stability maintained between the two lines. This is an illustration of Ligeti's description of fast-moving surface activity that is really static.

The Vla2 entry in b.19 at first doubles the VCl2 line, similar to the doubling across the 'join' in bs.15-16. It then becomes a complicating factor in

b.20 by (i) pursuing an independent 10𝅘𝅥𝅯 grouping, and (ii) introducing an E at the bottom of its pitch group. This creates a link with the sustained E♮ of Vla1, and reopens the earlier E/E♭ mid-registral area.

The VCl lines in bs.17-22 are consistent in direction, ascending from a fixed lower pitch. In spite of fluctuating pitch content, this unanimity of direction is maintained (**ex.1.4**). However, the Vla2 line becomes less clear in terms of direction in bs.19-20, with the reversion/inversion of the G-A-B♭ group, creating equal emphasis between the ascent to B♭ and the descent to E. If E was introduced as in **ex.1.5a**, the ascent to B♭ would occur on every fourth attack, and the direction would be upwards only. Instead, the B♭ is heard on every sixth attack and is given equal weighting with E (now perceived as the goal of the descending line) (**ex.1.5b**).

The introduction of E is also perceived as a bridging of the gap between the upper registral activity and the isolated lower limit C. In b.20 there is further weighting of the mid-registral area with the Vla's pitch group picked up in VCl3 and 4. This increasingly complex texture contains layers of activity emphasising moves towards both upper and lower limits, with these layers operating as follows:

(i) VCl1 and 2: these lines focus on movement towards the upper limit B, with a gradual reduction in the pitch content from G𝄪-A#-B to A#-B to A♯-B to B. Thus there is a rapid increase in the frequency of attacks on B with a perceptible shift from a mobile trill line to a fixed sustained/tremolo line focusing on a single pitch. The Vla 1, after dropping its sustained E♮ follows a similar process.

(ii) Vla2, VCl3, 4 and 5: the other group of fast-moving lines emphasise movement towards the lower limit, starting with E and descending through Eb, E♭, D, D♮, C#, C, C♮ to B. The upper pitches of these lines are thinned out from G-A-B♭ to G-A to G#-A with an eventual focus on the single pitch A.

(iii) Vla1, 3, and 4: these overlapping parts emphasise a sustained chromatic descent from E♮ (Vla1, bs.17-21) through E♭ and E𝄫 (Vla3), D, D♮, C#, C𝄪 (Vla4, b.22).

(iv) VC15 and 6: the lower limit C continues to be sustained.

Thus layers (ii) and (iii) refocus attention on the lower registral area generally, and on movement towards the lower limit specifically. In b.20 the two types of fast-moving activity may be perceived as drawing equal attention to the two registral extremes with only the sustained C providing any low registral bias. In bs.21-2, layer (iii) further increases this bias and, more significantly, emphasises a regrouping around, and possible challenge to, the fixed lower limit, whose weighting has been reduced from two cello lines to one. Such sustained movement in a single line (Vla3 shifting to Vla4) has already been imbued with an important function: the articulation of fixed limits for the first time (bs.9-12, Trb and Fl lines) (**ex.1.6**).

(ii) follows (iii) up to the second beat of b.22, then passes it, C-C♮-B, VC13, 4 and 5.

The implied conclusion of layers (i), (ii) and (iii) is an eventual arrival on a B octave:

(i) the reduction of the G-A-B♭ line to a single B tremolando,

(ii) the lower line moves towards a breach of the C limit, implying a new pitch B,

(iii) this line shadows (ii), stopping short of a move from C-B, but always challenging the lower limit.

Arrival point (i): octave multiplication

There is a coordinated arrival point on the third beat of b.22, with the four layers involved as follows:

(i)VCl1 and 2, Vla1	upper B tremolando
(ii)VCl3, 4, and 5	upper B tremolando
Vla2	lower B tremolando
(iii)Vla3	upper B tremolando
Vla4	sustained upper C
(iv)VCl6	sustained lower C

Thus there are two superimposed octaves, one tremolando, one sustained. They can also be differentiated as active and passive in terms of their arrival: both pitches of the B octave are goals of the various fast-moving lines, whereas the lower of the C pitches has always been sustained in some part since b.11, and the Vla4 C in b.22 is not the goal of any particular line (there are no specific voice-leading connections to that pitch).

The B and (to a lesser extent) C octaves are outgrowths of the previous 21 bars. There is another, much more dramatic aspect to this arrival point: a woodwind chord emphasising the C# pitch across four octaves (**ex.1.7**). This gesture is the most dramatic and striking of the movement so far. The C# pitch can obviously be linked in voiceleading terms to the B and C pitches which were the outcomes of the registral divergence in bs.19-21: a B-C-C# cluster is not unlike earlier clusters. Yet, one's attention is overwhelmingly drawn to the drastic registral changes and the octave sonority, rather than to other pitch relationships. After the tightly focused chromatic and microtonal sound-world of the previous 21 bars, enormous new opportunities can be seen in the cross-registral gesture of bs.21-22.

One of the C# octaves interlocks with the B and C octaves in the string parts, possibly complicating the perception of upper and lower registral limits.[1] Most attention must be focused towards the drastic registral changes effected by the C# octaves, rather than C# as a new registral limit. Because of these changes, b.22 functions not only as an arrival point, but also as an 'opening' point. Registrally, it overrides the stepwise movement of the previous 21 bars. In some ways a drastic change is necessary after the breaching of the lower limit C (fixed for 11 bars).[2] Bs.20-22 have already marked a return to lower registral expansion, and the C# octaves function as an extreme 'multiplication' across a wider registral expanse, amplifying the sense of divergence and movement in both directions. Because of the overriding of (i) the notion of fixed limits and (ii) stepwise movement to new pitches, the gesture in b.22 carries with it strong implications of something new.

Bs.23-4 evolve from this gesture with a texture which is extremely static in terms of pitch, but which speeds up rhythmically using three sets of interlocking trills:

C#-D#(octaves)	Fl1, FlS, ObS, BCl, DB1
B-C#	Vib, Hp
B-C (octaves)	Vla1,2,3 VCl1,2,3,4,5

The fixed pitch content means that the function of such an increase in speed is not the same as in bs.1-22: in other words, (i) note fixing and sieving leading to an eventual fixed limit, bs.10-13 and 20-22, and, to a lesser extent (ii) the introduction of new notes, bs.1-7. More attention is therefore drawn to manipulation of rhythm and direction.

The C#-D# trill is also different to earlier trill patterns in that it is not continuous, falling into four distinct groups. (**ex.1.8**). Depending on the starting

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[1]C# could possibly be seen as a new upper limit, but it conflicts with the B lower limit established in VCl3, 4 and 5.

[2]If this limit had not been breached, there would perhaps have been some increase in emphasis for the C pitch (e.g., *crescendo*, etc).

pitch of each group, movement in one or other direction is emphasised. After group (i) the potential must always exist for further expansion (i.e., if C# moves to D#, then it is equally possible for D# to move on further in the same direction).

Group (ii) qualifies this potential somewhat with D# being more prioritised (i.e., starting and finishing the group, possibly being set up as a point of departure for further expansion). There is less clarity of overall direction.

Group (iii) weakens this with a return to C# as the main pitch: At the same time, there is a clear reaffirmation of ascent as the dominant direction.

In group (iv) any potential for expansion is negated by (i) the length of the group, and (ii) the continued coupling of the C# and D# pitches, limiting any further upward expansion. Group (iv) consolidates activity, thus indicating the limit of the activity, it cannot go any further, meaning that something new is necessary for any further movement.

The string tremolandi, although remaining in the background, mirror the activity in the wind parts (i.e., an increase in the number of attacks per beat). Thus by group (iv) in b.24, it is clear that no registral/pitch expansion is about to evolve from the C#-D# and B-C trills. It is necessary for something to 'cut across' the continuous texture of bs.23-4. The rapid descent in the solo oboe (also the first 'soloistic' gesture of the movement) cuts off both static areas, effecting a registral collapse in both directions and focusing attention on a single registral area.

Analytical commentary on bs.25-44

Conflicts of accentuation

There are several referential/semi-referential links created in bs.25:

(i) B^{b}-C is recognisable as the same interval type as the C#-D# trill in bs.23-4,

(ii) It is referential to the opening of the movement by focusing on a single pair of pitches in a restricted register (there are also associations of timbre). This trill is noticeably higher and smaller than the opening D-F tremolo.

The most obvious change in b.25 is one of restriction and constriction. From the expansive gesture of bs.21-4, there is a narrowing of register and timbre. The clarity created by rhythmic unison across four octaves contrasts with the muddier, quasi-heterophonic texture in bs.25-30, with only *fpp* accents emerging as local points of focus. These accents seem to emphasise the fixed nature of these lines: unlike the treatment of the D-F dyad at the opening, there is no microtonal wedging around B^{b} and C. This treatment serves perhaps to 'fix' these pitches aurally: they continue to be present until b.42 as part of an evolving chromatic cluster, G-A^{b}-A-B^{b}-B-C-D^{b}. This cluster builds on the principle of restricted heterophonic lines as established in bs.25-30.

The Oboe d'amore (ObD) and Cor Anglais (CA) lines act as a link between the end of the accented groups and the new unaccented string texture, with the B^{b}-C pitches a common element in both. Although this link is closer in timbre to the Cl/Fg passage, there are two significant changes: (i) the absence of any *fpp* accents

as the ObD and CA attacks do not function as the first attack of a new B♭-C line (instead the first pitch in each line is to be played 'as soft as possible, *pp/pppp*'), and (ii) there is a sustained increase in speed from 6 - 7 - 8 (and 5 - 6 - 7) attacks per beat.[1] These lines do not have the same dynamising effect as that of the ObS in bs.24-5, where any momentum that has been 'stifled' by the static texture of the previous bar and a half is transferred into a single quasi-explosive gesture which creates a new area of focus.

While the ObS is an active response to a static situation, the ObD/CA lines can be seen as a passive response, where any 'dynamism' accrued through various manipulations of attack, pitch and timbre is dissipated.

Textural consistency and scalic patterns

The evolution of the chromatic cluster in bs.30-44 will be examined in detail as an example of Ligeti's systematic and rigorous control of local figuration, leading to a coordinated arrival point on a new kind of dyad. The B♭-C pitches are transferred to DB1-4 and a consistent texture is established: continuous sextuplet semiquavers, DB1 and 3 starting on C, DB2 and 4 starting on B♭ with strict pitch alternation, a continuous *p* dynamic and the instruction 'very even, without any accentuation'. The first change in this static texture occurs in b.33 with the introduction of a new pitch G, at first in DB1, and in DB2-4 in subsequent bars. The pattern of attacks caused by these overlapping lines is as follows:

b.33: DB1 introduces G which is attacked every 4 6𝅘𝅥𝅯s

b.34: DB2 introduces G, with its pattern of attacks 1 6𝅘𝅥𝅯 behind that of DB1 (meaning that there are two consecutive G attacks every 4 6𝅘𝅥𝅯s).

[1]There are fluctuations in the subdivisions in bs.25-31, but lines beginning with an *ffp* accent generally maintain a regular 6 attacks per beat.

b.35 DB3 and 4 introduce G 1 6♪ apart with DB3 1 6♪ behind DB2. Therefore G is attacked on every 6♪ beat and the texture in bs.33-5 becomes increasingly saturated with G attacks, drawing attention to a slightly lower register than the fixed Bb-C of the previous eight bars.

In b.36, DB1 adds a new pitch A, which bridges the gap somewhat between G and B^b-C. As well as rendering the G less isolated, the introduction of the A pitch as part of a quasi-scalic passage G-A-B^b-C-B^b-A-G means that G is attacked less frequently, (every 6 instead of 4 6♪ beats).

In b.37 various lines are converted to the above scalic pattern, as follows:

1st beat	DB2 and VC11
2nd beat	DB3 and 4
3rd beat	VC12

On the last beat of b.37, therefore, there are six separate lines, each using the scalic pattern a 6♪ apart in the following order:

(i) DB1	G A B^b C B^b A
(ii)DB4	A B^b C B^b A G
(iii)DB3	B^b C B^b A G A
(iv)VC11	C B^b A G A B^b
(v)VC12	B^b A G A B^b C
(vi)DB2	A G A B^b C B^b

Thus all possible permutations are present, meaning that each note of the scalic pattern has equal saturation for 8 attacks, and creating a consistent vertical sonority of G-A(doubled)-B^b(doubled)-B. In b.38 there is further filling-in of the G-C space, with G# introduced by DB1 (further bridging of the gap around the lower limit G) followed by B (creating a link to the upper limit), so establishing a chromatic line G-G#-A-B^b-B-C. The other five lines also introduce G# and B

pitches, and there is also an increase in texture with the addition of VCl3&4 lines. The texture is fully chromatic by the third beat of b.40. There is not complete saturation of the texture as in b.37: out of the ten possible permutations only eight are present, as there are only eight instrumental lines.

In b.41 there is a slight change in timbre, with VCl1-4 replaced by Vla1-4, always in the same register, but with a new upper limit, D^b. In spite of this change, textural consistency is maintained, with equality of articulation, no elimination of pitches or changes in the pitch order, and a consistent rate of attack. In b.42, while pitch order and density of attack remain consistent, there is an increase in the number of attacks from 6 through 7 to 8 per beat. This increase is uniform across the eight lines, in spite of their staggered pitch orders. This bar will be examined in more detail below.[1]

2nd beat: all lines 8, some non-chromatic movement,

Inst.	Line								Missing notes
Vla1	G	A^b	A	B	C	D^b	C	B	B^b
Vla2	B^b	A	A^b	G	A^b	A	B	C	B^b
Vla3	B	B^b	A	A^b	G	A^b	A	B	B^b
Vla4	C	D^b	C	B	B^b	A	A^b	G	-
VCl3	A	A^b	G	A^b	A	B	C	D^b	B^b
VCl1,2,4	still chromatic								

3rd beat: all lines 8, some gaps in chromatic line,

Inst.	Line								Missing notes	
Vla1	A	A^b	G	A^b	B	C	D^b	C	A	B^b
Vla2	D^b	C	B	A	A^b	G	A^b	B	B^b	A B^b
Vla3	C	D^b	C	B	A	A^b	G	A^b	B^b	
Vla4	A^b	A	B	C	D^b	C	B	A	B^b	
VCl1	G	A^b	A	B	C	D^b	C	B	B^b	
VCl2	B	C	D^b	C	B	A	A^b	G	B^b	
VCl3	C	B	A	A^b	G	A^b	B	C	A	B^b
VCl4	A	B	C	D^b	C	B	A	A^b	B^b	

[1]The activity in b.42 is not as clearly differentiated into separate crotchet beats as the above analysis might imply. However it is useful to examine the gradual erosion of the middle register of the passage by using such cross-sections of the string lines.

4th beat: all lines 8𝅘𝅥𝅯, further erosion of the chromatic line,

Inst.	Line								Missing notes				
Vla1	B	A^b	G	A^b	C	D^b	C	A^b	B^b	A	A	B^b	B
Vla2	C	D^b	C	B	A^b	G	A^b	C	B^b	A	A	B^b	B
Vla3	B	C	D^b	C	B	A^b	G	A^b	B^b	A			
Vla4	A^b	G	A^b	B	C	D^b	C	D^b	A	B^b			
VCl1	A	A^b	G	A^b	A	B	C	D^b	B^b				
VCl2	A^b	B	C	D^b	C	B	A^b	G	B^b	A	A	B^b	B
VCl3	D^b	C	B	A^b	G	A^b	C	D	B^b	A	A	B^b	B
VCl4	G	A^b	B	C	D^b	C	B	A^b	A	B^b			

It is clear that the middle of the continuous chromatic line is being eroded at an ever-increasing rate. Such erosion leads to more frequent attacks on the outer pitches, thus focusing more on the upper and lower limits of the line:

G	A^b	A	B^b	B	C	D^b	
G	A^b	A		B	C	D^b	mid-point eroded
G	A^b			B	C	D^b	erosion towards lower limit
G	A^b				C	D^b	equal erosion in both directions

Arrival point (ii): note sieving and fixing

In b.43, the process of erosion is developed further. By the third beat of b.43, all eight moving lines have been reduced to one of two single pitches (four lines on G, the other four on D^b), each of which is sustained at first using 10 attacks per beat, and then with "as dense a tremolo as possible."[1] In spite of the speed of the attacks, the perception is still one of two fixed pitches, meaning that the outer limits of the previous moving/dynamic activity are now static. Such stasis can be

[1]The texture is also augmented by the addition of VCl5 & 6.

linked with Ligeti's comment on lines that are "like the wheels of a railway engine, which at high speed seems stationary."[1]

The C#-D# trill in bs.22-4 created a strong local implication of movement across a wide registral area: this implication has not yet been fulfilled. So far, any expansion outwards from a two-note trill has been very localised and short-ranged, especially in terms of registral development.

The main difference between the G-D^{b} dyad and any of the previous two-note trills is the fact that a linear presentation of the two pitches (i.e., G-D^{b}-G-D^{b}, etc.) is not maintained: instead, they are attacked simultaneously. Hence there is no potential for a moving line in which direction becomes important: in other words, one of the pitches becoming fixed as a limit, with the other pitch used as a starting point for movement (e.g., D-F b.5, B^{b}-C bs.31-3).

Analytical commentary on bs.44-68

Sustained growth

The arrival on the G-D^{b} dyad in bs.43-4 brings back two significant elements from Section 1: (i) sustained pitch, and (ii) wind timbre, specifically FlS. Section 2 serves to emphasise restriction and systematic development within a small chromatic cluster, where elements such as microtones and sustained pitch were not used. The microtonal blurring around the G-D^{b} dyad in bs.44-7 reintroduces the elements that created much of the forward momentum in Section 1.

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[1]Ligeti, "Ligeti-Peter Varnai," in *Ligeti in Conversation*, 65.

In bs.44-7 the texture divides into two distinct groups of instruments: (i) Fl1,2&3, FlS, Cl1&2 and BCl, and (ii) the ten string lines from b.43. In b.44 group (ii) continues to sustain the G-D^{b} tremolando from the previous bar while FlS and Cl1 have a simultaneous attack G-C#, which, at a *pppp* dynamic, is at first a mere augmentation of the prevailing sounds. Increased attention is drawn towards this line by two changes: a marked *crescendo* to a *p* dynamic, and a shift upwards in pitch from G-D^{b} to A♭-D♮.[1] Both the fixed upper limit of bs.41-3, and more significantly, the lower limit of bs.33-43 have moved, and hence a new means of progression (i.e., one without reference to a fixed limit) is defined. The simultaneous shifting of both limits renders them equal in terms of the amount of movement and overall direction: however, such coordinated movement is not maintained.

As if in response to the shifting upwards of the G-D^{b} limits in the wind lines, there is a coordinated shift downwards in the tremolando string lines:

D^{b}-----D♭-----C

G------G♮----G^{b}

Yet again, precise coordination is not maintained after the G^{b}-C dyad. The overall effect of the movement in both groups is the gradual filling up of some of the chromatic space, with 'bunching' around the original G-C#/D^{b} pitches (**ex.1.9**).

The blurring is mostly concentrated around the areas below G and C#. The tremolo movement is 'block' movement at first, with various pitches 'left behind', resulting in the very slow filling up of a registral space, and the enlarging of the pitch vocabulary. The wind lines are also involved in the same type of movement. Both textural groups return to a G-C# dyad which functions as a measuring point (indicating how far the movement has progressed).

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[1]Once again the use of non-tempered pitches is associated with the shifting of long-standing limits which have been functionally significant.

New dynamism

The return of these prioritised pitches stops almost all the movement in both groups, except for the repetition in the FlS line of the last two pitches of its moving line E♭-E♮. In some ways, these pitches have static connections: the line is no longer moving to new higher registers, there is a sense of 'going over old ground'. E♭-E♮ is a larger step than any of those in the other woodwind lines (i.e., more than a semitone), and the repeated pitches are closer together and use more dramatic dynamic contrasts, thus leading to a perceived increase in speed and focus.

Further repetition in b.48 onwards contributes to this increased focus on this line, together with a 'normalisation' of the pitches from an E♭-E♮ dyad to D#-E.[1] The dynamic is also augmented through doubling by Fl1&2. The speed of events increases, at first through a reduction in the number of rests between entries: b.48, two triplet quaver rests apart, b.49, one triplet quaver rest apart. Towards the end of b.49 the first break in coordination occurs when the solo flute changes to semiquaver motion and subsequently to quintuplet and sextuplet groupings. Such an increase in the speed of attack is replicated in the other flute lines, which gradually become less coordinated in bs.50-1. A further development is the eliding of D#-E pairs, also introduced first by the FlS line (end of b.50). In bs.51-2 this four-note unit is treated in the same way as the original D#-E duplet—an increase in the speed of attacks and a decrease in the gap between units. There is further lengthening of the unit with the addition of a third D#-E group in mid b.52, where the increasingly complex flute lines seem to supplant the string-tremolo texture's place in the static/dynamic framework.

After the string-tremolo texture finishes on the last beat of b.52, there is a rapid introduction of new pitches. Non-tempered pitches are not used, but the FlS

[1]Such a normalisation has usually been indicative of a change in function from 'pitch on the move' to fixed pitch.

line reduces its rate of attack prior to the introduction of a new pitch, a process reminiscent of the opening of the movement. D#/E becomes fixed as the lower limit, meaning that registral expansion is always in an ascending direction. Yet the local direction of the lines is not always consistent due to the manipulation of the pitch order. Pitches are introduced as shown in **ex.1.10**.

It is clear that the direction of the units is always fluctuating: e.g., G♮ in b.56 is not introduced as a chromatic step up from G♭. Instead it is linked with F. The first linear version of these pitches appears in the Harp line, separated by timbre from the prevailing texture.

This concludes the complex pitch development, with E♮, one of the original D#-E dyad being the last pitch added, one which completes the chromatic line E♭-E♮-F-F#-G.

This five-note group is set up as a clear unit through increased spacing (i.e., larger rests between appearances of the unit). The evolution of this cluster uses the same heterophonic development as that of the six-note cluster in bs.32-44: however, the five-note cluster seems to evolve less systematically and more organically than the earlier one, with a greater sense of registral expansion and an overall ascending direction.

Four flutes (and an oboe)

The texture in bs.61-8 consists of juxtaposition of this five-note unit in FlS, Fl1, 2 & 3 lines (together with Hp in bs.61-2): thus timbre, pitch and speed of attack are always consistent (there is also no dynamic variation until b.69). Any sense of progression must therefore be created by the overlapping of these units, and more importantly, by overlapping of the spaces between units. This overlapping will be examined in detail in **ex.1.11** and **ex.1.12**

At first, Fl1, 2 & 3 enter close together with the FlS always slightly isolated in time. There is always some degree of overlap between entries of the unit, meaning that there are no silences in bs.61-3. There is occasional coordination between lines: e.g., 4th beat b.61, Fl3 and FlS, hence reducing the perception of four independent parts. The rests within each line (i.e., gaps between units) continue to increase, as mentioned above. Note that the FlS line is always the first to introduce the longer rests. The overall effect of this is that the five-note units become further apart from one another.

Any sense of vertical grouping of the units from each line becomes less defined: e.g., Fl1 is more isolated from the other three lines at the start of b.62, overlapping by only one demisemiquaver with the Fl2 line. As the distance between units increases in each line, there is less overlapping and the texture thins out, often with no more than two lines playing at once.[1] In the second half of b.62 there is either imitation after one demisemiquaver (e.g. Fl2 & FlS, 3rd beat, Fl1&3, 3rd-4th beat), or overlapping by one demisemiquaver (e.g., Fl2&3, 4th beat, Fl1 & FlS, 3rd beat): the texture which was made up of four independent lines is shifting towards one with two sets of linked pairs.

In b.63 there is alternation between (i) two and three overlapping lines (with Fl1, 2 & FlS overlapping on the 1st beat) and (ii) a thinning of the texture, first through the elimination of some overlaps (Fl2&3 are linked only by attacks on subsequent demis., 2nd beat) and, most significantly, the first coordinated rest in all parts (4th beat, b.63). This rest, although a very local break in the texture, must challenge the future progression of that same texture. When the next break occurs after four overlapping chromatic units, one in each of the flute lines, one's perception of events clearly shifts from that of a texture governed by overlapping linear activity to one focusing on vertical blocks of four 5-note units, with the overlapping between these units generating progression within each vertical block.

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[1]The harp also drops out in mid b.62, eliminating any sort of background connecting activity, thus emphasising the thinner texture.

In bs.63-5, the texture continues to be divided vertically, with lengthening gaps between blocks:

1st rest = 1 demi, 2nd = 5, 3rd = 8, 4th = 10.

The first three blocks also become more compressed internally:

Block 1 (4th beat b.63 -1st beat b.64) 11 demis.[1]

Block 2 (2nd-3rd beats b.64) 8 demis.

Block 3 (4th beat b.64 - 1st beat b.65) 6 demis.

This compression is achieved by tighter overlapping and eventual doubling of lines:

Block1 No doubling between lines

Block2 Fl1&FlS doubling each other (3 sets of attacks)

Block3 Fl1 doubles Fl2, Fl3 doubles FlS (2 sets of attacks).

As the silences between blocks increase, each block becomes more isolated, with Blocks 1, 2&3 apparently progressing towards an ideal of the four lines in unison, with Block 3 being the nearest possible state to complete unison. The next vertical block must be the determining factor in this process of compression and isolation

On examination of the process so far, there are two possible outcomes: either (i) continued progression towards a unison version of the 5-note chromatic unit, or (ii) an undoing/reversal of the process of compression and isolation. Judging by the previous five bars, (i) would seem to be the logical outcome. The achievement of such a goal—four identical unison flute lines—would however eliminate the process which has generated most of the dynamism in those bars, that is, the uncoordinated overlapping of lines using identical material. It is possible that a unison vertical block would carry such strong implications of a single line (rather than four independent flute lines) that a marked change in process, rather than a mere reversal of the old process, would be necessary to generate sufficient progression and dynamism. Such unison activity would also

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[1]Number of demisemiquaver beats between first and last attacks in a single vertical block.

function as a strong arrival point, thus also requiring a rethink in process. Therefore the process of compression and isolation of the vertical block as described above can move as near as possible towards complete unison: however, achieving unison carries with it implications detrimental to the continuation of the process itself.

The eventual compositional decision is clearly, a kind of reversal of the previous process, with a 'splaying-out' of the vertical block and a slight decrease in the distance between blocks.

		Size	Distance
Block 4	2nd-3rd beats b.65	8	8
Block 5	4th beat b.65-1st beat b.66	11	6

The reversal of the process, a move away from compression and isolation of the vertical block is faster and less controlled than the original progression towards unison, leading to a sense of unravelling of the hitherto coherent texture.

In b.66, Block 5 retains its identity (i.e., four identical flute lines, preceded and followed by rests) but there is wide overlapping between the lines. Subsequent vertical blocks are no longer clearly defined because of the lack of obvious overlapping, and the FlS line rapidly becomes isolated from the other lines. There is increasing ambiguity in the vertical organisation of the texture, due to the absence of the defining parameters from earlier bars.

In b.67, there is continued separation: e.g., no overlapping between Fl1 and the other lines on the 2nd beat, and the isolation of the Fl2 line on the 4th beat, which marks the first use of four distinct disjunct entries. It should be noted that there is a local increase in the speed of events (i.e., a gradual reduction in the distance between entries).

The FlS entry in b.68 does not stop on G: instead, it continues ascending chromatically (perhaps at last using the latent upward impetus in the 5-note unit). This also picks up a long-term registral implication from earlier in the piece.

Analytical commentary on bs.68-90

Arrival point (iii): explosive gestures

Everything that has happened so far can be linked to a tightly focused stepwise or subdivided (microtonal) stepwise pitch process. Even the dramatic registral expansion in bs.22-4 can be seen as a 'multiplying-up' of an existing pitch process, a momentary 'bubbling-up' which condenses back down. The cross-cutting gestures in bs.69-74 put registral expansion on a firmer footing, mapping out new registral areas, while at the same time maintaining clear voice-leading connections with the clusters of bs.24-68.

The first significant gesture of the next section evolves from the registral 'explosion' in b.68: along with registral expansion, there are other significant changes in this section:

(i) Rate of change: instead of single processes gradually unfolding with accretion of dynamism, there are many crosscuts of texture, changing rapidly from one registral area to another (similar to the C# octave gesture at the end of the first section, but over a longer period of time),

(ii) Speed of attacks: there is a move away from the regular demisemiquavers of the previous section[1],

[1]Note the change from demis to 9 attacks per crotchet beat in the first registral 'explosion' in FlS, b.68.

(iii) Juxtaposition of sustained and rapidly moving lines,

(iv) Differentiation of timbre,

(v) Increased complication of direction: e.g., bs.71-3, expansion in both directions from a single fixed point (G#-A).

Clearly, after the controlled environment of bs.60-68, there is an overwhelming amount of change happening very quickly. Some of the gestures link with, or build on, implications from previous processes/gestures, whereas some introduce new areas of focus. Because of the frequent shifts in texture, there are different 'layers' of activity, and thus it takes longer for any one process to gather momentum while it is being 'cut-across' by a different texture. Nevertheless, there are opportunities for inter-relationships between the different levels of activity and, most importantly, the potential must exist for the evolution of a hierarchy: one process being prioritised above the others. The evolution of process in the various textures will now be examined in detail.

Evolution of process

The scales in bs.68-9 establish registral outer limits, which are approximately an octave higher and lower than the previous point of widest register in b.22. The registral compass is further emphasised by the mostly chromatic filling-in of the space between the limits.

The flute scale is extended through doubling an octave and two octaves lower by ObS and Cl1 respectively (with the Cl1 coordinating in pitch, though not in speed of attack, with the beginning of the CFg scale). This lower scale is more complex: (i) its speed fluctuates from 6 - 8 attacks per crotchet, and (ii) it is 'blurred' by a Fg2 line doubling Fg1 at first a tone lower, and then at varying intervals due to the lack of consistent chromatic movement. It ascends as far as the

approximate midpoint of the registral compass, but the Trumpet (Tpt) and Trb become fixed, through repetition, on the pitches G-G#-A, a chromatic passage from near the end of the scale.[1]

There is twice as much movement here, compared to the treatment of earlier trills or tremolos (e.g. D-F tremolo, which was transformed from D-F, D-F♮, D-F#, E♭-G♭, E♭-G), with the figuration articulating expansion in one direction only. Here, while there is expansion upwards—G#-A, G#-A#, G#-B (ObD/Fg2/Cl1)—there is also a descent from G#-A, G-A, F#-A (CA/Fg1/Cl2), thus implying local divergence from a fixed centre point.

Expansion outwards from these fixed pitches is, at first, symmetrical: (**ex.1.13**). All expansion is contained within the F#-B limits, and there is a fairly consistent rate of attack in bs.71-2 and the first half of b.73. Such consistency (even stasis) in terms of both pitch and speed of events may require a large cross-cutting gesture to effect any change in a tightly focused process: the scale which begins on the third beat of b.73 is such a gesture. At first, it starts as a non-chromatic scale on BCl (a timbre not used in bs.71-2) and is isolated from the mid-registral activity: however, as the scale approaches the F# limit, instruments such as Cl1&2 take it up, and it continues in the CA and ObD as the upper B limit is reached. The ascent continues to D#/E♭ in each of the above instruments (with the addition of Fg1), but does not proceed any further: instead, there is a marked increase in the number of attacks per crotchet beat (12 - 13 - 14, and ultimately a D-E♭ trill in both clarinet lines; thus, the gesture which begins with a dynamic cross-cutting role is finally 'condensed' to a static trill, with the upper pitch E♭ given extra priority through being sustained by ObS, Vla1-4 and VC15-6 (harmonics). The entry of this pitch on the second quaver of b.74 can be seen to confirm, or to limit, the eventual goals of all the ascending lines: (i) it anticipates the last note of the ObD and CA lines (ii) it coordinates with the first repetition of

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[1]Note that this is the reverse of previous processes, which generally begin with a small fixed number of notes, and expand through addition of extra pitches.

E^{b} in the Cl1&2 lines (the repetition of D-E^{b} already implies that these lines will not continue to ascend, (iii) it anticipates the final pitch of the Fg1/ObD/Cl1 ascent, which goes only as far as D#.

The scale passages in bs.73-4 must have a referential link with those in bs.68-70, not only because of their proximity, but because of the similarity of situation: i.e., their function as a dramatic cross-cutting gesture to locally restricted, if not static activity. Whereas the scales in bs.68-70 could be said to have possible links with earlier prioritisation of registral extremes (e.g., bs.22-5), those in bs.73-4 are severely restricted in their registral development, thus any such links are less possible.

It is also significant to observe that the sustained E^{b} in Ob and string lines in b.74 onwards is the first note to be sustained since the G-C# dyad and related pitches in bs.43-4. This dyad was 'moved' by

(i) increases in dynamic level (from *ppp* to *p*),

(ii) chromatic 'complication'/non-tempered 'bending' of pitches,

(iii) eventual overlapping of other notes.

The eventual outcome of all of this movement was (i) a merging of the G pitch into the sustained string background, and (ii) movement from C# as far as E, before doubling-back and eventual 'fixing' on the two pitches D#-E. Therefore in bs.43-8 there is progression from sustained to (i) background sustained or, more significantly (ii) locally active: the D#-E dyad, through its assimilation of new pitches, eventually evolves into the five-note chromatic unit.[1]

The most important difference in the progression from the sustained E^{b} in b.74 is the affirmation of the concept of expansion in both directions from a central limit, as seen in bs.71-3.[2] This progression is in several stages:

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[1]The various stages in this progression can be summarised: movement from sustained pitch through (i) *crescendo*, (ii) non-tempered pitchbending, (iii) changes in timbre, (iv) addition of, and repetition of new pitches, (v) increases in the the rate of attack, (vi) establishment of fixed limits, and (vii) increased definition of a specific grouping through ordering and spacing of attacks.

[2]Note that a lower pitch D is always present, but only as part of the clarinet trill, and not as a sustained pitch.

(i) there is a *crescendo* from *pppp* to *mp* in ObS in bs.74-5,

(ii) in b.75 there is the first sustained descent from $E^{\flat}$ to $E\flat$ in ObS, Vla1&2, VCl1&2,[1]

(iii) in b.76 there is the first ascent from $E^{\flat}$-F (Ob1).

As progression continues in both directions, $E^{\flat}$-E-F and $E^{\flat}$-$E\flat$-D-$D^{\flat}$, the mid-point of such expansion, $E^{\flat}$, ceases to be sustained in the more foreground wind/brass lines, although it continues to be sustained in VCl5&6. The other string lines mirror the divergence from $E^{\flat}$, with movement to $E\flat$, D and F in bs.75-6. A new element is the harp, which also emphasises the pitches around the central pitch (C#/Db & E#/F) rather than the central pitch itself.[2]

In b.77, the overall effect of the divergence from $E^{\flat}$ is a texture saturated chromatically from $D^{\flat}$-F, each pitch being articulated through a trill/tremolo or sustained. In the last crotchet of b.77 there is an extension of this chromatic space in both directions (C in Celesta[Cel] and $G\flat$ in Vla3&4, together with $F\natural$ in ObS).

Changing syntax: movement away from fixed limits

Within the four-flute grouping of bs.61-8, there is no significant emphasis of FlS as soloist. In contrast, the ObS is already subtly isolated within its timbral group in b.71 (paired with ObD and CA), and in b.78 it takes on more of a soloist's role, marked by an increase in dynamic, a '*poco capriccioso, rubato*' direction, and most importantly, a new type of figuration. This figuration is more melodic, in the

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[1]Sustained descent was seen in the opening fixing of limits, bs.10-11, but the bottom limit was fixed so rapidly that progression towards the new upper limits became the primary area of focus:

F#-G-$A^{\flat}$

D-C#-C

[2]It is interesting to compare this passage with bs.41-3, where the outer limits G and $D^{\flat}$/C# become fixed through the eradication of the middle of the chromatic line. In this case, the same process is used but in reverse, with the movement of the diverging lines being further emphasised by the semi-eradication of the central pitch.

loosest sense of the word, and more expansive, with a discernible contour not dominated by stepwise movement.

The first gap appears in the chromatic texture with the dropping of E in the Cl1 trill (ending on the last quaver of b.77) and there is further thinning in b.78 with the elimination of the sustained string pitches, thus further highlighting the selective pitch groupings of the Hp and Cel groupings which are themselves (inter)related.[1] This elimination coincides with a reactivation of the ObS line (third crotchet of b.78) where there is a significant development in the methods of local progression: namely, a move away from slow, sustained stepwise movement (juxtaposing tempered and non-tempered pitches) usually governed by fixed limits. Alternately, new pitches within a single line have previously been introduced through expansion beyond such a fixed limit, either as part of a scale passage (e.g., bs.59-62), or other repeating figuration (e.g., bs.32-42).

The *crescendo* in the ObS line in b.78 (first and second beats) implies that a change of pitch is imminent. Significantly, the resulting pitch group moves freely outside the restricted area of bs.76-7, indicating an important break with earlier, stepwise syntax.[2]

(i)A^{b} (new): outside the previous limit by several steps
(ii)D: previously sustained by Horn (Hrn) and present as part of Cl trill
(iii)G (new): above previous upper limit (G♭ Vla3&4 in unison)
(iv)C#: present as part of Cel and Harp lines (=D^{b})
(v)B (new): outside previous upper limit by several steps.

The first integration of the ObS line into the overall texture in b.78 is the incorporation of the highest pitch B into the Cel's line as part of a second pitch

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[1]Harp moves from C#-D^{b}-E#-F (a.k.a. D^{b}-D^{b}-F-F) to B#-C#-D^{b}-E#-F (a.k.a. C-D^{b}-D^{b}-F-F). Celesta's line C-D^{b}-F can be seen to be a condensed version of the Harp's line in both pitch and direction.

[2]Note that the string harmonics end immediately after the first move by the ObS outside the fixed registral area of bs.76-7

grouping F-G-B. Note that this grouping links B with the previous upper limit F, and that the Cel continues with its C-D^{b} grouping, thus reiterating the lower limit from the previous activity. Therefore the Cel functions as a rationalising or consolidating element, perhaps compensating for the radical and drastic nature of the ObS activity.

As well as having links with earlier oboe movement (i.e., some stepwise moves linked with non-tempered pitches), the ObS line in bs.79-80 incorporates some of the intervallic leaps which appeared radical in b.78. The shadowing process in both Cel and Vib means that many of the new pitches introduced as a result of the ObS line bs.78-9 are 'absorbed' into the background, and thus into lines where registral expansion is, on the whole, tightly controlled. Thus the effect of the radical ObS gesture (a gesture using five notes, occupying less than one crotchet beat) requires and receives eight beats of consolidation. The increased scope of the second such ObS gesture in bs.80-1 could imply an equal increase in the range of any consolidation.

The second oboe gesture is faster moving (from 9s to 10s), has almost three times as many notes as the first, and expands the registral band in both directions (lowest pitch F#, highest pitch D#). In his analysis of the first movement of this work, Zohar Eitan discusses the concept of pitch centricity in contexts similar to bs.80-81, describing the aggregate of the twelve chromatic pitch classes as serving as a norm:

> In such cases, as with the filling of the aggregate, a chromatic complex—now a vertical one—constitutes, when complete, a stable unit. When incomplete—when a "gap" occurs . . . tension and instability are created. This tension is resolved by the PN [primary note], which completes chromatic ordering in this complex. Ligeti thus uses the principle of chromatic completion both "melodically" (by completing a horizontal chromatic complex that has unfolded gradually in time) and "harmonically" (by filling a gap in a vertical chromatic cluster). In both cases it is the isolation of the completing note from the remainder of the chromatic complex that emphasises its centric role.[1]

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[1]Zohar Eitan, "Functionality within Cluster Harmony: Cadences and Primary notes in the first movement of Ligeti's Double Concerto," *Orbis Musicae* XI (1994): 99.

Here, however, I see little evidence of any sense of pitch superiority or subservience. It may be significant that ten of the twelve chromatic pitches are used before there is any repetition (the two pitches eventually repeated are A and F#, the first two pitches of this gesture, and their repetition is immediately followed by the final two chromatic pitches D# and C#) [**ex.1.14**].

A registral peak is touched upon with the attack on D# (fourth note of b.81); however, the ObS settles on A^b, a pitch which has strong chromatic links with the Vib line. In fact, the A^b in the ObS line is anticipated by G# in the Vib one attack earlier, and the arrival of this A^b coincides with the (momentary) elimination of the shadowing lines such as the Cel and Hp. The sustained A^b is given great emphasis as an arrival point by the controlled cooperation between ObS and Vib. This level of control persists in b.82, where there is a slight wedging out from the central A^b pitch, with a smooth transition from repeated G#s (Vib) to F#s(=G^bs, Hp), coordinating almost exactly with a move from A^b-A♭ in ObS. Even at this stage, there is an obvious absence of any 'shadowing' (i.e., the A^b pitch is not retained anywhere in the background. Local divergence is cut off by a resumption of faster ObS activity. Instead of shadowing, the Cel now doubles the ObS line, further supporting the perception of a clear change in the background/foreground relationship, with hitherto background elements now (i) supporting the ObS line (Vib/Cel), or (ii) creating movement with it as an equal partner (Hp b.82). There is a strengthening of this cooperation between elements with the first large simultaneous attack for some time at the end of b.82 (Fl1, FlS, Ob1, ObD, Fg1, Fg2, DB1).

Significantly, this simultaneous attack means that the ObS line is not the sole starting point for progression, as seen earlier with respect to the E^b, A and A^b pitches where the ObS line was the origin of movement in both slow and fast moving activity (by providing pitches which were then shadowed). Such juxtaposition of slow and fast material is still present at the end of b.82: however

the relative lack of dynamism in the faster lines should be noted, with the downward trend of the Fg1 (G-F#) being balanced by the rising F#-G in Fg2.

Octave doubling and simultaneous attack

In bs.83-4, the consistent sustained G pitch is blurred using the familiar processes of (i) stepwise divergence, and (ii) non-tempered pitches. Significantly, any new pitches are not shadowed by the fast background activity: instead, as the wedging-out from the central G continues, there is a marked decrease in the number of attacks in this part of the texture.

Fg1	12	12	-	12	|	10	9	8
Fg2	12	-	12	10	|	-	10	9
DB1	9	8	9	9	|	9	9	9

The locally controlled divergence from G (**ex.1.15**) is cut across by the fourth burst of fast ObS activity, the longest so far. In common with previous passages, this material breaks any established registral limits: e.g., the ObS A (second beat, b.84) had been an upper limit for the wedging movement from G. Even before this faster material supplants this limit, there is a marked doubling of this pitch an octave lower in the CA and Cl1 lines, the first such doubling since the C#-D# trill five octave trill in bs.22-3, which was itself a means of breaking away from localised linear movement. Towards the end of b.84, this lower A continues to be sustained by the Cl1 while the CA fills in the registral space between this A and the top of the wedging material (at first non-chromatically and then chromatically from D onwards).[1] The previous two passages using faster oboe material generally had a balanced registral trend, arriving on a pitch well

[1]Note also that at first, the CA is in rhythmic coordination with the ObS line, but it slows markedly as it approaches A^{b}.

within the highest registral limit. In bs.84-5, the overall trend is upwards, ending with an almost pure chromatic ascent to F#, and there is no subsequent return to a 'mid-registral' pitch which is then sustained.

Thus the longer line alters the balance that existed between fast and slower moving activity in earlier oboe lines, where the shadowing background functioned as an intermediary.

Now any background lines (e.g. the CA) have a more active role; indeed, the doubling of the ObS line, at first in pitch terms (A b.84) and then rhythmically (in coordination with faster activity) could be interpreted as a blurring of the distinction between background and foreground elements. Again, other background or shadowing lines are mostly eliminated by the ObS activity, with only the CA's A^b and Cl1's A sustained into b.85. The clarinet A becomes a lower registral 'anchor' or link with the previous linear expansion, and this function persists through a very slow chromatic/non-tempered descent in Cl1&2 and BCl lines through to b.95.

Pitch control

It is interesting to examine the pitch organisation of the other 'background' lines more closely. Earlier, the complex textures of bs.69-82 were punctuated by local simplification onto single oboe pitches E^b, F, B and A^b. The attack on G in b.82 also punctuates the texture, but aural attention is drawn to the number of instruments involved (simultaneous attack being earlier associated with climactic moments, such as bs.21-2), and the absence of microtonal shifting, as heard in the treatment of the earlier ObS pitches. This attack marks the beginning of a section with less soloist/orchestra juxtaposition, together with a new type of sustained movement adopting the expansive characteristics of the ObS material in bs.78-82.

In the Oboe, Clarinet and Flute lines of bs.83-8, groups of pitches, in unison or octaves, are briefly sustained against a backdrop of faster moving trills or repeating three-note lines. When the sustained pitches are abstracted from the texture, it becomes clear that this slow-moving line, which, in contour, resembles one of the expansive ObS line, outlines a 12-note complex (**ex.1.16**). Eitan's 'primary note' in this case is C, which only sounds as part of the sustained line after a repetition of A^{b}. C is presented as part of the background texture (Fl1/FlS b.86): for the most part, these faster-moving lines 'shadow' the pitches in the order in which they are presented by the sustained lines. This is evidence of local control of pitch—the withholding of one note from the twelve-note chromatic complex, until it is eventually presented as part of a significant event.

Such an event is, perhaps, the presentation of C as the last significant octave-doubled pitch before a drastic textural change in bs.88-9. It can be seen to be 'absorbed ' into the descending lines: significantly, its change of role is emphasised by the return of microtonal sonorities, which are conspicuously absent in the sustained lines of bs.82-8.

In bs.68-88, the overall expressive effect is one of liberation from the registral and linear restriction of much of the stepwise figuration of earlier on. Ligeti's use of 12-note complexes at places such as bs.80-81 and 82-8 demonstrates an overall rigor of pitch selection and order which may not be as immediately apparent to the listener as in the more restricted dyadic vocabulary of bs.1-68.

Order with a mixture of disorder

The texture in bs.88-9 is quite distinct in character, as the liberation from tightly stepwise movement heard in the more expansive angular ObS lines in bs.78-82 is now taken a stage further. Through rigorous control of the pitch order, Ligeti

achieves a sense of background unity or common ground among the lines. At the same time, through minute changes in rhythm and careful control of synchronisation or the lack of it, one hears a kind of warped canon at the unison going in and out of phase, reminiscent of the *Kyrie* in the *Requiem*.

> In almost all my works you find what you could call a 'danger zone'. . . . I like pushing things to the limit of the possible. Performers have often said, 'you cannot play this piece' or 'it is impossible to sing it'. My answer always was, 'it is almost impossible, but just try and you'll almost make it'. On one occasion when rehearsals for my *Requiem* were going on in Stockholm, I received a telegram asking me to go there because the choir was unable to sing the fugue in the *Kyrie*. In fact they were perfectly capable of singing it, only they were taking everything too strictly, they wanted to render the septuplets precisely. I explained to the choir that it was alright if they did not sing all the notes exactly; all they had to do was to approximate what they saw in the score both rhythmically and melodically and that it did not matter if they made little mistakes—the mistakes had been reckoned for. Whereas I wrote down everything precisely I was aware that the choir could not sing it all exactly. My reason for so 'overwriting' the score was to achieve the effect I wanted, a sense of danger.[1]

Bs.88-9 have some of the most complex textures of the movement, with up to ten fast-moving lines, together with other sustained ones. The texture is at first generated through unison (rather than octave) doubling of the original angular line (starting with ObD which is doubled by, then transferred to ObS, where it gradually ascends in register and increases in speed from 5-6-7-8-9-10 attacks per crotchet beat). The textural complexity is heightened by manipulation of the original unison doubling, using both anticipation and imitation (shadowing) of pitch order seen in earlier sections. The relationship between ObS and Hp will be traced in detail as an example of such manipulation of texture (**ex.1.17**).

B.88

ObS G# E B♭ E♭ F C# A Hp A# E♭ F C# D G♭ B# A# G

The Hp anticipates four pitches from the ObS line. Because the ObS is moving in 7s rather than 6s, its echoes get nearer to the Hp pitches as the pitch

[1]Ligeti, "Ligeti-Peter Varnai," in *Ligeti in conversation*, 53.

sequences progress; yet, instead of catching up with the Hp line, the ObS has an extra pitch A and a demisemiquaver rest, while the Hp proceeds with pitches D G^{b} B# A#, again anticipating the ObS pitches. Throughout the second beat of b.88, the Hp stays ahead of the ObS line by the same means:

Hp:	D	G^{b}(=F#)	B#(=C)	A#(=B^{b})		G
ObS: (rest)	D	F#	C	B^{b}	A^{b}	G

In the third and fourth beats of b.88, there are several important changes in the relationship between the two lines: (i) the existence of two points of coordinated attack on the same pitch ([a] D#=E^{b}, start of third beat, and [b] D, midway through fourth beat), resulting in (ii), a reversal of the relationship, with ObS anticipating the Hp pitches. After [a] there is only one such anticipation (C# in ObS preceding C# in Hp) before the Hp line 'skips' the pitches F# and D#, thus getting ahead of the ObS line by reaching G first. But after [b], the increasing rate of attack in the ObS line means that even after skipping a pitch (A), the Hp is still behind the ObS line towards the end of the beat.

In b.89 there is an increase in the number of points of coordination between the two lines, and at first there is little sense of a fixed order of entries: e.g., 1st beat, coordination on C=B#, ObS first with C# and B^{b}, Hp first with C# and G. In the second beat, after the second point of coordination (note the higher degree of cooperation between groupings, 6:12), F# is introduced first by the ObS and, after a coordinated attack on G at the start of the first beat, this order of events is maintained until the end of the bar, with both instruments ending on D^{b}-B^{b} (C#-A#).

Therefore, in these two lines there is virtual unanimity of pitch and direction for two bars, with a high level of control of various parameters; yet, through manipulation of rate of attack, and the omission of strategic pitches in the

Hp line, an extremely dynamic relationship evolves, where a dominant line is not easily perceived.

When the other fast-moving lines are examined, it becomes clear that similar processes, sometimes on a larger scale, are in use throughout the texture: e.g., Fl1 begins on the second beat of b.88, in unison with ObS. It begins to lag behind in the third beat by remaining in demisemiquavers (8s) against the ObS 9s. It frequently omits the lower pitches from the ObS line, at first replacing them with rests, but in b.89 it tends to have a more continuous line, resulting in occasional points of coordination with the ObS: thus it is never very far behind in terms of pitch.

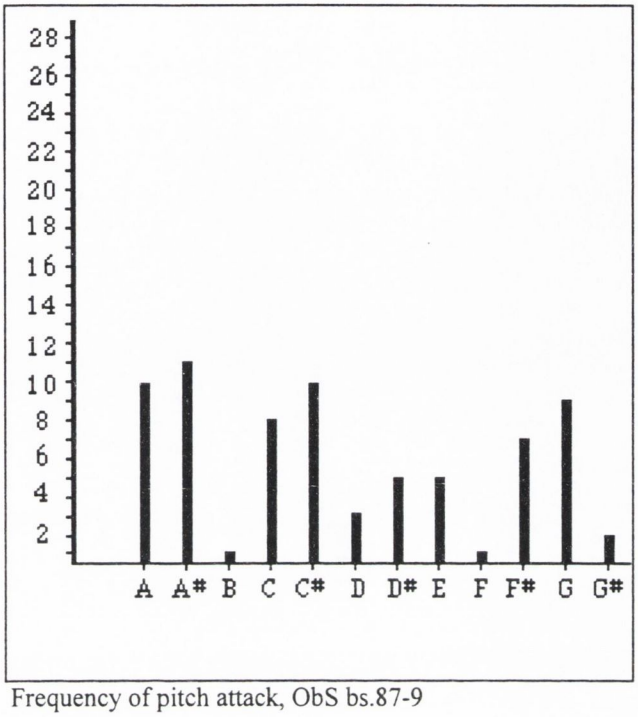
FlS starts in unison with ObS on the third beat of b.88 (also in 9s), and moves ahead by one attack. It stays slightly ahead of the ObS on the fourth beat, in spite of the increase in the ObS rate of attack from 9-10.

A further increase from 10-11 attacks means that the ObS line moves ahead at the start of b.89. For a short period after the first point of coordination (start of second beat, b.89, F#), the lead alternates rapidly between these two lines. From the middle of the second beat of b.89, the ObS moves ahead, and after one further point of coordination (G, start of third beat)[1] this order of entries is maintained, with an increasing distance between the ObS and corresponding FlS pitches: thus the ObS line is the leading element in the fast moving texture, with other lines including FlS, Fl1 and Hp following it in terms of pitch order.

The texture throughout b.89 has become increasingly complex, with up to six different (rhythmic) groupings superimposed. This textural complexity is maintained in b.90; at the same time, there is a radical simplification of pitch, with all the fast moving lines alternating between $B^{\flat}$ and $D^{\flat}$ (always in the same octave). When the pitch content is analysed, it becomes clear that this simplification is the culmination of a process throughout b.89 whereby key pitches

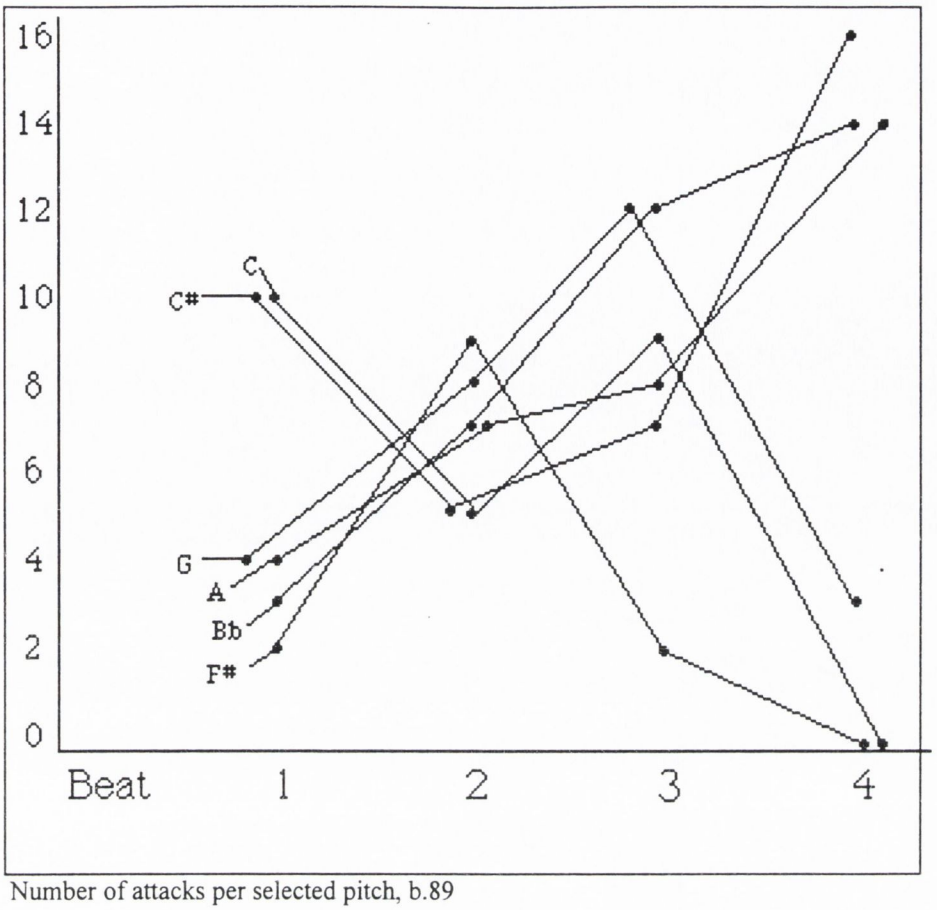
[1]There is also a point of coordination at the start of the fourth beat (A). However this is somewhat ambiguous since the FlS is now two pitches behind the ObS and its first A is coordinating with the second A in the ObS line.

are repeated more frequently, with eventual elimination of pitches from a fixed grouping.



Frequency of pitch attack, ObS bs.87-9

Although the pitch selection in the ObS line appears random, it is clear that, at first, repetition is highly controlled, with distances of between 8 and 16 attacks between repetitions of a single pitch. Also, many of the repetitions come at different octaves, somewhat reducing the sense of literal repetition. It is also clear from the graph that six pitches G-A-B^{b}-C-C#-F# account for 55 of the 73 attacks in the ObS line: thus as b.89 progresses, there is a kind of filtering process, with more frequent repetitions of selected pitches. Towards the end of the passage there is a final sifting of pitches, with B^{b} and D^{b}/C# prioritised as all other pitches are eliminated.



Number of attacks per selected pitch, b.89

When the pitch order is examined, it is clear that there is not the same presentation of a 12-note aggregate in the FlS/ObS lines in b.88. Instead, the gaps in any putative 12-note group are exploited and augmented, as seen in the first graph. The pitch order in bs.88-90 starts with expansive material and reduces or condenses to dyadic material (B^{b}-D^{b}). This creates an organic link between the two types of material (possibly the first dynamic link in this direction). The material from here on is more focused on single pitches or dyads: see bs.105, 111, 115. These pitches function as points of harmonic simplicity and clarity after the complex sonorities of the previous section. As demonstrated in the analysis, the arrival point on the B^{b}-E^{b} dyad (b.115) is not just a local arrival point, but a culmination of registral and harmonic processes that have been operating across the movement.

Analytical commentary on bs.90-116

Return to a simple pattern

Bars 68-90 have opened up new vistas of register and pitch after the restriction of earlier sections. Omitting bs.22-4, bs.1-66 of this movement are restricted to a registral compass of approximately 1½ octaves. Even the point of widest registral compass in bs.22-4 was restricted to three octaves. By b.69, this has broadened to 4¼ octaves. While the registral widening of bs.22-4 was somewhat short-lived, that from b.68 onwards is more long-term, with less octave multiplication, and more stepwise pitch movement covering the registral expanse. However, the implications of this more systematic movement into higher and lower registers is itself cut across by the striking ObS gestures of b.78 onwards, culminating in the complexity of bs.88-90. The simplification of the texture in b.90 focuses attention once again on a dyad, referential in interval quality to the opening, but this time, in a new, higher register, one of those opened up by the activity of bs.68-90. This marks the start of a section where the registral implications left hanging from bs.22-4 and 68-90 will be addressed.

In bs.90-91 there are three main layers of activity:

(i) Alternating B^{b}-D^{b} trill in upper wind and other instruments

(ii) Sustained notes from oboe lines (transferred to VCl1,2 &3)

(iii) Blurring around lower limit Cl1,2 and Basso, DB1&2, etc.

In bs.90-91, together with an '*accel. poco a poco*' direction, there is a consistent number of attacks per beat:

Fl3	5
Fl2	6
Cel	6
Xyl	7-8
Hp	8
Fl1	8
FlS	9

Once the *accelerando* stops in b.92 (crotchet=76, *poco più mosso*), there is a marked reduction in the frequency of attacks in all parts, the end result being a texture with consistent ♪ attacks by the 3rd beat of b.93, with the appropriate direction 'always very even and precise'. Thus no single line has priority through a larger or smaller frequency of attacks.

The high level of pitch restriction in the upper registers of bs.90-93 means that there is heightened awareness of a prominent dynamic process (i.e., juxtaposition of conflicting subdivisions). Even the rate of change of the background activity (i.e., the shifting lower limit) seems to become subordinate to the principal process. When homogeneity of attack is achieved on the 3rd beat of b.93, the dynamism associated with this process can no longer exist in its original form.

In b.93, as in b.65, a significant decision must be taken about the potential for further development of a particular process. Bars such as these mark a momentary clarification and simplification of otherwise complex activity: not merely functioning as a goal of the preceding process, but as a turning or marshalling point within this complexity. Both the above-mentioned bars are places where a long-range dynamic process reaches its limit: it can go no further without redefining its governing elements.

In b.94 the redefinition proceeds, with a division of the B^{b}-D^{b} dyad into two separate lines: repeating B^{b}s in FlS and repeating D^{b}s in Cl1, (1st beat). These pitches do not remain fixed for long: instead, the two lines descend in parallel interval 3s with correlating use of non-tempered pitches (notice that these are

present again after an absence of eight bars and that their return coincides with localised movement/shifts of fixed pitches) (**ex.1.18**).

As each line reaches G^{b}, the descent stops and there is a return to a higher pitch, either B^{b}/D^{b} or A/C. These pitches then remain fixed, creating a consistent A-B^{b}-C-D^{b} sonority, using varying groupings (4-5-6-7).

There are various stages in the redefinition of the B^{b}-D^{b} line from b.92:

(i) The line is broken in two and divided between a group of instruments (b.94);

(ii) B^{b}-D^{b} line is maintained in another group of instruments (Hp,Cel,Xylophone [Xyl], Fl2&3);

(iii) There is increased dynamism through a descent in parallel interval 3s, which introduces new pitches as it moves towards G^{b};

(iv) All lines do not return to the original B^{b}-D^{b} pitches: there is blurring and increased pitch complexity in the upper register (with pitches G^{b}-G-A^{b}/A-B^{b}-B/C-D^{b}).

These pitches then undergo the same treatment as in b.43: speeding up of fixed pitch lines leading to a delineation of limits (for example, Fl1 uses groupings of 4-5-6-7-8-9-10 attacks per crotchet beat), and similar processes operate in all other lines.

Conflicts of accentuation (2)

There are two significant changes in texture and articulation in b.97:

(i) Pitches are prioritised through accentuation, and

(ii) There is a marked thickening of the background texture (**ex.1.19**).

It may be posited that the harmonic saturation in the upper register in b.94 onwards weakens the sense of a fixed/slow-moving lower limit in the string parts.

The accented material begins with a striking gesture in the prevailing context: coordinated accented pitches on the first ♪ of the bar, emphasising the G^{b} and D^{b} pitches, which function as fixed limits for the accented activity in bs.97-101. The accented material has the following profile:

(i) Groups of repeated notes ranging in length from 4-16 notes, with an *sfp* or *poco sfpp* accent at the start of each group,

(ii) Each group is separated from the next by a rest or rests (from a semiquaver upwards),

(iii) There is no diversity of subdivision: all lines move in demisemiquavers (except for the 1st crotchet in Fl1, which completes the process from b.96).

Thus the possibilities for dynamic development can be derived from (i) length of group, (ii) distance between groups, and (iii) the degree of pitch movement.

When a cross-section of bs.97-8 is examined, the texture seems to fall into the following lines:

(a) Fixed D^{b} (upper limit from previous activity and same register as B^{b}-D^{b} from b.90) alternates between the FlS and ObS in such a way that D^{b} is always present; however, there are no overlaps of more than one demisemiquaver,

(b) Lower limit G^{b} (arising from lowest point of descent late in b.95) becomes fixed in Tpt and Ob1, with a similar pattern of alternation as in (a),

(c) Two other fixed pitches in mid register G (Fl2) and A^{b} (Cl2),

(d) Two linked descending lines in Fl1 and Cl1

Commentary on Graph, (**ex.1.20**)
Relationship between D^b and G^b lines

D^b line: this starts with accents in both parts, and then adopts the pattern of FlS line rapidly followed by ObS, each line commencing with an accent. The ObS phrases are generally longer than those of the FlS:

ObS	20	10	12	14	9	16
FlS	6	5	4	3	8	7

Thus as the number of attacks in any single FlS phrase decreases (6-5-4-3), its accent becomes closer to that at the start of the ObS line in bs.97-8. The longer FlS phrase in b.99 interrupts this pattern of accentuation (i.e., if the FlS phrase had continued to reduce in length to 2 attacks there would have been attacks on consecutive demisemiquavers). There is a change in the pattern of accentuation, with an accent in the middle of the ObS group at the beginning of b.100, immediately followed by an accent in FlS.

G^b line: There is no simultaneous attack between Ob1 and Tpt at the start of b.97. The groups of repeated pitches are more differentiated in timbre but less in length than those described above. The alternation between short bursts of Tpt activity with longer Ob1 groups, each commencing with an accent as seen in (a), means that at first, there are relatively long gaps between accents. In b.98, both sets of groups begin by being more homogeneous in length, with the accents becoming closer and more regular.

Distance between accents in demis., mid b.97-100 (Tpt and Ob1)

15 - 8 - 7 - 5 - 9 - 9 - 15 - 7 - 8 - 7

Here, there is not the same sense of increasing dynamism through a controlled reduction in group size as seen in (a).

Distance between accents in demis., mid b.97-b.100 (FlS and ObS)

6 - 10 - 5 - 12 - 4 - 14 - 3 - 9 - 8 - 14 - 1 - 7

Ex.1.20 gives details of the 'shadowing' relationship between Fl1 and Cl1, and the extra complication of Cl2. There is an important transfer of function in b.99, where Fl1 and Cl1 take up the sustained pitch $A^{\flat}$, while the hitherto fixed part of Cl2 begins to descend. The main difference between these lines and the $D^{\flat}$ and $G^{\flat}$ ones is the consistent overlapping of lines and the regular semiquaver rests between groups. Therefore manipulation of accent is only possible through changes in group length, and, as can be seen from the graph, such manipulations are used to emphasise specific pitch moves (e.g., shorter groups are usually associated with use of non-tempered pitches).

The oboe timbre continues to be associated with the upper $D^{\flat}$ limit, with an accented $D^{\flat}$ in Ob1 on the 2nd crotchet of b.100.[1] At the same time, this timbre also becomes associated with the lower limit, with Ob2&3 taking over the $G^{\flat}$ line from Tpt (2nd beat, b.100). The polarisation of the $G^{\flat}/D^{\flat}$ limits takes a new form after this timbral monopolisation, creating a distinct texture where there is consistent presence of both pitches without prioritisation through accentuation or switches of timbre. The remaining moving line continues to descend, but both Fl1 (G) and Cl1 ($G^{\natural}$) drop out before reaching the lower limit. There is further simplification of the texture through the elimination of the various string lines, meaning that the limits are increasingly polarised.

To summarise, from bs.96-100 the pitches $G^{\flat}$ and $D^{\flat}$ become fixed, and through a filtering process, are the only remaining pitches in the non-sustained lines by the middle of b.101. On previous evidence, such a filtering process may also govern, or have a bearing on, further progression from its goal pitches. In b.102 such progression is clarified, with very clear movement from both fixed limits.

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[1] This accent contributes to the breakdown of the FlS/ObS dialogue: e.g., 2 ObS accents, 1 FlS, 1 ObS, 1 Ob1, with the Oboe timbre increasingly prioritised.

Limits and registral divergence

In b.102, each instrumental line becomes associated with one or other pitch (there is no pitch alternation as seen in bs.100-101). There are, in general, three possibilities for dynamic movement within such a restricted texture:

(i) exploitation of timbre,

(ii) manipulation of accentuation, focusing on the start of each line,

(iii) pitch movement.

In bs.100-101 there is no dynamic development using any of the above possibilities; however, in b.102 the concept of pitch movement returns, with a controlled ascent from the D^{b} limit (**ex.1.21**).

In b.102, Ob1&3 become associated with movement from the lower limit G^{b} (**ex.1.22**). It is clear that the rate of descent of the lower limit is much greater than the corresponding rate of ascent in the upper registers.

(i) Non-tempered steps are used only from G^{b}-E^{b} (interval 3), while they are used across a range of an interval 4 in the upper level.

(ii) The overall span of the descent is a compound interval 6, whereas that of the ascent is an interval 10.

The most rapid descent occurs in b.104, with all 12 chromatic pitches being used. Within this bar, the rate of descent fluctuates:

1st crotchet	2nd	3rd	4th
3 pitches (B-B^{b}-A)	4 (A-G#-G-F#)	4 (F-E-E^{b}-D)	3 (D-D^{b}-C)

Towards the end of the 1st crotchet, Fl2 enters earlier than expected, but doubles Fl3's A instead of supplying G# to continue the descent. After this 'delay', there are further fluctuations with an increase in momentum in the 2nd and 3rd crotchets, followed by some slowing down towards the end of the bar (a return to three pitches in the 4th crotchet with less rapid alternation between Fl2&3).

There is a significant slowing down in the rate of descent in b.105, with no new pitches at first in the descending lines, and the introduction of a non-tempered pitch C𝄲. It is clear that as both diverging lines approach their goal pitches there is a controlled reduction in momentum. B becomes the goal of each line, and because of the level of control, they both reach B simultaneously; yet, the strength of this gesture is somewhat compromised by octave displacement in Fl2&3, which leap to B 2 and 1 octaves higher respectively. There is then further recontextualisation, with the B octaves transferred to a single trombone pitch (at the start of a glissando B-F, b.105). This transfer is similar in function to the opening-out gesture in b.22, where locally controlled registral expansion using specific limits is cut off by a multi-registral gesture.

In b.105, the tightly controlled divergence approaches an arrival point. The above-mentioned decrease in momentum must create some weakening of this arrival point, and octave displacement further diffuses the arrival on the goal pitches. The trombone glissando absorbs all this activity, coordinating with the arrival at B in both lines, cutting off the continuous demisemiquaver movement and, more importantly, cutting off the local process of divergence.

Arrival points (iv) and (v): ascending and descending gestures

The passage from bs.97-116 appears aurally to mark the climax of this movement. It uses material with the most vibrant figuration and the widest range of dynamics and articulation so far. The dramatic registral swoops and dives generate much of this excitement. Such gestures no longer function as destabilising elements, cutting across existing processes, based on stepwise pitch movement: instead, registral divergence becomes a goal, an end in itself. Lows and highs, which were touched upon briefly earlier on, are now consolidated.

From bs.97-116, the governing process is one of registral divergence. This process operates through several main gestures, each of which is concerned with specific registral areas. There are several attempts at divergence, mainly because of the relative imbalance between the amount of ground to be covered by the ascending and descending lines.

Gesture (i): bs.97-105	Mid-upper registers
Gesture (ii): bs.105-9	Mid-register & focus on low extremes
Gesture (iii): bs.110-12	Registral extremes
Gesture (iv): b.113-16	Filling in of mid-register.

Gesture (i) has already been examined in detail. Gesture (ii) has a single pitch as its starting point for divergence, picking up F from the end of the Trb. glissando, using the slowest possible movement (i.e., non-tempered pitches) away from this central point (F-G♭, F-F𝄲). At first, there is little specific association between timbre and ascent or descent: e.g., Fl1 starts the descent from F-F𝄲, but as the momentum increases in b.106 (with a marked *accel.*) Fl1 joins with the other ascending lines. Similarly, Cl1 is at first involved in the ascent (G♭, end b.105), but switches to the descent in mid b.106.

There are several factors that contribute to the increase in momentum in the ascending lines in b.106:

(a) an increase in the rate of movement through widening of the intervallic steps, from microtone to semitone to tone in some cases, especially towards the middle of the ascent,

(b) the use of *accelerando*,

(c) the increase in subdivisions from 8s (demisemiquavers) to 9s as the top of ascent is reached.[1]

[1]Ligeti's request for 'more breathy effect than tone', together with a sudden *crescendo* from *p* to *ff* in the final part of the ascent, could imply a sense of disintegration and a lack of definition, rather than the line reaching a well-defined climax and being abruptly cut off.

While a continuous divergence in 8s from F in b.105 is already impossible because of the relative imbalance between the potential sizes of the ascent (almost 2 octaves) and the descent (possibly 4½ octaves if a five string double bass is used), further disparity is created towards the end of b.106. With the upper line now moving in subdivisions of 9, there is a slowing to 7s or even 6s in the lower lines.

Up to this point, there has been a continuous descent using chromatic or sideways chromatic filling in of all space. But in b.107 (2nd crotchet) there is a retake, with a fresh descending line beginning from A in Fg1, CFg and VCl1, marking the start of approximately three bars of more complex lower registral activity. Significantly, there is no longer one consistent descent: there are instead several descending lines operating on different levels. (In b.107 Hp coordinates with the end of one descending line and the start of another).

Line (i) Chromatic at first, B^b-A^b gap in Fg line filled by Trb,
Line (ii) All chromatic except for last step in DB1,
Line (iii) Trb, dislocated from (i) (almost an octave higher than last five notes of CFg), anticipates VCl1's starting pitch on 2nd beat of b.108,
Line (iv) VCl1,3,4,5&6: coordinated in subdivision and attack, not in pitch, VCl1 purely chromatic, the rest are non-chromatic with frequent gaps of interval 2.

These lines do not link in with the ends of the most important descents so far, (i) and (ii) being approximately an octave higher.

Cross section: 2nd beat b.108						
VCl1	F	E	E^b	D	D^b	C
VCl3	G^b	F	E^b	D	D^b	C
VCl4	G	G^b	F	E^b	D	D^b
VCl5	A^b	G	F#	E	E^b	D^b
VCl6	A^b	G^b	F	E	E^b	D
No. of adjacent pitches	4	4	2	3	3	3

(Note the tight chromatic clusters, with little real change in rate of descent: this links into DB1, 2 &3 which continue the VCl descent, starting on D^b and C. There is also a change of timbre from *arco* to *pizzicato* and a reduction in subdivision from 6 to 4).

Cross section: 3rd-4th beats b.108								
DB1			C	B	B^b	A	A^b	G^b
DB2	D^b	C	B	B^b	A	A^b	G	G^b
DB3	D^b	C	B^b	A	A^b	G^b	F	E

(Note the difference in the rate of descent, depending on the type of movement used: (DB2) pure chromatic/(DB3) non-chromatic).

On the last 𝅘𝅥𝅯 of b.108, an accented B^b in the Hp line marks the start of a further retake as part of the overall descent. DB3 leads the string lines in the evolution of a six note motif B^b-A-A^b-G^b-F-E, with the B^b prioritised not only with an accent, but also with a *forte* dynamic.

Arrival point (vi): simultaneous attack and registral balance

Each descending line undergoes important modifications in order to achieve simultaneous coordination in mid b.111. All DB lines change to triplet quaver motion, with the effect of a 'written-in' *ritenuto*. These modifications—DB1's triplet quaver rest, DB2's mini-retake with its first non-chromatic step and the change in DB3's grouping from 5 to 6 pitches (B^b-A^b-G^b-F-E to B^b-A-A^b-G-F-E)—facilitate coordinated attacks on three pitches G-F-E. The addition of DB4, which at first doubles DB3, seems to 'absorb' and maintain some of the impetus of the earlier chromatic descent by restoring pure chromaticism from F to B.

There are obvious instrumental limitations to any further descent: yet the DB4 line also gives the impression of winding down, through equality of

accentuation and dynamic for all pitches from B♭-D. The prioritisation of the Bb pitch in earlier DB lines established this pitch as a starting point for descent, and heightened the contrast with the other unaccented pitches, which were not bounded: as part of a dynamic process, they had the potential to change. In b.111 all pitches are equal: B♭ is no longer emphasised as a starting point and there is less possibility of a return. The subsequent pitches are part of a wider ranging descent than seen previously, but in some ways overall dynamism has been reduced and the eventual arrival on the lowest pitch of the piece (B♮ b.112) is somewhat understated[1]: unlike many earlier arrival points, this is one that could be said to have more of a closing or cadential function than an opening one. The weighting of this arrival point and the relationships between divergences on various levels will be considered presently, following examination of activity in the upper register in b.110 onwards.

The extra emphasis of B♭ in the lower register in bs.109-10 has been discussed above. At the start of b.110 there is a response to this prioritisation with local octave multiplication through the mid and upper registers in the harp.[2] From this multiplication, the B♭ pitch (which is emphasised through rapid repetition in the FlS) becomes a centre of focus for diverging lines in the upper registral area (this is similar to divergence from the F pitch in b.105, where F arrives as part of the Trb glissando, linked with the end of the previous diverging lines).

(i) Ascending movement in FlS, Fl1 and Hp lines (**ex.1.23**).

Between FlS and Fl1 lines, a continuous chromatic ascent is maintained from A#-A (interval 13) and from B-D (interval 3): there is one missing pitch, B♭, which is provided in the appropriate octave by the rising Hp line towards the start of b.111.

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[1]Note the lack of accentuation, the absence of a sustained B♮, and the *diminuendo* through the last three pitches (D♭-C-B♮).

[2]Note the earlier function of the Hp line as a marshalling/grouping point for various lines: Hp in b.107, 2nd beat functions as a closing point for one process and an opening point for the next.

Although chromatic saturation is a product of the texture, the individual lines seem to speed up as they ascend, with (i) an increase in subdivision from 8-9, together with (ii) a larger number of interval 2 rather than interval 1 steps within the individual lines: e.g.,

Fl1	F#	G#	A	B	C			
FlS	F	G	G#	A	B	C#	D	
Hp	G	A^b	B^b	C	D	E	F#	G

This increase in momentum is counteracted by the sustained D in Piccolo 3 (Picc3), which can be interpreted as a transfer of the D from the end of the FlS line with a clear point of coordination between the two lines in b.111 (end of 1st beat). Interestingly, the same pitch is anticipated one attack earlier as part of the Hp line; however, while the Picc3 D acts as a point of conclusion for the FlS/Fl1 ascent, the Hp strongly overrides this limit, with pitches D-E-F#-G (note the *ff possibile* dynamic). There is no attempt to maintain pure chromatic movement.

(ii) Descending movement in Cl1 line:

B^b is established as a centre for movement similar to F in b.105. Note that the descent from Bb(=A#) starts one demisemiquaver later than FlS line, and coordinates exactly with the movement in the opposite direction by the Fl1 line. Cl1 is the only line descending in this register and it stays consistently chromatic from B^b-B (interval 13). There is a similar increase in momentum to that seen in (i), with a move from subdivisions of 8-9, and later, some use of interval 2 steps; e.g., B-A, A^b-G^b, F-E^b. Unlike the ascending lines, there is a return to pure chromatic movement on the 2nd beat of b.111 (E^b-D-D^b-C), and a transfer of the last pitch C to a sustained line (FlS and Vib).

Thus, two clear limits (D-upper, C-lower) are set up by divergence from B^b(=A#), a pitch which itself grew out of prioritisation within the bass descent which continues under this mid/high registral process. There are some interesting pitch relationships created by the combination of sustained and moving lines in

bs.111-2 (**ex.1.24**). (Points (i), (ii) and (iii) refer to marked pitches in this example.)

(i) In most performances it is possible to hear the last four notes in the DB4 line as a slower version of the pitches at the end of the Cl1 line. This link is very significant as Cl1's line in the 1st beat of b.111 covers more ground (there are several gaps in the chromatic line), but there is an obvious slowing down in the 2nd beat, where it reverts to pure chromaticism.

(ii) & (iii): Any chromatic line will sooner or later refer to pitches already present as part of a vertical sonority. Yet, the chromaticism here is too well-organised for mere coincidence. The starting point for the divergence gesture out of which the sustained C and D pitches evolved was itself derived from a prioritised pitch within the descent. The obvious octave doubling of both the upper and lower limits by the lowest descending line can be interpreted in various ways.

On the local level, the descending line, by filling the D-C gap in linear form (i.e., D-D^{b}-C-[B]), and continuing this chromatic movement before dropping out, serves to emphasise the non-chromatic nature of the C-D dyad. Combined with the registral disparity, the lack of a chromatic relationship means that neither pitch within the dyad is forcing the other to move.

Any sense of confrontation in b.111 is achieved through the juxtaposition of the outcomes of two distinct types of material and processes (sustained versus moving lines), heightened by the obvious pitch links. If the C and D pitches ceased to be sustained as the chromatic line continued to descend, the moving line would once again take supremacy over all sustained pitches.

In more general terms, this confrontation and the outcome mark liberation from the Linear - Vertical - Linear pattern, where vertical structures or sonorities rapidly evolve out of linear processes and are cut off or absorbed into new or

related linear movement. The most frequent appearance of this pattern has usually involved octave multiplication and its converse, octave absorption. Both of these processes have been used to cut off an existing process or to provide extra impetus for change: e.g., in b.110 the bass descent only breaks out of its repeating B^{b}-A^{b}-G-F#-E after the octave multiplication of the B^{b} pitch. Gesture (iv) (bs.113-16) marks an important liberation for large-scale vertical structures in general, and for the octave sonority in particular (**ex.1.25**).

It is important to note the relative complexity of the arrival at the B^{b}-E^{b} dyad, as it would be possible to have a relatively straightforward divergence:

D - E^{b}

C - B^{b}

Instead, each of the pitches C and D becomes a centre for divergence. Significantly, non-tempered pitches are again used to destabilise or 'defocus' the sustained pitches. More importantly, the registral extremes of the octave sonority, so often associated with arrival points, arise here out of local voice-leading and not simply as an elaboration or multiplication of an individual line. In bs.105-16, there is an accumulation of gestures involving divergence and simultaneous attack. These will now be examined in the context of similar gestures from earlier in the movement (**ex.1.26**).

Clearly bs.111-12 mark the registral climax of the movement in terms of divergence. It is the arrival point for highly controlled movement into each of the three registral areas, high, mid and low. Significantly, while there is a retake of the divergence into mid and high areas (bs.110-11), the arrival on B/C^{b} (Hp and DB4) in b.112 is the culmination of a single descent, which begins in b.106. In bs.114-15, it is important to observe the dearth of low registral activity: there is no octave multiplication outside the range of the original C-D dyad areas (mid and high registers only). When this factor is taken in conjunction with the lack of lower registral activity in the remainder of the movement from b.117 onwards, there is a

(retrospective) intensification of the perception of bs.106-12 as a comprehensive sealing-off of the lower registral area and all processes therein.

Overview of arrival points

Both arrival points (i) b.22, and (iii) b.68, involve wide registral gestures which have an opening function and little organic link with surrounding processes. Points (iv) b.105, and (v) b.106, both use registral expansion which grows out of previous material, but mitigating factors render them incomplete. Arrival point (vi) b.111 operates across all significant registral areas, and functions in all ways as a logical outcome of the preceding material, making it the strongest arrival point so far. It is clear that extreme registral compass and divergence change from being destabilising elements, as in (i) and (iii), to being prerequisites for stability, as seen in (vi).

Challenges to, and movement away from fixed pitches have been seen many times throughout the movement. In b.117, few of the methods whereby earlier pitches have been challenged, and ultimately shifted, are seen, with no juxtaposition of the $B^{\flat}$-$E^{\flat}$ dyad with new pitches, or any extra dynamic weighting of the pitches before they move. Some ambiguity of direction is also created by the returns to $B^{\flat}$ and $E^{\flat}$ (see discussion on a similar topic, bs.22-4). There is also no long-term sustaining of pitches (except for $B^{\natural}$ in Vla1 and Fl1 for a short time). No 2/3/4 note motif is established, such as those seen in bs.25 or 71 (both coming after important arrival points), and while there is some use of registral expansion (specifically upwards from the $B^{\natural}$ pitch), it occurs at a very slow rate, and any sense of a clear ascent is negated by the ambiguity of direction in all lines.

Analytical commentary on bs.117-61

Single order

In bs.117-42, some familiar traits from earlier sections can be heard. Many of the instrumental lines display the same ambiguity of overall direction, as seen in the expansive material from bs.78-89. The systematic pitch restriction from the earlier stepwise figuration is also present in this new section. At the same time, many of the governing processes that generated dynamic development and forward momentum in these earlier sections are now absent. There is little or no sense of registral expansion or divergence: neither is there any controlled enlargement of pitch vocabulary. Although the complex texture from b.117 onwards is registrally restricted, for the most part, there is no clear articulation of limits. As will be seen in the following commentary, Ligeti uses a common pitch order for these lines. This order is inaudible at first, because of his manipulation of rhythm, phrasing and instrumentation. However, the homogeneity of pitch and contour must register on the listener on a subconscious level, as lines merge on a local point of coordination, before diverging rhythmically again. There is a perception of a 'sameness' of pitch and texture, of the same ground being reworked, with the more vibrant, dynamic processes from earlier sections being conspicuously absent.

In bs.117-21, all instruments apart for FlS and ObS are instructed to play 'always in the background', resulting in extra dynamic weighting of the solo lines which seem to be more 'in focus' than the other elements of the texture. In bs.117-

18, there is a restricted pitch compass in both these lines (A#-B-C-C# in various combinations), with little prioritisation of any one pitch or obvious synchronisation or repetition of patterns. It is only towards the end of b.119 that any replication of pitch content and overall contour can be perceived (**ex.1.27**).

When the pitch organisation of this passage is examined in detail, it can be seen that each line (Fl1, FlS, ObS, Cl1, Xyl and Vla1), uses the same pitch order and contour, creating a greatly restricted harmonic texture. At the same time, through widely diverse rhythmic groupings and segmentation of this order, the rate at which each instrumental line proceeds through this ordering is controlled to create few points of obvious duplication or imitation.

The use of such an order imposes strict limitation on pitch and overall contour. Pitch movement is, for the most part, bounded by the B^{b}-E^{b} limits emphasised in bs.115-16, with no cross-registral activity: all lines move within an interval 5 compass (exceptions are the Hp and Xyl A in b.120). In bs.117-21, few pitches are prioritised through being sustained (the most common method used earlier). Instead, any passages of obvious imitation or even synchronisation of pitch (although remarkably few in number considering the common pitch order) have the effect of creating points of focus within the texture, functioning as points of regrouping, where two lines meet. Such synchronisation, although occurring on a very local level, creates a simplification of the otherwise complex texture, isolating the coordinating lines and drawing attention to any 'shadowing' process that occurs after the synchronisation or imitation.

Examples of synchronisation/duplication in bs.117-21:

(i) FlS & Fl1, bs.117-18	Imitation, FlS established as leading line
(ii) FlS & Fl1, b.118	Synchronisation (3 attacks)[1]
(iii) FlS & Fl1, b.119	Synchronisation (2 attacks)
(iv) FlS & ObS, b.119	Imitation, ObS leading.

It is striking that both FlS and ObS are moving through the pitch order at a much faster rate than other instruments. In b.119, the juxtaposition of ObS (8s) and FlS (6s), with both lines beginning at the same point in the pitch order and then gradually moving out of synchronisation with one another is the clearest aural indication so far of the similar pitch path being followed by both instruments.

Attention is drawn to the above examples, as it seems clear that the pitch order has been organised rhythmically to achieve minimum amounts of duplication between lines. Points such as those listed above will emerge as aurally significant (**ex.1.28**).

When the overall pitch order is examined, it is obvious that there are some 'rogue' elements or instrumental lines, which enter midway through the order (e.g., Picc2 b.120, Clarinet Piccolo [ClPicc] b.121). Both these lines are of significance as they anticipate an important change in the overall texture in bs.121-2.

Picc2 enters by synchronising with Fl1's E^{b}, but it does not follow the established pitch order (Eb-C or E^{b}-B^{b}): instead, it sustains E^{b} and then moves to D. This is the first in a number of quasi-prioritisations of the E^{b}/D# pitch (there is also an accented *f* E^{b} in FlS, and *crescendo* to D# in the ObS line). Such emphasis goes against the relative weighting of E^{b} as a percentage of total attacks.

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[1]There are two important factors: (a) Fl1 continues to A# before FlS: however FlS's A#, when it comes, is emphasised with an accent and *mf* direction, (b) the simplification of texture created by the simultaneous attacks is negated by an increasingly complex surrounding texture (addition of Hp, Xyl and Cl1 lines).

Fls line bs.117-22						
Pitch	A#	B	C	C#	D	Eb/D#
No. of attacks	6	8	6	6	4	2
%	18.75	25	18.75	18.75	12.5	6.25

There is obvious weighting of the lower registral pitches. In spite of the paucity of E^{b}s as part of the pitch order, this pitch is emphasised as part of a new sustained gesture in b.121.

The other 'rogue' instrument, ClPicc, does use the pitch order starting three pitches behind Cl1, but due to its use of smaller subdivisions, actually ends up ahead, arriving on B^{b}, which it first sustains, and then shifts to B♮.

Thus in b.121, one sees the return of three important aspects from earlier in the movement, conspicuous by their absence from the passage governed by the pitch order in bs.117-20: (i) sustained pitches, and hence the notion of (ii) fixed limits, and (iii) non-tempered pitches, bringing with them the associations with various types of movement, specifically the exploration of new pitch areas :in other words, movement outside fixed limits.

There are two strong points of coordination:

(i) Synchronised attack on E^{b}/D#, b.121 (Picc2, FlS &VCl1),

(ii) Synchronised attacks on B-D-B^{b}, b.122 (Picc3, FlS & ObS), where the final sustained B^{b} merges with the already sustained ClPicc B^{b}.

These lines then proceed to descend (not in synchronisation) through B♭-A♮-A. It is important to note again the association between non-tempered movement and the shifting of fixed limits (there is extra emphasis of these non-tempered pitches through *crescendo* and *mf* markings in FlS and ObS lines). The slower moving sustained lines return to faster non-linear movement once A is reached, led by the FlS and ObS lines in a resumption of the strict pitch order. Most of the sustained activity is concerned with movement around the lower registral area, with no corresponding shift of the upper E^{b} limit so far (E^{b} moves to

D in Picc2 and then drops out). Thus the earlier bias towards the lower register as seen above is also reflected in the sustained lines.

There is, nevertheless, one aspect of the sustained activity where there is more equal treatment of the upper and lower limits: the sustained string activity which is subordinated through use of harmonics, *pp* dynamic and the 'in the background' instruction. These lines, using a mixture of tempered and non-tempered pitches (contributing to the sense of the slowest possible descent) begin by coordinating with the prioritised E^{b} and B^{b} pitches in the wind lines (bs.121-2), and continue to descend even when these lines resume the faster pitch-order activity. This descent continues from b.121 to b.126:

VCl1 E^{b} - C𝄮

VCl2 B^{b} - B𝄮[1]

Both lines come to a (coordinated) stop in b.126, and there is a 5½ beat pause before the descent is resumed. Before any reason for such a pause is offered, it is useful to look at the interaction between the three main types of material used so far: (i) fast moving material governed by pitch order, (ii) sustained movement in wind lines, (iii) sustained movement in string lines (**ex.1.29**).

From this graph, it is clear that the appearances of the faster moving pitch order material are carefully balanced by the slower moving sustained lines, and that the accented coordinated attacks function as marshalling points where the various strands of pitch material come together. This overall balance in bs.117-41 will be explored under two headings: (i) boundaries of the sustained line(s) (**ex.1.30**), (ii) simultaneous attacks and octave doublings.

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[1]Note the difference between VCl1 and VCl2 in terms of ground covered.

Sustained lines and their boundaries

In b.123 the VCl2 line no longer articulates a clearly defined boundary, as FlS, ObS and ClPicc have all reached A (with VCl2 still remaining on B♭). VCl1 continues to descend to C♮, thus approaching VCl2's limit. They both drop out in b.126 where (i) there is much faster activity as Picc2&3, ClPicc and Xyl move through the pitch order at a steady rate (in demisemiquavers) thus gaining ground on the FlS and ObS(6s); and, (ii) there is an important move outside the A-Eb pitch range, with E♮ introduced at the top of the register (appearing first in the Picc3, at the end of b.126) and, more significantly, an octave lower in the ObS line (note the accentuation and simultaneous attack in b.127, FlS and ObS). In b.127 the VCl1&2 sustained descent resumes on C♮ and A respectively, with VCl1 moving much faster in bs.127-30 by descending as far as B♭. It is important to note the thinning of the texture as the string lines resume.

Both VCl lines are now associated with the lower registral area, with VCl2 still functioning as a lower limit. However, in the next group of sustained wind lines, there is increased duplication of, and interaction with, the pitches of VCl1 in particular.[1] Although the wind lines all begin higher than VCl1, they descend much more quickly while VCl1's rate of descent decreases dramatically after the simultaneous attack (**ex.1.31**).

By b.132 VCl1's movement has ceased; though VCl2 is still functioning as a lower limit through its sustaining of A♭ and subsequent move to A♭, which becomes the lowest pitch of a 5-note cluster in b.133:

Cl1	B
VCl1	B♭
Picc3	A
ObS	A♮
VCl2	A♭

[1]Note the simultaneous attack between FlS, Fl1, Cl1 and VCl1 creating a 3-note chromatic cell B♭-B-C.

Although VCl2 functions as a local lower limit for such sustained activity, it is no longer a limit *per se*, as it has been drastically breached as early as b.127 (ObS), and in bs.134-6 there are further breaches through octave doublings in ObS and Cl1.

The resumption of sustained wind lines is notable for the clarification of the texture through the use of coordinated attacks and the merging of FlS, Fl1 and ObS lines on the one pitch A^b at the end of b.136 (thus joining VCl2's lower limit). An important point of coordination occurs in b.137, with a move to A in VCl1 being overshadowed by a further breach of both VCl lines by a sustained D in ObS, doubled by Vla1&2. The absence of any further VCl1&2 movement is emphasised by the (rare) absence of non-tempered pitches (always associated with further movement).

Therefore, after the first octave displacement in b.127, there is a gradual overriding of all sense of controlled limits. This drastic breach, with no clear links with the measured stepwise progression of the VCl descent, means that the impetus of this descent is lost, especially after the restart in b.127, when FlS, Fl1 and ObS lines rapidly breach the VCl2 line. The VCl1 lower limit is more persistent, but further octave displacement, together with the doubling of the new lower limit D by Vla1&2, also weakens its function.

Simultaneous attack and octave displacement

Occurrences of prominent simultaneous attacks have already been explored in bs.117-22. Further occurrences will be summarised briefly below.

Bar no.	Insts.	Pitches	Context
b.125	ObS-FlS-Cel Picc3-FlS	C# E^b/D#	Semi-sustained, just before rapid Picc activity and dropout of VCl1&2
b.127	FlS-ObS	E (8ve apart)	After Picc activity and re-entry of VCl, thinning of texture and reduction in movement
b.129	Picc2-FlS-Cel-Hp	A-E (accented)	Thinning of texture, end of fast activity
b.129	FlS-Fl1	B	Start of sustained passage, coordinating with Cl and VCl attacks
b.135	FlS-ObS Cl1-Vla1&2	C C#	Briefly sustained in the midst of faster activity
b.136	FlS-Fl1	A^b	Resumption of sustained line
b.137	ObS and Vla1&2	D	New lowest pitch
b.138	Fls-Obs-Xyl-Cel-Hp	(D)-E-G#	Occurring between bursts of faster activity
b.139	FlS-ObS	C#-B^b	Prioritised through accentuation/dynamic
b.140	Hp-FlS	F	Start of long sustained pitch juxtaposed with frenetic ObS activity
b.141	ObS-Xyl Hp-FlS	A-C-E G#-E^b/D#	
b.142	FlS-ObS joined by Ob12&3	C#-E-B-F-C G#-A-F#-D-C#	
b.143	& all insts except FlS12&3		

The simultaneous attacks in Xyl & Hp lines in b.141 are significant in that they combine pitches from ObS and FlS lines which are still moving through the pitch order at different rates:

2nd beat b.141				
FlS	F	B	G#	D#
ObS	F	A	C	E
Xyl		A	C	D#-E
Hp	F	A	G#	E^b

Therefore both Hp and Xyl break out of the pitch order to combine pitches from both solo lines. The Hp line has missed notes from the order before, but in b.141 this 'gap' is given extra emphasis through rhythmic unison, lack of other conflicting lines, use of dynamic weighting, etc. After this quasi-unison passage in b.141, the FlS line continues to move through the pitch order; however, when the ObS resumes in b.142 (3rd beat), it omits 4 pitches in order to coordinate with the FlS line.

The gesture in bs.142-3 is the longest and most extreme use of simultaneous attack, and leads to a passage (bs.143-56) governed primarily by a single pitch order, where, apart from b.146, all instrumental lines play in unison or octaves with one another.

Towards global unison

In Section 6, pitch coordination is used in several different ways:

(i) At the start of the section, the simultaneous attacks are laid out so as to make the existence of a fixed pitch order relatively clear: e.g., in b.118 it is apparent that FlS&1 after being coordinated, move out of synchronisation, while retaining the same pitch order.

(ii) As the section progresses, simultaneous attacks become more associated with the start of sustained passages: e.g., bs.121, 136, etc. Here also, replication of pitch patterns is more obvious because of the slower pace of events.

(iii) There are occasional coincidental points of coordination, where the two instruments are at different stages in the pitch order, but have a simultaneous attack on the same pitch. This occurs most often between the

FlS and ObS lines, perhaps acting as local points of focus, with the effect of two lines merging momentarily: e.g., bs 117 (4th beat) and 135 (4th beat).

(iv) Later in the section, there are larger groups of simultaneous attacks, often involving new timbres such as Xyl, Hp, Cel, ClPicc and Picc: e.g., bs.129, 138 and 141. As well as standing out as part of the overall texture, these groups of attacks are often linked with the widening of the lower end of the registral compass.

Any point of pitch coordination between otherwise independent lines will always create a momentary clarification or simplification of the texture. Some of the different types of coordination described above operate on a very local level: e.g., (i) and (iii), which occur in the middle of faster activity (associated with pitch order). Attacks in category (ii) tend to have a more global role, by signposting the shift from faster to slower sustained activity, and also articulating the long-term process of extension of registral limits. Category (iv) is, in many ways, an extension of category (ii), providing longer, more emphatic signposts or marshalling points.

The strength and efficacy of these passages comes chiefly from the accretion of attacks: e.g., b.129 - 2 attacks, b.138 - 3 attacks, b.141, 4 attacks, (note relative dynamic weighting and accentuation), involving an increased number of instruments (including timbres outside the wind/string groupings). In bs.129, 138 and 141, there are few conflicting lines, meaning that the points of coordination can project with maximum clarity (see **ex.1.28**).

> This is an example of acoustic illusion, a favourite topic of mine. . . . Do you remember the prestissimo coda at the end of the work when all the instruments play in a high register, recreating the glittering sound of a glockenspiel or the piccolo, and all that rapid movement is somehow frozen into motionlessness.[1]

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[1]Ligeti, "Ligeti-Peter Varnai," in *Ligeti in Conversation*, 65

Bs.143-61 function as a 'purification' of bs.117-42, where a single pitch order prevailed, but where conscious rhythmic diversity created large-scale textural complexity. In bs.143-61 there is large-scale unison of pitch, rhythm and register, meaning that for much of this final section, the texture is reduced to a single line. Another important change/simplification is the elimination of the slower sustained activity: the first absence of the fast/slow juxtaposition that has been paramount for most of the movement.

Because of the drastic simplification of the texture, any breaks in this global unison project with as much, if not more, clarity as the passages of simultaneous attack in bs.117-42. Bs.143-61 are summarised below, with breaks in registral, rhythmic and pitch unison examined in more detail.

b.142: Single line shared between ObS and FlS.

b.146: ObS/FlS in unison first, pitch conflict starting on 3rd beat, but back in unison in b.147 with extra instruments.

b.148: Still in rhythmic and pitch unison, but there is octave multiplication across 4 octaves with some polarisation or juxtaposition of upper/lower registers.

b.151: First deviation from rhythmic unison between Picc2/BCl and Vla/VCl lines.

b.152: Resumption of pitch, rhythmic and registral unison.

b.156 (i): octave doubling of selective Picc2 pitches by Tpt, Glock and Hp.

(ii) Picc2 stays in rhythmic unison but is 6 pitches behind Picc3.

bs.156-7: Gaps in pitch order in both Picc2&3, both ending on Db in b.156.

b.158 (i): Brief resumption of pitch unison and rhythmic cooperation between FlS, ObS and Cel lines.

(ii): Pitch order used in imitation at one note intervals in Picc1,2,3, FlS and Cel (ObS joins in b.159), with no registral / rhythmic conflicts between these lines.

In bs.147-58, each of the three parameters of register, rhythm and pitch are dealt with (register in bs.147-9 and 156-7, rhythm in b.151 (coinciding with the last of the low register activity) pitch (order) in bs.156-7 (with Tpt/Glock lines creating the effect of lines moving at different speeds)). In b.158, there is an important local point of synchronisation, with cooperation on all levels, and the imitative texture in bs.158-9 effects a highly controlled movement out of synchronisation (by one note at a time).

Picc 3&2, FlS, Picc1 and Cel use an almost identical pitch order in bs.158-60. When this order is examined, increasingly frequent attacks on the C pitch can be observed (**ex.1.32**).

Because the above instruments are not coordinated in pitch, there are random attacks on C on almost every subdivision of the crotchet beat. This emphasis on C is confirmed by the Hp line, which segments into two discrete groups of pitches, C-B-B^{b}-A^{b}-G and F-E^{b}-D^{b}, with a C occurring on every second attack in the RH part.

From the end of b.158-60, there is a steady increase in (i) the number of instruments playing C per attack, and (ii) the number of Cs in the texture as a percentage of all other pitches. The resulting saturation of the texture with Cs means that the overlapping Picc1, 2&3 and FlS lines become more and more restricted in pitch, and this, together with the confined registral and rhythmic palette, creates an increasingly static texture, where there is no impetus for further movement. Ligeti uses the earlier 'sieving' syntax (e.g. bs.88-90), but this time, nothing dynamic arises from such focus on a smaller group of pitches, and the texture 'burns out'.

Conclusion

Premise: a basis, stated or assumed, upon which logic proceeds.

As described in the introduction to this thesis, the notion of premise goes hand in hand with that of 'opening out'. The 'simple pattern' to which Ligeti has referred becomes a defining force for longer-term progression. As emphasised in the above analysis, the sets of relationships in Section 1 go some way to defining syntactical conditions for later on. Bs.1-25 define two conflicting issues:

(i) The juxtaposition of (a) fast-moving material typified by the D-F trill, which gradually extends its boundaries, and (b) much slower sustained lines which confirm and gradually extend these boundaries by creating a fixed lower limit against which the rapidly expanding faster lines can be measured;[1] and

(ii) The drastic overriding of the controlled movement in both directions by octave multiplication, creating a large registral expansion in both directions.

B.22 is the first arrival point of the movement. A hierarchy of arrival points must be seen to operate across the movement, creating a framework of points where firstly, processes culminate on a local level, but more significantly, where issues are signposted as being of more global importance. As illustrated in the analysis, the pitches on the 3rd beat of b.22 are logical outgrowths of the pitch processes in the previous bars. The drastic registral expansion notwithstanding, the breach of the lower limit, pre-eminent for the previous eleven bars is, in itself, a valid reason for change. In spite of this, the extreme registral divergence is more

[1]Note the inherent ambiguity: fast-moving activity which is often static in terms of pitch and slow articulation of limits which can often be said to be more dynamic.

than a gesture cutting across a process of linear expansion, for it has more than mere local significance. As mentioned earlier, the process of steady expansion using tempered and non-tempered pitches against a fixed limit is overridden by a gesture that carries more long-term implications.

When the main arrival points are examined, it is clear that the sets of relationships as defined by bs.1-25 have a more global role as the framework or premise for the movement as a whole.

At the start of Section 2, the inherent ambiguity between stasis and dynamism is exploited through the use of a B^{b}-C trill which is fixed in terms of pitch, timbre, register and speed, but which generates dynamism through manipulation of accentuation and overlaps between instruments. Similar processes were seen in bs.22-4, creating a means of progression in the material associated with registral expansion. Although there is no direct articulation of upper and lower limits because of the absence of sustained lines, such limits are, at first, implied through the controlled expansion (in both directions, but mainly into lower registers) from the B^{b}-C trill, and eventually become prioritised through increased numbers of attacks.

In Section 3, such prioritisation and eventual fixing of these limits results in the elimination of the faster-moving activity, and in bs.44-7, there is notable dynamic development of the established limits and the creation of a dense chromatic texture. Previously, any chromatic saturation of the texture resulted from an increasing number of pitches in the interweaving faster lines, while the sustained line(s) functioned as abstractions, or reductions/simplifications, of the overall texture. Bs.44-7 are a further illustration of the increasing ambiguity between dynamism and stasis: there can be no clear assignation of function, along such lines as these:

Fast-moving = dynamic

Slow-moving = static

Instead it is increasingly clear that the sustained lines, while seeming locally static, have a more dynamic long-term role. In bs.25-42, the static aspects of the faster-moving activity are emphasised in the absence of any sustained lines, while in bs.43-7, the sustained lines function more dynamically without any faster material; hence there is increased swapping of traits and previously associated functions amongst the main elements of fast/slow/registrally expansive material.

Although these disparate elements are isolated from one another in bs.23-47, their functions become increasingly intertwined, creating a powerful interdependence: sustained activity is dependent on faster lines to generate/articulate limits. So far, limits have originated as an abstraction of faster activity. Conversely, faster activity is dependent on sustained lines as measuring points: in other words, fixed points or lines against which change can be measured. Section 2 functions as a passage of regrouping for two distinct elements and the relationship between them.

The obvious long-term links between bs.22-3 and 68-9 concern the third element from Section 1, register. In both cases, an extreme cross-registral gesture cuts off a controlled process hitherto operating across a small registral compass. In spite of this link, there are some important differences, notably the function of each gesture. In bs.22-3, the process of controlled registral expansion against a fixed limit continues right up to the cross-cutting gesture. As mentioned earlier, b.22 (3rd beat) functions as a goal (in terms of voiceleading) for several of the processes involved. The gesture and its vastly increased registral expanse, while overriding the controlled movement from fixed limits, is not developed as a starting point for a new process: instead, its relative status in terms of pitch and register causes a decrease rather than an increase in momentum. Thus this gesture has two functions: (i) to cut off the locally controlled fast/slow-dynamic/static-limits based process, and (ii) to present for consideration the potential for movement across a larger registral compass without the need for steady controlled movement at the slowest possible (linear) rate.

This latter function is not fully exploited until Arrival point (iii) in bs.68-9, which differs from A.P.(i) in that it is not the goal of the preceding controlled process. As the analysis shows, there is a high level of control of all parameters in bs.60-67, with sparseness of texture and unanimity of timbre, register and pitch. However the first registral expansion in b.68, instead of functioning as the goal of the preceding bars, comes after the process has unravelled or disintegrated. Rather than staunching the momentum of a process in 'full flow', the registral divergence in bs.68-9 injects momentum by functioning as an opening gesture. Although in b.71 there is a brief return to a static trill reminiscent of b.25, the pre-eminence of registral divergence as a governing process is contained through (i) local divergence within the trill material, and more importantly, (ii) a return to cross-registral movement in BCl-Cl-Ob lines in bs.73-4. This latter confirmation illustrates the importance of local repetition (whether literal or modified) as a means of accruing function, at first locally, but eventually on a global level.

As seen in the analysis, there is an overwhelming amount of change in Section 4, where many of the means of progression used run contrary to the controlled expansion and limits-based movement in Sections 1-3. Instrumental lines have an expanded range of pitches, mostly introduced through new types of syntax (notably in the angular, non-stepwise, multi-directional ObS lines). More than in any previous section, it is possible to observe numerous points where progression in a specific direction only goes so far before it is cut off, meaning that there are many points of 'opening out', but few local arrival points.

There is some striking recontextualisation of traits and devices associated only with A.P.(i) (b.22-5): (a) simultaneous attack and (b) octave doubling/multiplication. The local effects of (a) simplification of texture from the merging of two or more lines, leading to prioritisation of a pitch or pitches, and (b) the emphatic widening of the registral compass and dramatic movement outside any linear or limits-based pitch process, can be seen to operate in Section 4. Nevertheless, it is important to realise that the increasing use of octave doubling

(b.84 at first, and then bs.85-6) also indicates a move away from syntactical norms established thus far within the section itself: in other words, less foreground/background prioritisation, ObS angular lines amplified through octave duplication, etc. For this reason, it is possible to observe functional links between the use of octave doubling in bs.22-5 and bs.84-6, in spite of the large differences in local context.

The inherent dynamism in bs.88-9 is never in any doubt, with the exploitation of unison lines, through manipulation of order, and extension of the shadowing process which operates between foreground and background lines earlier in the section, together with an intensification in attack created by the *doppio movimento*. Yet the use of a fixed pitch order which becomes more obvious through the prioritisation of pitches, using the sieving and sifting methods so often described by Ligeti in his writings, must be seen to have some static implications in terms of pitch content and relative overall contour[1] (i.e., fast moving music which is really static).

In contrast to the overwhelming textural complexity of Section 4, with its extremes of pitch, register and timbral contrasts, there is a strong sense of movement from complex to simpler textures in Section 5, already hinted at by the gradual reduction in pitch content in bs.88-9:

(i) The simplification of beat subdivisions in b.93,

(ii) The thinning of pitch content in bs.101-2,

(iii) The gradual thinning of the string harmonics from bs.97-104,

(iv) The reduction in timbre in bs.103-4 (FlS,1,2,3 only).

Section 5 is characterised by a return to tightly controlled registral areas with fixed pitch boundaries, and significantly, there is at first a high level of cooperation between the processes which govern such areas and those involved in registral divergence.[2]

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[1]Notwithstanding the use of octave doublings and pitch omissions.

[2]Note the localised expansion from B^{b} and D^{b} fixed pitches and from G^{b}-D^{b} dyad.

As discussed earlier, in bs.104-16 there is systematic divergence, with several attempts to resolve the registral issue. In these bars registral divergence is finally confirmed as a process in its own right, rather than a cross-cutting gesture, and is shown to have a strong link with the limits-based issue: this link being the articulation of the single most important process of the movement, linear pitch expansion. Therefore, registral divergence overrides limits-based material using the same means of progression articulated by the slow moving sustained lines which confirmed or extended the fixed limit(s).

In a naive sense, registral divergence on such a scale must be seen to override all processes that use stepwise or non-tempered movement (all the pitches have been used and thus there is nowhere new left to go) and the second major issue of the movement, polarisation of extreme registers (established first in bs.22-5), has been resolved in a well-controlled way.

In spite of the complexity of texture and timbre in b.117, there are few of the traits associated with the fast-moving, registrally restricted material as seen in b.25 or bs.59-60, etc. Here, the motivic material is non-cellular/repetitive; it is not obviously uni-directional and has no clear expansive features in terms of pitch. It is perceptibly restricted in register, but there is no articulation of fixed limits by any slow(er) moving lines for five bars. It is also important to notice that it does not appear obviously static at first due to the high level of rhythmic diversity.

Unusually, the two types of material (fast versus slow/sustained) are presented alternately rather than simultaneously at first. The sustained activity in bs.122-5 and in subsequent appearances, while incorporating arresting features such as simultaneous attack and use of non-tempered pitches is rarely involved in any large-scale expansion of registral boundaries: for example, instead of a divergence from $B^{\flat}$-$E^{\flat}$ or a controlled convergence, there is little movement in the sustained wind lines in the upper register after the initial $E^{\flat}$-D move, and although there is some movement in the lower registral areas, it seems less focused than in previous sustained descents. When this relative lack of momentum is taken

together with the residual line (which remains in the background and becomes very subordinate to the faster activity) it is evident that the rate of change has decreased significantly.

Consequently, both the faster moving lines of bs.117-22 and the sustained activity of bs.121-4, etc. have been divested of the dynamism with which they have been associated at times earlier in the movement. This reduction in dynamism is strongly linked to the registral constriction, the lack of focused directional movement, and the absence of clearly signposted challengeable limits. The overriding of any notional limits and the remains of linear stepwise movement in both fast and slower lines by the oboes in b.127 (octave doubling) and b.137 (A♭-D) mean that the string background lines have become functionless, and ultimately redundant. Unlike the issue of registral divergence, it is more difficult to say that the long-standing relationship between fast-moving and sustained lines is resolved. It would be more realistic to say that the conditions wherein this relationship thrived have been eliminated or rendered undynamic[1] mainly through pitch restriction.

While the sustained line is rendered redundant due to the lack of momentum in the faster activity, it is also true to say that its elimination removes a vital reference point for the same faster material. The increasing numbers of points of simultaneous attack or overlaps between the various lines serve to simplify the overall texture by emphasising similarity rather than diversity of path, anticipating the stasis inherent in the rarefied atmosphere of the single line. Any controlled breaks in the unison of register, pitch and rhythm do not function as starting points for new processes. Any new development that may be implied by the controlled disintegration of the pitch unison in bs.158-60 is cancelled or mitigated by the

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[1]The *raison d'être* of the sustained line is to focus and expand upon the implied boundaries of the faster moving activity: thus the absence of movement in the faster moving lines renders the sustained line redundant.

winding down of all pitch processes, leading to an implied intensification of a single pitch.[1]

Integration of registral process

After the first registral expansion, which operates outside normal syntax of tight registral control (systematic introduction of new pitches via non-tempered movement), there are increasing attempts to integrate the notion of registral expansion and divergence using methods closer to the syntax established as part of the premise, centring around stepwise, controlled expansion.[2] In contrast, while there is no preparation for sudden cross-registral activity in bs.22-3, there is controlled movement into, and sealing off of high, low and mid registral areas in bs.106-16.

The stages of integration can be seen clearly:

(i) Cross-cutting gesture (not integrated), b.22-5,

(ii) Opening gesture (more integrated), bs.68-71,

(iii) Arrival point, goal of overall process (fully integrated), bs.107-16.

By adopting and extending syntax from earlier in the movement (e.g., adoption of stepwise movement leading to ultimate redundancy of fixed limits), the registral issue overrides the first defining relationship (fast activity versus sustained lines) to such an extent that the controlled resolution of bs.107-16 could perhaps be interpreted as an arrival point or goal for the entire movement. Such an interpretation is supported by the lack of any obvious arrival point or opening

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[1]Even this does not reach a point of fulfillment, as in b.111, for example: instead, there is a direction to 'stop suddenly as though torn off'.

[2]Note the relative absence of non-tempered pitches in significant expansions associated with arrival points (bs.68-70, 107-11 and 115).

gesture in bs.117-61: rather, there is a gradual diminishing of all the dynamism inherent in the primary relationship of fast versus slow.

CHAPTER 2

PREMISE AND COMPOSITIONAL WORKING OUT IN TRIO FOR VIOLIN, HORN AND PIANO

General Introduction

> I could say that the earlier pieces are crystalline in nature and that these [new works] are much more vegetative and proliferating pieces. Let me say that this Horn Trio is the first piece in this new Ligeti style . . . let us call this my last period, the period of my old age, I do not know how long it will last.[1]

The Trio for Violin, Horn and Piano was first performed in August 1982, having been commissioned by the pianist Eckart Besch to be programmed alongside Brahms' Horn Trio. Ligeti dedicated the work to Brahms, but at the same time declared that

> There are neither quotations, nor direct influences of the music of Brahms: my trio is—in construction and expression—music for our time.[2]

Music for our time notwithstanding, there were enough striking changes in the compositional methods to create a great deal of interest. After the premiere of *Le Grand Macabre* in 1977, Ligeti had produced little, and has described this fallow period as a compositional crisis (see introduction). He felt that the Darmstadt-type modern music had become obsolete, but that this should not automatically imply a return to neo-classicism:

> I wanted to find my own way and I finally found it. I don't do 'static' music any more.[3]

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[1]György Ligeti, interview by István Szigeti, "A Budapest Interview with György Ligeti," *The New Hungarian Quarterly* 25 (1984), 204, quoted by S. Taylor, "Lamento motif: Metamorphosis in Ligeti's late style" (DMA Thesis, Cornell University, 1994): 2.

[2]Ligeti, "Ligeti-Peter Varnai," in *Ligeti in Conversation*, 10.

[3]Ligeti, interview in Dufallo, *Trackings*, 335

He mentions the Trio for Violin, Horn and Piano, the Etudes for Piano and the Piano Concerto as being the works that illustrate this new musical thinking.

In context, therefore, the Trio for Violin, Horn and Piano can be seen as a reaction to the highly complex, yet slow-moving textures of the earlier micropolyphonic works. From the very opening of the first movement, with a (modified) quotation from the beginning of Beethoven's Piano Sonata Op.81a, *Les Adieux*, there is an immediate move away from the crystalline, 'pitch-kernel' development of earlier works such as *Continuum* and the Ten Pieces for Wind Quintet. Ligeti explores the expressive potential of each instrument, with more expansive, melodic lines. As will be seen from the analysis, there is less reliance on chromatic or near chromatic linear movement: instead, there is quasi-motivic development based on a small number of intervals. There is greater clarity of formal design, both in localised phrase structures and more long-term repetition of sections. Vertical sonorities are simpler, often based on three-note groups, with particular chords becoming referential: indeed, commentators have enthusiastically described Ligeti as 'openly embracing tonal affinities',[1] and embarking on 'a new and generally simpler style'.[2] This 'reinvented tonality' will be explored at the end of the analytical section of this chapter.

After such a crisis, the drastic changes in Ligeti's musical thinking and syntax mean that links with the earlier works—specifically the compositional processes of the Double Concerto—may not be immediately obvious. The following analysis will attempt to show that a framework of defining relationships also governs the 'new simplicity', and that the notion of premise is still a valid analytical tool.

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[1]Andrew Clements, programme note to performance of the Trio for Violin, Horn and Piano by The Nash Ensemble at the South Bank Centre, 29.10.89.

[2]Townsend, "The Problem of Form," 17.

Analytical commentary on bs.1-59

The movement falls into three main sections, the first being from bs.1-59, the second from bs.60-91 (bs.83-91 being a reworking of the first phrase of the first section), and the third section from bs.91-142 (this section uses the same material as bs.12-59 of the first section, but with manipulations of tempi and phrase length).[1]

Separation

One of the main compositional issues in the first section, an issue which has implications for the movement as a whole, is that of separation: (i) separation of a section into clearly defined phrases through the use of modified repetition and referential material, and (ii) separation of the phrase into areas which are dynamic or onward moving, and those which are more static or stable, creating local points of repose.

At the outset, separation on both levels is used to set up a clear framework where each type of material used has a specific function, and where phrases are clearly defined. As the movement progresses, the definition within each phrase, and from phrase to phrase, is eroded. The changing balance between stasis and dynamism, instead of causing degeneration into extreme localised activity, actually effects a shift away from the local level (i.e., no longer confined solely to

[1] Note that Ligeti's bar numbers are incorrect from b.47 onwards, since he omits nos.48-9. This has been corrected in my analysis.

the phrase). The degree of separation within the phrase and from phrase to phrase decreases, and a larger, more onward moving unit is created, one which demands resolution on a global level, across the movement as a whole.

The first main phrase is from bs.1-12 with one main division in b.9. Bs.1-9 have two main elements: (i) violin double stops increasing to triple stops in bs. 4 and 7, and (ii) the horn line. Each instrument has three bursts of activity separated by rests. The two instrumental lines interact as in **ex.2.1**. Ligeti maintains the individuality of these lines, by having the violin move using crotchet beats subdivided into four, while the horn uses subdivisions of three. Partly for this reason, there are no simultaneous attacks between these two instruments for the first nine bars.

The various lines coincide as follows: violin(i) overlaps with horn(i), violin(ii) with horn(ii), etc., and the overlaps operate without any total silence from the start of violin(i) to the (coordinated) ends of violin(iii) and horn(iii). (For convenience the area occupied by violin(i) and horn(i) will be referred to as subphrase(i), that of violin(ii) and horn(ii) as subphrase(ii), etc.)

Violin movement, first phrase.

The violin line expands outwards intervallically using double stops of vertical intervals 4, 6 and 8. In subphrase(ii) it moves more quickly from interval 3 to 8 (leaving out the intermediate interval 6) and then further again to a new interval 11. There is a return to the familiar interval 8 before a move to the largest so far, a three-note chord containing the intervals 8 and 7, with an interval 15 formed between the outer parts (the tonal implications of this chord, a first inversion major triad, will be examined in detail later). Thus the widest intervallic spread is achieved using familiar intervals (15 = compound 3, 8). The top two notes of the triple stop (interval 7) are sustained, forming an overlap into subphrase(iii). In this

subphrase various elements from the previous subphrases are either used in a different order or omitted. The violin line starts with interval 8 (a larger interval than that at the start of subphrases(i) or (ii)) which moves down to the familiar interval 4. The same intervallic shape of 8/7 is used for the triple stop with the top interval sustained. However interval 7 is not the last interval of the violin line: instead, the pitches diverge chromatically to interval 9.

Therefore, within the double-stopped violin line there exists an increase in the compass of intervals across the three subphrases. There is a similarity of sonority at the ends of subphrases(ii) and (iii) (8,7 chord) with a movement through this chord in b.8 using smooth voiceleading connections.

As well as the gradual increase in intervallic compass in bs.1-9, there is an introduction of various types of wedging movement between the two (and sometimes three) parts of the violin line (**ex.2.2**). When linear movement is considered, we also see a restricted number of intervals in use. To summarize, various types of movement are set up in subphrase(i), using horizontal intervals 1, 2, 3 and 4. In subphrase(ii) all of the same intervals are used with the addition of 5. In subphrase(iii) intervals 1-5 appear again with the addition of 9. Therefore there is extreme economy with the means of movement, with a gradually enlarging intervallic vocabulary. This results in an increase in dynamism, with a feeling of ebb and flow within the phrase created by contraction and expansion in the two and three parts.

Horn movement, first phrase.

In subphrase(i) there are four notes forming a long-long-short-long pattern. The general direction is upwards with a return inside the largest leap. The intervals used are 5, 10 and 6 (**ex.2.3**).

In subphrase(ii) the long-long-short-long pattern is also present. The general direction is downwards with a return inside one of the larger leaps. The intervals used are 8, 3 and 10. The first two subphrases are complementary in terms of direction and have similar patterns of relative notelength. In subphrase(iii) there is a different pattern of notelength, with the addition of three shorter notes before the familiar long, long, short, long, and the sustaining of the final 'long' for 8½ beats. The intervals used include the familiar 6 and 10 with the addition of 7.

Movement of horn in relation to violin.

In the first two subphrases the horn moves after the violin's first two chords. In subphrase(iii) this pattern changes, with all of the horn's movement (except for the final short-long) completed before the violin enters. There is no simultaneous attack between the violin and horn lines in any of the three subphrases. Therefore the two lines are perceived as being quite distinct, with a pattern for their overlap set up in subphrase(i) and followed in subphrase(ii). Most of the changes occur in subphrase(iii), with a change in the order of entries and a lengthening of the ends of both lines (an extra violin chord and a long sustained horn note).

Cooperation and control

The section from the second beat of b.9 to the first beat of b.12 is an extreme contrast to the previous activity, incorporating simultaneity of attack and direction. Firstly, these bars are preceded and followed by silence, the quaver rest in b.9 being the first silence since the beginning of the piece. There is no overlap into a new subphrase such as that seen in b.3 (horn) or b.5 (violin). After the rest,

both instruments attack simultaneously, the first instance of this in the piece so far. The general direction is downwards (bottom violin part and horn) with only one upward move (E-F#, violin, top part). There is a change in timbre in both instruments (violin *sul tasto, flautando*, horn stopped). The isolation of this gesture in time with rests before and after, the coordination between the instruments in terms of attack and overall direction, and the changes in timbre: all these factors set bs.9-12 apart from the previous subphrases.

Yet there are still links with the past activity. The intervallic vocabulary does not change, with intervals 1, 2 and 3 present in the violin part and interval 7 in the horn. Another significant link is the intervallic composition of the final horn/violin chord E^{b}-B-F# (intervals 8/7), which is related by transposition to the chords at or near the ends of subphrases(ii) and (iii) (violin, fourth beat b.4 and third beat b.7). Thus the 8/7 intervallic combination becomes significant as an element associated with the local closure of musical units, as part of a distinct cadential gesture, one which arises out of the evolving harmonic syntax of the preceding phrase. In the light of this, the accuracy of Taylor's view of this movement is, I think, open to question:

> In the Horn Trio as well (especially in the first and third movements) there is a semblance of diatonic harmony, reinforced by the rhythm and character of the lines. But the lines never approach a cadence; harmonically, the ending of one phrase could just as easily begin the next. Resolutions are created in other ways, through rhythm, dynamics, or register.[1]

The first appearance of the piano comes in bs.10-11. In spite of this new timbre, there are strong links with the previous activity of the movement, with the piano material being a direct transposition of the opening violin *Adieux* motif.

In bs.9-12 there is a sense of increased cooperation between the instruments through unanimity of direction, similarity of intervallic vocabulary and, most significantly, simultaneity of attack. This cooperation, together with the

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[1]Taylor, "Lamento motif," 7-8.

preceding and succeeding rests, contributes to the perception of this section as a separate area of relative stability in contrast to the more dynamic subphrases of bs.1-9. Repetition and referentiality of thematic material are also evident: in simple terms, the first phrase and cadence have overall ABA' or ternary implications which become increasingly significant for longer-term structural development.

Definition of process

The section from bs.1-12 forms the first large unit of the movement (this will be confirmed by the horn line in bs.12-13) and contains many implications for the rest of the piece. Ligeti defines methods of progression through the setting up of an opposition between dynamic and stable elements, with the potential for an evolving relationship. Patterns occur from subphrase to subphrase, but these patterns are not fixed: instead, there is potential for manipulation of the basic building blocks which make up the patterns, thus producing dynamism and progression. Changes in the patterns occur at different rates, providing fluidity and continuity instead of abruptness: e.g., the pattern for order of entries which is established in subphrase(i) and confirmed in subphrase(ii) (two violin chords and then horn entry) changes in subphrase(iii) (five horn pitches before violin entry). However, in the case of the 8/7 chord, the first appearance of this sonority in b.4 is confirmed at the end of subphrase(iii) with only slight change (addition of an extra chord). In b.10 the 8/7 chord is again used, this time with changed instrumentation (again slight change). Therefore, the use of the 8/7 sonority at the end of a small unit is confirmed throughout the phrase with only small changes. Subphrase(iii), while acting as a point of change for one building block (order of entries) is also a point of confirmation for another element (the 8/7 sonority); thus, continuity is ensured.

The second phrase: polarisation.

Bars 12-22 form a unit similar to the first phrase, with the horn and violin lines retaining their individual expressive character. There is some sense of progress, firstly within the individual lines, mainly achieved through intervallic and registral expansion, and secondly, in the combination of these melodic lines, through reordering of events. This second main phrase begins with a horn line which has the same shape as that of the horn in subphrase(i). This time it starts a semitone lower and has an extra interval (10) at the end. There is an overall increase in the compass of the line (starting lower and ending higher). The violin line uses familiar intervals but there is no chord corresponding to the second chord of subphrase(i); instead, there is movement directly from intervals 4 to 8. A variant of the 8/7 chord is used at the end of this new subphrase (third beat, b.14, 7/8). It is important to note that the original 8/7 chord did not appear at the end of subphrase(i) in b.2.

The most significant change in bs.12-14 is in the ordering of events. In the first phrase the violin's two chords come before the horn's entry in subphrases(i) and (ii). Here in the second phrase, there are two horn notes before the entry of the violin in the first subphrase. Bars 12-14 are important for their use of familiar material: in spite of the transposition of the horn line it is still audibly related to that of bs.1-3. There is a similar relationship between the violin lines of bs.1-2 and 13-14.

The perception of such familiar elements must be affected by the new context in which they appear. The modified repetition of subphrase(i) in bs.12-14 is affected by other events which are themselves changing and developing: e.g., the 8/7 chord is in its accustomed place at the end of the subphrase but its internal organisation has changed (7/8). Such reordering of familiar elements in different contexts emphasises dynamism on the local level and posits implications for the long-term.

The separation of subphrases (ii) and (iii) is not as clear in the second phrase as it was in the first. This separation was previously defined by (1) a sustained note in an instrument forming an overlap into the start of the next subphrase (bs.3, horn and 5, violin) and (2) use of a specific sonority at or near the end of the subphrase (8/7 violin chord in bs.4-5 and 7-8). There are two bouts of activity in the horn corresponding to the second and third subphrases (bs.14-15 and 16-18). The violin's activity from the end of b.15 to b.19 does not fit into two distinct groupings. In b.15 the violin begins later than in 2/(i) (second phrase, first subphrase). The violin just overlaps with the end of subphrase(ii) in the horn (b.15), and the same violin chord is sustained for the beginning of the horn's subphrase(iii) in b.16. So the violin's activity corresponding to that in 1/(ii) is delayed, and overlaps with subphrase(iii) in the horn.

There is some obvious reworking of the 8/7 sonority:

(i) 8/7 in bs.4 and 7 (violin) and 10 (horn),

(ii) 7/8 in b.14 (violin),

(iii) 8/7 again in b.17 (violin and horn),

(iv) 10/8 in b.18 (violin),

(v) 6/7 in b.19 (violin and horn).

In spite of these changes the chord generally retains its function of marking the end of a small unit.

The first three subphrases of the second phrase show signs of a loss of definition and a decrease in local separation. This implies the potential for the evolution of larger units with less local fragmentation.

The section from the third beat of b.19 to the third beat of b.22 is separated from the preceding and succeeding bars by silence. This separation along with the use of (1) simultaneity of attack, (2) overall unanimity of direction, (3) change of timbre and (4) the specific harmonic gesture of the 8/7 chord, links these bars with the corresponding passage at the end of the first three subphrases

(bs.1-9). Here there is much more of a sense of literal repetition between the two passages. The fact that bs.12-19, although corresponding in many ways to the first three subphrases, have undergone changes which emphasise the progressive nature of the compositional elements by combining and ordering them in different ways, may also provide an expectation for change in the more stable unit. The relative lack of change in this unit widens the gap between the dynamic and stable elements in the larger phrase.

There is some change in bs.19-22: (1) the composition of the chords is slightly altered and (2) the piano has an extra chord using the familiar interval 6. In spite of this, the change between bs.1-9 and 12-19 is much greater than that between bs.9-12 and 19-22. Therefore, the stable gesture is perceived as being slower to change, and somewhat more static than the intervening subphrases.

After two large phrases, the continuing polarisation of dynamic and static areas, along with the internal development of these areas, is the issue that provides the strongest implications for the rest of the piece.

The third phrase: increasing dynamism

The section from the last beat of b.22 to b.40 (approx.) forms the third main phrase of the movement. This phrase is related to the previous two phrases by its general structure: three subphrases with a separate, more static area at the end. The experience of the preceding phrase creates an expectation of further change and development occurring at different rates throughout the phrase.

The three subphrases are again clearly defined in this phrase. The space occupied by the subphrases has varied from phrase to phrase: e.g., first phrase, eight bars plus one beat, second phrase, six bars plus two beats, third phrase, eleven bars plus one beat. In the second phrase the eliding of subphrases(ii) and (iii) results in a reduction in the length of the subphrase group. Now in the third

phrase the subphrases are seen to occupy almost twice the space of those in the second phrase. There are two reasons for this increase: (i) an increase in the length of each subphrase and (ii) more separation between subphrases. Thus there is clearer definition between subphrases in this phrase. This provides a referential link with the first phrase and negates the possibility of a continuing breakdown in subphrase structure as implied in the second phrase. This also emphasises the fact that the possibility for movement in both directions is always an option for a particular process, that the phrase is capable of becoming more or less dynamic with respect to a particular process (subphrase definition). Instead of implying a complete regression, such a reversal often provides space for another process to come into focus: e.g., overlapping of instrumental entries, elongation of subphrase, definition of end of phrase, etc.

In the third phrase both the horn and the violin have lines which fall into three distinct subphrases. In b.26 there is the first instance of a rest within the subphrase group. Up to now, rests have occurred only before and after the stable gesture areas. This rest emphasises the return to clear definition of beginnings and endings of phrases, with the rest implying complete separation. In bs.22 and 26 the horn and violin are only one note apart at the start of the subphrases and both lines are longer than those in previous phrases. The harmonic interaction between the two parts will be examined in detail later but several important points will be raised here: firstly, the change in harmonic definition at the end of a subphrase.

In b.23 the 8/7 or 7/8 sonorities do not appear; instead, the violin triple stop forms a 10/7 chord. In b.24 several chords which contain one or other interval from the familiar chord are created between the violin and horn (**ex.2.4**).

The first three chords in this example have a constant interval 8, while the last two have a proliferation of interval 7 (the last chord, containing an interval 7, is the first quadruple stop of the piece). There seem to be various attempts to create the familiar concluding sonority: attempts which do not succeed because of

the failure of the horn to provide suitable pitches to underpin the prominent intervals 8 and 7 in the violin line, bs.24-5, thus creating the desired sonority.

Such manipulation of sonority is also present in bs.28-9, with various attempts to create a familiar chord over the sustained E^{b} in the horn (**ex.2.5**). Thus there is an increase in the complexity of sonority at the end of subphrase(ii). The 9/7 chord in b.28 does not complete the subphrase, and voiceleading connections between it and the final chords are broken (unlike those in b.8). The breaking of such connections diminishes the stabilising quality previously associated with the sonority. It no longer acts as a point of closure for the subphrase; instead, it is followed by a more complex sonority. The function of the 8/7 (and 7/8) chord is changing and becoming more ambiguous, and the manipulations at the end of subphrases contribute to the feeling of progression and development.

The descending horn line in the third subphrase has links with that of the horn in 1(iii), but it has a larger registral compass with more movement and less of the sustained note at the end. Familiar intervals are used, and the 9/7 chord, although blurred in the vertical form, is used linearly (**ex.2.6**).

The line seems to fall into two sections, with the end of each denoted by the short-long rhythm familiar from the first phrase (a boiled down version of long-long-short-long). The first half of the horn line moves from high to mid registers, and the second half from mid to low. Unlike subphrases(i) and(ii) of this phrase, there is no long, sustained horn note against which the violin may create various chords related to the 8/7 or 7/8 sonorities. Thus in bs.32-3 both instruments create the following sonorities by moving in an uncoordinated fashion (**ex.2.7**).

There is extensive manipulation around the 8/7 sonority, and the fact that both parts are mobile increases the possibility for new sonorities. The familiar intervals are all present but there is no vertical combination of 8/7 or 7/8, and the sonorities generally change rapidly with few opportunities for a sustained chord. The longer chords are illustrated in **ex.2.8**.

(1) and (2) each have an element of the 8/7 or 7/8 chord. (3) however has different intervals (one slight link is the D#-B interval 8). But overall the 8/7 chord does not appear at or near the end of subphrase(iii), and the process seen at the end of subphrases(i) and (ii), whereby the violin posits certain intervals against a sustained horn note in an attempt to create the sonority, is not used here.

Thus in the third main phrase the subphrases have regained some of their former definition and are extended in length. This definition, however, is achieved by the spacing of lines and the use of clear overlaps, and not by use of the sonority which previously functioned as a point of definition for the end of a subphrase. Attempts are made in the general direction of this sonority at the end of each subphrase, but the full sonority is not achieved.

By b.33 the unit made up of three subphrases has been heard three times, with some changes on each hearing, but with enough definition and similarity of material to provide a referential framework. The major changes have involved:

(1) The separation of subphrases: first phrase, well separated; second phrase, subphrases(i) and (ii) elided, third phrase, well separated but each subphrase extended. Therefore the experience of a longer subphrase through the joining together of 2(ii) and 2(iii) is incorporated into the extended subphrases of the third phrase.[1]

(2) Definition of the ends of subphrases: the blurring of the 8/7 chord starts in the second phrase, but it occurs mainly in the third phrase where at first, obvious attempts are made to create the sonority, and then this becomes more unrealistic because of the increased movement of the parts.

As mentioned previously, the idea of patterns changing at different times and rates against a familiar framework is very significant. In the third phrase, the 8/7 chord undergoes some drastic changes, but this occurs against a background of clearly defined subphrases. The most important elements for progression and

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[1]3(iii) has a binary structure, as if two similar subphrases were elided.

dynamic movement are (1) breakdown in function of the 8/7 chord—it ceases to operate as a prerequisite for local closure, and (2) extension of subphrase length. The separation between subphrases is an element of local change. So far, there has been alternation between well-defined/separated (first and third phrases) and elided/not so highly separated (second phrase). This process is confined at present to the local level of activity: in other words, subphrases are not becoming more or less defined. The other two processes (1 and 2 above) generally operate in a direct fashion and therefore tend towards a more global effect: they have the potential to operate across a larger level of the movement, not merely within the subphrase or phrase.[1]

The sections at the end of the first and second phrases have remained as relatively stable areas separating the more dynamic groups of subphrases. They can be perceived to function as quasi-cadential gestures, providing local repose within the phrase. The section from bs.34-40 (approx.) heralds a change in this stability/stasis. The changes in timbre and use of coordination of attack continue to follow the patterns seen previously. But the most significant change is the use of the process seen at the end of the first and second subphrases of this phrase, where the violin attempts to create the 8/7 or 7/8 sonority against a sustained horn note. In phrases (i) and (ii) the coordinated movement in the quasi-cadential area was as follows: (**ex.2.9**).

The horn part moves once, the top violin part moves once (coordinated with the horn), and the bottom violin part moves twice (the second time with the horn).

From b.34 onwards this pattern changes in several ways:

(1) The top violin note is not sustained for four beats in b.34: instead, both parts move to B^{b}, leaving only one violin note against the horn.

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[1]There must be cooperation between local and potentially global processes in the short term, within the phrase and from phrase to phrase, because of the fact that all local processes have the potential to operate globally. Hence the effect that the eliding of two subphrases (the—as yet—local process of subphrase definition) has on the process of subphrase length.

(2) There are two new pitches against the horn (instead of one) at the beginning of b.35 (see b.20, first beat, b.9, last beat for comparison).

(3) According to the previous pattern, the simultaneously attacked chord at the beginning of b.35 should be sustained by both instruments up to the end of the phrase (see bs.10 and 21). Instead there is a fourth violin chord (not on a main beat), and the violin chords continue with a general upward trend, implying an expansion into higher registers.

(4) The *dim. morendo* marking seen in the last bar of the stable area in the first and second areas now extends across three bars.

(5) The 8/7 chord is not in its usual place. As the horn sustains, the following chords are created (**ex.2.10**).

(6) The piano entry is at a register more referential to the horn and violin than to that of its own previous entries. Its material refers to the opening violin shape of subphrase(i) of the first phrase, but is now extended. Previously there was a clear similarity of intervallic vocabulary between the piano and violin parts, but the piano was isolated registrally. Because of its shift in register it now becomes associated with an opening rather than a closing function.

Thus, all the dynamic development occurring in the surrounding subphrases has an effect at last on the stable gesture, and it seems as though all the dynamism happens at once. Familiar processes are used, such as those of bs.24-5 and 28-9, along with the extension and elongation of the phrase as seen from b.23 onwards, and it is clear that after having had a slow rate of change for the first two phrases, there is a large increase in the third phrase, creating a new balance between the formerly well-defined dynamic and static areas.

Referentiality

If this analysis seems to focus somewhat on the concept of referentiality and closely observed change, this is only because Ligeti's approach in this movement highlights these aspects of his material. To illustrate, in the 40 bars so far, he has organised the material into three large phrases, each of which can be divided into progressive and stable areas. The progressive area is further subdivided into three distinct subphrases, each with a clearly ordered relationship between the two melodic lines. The ordering continues in the stable area, with clear cooperation between violin and horn, and the piano appearing each time in 'its proper place'. As if this order and modified repetition were not enough, Ligeti retains strong motivic links between the violin and piano material each time. Thus, the opening section of this movement exhibits much homogeneity of thematic material and its treatment. This is very different to the opening section of the Double Concerto, where, firstly, the main material consists of dyads, which are not imbued with any expressive or characteristic quality, and secondly, there is maximum contrast in approach and treatment.

The piano phrase: new types of syntax

The delaying of the piano entry at the end of the third phrase creates an overlap with the next section because of the registral ambiguity. The piano is no longer separated from the horn/violin activity. Its material is referential to both that of the violin in 1(i) and the piano in the quasi-cadential area, but there are no rests after the piano part. Therefore the perception of increased dynamism is emphasised by the overlapping of the end of one phrase with the beginning of another.

After the rest at the end of b.33, there is a section of continuous sound with no rests, which lasts until the end of b.59, and is almost equal in length to

that of the first three phrases. In this long section there are varied gestures which mark out subsections. Some of these are linked with the previous material: e.g., the gestures in bs.47-51 are related to the last stable area, bs.34-40. One of the most significant new gestures is the ascending figure in bs.41, 44 and 53. This ascending horn line occurs after the piano material in bs.39-40 (using intervals 4, 6, 8 and 6 again). This piano material (with similar intervallic content) is then heard at a higher register in bs.42-3, and is again followed by an upward gesture in the horn. The two registers used for this piano line emphasise the ambiguity of function: is it an opening or closing gesture? This is significant in that it reinforces the fact that the relatively strict ordering of events in the previous phrases has now broken down, with recombination of elements. The elements associated with the stable gesture are dislocated in time and register, in bs.42-3 the piano material associated with closing the 'cadence' is used, but the horn and violin parts do not fit in. In bs.47-51, the violin has an ascent to the top register, using the process last seen in bs.36-40, with various intervals used against a sustained horn note. This time there is no coordinated attack, the piano is dislocated registrally, is much slower than usual, and is missing its first chord (interval 4). The slow piano line therefore overlaps into the next subsection where it is followed (as in bs.41 and 43) by the ascending horn line.

From b.41 onwards, there are changes in the local interaction between the violin and horn parts. After the first ascent, the horn adopts a new type of articulation (linked to the endings of many of the subphrases). It is generally operating at the mid- to high part of its register. This is independent of the violin line, which moves using familiar intervals (7,6,9), and a triple stop in its usual place just before the stable gesture. Thus from bs.41-51 the horn has two new features: (1) the upward gesture and (2) strongly accented movement; the piano is using old material in new registers, and also adopts the upbeat ascending line from the horn; and the violin is using material very similar to that of the subphrases in the previous section. Change is overlapped with the use of familiar

elements to provide continuity and the impression of evolution rather than drastic upheaval.

On the last beat of b.51 the horn's ascent cuts off the cadential gesture in the violin (note that (i) this ascent is already associated with the piano material and (ii) again there are no rests before or after the cadential gesture). This time the violin continues the upbeat gesture with a *crescendo* from *mf* to *f* (the first *forte* dynamic in the violin line). Here, the violin adopts a new element from the horn, and this process continues with a further adoption of the pattern of accentuation from that line. There is a new interaction between the two parts, as the violin's accents occur during the horn's sustained notes and vice versa. There is also a change in the piano. In bs.41 and 44 the accent in the horn was associated with the cutting-off of the piano's low registral material, with an ensuing move to its upper register (the cadential gesture area). In b.54, with the impetus of the horn ascent being taken up by the violin, the piano remains in the low registral area and continues to descend. This descent is mirrored by a registral collapse in the horn and violin parts in bs.55-6.

In bs.56-9, there are enough familiar elements to link this area with previous cadential gestures:

(1) The piano is back to its high registral area using intervals and chords previously associated with the gesture,

(2) The violin has an ascent into a very high register as seen in bs.37-40 and 47-51,

(3) The horn has a two-note descending motif as used at the end of the first and second phrases.

(4) There is a rest at the end of the cadence (implying separation).

However, there are various dislocations in time which make this gesture different:

(1) The piano is slower and is spread across the whole cadential passage, instead of providing only three chords at the end,

(2) There is no coordination of attack between the horn and violin,

(3) The cadential gesture is not separated from the preceding activity by a rest,

(4) There is no differentiation in timbre between the cadence and the preceding material,

(5) There is no return to the use of a specific harmonic gesture to complete the cadence.

New contexts

This marks the end of the first main section of the piece. After the rest at the end of b.59 there is a change of timbre, instrumental combination and tempo. Therefore, there is a local break in continuity, and this poses questions about the implications from the first section. The most important processes in use in the first section are:

(i) The elimination to a large extent of the concept of separation within the phrase, leading to the evolution of longer bursts of activity with local issues becoming more long-term,

(ii) The erosion of the contrast between dynamism and stasis, mainly brought about by (iii),

(iii) The functional use of material which becomes associated with different types of movement, and the manipulation of the interaction and order of events, effecting a change in the rate and type of movement.

Because of the change in texture and timbre, the above processes cannot operate in a continuous fashion locally. In the next section, therefore, if the

implications of the first section are to be addressed, there must be a recontextualisation of the processes from that section.

Analytical commentary on bs.60-91

Contrast and Separation

Ligeti achieves striking contrast from the very start of the second section, through the use of material which articulates a clear quaver or crotchet pulse, and demonstrates close rhythmic cooperation between violin and piano. While these two instruments have shared material in the first section, there were no simultaneous attacks between them at all.

Separation is also an important part of this section. There is separation between two types of phrase: (i) phrases which use coordination of attack, bs.60-62, 66-8 and 74-9, and (ii) phrases using more canonic type movement, bs.63-5 and 69-73. Different timbres are used to effect the separation:

bs.60-62 and 66-8: violin, *molto vibrato*, pizzicato, and piano,

bs.63-5 and 69-73: violin, *senza vibrato*, arco, harmonics, and horn, *con sordino*,

bs.74-9, violin, *sul ponticello*, tremolando, *con sordino*, and piano.

The most significant new element is that of simultaneous attack which is seen in the three violin-piano phrases. The instances of this element are infrequent in the first section (confined to the first and second cadential gestures) and decrease as the section progresses. Here, three phrases have complete coordination between violin and piano. Thus, coordination is the norm, instead of

being an unattainable goal or a symbol of stability at the end of an increasingly dynamic phrase.

The coordinated phrases are linked to section 1 (specifically the violin material from 1(i)) by the use of familiar intervals and contours from the *Adieux* motif (**ex.2.11**)): thus the new phrases establish early links with both the dynamic and stable areas of the previous section.

The notion of contrast is emphasised by the juxtaposition of two contrasting sets of timbres, instrumentation and material. Bs.63-5 and 69-73 have tenuous links with the cadential gestures of the previous section through the instrumentation (horn and violin), and through specific rhythms and motifs: however, there is no coordination of attack. As well as the contrasting timbre and material there is a change in tempo (from *piu mosso*, crotchet=112 to crotchet=100). In a similar way to the first section, local contrast is set up between the first coordinated phrase and the first canonic phrase. The return to coordination in b.66 using similar instrumentation, timbre and material to that in bs.60-2 provides the potential for more long-term exploitation of this contrast, and also implies the possibility of the creation of a framework of referential material, against which change in the contrasting elements can be measured. The main change begins in the second canonic phrase in b.69, and is concerned with registral expansion.

<u>Registral expansion in the middle phrase.</u>

First coordinated phrase: uses violin and piano moving in similar motion, starting and ending in same register.

First canonic phrase: uses violin and horn moving in similar motion, the general trend is upwards with a move back inside the last leap.

Second coordinated phrase: uses mostly similar motion with some octave displacement, remaining within the same register.

Second canonic phrase: again similar motion with a return downwards at the end before a large upward leap by the violin.

Third coordinated phrase: in the first three bars the violin and piano move in similar motion, but not in parallel octaves as in previous phrases. The piano is now operating on two separate registral levels. In the middle of b.76 the piano begins a divergence into the lower registral area while the violin moves from its normal register in the coordinated phrase to the higher register associated with the canonic phrase. Thus there is a divergence of register in bs.78-9 with the violin at its highest possible register and the piano at quite a low level (but not yet at the bottom of its register). The piano continues to descend, and reaches its lowest possible note in b.84.

Significantly, there is a lack of coordination between the upper and lower registral limits, with the upward registral expansion taking less time and finishing in b.79. The large violin leap in b.76 contributes to the rapidity of the expansion, by-passing a section of the upper registral area. The registral divergence of the piano and violin parts is emphasised by the instruction for the violinist to "follow the rubato of the piano," strengthening the sense of coordination between the two parts. The violin line has a *perdendosi* marking and eventually evaporates ("where the tone disappears, play a noise like a breath") with a perceptible sense of having ascended as far as is registrally possible. The piano however, does not pick up the momentum of the upward expansion. Although it has a *'dim. poco a poco'* marking, there is a slowing-down as it reaches the lower register with the elimination of quaver motion, leading to eventual movement in dotted crotchets and minims.

Thus the issue of registral expansion, which was used as a destabilising element in the cadential gestures in bs.38-40 and 57-61, is now emphasised through its use at a significant arrival point in the second section of the movement. Bars 78-9 provide the strongest climactic gesture of the piece so far, uniting the two main elements in operation in this section: simultaneous attack (piano and violin phrases) and registral divergence (violin and horn quasi-cadential phrases).

Dynamic phrases and cadential gestures:
recapitulation and reworking of balance

As in so many of Ligeti's works, a climax is marked by a registral expansion, where both instruments are 'pushed to the edges' of their ranges. Many of these climaxes do not function as a final arrival point or satisfactory ending because of the dislocation of part of the registral divergence in time. This is the case in bs.78-9, with the violin disappearing into the stratosphere, while the piano is still 1½ octaves from its lowest note. Unlike the end of *Automne à Varsovie*, there is no accelerating dive for the bottom of the piano: instead, the rate of descent slows down, and the heat goes out of this descending line. This reduction in momentum is compensated for, by the re-emergence of activity in the mid-register, with significant referential material.

Bars 83-91 contain juxtaposed material from the first and second sections and will be seen, in retrospect, as marking the overlap between the second and third sections of the piece. The horn part uses the same pitches and registers as those of 1(ii) and 1(iii) while the violin uses the pitches of 1(ii) but at a lower octave, and both the pitches and register of 1(iii). Now the two subphrases take less time than in the first phrase (bs.3-9, $21\frac{1}{6}$ beats, bs.83-7, 16½ beats). The

main reasons for the decrease in length are: (i) less space between the subphrases and (ii) less sustaining of the long notes at the end of subphrase(iii). In contrast, the cadential gesture in bs.88-91 lasts for 14 beats compared to 12 for the corresponding one in bs.9-12. Thus the local rate of change (in terms of speed of events) is increasing in the dynamic subphrases while the more stable cadential gesture is becoming more drawn out.

As well as the change in relative phraselength, the recapitulation of material from the first phrase is underpinned by a new element: the consolidation of the lower registral expansion in the piano part from the second section proper. There is a general lack of coordination between the two elements and this is emphasised by the differing tempo markings, with the horn and violin following the *tempo primo*, crotchet=100 while the piano continues at crotchet=112 (the main marking of the previous section) with the instruction "independent from the tempo of the horn and violin." An important exception to this generally uncoordinated relationship is the activity on the last quaver beat of b.83, where the three instruments have a simultaneous attack all within the crotchet=112 tempo. Therefore the beginning of the repetition of material from the first section is marked by the only wholly simultaneous attack of the piece so far. There is local coordination between the material of the second section and that which was familiar from the first section, providing a momentary sense of cooperation between new and familiar.

On the local level there is a passing association between the dynamic (subphrases) and the static/stable (coordination of attack). This coordination of elements does not persist: instead, the return of the horn and violin to the uncoordinated material of 1(ii), and the juxtaposition of two different tempi mean that the lack of local coordination is emphasised, and the contrast between the subphrase material and the continuing registral expansion in the piano part is heightened.

It has already been noted that the cadential gesture achieves increased weighting through its extension in length, and the return of the piano to its expected place (in both time and register) at the end of the cadence for the first time since the middle of the first section increases its strength through the restoration of a crucially referential element.

New and familiar implications

In spite of the breaking of local connections between the first and second sections, there are many longer-term links, with implications established in the first being picked up in the second. The most important are:

(1) The use of registral expansion, first picked up in the quasi-cadential horn and violin phrases, linked to the first section by timbre and tempo,

(2) The use of simultaneous attack in a more dynamic contrast in the violin and piano phrases, differentiated from the first section by changes in timbre and tempo,

(3) The combining of (1) and (2) in a climactic gesture using new and familiar elements,

(4) The linking of (3) with the return of familiar material.

Most of the above elements are concerned with issues that arise during the gradual loosening of the cadential structure in the first section. The fact that the cadence in bs.88-91 has all its constituent elements in the proper place and is extended in length, suggests that the second section is seen to be a working-out of

the various implications set up by the increased dynamism of the cadence in the first section. After this working-out, the cadence returns, seemingly 'bigger and better' than ever. Thus questions are raised as to the way things will progress and most importantly, the role that repetition will play in the next section.

Analytical commentary on bs.91-142

As mentioned in the introduction to this analysis, the material in bs.91-142 is a repetition of that in bs.12-59, with a return to the separation between dynamic phrases and more stable cadential gestures. Both sections are approximately the same length (bs.12-59 = 47 bars and bs.91-142 = 49 bars). The internal organisation of the third section differs considerably because of a significant change in the ratio of phraselength to cadence length, with a compression of the phrases and an increase in the length of the cadences, thus continuing the trend seen in the reworking of the first phrase (bs.83-91).

Comparison of phrase/cadence length.

	Section 1	Section 2	Difference
Phrase 2	$26\frac{1}{6}$beats	$20\frac{5}{6}$beats	$-5\frac{1}{3}$beats.
Cadence 2	12 beats	14½beats	+2½beats.
Phrase 3	44½beats	$35\frac{1}{3}$beats	$-9\frac{1}{6}$beats.
Cadence 3 (before piano entry)	23 beats	28 beats	+5 beats.
Piano Phrase	67½beats	65 beats	-2½beats.
Cadence 4	13½beats	34 beats	+20½beats.

From this comparison of relative phraselength, several observations can be made. The shorter second and third phrases become increasingly compressed and the cadences in between are lengthened. In the shorter phrases the compression is created by (i) use of shorter note values (see comparison of 2(i) in the horn, **ex.2.12**) and (ii) increased overlapping of parts (see violin and horn parts bs.22-5 and 101-3) Outside a $^4_4$ context the notelengths can be compared as in **ex.2.13**.

The shorter note values remain the same but the longer ones decrease in length by as much as $1^1/_3$ beats. This is especially noticeable in the sustained notes that occur at the ends of subphrases.

The effect of this compression, combined with the built-in increase in dynamism associated with this material from the first section, creates a feeling of onward movement and a definite dynamic drive. The slow music is getting slower, while the fast gets faster. This must be examined in conjunction with the changing cadential structure in order to ascertain the overall effect.

Increased cadential weighting

The rate of change in cadence length in the third section first doubles (from $2^1/_2$ to 5 beats) and then quadruples (from 5 to 20 beats). Therefore there is a much greater change here than in the surrounding phrases. Manipulation of notelength also effects the change here (**ex.2.14**).

Thus the change in internal organisation in the third section emphasises the stable element more than the dynamic one. Dynamism is perceived to be subordinate to stability/stasis in terms of the rate of change of each state.

As seen above, most of the changes in the third section are effected by manipulation of notelength and overlapping lines, with the actual pitches generally remaining the same as those in the first section. This results in an increased

awareness of the dynamic effect resulting from such manipulation. It also heightens interest in any deviation from the familiar pitch path. Such deviation occurs in the last cadence (b.135 onwards) which is longer than any of the previous cadences. This cadence has the usual features of (i) lack of simultaneous attack, and (ii) use of registral expansion, as seen at the end of the first section. The most significant changes are (i) the slower unfolding of events (see **ex.2.15),** and (ii) an extended violin line.

Previously the piano had the last attack of the cadence, followed by a simultaneous cut-off of all lines. Now the violin has three further attacks after the $B^{b}FB^{b}$ piano chord, expanding upwards registrally. During this activity, the horn and piano sustain, contributing to the sense of extension. After the last attack the violin also sustains and there is a simultaneous cut-off marking the end of the piece.

The final cadence operates on two levels: (i) within the third section it is part of a process seen previously in the first section. As such, it is the culmination of the process of cadential loosening, using less simultaneous attack, less registral/directional control, etc. Because of the fact that this process has been the focal point of a previous section, the repetition of much of the material from that section does not imply a verbatim rerun of the process. The first and third sections are separated by the events of the second section. These events are closely linked to the implications from the first section and, because of their position in time, must also have some effect on the section that they precede. Ligeti is using almost direct repetition to emphasise the amount of change that has occurred. The process in the third section is not identical to that in the first section: it cannot be because of its position in time. Although there is a strong resemblance to that of the first section, it is perceived as having undergone significant changes due to (1) the experience of the second section, where the elements of simultaneous attack and the separation of dynamic and static areas are regrouped, recontextualised, and eventually used to achieve a controlled climactic gesture, and (2) the reworking of

the relationship between dynamism and stasis through manipulation of phraselength in the third section. The single gesture which epitomises the change most effectively is the first return of familiar material at the end of the second section. It is at once familiar and new, linking the events of the first section with the regrouped elements of the second section, and projecting towards the cadentially-dominated third section.

Harmony in the Horn Trio, first movement: tonal versus atonal

A listener who has some familiarity with Ligeti's work up to the Horn Trio will very probably hear in this work something akin to a 'return to more tonal styles' in the writing, yet at the same time the piece sounds atonal. There is something ambiguous going on, and it is worth examining the harmony with a view to elucidating how this quality is achieved.

The broadest rhythmic and textural qualities, along with harmonic ones, bring this ambiguity to the surface: the oft-perceived ternary formal scheme,[1] the easy separation of the three timbres with their separate phrasing and 'melodic' kind of writing, the use of a 'false quotation' from Beethoven's *Les Adieux*, the quasi-thematic appearance of the lamento motif and some cyclical cross-referencing through the piece as a whole, all play on this ambiguity. By examining the material more closely, one can see how it keeps a degree of atonality as the dominant harmonic quality, but plays with elements that derive from tonal models.

Ligeti himself does not consider this simply traditional ternary; he says it has odd angles and trick floors that do not fit in anywhere', see Ligeti, sleeve note with Sony CD SK 62309, translated by Annelies McVoy and David Feurzeig, 14.

This may involve retracing some of the steps of the earlier analysis, but now with more focus on Ligeti's local control of dissonance and consonance, by examining interval content and contour in a more statistical manner.

Tonal elements

The *Les Adieux* material is the first thing we hear; it takes a phrase from tonal music and twists it so as to undermine—slightly—the tonal reference. Third, tritone, sixth[1]: in tonal music (including *Les Adieux*) the fifth resolves to a sixth also, but here the notes are adjusted to provide a non-diatonic set: G, A^{b}, A, B, C, E^{b}. Yet the lower voice outlines a C minor triad, and all of the notes so far can be found in a C minor scale: curious! We will also see below how this is absorbed shortly after into an almost serial atonal procedure.

Throughout this movement there is a remarkable separation of linear material according to instrument. The violin opens with three sounds that give us the *Les Adieux* reference. The piano will also use this material; the difference being that the violin quickly leaves it behind and sets up new material freely derived from it, whereas the piano is more strictly limited to it. This establishes an effective distance between these two. Meanwhile the horn has a contrasting set of 'rules' which are fully independent of all this.

The violin's top voice moves in a voice-leading style that resembles tonal melody, in that it statistically prefers the intervals of major second, perfect fourth and minor second, and completely avoids intervals such as minor seventh, tritone,

[1]I am only too aware of the potential confusion in using interval names associated with tonality: however, it seems more useful in the context of quotation from *Les Adieux*.

etc. These are 'reserved' for the horn part, where they appear frequently. The violin's lower line also avoids large leaps, the semitone is the most common linear interval here for the first twelve bars, and so it resembles tonal models inasmuch as inner lines in homophonic textures usually obey the rule of moving to the nearest available note.

The linear intervals for the first twelve bars of the violin's top line are thus:

*-(interval) 2-1 . . 8-2-2-5-2 . . . 4-5-2-1 . . . 5-2 (I use * to indicate the starting note)

and its lower line is:

*-4-3 . . 1-3-1-2-3 . . . 5-1-1-1 . . . 1-3-1

while the horn's linear interval repertoire is:

*-5-10-6. . . 10-8-3-10 . . . 4-7-7-6-10-7 . . . 1-7

The intervals of tritone, perfect fifth, and minor seventh are strictly kept for the horn, and the horn also completely avoids steps of major or minor second until bar 41 where a new 'theme' appears.

The piano is somewhat restricted by its adherence to the *Les Adieux* material that it takes from the violin's opening bars, so that until bar 44 it has no other intervals except those found in bars 1-2. Again it is the same new 'theme' that introduces a change.

Already one is describing an ambiguous sound-world, since such strict separation of interval content is supporting a 'thematic' view and hence a shadow of tonality, yet the strictness is of a sort found elsewhere in free atonal models, such as in Elliott Carter's music. The melodic shape of the separate parts is also interesting to observe: the violin has a slight predominance of rising notes, the horn an equal balance, and the piano always falls, until the new material of b. 41:

Bars 1-40: (D = down, U = up)

Vn: D, D, U, U, U, D, U. D, D, U, U, U, U. D, U, U. D, U, U, U, U, U, D, U. D, D, D, U, U, U, U, U. D, U, D, D, U, U, D, D, U, D, D, D, U, D, U, D, D, D, U, U, U, U, U. (23D, 32U)

Hn: U, U, D, U, D, U, D. U, D, D, U, D, U. U, D. D, U, U, D, U, U, D, U, D, D, U, D, D, U, U. U, D. D, U, U, D, U, U, D. U, D, U, D, D, U, D, U. U, D, D, D, U, U, D, U, U, D, D, D, U, U, D. U, D. (34U, 33D)

Pf: D, D. . . . * D, D, D. . . . * D, D, D...

As seen in the analysis, they each have a separate approach to contour, with the horn balancing 'ups' with 'downs' almost immediately, which the violin does not do.

Tonal elements also appear when a closer look is taken at the vertical harmonic structures, but here once more ambiguity reigns. It is helpful to elaborate some of the almost functional qualities here which are associated with phrase-endings, cadence. An examination of harmony that takes this into account along with the instrumentation reveals a pattern dependent upon the difference in timbre.

If we consider the areas where the phrases of the separate instruments rhythmically coordinate to be more cadential, we can develop a list of the various phrase endings that posits a structural order of importance:

(Starting with the more coordinated and hence more 'cadential')

b.12
b.21
b.40
b.33
b.5
b.2
b.7

We find at these points a certain loosely-defined chord-type: let us call this the 'ambiguous chord'. It works as follows: there is always a part of the chord found in

one timbre or timbre group that is diatonic (either a major chord or a dyad of a sixth or third), while in a separate timbre group there is a single note that forms a prominent minor ninth or semitone with one of the other notes. The way the timbre groups work is that at first (i.e. see b.2) the violin and horn are the only timbres, so they operate against one another, that is, the violin provides the consonant part and the horn the dissonant part. When the piano enters, the violin and horn become a consonant group, agreeing on a major chord, while the piano provides the semitone relationship.

The chords are as follows:

bar 12: vn+hn, 8/7 triad E^{b}-B-F#, against pf $F^{\natural}$
b. 21: vn+hn, 8/7 triad F-D^{b}-A^{b}, against pf G
b. 40: vn+hn compound min 3^{rd}, C#-E, against pf E^{b}
b.33: vn, trichord F#-B-E against hn B^{b}
b. 5: vn 8/7 vn triad D-B^{b}-F, against hn E
b. 2: vn minor 6^{th} C-A^{b}, against hn $A^{\natural}$
b. 7: vn 8/7 triad G-E^{b}-B^{b}, against hn $A^{\natural}$

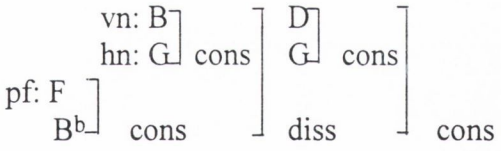
It seems that the stronger versions of this feature a minor ninth relationship between the outer parts, and ideally an 8/7 chord with it.

There are other weaker forms of this pitch pattern, in structurally (rhythmically) weaker places: bars 14 [1], (1^{st} beat of b.14) 17^{2}, 18^{3}, 21^{3} and 25^{2}.

If we examine all the sonorities in between these points, in places that are not remotely cadential in rhythm or harmony, we find a freer range of chord-types. As we are inevitably looking out for tonal references, we find that the vertical harmony allows many diminished triads, major or minor triads, augmented triads and thirds or sixths that appear fleetingly, without any extra note to provide a semitone. But we also find trichords such as (0,1,2), (0,1,3) (0,1,5), (0,2,5) and (0,2,6). It is almost always the case that the timbre separation operates for these too: that the violin, for example, holds a third or sixth with the horn adding the

note that gives the dissonance(s). We might even begin to think that the language is flirting with something akin to bi-tonality, but truly this cannot be the case because the parts each draw their notes freely from the chromatic whole. It also may be said that the resting 'ambiguous chord' is more dissonant than most of the moving chords in between, and that this is a reversal of the traditional functions of consonance and dissonance. The phrases that fully begin and end together, such as bars 9 to 12, can also begin with a dissonance (0,1,6), (see also (0,1,6) in bar 20). This further supports a view that the roles are reversed, with dissonance defining the beginning and ending of a phrase, and consonance signalling movement or restlessness.

This reversal of the roles of consonance and dissonance is not permanent, however, since in the final bars of the movement all three instruments become part of a single consonant group:



pitches in the final bars

The 'ambiguous chord' becomes resolved. It is as if the reversed function of dissonance and consonance could no longer hold, and 'flips back' to a more traditional situation.

Atonal elements, twelve-note and serial aspects

The opening phrase uses only the pitches C, E^b, G, A^b, A, B, as noted above; or, in more atonal terms: 0, 3, 5, 7, 8, 9, 11. The notes 1, 2, 4, 6, and 10 make up the complement, and the next phrase immediately uses four of them before any other pitch appears (1, 4, 10 and 6). The last one to appear is 2, which is involved in the cadence for this phrase. This shows significantly that the language of the piece, while 'flirting' with modes momentarily, is centred on free atonal procedure. Again we see Eitan's pitch aggregate theory in operation, as described in Chapter 1.

The device, used in phrase 1, of presenting such a quasi-diatonic set before completing it, is not used again. The piece proceeds with stricter twelve-note control. Phrase 2 uses eleven different pitches (omitting C, perhaps significant in the light of the 'flirt' with C minor) in fourteen notes; phrase 3 uses all twelve pitches in fifteen notes; and the short phrase 4 uses a very chromatic nine-note set (0,1,2,3,4,5,6,8,10) in a thirteen-note statement. This defines a free atonality subsequently used throughout the piece. **Ex.2.16** shows the full set of pitch aggregates for bs.1-12.

There is even some suggestion of serial procedure, though again it applies for the opening bars only. If we examine the order for the first twelve different notes we discover an array that is symmetrical in its intervals (see **ex.2.17**). This is clear evidence of some serial thinking, yet the piece appears to continue without using this as a thematic-contrapuntal source in the usual serial way. One can only presume that the need to preserve the distinct interval language of the separate timbres, alongside the desire to maintain the freedom of phrase entry ordering would make strict serial pitch selection unworkable, and even redundant, since the

piece has a host of unifying qualities already. It may also be noted that the 'series' in **ex.2.17** uses only intervals of major and minor thirds, and the tritone. We can associate this with the desire to 'flirt' with diatonicism while retaining a twelve-note quality. This continues in the *più mosso* section where these intervals are developed in a non-serial, but more traditionally thematic way. The material at the new tempo presents the same intervals vertically in a strict order: 4, 3, 6, 4, 3, 6, 4, 3, 6, 4, 3 / 6, 4, 3, 6, 4, 3, 6, 4, 3, 6, 4 / 3, 6, 4 etc (the / shows where the *tempo primo* segments are inserted). The pitch order is not derived from the 'series', but the pitches in this section are also presented atonally, such that the first eleven are different notes.

Once more it is evident that the overall harmonic language is characterised by a continuous circulation of the twelve notes of the chromatic whole which guarantees that the tonal qualities are subordinate to the atonal.

Conclusion

In the concluding section of this chapter, the relationship between the specific issues which emerged from the analysis, and the general concepts of premise and compositional working-out will be explored.

As seen in the analysis, the first twelve bars of the movement establish a set of relationships that develops as the piece progresses. There is a differentiation between (i) an area where dynamic development is prevalent, with three distinct subphrases exhibiting an overall increase in the level of registral and harmonic development, and (ii) an area where the various parameters work together, providing controlled movement towards overall stability.[1] In area (i) there is an increase in tension as the rate of change increases, whereas in area (ii) there is a decrease in tension. Thus within the first phrase, dynamic development only goes so far before it is halted by a trend in the opposite direction: movement in one direction (from stable to progressive) is answered by a move in the other direction (from progressive to stable). However, the fact that there is not a continuous progression from one area to the next means that the tension accrued through the dynamic development in area (i) cannot be fully dissipated by movement in the opposite direction in area (ii).

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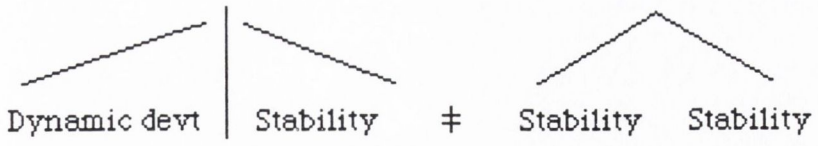
[1]Because of the nature of the concept of 'opening', all elements must be seen to be defined by what has gone before. Therefore there is a symbiotic relationship between the two contrasting areas of the first phrase. Area (ii) is perceived as stable because of the reordering and reinterpretation of elements from area (i) in such a way as to imply a decrease in tension. The dynamism of area (i) is heightened retrospectively through the contrast perceived in area (ii).



If such total dissipation of tension did occur, there would be no need for further progression: in other words, the piece would be over. Thus in spite of the ordering of dynamic phrase followed by stable cadential gesture which provides local closure, already there are implications left unresolved which must be returned to on the global level.

The primary relationship between dynamism and stasis/stability, and its articulation in the first twelve bars can thus be taken to be the premise for this movement. Compositional working-out in this case consists of a more detailed exploration of this primary relationship, and progression towards a final resolution of the implications contained therein. Through the use of modified repetition of the first phrase, there is the potential for implications from one bout of dynamic development to be built upon further in the corresponding area in the next phrase. Such cross-relations between the phrases mark the beginning of global development, where small units can be linked together, creating processes that operate across larger areas. There is an increase in overall development through an accentuation of the contrast between the two primary areas, with a steady increase in the dynamism of area (i), while area (ii) remains static (see first two phrases, bs.1-25). A momentary decrease in the development of the first area of the third phrase can still be interpreted as part of the same global process, as it can be seen to balance the extreme increase in dynamism (reordering of timbre, change in the horn/violin relationship, etc.) that occurs in the subsequent piano phrase.

Such manipulation of dynamic development is one of the main compositional elements at work in the first section of this movement. Another manifestation of this is the withholding of development in the cadential area for most of the section: the resulting surge in dynamism when the stable gesture

finally changes demands a fundamental reinterpretation of the primary relationship, occurring as it does in conjunction with a breakdown in the progression of the dynamic area of the phrase (1(iii), attempts to recreate the final 8/7 sonority).

Local changes in texture, timbre and tempo negate the possibility of a link between the first and second sections. At the same time, within this new context, various implications from the first section are dealt with, albeit through changes in the functionality of its material (e.g., the difference in the associations of the concept of simultaneous attack, previously connected with stability, now involved in the dynamic piano/violin line). Traits associated with the stability of the cadential gesture in the first section, together with the elements which effected the increase in dynamic development of that gesture, are reinterpreted as part of an overall progression towards the largest climactic gesture of the movement. Thus in spite of the local break between the sections, there is a controlled attempt in the middle section to resolve some of the strongest implications left hanging from the first section: i.e., the eventual goal of the dynamic development.

It is possible to note how the relationship between the first and second sections corresponds in some ways to that between the two areas in the premise-containing first phrase, specifically, the lack of a continuous link from one to the other, and the use of some familiar elements which are reordered to provide progression in a different direction. In some ways, the first and second sections can be seen as a large reworking of the first phrase. However, the difference between the two relationships stems from the contrasting local and global areas of focus.

In the first phrase (premise) minute manipulations of each musical parameter govern the shaping of the music. Thus small gestures, such as the repetition of a single sonority at a specific time, achieve a specialised function. As the piece progresses, the same degree of local control is maintained, but through the use of referential material, functionality accrues across a larger expanse, with

the establishment of a quasi-hierarchical framework: in other words, at the start of the piece the listener's attention is drawn to the minutiae of the compositional process, since it is these that must define the methods of musical progression. The degree of local control exhibited in the opening phrase continues throughout the piece, with significant local and secondary relationships established and developed between parameters. The primary relationship emphasised through the use of functional material in the first section, gains momentum through its development from phrase to phrase, becoming a process that operates on a longer-term level than the more local phrase-to-phrase issues. A hierarchy is established where most attention is focused on the progression of the longer-term process, and each phrase is significant for its contribution to the further development of this process. Thus functionality can operate locally and globally: a gesture can have a specific local function within a phrase, but can also affect development of the subsequent phrases, creating a longer-term link across the piece.[1] Local development is assessed for its contribution to long-term progression.

Because of such long-term progression, the implications contained in the modified repetition of a large amount of the first section cannot be assumed to have the same effect as those contained in the original first section.

> Temporal proportions are not like spatial ones; we cannot refer back and forth at a performance, and we must rely on memory, emotional and sensuous as well as intellectual, for comparison. The sense of balance in music is not arithmetic; a set of factors larger and more complex than a mere count of measures come into play. As we have seen, if a phrase is played twice, the effect is not like that of the repetition of an architectural motif on a façade; each playing has a different weight. [2]

The fact that in the second section there is a further progression built on the reordering and interpretation of the elements from the first section means that there cannot be a 'wiping clean of the slate'. Thus one's perception of the repeated

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[1]In phrase 2, the elision of subphrases (ii) and (iii) shows manipulation of the local dynamism within the phrase, but also sets a precedent for an increase in subphrase length in the next phrase, contributing to an overall increase in dynamism.

[2]Charles Rosen, *The Classical Style* (London: Faber and Faber, 1976), 75.

material in the third section must be governed by the dynamic progression in the piece so far. The views of these commentators on what they see as Ligeti's 'return' to traditional ABA forms, and his reasons for doing so, seem to me to be somewhat simplistic:

> [The Horn Trio] is based on motivic development, ABA forms, and such traditional chamber music textures as lyrical violin and horn melodies over piano accompaniment.[1]

> These traditional forms better fit his harmonic language, eerily reminiscent of tonality. Also, especially in the more rhythmically complex pieces, a complex form could overload the listener's perception too easily.[2]

Instead of seeing this movement as fitting into a 'traditional' ternary form, it is more accurate to observe the subtlety of Ligeti's modified repetition in the final section. The effect of such modified repetition is to focus attention on the continuation of such progression in the third section—concentration on the elements that have changed. As the section progresses, there is an increased contrast between the compressed dynamic area and the extended cadential gesture, a contrast which is measured at first within the phrase, but one which takes on a more long-term aspect, operating across several phrases and using two simultaneous processes to effect the above-mentioned contrast: a steady decrease in the length of the dynamic area, and a much faster increase in the length of the cadential gesture. This increased cadential weighting culminates in the 'cadence within a cadence', where a strong closing gesture is used to articulate final stability.

Through the use of a large block of familiar material, it is possible to focus closely on any changes which do occur, changes which effect a long-term move towards the stable part of the dynamic/stable relationship. When the role of the third

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[1]J. Bossin, "Gyorgy Ligeti's new lyricism and the aesthetic of currentness: The Berlin Festival's retrospective of the composer's career," *Current Musicology* 37/38 (1984): 237

[2]Taylor, "Lamento motif," 14.

section is examined with respect to the earlier comparison between phrase 1 and sections 1 & 2, it can be suggested that the final section clarifies the two progressions of (1) Stable----------Dynamic, and (2) Dynamic---------- Climactic/stable contained in the first two sections, by dissipating the tension and prioritising towards stability. It should be remembered that the need for such clarification was the factor that left the end of the first phrase open.

Thus there is a clear interaction between premise and compositional working-out in this movement, in that the primary relationship from the first phrase provides the impetus for further progression and development. Of course, it cannot be assumed that the premise contains all the future development of the piece in miniature. The most significant feature of the premise is implication. In it, methods of progression are implied and basic relationships defined. Compositional working-out demands that such primary relationships are built on, with the development of processes which articulate, expand, and eventually resolve the issues of the premise. Such working-out is not merely a longhand version of the premise: instead, it provides processes which grow organically from the initial premise.

> The feedback relationship has more to do with the fact that during the working-out process new musical ideas arise: structural deliberations and naïve idea mutually affect each other. And the working method is itself not just a matter of cold calculation: there are intuitive ideas in the construction just as there are speculative features in the initial idea.[1]

[1]Ligeti, 'Ligeti-Ligeti,' in *Ligeti in conversation*, 127.

CHAPTER 3

PREMISE AND COMPOSITIONAL WORKING OUT IN *AUTOMNE À VARSOVIE*

General Introduction

> Today's composers are often confronted with nearly insoluble problems of rhythmic delineation, and performers are then called upon to translate whatever solutions are devised. It must be stated, however, that the composers' solutions on paper have usually excelled the accuracy of the translations. In other words, the ingenuity of the creators' notational devisings has not as a rule been matched by the immediate perception and accurate interpretation of those devisings on the part of the performer, no matter how musically and technically advanced his or her endowments. Yet we cannot lay the blame solely on the performer, who is faced all too often with rhythmic complexities that might well baffle even a sophisticated electronic computer.[1]

While Read is mainly concerned with the problems of contemporary rhythmic notation, he highlights the fraught nature of the relationship between the composer's interest in increasingly complex rhythms and the performer's ability to execute them. Conlon Nancarrow's solution was to eliminate the performer completely, thereby achieving his rhythmic complexity through mechanical means. In his Studies for Player Piano (1950-68), he creates complex textures where each line may move at a different tempo, and increase or decrease in speed independent of the surrounding lines. The effect in many of Nancarrow's Studies is of simpler, more accessible intervals and sonorities, coupled with extremely intricate rhythmic and metric development.

Just as Ligeti focused on the interesting harmonies in Partch's music, it was the rhythmic potential of Nancarrow's music that excited him. The mechanistic quality of the Studies for Player Piano also links in with his perennial fascination with machinery:

> I have always been fascinated by machines that do not work properly; in general, by the external world of technology and automation which engenders, and puts people at the mercy of, bureaucracies. Transposed into music, the ticking of malfunctioning machinery occurs in many of my works.[2]

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[1]Gardner Read, *Modern Rhythmic Notation* (London: Victor Gollancz, 1980), 5.

[2]Ligeti,, "Ligeti-Peter Varnai" in *Ligeti in Conversation*, 16

Ligeti's discovery of Nancarrow's music in 1980 has been well documented in his writings and interviews.[1] He describes how works such as the Studies for Player Piano seemed to exploit similar rhythmic ideas to those in his own earlier works, *Poème Symphonique for 100 metronomes*, *Continuum*, and *Monument, Selbstportrait, Bewegung*, where he explores the idea of illusionary rhythm. He writes:

> A new kind of overall rhythmic pattern emerges from the homogeneous fusion of sound, and from the complex contorted polyphony which is achieved by superimposing two relatively simple phrases.[2]

This is clearly similar to Ligeti's exploration of dense, complex harmonic textures in his earlier micropolyphonic works, where minute shifts of emphasis within single lines have an ultimate impact on the overall effect. He is quick to emphasise the primacy of this overall effect:

> My new music should not be understood as an 'Ivesian' heterogeneous layering. On the contrary, it is the homogeneous fusion of sound which is of the utmost importance.[3]

In a programme note to the Etudes for Piano (Book I), Ligeti describes how he wanted to write music which used complicated rhythmic combinations but which could be performed by a single instrumentalist without an impossible degree of difficulty. In order to achieve this, he uses two distinct rhythmic processes:

(i) the metre-dependent hemiola, most often associated with Schumann and Chopin, and

(ii) the additive-pulse principle of African music, which Ligeti discovered in 1980 through recordings made by the Israeli musicologist Simha Arom.

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[1]Ligeti, interview in Dufallo, *Trackings*, 335.

[2]Ibid., 335.

[3]Ibid., 336.

> That which is eminently new in my Piano Etudes is the possibility of a single interpreter being able to produce the illusion of several layers of different tempi . . . Our perception can be outwitted by imposing a 'European' accent pattern upon the non-accented 'African pulsation'.[1]

In his exploration of rhythmically complex textures, Ligeti was doubtless attracted by the inherent ambiguity of the romantic hemiola, where a group of six beats can be divided into two groups of three, or three groups of two. The idea of metre-dependent hemiola usage carries with it the implication of the existence of some sort of referential metric background and a common (background) pulse: i.e., the common crotchet beat in $^{3}_{2}$:$^{3}_{4}$, the quaver in $^{6}_{8}$:$^{3}_{4}$. Hemiola usage is also heavily dependent on the impetus towards the first beat, as seen in Chopin's use of simultaneous hemiola in Waltz in A flat, Op.42, with the right hand playing in an implicit $^{6}_{8}$ grouping, superimposed on a left hand accompaniment which clearly articulates $^{3}_{4}$: the coordinated downbeat in both parts negates the possibility for more long-term polymetric development. In their explorations of Ligeti's hemiola technique Townsend and Bouliane have both cited Chopin's Etude op.10 no.10, where groups of two quavers in the right hand are juxtaposed with groups of three in the left hand in an overall $^{12}_{8}$ context.[2] Ligeti has also referred to the 'complex hemiola structure' used in the second movement of the Trio for Violin, Horn and Piano, and subsequently in the Piano Etude *Fanfares*, where he uses the grouping of $^{3+3+2}/_{8}$ which refers back to Bartok (think of the Dances in Bulgarian rhythms in *Mikrokosmos 6*).[3]

In the additive-pulse principle of African, and specifically Sub-Saharan music, there is also a 'lowest common denominator' which is the constant repetition of unaccented pulsations. The rhythmic events in each line operate

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[1]György Ligeti, programme notes for Erato ECD 75555, 21.

[2]Townsend, "The Problem of Form," 5, and Denys Bouliane, "Les Six Etudes Pour Piano de György Ligeti," *Canadian University Music Review* 9, no.2 (1989): 83.

[3]György Ligeti, programme notes for Erato ECD 75555, 22.

within the line's own 'pulse', which is made up of a fixed multiple of pulsations. The superimposition of various lines, each with its own pulse and rhythmic configurations, creates polymetric and polyrhythmic ambiguity. Simha Arom has drawn attention to the absence of any sense of downbeat within this rhythmic organisation:

> It is worth noticing that such organisation of time draws attention to the absence between the period envisaged in its totality and the pulsation of a regular accentuated matrix, the 'bar' of western music and the strong beats which determine it. This means that the pulsations which form the period all have an equivalent status.[1]

Yet, some similarities with hemiola technique may be observed: because of the common pulsation, it is possible for occasional simultaneous attacks to occur between the various rhythmic lines. Ethnomusicologists have noted a possible link:

> (Hemiola) is a feature that has attracted the attention of other scholars, including Nketia, and its importance is underlined by Nketia's remark that certain passages in western music sounded African, particularly the music of Brahms, but that just when he thought the composer was going to make something interesting of it he went and spoiled it.[2]

Overview of structure

In *Automne à Varsovie* (Etude 6 from Etudes for Piano [Book I]) the texture is divided into two distinct elements, both reminiscent of the additive-pulse principle discussed above:

(i) a semiquaver line/lines present for 115 out of 122 bars (this will be referred to as the semiquaver ostinato) functioning as the 'lowest common denominator',

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[1]Simha Arom, programme note for Lecture Concert *Rhythmics and Polyrhythms in Africa,* South Bank Centre, London 5.11.89.

[2]*New Grove Dictionary of Music and Musicians*, ed. Stanley Sadie (London: Macmillan, 1980), s.v. "African Music," Merriam "Characteristics of African Music," 1959.

(ii) overlapping melodic lines (chromatic or mostly chromatic), which are usually descending. Each line operates within its own fixed pulse or grouping, which is a multiple of the basic semiquaver unit.

Within these descending lines, the musical language is pared down by various means:

(i) there is limited possibility for movement (mainly chromatic or nearly chromatic),

(ii) all longer notes can be measured in terms of semiquavers,

(iii) there is no possibility for subdivision within a particular semiquaver grouping.

Within a 7♪ grouping each note is either 7♪s or 14♪s away from the preceding and succeeding notes, with attacks occurring on the first ♪, the eighth ♪, the fifteenth ♪, etc. This limits the possibility for rhythmic development within a particular ♪ grouping. Any desired rhythmic complexity must arise through the superimposition of different ♪ groupings. Such juxtaposition, for example, that of lines using 3♪ and 5♪ groupings in bs.19-20, with prioritisation of coordinated attacks between the groupings, can be seen as an extension of the additive-pulse principle, where the link between the various lines is the ♪ or lowest common denominator.

Automne à Varsovie falls into three main sections, the boundaries of which are characterised as follows:

The start of a section: beginning at a point of rhythmic simplicity (♪ ostinato alone), and proceeding with rapid complication resulting from the interaction of the ostinato with the descending chromatic lines in various ♪ groupings, (sections beginning at bars 1, 55, 98).

The end of a section: registral divergence and climax of a passage of increasing rhythmic complexity, usually with increased accentuation.

Generally, there is some attempt at a reconciliation of the various contrasting ♪ groupings, with a large cut-off of registral and voice-leading connections.

Foreground/background relationships

From b.2 onwards the octave melodic line draws attention to itself using accentuation and movement, as opposed to the unaccented, mono-pitched ostinato. Thus, even at this early stage a foreground/background or even melody/ accompaniment relationship is implied.

A change in the ostinato from b.11 onwards, with isolation of the lowest ostinato notes creating a point of focus, draws some foreground attention towards the background ostinato activity, where crotchet pulsation had previously been loosely defined by the lowest note of each four-note group.

Throughout the destabilising of the large rhythmic unit associated with the melody lines, the concentration of the ostinato into a single pitch, spawning various descending lines imbues it with a more dynamic quality, narrowing the gap between the foreground, progressive lines, and the background, static, cross-registral ostinato.[1] This is illustrated in bs.25-6 with the evolving chromatic link between the ostinato and the lower accented line. Thus the return to a cross-registral ostinato in b.26 reasserts the dynamic/static separation through previous association.

The drastic change in texture in b.55 means that the section starts from a position of utmost clarity. There is a single uncorrupted pulse with no ostinato or other line(s), thus no foreground/background conflict. This section, where we hear

[1]Note that the first dynamic line (b.2) starts by creating a chromatic wedge around the ostinato pitch (an early example of ostinato generation of a dynamic line). This very local connection is not built upon because of the cross-registral nature of the ostinato, which rapidly becomes a background element.

an unclouded single tempo, forms a strong contrast with the rest of the piece. Registral separation is always maintained, with the two lines at a constant distance from one another (compound interval 6). As the section progresses, the three-phrased rhythmic unit is heard, with the same contour and direction as in bs.2-9. Thus, in all areas, control of all parameters is being exhibited to the highest possible degree, with all complications of pulse, register and direction absent.

In spite of the degree of control in bs.55-61, the absence of the ostinato (and *ipso facto,* its interaction with the dynamic line(s), something which has provided most of the impetus for the piece so far) means that these bars are not totally stable, and there is a sense of 'waiting' for something to happen. This 'something' is, in fact, the return of the ostinato.

When this does occur, there is a restoration of equilibrium to a certain extent (i.e., the dynamic line can now be 'measured' in terms of semiquavers), but it also creates the usual juxtaposition of foreground and background elements (the return of the ostinato means the return of the polyrhythm), and other factors combine to add to the sense of conflict. The elimination of this conflict becomes a defining process for the remainder of the piece. The fundamental reworking of the relationship between the ostinato and the melody lines, particularly in b.98 onwards, leads to the eventual elimination of any foreground/background distinctions.

The role of the ostinato

From b.11 onwards it becomes possible for the ostinato to use more than one pitch, and to prioritise towards a specific pitch with various shaping forces. With such prioritisation a pitch, a line, or a gesture can emerge from a specific context, establishing an identity relative to that context, and can change and develop firstly

within that context, and then beyond its referential area without a break in continuity.

This contributes to the perception of a loosening of the hitherto constant ostinato texture, with an overall increase in the level of interest of the ostinato, which is beginning to emerge from the background.

The coordinated attack in b.2 can be perceived retrospectively as one with 'passive' ostinato involvement: i.e., the ostinato did not have to change in order to coordinate with the octave line. After this attack, through various shaping factors, attention is drawn from the ostinato and it assumes a background role. The next prominent point of coordination occurs in b.9, where the ostinato must lose one 𝅘𝅥𝅯 to facilitate coordination with the octave line. There is more change than is necessary for mere coordination to occur (first change of pitch, accented crotchet) resulting in a dynamic ostinato event. The coordination in b.11 is also active rather than passive with the largest change so far in the ostinato, resulting in much more than mere simultaneity of attack.

In Section 1 there is clear development of the ostinato's role: it is instrumental in the establishment of the first foreground conflict between two fixed-pulse lines (5𝅘𝅥𝅯/3𝅘𝅥𝅯 lines, bs.18-19), a conflict not fully explored until the ostinato is subordinated in b.41. Prior to this, the compression of its registral span from three octaves to one can be seen as preparation for the new 3𝅘𝅥𝅯 line. The ostinato itself functions as the first fixed limit in b.18, thus becoming the goal of a moving line, and through octave multiplication, exhibits the ability to focus on different registers, through weighting of different parts of its texture, e.g., bs.41-2. There are also frequent changes in the relationship between the ostinato and the melodic lines: in bs.41-4, the ostinato is not required to 'arbitrate' between two conflicting 𝅘𝅥𝅯 groupings as the melodic lines define their own relationship through points of coordination without the need for a lowest common denominator. In

b.45, the ostinato reasserts itself dynamically: it is no longer subservient to the primacy of the 3♪/5♪ relationship.

At the beginning of Section 2, the absence of the ostinato, although a contributing factor to the overall sense of control in b.55 onwards, also means that the rhythmic unit is not 'measured': i.e., there is no constant semiquaver pulse. Thus the 5♪ pulse, although associated with the rhythmic unit, cannot be totally confirmed in terms of semiquavers until the return of the ostinato. When the ostinato returns, it brings conflict, with more accentuation and an increased pitch vocabulary

This increasingly dynamic ostinato is very important, as it adds to the sense of an increasingly complicated texture with more and more development happening at a much faster rate.

The changes in the ostinato can be perceived as belonging to a process which questions the function of the ostinato itself. After its absence in bs.55-61 it returns as a flow of semiquavers articulating a 5♪, and then 10♪ grouping and undergoes an increase in dynamism in several stages before the climactic return to its octave state in b.81. If the events of bs.55 onwards function as a sort of reopening for the Etude, then it is significant that it is only in b.81 that the ostinato returns to the figuration and semiquaver grouping associated with the start of the piece, whereas the dynamic element uses the familiar profile of the large rhythmic unit immediately. This dislocation of the melodic lines from the ostinato is another example of the reworking of their relationship.

At the start of Section 3, the ostinato is reduced to its simplest possible form, and so there is a return to a simple texture governed by a single element. Hence the potential for controlled development: anything that happens will be starting from a place of the utmost simplicity. In bs.98-102, both the ostinato and the dynamic lines are operating in their simplest and most cooperative forms. The ostinato is functioning according to the fundamental principle of additive-pulse:

i.e., supplying a common background 𝅘𝅥𝅯 pulse for the various dynamic lines. Within these dynamic lines, coordination, the principal goal of vertical hemiola technique, is prioritised, with each new line being introduced in the smoothest possible way: i.e., through a coordinated accent with a line already present. There is also a high level of cooperation between the ostinato and the dynamic lines, with each new pitch in the increasingly dynamic ostinato in bs.102-105 coordinating with an accent in one or other of the dynamic lines.

The return of the ostinato in b.107, with its characteristic traits of octave sonority and 4𝅘𝅥𝅯 grouping, creates a referential link with similar versions of the ostinato, most specifically the ostinato figuration at the start of the Etude. This is much more than a local link: the return of such a referential element provides a means of ascertaining how far the piece has progressed. If the ostinato in b.107 was identical in shape and grouping to that of the opening, it would still have to be viewed in the light of all the development that has taken place since then.

In view of the single defining relationship of the Etude, the systematic elimination of the ostinato poses the following question: can the dynamic line(s) continue if the referential semiquaver ostinato is no longer present?

The two sets of relationships which govern the piece, (i) that between the ostinato and the melodic lines, and (ii) between the various melodic lines themselves, reach a point of culmination, and perhaps resolution in the last ten bars of the Etude. This is achieved through the increasing potential for change in the dynamic lines: instead of 5𝅘𝅥𝅯 vs 4𝅘𝅥𝅯, the 5𝅘𝅥𝅯 line is absorbed into the 4𝅘𝅥𝅯 and so on through 3𝅘𝅥𝅯, 2𝅘𝅥𝅯 and 1𝅘𝅥𝅯 groupings. Hence the ostinato is no longer required to provide a common link between disparate 𝅘𝅥𝅯 groupings, since the groupings no longer exist, and points of coordination between these conflicting groupings are not important because the conflict no longer exists.

The evolution of process

At an early stage in the piece, each parameter's contribution to such a definition of a phrase must be examined in minute detail, as it is here that a framework of possibilities is itself being defined by the composer. Therefore, the smallest change in an established pattern (albeit one established in 6𝅘𝅥𝅯s worth of music) must be read as development of the material, at first on a local level, but development that results ultimately in an accretive process across the piece.

The sequence of events in b.9 forms an important three-stage process that will be used again.

(i) destabilisation of familiar element,

(ii) addition of new element,

(iii) stabilisation of new element.

This process is extremely important, and will be seen to operate not just in the development of the ostinato, but also in the melodic lines.

In b.19, the ostinato, although using some familiar material, changes the order of various patterns from previous statements of the material, resulting in dynamic development and progression: i.e., the first stage of the three-part process. This time, more long-range development is implied through the overlapping of stages (ii) and (iii) in the process: i.e., while new elements are being stabilised through their association with hitherto familiar aspects of the ostinato, there is simultaneous destabilisation of the ostinato in another register.

The striking texture and atmosphere of b.55 onwards also uses an overlapping of stages (ii) and (iii), with a significant increase in the rate of change of events.

Melodic conflict and registral expansion: Ligeti's control of syntax

The inter-relationship of the various melodic lines (moving in 3𝅘𝅥𝅯, 4𝅘𝅥𝅯, 5𝅘𝅥𝅯 or 7𝅘𝅥𝅯 groupings, amongst others) is an important means of progression in the Etude. In the juxtaposition of two or more melodic lines, Ligeti uses sideways chromaticism as a means of controlling both direction and rate of ascent or descent. Sideways chromaticism distorts the overall direction of the line through use of local 'twists and turns' (e.g., down an interval 2, up an interval 1, etc.) which lessen the sense of movement in one direction. Instead, the amount of ground covered varies, with a sense of 'moving further and faster' implied by gaps in the line, and one of regression when the line 'doubles back' to fill in the gaps in the chromatic framework. This can be seen as an extension of Eitan's 'filling of the aggregate', with many of the octave/melodic lines forming 'horizontal chromatic complexes'.[1] The use of sideways chromaticism means that a line is frequently doubling back on itself, producing a rather slow descent: hence there is a perceptible increase in the rate of descent when there is a shift to pure chromaticism. There is also more overall clarity in terms of direction.

When the texture is made up of layers of melodic lines, often moving towards a fixed limit, the size of the basic 𝅘𝅥𝅯 grouping, together with the rate of progression will control the rate of ascent or descent of individual lines. As the Etude progresses, it is interesting to note the increased dynamisation of the notion of the registral limit and its surrounding lines. After a fixed limit is established, with a pitch being prioritised usually though simple repetition, at least two dynamic processes can be observed: (i) the breaching of this limit can become a focus for a moving line, and (ii) movement away from a fixed limit carries all the dynamic implications of registral expansion. Further complication of the texture by the establishment of movement around upper and lower limits serves to define,

[1]Eitan, "Functionality within Cluster Harmony," 99.

and ultimately extend textural boundaries. The potential must exist for the juxtaposing of different registral areas and the contrast in the rates of change in divergence/convergence therein.

Analytical commentary on bs.1-55

Opening elements: ostinato and descending line

The opening texture has a *perpetuum mobile* character, with clearly defined parameters of pitch and register. At the opening of the Etude, the ostinato (E^b♪s across three octaves) is registrally balanced, with a limited pitch class, and a *pianissimo* dynamic. There is no accentuation marked, though the grouping and phrasing privileges the lowest E^b (which is the first note to be repeated), setting up a 4♪ grouping. The group is repeated four times, with no change of phrasing or register within the 4 E^b grouping.

The first octave of the melodic line arrives on the first ♪ of the sixth 4♪ group, but the second octave does not come on the first of the seventh 4♪ group, occurring instead after a 5♪ interval. This new implied ♪ grouping contributes to an overall perception of conflict:

(i) The octaves use new pitches, introducing the first movement outside the E^b universe.

(ii) Each octave lasts longer than a ♪: again, something new.

(iii) The octaves are emphasised through the use of accent marks.

The third octave (D^b, b.2, bt.4) is significant in that it marks out the second 5♪ gap between components of the octave line, confirming this regular

grouping. It is also the longest note so far (5𝅘𝅥𝅯s) and is the first of the octaves not to have a semitonal connection with the top two E♭ pitches from the ostinato.

The two elements are generally registrally separated except for the top notes of the ostinato, which occur in the middle of the octave territory. In fact the first sense of local development within the ostinato can be observed from the end of b.2 onwards when the top E♭ is withheld from each group of 4𝅘𝅥𝅯 E♭s and is reserved for use only in some of the 4𝅘𝅥𝅯 groups: usually those occurring before an important octave note, with the top E♭ acting as a sort of grace-note. This practice results in some modification of the shape of the ostinato.

The octave line descends from D♭ to C in b.3, completing an almost-chromatic descent from F♭ to C (the missing step being supplied by the top E♭s of the ostinato), with a gap of 5𝅘𝅥𝅯s between each octave attack. After the C octave there is no attack 5𝅘𝅥𝅯s later, which introduces several possibilities:

(i) that not every expected attack will occur (unlike the ostinato with its incessant flow of semiquavers)

(ii) that a new semiquaver grouping (greater than 5 𝅘𝅥𝅯s) may be set up.

Possibility (ii) is negated by the next attack which occurs 10𝅘𝅥𝅯s after C. Because of the predominant 5𝅘𝅥𝅯 grouping of the previous bars the gap is perceived in terms of the principal grouping: i.e., 10𝅘𝅥𝅯s = 5𝅘𝅥𝅯s + 5𝅘𝅥𝅯s. Another familiar element is the return to the top F♭ pitch, providing the stability of the known (the ostinato's high E♭ also returns just before this). This F♭ pitch, being associated with the beginning of the octave line also carries the implication of some kind of restart. Summing up, therefore, the traits associated with the first phrase are as follows:

(i) it starts on F♭, (ii) it descends chromatically (with E♭ filling the gap), (iii) it ends with a longer note (the expected attack being absent).

Thus there exists a series of criteria for the definition of a 'phrase', defining opening, progression and closure.

Phrase definition: the evolution of the large rhythmic unit

The lack of coordination between the octave F^{b} (end b.3) and the first (prioritised) note from the 4𝅘𝅥𝅯 ostinato group is an example of a small change in an established pattern. The first F^{b} octave coincided with the first of 4𝅘𝅥𝅯s, entering a texture dominated by 4𝅘𝅥𝅯 groups. Throughout the first phrase there was a gradual unfolding of the 5𝅘𝅥𝅯 grouping as a pulse, with a perception of a slower moving 5𝅘𝅥𝅯 group against a 4𝅘𝅥𝅯 group which rapidly moved into the background. At the end of b.2 there is to be no such common point of departure for the 4𝅘𝅥𝅯 and 5𝅘𝅥𝅯 groups.

Looking at the traits of the first phrase, it is obvious that the first two categories (starting on F^{b}, descending chromatically) are fulfilled in the second phrase. There is also a longer note at the end, with the absence of any attack for 10𝅘𝅥𝅯s. This last note is B, not C, which introduces the notion of expansion into lower registers; in other words, the top of the phrase has been 'bounded' by F^{b} but the bottom is more flexible.

Absence of attack for 10𝅘𝅥𝅯s has now been associated with the end of the first phrase, and previously such a long note immediately preceded a return to the top pitch of F^{b} and the beginning of a new phrase. After the 10𝅘𝅥𝅯 pause in b.5 there is a move back to the top register, but to a non-octave sonority G^{b}-F, which is beyond the previous high point (F^{b}), and which marks the start of another 10𝅘𝅥𝅯 break between attacks. This register has again been opened up by the return of the ostinato's high E^{b}. Thus from bs.3-6 there has been expansion in both directions, with movement outside the area bounded by F^{b} and C in the first phrase. The use of a longer note lasting through the 5𝅘𝅥𝅯 barrier where the next attack is expected was a trait first associated with the low register at the end of the first (and second) phrase. Now this longer gap between attacks occurs at the other registral extreme. After the destabilising effect of the G^{b}-F dyad, the next attack is an F^{b} octave with a return to the familiar starting pitch. The phrasing indicates that the F^{b} is not the first note of the phrase; instead, the G^{b}-F marks the start of the third phrase in the

top octave line. Thus this phrase has the highest pitch so far as its starting point. All the pitches used in the top line can be linked chromatically, and the new pitches continue to maintain this relationship ($F^{\flat}$-G-F); however, instead of using three octaves $G^{\flat}$, F and $F^{\flat}$, the first two are combined in one non-octave $G^{\flat}$-F, omitting one step of the chromatic process, and indicating a speeding up of the movement with more ground being covered.

After the $F^{\flat}$ octave in b.6 there follows the longest phrase so far with a chromatic descent to $A^{\flat}$ (three semitones below the previous lowest pitch). This descent is broken up by two non-octave attacks: $E^{\flat}$-D (between $D^{\flat}$ and C) and D-C# (between $B^{\flat}$ and A, bs.8-9). The two non-octaves are registrally dislocated from the prevailing direction, and indicate the use of this sonority to affect the phrase's internal structure, not just at the start. The $E^{\flat}$-D attack alters the contour but not the rate of attacks (5𝅘𝅥𝅯s apart). The D-C# attack breaks up both the descent and the flow of attacks, with a gap of 2 x 5𝅘𝅥𝅯s before the next attack. This gap, previously associated with the lowest point of a chromatic descent, now occurs in association with continuous internal distortion. After each non-octave, the descent is resumed at the appropriate point (**ex.3.1**). The end of this, the longest of the three phrases, and one which undergoes the most change, covering the most ground, coordinates with the first significant change in the ostinato.

This three-phrase unit has been termed Ligeti's 'Lamento-ostinato' by Steinitz:

> The constant repetitions throughout the study of this melancholic melody, Ligeti's 'Lamento-ostinato' is profoundly affecting. We hear it perhaps eighty times in some guise or another, speeded up, slowed time, overlaid, even to the extent that at one point its first phrase is superimposed in a loose mensural canon at four simultaneous tempos.[1]

As well as examining its development in *Automne à Varsovie*, Steinitz finds evidence of this motif in other works, including the *Requiem*, the Trio for Violin,

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[1]Richard Steinitz, "Weeping and Wailing," *The Musical Times* 137, no.8 (1996), 17.

Horn and Piano, the Piano and Violin Concerti, and the Viola Sonata, amongst others:

> As I became better acquainted with Ligeti's recent work, it dawned on me that the 'Lamento-ostinato' not only saturates *Automne à Varsovie* but also haunts virtually every other work of his since 1980. Moreover, its antecedents are traceable in Ligeti's 'textural' micropolyphony of the 60s and 70s, are clearly evident in the previous Hungarian period, and suggest a more distant lineage of historical laments and passacaglias stretching back to the 17th century. It seems that Ligeti's musical sensibility is embodied in melody, even in one particular melody: an *idée fixe* indeed! [1]

Use of this melodic line not only points directly to material from the 4th movement of the Horn Trio (where the entire Lamento-ostinato first appears), but indirectly to a change in Ligeti's choice of material. There is a move away from the more abstract two- or three-note motivic cells of the Double Concerto towards more expressive lines. However, it is significant that these new lines still depend on his perennial resource of chromatic/near chromatic movement for their local syntax.

The dynamic ostinato

As seen previously, the low E♭ is the point of definition for the ostinato, being always present at the same place in the 4𝅘𝅥𝅯 group. The ostinato undergoes some subtle manipulation: (i) the withholding of the top E♭ (already mentioned above), and (ii) the shifting of the phrase mark within the 4𝅘𝅥𝅯 context so that it coincides with points of change in the upper parts, e.g., the start of the third phrase in b.5 (however, this may not be very audible, as the low E♭ will still have aural priority). In b.9 various factors draw attention to the ostinato for the first time since the top octave line began. The factors that effect this emergence from the background are:

(i) the first non-4𝅘𝅥𝅯 group in the ostinato,

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[1]Ibid., 18.

(ii) the first use of an accent in the ostinato,

(iii) the first non-E^b sonority (coordinating with the first tritone in the melody).

These factors combine to form the first main 'event' in the continuous flow of semiquavers. For the first time the ostinato is shown to have the potential to move—to a new pitch—and, instead of gradual change, the last E^b group is shortened by a semiquaver, resulting in the early arrival of the next low note which is also a new pitch with an accent. This arrival is given extra emphasis by the coordination with the accented A^b octave in the top part. In spite of the local coordination of accents between the top and bottom parts, the overall effect is lack of coordination: as the octave phase reaches its close the ostinato becomes agitated and moves.

This is the first example of the three-stage process

(i) destabilisation (4♪ -3♪ grouping),

(ii) addition (E^b supplanted by D),

(iii) stabilisation (with familiar 4♪ grouping,

similar register, phrasing, return of high note, etc.).

Thus the stability of the ostinato is questioned because of the events of b.9: in spite of the local re-stabilisation around the D ostinato, the potential for change has been introduced into a hitherto constant ostinato background.

After the end of the longest octave phrase so far, there is a gap of 10♪s before the next attack which occurs on a chord bounded by an F# octave with an inner note B. Looking ahead, it is clear that the phrase beginning here and the two subsequent phrases bear a large resemblance to the first three phrases of the piece in terms of rhythmic organisation and general direction. Thus, the six octave phrases from bs.2-17 form two large units, each containing three phrases.

The second large unit

There are some significant changes in the second unit, the first of these being an overall increase in sonority produced by (i) a small rise in dynamic level from *p* to *mp* (*molto cantabile*), and (ii) the addition of an inner note to each octave resulting in a series of three-note chords. In fact, the first such chord occurred at the end of the third phrase in coordination with the new bass note D, the inner note being a doubling of the ostinato pitch. Because of the duplication of pitch and the increased weight of the octave, the melodic line becomes subordinate to the drastic change in the ostinato, and the full significance of the change in the top part is realised only at the start of the second unit.

Unlike bs.1-2, the new unit is preceded by only 2½ ostinato groups, and its start does not coordinate with the first 𝅘𝅥𝅯 of a 4𝅘𝅥𝅯 group. Previously, the opening octave pitches (F♭ and D) were linked chromatically with the ostinato pitch, first creating a semitonal wedge around E♭ and then moving onwards from that base. At the start of the second unit, the octave pitch is F#, meaning that there is some registral divergence (albeit on a very small scale). This sense of a 'quicker' start to the unit and the omission of some of the early stage (chromatic wedging and coordination with the ostinato) results in a perception of an increased rate of change, with less familiar ground to go over and faster movement through to new events.

Increased emphasis is created by use of *sforzando* markings at strategic places in the octave line (non-octave chords at the beginning of the second and middle of the third phrases). Along with these changes in the second large unit there is further development in the ostinato line. The D𝅘𝅥𝅯 ostinato follows a similar pattern to that of the original line for the first phrase of the second unit, with the same general trend of registral movement from low to high, and the highest D reserved to precede specific pitches in the octave line. Here again, there is

evidence of an increase in the pace of events, with a change in the ostinato occurring after 35♪ Ds (as opposed to 135 E♭♪s).

In b.11 the preliminary event to an ostinato change occurs (3♪ group instead of 4♪), and this is followed by a shift to a new ostinato note, G, which is accented. Significantly, there is no chromatic link between the new ostinato pitch and its predecessor, and thus a precedent is created within the intervallic vocabulary of the ostinato (up to now confined to octave or semitonal movement).

This large dip in register is augmented by the isolation of the G which becomes "detached" from the ostinato due to several factors. Most importantly, there is the first real prioritisation of an individual note within the ostinato. In b.9 when the bottom E♭ moved down a semitone to D the other E♭s followed suit, with the whole ostinato shifting down chromatically. Yet, in b.11, when the bottom D moves (non-chromatically) to G, the other Ds stay where they are. Further emphasis on the bottom note is created by: (i) an increase in the length to a sustained crotchet, (ii) accentuation and (iii) an *mp* marking (with the rest of the ostinato at *pp*). All of these are 'non-ostinato' features, and so contribute to the sense of ambiguity regarding this G: is it part of the ostinato, or a new 8♪ line?

The G's position as a point of departure from the ostinato norm is reinforced by its coordination with the start of the second octave phrase, a coordination which is displaced from its place at the start of the octave unit.

Thus, through the local emphasis of the G pitch the potential for dynamic development also becomes evident. After the first G in b.11 the next one occurs after a gap of 8♪s, with the intervening 4♪ group being marked by a D (same note as the previous ostinato low note). Thus a larger unit is being created, being defined from G to G, but one which is still perceptible in 4♪ groups (this is similar to the early appearance of such a trend in the 5♪ groups).

As anticipated, from b.11 the ostinato adopts a more dynamic trend, with increased movement and weighting towards the lower register. The 2 x 4♪ pattern continues into b.13, with the low notes recurring after 8♪s. The next move is from

G to F# with a return to chromatic movement (similar to the original E^{b}-D move). There is no use of a shortened group (3𝅘𝅥𝅯s) before the new (accented) pitch as seen when the D and G pitches appeared for the first time. Again, there is the omission of a 'preliminary step', creating an increased sense of onward drive, and questioning the role of this lowest line.

The first F# also has the first *mp/pp distinction* since that of the original G, and slots into the 8𝅘𝅥𝅯 pattern. Yet the next low note comes after 6𝅘𝅥𝅯s and does not have an accent or an *mp* marking. Thus there is a conflict of implications, as the low note has generally been associated with the start of a semiquaver grouping. Here for a moment it is unclear whether the F# is to be regarded as such. The next accented note (which is also a sustained crotchet in length) occurs in the expected place; i.e., 8𝅘𝅥𝅯s after the F# accented 𝅘𝅥𝅯, resulting in the interpretation of the preceding 8 semiquavers being divided 6+2. The F natural is followed by 5𝅘𝅥𝅯s, forming a 6𝅘𝅥𝅯 group. Depending on previous evidence, therefore, a 2𝅘𝅥𝅯 group could be expected, creating a 6+2 pattern. There is a low note in the expected place, but instead of a repetition of F natural (minus accent and *mp* marking) the chromatic descent continues with an accented E (*mp* marking and extra length) linking with previous notes which have been so emphasised: G-F#-F-E (**ex.3.2**).

From E onwards the sense of an 8𝅘𝅥𝅯 grouping is completely lost, with semiquavers grouping according to the bottom notes (accented and with *mp* markings). There is increased isolation between the bottom and top of the ostinato, implying a focus of attention towards the more prominent bottom part. A complete chromatic descent from G to C can be traced,[1] with a gradual shortening of the distance between accents:

G----------F#-------F------E-----E^{b}-----C#----C
32 𝅘𝅥𝅯s 8𝅘𝅥𝅯s 6𝅘𝅥𝅯s 5𝅘𝅥𝅯s 5𝅘𝅥𝅯s 4𝅘𝅥𝅯s

[1]Note: D is omitted, avoiding a return to the quasi-ostinato D-D-D-D.

C, the lowest point of the chromatic descent creates the first significant point of coordination between the octave line and the ostinato since b.11. It is also clear that the process of decreasing distance between accented bass notes does not go beyond the 4𝅘𝅥𝅯 limit that has been set up as the norm for the ostinato line.

After the *mf/pp* C (the largest dynamic differentiation in the bass so far) there is no accentuation in the ostinato line for 3 bars and the ostinato returns to its mid-registral area, with a decrease in focus towards the bass. There is a return to a single ostinato pitch (Ab) and irregular phrasing, with the end of a phrase being defined by the highest note rather than the start being defined by the lowest note. This can be perceived as a slight shift of emphasis towards the upper register. The length of the phrases (in semiquavers) from the *mf/pp* C onwards is as follows: 5-4-4-8-4-4-4-4-7. Note that although there is a preponderance of 4𝅘𝅥𝅯 phrases they generally do not concur with the written 4𝅘𝅥𝅯 groups as seen previously.

The third large unit

Thus far, one's perception is of a primary melodic line of increasing density, moving in 5𝅘𝅥𝅯 units or their multiple. This is juxtaposed with an ostinato, which having at first subtly articulated a 4𝅘𝅥𝅯 grouping, becomes increasingly active, first with flexibility of 𝅘𝅥𝅯 grouping, and then providing secondary counterpoint of melody and pulse at the bottom of the registral spectrum. The conflicting pulses are polarised registrally, leaving a gap in the middle.

The first phrase of the third large unit, with its recognisable rhythmic and directional profile, starts in b.18 but is not prepared by a mono-pitched ostinato as seen in bs.1-2 and 9-10: instead, the third bout of such ostinato activity precedes the start of the unit by three bars, overlapping with the end of the third phrase of the second large unit. The first phrase of the unit is also complicated by the use of

a non-octave chord as its starting sonority, carrying with it all its destabilising implications. As the phrase starts, the top ostinato notes drop out, with a resulting registral constriction and separation of approximately one octave between the top of the ostinato and the octave line.

As the octave line descends chromatically from A#-A-G# in the first phrase there is an important point of coordination between the octave line and the ostinato on the same pitch (G#=A^{b}), but now the ostinato has been 'inverted', with the accented note coming at the top rather that the bottom.

The accented G# in b.18 (anticipated by two previous unaccented G#s)[1] marks the starting point of a series of accents occurring at 3𝅘𝅥𝅯 intervals (the first prolonged use of such a small semiquaver grouping).[2] With an accented chromatic descent occurring at the top of the ostinato against a fixed lower limit (G#), there is a sense of registral contraction instead of expansion, focusing attention on a tight registral band within the surrounding texture.

Cross-registral development

If these accented pitches are assumed to be part of a second melodic line, descending towards the ostinato that has been condensed into a single pitch, new and significant means of progression are being clearly defined. As well as the rhythmic and textural complication inherent in the superimposition of various melodic lines,[3] the establishment of fixed limits for these moving lines also has significant implications for cross-registral focus and development.

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[1]A similar anticipation is seen in b.18 when the accented B octave in the ostinato precedes the accented non-octave chord (containing a prominent B). However, the ostinato does not mirror the chromatic descent of the top part, achieving coordination several steps later on G#.

[2]Previous ostinato use of a 3𝅘𝅥𝅯 grouping has implied a change of pitch: i.e., it has been associated with destabilisation.

[3]Note the link with the additive-pulse principle, see general introduction to this chapter.

This chromatic descent moves from G# to F, thus travelling in the same direction as the top octave line and using a similar mode of descent (chromatic movement). Because the ostinato accents occur every three semiquavers, they move much more quickly than the 5𝅘𝅥𝅯 grouped octave line, covering a similar distance in a shorter time. The ostinato also picks up G# from the middle of the octave, with an implicit acceleration through G-F#-F.[1] Thus the ostinato can now be seen to be adopting some characteristics of the octave line, but is also enlarging upon and developing them.

As mentioned above, the ostinato in bs.18-9 adopts a similar pattern to that of the first phrase of the large rhythmic unit (associated with the octave line). At the end of b.19 the chromatic descent starts again from the G#, setting up the expectation of a similar phrase, perhaps corresponding to the second phrase of the large unit. In the period from the end of the first to the beginning of the second phrase the 3𝅘𝅥𝅯 accentuation pattern is not maintained, with a 4𝅘𝅥𝅯 and a 5𝅘𝅥𝅯 group occurring before the 3𝅘𝅥𝅯s resume with G# (b.19).

The distance between the accented notes F and G# is nine semiquavers in length, measurable in terms of 3𝅘𝅥𝅯 units, but is not articulated as such. Thus, the clarity of the larger unit is distorted, signalling again that the ostinato, although using some familiar material, is adapting and developing it, the first stage of the three-part process. This destabilising of elements in the ostinato occurs at a point where it will be instantly noticeable, between phrases one and two of the octave line (b.19).[2]

At the end of b.19 the top octave line returns to the A# from the first phrase, but now with a four- instead of a three-note chord (with increased

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[1]The ostinato covers similar ground with similar means, but goes further, faster, and is therefore becoming more dynamic, almost engulfing the hitherto mobile element (the octave line) which is now perceived as the fixed element against which other movement is gauged.

[2]In the octave line up to now, the gap between the first and second or second and third phrases is perceptible in terms of the accented 5𝅘𝅥𝅯 beats from the previous phrase and the ostinato 4𝅘𝅥𝅯 beats which, although they come into focus because of a break in the octave line, do not assert themselves through change.

semitonal weighting, BA#-EF). There is a chromatic descent from A# using 5♪ groups, and as seen in the first phrase, this overlaps with a similar descent in the ostinato (using 3♪ groups). Instead of a coordinated attack between the two groups on a common pitch G#, the first 3♪ accent occurs between the A# and A of the top line, and G# is sounded as an accented note in the ostinato part before the same pitch is reached in the octave line, with a resulting impression of an increase in the speed of events (stage (ii) of the process, with the addition of new elements). There is a sense of familiarity in that the ostinato returns to the first pitch of the first phrase, retaining the rhythmic pattern of the second phrase of the large unit, but it starts earlier and, by virtue of its movement in 3♪ units, descends further and faster than the octave line which is clearly 'left behind'. This reflects the autonomy of the 3♪ line.

Registral limits

In both the first and second phrase of the accented line, the bottom G# functions as a remnant of the original ostinato, providing a constant semiquaver pulse against which the various groupings can be measured. It has also functioned as a lower registral limit, restricting the degree of descent which the accented part can achieve. In b.20 the last note of the accented ostinato part coordinates with the second last note of the top octave line (emphasising the relative slowness of the top part). Thus in some ways it is functioning as a restabilising force, stage (iii) of the process. Yet while the top and the middle elements approach a point of local stability (i.e., the end of the second phrase) there is movement at the bottom of the ostinato. Firstly, there is a chromatic move from G#-G which is coordinated with the accents in the other two parts (creating an octave with the upper part), and then a shift to B^{b} for the repeated semiquaver pulse.[1] There is an expansion

[1] As at the end of the first phrase (b.19) there is accentuation outside the prevailing 3♪ grouping.

downwards to B♭ (an octave lower) which is accented with an *mp* marking. Thus the ostinato has been inverted again (**ex.3.3**).

The space between phrases two and three in the top octave line (b.21) is 10𝅘𝅥𝅯s (= 2 x 5𝅘𝅥𝅯s) against a strong pattern of 4𝅘𝅥𝅯 accentuation in the bass, with a return to the juxtaposition of 4𝅘𝅥𝅯 and 5𝅘𝅥𝅯 groupings. This time there is a much more active 4𝅘𝅥𝅯 grouping, with a chromatic descent from B♭ to G♭, using the rhythmic pattern of the second phrase. In bs.21-2 the accented bass-line overlaps with the third phrase of the top line, which is an abridged version of the pattern of previous third phrases (**ex.3.4**).

In the third phrase of the third large unit the chromatic descent is one step smaller, down to an interval 7 instead of interval 8. Of the three 'breaches' in the purely chromatic descent seen in both the earlier phrases, the outer two are present but the middle one has been omitted. Thus the phrase is still recognisable through the presence of its outer limits, but there is a sense of compression.

In b.22 the bass-lines' 4𝅘𝅥𝅯 grouping is maintained with a chromatic descent (E-E♭-D) disjunct from that in b.21 (from B♭ down to G♭). The final D coordinates with an F which can be linked back chromatically to the G♭ at the beginning of b.22, setting a new lower limit. Immediately after this new low, the repeating B♭ semiquaver moves back to B natural with a sense of slight registral divergence. In b.22 the E-E♭-D line is significant in that it has a similar effect to the leaps in the third phrase of the unit (see **ex.3.1**) by breaking up a chromatic descent from B♭ through to F.

The 5𝅘𝅥𝅯/4𝅘𝅥𝅯 juxtaposition is maintained through bars 21 and 22, but after the accented F-D dyad on the last semiquaver of b.22 there is no accent in the bass for five semiquavers, which creates an extended group six semiquavers long.[1] Because of the pattern of chromatic descent from B♭ to F (with E-E♭-D interpolation), a long note (i.e., 2 x 4𝅘𝅥𝅯s) could be expected to complete the phrase.

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[1]Note: the *sfz* octave accent in b.23 occurs on what would be the next 4𝅘𝅥𝅯 accent in the bottom part.

Instead of an 8𝅘𝅥𝅯 gap, after 6𝅘𝅥𝅯s, there is an accented A above the repeating B𝅘𝅥𝅯 line, with a return to the previous registral shape.

The increase in accentuation in the middle and lower lines effects a destabilisation of the three-phrase unit. It is still fairly intact within the 5𝅘𝅥𝅯 context, but there is growing conflict and ambiguity, through allusions to contours and rhythmic profiles associated with this unit, which are now occurring in the lower lines.

Sideways chromaticism

The next accent occurs after 3𝅘𝅥𝅯s with a move downwards to A^b, setting up a chromatic descent using a 3𝅘𝅥𝅯 grouping. From bs.23-4 there are six accented notes in the middle of the texture, using the chromatic pitches from A#-F, but there is not an ordered chromatic descent. After a chromatic start A-A^b-G, the next pitch F creates a gap. There is then a leap to A# which can be linked chromatically to the starting pitch A, and finally F# which fills in the gap between G and F. The movement here is different to that seen in the third phrases of the large rhythmic unit where the chromatic descent always remained intact in spite of interpolated leaps.

As discussed at the start of this chapter, sideways chromatic movement where gaps in the chromatic descent or ascent are filled in retrospectively is an important process in the juxtaposition of conflicting melodic lines.

Bs.23-4 will be examined in more detail: there is a precedent for such a leap from the bottom of the descending line (F) to a pitch (A#) higher than the original starting pitch (A) (see b.5, B-F and b.13, D^b-G#), but these earlier leaps happened at the joins between phrases, not within the phrases themselves. In b.23, the 3𝅘𝅥𝅯 line shows an increase in the pace of development; i.e., F, being an interval 2 lower than G, may be expected to be twice as long (2 x 3𝅘𝅥𝅯s) following the

model of phrase one of the rhythmic unit. Also, although the A# is prioritised through length (2 x 3𝅘𝅥𝅯s) and dynamic (*f*), it is not slurred into a new phrase: instead, it is followed by an equally prioritised note which focuses attention away from the top of the line (and thus away from a resumption of the chromatic descent).

Throughout all this accented activity in the inner register, the ostinato has remained fixed on B, but after the accented F#, the ostinato moves to C, giving a sense of local registral contraction. The F# coordinates with the last octave (also containing an F#) and the next accent occurs 5𝅘𝅥𝅯s later, a grouping which is maintained up to b.26. Thus, the 5𝅘𝅥𝅯 grouping predominant in the octave line from the beginning of the piece is transferred to the ostinato, meaning that on the local level the length of the last octave can be measured in 5𝅘𝅥𝅯 units (exhibiting clear cooperation between the ostinato and the octave line). If the octave line were to return after a 2 x 5𝅘𝅥𝅯 break, its accents would coordinate with those of the ostinato. There are several factors that thwart such cooperation. Once C has been established as the fixed ostinato pitch, the inner accented line transfers below it, with a descent from B^{b}. In b.25, the C is picked up an octave higher as the starting point for a descending line moving in 3𝅘𝅥𝅯 units.[1]

Both lines have the pitch C as a point of origin, and thus have various pitches in common as they descend. The bottom line starts earlier, descends from B^{b} instead of C, and has a gap between A^{b} and G^{b}, meaning that although it is moving in longer units it is always ahead of the top 3𝅘𝅥𝅯 line, which moves chromatically from C to A^{b}.

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[1]From b.18 onwards the ostinato (hitherto operating in octaves across a large register) is concentrated into a single repeating pitch, providing a local reference point for the descending lines. Around this restricted ostinato pitch there is an overall increase in movement, with the potential for lines above the ostinato to descend towards it and for those below to descend to new, lower registers, thus creating a framework of descending lines. The ostinato also has the potential to change its pitch, providing several centres for movement (i.e., G#, B^{b}, B, C so far). The ostinato also retains its multiplicative potential, with many of the accented lines beginning from a pitch an octave above or below the ostinato (b.18, G# and G#, b.21, B^{b} and B^{b}, b.25, C and C). Thus the ostinato is spawning many of the new lines, creating a framework of layers.

In bs.24-6 there are three musical elements (the top 3𝅘𝅥𝅯 line, the repeated note ostinato and the bottom 5𝅘𝅥𝅯 line) with the two dynamic lines deriving from the ostinato C. The three elements follow patterns of development established in bars 18-24, but combine the previous lines in a more controlled way, moving towards an arrival point on the sixth semiquaver of b.26, where there is a reinterpretation of various factors.

The first of the three elements (to be altered) is the repeated-note ostinato, which acts as the upper limit of the descent: this descent is separated from the C by accentuation, dynamic emphasis and, most importantly, an intervallic separation, which increases as the line descends. At the same time, the descent is destabilised by increases in the amount of ground covered, firstly by a leap from A^b to G^b, and then by a simultaneous F-B attack, implying expansion in both directions by opening up the top of the line (B 'capping' the top B^b). The use of B also gets rid of the notion of separation between the accented line and the C ostinato, since it establishes a chromatic link with the C pitch, although dynamic differentiation is maintained.[1] Once the ostinato is linked with the chromatic movement in one direction (i.e., B-C) a link in the other direction also becomes possible (C-C#—the new ostinato pitch). Further chromatic movement of this sort is negated by octave displacement of the C#. If middle C had moved to middle C# and the octave leap had then occurred, the lower C# could have functioned as the starting point for a new descending line, a further layer of development. Movement in the other direction (from low C# to middle C#) re-establishes the octave as part of the ostinato using an alternative process: the multiplication up from the single pitch ostinato into a double octave one. This new cross-registral process is significant in exhibiting a new type of movement within a line besides chromaticism and sideways chromaticism. Both C#s are also isolated from the

[1]Note that the B is ambiguous, occurring at a place in time associated with the descending line but, being unaccented, thus connecting with the repeated C semiquavers.

dynamic line through a return to a non-accented, *pianissimo* level, with the last accent (G, sixth semiquaver, b.26) filling the A^b-G^b gap from b.25.[1]

In contrast to the sideways chromaticism of the bass line, the 3𝅘𝅥𝅯 line uses 'pure' chromatic movement with no gaps from C to A^b: thus, with its starting note generated from the C ostinato, the accented C#-D attack at the end of b.25 anticipates the movement from C to C# in the ostinato in b.26 and introduces a new pitch D, which also has a chromatic link. The expansion at the top end is mirrored by the G in b.26, which links chromatically with the Ab from b.25. The final accent in the 3𝅘𝅥𝅯 line coordinates with that in the 5𝅘𝅥𝅯 line, sharing the G pitch and giving the impression of the top line's having 'caught up' with the bottom one. The two Gs share a similar function: i.e., completion of a chromatic line, either through sealing off a specific register, or 'filling a gap', two features increasingly associated with the creation of local stability.

It is perhaps appropriate to summarise activity thus far. The most significant factor from bs.1-24 is the presence of the three phrase, rhythmic unit, which is a constant element in various ways: (i) it is always present at the top of the texture, (ii) it maintains a constant 5𝅘𝅥𝅯 grouping and (iii) it creates and maintains through repetition, an internal rhythmic structure. The emergence of the ostinato as a challenge to the large unit draws attention away from the unit, which at first remains constant but as the challenge gains momentum, becomes distorted, compressed and fragmented. In bs.24-6 the various lines generated by the ostinato in order to challenge and overcome the large unit combine to reach a point of local stability at which the main destabilising factor is the reinterpretation of the most important element, the ostinato itself.

The listener loses an important reference point in b.25, where there is no longer a 5𝅘𝅥𝅯 line at the top of the texture. The perception up to this point is of increasingly complex activity underneath this constant element. In bs.24-5, there

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[1] The descending line from Bb-F has the same contour as that from A-F# in bars 23-4.

is a momentary inversion of the texture, with the aforementioned bass descent moving in 5♪ units: while the ostinato returns in b.25 to a texture referential in contour to that of the opening, the top melodic line which resumes at the end of this bar is noticeably faster than before. It is useful to look at these lines both in isolation, and in combination with one another, in order to appreciate fully Ligeti's careful control of local syntax.

Increased complexity: expansion into upper register

From bs.26-30 there are three superimposed rhythmic groupings, with the semiquaver as the lowest common denominator. The ostinato using the C# pitch (discussed earlier) has a 4♪ grouping, creating a referential link with previous 4♪ groupings through similarity of phrasing and the use of octaves, resulting in the perception of a return to a familiar grouping, with some clear implications: (i) that the ostinato is returning to the background, but with the potential for development, and (ii) that the 4♪ grouping is 'ripe' for complication by different semiquaver groupings.

5♪ line

The first complication is a continuation of the 5♪ accented line from bs.25-6 which resumes in the middle of b.26 on B natural, the pitch which created the accented line/ostinato link. Now the ostinato has changed in both pitch and contour, and such a link is no longer possible. The descent from B is moving towards the lowest C#, filling in the lower octave of the ostinato. It moves chromatically at first, but soon its approach quickens through the use of leaps, firstly of two semitones (A-G), and then larger ones (E#-D = three semitones). Through both sideways and pure chromatic movement, this 5♪ line approaches, and then breaches the lowest ostinato C# (bs.28-9). After this focus towards the

lowest ostinato pitch, C# remains in place while the top line's descent is concluded and is then dropped from the ostinato line (b.30). In previous activity, there was always clear registral separation between the ostinato and other dynamic activity (e.g., in b.2 onwards the only part of the ostinato to come into contact with the dynamic activity in the top register is the high E^b, and its interaction with the accented line is rigorously controlled, occurring at significant points in the phrase). From b.26 onwards the dynamic activity and the ostinato are operating within a relatively narrow registral band and, as seen above, one of the dynamic lines is operating between two of the ostinato pitches. Thus the breaching of the lower ostinato limit acts as a goal for this descent, and when the breach finally occurs, first the descending 5𝅘𝅥𝅯 line, and then the bottom ostinato note drop out, resulting in a shift upwards of the lowest registral limit to the next ostinato note, middle C#.

3𝅘𝅥𝅯 line

While the lower descending line is occupied in movement towards, and eventual removal of, the lower ostinato activity, the top line, moving in 3𝅘𝅥𝅯 units, starts slightly higher than the upper limit of the previous 3𝅘𝅥𝅯 line (E instead of D, b.25). At first it follows a familiar pattern of descent, beginning chromatically and leaving gaps (D-C, filled by the ostinato's C#, B-A, b.27), and leaping to a point higher than, but chromatically connected to, the starting note (E#-E), with a simultaneous filling of the B-A gap (A#). Similar leaps have been seen earlier in the middle of the second phrase of the lamento-ostinato, together with the doubling of note-length. At this stage, instead of a move towards the lower end of the chromatic line (see b.26), the upper limit is further expanded to F#, with a simultaneous extension of the lower limit (G-F# dyad, b.28), thus providing expansion in both directions. F# is emphasised through extra length and an *sfz* marking. From the end of b.28 to b.30 there are two further extensions of the upper limit, each preceded by a repetition of chromatic steps near or above the

original starting pitch E, and emphasised by an *sfz* marking or extra length. Thus the line from b.26 (end) to b.30, while starting as a descent from E and reaching its lower limit in the middle of b.28, continues to expand chromatically for two bars, focusing on the extension of its upper registral limit, an extension effected by the use of sideways chromaticism which is ascending rather than descending. This is clear from development from the related lamento material, which only ever has a 'passive' ascending contour, instead emphasising registral descent.

Interrelationships

The 5𝅘𝅥𝅯 and 3𝅘𝅥𝅯 lines, both of which begin by descending chromatically, end up by (registrally) diverging. Unlike the 5𝅘𝅥𝅯 line, the top line begins by descending through an area around the top ostinato pitch, but does not have its elimination as a goal. Instead, its final area of focus is almost an octave above the ostinato C# which remains in place. In b.30 the dropping out of the lower registral activity, combined with the registral expansion at the top results in a shift upwards in register across the texture.

Ostinato

In b.30 there is a transition in ostinato grouping from 4𝅘𝅥𝅯s to 3𝅘𝅥𝅯s, and the dropping of the bottom pitch is effected through a regrouping of 2 x 4𝅘𝅥𝅯 groups into 5𝅘𝅥𝅯 + 3𝅘𝅥𝅯.[1] At the beginning of the bar both the low and high C#s are surrounded by an A-D# dyad, resulting in a slight simplification of overall sonority. The 5𝅘𝅥𝅯 line then drops out and the 3𝅘𝅥𝅯 line leaps to A-B^{b}, meaning that the extreme ostinato notes are isolated. The characteristic ostinato pattern is extended by the addition of an extra middle C#, forming a 5𝅘𝅥𝅯 group, (**ex.3.5**).

This time, the first attack of the new 3𝅘𝅥𝅯 line (now using denser, three-note chords) occurs on the second semiquaver of the 5𝅘𝅥𝅯 group, giving the local effect of 1𝅘𝅥𝅯 + 4𝅘𝅥𝅯s instead of 5𝅘𝅥𝅯s. In the next ostinato group the extra middle C# drops

[1]This complication of the ostinato has been used before (see b.11).

out, there is no low C# and the final result is the original pattern minus the low C#, a 3♪ pattern. The extra C# in the 5♪ group isolates the low C# by shifting it to the left of the new 3♪ group articulated by the accented chord. As well as this, the extra middle C# ultimately prevents the ostinato's 3♪ grouping from aligning with that of the top accented line.

Thus in b.30 there is a slight reduction in the complication of accentuation from the previous three bars, with a movement from a juxtaposition of 3, 4 and 5♪ groupings to one of one 5♪ grouping and two sets of 3♪ groupings which are unaligned.

The accented line at the top of the texture begins by using non-octave chords in a descending line (bottom pitches F#, F, E, E^{b}, D), similar in contour and rhythmic organisation to the second phrase of the large rhythmic unit (using a 3♪ instead of a 5♪ grouping), implying a return to a general downwards trend after the freer registral expansion of the previous 3♪ group activity.

The next phrase returns to F# as a starting point, but has a much more extensive descent that begins using a combination of pure and sideways chromaticism, and then speeds up by leaving larger gaps and covering further ground, before a return to pure chromaticism in bs.35-36 (top pitches G-F#-F-E-E^{b}), slowing down before dropping out. Thus the top line, which begins by being separated from the top of the ostinato in b.30, ends in b.36 below the middle of the ostinato, which expands in the meantime.

In b.30 the 5♪ line, after a break of 2 x 5♪ units, begins its descent at a point midway between the two ostinato notes, implying a similar assault on the lower ostinato limit in bs.26-30. It moves chromatically from G to E before leaping up to G# and then A, thus extending in the other direction, implying a movement towards the top C# (see **ex.3.5**).

In response to this challenge, it is extremely significant that the ostinato adopts a more active attitude towards the encroachment on its boundaries through a shift in its lower limit from C# to A, limiting the expansion of the 5♪ line,

which picks up the downwards trend where it had stopped (i.e., E^{b} linking chromatically with the last E). As the 5𝅘𝅥𝅯 line reaches D a semitone above the ostinato C#, the lower limit shifts to C natural, and so on through B and B^{b} to A, with a move of a semitone for each 3𝅘𝅥𝅯 unit, and the ostinato adopting some of the emphasising traits of the dynamic lines (accentuation and extra notelength). Such emphasis is dropped after A is reached, restoring the ostinato compass to an octave, A-A.

The changing role of the ostinato

When the present status of the ostinato is compared to that at the start of the Etude, the most significant change is one from a passive to an active role. It has gone through several stages of development: starting as a static background element, fixed in register and pitch and unaffected for the most part by the surrounding dynamic activity. The evolution of the 3𝅘𝅥𝅯 line from an ostinato pitch in b.18 and the increasing significance of ostinato pitches as limits, and thus points of focus for the dynamic lines, are important steps in the 'emancipation' of the ostinato from its static role.

Thus in bs.32-3, the ostinato has less of a passive role in the face of the 5𝅘𝅥𝅯 line's movement towards its upper and lower limits. It actively adopts traits from the melodic-line activity in order to challenge the encroachment of its boundaries. In the case of the upper limit, by moving from C# to A, it reduces the area open to the 5𝅘𝅥𝅯 line, meaning that if there is to be any further development, the accented line must breach the new limit. When it fails to do this, instead returning to the lower end of its activity, no further development in the upper area is possible without a new gesture that will challenge the primacy of the ostinato limit. Once the lower limit of the ostinato is challenged and begins to move, its 3𝅘𝅥𝅯 units mean that it is perceived as being faster than the 5𝅘𝅥𝅯 line, and even though it stops

moving after it reaches low A, it seems as though enough has been done to see off the 5𝅘𝅥𝅯 challenge. Although the dynamic line can and will continue to descend, the burst of activity from the ostinato demands a similar increase in energy to sustain a successful challenge.

Such an assertive gesture does not materialise: the primacy of the 5𝅘𝅥𝅯 descent is complicated by (i) simultaneous descent from the upper register, (ii) thickening of the mid-register through use of dyads and triads rather than single pitches, and (iii) slowing down of the lower descent before the eventual breaching of the lower limit (**ex.3.6**). The decrease in overall registral area in bs.34-6, together with the resumption of the ostinato octaves, means that there is less focus on a single descent. In bs.34-6, although each element is still operating according to its own internal order, the registral contraction effected by the simultaneous descent in upper and mid-registers, together with the resumption of the ostinato octaves, means that there is less potential for focus on a single descent. This is reminiscent of Ligeti's description of "the wonderful combination of order and disorder."[1] One is aware of an overall descending tendency, made up of various conflicting elements.

Because the accented line at the top of the texture is moving in faster 3𝅘𝅥𝅯 units with less chromaticism, it covers more ground than the 5𝅘𝅥𝅯 line, and thus both lines occupy the same registral area in bs.35-6. In b.34, as the bottom of the ostinato is about to be breached by the 5𝅘𝅥𝅯 line, an extra A is added at the top, restoring the 4𝅘𝅥𝅯 two-octave pattern last seen in b.30. This top A encloses the descending 3𝅘𝅥𝅯 line, meaning that for most of b.34, all dynamic activity is registrally encompassed by the ostinato's outer limits, with a return to the juxtaposition of three different semiquaver groupings. The 3𝅘𝅥𝅯 line continues to descend, but its rate of descent decreases as it reaches the lower ostinato limit which it does not breach (see **ex.3.6**).

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[1] Simha Arom, *African Polyphony and Polyrhythm: Musical Structure and Methodology*, with a foreword by György Ligeti (New York: Cambridge University Press, 1991), xvii.

From bs.30-36 there is a clear descent across several registers, with the 3♪ line going from a high register (associated with the large rhythmic unit) to the bottom of the ostinato, and the 5♪ line starting in mid-register and descending more slowly to approximately the same level as the 3♪ line. Thus the various dynamic elements cooperate in terms of overall direction of movement and magnitude of descent. Both these issues are ultimately dependent on the ostinato as a figure of constancy against which direction and distance can be gauged. The ostinato asserts itself dynamically to limit the scope of the descending lines, defining both upper and lower limits within which the 3♪ and 5♪ lines must move.

Thus the ostinato, an element that, on the surface, has many static qualities, exhibits its flexibility and potential for change, enabling it to control the surrounding activity. As well as the various dependencies listed above, the relationship between the descending lines is also linked to the ostinato because of the shared denominator of the semiquaver, in other words, through the additive-pulse principle. This link is blurred because of the ostinato's potential to regroup (from 3♪ to 4♪, etc). In bs.26-36 there are two descending gestures, with the second (bs.30-36) being of larger scope than the first, ascending into the top register, and then descending much faster. Therefore it is perceived as being a more 'single-minded' attempt to achieve cross-registral descent, thwarted in the end by the assertiveness of the ostinato.

In bs.37-41 there is a third descending gesture using the same juxtaposition of 3, 4 and 5♪ groupings. The ostinato pattern continues into this new gesture, with a return to higher registers for the top descending line, and a further descent starting in the general area of the lower ostinato limit. At this stage, the speed of the various descents changes, with the top line moving in 5♪ units and the lower moving in 3♪s. Thus the descent associated in the previous gesture with an attack on the lower limit of the ostinato is now moving faster, 3♪s instead of 5♪s. It also starts on C, an interval 3 above the lower limit A, meaning

that there is very little ground to be covered before this lower limit is breached, if the line descends chromatically. The line first fills the chromatic space above C (C-D^{b}-E^{b}-D-E) before moving below to fill a similar amount of space and so breach the lower limit of the ostinato.

The 3♪ line does not continue to descend, instead returning to D^{b} above its starting note. This D^{b} coordinates with a shift in the ostinato's lower limit from A to G, thus taking up the lowest point so far of this descending line. This movement in the ostinato is different to that seen in b.33 and earlier in b.30. In b.33 the ostinato moves before the descending 5♪ line reaches it, establishing a dynamic identity for itself and moving more quickly than the 5♪ line, thus asserting itself before a breach can occur. The limit is finally breached only when the ostinato has established a new limit, one that is strengthened by its dynamic approach. In the earlier descent there is no change in the ostinato as its limit is breached, and the lower limit drops out after the descent is complete.

The action of the ostinato in b.38-9 is halfway between the active one in b.33 and the passive ostinato in b.30. The ostinato allows a breach to occur, and moves only when the descending line's activity seems to have ceased in that area. Even when it does move, it does not explore any new territory, limiting its movement to the lowest note reached in the 3♪ descent, and there is no emphasis through an increase in dynamic or accentuation. Thus there is not enough dynamism in the ostinato to inhibit the progression of the 3♪ line, which continues to descend using sideways chromaticism and large leaps, eventually reaching the lowest registers in b.41.

Because of the swapping of the 5♪ and 3♪ lines, there is less of a sense of marked registral contraction and overwhelming descent than seen in bs.30-36. This lack of a sense of overall descent is strengthened by the complicated sideways chromaticism in the top 5♪ line in bs.37-9 (**ex.3.7**). This line consists of a series of dyads, creating two descending 5♪ lines in coordination. Note that the change to chromatic movement occurs immediately the line passes the upper

ostinato limit. If the sideways chromaticism had continued, the pitch A would have occurred as part of the pattern A^{b}-G^{b}-A-G, but as the line moves in pure chromaticism from A^{b} downwards, the A pitch is avoided and does not come under threat.[1]

The lower parts of the dyads have a similar break in movement in b.39. It begins in b.37 with a chromatic descent from F# to C, with two 'interruptions'—a leap to G which links chromatically with the starting note F#, and a return to E^{b}, a pitch already used in the descent (E^{b}=D#, b.38). Thus there is a much stronger downward trend than in the coordinating upper line, yet the descent is broken up in two places in a similar way to (i) bs.25-6 where there is a leap to pitches that establish a new upper limit and (ii) the third phrase of the large rhythmic unit, where the chromatic descent is interrupted by leaps to pitches which were already part of the line. Such interruptions serve to deprive the lower line of the directness of a pure chromatic descent.

In b.39, the ostinato pitches are being challenged in all three registers. As the top line passes the ostinato A and begins to move chromatically (b.39), the middle line switches to sideways chromaticism, with a move from C-B^{b}, thus getting as near as possible to the middle A of the ostinato. In the next ostinato group the A moves to G, away from the bottom of the 5𝅘𝅥𝅯 line which then returns to the gap left by the C-B^{b} move, filling it with B and moving down to A, (**ex.3.8**).

If this pattern were to be maintained, B^{b} would be the next pitch. Instead of a semitone up, it moves down to G#, resulting in the first parallel chromatic movement between the two 5𝅘𝅥𝅯 lines, occurring at the end of the descent. There is still the possibility of further encroachment on the middle of the ostinato (G versus G#, bottom of the 5𝅘𝅥𝅯 line), but the first absence of an attack after 5𝅘𝅥𝅯s implies some sort of a hiatus in the descent.

Thus in bs.37-41, two out of three of the ostinato pitches have been shifted from A to G. The ostinato movement has not approached the dynamism of that

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[1]Note the rate at which the speed increases once the ostinato limit has been passed.

seen in bs.33-4, and has not imposed limitations on the descending lines. Instead, the 5𝅘𝅥𝅯 and 3𝅘𝅥𝅯 lines achieve greater momentum after the breaching and shifting of the ostinato limits, creating an increased separation between dynamic and static elements. Unlike bs.26-30 and 30-36, there is not a strong sense of an overall descent. There is clear evidence of a lessening of the ostinato's control over the texture. Instead, the descending lines work together systematically to erode the pitches of the ostinato, resulting in the perception of controlled cooperation between the lines. Such a perception is enhanced by the balanced movement between the two lines of the 5𝅘𝅥𝅯 descent. In spite of such control and cooperation of function, there is still a fundamental complication of accentuation resulting from the juxtaposition of various semiquaver groupings.

Cooperation between melody lines: hemiola technique

At the end of b.40 the only ostinato pitch which has not shifted to G is the top A, and the ostinato pattern G-G-G-A is used across the barline into b.41. The next ostinato group begins G-G-G and the A comes in its usual place, but is given extra emphasis through an increase in length and accentuation. In coordination with the emphasised A the bottom G of the next ostinato group comes a semiquaver early and is an octave lower, meaning that the ostinato group has moved 'a semiquaver to the left', and the last remaining A in the ostinato has been 'squeezed out'. But through its emphasis, this A now has the attributes of a pitch belonging to a dynamic line rather than the ostinato.[1] This is another instance of the increased fluidity of function, where the ostinato 'spawns' new melodic lines.

A is picked up as the point of departure for the top line, which continues to move in 5𝅘𝅥𝅯 groups. There is also an accented line at the bottom of the texture,

[1]Note the use of a similar process to that seen in the ostinato in b.30, where it is extended by one semiquaver and the bottom note is isolated and dropped. In b.41 the excess note is picked up in another part.

which moves in 3𝅘𝅥𝅯 groups. Thus the two semiquaver groups associated with the dynamic lines in the previous activity remain, with the temporal relationship preserved (A occurring 10𝅘𝅥𝅯s after E/G#, and low F 3𝅘𝅥𝅯s after C). Yet, there is no smooth voiceleading connection, with the 5𝅘𝅥𝅯 line leaping to A and the 3𝅘𝅥𝅯 line moving down to a new low register, starting its descent from F. Therefore there is a sense of increased registral compass, especially in the lower register. As well as 'squeezing out' the top A, the early ostinato entry on the fifth semiquaver of b.41 results in a change from a 4𝅘𝅥𝅯 to a 3𝅘𝅥𝅯 grouping, with the first semiquaver of the new grouping coordinating with an accent in the lower 3𝅘𝅥𝅯 line. (While the upper registral compass of the ostinato is reduced through the change in the status of the top A, its overall register is maintained through a shift into a lower register by octave multiplication).

This coordination between melodic lines results in the creation of the least complicated rhythmic texture since b.26. The simplicity of the texture arises from: (i) the clear spacing and separation of the three lines, with neither of the dynamic lines entwined within the ostinato's compass, as seen earlier, (ii) the ostinato's return to use of a single pitch, (iii) the use of only two juxtaposed semiquaver groupings and (iv) the lining-up of the 3𝅘𝅥𝅯 groupings of the bottom descending line and the ostinato.

Bs.26-30	3𝅘𝅥𝅯	4𝅘𝅥𝅯	5𝅘𝅥𝅯
Bs.30-4	3𝅘𝅥𝅯 ----------3𝅘𝅥𝅯 (uncoordinated)		5𝅘𝅥𝅯
Bs.34-41	3𝅘𝅥𝅯	4𝅘𝅥𝅯	5𝅘𝅥𝅯
Bs.41-4	3𝅘𝅥𝅯----------3𝅘𝅥𝅯 (coordinated)		5𝅘𝅥𝅯

This juxtaposition of two patterns of accentuation is the clearest manifestation of a hemiola technique seen so far in the Etude. I am not suggesting that additive-pulse principle and hemiola technique are mutually exclusive. Indeed, in the introduction, observations made by ethnomusicologists on the links between the two techniques were noted. Within the Etude, as soon as two accented melodic lines are juxtaposed (e.g., in bs.18-20) the conditions for the technique described by Read as 'vertical hemiola' must be seen to exist, and, for as long as the ostinato functions as the lowest common denominator between these disparate melodic lines, the additive-pulse principle must be seen to operate. Hence both techniques have operated simultaneously for much of the Etude so far. Yet, the increased emphasis on coordination between the 5𝅘𝅥𝅯 and 3𝅘𝅥𝅯 lines in b.41 hints at a stronger role for the hemiola. The lines are purposely juxtaposed in such a way to make them easier to assimilate aurally, in comparison to earlier melodic line conflict.

This simpler texture begins with a coordinated accent between the first of a group of 5𝅘𝅥𝅯s and the first of a group of 3𝅘𝅥𝅯s, together with the start of an ostinato group, and there is a cycle of returns to this coordination (i.e., after 3 x 5𝅘𝅥𝅯s and 5 x 3𝅘𝅥𝅯s). When only two juxtaposed groups are involved, and there is no conflicting manipulation within one or other of the groupings, such a cycle can be perceived as a relatively stable entity, especially if it occurs, as in bs.41-4 after a period of increased dynamism and development.

The obvious registral separation also contributes to this sense of stability, with the top line using sideways chromaticism to fill the space between F and B (avoiding the G pitch which is being emphasised by the ostinato) but being non-committal as to direction, adopting neither a clear ascending nor descending shape. The bottom 3𝅘𝅥𝅯 line also uses sideways chromaticism, but has a clear downwards direction from the start of b.41 and adopts pure chromatic movement in b.43, resulting in a clearer descent.

The ostinato is now less of a common denominator because of its complete cooperation with the 3𝅘𝅥𝅯 line, further reducing the sense of additive-pulse principle and intensifying the 3𝅘𝅥𝅯/5𝅘𝅥𝅯 contrast.

While the ostinato is restricted in terms of pitch and accentuation, there is some inner development similar to that seen in the first of the large rhythmic units, using various groupings of G octaves. The most common (and stable[1]) of these is seen in the second half of b.41, but the others use repetitions of a G pitch instead of Gs an octave apart, which form a related grouping to the first 3𝅘𝅥𝅯 ostinato group in b.41, but with the repeated Gs at the bottom of the ostinato, drawing attention towards the lower register. At the start of b.43, the second low G is absent, but instead of a return to the original octave pattern, there are two mid-register Gs before a fourth semiquaver G at the top of the ostinato.

The ambiguity in the ostinato in bs.42-3 is enhanced by the absence of an attack in the related 3𝅘𝅥𝅯 line on the last semiquaver of b.42, meaning that the rogue ostinato group does not have the same reinforcement as the other 3𝅘𝅥𝅯 ostinato groups. As well as the lack of accent in the 3𝅘𝅥𝅯 line, the expected 5𝅘𝅥𝅯 accent is also absent on the third semiquaver of b.43 where it should coordinate with an attack in the 3𝅘𝅥𝅯 line (the only attack being the extra ostinato semiquaver), thus contributing to the general lack of momentum. The next accent comes one semiquaver later with a coordinated resumption of the 3𝅘𝅥𝅯 and 5𝅘𝅥𝅯 lines, with the cooperating 3𝅘𝅥𝅯 group ostinato. The 5𝅘𝅥𝅯 line is again at the top of the texture and takes up the same register as before, still using sideways chromaticism, this time ascending. At the same time, the two other parts have moved to higher registers, with the 3𝅘𝅥𝅯 line now operating between the ostinato and the upper line using sideways chromaticism, with a vaguely upwards trend in bs.43-4. The ostinato shifts to a new pitch, providing a new background 'sound', and maintains a 3𝅘𝅥𝅯

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[1] It is stable (i) because of the use of an octave pattern, which is referential to the ostinato at the start of the piece (the acme of ostinato stability), and (ii) because within the present context of clearly differentiated dynamic lines, it provides a cross-registral link between the two areas of interest, whereas the other ostinato groups (e.g., in bs.41 (start) and bs.42) focus on one particular registral area.

grouping, but its relationship with the 3𝅘𝅥𝅯 dynamic line has become more symbiotic (**ex.3.9**). It is being 'completed' by the 3𝅘𝅥𝅯 line's attack on the first of every three semiquavers, meaning that it has less of a separate identity: now it merely fills in the gaps between every accent in the dynamic line. In bs.43-4 there exists a general upward trend in the dynamic lines against the fixed ostinato pitches, with the afore-mentioned sideways chromaticism providing the means of dynamic movement. The same two semiquaver groupings are juxtaposed as in bs.41-3, and a similar pattern of 3𝅘𝅥𝅯/5𝅘𝅥𝅯 groupings evolves. Now, the registral compass of the texture is much reduced from that of the corresponding area, with the 3𝅘𝅥𝅯 line operating much nearer the top of the ostinato, and descending to within a semitone of the top E (F in b.43) before a return to higher registers. At the end of b.44 the 3𝅘𝅥𝅯 line appears to split, with a dyad G-E^{b} which is ambiguous, G being the starting pitch of the 3𝅘𝅥𝅯 line in b.43 (perhaps indicating a return to the lower register), and E^{b} fitting in with the sideways chromatic movement upwards in the 3𝅘𝅥𝅯 line. The ambiguity begins to be resolved with the next 3𝅘𝅥𝅯 attack in b.44, with a D filling the gap in the sideways chromatic 3𝅘𝅥𝅯 line from b.43, and the G remaining as a sustained note. The D also coordinates with an accented F# in the 5𝅘𝅥𝅯 line, completing the third 3𝅘𝅥𝅯/5𝅘𝅥𝅯 cycle.[1] This is the last uncomplicated cycle, as G is followed in b.44 by an accented F#, marking the beginning of a 7𝅘𝅥𝅯 grouping, which makes the perception of the 3𝅘𝅥𝅯/ 5𝅘𝅥𝅯 cycle much more difficult. The 7𝅘𝅥𝅯 grouping also establishes a purely chromatic descent (confirmed in b.45 by F natural) which puts pressure on the upper ostinato limit.

[1]In both cases (bs.41-2 and 43-4) the 3𝅘𝅥𝅯/5𝅘𝅥𝅯 pattern occurs over three cycles, allowing for full confirmation of it as a locally stable entity before destabilisation begins.

Registral contraction and expansion

One of the reasons why bs.41-4 emerge with such clarity is the clear registral spacing of the various lines. As the descending lines overlap more closely in bs.45-6, together with a 'reawakening' of activity at the lower end of the ostinato, one hears a more complex, dramatic texture. The local syntax, out of which this texture evolves, will now be examined.

In b.45, as well as the various complications effected by the 7♪ line, there is also internal reorganisation within the ostinato line, similar to that in b.42-3 (i.e., occurring after three 3♪/5♪ cycles), but with much greater repercussions. As in b.43, the first change is an extra note at the end of the ostinato figure. Previously the addition merely duplicated the main pitch an octave higher, and was itself a pitch which had occurred earlier in the phrase as part of the ostinato grouping. The 4♪ grouping occurred at the end of the phrase and had little or no direct effect on the surrounding dynamic lines: instead there was a regrouping, and the whole process started again in b.43. Now the extra semiquaver is a new pitch F which introduces a chromatic relationship (always connoting dynamism) at the bottom end of the ostinato. The surrounding dynamic lines do not drop out to allow a temporary dissipation of the tension: instead, there is increasing complication because of the now established 7♪ line. Most significantly, the 3♪ grouping within the ostinato is displaced one semiquaver to the right, taking it out of alignment with the 3♪ dynamic line, and the first note of each new 3♪ group is accented, creating a descending chromatic line which has a dual dynamic/ostinato function (**ex.3.10**).

Thus by the middle of b.45 there has been a change from two juxtaposed semiquaver groupings to four, and this complication of texture is combined with an increased rate of movement and a change of overall direction. The 5♪ line maintains its sideways chromaticism up to the point just before the entry of the first conflicting element (G in b.44) but then begins a purely chromatic descent.

The 3𝅘𝅥𝅯 line's E♭ which coordinates with the first 7𝅘𝅥𝅯 pitch is also its highest point. Thus, retrospectively, the end of b.44, as well as having the most uncomplicated texture, is a high point of local registral expansion.

Register	Grouping	Means of movt.	Direction
Top	5𝅘𝅥𝅯	pure chromatic	descending
High mid.	3𝅘𝅥𝅯	sideways chromatic	descending
Low mid.	7𝅘𝅥𝅯	pure chromatic	descending
Top of ost.	3𝅘𝅥𝅯	pure chromatic	descending
Btm. of ost.	3𝅘𝅥𝅯	Fixed on E-F (to b.47)	

Bars 45-6

From the above, it is clear that there is a very strong sense of convergence to a lower limit, the obvious one being the fixed ostinato pitches, E-F. The nearest dynamic line to challenge this limit is the 3𝅘𝅥𝅯 line at the top of the ostinato which, because of its pure chromaticism, approaches the lower limit rapidly and systematically.[1] The crucial pitch is F# which is reached in b.47, with two possibilities for the continuation of the descent if the pattern is to be maintained: (i) the descending line moves to F natural, thus providing that pitch with a dual function as part of both dynamic and ostinato lines, (ii) the descending line by-passes the E and F pitches and moves to D#, leaving them as functioning ostinato pitches, but no longer acting as a lower limit to the descent. The final outcome is a modification of (ii). The accented line moves from F# to D#, but not before an extra F# semiquaver has been added to the E-F ostinato line (the lack of an accent on the second F# negates the possibility of a repeating F#-E-F grouping). Instead the first F# and the D# are linked through accentuation and note-length, meaning that the dynamic line still has aural priority over the ostinato.

[1]In mono-directional passages the contrast between the rates of movement in pure and sideways chromatically moving lines is markedly heightened.

Such prioritisation continues, as the move to D natural confirms the downward trend of the dynamic line, with the ostinato becoming more chromatic (E-F-F#) but remaining fixed for the moment. The activity in b.47 also marks the return of the 4𝅘𝅥𝅯 grouping to the texture. The overall directional trend remains downwards, with the only conflicting element being the chromatic ascent of the three ostinato pitches.

Ostinato development

The sideways chromaticism of the 3𝅘𝅥𝅯 line in the middle of the texture has meant that its speed of descent has not been commensurate with the frequency of its attacks. Therefore, it is only in b.48 that it starts to encroach on the ostinato's territory. At first the ostinato and its corresponding dynamic line are unaffected by this challenge, with the E-F-G^{b} (=F#) remaining fixed as the lower line descends chromatically, intensifying the sense of registral compression (**ex.3.11**).

At the end of b.48 after the lower line reaches B natural the ostinato figure finally moves to D# instead of E, creating a four note ascending figure and a five instead of a four semiquaver grouping. In b.49 there are further additions to the chromatic part of the ostinato. This results in a slowing down of the rate of descent of the bottom dynamic line, which has gone from having attacks every three semiquavers to every four, five and eventually six semiquavers. Through the expansion of the ostinato, increased attention is also drawn to the inner parts, with a subsidiary chromatic descent adding to the already complex texture (**ex.3.12**).

At first, the ostinato gains extra pitches at its lower end, with the original core pitches E-F-G^{b} remaining as an upper limit. As it proceeds, there is extension in both directions, with the first change at the upper end occurring in the middle of b.50, where the G^{b} is replaced by G natural, providing the first non-chromatic move in the ostinato since the process began. The use of non-chromatic

movement means that more ground can be covered (especially if there is no returning to fill the gaps).[1] The end result is a perception of 'uncontrolled' expansion upwards as opposed to the controlled descent, which was almost totally chromatic (**ex.3.13**).

The evolving ostinato development can be traced as follows:

(i) b.47 tight chromatic band

(ii) bs.47-9 isolation of bottom register

(iii) bs.50-1 stretching of top register

(iv) b.52-4 loosening of middle register,

(These processes are all cumulative.)

The ostinato line from b.53 onwards undergoes some radical registral development, using overlapping 'common' elements to create links from phrase to phrase. Between ostinato phrases (1) and (2) there is a common mid-registral 'core' of A-E^{b}-A^{b}-A^{b}-D, and the distinctive A^{b} repetition is retained in (3), with movement in all other areas (see **ex.3.13**).

Between phrases (3) and (4) there is again a common central core B-E-G#-G#-D#-A, but the additional expansion at the end of (4) is much greater in relation to (3) than at the end of (2) in relation to (1), showing the increase in the rate of overall expansion as the phrases progress. The extension to (4) also uses a similar intervallic shape to the end of (3),

G#G#----------D#----------A
A-A----------E----------B^{b}
(interval 7) (interval 6),

again using the process of extending a familiar element to achieve further expansion.

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[1]In this instance, whereas pure chromatic movement was the means for initial movement, it is non-chromatic movement that results in more rapid expansion.

Melodic line development

The dynamic lines from b.50 onwards continue the process of descent established from b.45, but each undergoes some changes that can be linked to the evolution of the conflicting ostinato ascent. The 7♪ line adopts sideways chromaticism in bs.48-51, but it does not slow down its rate of possible descent, since if it had maintained pure chromatic movement, it would still arrive on E at the end of b.51. Therefore the reasons for this adoption must be to do with (i) the more ambiguous and erratic directional qualities associated with sideways chromaticism, and (ii) the heightened mono-directional sense that is created by a return to pure chromatic movement. Such a return occurs in b.52, and the chromatic descent continues until b.54.

The 3♪ line maintains its sideways chromaticism of bs.45-6 as it descends through the ostinato register. In b.51 it passes the bottom of the ostinato and becomes the lowest descending line, occupying a part of the texture which is unblurred by other activity, and one on which attention can be clearly focused. In b.53 the 3♪ line assumes pure chromatic movement, thus drawing attention to a single-minded descent. This is not maintained in b.54 where there is a momentary return to sideways movement, perhaps an attempt to slow down and consolidate the imminent end of the descent in its present form (ex.**3.14**).

The 5♪ line uses pure chromatic movement from bs.45-50 (except for a short period of sideways chromaticism in b.46-7 that coincides with the beginnings of ostinato activity). In b.50 it returns to sideways chromatic movement: yet this does not have the effect of slowing down the rate of descent (in fact, the 5♪ line reaches E^{b} one step earlier than if it had maintained pure chromatic movement). Instead, the sideways chromaticism has the effect of altering the quality of the descent through a constantly shifting sense of direction. In the 5♪ line this is achieved in a more controlled way than in some of the more

erratic sideways chromaticism seen earlier, through the use of a four-note unit with a specific intervallic shape (**ex.3.15**).

At first there is overlapping between the units, with the last note of one unit being the first note of the next. As the line descends through the ostinato texture there is increasing fragmentation, firstly between units (no overlap between units [3] and [4]), and then within a unit itself (in unit [4] the pitches do not follow the established pattern: instead, there is a change in the intervallic make-up, and there is octave displacement of E and D natural at the end of the unit). Thus, in unit [4] there is a sense of a large amount of ground having been covered very quickly, with the main linking elements being the continuing use of sideways chromaticism and the omnipresent 5𝅘𝅥𝅯 grouping. The sideways chromaticism continues, with an attempt to restart the pattern using a C#-B movement. Before the unit can be completed, a cross-textural cut-off point is reached, limiting further descent in this line.

At the end of b.54 an expected attack in the 7𝅘𝅥𝅯 line is missed, and there is a similar absence of attack in the 5𝅘𝅥𝅯 line at the start of b.55. Thus, there is a thinning out of the texture which becomes increasingly sparse due to the absence of much of its mid-register activity. Registral divergence is emphasised through the combination of the ostinato's extension at the end of its fourth phrase and the pure chromatic descent at the end of the 3𝅘𝅥𝅯 line. At the end of this, the first main section of the Etude, the general impression is of an emphasis on wide registral separation together with an ostinato that is basically 'out of control'. In her research on harmonic process in *Continuum* and other pattern-meccanico compositions, Jane Piper Clendinning comments on Ligeti's two typical registral shapings:

> These harmonic processes . . . create the two typical registral shapings for the pattern-meccanico compositions: expansion/contraction . . . and an expansion which is broken off at its widest point. . . . The registral shapings are often accompanied by change in the amount of harmonic tension present in the music. . . . As range closes and the texture thins anticipating the close of the section, tension gradually is dissipated rather than "resolving" in a traditional manner. In many of the sections

> which feature a registral expansion that is broken off, the harmonic tension increases over the course of the section and is not dissipated at the end.[1]

Although there is not the same level of harmonic control in the Etude as in the tightly focused pitch groupings of *Continuum*, I think that the increase in pitch and registral compass of the ostinato contributes to the increase rather than decrease in tension towards the end of this section, and further heightens the effect of the new texture in b.55.

Summary of the first section

Because of the drastic change in texture in b.55, it acts as a marshalling point, a point of summation, a local break in activity, or marked change in texture where all the development of events so far can be evaluated. The main issues that have arisen in the first 54 bars are as follows:

(i) The establishment of a conflict between the semiquaver ostinato and one or more fixed-pulse line(s), and the evolving relationship between these elements and their changing functions,

(ii) The definition, through repetition, of a large-scale rhythmic unit, and the destabilisation of this unit through its interaction with elements from (i),

(iii) Attempts to coordinate overall progress in terms of directional and registral control, through movement towards, and away from fixed limits.

It is extremely important to note the controlling influence of the ostinato in many of the above issues.

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[1]Clendinning, "The Pattern-Meccanico Compositions of György Ligeti," 206.

In more general terms, two important precedents for movement, progression and development have been established through reiteration and modification. The three-stage process of destabilisation, addition and restabilisation has been presented and modified, as has the juxtaposition of pure and sideways chromaticism, with the exploration of their varying effects on the rate of descent (or ascent, but notice how descending lines have predominated, with ascending movement, such as in the ostinato activity in bs.51-5, being less controlled or focused).

Bs.52-5 constitute the largest climactic gesture in the Etude so far. Since it also occurs at the end of a section, being followed as it is by a completely new texture, any traits displayed here such as registral divergence, etc. should later be compared with the end of any succeeding sections in order to isolate any common element that may become associated with local closure. The strength of the gesture is augmented by the controlled chromatic/sideways chromatic descent in several of the parts, and also by their unanimity of direction. At the same time, there are several conflicting elements which detract from the overall unanimity of the gesture:

(i) the increasing complication of pulse from b.52 onwards, especially with the changing group length and erratic accentuation of the ostinato,

(ii) the uncontrolled nature of the ostinato's development, reaching a high point of expansion with potential for articulation of this new register, while all other elements appear to be closing down into lower registers.

(i) and (ii) therefore are the issues which demand resolution as the piece progresses.

Analytical commentary on bs.55-98

Regrouping: the return of the three-phrase unit

The lamento-ostinato has been emphasised so much in this Etude already, that its return would always be a significant aural event. However, the intensity and clarity of its positioning, both registrally and intervallically, the absence of any surrounding 'blur', the dramatic stillness of the texture; all these factors make bs.55-62 immensely striking and expressive. The spatial quality observed in many of Ligeti's works is immediately obvious in b.55. In the orchestral work *Atmosphères*, a sense of registral expanse is articulated by an ascent into the highest piccolo registers, which 'tips over the edge' and is picked up in the lowest possible double-bass register. This gesture delineates the registral potential or boundaries of the texture, marking out how high and how low things can go.

There are some similarities in *Automne à Varsovie*. The first attack of this gesture in b.55 use the highest and lowest pitches so far: a reiteration of the highest C from b.21, and G^{b} one semitone lower than G at the end of the 3𝅘𝅥𝅯 descent which ends in b.55. The potential for further registral expansion is also there: the bass lamento-ostinato continues to descend, and there is the slower expansion at the top, as seen in the third phrase of previous lamento-ostinato units.

Because of the use of referential material, comparisons can be made between bs.2-9 and the present appearance of the large rhythmic unit. In its first appearance, the unit itself creates complications against the background of a clearly defined 4𝅘𝅥𝅯 grouping in the ostinato, setting up emphasised areas of register

and pitch. In that case the unit has imposed its identity on the background element and 'subdues' it, but later becomes a victim of that same background material which emerges using various means.[1]

The function of the material in b.55 onwards is twofold: (i) it acts as a culmination of the process of registral divergence in the first section (exemplified by the ostinato in bs. 47-54), by operating in two sharply contrasted registral extremes with clear local voice-leading connections to the end of the previous section, and (ii) through its use of a very clear pulse and coordination across the registral expanse, its function as a marshalling point also incorporates the possibility for future corruption, something which has always happened to the large rhythmic unit in its previous incarnations.

The situation in these bars is 'poised', and in spite of all the control, cannot be said to be totally stable. Significantly, in bs.55-61 there is also the complete absence of any conflicting melodic lines, with a single 5𝅘𝅥𝅯 pulse predominating. For the first time in the Etude, neither the additive-pulse principle nor hemiola technique is being used. Instead, the precise coordination between the hands represents the antithesis of movement thus far.

From bs.55-8 the rhythmic profile corresponds to that of the first two phrases of the large rhythmic unit. That of bs.58-62 is similar but not identical to that of the original third phrase, with the non-octaves in bs.5-9 replaced by semitones[2] (the only dyads in the lines) and the extra long notes occurring on the first rather than the second leap upwards, marking a new registral high (**ex.3.16**).

This rhythmic reorganisation in the third phrase is amplified by the lack of a clear 2 x 5𝅘𝅥𝅯 note at the end of the phrase, and a subsequent return to the beginning of the rhythmic unit. Instead, after one 5𝅘𝅥𝅯 group the semiquaver ostinato returns, picking up the last pitches of the top 5𝅘𝅥𝅯 line in the same registral

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[1]The unit is finally usurped by 'copycat' patterns in three rather than five semiquaver groups.

[2]The octaves in the original rhythmic unit are replaced by single notes, creating a further sense of paring down of registral activity: i.e., the two lines are as far apart from one another as possible.

area. The ostinato does not confirm the original 5♪ pattern, instead starting with a 4♪ group before settling on a 5♪ grouping which is now out of synchronisation with the first one. The ostinato's grouping is articulated through two repeating patterns, lightly outlining a 10♪ pattern, but its lack of accentuation negates any dynamic possibilities, and when the next accented line begins, the ostinato resumes a background function.

This new dynamic line coordinates neither with the start of an ostinato grouping nor with the original 5♪ grouping (had this been maintained). It also occupies a register slightly lower than that of the original top line, while the bottom registral area drops out. It retains the rhythmic profile of the first two phrases of the large rhythmic unit, however this time in a 7♪ context.

The 7♪ line has an altered rhythmic profile in the third phrase of the large unit, instead retaining that of the 5♪ line in bs.58-61 (in 7 rather than 5♪ groups), but in terms of pitch, it is more complex than the 5♪ line, using a combination of octaves (with or without a third note) and non-octave sonorities, creating a more sophisticated texture than that of bs.55-61. In the first two phrases the non-octaves are retained for the leaps outside, and the starting points of the chromatic descent (somewhat similar to their occurrence in the original large unit). The third phrase (bs.67-73) consists exclusively of non-octave sonorities, indicating that although the 7♪ dynamic line is using familiar material, the rate of development of this material is much faster than seen previously. Again, such a tendency when familiar material is reused will be examined in general terms in the conclusion. It must again be noted that because of the relative simplicity of the texture from b.55 onwards, various gestures that provide a means of progression for the piece can be observed in a rarefied atmosphere, and as such, their effect is enhanced. It could also be argued that the events in b.55 onwards function as a sort of reopening for the Etude, one where a similar juxtaposition of elements takes place, but this time with development happening at a much faster rate, stages (ii) and (iii) of the three stage process again being overlapped.

Increasing conflict: the dynamic ostinato

As well as the other changes already mentioned, the third phrase of the 7♪ line also coincides with the first change in the ostinato line since b.62. The ostinato in bs.67-8 becomes more active on two levels: (i) the 5♪ + 5♪ grouping is now more clearly articulated through accentuation on the first of each group and (ii) the ostinato is no longer limited to the pitches B and F: instead, it begins to move upwards, with changes of pitch in each group.

The ostinato in bs.62-5 is made up of two repeating patterns, which move around two octaves, B-B and F-F. When the ostinato begins to move in bs.67-8 the octaves do not move together. Instead, the B octave moves to C first and then the F octave moves to F# in the next 5♪ group. Thus, it takes 2 x 5♪ groups for the complete ostinato figure to move up by an interval 1. Each time, the new pitch is enhanced by accentuation at the beginning of the 5♪ group, the first C and F# pitches being accented. Movement upwards at this speed continues until the top of the piano is reached (top C in b.73). It is as if the ostinato has picked up the (slow) registral expansion from the 5♪ line (C, b.55, C#-D, b.59, F#, b.69, and so on).

After C is reached, the second half of the unit is completed using the expected pitches G and C. It is clear that the pattern will have to be modified if any further ascent can take place. Instead of such a modified ascent, the ostinato begins to descend in b.73, using the second half of the 2 x 5♪ pattern. This time, instead of it moving one octave at a time, the whole group is shifted by an interval 1, with the G-C pattern moving to F#-B.

This marks a further increase in the rate of movement, which is perceived as being more direct for two reasons:

(i) everything happens within the space of 1 x 5♪ rather than 2 x 5♪ units and therefore the ostinato is moving twice as fast as before,

(ii) the ostinato is more single-minded with regard to direction, with less meandering than in the previous pattern.

The ostinato is now descending chromatically on two levels: (i) the accented top part (also duplicated an octave below) G-F#-F-E-E^{b}-D, etc., and (ii) the unaccented inner part an interval 7 lower, C-B-B^{b}-A-A^{b}-G, etc.

In b.75 there is the first change in this descending pattern. Instead of a duplication of C# an octave below, the top part continues to move down, with an accented B natural which comes three semiquavers early. Instead of the inner part also moving down by an interval 1 after the B, it remains fixed on F, the same pitch as at the start of the group.

Thus, a descending outer octave line around a fixed inner pitch replaces the controlled descent on two levels (same direction, same speed). The existence of such a fixed pitch against which the descent can be 'measured' means that the internal dynamism within the ostinato becomes more obvious.[1] F remains as a fixed inner 'limit' for the ostinato from bs.75-80 but surrounded by several types of descending activity:

(i) Octaves in 3𝅘𝅥𝅯 units (from the end of the last 5𝅘𝅥𝅯 group [=2+3𝅘𝅥𝅯]) which descend as far as G^{b},

(ii) The top G^{b} then becomes fixed, and functions together with the original F, as an upper limit to an accented ascending line which starts from the lower G^{b} of the original octave line and ascends to E natural, forming a semitone cluster with the F-G^{b} ostinato (note the shift of the accent from the first to the last semiquaver of each 3𝅘𝅥𝅯 group),

(iii) In b.77 the accent associated with the ascending line occurs on G^{b}, creating a pitch ambiguity with the ostinato. There are no further accents

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[1]In places such as bs.1-10 and 62-7 the ostinato functions as a measuring point, a limit or reference point to which all of the other (dynamic) movement can be referred. In places such as bs.13-15, 46-9 and now 75 onwards, the ostinato divides into a dynamic part and a static part, mirroring the earlier dynamic/static relationship within itself. Such a division within the ostinato contributes to an increasingly complex texture, and so far, has been followed by various regroupings of the (at first static) ostinato which also develop dynamic characteristics, or by an increasingly dynamic ostinato which rapidly gets out of control. The division of the ostinato into static and dynamic components is also happening earlier each time. Thus, as more attention is being drawn to the ostinato, a large body of implications is being set up, one which demands resolution not just on a local but on a long-term level, because of the accretion of ostinato instability.

for five semiquavers and no other pitches save F and G♭. The 3𝅘𝅥𝅯 grouping is also absent,

(iv) The next accent occurs on B in b.78, with the F-G♭ returning to their previous function as a fixed limit, but this time a lower one. B becomes the starting point for a ascending 4𝅘𝅥𝅯 line moving chromatically (except for C#-D#) to F an octave above the lower limit.

Throughout the above phases of ostinato development, F and later G♭ act as fixed limits at the bottom, middle and top of its registral area. There must be an accumulation of tension as the ostinato posits four different kinds of dynamic movement which fail to 'dislodge' the fixed pitches. The implications of this are addressed in bs.79-81, as the F-G♭ dyad is first reduced to a single pitch F, and resumes its function as an upper limit to a descending line from E. At first this line adopts the 4𝅘𝅥𝅯 accentuation pattern from (iv) above, but pitch terms, it is moving twice as fast, with the second pitch (unaccented, possibly an oversight) in the descent, E♭ occurring after two instead of four semiquavers. The succeeding pitches continue to descend, at first chromatically and then using sideways chromatic movement, but all accented in a 2𝅘𝅥𝅯 grouping. Thus this is faster than any of the preceding descents, and the sideways chromaticism at first gives the effect of a rapid move away from the F with a leap from D♭ to B, even though all gaps are subsequently filled, and the line returns to pure chromatic movement. Something that also heightens tension in b.80 is the octave doubling of the descending line, creating an effect similar to that in (i) above, with F acting as a fixed inner 'limit'. The effect is also strengthened because of the simultaneously attacked octave within the 2𝅘𝅥𝅯 context instead of the broken octave in the 3𝅘𝅥𝅯 grouping in bs.75-6.[1]

Thus in bs.79-80 the fixed pitch F comes under similar sorts of 'attack' to that seen in (i)-(iv) above. This time things are happening at a faster rate than

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[1]The ratio of dynamic element to ostinato in semiquavers is now 1:1 compared to 1:3 in bs.78-9.

previously seen, mainly due to the 2♪ grouping. More focus is also thrown on the F pitch because it is no longer paired with the G♭ pitch, which carries with it a degree of ambiguity because of its dual dynamic-ostinato function. The combined result of this extra attack is the shifting of the ostinato F in the second half of b.80, where it moves down by an interval 1 with the octave A: A-F moving to G#-E. This pure chromatic movement is maintained for the next six semiquavers, but with the dropping of the lower pitch of the octave, together with a change in direction for the upper note of each group, resulting in a pair of diverging chromatic lines.

Therefore for the first time since b.75 there is no fixed ostinato pitch F, and since moving chromatic lines have such an association with the dynamic elements of the Etude, the only ostinato traits present in this albeit short passage are (i) the endless flow of semiquavers and (ii) the absence of accents to reinforce the moving chromatic lines (note in contrast the accented octaves at the start of b.79).[1] The outcome of this dynamic movement is an eventual return to the most clear-cut ostinato figuration: i.e., broken octaves from b.81 onwards, now at the top of the texture. Thus the association of this type of figuration with relative stasis counteracts any perception of a dynamisation of the ostinato in bs.79-80. The return of this characteristic figuration for the first time since bs.35-6 emphasises the amount of change in the ostinato in the intervening sections. It has become associated with registral expansion, both out-of -control (bs.49-54) and systematic (bs.68-73), and has introduced the new 2♪ grouping.

Having traced the ostinato from bs.61-81 it is now important to examine the evolution of the dynamic element(s) and their interaction with the ostinato in the same passage.

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[1]It should not be inferred that fixed pitch is a pre-requisite for ostinato definition. For example, in bs.68-75 the ostinato uses pure chromatic movement over a 1 x 5♪ and later 2 x 5♪ cycle. However in that case the regularity of the pattern is a mitigating factor. In the present case the issue is the increasing dynamism of the ostinato after a long period of stasis (i.e., the fixed F pitch). Perhaps a further complication is the speed of the movement, as in earlier dynamic development of the ostinato (e.g., bs. 49-55) there are usually some common pitches retained from group to group.

Reworking of the ostinato/melodic line(s) relationship

As mentioned earlier, the third phrase of the large rhythmic unit overlaps with the first change in the ostinato in b.69. The dynamic line's semiquaver grouping is juxtaposed with a conflicting grouping as articulated by the ostinato. There is also a perception of divergence as the ostinato begins its ascent across a 2 x 5𝅘𝅥𝅯 group. In bs.62-8, while the ostinato pitches are fixed, the top of the 7𝅘𝅥𝅯 line operates in an area between the bottom two pitches of the ostinato, B and F. The only exception to this is the F# at the start of the third phrase (b.67) which is emphasised through accentuation and an *mp* rather than a *p* marking, being the highest note so far in the 7𝅘𝅥𝅯 line. There is a period of transition in bs.68-70 when the ostinato begins to move but the top of the dynamic line is still higher than the new bottom of the ostinato, the last such note being E in b.70. Once the two elements are no longer sharing a registral area, the sense of divergence becomes much stronger, a fact emphasised by the overall downward trend of the sideways chromaticism of the third phrase of the large rhythmic unit, no longer returning to its starting note E.

In b.73 a change in this pattern of divergence occurs, when the ostinato reaches its upper limit, (the top C of the piano), and begins to descend. Because of the registral separation, although the ostinato is descending in five-semiquaver units, the slower moving lower line would still be far enough removed from the ostinato for its territory to remain distinct. The introduction of a second, faster dynamic line (using a four-semiquaver grouping) between the ostinato and the original dynamic line blurs the registral clarity of the two elements and marks the beginning of a texture made up of layers of descending lines. This new line uses a pure chromatic descent from C with an attack every four semiquavers until the A which is 2 x 4𝅘𝅥𝅯s in length—using the familiar profile from the first phrase of the large rhythmic unit. This familiarity is further confirmed by a return to C as the starting point for the second phrase which descends further to A^{b}.

Thus in b.73, although the ostinato is now descending twice as fast as its rate of ascent in the previous bars, the new dynamic element is still moving faster. This is heightened by the fact that the inner part of the ostinato uses the same pitches as the first phrase of the 4𝅘𝅥𝅯 line. On the fifth semiquaver of b.73 both lines have Cs (an octave apart), but as the descents continue, the ostinato's inner part drops further behind the dynamic line because of the 5𝅘𝅥𝅯:4𝅘𝅥𝅯 ratio. At this stage the various elements, although nearer one another than in the previous bars, are still registrally disjunct, with the top of the 4𝅘𝅥𝅯 line separated from the bottom of the ostinato by at least an interval 7 (A-E, first half of b.74): however, there is a slight sense of registral compression due to the relative stasis of the lower 7𝅘𝅥𝅯 line, which although not fixed, retakes some of the same ground in bs.73-4 instead of continuing its sideways chromatic descent.

In the second phrase (second half of b.74 onwards) although the 4𝅘𝅥𝅯 line is the fastest moving, the fact that it returns to C, following the lamento-ostinato pattern, instead of continuing to descend means that the (albeit slower moving) ostinato line has more impetus as a descending force, and is coming nearer to encroaching upon the territory of the dynamic line. By the end of the phrase the bottom of the ostinato is an interval 2 away from the 4𝅘𝅥𝅯 line (A^{b}-B^{b}), and the sense of compression mentioned earlier is further enhanced by the lack of movement in the 7𝅘𝅥𝅯 line, creating the sense of a tightening registral band.

In b.76 the third phrase of the large rhythmic unit begins with a B-C dyad in the 4𝅘𝅥𝅯 line: significantly, the upper limit of the dynamic line is not extended as has been seen in earlier versions (e.g., b.5, b.58). This lack of expansion appears to indicate that a 'ceiling' has been imposed on any expansion into the upper registers by the dynamic line. The accented dyad also coordinates with the first overlap between the top of the 4𝅘𝅥𝅯 line and the bottom of the ostinato. Note the fluctuations in the rates of movement of the two elements: as the ostinato gets nearer to the upper limit of the 4𝅘𝅥𝅯 line, it moves faster, with a shift from five to three semiquaver units in b.75 (the dynamic line retains its grouping). When it

actually bypasses this limit, there are no attacks in the 4♪ line (minim B-C dyad), thus accentuating the ostinato activity. The change of direction in the ostinato movement in bs.76-7 is juxtaposed with the 4♪ line as follows: (**ex.3.17**).

The common A^{b} near the end of b.76 is a pivotal point for the relationship between the ostinato and melodic lines. Much of the impetus of the ostinato's descent in bs.74-5 seems to involve chasing the 4♪ line. When this line is finally breached at the start of b.76, various choices could have been made by the composer about the future relationship between the lines—would the whole ostinato continue to descend below the 4♪ line at the same rate, would the 4♪ line itself remain within the confines of the large rhythmic unit, following the pattern set up in earlier versions? As has been seen earlier, the ostinato undergoes a significant change of direction after the breaching of the 4♪ line's upper registral limit and this shift is mirrored in the 4♪ line itself in bs.77 onwards. At first, it maintains the sideways chromatic descent seen in earlier versions of phrase three of the large rhythmic unit, but does not limit itself to 10-11 attacks: instead, its descent continues for 2½ octaves (G^{b}, b.81). Another factor contributing to the perception of bs.76-7 as a pivotal area is the partial fragmentation of the 7♪ line (previously moving in three-/four-note chords, now changing to a 7♪ line using two-/three-note chords and a single-pitched 5♪ line at the bottom). The potential increase in dynamism generated by a faster-moving line at the bottom of the texture is picked up at the top of the dynamic area in the next bar with a move from 4 to 3♪ units.

Metric conflict and registral descent

Ligeti achieves contrast and tension through the juxtaposition of passages of relative clarity (only two conflicting pulses, clear registral separation, perceptible hemiola relationships) with passages of greater complexity, such as bs.34-5, 46-8

and now 78-81. In common with the earlier passages, there are three conflicting pulses, coupled with an increasingly dynamic ostinato using flexible 𝅘𝅥𝅯 groupings, all in a context of registral compression and constriction.

There is an obvious increase in the speed of events from bs.77 onwards: whereas previously the faster moving of the dynamic lines was restricted registrally within the large rhythmic unit (bs.73-6), and the 7𝅘𝅥𝅯 line's movement was limited because of (a) its paucity of attacks, and (b) its tendency to retrace its steps, now this relatively slow moving line is sandwiched between two faster moving lines, both with strong downwards tendencies, creating a tight band of dynamic activity. The change in the ratio of the top two lines from 4:7 to 3:7 further increases the likelihood of the 7𝅘𝅥𝅯 line being 'breached'. In such a complex texture, it is useful to examine local syntax and the interrelationship of the three melodic lines, which are operating in a tight registral band. The relationship between the three dynamic lines in bs.78-81 is as follows:

3𝅘𝅥𝅯 line sideways chromatic,
7𝅘𝅥𝅯 line sideways chromatic,
5𝅘𝅥𝅯 line chromatic,

Bar	Top	Middle	Bottom
78	3	7𝅘𝅥𝅯	5𝅘𝅥𝅯
79	7𝅘𝅥𝅯	3	5𝅘𝅥𝅯
81	7𝅘𝅥𝅯	5𝅘𝅥𝅯	3

In four bars the 3𝅘𝅥𝅯 line moves from the top end of the band of dynamic activity to the bottom. In doing this it has to breach three limits: the upper and lower parts of the 7𝅘𝅥𝅯 line, now moving in dyads, and the 5𝅘𝅥𝅯 line. Its sideways chromatic movement uses only steps of intervals 1 and 2, with frequent local changes of direction to fill any gaps in the chromatic continuum. As the lower limit of the 7𝅘𝅥𝅯 line is breached there is a delay (of one attack) before the G-F gap is filled, providing a slight increase in downward momentum. As the 3𝅘𝅥𝅯 line

approaches the 5♪ line in b.81 this increase in momentum is heightened, with two successive interval 2 gaps, B♭-A♭-G♭ and no local changes of direction to fill them. The A♭ is shared with the 5♪ line and the G♭ breaches this line.

The 3♪ line does not assert itself at the bottom of the band of dynamic activity: instead, it drops out from the end of b.81. In retrospect, it is possible to perceive the 3♪ line as becoming slightly less controlled as it breaches the lower limits of the other lines. This 'speeding up' before 'dropping out' can be viewed as a microcosmic version of the process whereby the ostinato in bs.49-54 approx. expands registrally to such an extent that further progression along the same lines as before becomes impossible, such extreme development acting as a stopping mechanism. With respect to the 3♪ line, two consecutive interval 2s which are not filled through sideways chromatic movement have only a localised effect at first glance, halting the 3♪ line's descent. Because this descent is halted just after the line reaches the end of its movement through the band of dynamic activity, the implication is that a particular phase of dynamic development is ending. Thus the lack of control in the 3♪ line can be seen to act as some sort of stopping mechanism, albeit on a very local level. When these changes in the dynamic activity are seen to coordinate with a significant simplification of the ostinato texture—a return to the cross-registral broken octave figuration associated with earlier areas,[1]—the local changes in the 3♪ line can be seen to be of more global significance.

In spite of the changes, the 7♪ and 5♪ lines continue their descents until b.85, with the 7♪ line using sideways chromaticism, and the bottom part of the 5♪ line almost completely chromatic. The 5♪ line has an added top part (not always descending) from b.83, and this results in the gradual merging of the 5♪ and 7♪ lines: if the 5♪ line had continued to descend in single notes, as the faster moving line it would always be moving further away from the other dynamic line. Thus

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[1]Areas where the ostinato/dynamic line demarcation was much clearer.

this 'thickening' of the 5𝅘𝅥𝅯 line (from two to three to four notes in b.84) results in the eventual overlap with the bottom of the 7𝅘𝅥𝅯 line.

The proximity of the two dynamic lines and the absence of the conflicting 3𝅘𝅥𝅯 grouping in the same registral area makes it easier to hear the points of coordination between the 7𝅘𝅥𝅯 and 5𝅘𝅥𝅯 groupings. The most prominent of these is at the end of b.82 when the merging of the two inner limits has not yet occurred. The next expected point of coordination at the start of b.85 has no 7𝅘𝅥𝅯 pitch(es): occurring after the overlapping of the two lines and the increase in the 5𝅘𝅥𝅯 line to four pitches, the 7𝅘𝅥𝅯 line drops out. This marks the culmination of the process of breakdown of the descending activity through a gradual slowing down in the rate of descent: i.e., the 3𝅘𝅥𝅯 line, being the fastest moving, gets to the bottom first and then drops out, leaving the slower-moving 5𝅘𝅥𝅯 and 7𝅘𝅥𝅯 lines. In spite of the fact that the 5𝅘𝅥𝅯 line is the lower of the two, the addition of extra pitches, as well as effecting the eventual merging with the 7𝅘𝅥𝅯 line, introduces an ascending element—instead of a descending band of activity with an ever-extending lower limit, there is more emphasis on the area between the 7𝅘𝅥𝅯 and 5𝅘𝅥𝅯 lines, thus detracting from the descent.

In b.82, although the 3𝅘𝅥𝅯 grouping is dropped as one of the lower descending lines, there is not an overall reduction in the number of conflicting groupings. Instead, this grouping is articulated through the accentuation of pitches that are closely connected to the ostinato's octave Cs.

Octave multiplication in the ostinato

When the octave displacement of the accented pitches is disregarded, they can be seen to form an almost chromatic descent from B to E, with the only gap F#-E immediately filled by F (**ex.3.18**). This F then becomes the focal point for a new stage in the chromatic descent by becoming associated with the first move in the

ostinato's octave line (C-C moving to B-B) through the formation of an F-B dyad, which then moves as seen in **ex.3.19**.

This is another example of the process whereby one slight 'wobble'—something out of character in the means of movement already established—is often a precursor of some more significant change. Alteration or destabilisation on a very local level (for example, the displacement of one pitch) can lead to a major change in the means of progression. It is often the righting of this 'wobble'—the restabilisation of the three-stage process—that triggers something more important.

At first, both pitches of the F-B dyad move simultaneously to E-B^{b}. This rate of descent is not maintained, however, with either the top or the bottom pitch remaining fixed through the next two moves. The ostinato octaves, while still present, are not as clearly distinguishable from the moving chromatic line as in b.82 for two reasons: (i) the ostinato is no longer fixed on the one pitch C, and (ii) there is octave duplication of the accented pitches (F in mid. b.83, E at the end of b.83 and the start of b.84), thus blurring the lower limit of the ostinato. Thus, although in voiceleading terms the ostinato C-C octave can be seen to move chromatically through B-B and B^{b}-B^{b} to A-A in b.84, its function in b.83 is less clear than in the preceding bar because of its stronger links with the accented line.

In b.84, the ostinato returns to a more familiar role, defining a fixed area, imposing upper and lower limits against which dynamic activity can be measured. Earlier, in bs.82-3, because of the octave displacement of the accented line together with the ostinato's two-octave compass, a diffuse registral area was occupied. Now there is a sense of focusing in on a smaller registral area where upper and lower limits are clearly defined and dynamic activity is restricted to stepwise movement. This restriction contributes to an increase in the rate of descent previously slower because of (i) octave displacement, and (ii) alternation of pitches in the dyads (b.83) (**ex.3.20**)

The accented line approaches the lower limit A, moving at consistent 3♪ intervals as far as B^{b} on the fourth semiquaver of b.85. At the same time,

additional pitches cloud the texture on the second semiquaver of b.85 (they do not have any clear voiceleading connections, but coincide with a significant point of coordination for the 5𝅘𝅥𝅯 and 7𝅘𝅥𝅯 lines). This extra sonority at first detracts from the dynamic descent/ostinato juxtaposition. The thickening of the texture continues with the addition of E^b to the expected A-B^b interval 11, the penultimate pitch before the lower limit of the ostinato is reached. Yet when A is finally reached, any sense of a climactic arrival point is denied by (i) the absence of any accent and (ii) its early arrival—two rather than three semiquavers after the accented B^b. The A octave is not reached as a simultaneous attack: instead, both As are transferred to A^bs, with the top A^b marking the starting point for a descending accented line moving in 3𝅘𝅥𝅯 units,[1] and the other functioning as a fixed lower limit.[2]

Cooperation between melodic lines: hemiola technique

In spite of the varied types of upper-registral activity from b.76 onwards, the lower register has been occupied with a single band of descent involving 3𝅘𝅥𝅯, 5𝅘𝅥𝅯 and 7𝅘𝅥𝅯 groupings. These processes culminate in the accented chord on the second semiquaver of b.85, with the merging of the 5𝅘𝅥𝅯 and 7𝅘𝅥𝅯 lines as described above. This long-term process, together with the relatively consistent texture in the upper register adds to the perception of a large single section of activity. Therefore, in spite of the voiceleading links and the consistent 3𝅘𝅥𝅯 unit, the *sub. pp* section from b.85 onwards is perceived as a slight shift away from the preceding activity. As well as the above-mentioned links between the two sections, there are other common factors.

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[1]The 3𝅘𝅥𝅯 unit from the previous activity is maintained in spite of any conflict caused by the accented chord on the second semiquaver of b.85.

[2]This is another example of the ability of the ostinato octave to change to a single ostinato pitch with a dynamic upper line

The *sub. pp* phrase operates as follows: the top descends chromatically (at first) towards the lower A^b limit using 3𝅘𝅥𝅯 units (the ostinato cooperates metrically with this line). A descending 5𝅘𝅥𝅯 line, moving in parallel interval 7s, begins below the A^b limit at the same time. A 7𝅘𝅥𝅯 line, also moving in parallel interval 7s, but not coordinating with the first attack of the 3𝅘𝅥𝅯 and 5𝅘𝅥𝅯 lines, begins its descent on the third semiquaver of the phrase.

The activity in from b.85 onwards can, in many ways, be seen to exhibit a very controlled dynamic descent. The various semiquaver multiples are grouped fast to slow, top to bottom. The ostinato remains fixed, both in register and pitch, and is again subordinated to the 3𝅘𝅥𝅯 line. In contrast to the long sprawling descent in bs.76-85, this descending activity has more textural clarity. In many ways it is a simplified version, a retake of the processes of the earlier section.

Some factors which may work against this level of control become more apparent in bs.86-7: the move into sideways chromaticism in the 3𝅘𝅥𝅯 line, the thickening of the texture by the addition of a new 4𝅘𝅥𝅯 line, descending from G-G^b-F. Yet the most significant change is the octave displacement of two pitches as the 3𝅘𝅥𝅯 line approaches the A^b limit (**ex.3.21**).

Had the B^b and B pitches been sounded at the original register, the sideways chromaticism would have the effect of reducing the impetus towards the A^b limit. Instead, the octave displacement opens up the top register, and B^b-B perhaps hints at chromatic ascent rather than descent. Thus the only point of coordination of attack between the 3𝅘𝅥𝅯, 5𝅘𝅥𝅯 and 7𝅘𝅥𝅯 lines coincides with an opening-out of the top register, instead of a point of culmination of the descent from b.85. This opening-out is heightened by a crescendo to *mf* but this new dynamic is not sustained: instead, a second *sub. pp* marks the possible opening of a new phrase (or second retake).

The registral expansion implied by the B^b-B is picked up, with an accented G almost two octaves above the ostinato pitch, which remains fixed on A^b. The 3𝅘𝅥𝅯 grouping is maintained and there is no contradictory accent (i.e., one outside the

3♪ grouping) for thirteen semiquavers. This is the point of least complication of pulse since b.61.[1] Such a lack of complexity with respect to one parameter creates more focus on other parameters and the processes that control them, the accented line and its chromatic descent. The 3♪ line's descent is purely chromatic from its starting pitch G to A^b an octave above the fixed ostinato pitch. The entry of a 4♪ accented line in b.88 does not, as has been seen earlier, result in a shift to sideways chromaticism. Instead, the new line begins a pure chromatic descent from B (an interval 4 above the start of the 3♪ line). For almost two bars the 3♪ and 4♪ lines co-exist in relative stability: there is no registral conflict because of (i) the separation of the two lines, and (ii) the fact that the slower moving line is on top: thus, they do not encroach on one another's territory.

Because of this stability in other areas, any pulse conflict seems to be less apparent. The relationship between the two accented lines is 'audible': they are perceived as fitting together, as being of equal importance. Much of this audibility is due to the non-conflict role of the ostinato: it is subordinate to the 3♪/4♪ lines, which are again juxtaposed in a hemiola-like fashion. Because of the lack of overall complexity in other areas, more attention is demanded by, and given to, the 3♪/4♪ relationship. There are three points of coordination between the lines, and these are significant for the aural assimilation and understanding of this relationship. Thus when a new and conflicting dynamic line draws attention away from the final point of coordination and cuts across an area of registral, linear and metrical control, where the underlying process of the piece (chromatic movement towards a fixed limit) has been articulated in the clearest possible terms, there must be more than mere local consequences.

The new dynamic line in b.89 (moving in 5♪ units) starts on E (interval 8 above the ostinato A^b), and uses sideways chromatic movement (note the continued clear spacing between lines, with 23 semiquavers between the entry of

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[1]In bs.62-8 the ostinato did not conflict metrically with the large rhythmic unit (in 7♪ units): neither however did it cooperate to the extent that the ostinato's pattern does in bs.87-8.

the 4♪ and 5♪ lines). Its first pitch does not coordinate with accents from either dynamic line: thus it creates a conflict of pulse even before its basic ♪ unit has been established. There is resulting sideways chromaticism in first the 3♪ and then the 4♪ lines (occurring perhaps because the first 5♪ accent has such a strong effect on the 3♪/4♪ relationship that it is impossible for their means of progression to remain unchanged)[1] (**ex.3.22**).

The 4♪ line is the last to relinquish pure chromaticism, and does so with a larger leap than usually associated with this type of movement (E^b-C). This leap has more 'drastic' implications in that more pitches are necessary for 'normality' to be restored—more pitches are needed to fill the gaps in the chromatic continuum—and in this context, where the notes are four semiquavers apart, this takes longer than, for example, a similar gap in the 3♪ line. In this extra time, other factors can arise which may alter the function or the outcome of the original line and its process: thus, one leap can result in more global implications than its first local effect (**ex.3.23**).

All gaps in the chromatic framework in the 4♪ line have been filled by D (first note in b.91) but directionally, things have become much more complex. The entry of the 5♪ line provokes a shift from the strict chromatic descent in both the 3♪ and 4♪ lines, resulting in the ultimate breakdown of mono-directional movement.

Registral divergence and the subordination of the ostinato

In b.91, the G#-B dyad in the 4♪ line provides the first repetition of a pitch (B) from the earlier descent. Both parts of the 4♪ line subsequently return to sideways chromatic movement, with no move larger than an interval 2. Thus regular

[1]Changes in the chromatic framework originate in the middle of the texture—sideways chromaticism is introduced from the bottom up. Thus, this heightens the progression towards the ostinato, bringing the activity to within an octave of the A^b pitch.

progression is restored and there is more overall clarity of direction. However the divergence of the two parts of this line reintroduces the idea of registral expansion as seen at the end of the first attempt in bs.76-85.

The 'wobble' analogy can be seen to operate in the retake. The chain of events can be traced as follows:

(i) The 3♪ line and ostinato co-exist metrically,

(ii) The 4♪ line is a conflicting element but there is cooperation on various levels, resulting in a stable 4♪/3♪ relationship,

(iii) The entry of the 5♪ line in b.89 provokes the first sideways chromaticism in the 3♪ line and hence in the 4♪ line,

(iv) By D in b.91 all non-chromatic gaps have been filled, but the G#-B dyad leaves one gap (no A),

(v) If the G#-B dyad was followed by A then there would be a return to stability of sorts, with a possible continuation of the downward trend from this, the highest part of the texture,

(vi) Instead, G#-B is followed by G-C, meaning that the stabilising element of chromatic movement is now couched in destabilising terms of divergence, leading to registral expansion rather than mono-directional movement (**ex.3.24**).

The top and bottom parts of the 4♪ line move either in parallel or diverging contrary motion from b.91 to the start of b.93. The overall effect is of two diverging lines which are widest apart on the first beat of b.93 and then converge for the first time, with a large leap of interval 5 in the top line implying a break in the consistent sideways chromaticism of the previous two bars. The addition of an extra pitch implies a move away from the idea of two diverging lines, with phrasing and a change in note-length also separating this chord from the previous dyads.

The shift from two- to three-note chords alters the way that the line is perceived. A line moving in single pitches carries the least number of implications with respect to overall direction of the line and the distance from one pitch to the next. A line using dyads is more complex, as not only does each part of the line have the above implications, but the relationship between the two lines must also be considered. Depending on the context, however, both sets of implications and their inter-relationship can be followed aurally. As the number of pitches in the chord increases, a sort of normalisation exists whereby the movement of the chord as defined chiefly by its outer parts, overrides the separate voiceleading implications of the inner parts.[1]

In this case, the new process of registral expansion in bs.91-3 continues, with the top pitches of the chords continuing to ascend, at first chromatically, and then using more rapid movement (leaps of interval 2 leaving any gaps unfilled), with a return to pure chromaticism for the last nine notes of the piano's top register.

The other 2/3/4 pitches of the chord begin by having a predominantly downward trend in b.93. In bs.94-5 an interval 14 is generally maintained between the outer parts of the chord. Towards the end of b.95 the texture thickens briefly and an octave is maintained between the outer parts at first as the chord moves chromatically towards the piano's upper limit. Thus both top and bottom ascend at the same rate. As the top of the piano becomes nearer, the bottom line speeds up, moving by interval 2s, while the top maintains chromatic movement. Once the upper part reaches top C, the bottom line uses sideways chromaticism with changes of direction, as if delaying its arrival on C. In bs.91-8 the manipulation of the processes of chromatic descent and divergence effect a controlled move towards the upper registers of the piano and an eventual climactic arrival point

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[1]As a texture becomes more complex, aural 'sifting' must be possible—the most significant processes (those of global import) will be followed because of their 'demand' for foreground attention.

with the top pitch of the piano established as a goal.[1] There is much reorganisation of 𝅘𝅥𝅯 grouping in this register in bs.95-8: however this will be examined later in the context of similar changes in the overall texture.

As seen above, the 3𝅘𝅥𝅯 line moves chromatically until the entry of the 5𝅘𝅥𝅯 line in b.89, and then uses sideways chromaticism as far as b.91, where it reaches C an interval 4 above the fixed ostinato limit.[2] Instead of 'challenging' this A♭ by continuing to approach it through pure or sideways chromaticism, the 3𝅘𝅥𝅯 line passes over the A♭ and continues to descend below it.[3] This descent starts off using sideways chromaticism (giving the impression of rapid movement away from the fixed A♭) and then changes to pure chromatic movement as it approaches A♭ an octave lower (**ex.3.25**).

This time, instead of creating an octave between the accented A♭ and the fixed ostinato pitch, a similar process to that in the 4𝅘𝅥𝅯 line (third beat, b.91) is used, with an earlier pitch repeated as part of a dyad, A-B, followed by other dyads creating complication of the hitherto mono-directional descent.[4] In the last 3𝅘𝅥𝅯 group of b.93, there is octave multiplication of the ostinato A♭(=G#), with an ensuing shift from single fixed pitch to octave ostinato. As the 3𝅘𝅥𝅯 line continues to descend, the lower ostinato A♭ is encroached upon by the top of the dyad line.

There is further complication of the texture with the top part of the dyad line first using sideways chromaticism with several pitch repetitions, thus reducing the overall clarity of direction, and then splitting in two in the middle of b.94. This split occurs just as the lower G# is about to be breached by the top of the dyad line. After the shift from two- to three-note chords, the top pitch of the ostinato

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[1]Note that top C was not established as a fixed limit first.

[2]In bs.90-91 the 3𝅘𝅥𝅯 line's movement becomes more extreme (larger leaps) as it crosses the 5𝅘𝅥𝅯 line, which always moves chromatically.

[3]This is another example of the conversion of a limit from being the goal of a line moving towards it, to being the starting point of a line moving away from it.

[4]At first there is divergence between the two parts of the dyad line: then there is an overall parallel descent.

octave is dropped and attention is focused on the lower registral activity, with the ostinato acting as a quasi-fixed limit to the top part of the 3𝅘𝅥𝅯 line.[1]

Once G# is reached by the top of the 3𝅘𝅥𝅯 line (last semiquaver, b.94) and breached (G, b.95), the ostinato shifts to B♭. This shift coincides with a change in the descending line at the bottom of the 3𝅘𝅥𝅯 chords (**ex.3.26**).

At the end of b.94/start of b.95 the top note of the 3𝅘𝅥𝅯 chord and the ostinato pitch are the same: thus there is a resulting group of three semiquaver G#s. The first of these is not emphasised itself by accentuation or note-length.[2] At the same time the bottom note of the 3𝅘𝅥𝅯 chord arrives on B as part of its chromatic descent. Thus the outer limits of the chord G#-B are expected to move chromatically to G-B♭. These expected pitches do occur on the next accented beat, but in inversion.

The 3𝅘𝅥𝅯 group with its implied ambiguity between the top note of the chord and the two ostinato pitches is now replicated with a new pitch, B♭.[3] Thus the bottom of the 3𝅘𝅥𝅯 chords moves chromatically from C in b.92 to B in b.94, where the swap occurs with the top of the chord. From G in b.95, the bottom of the chord resumes its descent, using sideways chromaticism at first, with a return to mainly pure chromatic movement from C in b.96.

In the 3𝅘𝅥𝅯 group in b.95 (B♭s) the separation between the moving line (with its longer, accented notes) and the ostinato no longer exists. The ostinato's A♭(=G#), fixed since b.85, has gone, leaving the 3𝅘𝅥𝅯 grouping as the only constant element, still articulated by the accentuation of the remainder of the 3𝅘𝅥𝅯 'chord' (now reduced to a single pitch, G). There are several possibilities for further progression within a 3𝅘𝅥𝅯 grouping:

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[1]Note the ambiguity of the top pitch of the 3𝅘𝅥𝅯 chord, which is both part of the 3𝅘𝅥𝅯 line and linked to the ostinato's 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯 grouping. This ambiguity will be exploited at the start of b.95.

[2]However, it will have extra emphasis because of the accentuation of the 3𝅘𝅥𝅯 chord.

[3]Note that the swapping of pitches and registers between the various 3𝅘𝅥𝅯 lines and the ostinato begins in b.95, but this is anticipated and made possible by the change from dotted quaver to 𝅘𝅥𝅯 from the middle of b.94 (the dynamic notes are no longer prioritised through increased length.

(i) The ostinato/dynamic line ambiguity could continue as a succession of groups of three repeated notes,

(ii) The ostinato/dynamic line relationship could return to its previous pattern, (**ex.3.27**).

The actual continuation (iii) restores the ostinato/dynamic line relationship as in (ii)—the dynamic line has the first pitch, followed by B^b in a position of subordination within the group. The resulting gap (A^b-B^b) is immediately filled by a semiquaver A, with only one intervening ostinato B^b instead of two. This A is given extra emphasis through its coordination with the accented lower pitch of the chord F#, everything previously associated with the 3♪ chord and grouping comes a semiquaver early, creating a 2♪ grouping instead. This grouping is confirmed by the next accented pitch, G (with intervening ostinato B^b) which marks the resumption of the descent. In bs.94-6, the 5♪ line is active in the same register as the 3♪ (and now the 2♪) figuration, and its effect on events should be examined.

From b.89, the 5♪ line can be seen to have had a destabilising effect on the 3♪ and 4♪ lines with respect to direction and chromaticism. Its sideways chromatic movement does not challenge the fixed ostinato A^b in bs.91-2: however it is a contributory factor to the eventual move of the ostinato's A^b(=G#) to B^b in b.94 (speeding up as it approaches A^b using a C-B dyad, anticipating the ostinato's B^b [A#, b.95]).

The 3♪ line originally crossed the 5♪ line in b.90: therefore because of the shorter group length (more frequent attacks), it might be expected to descend at a much faster rate. Yet because of the various complications with respect to dyads, triads and its relationship with the ostinato, its rate of descent has slowed down, and it shares a common register with the 5♪ line in b.94. In b.95 the 5♪ line has its first leap of more than interval 3 when it moves from A#-D^b, thus crossing the 3♪ line,[1] with its accent occurring on the second semiquaver of what appears to be a

[1] The 3♪ line reached a lower level earlier, but returned to G as part of the 'inverted' move.

3♪ group. This is the point where, as mentioned earlier, an ostinato pitch is dropped, with the resulting creation of a 2♪ grouping: thus the 5♪ line's accent is directly between two accents from the 2♪ grouping. Therefore the increase in the rate of descent through the shift from 3♪ to 2♪ groupings can also be perceived as a response to the 5♪ line's challenge to its register, 'making up for lost time' in its earlier descent. The increase in the number of accents also has a dynamising effect in this register and this is mirrored in the upper register, with a shift from 4♪ to 3♪ groupings: this again increases the number of accents.

From the end of b.95, there is a perception of a texture governed by two lines diverging at an ever-increasing rate. The ostinato also undergoes several changes and its rate of change also increases because of the absence of well-established patterns of progression: for example, in b.95 B♭ is established as the fixed ostinato pitch with a descending 2♪ line moving away from it. In earlier cases the ostinato pitch moves as the corresponding pitch an octave lower or higher is approached by the descending or ascending dynamic line. In this case, in b.96 B♭ moves to B while the descending line is still an interval 4 above low B♭.[1] As the descending line moves further away from the fixed B in b.96, the ostinato moves down an octave to low B: yet the intermediary step of reintroducing the octave ostinato before such a move (for example, the A♭ ostinato, end of b.93) is not used here (again, the omission of stages in a hitherto established process leads to faster development). This new lower ostinato pitch remains fixed as the two parts of the 2♪ line descend. Thus, shifting down of the ostinato indicates further focus on the lower registers, contributing to the increase in the rate of descent. It is possible that this can be linked to the change in the upper registral ascent from a 3♪ to a 2♪ grouping.[2]

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[1]However, the 5♪ line is approaching Bb an octave lower, and in fact its last note B coordinates with the first ostinato B.

[2]The accent which comes a semiquaver early in the upper register, coordinates with the last ostinato B at its usual register.

In bs.96-7 there is a textural thinning in both the upper and lower registers, with the lower 2♪ line moving in dyads: the bottom part moves chromatically as far as the end of b.96, in sideways chromaticism to C# in b.97 and then returns to F, creating an interval 7 with the top part. On the next accent, the same interval is maintained between the parts while the ostinato B is breached by the top part, and after this move, accented interval 7 dyads descend chromatically for three semiquavers with no intervening ostinato notes. This parallel movement is not maintained: instead, the two parts diverge.

As mentioned previously, the goal of the ascending line (top C) is reached in b.97. This C is not prioritised through extra accentuation or an increase in note-length: instead, it is repeated while the lower parts of the chord continue to ascend. There is a sense of waiting for the other parts to 'catch up': the top C is emphasised as a sort of early arrival point—when C is reached, there is still ample time for further descent in the lower register.[1] Both dynamic lines have been shown to have the potential to increase their rate of ascent/descent by shortening the distance between attacks (for example, the changes from 4♪ to 3♪ to 2♪ groupings). Each change in the dynamic activity can be linked to an occurrence in one of the other dynamic lines, and so far, there has been no consistent simultaneity of attack between lines.

[1]The 2♪ line is still a compound interval 4 above the lowest note of the piano.

Bar	Register	From	To	In response to
b.95	Low	3	2	5 line's challenge in the same register
b.95	High	4	3	Speeding up of descent in 3 line
b.96	High	3	2	Continuing descent, attempt to coordinate with low 2 line
b.97	Low	2	1	Breaching and elimination of ostinato
b.97	High	2	1	Speeding up of descent and eventual coordination of attack between low and high registers.

Summary

It is very significant that controlled divergence and simultaneity of attack is only achieved after the ostinato has been eliminated: that is, the first coordinated accent between the diverging lines comes on the semiquaver where the first missing ostinato note is expected in b.97. Because of this fact, the climactic arrival point in bs.97-8 is much stronger than that in bs.52-4. Now the ostinato has been subordinated to the dynamic lines and eventually eliminated: previously the ostinato expanded into a sprawling cross-registral force that confused the otherwise focused dynamic progression. In bs.95-8 the dynamic lines' potential to change their pulse or semiquaver grouping means that the ostinato's prime function: that of providing a referential framework, a constant semiquaver pulse against which disparate groupings can be measured and related, has, for the moment, been usurped. This implies a fundamental reworking of their relationship with the ostinato. Once the dynamic lines start to move in coordinated accented semiquavers, the ostinato is no longer necessary.

Thus the passage from the end of b.97 to the start of b.98 exhibits a high level of control and cooperation across various registers. It is a more significant example of controlled cooperation than, for example, bs.55-61, in that it is a logical outcome of the processes in the previous section(s) and not a sudden change of texture. In bs.55-61 the sudden absence of the ostinato left a vacuum: here it has been eliminated using various controlled processes.

The events in bs.95-8 constitute the largest climatic gesture or arrival point since bs.52-5. In both cases registral divergence is emphasised. More importantly, as well as the difference in the treatment of the ostinato, bs.95-8 exhibit a move towards unification of pulse, whereas this became increasingly complicated from b.52 onwards. Thus the two issues demanding further resolution in bs.52-5 are dealt with in bs.95-8. The increased weighting of this arrival point must raise the issue of closure: is this climactic gesture strong enough to provide resolution for all the processes that have evolved in the piece so far? The high degree of control exerted over some parameters has already been discussed: however, there are some mitigating factors that negate the potential for overall closure.

(i) In general, there is a deliberate lack of coordination between the diverging lines until the eventual move to a 1♪ grouping: for example, by the time the 4♪ line changes to 3♪ units in b.95, the lower 3♪ line has already changed to 2♪ units. When both lines eventually reach a 2♪ grouping, they are still unsynchronised. This lack of coordination/synchronisation, together with the ever-increasing number of accents, contributes to the increasing dynamisation of the divergence, and the seven semiquavers of synchronised movement do not seem to be enough to balance all the preceding pulse conflict.

(ii) In the eventual coordinated passage the directional energy (i.e., the impetus towards divergence) is dissipated somewhat by the internal divergence in the lower part.

(iii) There is no coordinated arrival point emphasising registral limits at both extremes: the upper limit is reached early on and there is a sense of waiting for everything else to catch up, while there is no clearly defined lower limit, with the descent stopping well before the bottom of the piano's register, as alluded to earlier in bs.55-62, where the lowest note is an interval 8 below G in b.98.

In bs.97-8 the upper register is arrived at through a climactic gesture which could be perceived to 'seal it off' in a relatively emphatic way. In spite of this, the overall attempt to achieve climax/closure has still some way to go to effect closure for the piece as a whole, with specific issues still unresolved in the lower registers, and the relationship between disparate dynamic lines seeming to require further clarification.

Analytical commentary on bs.98-122

Regrouping: the simplification of the ostinato

Bs.98-9 mark another 'expectant' moment in the progress of this Etude. Like bs.55-62, the texture and figuration are stripped down to a single element. These bars are also preceded by dramatic registral divergence, the culmination of complex dynamic processes. In contrast, the repetition of D# 𝅘𝅥𝅯s, restricted to a single pitch, emphasises stillness and solitude: there is a total absence of any polyrhythmic activity for these few bars.

As in bs.52-5, the arrival point in bs.95-8 is followed by a completely contrasting texture. In b.56 this took the form of two coordinated dynamic lines

without any referential ostinato: here it is the ostinato without any surrounding dynamic activity. In b.98 there is a reduction in the dynamic level from *fff* to *sub.pp*, with a series of D# semiquavers. This is the least complex version of the ostinato in the Etude so far, with no complications of grouping (no 4𝅘𝅥𝅯 or other semiquaver groups), octave multiplication or conflicting accented lines. The fact that it is preceded by a series of accented semiquavers means that there is no implied grouping left hanging from the previous section. The 21 semiquavers of pure ostinato cannot be perceived in any single grouping.

In b.99 the first non-ostinato event occurs, with a B-F# attack.[1] The second attack, at the end of b.99 is significant in that (i) it implies a 7𝅘𝅥𝅯 grouping (confirmed by the next attack in b.100), (ii) it ascends chromatically from the opening accented pitches, and (iii) it introduces E a semitone above the ostinato D#, thus opening up the possibility of a challenge on the ostinato pitch and creating a wider band of 7𝅘𝅥𝅯 activity. One has heard so many descending chromatic lines that this rising one seems imbued with a little extra excitement and anticipation. The above implications are confirmed in b.100, with the F-D^{b}-A^{b} confirming the 7𝅘𝅥𝅯 grouping and maintaining a pure chromatic ascent. At the end of b.100, the chromatic ascent continues with the further broadening of the 7𝅘𝅥𝅯 activity to a four note chord with G# at the top (an octave doubling of the A^{b} at the top of the previous chord). In b.101 there is an increase in dynamic activity, with an early G attack (after 5 semiquavers) creating the first chromatic descent (G#-G).

This chromatic descent continues, with F# confirming a 5𝅘𝅥𝅯 grouping: i.e., the first conflict faced by the 7𝅘𝅥𝅯 line. The next dynamic line is introduced in a similar way: i.e., the first pitch, B is introduced as part of the 5𝅘𝅥𝅯 line, but then moves after 4𝅘𝅥𝅯s to B^{b}, establishing a further level of chromatic descent. Thus, in contrast to the controlled environment in bs.99-100, there is now ever-increasing

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[1]Note that this does not create any semitonal relationships with the ostinato pitch. This contrasts with the F^{b}/E^{b} conflict, which provided the impetus for the first chromatic descent in b.2.

complication of the texture, with new lines entering closer and closer together.[1] All the new lines descend chromatically, thus approaching and challenging the 7𝅘𝅥𝅯 line. This challenge alters the progression of the 7𝅘𝅥𝅯 line that was clearly defined in bs.99-100 (**ex.3.28**).

In bs.98-102, both the ostinato and the dynamic lines are operating in their simplest and most cooperative forms. The ostinato is functioning according to the fundamental principle of additive-pulse, supplying a common background 𝅘𝅥𝅯 pulse for the various dynamic lines. Within these dynamic lines, coordination, the principal goal of vertical hemiola technique, is emphasised, with each new line being introduced in the smoothest possible way, through a coordinated accent with a line already present. There is also cooperation between the ostinato and the dynamic lines, with each new pitch in the increasingly dynamic ostinato in bs.102-5 coordinating with an accent in one or other of the dynamic lines.

Mid-registral development and textural compression

After the first non-7𝅘𝅥𝅯 line note (i.e., G moving outside the 7𝅘𝅥𝅯 grouping, b.101), there is the first non-chromatic move in the 7𝅘𝅥𝅯 line (bottom of the chord, F#-G#). This marks the beginning of a change in the chordal nature of the line (i.e., a three-note chord ascending in parallel chromatic motion). In bs.101-4 the only time that all three pitches move in this way is in b.103.

After the entry of the 5𝅘𝅥𝅯 and 4𝅘𝅥𝅯 lines there is a gap of approximately two bars before the start of another accented line: however, there is no levelling-out of, or decrease in, dynamism, as the ostinato begins to move using ascending chromaticism, without establishing a fixed or implied semiquaver grouping. This movement accentuates the sense of textural compression, with the bottom of the

[1]There are approximately 1½ bars of the 7𝅘𝅥𝅯 line before the 5𝅘𝅥𝅯 line enters, but only one bar (approx.) of the 5𝅘𝅥𝅯 line before the 4𝅘𝅥𝅯 line enters.

texture no longer fixed. As this compression continues, there is overlapping between the various dynamic lines with the top of the 7𝅘𝅥𝅯 chord approaching the 5𝅘𝅥𝅯 and 4𝅘𝅥𝅯 lines. The only pure chromatic chordal movement brings the top of the chord to the top of the texture. E and F are not sustained for 7𝅘𝅥𝅯s,[1] and after this attack the 7𝅘𝅥𝅯 line is reduced to a series of dyads.

F's primacy at the top of the texture is shortlived, as a new dynamic line enters at the end of b.103. As seen previously, its first pitch A is introduced at the top of the texture in coordination with an attack from the 5𝅘𝅥𝅯 line.

In bs.103-4 the dynamic lines and the ostinato move as follows:

Line	Activity	Maintained up to
5𝅘𝅥𝅯	Continues to descend chromatically	Start of b.105
4𝅘𝅥𝅯	Descends almost chromatically except for sideways chromaticism at the crossover points with the 7𝅘𝅥𝅯 chord	Start of b.105
3𝅘𝅥𝅯	Descends rapidly using sideways chromaticism[2]	Start of b.105
Ostinato	Ascends chromatically in an irregular grouping in cooperation with accents from the various dynamic lines. Its rate of movement increases as it approaches the bottom of the 7𝅘𝅥𝅯 note chord, but it does not immediately breach this limit.	Mid. b.105
7𝅘𝅥𝅯	Ascends in non-parallel dyads using sideways chromatic movement [3]	Mid.b.105

[1] Note-length is maintained during the 7𝅘𝅥𝅯 line's crossover with the 5𝅘𝅥𝅯 line (the 7𝅘𝅥𝅯 line creates a dynamic challenge using leaps and chromatic movement:

5𝅘𝅥𝅯 line	E^b	D
7𝅘𝅥𝅯 line	C#	D^b

The 7𝅘𝅥𝅯 line is more static in its overlap with the 4𝅘𝅥𝅯 line:

4𝅘𝅥𝅯 line	G	F#	F	(F)
7𝅘𝅥𝅯 line	D	E	(E)	E^b

resulting in a loss of momentum at the top of the texture.

[2]Because of the late entry of the 3𝅘𝅥𝅯 line it does not cross the 4𝅘𝅥𝅯 or 5𝅘𝅥𝅯 lines in spite of its faster movement.

[3]Note that the 7𝅘𝅥𝅯 line reverts to the use of a three note chord at the end of b.104, with F# becoming the top pitch of the texture, plugging a gap in the 3𝅘𝅥𝅯 line's sideways chromaticism which is then filled in the 3𝅘𝅥𝅯 line itself in b.105.

The events in bs.105-6 can possibly be viewed as a microcosmic version of bs.94-8, but with registral convergence rather than divergence as an objective at first. There are similar attempts to achieve coordination of accent across all registers, with ambiguity between dynamic activity and the ostinato.

The first accent in the top part G#-D# coordinates with the last dyad in the 7𝅘𝅥𝅯 line and is followed by three ostinato-type semiquavers (unaccented, spanning an octave). The accented line descends in parallel chromatic interval 7s[1]: however it has an irregular pattern of accentuation (**ex.3.29**).

In bs.105-6 there are three sets of 7𝅘𝅥𝅯s in the upper part, each grouped in 4+3/7𝅘𝅥𝅯s. This is significant for two reasons:

(i) it is positioned so as to provide continuity with the 7𝅘𝅥𝅯 grouping as established in b.99: thus, in spite of the textural changes in b.105, there is still a metrical link with the previous activity,

(ii) a dynamic line has recently been shown to have the potential to increase its rate of movement (see bs.94-8). Now the dynamic line is showing further flexibility by alternating between two semiquaver groups.[2]

In the lower register the ascending process from the previous ostinato activity overlaps with the start of the descending interval 7s in the top part. Because of the E-B dyad from the 7𝅘𝅥𝅯 line, there is coordination between the two registers on the fourth semiquaver of b.105, and the next two accents in the lower register also synchronise with an accent in the upper part, thus cooperating with the first 4+3𝅘𝅥𝅯 group. Such cooperation is not maintained, however, with the lower line continuing to move in 3𝅘𝅥𝅯 units (**ex.3.29**).

The lower part ascends in parallel interval 7s: however, it does not always move chromatically. Therefore its rate of ascent is faster than that in the 4+3𝅘𝅥𝅯

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[1]Perhaps referential to the descending chromatic intervals 7s in b.95.

[2]Note similar division of 5𝅘𝅥𝅯 into 3+2 in b.75.

line, and the two lines come within a semitone of one another in b.106, G-D and E^{b}-B^{b}.

Instead of actually overlapping, both lines return to a point a semitone higher than their original starting pitches. From this point, the lines converge again, with a noticeable increase in the speed of events:

(i) The lower line starts with an interval 2 leap, instead of using pure chromaticism at first,

(ii) The expected 4+3♪ grouping changes to a 3♪ grouping (the first early accent = A^{b}-E^{b}, last beat of b.106): thus its rate of descent increases. This new 3♪ grouping does not synchronise with that in the lower line.

The ostinato has not been mentioned so far in the examination of events in bs.105-6. If the function of the ostinato is understood to be that defined in the general introduction to this chapter—a constant semiquaver pulse creating a referential framework against which various dynamic lines can be measured—the unaccented semiquavers in these lines can be said to fulfil this function in some ways. The distance between accents in both lines is filled in with semiquavers and so can be measured. In both cases, the ostinato does not have a separate grouping: instead, it cooperates with the pattern of accentuation in the dynamic lines (a pattern anticipated in the cooperation between the moving ostinato and the various accented lines in bs.102-5). One significant change is the presence of two quasi-ostinatos: when the synchronisation of the dynamic lines ends with the 4♪/3♪ juxtaposition (mid.b.106), one set of unaccented semiquavers continues to fill the gaps between accents in the top line, conforming to a 4♪ + 3♪ grouping, with the other set following the 3♪ grouping in the lower line. This dual ostinato can be contrasted with the events in bs.87-95, where the ostinato is used in a similar way, filling in the gaps between accents in a 3♪ line. In this case however, it is associated with one dynamic line only, and any other dynamic lines must be measured against the prevailing 3♪ grouping.

In bs.105-6 the dynamic lines are equal, each having its own quasi-ostinato figure fulfilling the ostinato function. The shape of each ostinato is closely linked to that of the dynamic line, with little sense of fixed pitch, or of the ostinato acting as a limit for the descending or ascending lines. Instead, the ostinato pitches are involved in the breaching of various parts of the dynamic lines, with two breaches occurring at points of significance: (i) prior to the retake of the convergence (ostinato breaches upper dyad E-E^{b}), and (ii) before a further increase in the rate of convergence (lower ostinato again breaches upper dyad G-G^{b}).

The similarity between bs.94-8 and bs.105-6 in terms of aims has already been mentioned. Bs.105-6 represent a stronger development, in that the separate identity of the ostinato has been subordinated to the demands of the dynamic lines. The attempt to achieve synchronisation is also strengthened by the brief coordination of accentuation achieved in b.105: thus there is an attempt to return to this level of synchronisation in conjunction with convergence towards a central point. In spite of this, there is always some lack of coordination associated with the start of the original converging lines in b.105 and the retake in b.106 (some element is always late to start). The top line's move into a 3♪ grouping starts too early: one more 4♪ group would result in coordination on the last semiquaver of b.106 (**ex.3.30**). This would result, however, in the continuation of the 4 + 3♪ unit into the retake, which would perhaps negate the effect of the resumed ascent at a faster rate.

After the second breach at the end of b.106, the ostinato is eliminated in both lines, creating another link with earlier events (b.97), and focusing specifically on the converging lines. The uncoordinated 3♪ texture is not maintained, instead, there is the reappearance of an increasingly flexible top line with a move to 2♪ units, and this perhaps triggers off a similar move in the lower line. The accents remain unsynchronised but there is much cooperation between the converging lines in other areas, mainly in the area of interval content and chromatic/non-chromatic movement (**ex.3.31**).

The only move towards synchronisation occurs when the two lines finally overlap with a coordinated *sfz* semiquaver and, unlike bs.97-8, there is no conflicting divergence in one or other lines: thus the arrival point is strengthened further. The amount of resolution provided by this gesture still seems to be insufficient for the preceding complexity and diversity of relationships between dynamic elements and the role of the ostinato. Also, if bs.97-8 can be said to seal off the upper registral development,[1] bs.105-7 are mainly concerned with mid-registral activity, meaning that a closing gesture that focuses on the lower register has not yet been presented. However, we now have some idea of the norms for such a closing gesture: clearly defined registral progression, taking in the extremes of register as touched on in bs.55-62 (bass) and 97-8 (treble), a reduction of distance between accents from 3𝅘𝅥𝅯 to 2𝅘𝅥𝅯 to 1𝅘𝅥𝅯, and the elimination of the ostinato (no unaccented semiquavers are required).

Referential ostinato links

In both previous arrival points the ostinato has first been subordinated, and then eliminated before the final divergence or convergence. The return of the ostinato in b.107, with its characteristic octave sonority and 4𝅘𝅥𝅯 grouping, creates a referential link with similar versions of the ostinato, most specifically the ostinato figuration at the start of the Etude. This is much more than a local link: the return of such a referential element provides a means of ascertaining how far the piece has progressed. If the ostinato in b.107 was identical in shape and grouping to that of the opening, it would still have to be viewed in the light of all the development that has taken place since then.

[1]Note the lack of any activity in this register from b.101 onwards.

In b.107, both converging lines stop moving and the ostinato returns to octave Ds (and 4𝅘𝅥𝅯 grouping).[1] In the next 4𝅘𝅥𝅯 grouping there is some complication, with division of the ostinato into D and F octaves, perhaps mirroring the dual ostinato in bs.105-6. At the same time, there is total cooperation between the two halves of the ostinato, which combine to form a consistent 4𝅘𝅥𝅯 grouping (**ex.3.32**).

It is significant that from bs.107-9 all dynamic activity is enclosed within the ostinato limits, a return perhaps to the primacy of the ostinato. The first dynamic lines begin 3 semiquavers from the end of b.107, with both accents coordinating with the start of an ostinato group. The second semiquaver of b.108 marks a more important point of coordination, when both accents again coordinate with the next 4𝅘𝅥𝅯 group of the ostinato. The dynamic lines converge, not however at the same rate, with the lower line using faster sideways chromaticism, leaving semitonal gaps unfilled while the top line descends chromatically.

The first complication of this high level of overall coordination comes in the middle of b.108, with the introduction of a D pitch which coincides with the other attacks but then moves after five semiquavers to D^{b}, and subsequently establishes a chromatic descent.

Because of the use of octaves in the ostinato, some of its pitches are in the path of the three dynamic lines in bs.108-9:

(i)	Sideways chromatic	lower 4𝅘𝅥𝅯	ascending towards D (mid reg.)
(ii)	Pure chromatic	upper 4𝅘𝅥𝅯	descending towards F (mid reg.)
(iii)	Pure chromatic	upper 5𝅘𝅥𝅯	descending towards F (mid reg.)

On the last 4𝅘𝅥𝅯 accent of b.108, line (ii) reaches F: yet there is no apparent challenge to the ostinato's F, and the line continues to descend chromatically in b.109. In b.108, line (i) gets to within an interval 2 of mid register D, but then returns to G (interval 1 above its starting point) and descends chromatically in parallel interval 9s with line (ii) (**ex.3.33**).

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[1]This can be linked to previous octave in ostinato, D-D-D, start of ascent in b.105.

There is still little sense of challenge to the ostinato's pitches: in fact, the two accented pitches on the tenth semiquaver of b.109 double the ostinato's D and F, thus creating no additional complication of sonority. In spite of this, there is change in the next ostinato group, with the first note coming a semitone lower and a semiquaver early (**ex.3.34**).

Instead of a change from 4𝅘𝅥𝅯 to 3𝅘𝅥𝅯 grouping in the ostinato at the end of b.109, the complete pattern shifts one semiquaver to the left (the F octave coming one semiquaver early). The lower ostinato octave moves down a semitone, with the upper octave remaining on F, meaning that the internal organisation of the ostinato is relatively unchanged, but that its registral compass stretches slightly.

The upper 4𝅘𝅥𝅯 line drops out once mid-registral D is reached in b.109. There is also a momentary pause in the lower line's activity during the reorganisation of the ostinato's groupings, with the return of this line coordinating with the start of an ostinato group. Such adaptability within a melodic line is highly significant, if not unprecedented,[1] and again reinforces the perception of increased flexible dynamic elements.

The D-D^{b} move in the lower half of the ostinato is mirrored by an F-E move in b.110[2]: hence the ostinato group as a whole is now a semitone lower than that in bs.108-9, but it takes two groups for this move to be effected. There is further complication in b.110 due to (i) the extension of the 4𝅘𝅥𝅯 line into a series of dyads which shadow the bottom of the ostinato, descending in parallel interval 7s with one leap of an interval 2, then using pure chromaticism, and (ii) the entry of a 3𝅘𝅥𝅯 line at the top of the texture just inside the upper limit of the ostinato.[3] At first

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[1]There has been cooperation between ostinato and dynamic lines, notably within the 4𝅘𝅥𝅯/3𝅘𝅥𝅯 section bs.87-9, but never adaptation like this.

[2]The mid-register F is possibly challenged by the 5𝅘𝅥𝅯 line, which is not affected by the metric shift in the other lines in b.109, but which does increase its rate of descent with its first interval 2 move (to A^{b}), thus approaching the F at a faster rate.

[3]The first pitch of this line coordinates with the first semiquaver of an ostinato group, and also with pitches in both the 4𝅘𝅥𝅯 and 5𝅘𝅥𝅯 lines.

this line exploits the ambiguity of direction which has been associated with sideways chromaticism, before settling into a generally descending pattern.

Both (i) and (ii) challenge the lower and upper limits of the ostinato, and the dislocated descent seen at the start of b.110 is maintained, with the top octave remaining on E while the lower octave shifts to C. After this, there is an increase in the rate of descent, perhaps triggered by the encroaching 4𝅘𝅥𝅯 line, with the complete ostinato descending in parallel chromatic semitones for three groups. The upper octave remains fixed on C# for two groups (and so is breached by the 3𝅘𝅥𝅯 line), while the lower octave descends, with its bottom note consistently an interval 2 below the bottom of the 4𝅘𝅥𝅯 dyad. In the last group of b.111, there is a switch in the pattern of descent: the upper octave moves from C#-C while the lower octave remains fixed on A^b. At the same time, the dyads' descent switches to sideways chromaticism and reaches the lowest ostinato limit A^b. Hence the overall texture in bs.109-11 is a band of descending activity, with different areas moving at ever-increasing rates.

On the last semiquaver of b.111, the first note of the ostinato group again enters one semiquaver early. When taken in conjunction with the 4𝅘𝅥𝅯 dyad's return to A-E (thus filling a gap in the sideways chromaticism), it can be perceived as an assertive move, an attempt to regain the momentum towards descent and to restore the interval 2 distance between itself and the descending dyads. On the second semiquaver of b.112, the 4𝅘𝅥𝅯 line also cooperates with the new ostinato pitch, and it seems as though the top octave is fulfilling its usual role: having entered a semiquaver early on C, the top half of the group is still intact, and the descent (dislocated or otherwise) may be resumed (**ex.3.35**). Instead, on the third semiquaver of b.112, there is a break from the octave sonority in the right hand portion of the ostinato, and the continuation creates a 5𝅘𝅥𝅯 grouping which expands into the upper register using a combination of chromatic movement and octave multiplication (**ex.3.36**).

A descending pitch process is actually adapted, creating an ascending gesture instead (the last of the piece).[1] Rather than the expected semiquaver rest in the lower register, there is an accented attack which implies the continuation of the 3♪ grouping, the parallel interval 7s continue their sideways chromatic descent at the bottom of the texture (taking up the lowest ostinato note, G) and the octave ostinato is reduced to a multi-pitched 3♪ grouping above the dyads.

Cooperation and coordination: the elimination of conflict

Both the ostinato and melodic lines are exhibiting an increased flexibility with respect to ♪ grouping: each now shows the potential to regroup. This leads to a multi-accented texture, again within a constricted registral compass, especially in bs.110-12. From b.112 onwards, there is an obvious clarification of the texture, with clear separation of the activity into two registral areas. The various layers of descent are more perceptible because of the registral spacing. The rapid expansion of the ostinato[2] re-emphasises the higher registral area left untouched since bs.94-5 approx. The dynamic lines in this area are (i) a line moving in 5♪ units, using 3/4 note chords, and (ii) a single 4♪ line. The outer limits of the chords define/delineate the overall direction, and the 5♪ line descends consistently, starting off by using parallel interval 14s, (then interval 13s) in a phrase rhythmically reminiscent of the first phrase of the lamento-ostinato. There is a slight retake in b.114, with a return to F# interval 3 above the original starting point, followed by a long descent in parallel interval 13s.

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[1]In contrast to the controlled ascent in bs.95-8, the last ascending gesture of the piece is relatively uncontrolled: its registral implications are immediately subsumed into, or adopted as the starting point for the overall descent.

[2]This has certain common traits with the ostinato in bs.52-5: movement away from a restricted register/pitch pattern, use of rapid, almost uncontrolled expansion into the upper register, a register which is then picked up in the succeeding dynamic lines.

The 4𝅘𝅥𝅯 line starts from B^b (highest point of ostinato expansion), and descends, firstly using sideways chromaticism, with pure chromatic movement from b.114 onwards (except for E^b). It starts at a point midway between the limits of the 5𝅘𝅥𝅯 chord, but its faster descent means that it reaches the bottom of the chordal texture at the end of b.114.[1] Because of the registral separation and the clear juxtaposition of two contrasting elements (a series of chords and a series of single accented pitches), the metric relationship between the 5𝅘𝅥𝅯 and 4𝅘𝅥𝅯 lines is easily perceived, particularly with regard to the three points of coordination:

Point of coordination		4𝅘𝅥𝅯 line	5𝅘𝅥𝅯 line
(i)	start of b.113	A	in the middle of B-F-C chord
(ii)	end of b.114	E^b	at the bottom of B^b-D^b-F^b chord[2]
(iii)	start of b.116	A	below B-C dyad.

In b.115, the 4𝅘𝅥𝅯 line is never more than an interval 2 below the lowest pitch in the 5𝅘𝅥𝅯 line's chord, indicating some type of shadowing process.

After the third point of coordination in b.116, the chordal descent continues, but the chordal character associated with the 5𝅘𝅥𝅯 line is now presented as part of a 4𝅘𝅥𝅯 grouping, as if this point of coordination signifies a merger between these two cooperating dynamic lines. In previous passages, dynamic lines have been altered in terms of pulse, in various attempts to achieve coordination of accentuation between two contrasting dynamic lines (e.g., bs.95-8). As such coordination was rarely achieved until the last minute, such alterations usually resulting in an increase in the number of accents and in the rate of descent/ascent, with an overall increase in dynamism. In this case, the relationship between the 4𝅘𝅥𝅯 and 5𝅘𝅥𝅯 lines is clearly defined (especially in terms of register and chromatic

[1]The 4𝅘𝅥𝅯 line continues to descend during the retake of the 5𝅘𝅥𝅯s descent, hence it reaches the lower register sooner.

[2] The 4𝅘𝅥𝅯s E^b maintains the interval 13 (E^b-F^b).

movement), points of coordination are clearly established, and there is a perceptible 'transfiguration', with the figuration associated with one line adopting the (faster) grouping of the second line which then drops out.

Because the rate and type of movement remain consistent when the 5𝅘𝅥𝅯 line adopts a 4𝅘𝅥𝅯 grouping (and throughout all subsequent changes from 4𝅘𝅥𝅯 to 3𝅘𝅥𝅯 to 2𝅘𝅥𝅯 groupings), the descending line, by becoming more stable and less prone to changes in direction or rate of descent, is establishing itself as a controlling force for resolution: there is strong unity of purpose, with figuration which originates in the higher register moving systematically across the registral expanse towards the bottom of the texture. Coordination has been posited as the ultimate aim for the various dynamic lines. This is an important stage towards eventual elimination of the conflict inherent in the hemiola principle.

In the lower registral area in b.112, the inversion of elements from the previous section (accented interval 7s at the bottom of the texture, ostinato semiquavers at the top) means that the chromatic descent is now the principal area of focus. The dyads maintain an interval 7 for two groups and then the two parts diverge (weakening the sense of descent), achieving an octave towards the end of b.112, and then resuming a descent which becomes purely chromatic in b.113 (D-D^{b}-C). At first the ostinato semiquavers are relatively free in their registral compass, moving above the accented dyads, but they become more focused within the octave line at the end of b.112 and in b.113 where they weaken the overall impetus towards descent, by providing a conflicting chromatic ascent, moving towards C which is part of the accented line.

Ostinato development and systematic descent

After the C octave, there are two non-accented semiquavers: thus following the pattern established earlier (for example, b.91). This pattern does not continue with

the expected octave B♭: instead, there is an unaccented single B♭, resulting in a series of interval 7s, C-F-F-B♭, which is then used to create a more flexible ostinato pattern, written in 4𝅘𝅥𝅯 groups, but with little sense of internal accentuation (similar to the type of figuration in bs.62-8).

Thus, two symmetrical groups are created around a pivot point C (**ex.3.37**). There is continuity of pitch, but there is no accentuation for 6𝅘𝅥𝅯s after the C octave, and the next accent does not coordinate with an expected accent from the previous 3𝅘𝅥𝅯 grouping: instead, it establishes a new 3𝅘𝅥𝅯 grouping, which descends using sideways chromaticism and coordinates with C in the ostinato on the fifth semiquaver of b.114. The last three pitches of the interval 7 figure C-F-B♭ become a 3𝅘𝅥𝅯 unit, B-E-B♭, moving to B♭-E♭-B♭, with B♭ also prioritised as part of the accented line. In the next 3𝅘𝅥𝅯 group, this type of coordination is not used: instead, the 3𝅘𝅥𝅯 unit separates into (i) an accented line and (ii) a lower 3𝅘𝅥𝅯 group. This separation is maintained from b.114 to b.117.

(i) In the final descent of the accented 3𝅘𝅥𝅯 line to the lowest note of the piano's register, pure chromaticism is used, with sideways chromaticism used earlier as a delaying tactic, detracting from the directness of the overall descent.

(ii) At first B♭ is established as a lower limit, with the other two pitches descending towards it (**ex.3.38**).

At the end of b.114 the internal relationship changes, with the D-G#-D group challenging A in the 𝅘𝅥𝅯 line, which then changes to sideways chromatic movement. In b.115 the ostinato now shifts from its emphasis of a specific grouping (3𝅘𝅥𝅯) to a long collection of unaccented semiquavers, creating a less restrictive grouping in terms of its potential as an unbiased reference point for other (accented) lines. B♭ is restored as a lower limit, with a descending line approaching it chromatically (**ex.3.39**). Instead of the next logical step, C♭-B♭, the interval 2 contour (seen in C-B♭) is shifted down chromatically to A-B, A♭-B♭,

etc., creating the most controlled form possible of sideways chromaticism (moving at half the speed of a pure chromatic descent). This descent continues at the same rate until the lowest note on the piano is reached (end of b.116), and becomes fixed on the A-B^{b} group (A^{b}-B^{b} is the next logical step, but is unavailable). The repetition of the A-B^{b} group is significant in that semiquaver movement is maintained. The lack of potential 'ground' for further descent is strongly emphasised: however the line does not stop. The energy is not dissipated, indicating the potential for further ostinato activity. The fact that in spite of the absence of phrasing or accentuation, a 2♪ grouping is implied by the ostinato's figuration, means that there is still a conflict in the lower register between 2♪ and 3♪ groupings.

The sense of 'unfinished business' in the A-B^{b} repetition in bs.116-17 is confirmed by the ostinato retake in mid b.117. There is a return to the cooperation between the 3♪ line and the ostinato seen in b.114 (the first note of the ostinato being common to the 3♪ group). This time it is not abandoned after 3 x 3♪ groups, but is used instead to create a systematic descent to the lower limit(s) of A-B^{b} (**ex.3.40**).

The descent operates across several layers:

(i) b.117: top uses sideways chromaticism, middle uses pure chromaticism, bottom alternates between B^{b} and A (every 3♪s),

(ii) b.118 (start): top uses pure chromaticism, middle and bottom create C-B^{b} and B-A groups which are referential to the end of the ostinato descent in mid b.116, resulting in compression from an interval 6 compass to an interval 4,

(iii) b.118 (end): accented descent continues following the pattern in (ii) necessitating the reduction to a 2♪ grouping,

(iv): accented descent continues with the next two chromatic pitches B^{b} and A. In order to achieve regular accentuation on these two pitches either a 1♪ or 3♪ grouping is necessary.

The use of a 3♪ grouping turns the unaccented A-B♭ to B♭-A, confirming the overwhelming trend towards descent.[1] This turnaround is emphasised with 2 x 2♪ groups B♭-A, and the final arrival point of the line is confirmed with two accented semiquavers B♭-A.

In b.119 there is an increase in the number of accents, indicating a change in the rate of movement (2 x 3♪, followed by 2 x 2♪, followed by 2 x 1♪ groupings). On the other hand, the pitch organisation, with equal weighting of B♭ and A in the 3♪ groups, the emphasis of the (descending) B♭-A units as part of the 2♪ groupings, and the emphatic final phrase in the descent with the movement from B♭ to A mean that the extra accents do not add to the dynamisation of the line (they do not create change or conflict); instead they consolidate the sense of arrival and stabilise this lower register at last.

The events in the retake (bs.117-19) effect a controlled exorcism of the semiquaver line (in contrast to the local removal of the unaccented semiquavers in bs.97-8 and b.107). The level of control of pitch, direction and accentuation means that the piano's registral limitation is not presented as the sole reason for stopping: rather, the internal processes which effect the descent to this lowest limit also have reasons for ending. This low register is not just the place where the descent stops: instead, it is comprehensively sealed off.

Changing pulse in melodic lines

The systematic chromatic descent in parallel interval 13s in the upper register has previously been discussed, as has its change from 5♪ to 4♪ groupings. In b.117 there is a further change from 4♪ to 3♪s, coordinating with the start of the retake

[1]This contrasts with the repetition of A-B♭ in bs.116-7,which implies movement (albeit local) away from the lowest pitch A.

in the lower register, and cooperating with its 3♪ grouping. As the descent continues, there is a thinning-out from a four- to three- to two-note chord, increasing the prominence of the interval 13. The change from 3♪ to 2♪ groups in the upper register creates local conflict with the last 2 x 3♪ groups in the lower register. There is therefore alternation between synchronised 2♪ units and 2♪/3♪ conflict at the end of b.118/start of b.119. Thus the possibility of synchronisation is presented, but is locally avoided. More protracted synchronisation is achieved only when the Bb-A descent is confirmed by the 2 x 2♪ grouping in the lower register with two coordinated accents.

The 2 x 1♪ accents, while not conflicting with the higher 2♪ grouping, emphasise the end of the lower registral descent (see above), and because of this, draw more attention to the upper line and its unfinished state: its systematic chromatic interval 13 descent overrides any instability created by its movement from 5♪-4♪-3♪-2♪ groupings. Any increase in its rate of descent has been very slow and measured. From b.117 onwards it has had a high level of cooperation with the semiquaver ostinato. Now the emphatic stabilisation and eventual cessation of activity in this ostinato line calls into question the future role and response of the upper line.

There are three further steps in the chromatic descent, each using an interval 13. Yet the use of a triplet quaver note-length indicates a response of overriding importance to the elimination of the ostinato. These triplets are the only notes in the piece so far which are not divisible by or cannot be measured in terms of semiquavers: they do not need the ostinato, and they are not part of the material associated with the additive-pulse principle. The dynamic line, although it retains its pattern of descent, is no longer governed by one of the terms of reference that has been constant since the start of the Etude—pulse which can be measured in semiquaver units. Thus the two elements in the relationship mentioned above have reached a point where the relationship is no longer necessary (they have become

independent of one another). The local sense of acceleration from quavers to triplet semiquavers is an important aural marker.

Bars 120-22 act as a summing-up of the sustained descent from bs.112-9, with two parallel pure chromatic descents. There are several points of significance in this quasi-coda:

(i) there is a possible retake of the ostinato descent from A#(= B^b), an important pitch in bs.113 and 117,

(ii) the interval 13 pitches C-B from the end of the dynamic line in b.119 link chromatically with B-A# in b.120, thus continuing the systematic descent,

(iii) pure chromaticism is maintained, indicating complete cooperation between the lines in terms of rate of descent,

(iv) the use of accented semiquavers in b.120 indicates full and final cooperation between ostinato (with the eventual systematic move to accented semiquavers in b.119) and the dynamic line (movement through triplet quavers in b.119 brings about its independence from the ostinato): they now co-exist as equal partners in the descent,

(v) the developments mentioned in (iv) are further reinforced by the increase in momentum in bs.121-2, with the change from 4 to 5 to 6 attacks per crotchet beat.

This increase in speed of attack creates extra acceleration towards the lowest limit, which is the culmination of the descent: there is also a perception of a 'burning-out' of all activity. Even more significantly, however, it symbolises the eventual emancipation from the 'tyranny' of the semiquaver: i.e., there is complete unanimity of attack, and so the semiquaver is no longer needed as a referential element.

Summary

To summarise the last section: it is characterised by movement that is strongly focused in terms of direction. Clear attempts are made to seal off all registral areas (**ex.3.41**), and it culminates in a systematic mono-directional chromatic descent that encompasses all registers. The two sets of relationships that govern the piece, (i) that between the ostinato and the melodic lines, and (ii) between the various melodic lines themselves, reach a point of culmination, and perhaps resolution in the last ten bars of the Etude. This is achieved through the increasing potential for change in the dynamic lines: instead of 5𝅘𝅥𝅯 vs 4𝅘𝅥𝅯, the 5𝅘𝅥𝅯 line is absorbed into the 4𝅘𝅥𝅯 and so on through 3𝅘𝅥𝅯, 2𝅘𝅥𝅯 and 1𝅘𝅥𝅯 groupings. Hence the ostinato is no longer required to provide a common link between disparate 𝅘𝅥𝅯 groupings, since the groupings no longer exist, and points of coordination between these conflicting groupings are not important because the conflict no longer exists.

Pitch procedures in *Automne à Varsovie*

Chromatic expansion

Processes of chromatic expansion, both down and up, govern most of the events through the piece. It is true for the whole piece that descending motion always outnumbers ascending motion, but as a consequence, ascending motion can occasionally have an important role in creating a change (e.g., in texture at bars 47-55).

For the opening large unit of three phrases, chromatic descent proceeds along three temporal levels, and a fourth process can be considered more abstractly. There are slow, medium and rapid levels of descent. Ascent occurs on one level. These processes are quite straightforward, although the use of some sideways chromaticism exists to obscure the obvious, and to introduce itself for later development. The ostinato provides the slowest chromatic move, from E^b to D; and the melodic line provides two others, by going over the same pitches in its local articulation. It can be shown thus:

Ostinato		E^b	D
Melodic line	medium	F^b (F) E^b D	
	rapid	$F^b(E^b)DD^bC$ B	B^b AA^b
	(actual line)	$F^b(E^b)DD^bC \mid F^b(E^b)DD^bCB \mid \underline{G^b}\underline{F}F^b(E^b)DD^b\underline{E^b}\underline{D}D^bCBB^b\underline{DC\#}AA^b$	

The rapid process is enriched by the fact that its rate of change is variable, therefore less predictable. This must be of particular importance here where the essential material is predictably made of chromatic steps. The fourth, more abstract level mentioned above is simply the fact that as notes unfold, new pitch classes are revealed, and by the end of this unit only one has not yet occurred, G, which then soon appears in the ostinato part. Actual linear intervals are not all semitones, but all can be explained as chromatic progressions delayed and interrupted by inserted repetition of fragments, and by the constant presence of the E^b ostinato, which allows the moving line to omit this step. Thus linear intervals of 2, 3, 4 and 5 all occur (3, 4 and 5, very rarely), but are within the context of sideways chromaticism.

The avoidance of E^b that allows the line to take a step of interval 2 invokes what amounts to a 'rule': the 'rule of avoidance'. This will occur later in other

guises, and is an example of how the contrapuntal-thematic writing exists in an atonal context, since it is reminiscent of the rule of octave avoidance in serial technique. However, it is also perhaps indicative of Ligeti's attitude to serialism that he breaks it later when it is useful to do so. A later example of the rule being observed occurs in bar 12 where the falling line moves in semitones until the end of this bar, where the two notes of the line skip over D and G, because these notes are present in the ostinato. Where this rule is ostentatiously broken for the sake of development is in bar 18. At the end of this bar we might expect avoidance of G# for the same reason, but the falling line makes use of this pitch. I believe that it does so as a way of masking the incipit note of the new line and new rhythm that is entering in the middle of the texture. From this point on, the rule of avoidance is only observed where it is convenient to do so for other reasons.

Ascending chromatic lines are noted in the analytical commentary. The earliest example is the gradual expansion of musical space played out in the highest notes of the phrases of units 1 and 2: F^{b}, F, F#, G# (skipping G because it has just appeared in the bass). Ascending chromatic lines also have a role in the localised creation of vertical sonorities, which is dealt with below.

Vertical sonorities in the melodic line

These evolve both gradually and radically, from time to time. An example of a radical evolution would be where the RH octave sonority is replaced by a major seventh for just one event (although we can also describe this as two chromatic steps occurring together, and thus it is within the context of chromatic expansion).

An example of gradual evolution is where two precedents are brought together to create a new possibility: the major seventh of bar 5 and the tritone of bar 9 are combined to provide a (0,1,6) chord-type at b.13. Ultimately, all kinds of sonority can be explained as deriving from the basic condition of holding one note while sliding another through all the possible notes, but that will be dealt with below. It is valid nonetheless to consider if and how the various vertical sonorities in the melodic line relate to one another.

The octave is the first of these sonorities, and this is used for the entire first large unit with the exceptions of three major sevenths and a tritone. The major sevenths are placed at significant points of directional change in the linear contour, and the tritone marks the end of this unit. As mentioned already, the major seventh may be thought of as two chromatic steps occurring together. The tritone makes for a logical ending since it marks the point after which, if one note is held and another moves chromatically, repetition of interval class occurs. This particular tritone occurs where that repetition would occur, were it not for the move from E^{b} to D in the ostinato. Consequently, two tritones are heard, one is E^{b}-A, as the octave line moves in bar 9, and the other is D-A^{b}. The fact that the tritone occurs by doubling a note from the ostinato, along with the reason cited above, shows how Ligeti is painstakingly cautious at this stage of the piece in introducing new elements. In bar 10 there is a radically new sonority, the octave F# filled by B, a 5-7 chord. This becomes a new standard sonority; it adopts the role of the octave. Thus the line generally moves in parallel 5-7s for the second unit of three phrases. Again there are some exceptions. The simple option of changing 5-7 to its inversional equivalent 7-5 occurs twice in phrase 6. The major seventh is 'replaced' by a filled major seventh (a 5-6 chord) (since the two large

units are parallel in melodic and rhythmic structure). This is a very cautiously introduced novelty, since the major seventh part of it is not new, and the middle note again is a doubling of the ostinato note (see b. 13). Two completely new sonorities occur in bar 16. These are radical in structure, but can be explained as resulting from an application of the rule of avoidance combined with an inner ascending chromatic line. This line begins with an A at bar 15^4, this rises chromatically to C at 16^4. One might wonder why there is an F at 16^1. It cannot be A^b (the next logical note), as this would double the ostinato where such an effect is unwanted (because it does not mark an important event or point). It is F for complicated reasons: because the penultimate sonority for this phrase must be enclosed in octave Cs in order to preserve the lamento contour, the F is required for the middle note here to make up a 5-7 chord. So because this contains an F, the one before (at 16^2) must use another note. If this chord could have F, then it could have the 5-6 chord, which would fit the overall pattern better. As it does not, it uses F#, and adds G in order to restore the missing semitone sonority. The use of these notes forces the choice of F for the chord at 16^1. Therefore the radical chords are accounted for by what amount to rules of counterpoint.

Having introduced the 5-6 chord for the turning points in the second unit, it becomes more common in the third lamento unit. The third unit is more developmental in its choice of sonority. For its first two phrases, a 6-6 chord-type (this type was introduced back at b. 9) becomes the new standard, with the 5-6 type and a new variant, 5-1-5 used for the first chord of each phrase. Then the third phrase (bs.21-24) takes the 5-6 as the standard for parallel movement (the 5-1-5 type now functions to mark the turning points in contour). As the piece progresses from this point to the end, the chord-types are mostly easy to relate to

precedents: for example, bs.30-32 uses a 6-7 sonority that is reducible to (0,1,6), as is the 5-6 chord. Nevertheless, the pace of development is always increasing; new chord-types appear at an increasing rate.

Ex.3.42 shows the vertical sonorities through bars 30-36. One can see that two radically new chord types appear here, the 5-5 (or (0,2,7)) and the 5-4 (or major chord!). The 'rules' for linear contour are also developing. By alternating 6-7 and 6-6 chords, the top line is allowed adjacent repeated notes for the first time; the lower line adheres more closely to the lamento motif. Whole-tone steps are also more common. Some are the result of the rule of avoidance, later ones are simply allowed—the rate of development is accelerating. With the gradual acceptance of steps of 2 alongside 1, and the acceptance of repeated notes, one can view the new sonorities of 5-5 and 5-4 as mere resultants from the linear rules (although the rules seem to relax continuously, note that all these steps are descending, and all other intervals are excluded). Later on, the rate at which new sonorities appear increases even more. **Ex.3.43**, from bars 62-72, shows at times a kaleidoscopic variety of chord-types, seemingly far removed from the conservatism of the opening. On the one hand this shows how the rate of development is itself always accelerating, but it is also possible to show that the chords all result from chromatic descent, chromatic ascent, or sideways chromatic movement, in various combinations. Again the steps are generally of 1 or 2.

Overall harmony: 'consonance' and 'dissonance' redefined

The opening conditions of the piece invite the construction of a theory specific to this piece. Consonance and dissonance occur in more equal measure than one might expect; this is directly attributable to the chromatic stepwise motion working with the static element. If one pitch is held or repeated while a chromatic line moves, the result will be the occurrence of all intervals. The first phrase here moves from (0,1) intervals in an expanding direction. The tritone, as mentioned before, is a point after which the interval classes will begin to repeat. Therefore the theory proposed here is that rather than pursue categories of consonant and dissonant based on tonal models, an analogous opposition exists of 'close' (0,1) and 'open' (0,6), with four intermediate graduated states. So the first large unit is a paradigmatic progression from close to open. The second large unit reverses this, beginning open and moving to close. However, 'close' is arrived at early, at the end of phrases 4 and 5. This can be attributed to the overall ascending line being produced slowly over the phrases: F^{b}, F, F# (bars 2, 5, 10 respectively). The F# is not high enough for 'closeness' to come later. The third phrase begins with a tritone, but terminates without reaching a close position. The third large unit moves from close to open, but modified so that it is (0,2) moving to (0,5). The final sound is in fact two tritones superimposed (0,1,6,7). Generally, the open and close positions seem privileged, but their application cannot be directly analogous to consonant and dissonant functions, the music is not as simple as that. However there are many places throughout the piece where either an open or close position is adopted for a phrase beginning or ending. Freer options are also chosen where

thematic development is freer. When the lamento motif reappears in bars 62-72, the close position is chosen for the beginning of the unit.

Apparent diatonic references

The piece uses thematic material in a clearly defined way, relying on repetition, variation and development in a surprisingly traditional way (for the wider cultural context). This, coupled with the existence of chords associated with diatonic harmony may tempt the listener to assume that the piece is all parody; post-modern irony, etc. There may even be some validity to this view, given what we know of Ligeti's use of humour and parody in works such as *Aventures* and *Le Grand Macabre*. If one picks through the piece, there are very many places where the texture is composed of a diatonic chord. Some examples are: b. 10^1, minor chord; b. 17^2, incomplete minor seventh chord; bs.20-21, diminished seventh. And, as noted above, with dyads there are as many consonant as dissonant. Then there are places where part of the texture uses a sequence of major chords (as in **ex.3.42**, where M signifies major), with the ostinato perhaps providing a semitone against them.

If, however, these are viewed in the context of the linear conditions as I have done above, one quickly sees that they are integrated into the fabric of the piece, with 'rules' such as chromatic movement, 'avoidance', and sideways chromaticism accounting for every pitch choice. Yes we do experience a feeling of ambiguity in the harmony, a little like that encountered in the Horn Trio, but here,

as there, there is a context of chromatic saturation, and of other typically atonal sonorities surrounding these moments.

Perhaps a good way to describe this ambiguous situation is as 'the emancipation of the consonance'. Ligeti seeks to forge an inclusive atonal language where all the possible chords are admitted. The diatonic-sounding ones are subsets of a greater collection ranging across the spectrum. What is important is that these appear divested of their traditional voice-leading implications; these are supplanted by alternative voice-leading requirements based on the chromatic step. These diatonic chords, and all the others, are driven along 'rails' that destroy any possibility of tonal function. If anything, they are 'trophies' that he can dangle in front of us—as if he had defeated them. In that sense this might be truly post-modern music.

Conclusion

In common with the earlier analyses, the concept of premise should be examined in relation to *Automne à Varsovie.* With the notion of premise associated always with the start of a particular piece, it is worth examining the contrasting elements juxtaposed in the opening of the Etude.

Firstly, what relationships are established in bs.1-9?

There is the juxtaposition of the ostinato and the accented melodic line, creating the opposition of elements that are static and dynamic, relative to one another. The contrast between melody and accompaniment, foreground and background is emphasised. There is a very slight sense of conflicting pulse, with

the dynamic lines articulating a clear pulse every 5𝅘𝅥𝅯s in contrast to the background 4𝅘𝅥𝅯 grouping of the ostinato.

In b.9, the ostinato's first move to a new pitch raises two new issues: (i) the fact that the ostinato is not always going to stay on E^{b} (hence, the potential for registral expansion), and (ii) the possibility of its using groupings other than 4𝅘𝅥𝅯s. Equally significant is the fact that the introduction of the first 3𝅘𝅥𝅯 grouping in the ostinato stresses the notion of coordination between disparate elements such as the ostinato and the melodic line.

Bs.1-7 also present descending chromatic/near chromatic movement as the norm for progression within the dynamic line. It is striking how the elements highlighted above, all go on to have a significant influence on the shape of the Etude.

This analysis has also been shaped by descriptions of Ligeti's pre-compositional interest in complex polyrhythmic and polymetric structures, an interest that shaped the initial planning of the Etudes.

There is much more evidence of Ligeti's preoccupations at the time of the composition of the Etudes for Piano, Book 1 than for the Double Concerto for Flute and Oboe or the Trio for Violin, Horn and Piano: his desire to build on his earlier works which explored rhythmic and metric layering, his move away from 'static' structures, the influence of Nancarrow and Simha Arom and his wish to write complex, yet performable music, all of these have been discussed in his writings and interviews. These factors obviously influenced his preliminary work on the raw musical material.

The relationship between raw musical material and structural working-out, together with the role of premise for the analyst, has been discussed in detail in the conclusion to Chapter 2.

> Structural features, or speculative patterns are certainly discernible in my composition. These are the result of musical deliberations at the time of working the composition out. However, the initial impulses which set the act of composition going tend to be naive in character . . . The naive initial musical idea can be

> described as music in the raw state . . . Composition consists principally of injecting a system of links into naive musical ideas.[1]

The two techniques of hemiola and additive-pulse were a significant part of Ligeti's act of composition. However, in his writings they are only referred to in general terms as applying to all six Etudes. Thus in compositional terms, there must be a specific or personal application within each Etude.

In many ways, this analysis has attempted to trace the operation, development, and interaction of these processes in *Automne à Varsovie*, and it is suggested that the premise for the Etude is built on the interaction of these two techniques, as articulated through the juxtaposition of the ostinato and dynamic lines. Through this juxtaposition, three issues are emphasised:

(i) the relationship between the ostinato and the dynamic line(s),

(ii) the changing/ambiguous function of the ostinato itself,

(iii) later on, the relationship between the various dynamic lines.

It is useful to examine the changes in these relationships at each of the main arrival points, in order to gauge the more long-term operation of premise.

As described earlier, the arrival point in b.55 is approached through a drastic registral expansion, itself the combination of controlled descent in the dynamic line and a less rigorously controlled ostinato ascent. In b.55, coordination and unanimity of direction are highly prioritised, and there is a strong referential link with the opening, through the three-phrase unit. Bs.55-61 mark a point of the utmost clarity and control, with no conflicting elements. That is why it must function as a point of outgrowth, something to become more complicated.

Progression in this piece is built on conflict: where there is cooperation between lines, for example, in bs.41-5, 55-61, 87-90, there is always the potential for complication. The change of texture in b.55 may seem very radical, but the

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[1]Ligeti, "Ligeti-Ligeti" in *Ligeti in Conversation*, 124.

overall level of control means that things become 'stuck' within the already familiar three-phrase unit until the ostinato returns. At this stage, the dynamic line is shown to be dependent on the ostinato as a conflicting element that stimulates development and change. Note that in order for a point of simplicity or clarity to be achieved, the ostinato must be subordinated or even eliminated. Once the ostinato is reactivated, progression and development happen at a much faster rate.

In bs.94-8, during the approach to the second large arrival point, coordination and registral divergence are again emphasised, with increased cooperation between the dynamic and ostinato lines. The biggest change in this relationship is the dynamic lines' adoption of some of the ostinato traits: flexibility of semiquaver grouping and direction. B.98 is again radical in its texture: note that this time, the ostinato becomes 'stuck', and any progression is made possible only with the entry of the 7♪ line. Therefore, after each of the arrival points, the ostinato/dynamic line relationship is rebalanced. As described in the analysis of this section, there exists the highest possible level of control and stability between the ostinato and the various dynamic lines, as if Ligeti is summarising the defining sets of relationships for the Etude in their clearest possible form. The disparate issues only hinted at in bs.1-9—foreground/background juxtaposition, conflict of pulse, registral expansion, prioritisation of coordination, chromatic/near chromatic movement—are now operating as part of a highly unified and controlled process. Yet, this point of clarity precedes a radical reworking of the ostinato/dynamic line relationship, resulting in the elimination of the ostinato and the absorption of the various dynamic lines into a single accelerating descent. After the clearest exhibition of cooperation and control, there is a rapid increase in conflict, but not the type which earlier implied progression: instead, this conflict ultimately achieves closure.

There is no doubting the sense of finality towards the end of *Automne à Varsovie*: the increased weighting of the process of registral divergence and expansion provides dramatic local closure. Indeed it is interesting to observe how

often Ligeti returns to rapid movement towards one or both of the piano's registral extremes as a closing gesture in the other Etudes. At the same time, however, there is another factor that contributes to this sense of closure, one which has links with the long-term operation of premise in the Etude. This factor can be described as the culmination of the three defining relationships throughout the work. It can be argued that the subordination and eventual elimination of the ostinato is the single most important force for closure.

Bs.55-61 and 98-9 have obvious links through their simplicity of overall texture. As discussed in the analysis, the level of control and cooperation in bs.55-61 was unprecedented: yet the return of the ostinato was required for further progression. In other words, the dynamic lines were shown to be dependent on the ostinato. The ostinato itself returned in a form which was more complex in terms of overall direction and grouping, and there was independent development of the three relationships, leading to an increasingly complex texture.

The fundamental difference in b.98 is the order of events. Now it is the ostinato which is dependent on the return of the dynamic lines. Until such a return, it is reduced to a single pitch, with none of its previous dynamic forces of register, accentuation or grouping. The return of the dynamic lines, while providing a certain amount of conflict, is unparallelled in terms of the level of cooperation and control, and progression towards the unification of these lines through the gradual elimination of conflicting semiquaver groupings makes the ostinato dispensable, and, furthermore, results in the dramatic compression of the texture to a single accelerating descent, plummeting towards the bottom of the piano.

The defining process of *Automne à Varsovie* is the development of the early relationship between the ostinato and the dynamic line(s): in other words, the premise. Conflict between these two elements has been the largest shaping force, whether it be the background/foreground 4𝅘𝅥𝅯/5𝅘𝅥𝅯 groupings in b.2, or the complex registral and pulse manipulations in bs.52-5. At every significant arrival point, this relationship is developed and reworked, and closure is achieved through its

ultimate rebalancing and resolution. There can be few clearer examples of the validity of premise as a means of analysing Ligeti's transformation of "music from its raw state into a musically consistent and linked network."[1]

[1]Ibid., 124.

CONCLUSION

Introduction

> One might imagine individual objects which are hurled in the greatest disarray into a drawer, and yet the drawer itself has a clearly defined form.[1]

> There is an underlying layer of order, a middle layer of disorder, and an overall layer again of order. . . . The adequate hearing of this music should encompass all three levels equally: the melodic lines, their discrepant combination and the absorption of these discrepancies into the global structure, into the self-enclosed, well-ordered large form.[2]

While Ligeti was talking specifically about *San Francisco Polyphony* in the interview with Rudolf Frisius, the ideas therein can be applied in general terms to other works in his output. Orchestral works such as *Melodien* and the Double Concerto for Flute and Oboe feature this juxtaposition of foreground and background activity, with individual faster-moving lines having their own coherence and thus forming the first layer of order, the combination of these lines forming the middle layer, and the longer-term pitch and registral processes (often articulated by sustained lines) delineating the larger structure.

This layering can also be observed in the Etudes for Piano. In *Automne à Varsovie*, there is internal order within the various octave lines, the 'discrepant combination' of these together with the omnipresent ostinato (which of course has its own internal order), and the framework of metrical and registral development where all is absorbed into the global structure.

It is more difficult to use the order-disorder-order generalisation in the context of the Trio for Violin, Horn and Piano. The level of cooperation between

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[1]György Ligeti, sleeve note with Wergo CD 60163, cited in Griffiths, *György Ligeti* (1997), 89.

[2]György Ligeti, interview by Rudolf Frisius "Tonal oder postserial?" *Musik und Bildung* 7 (Oct.1975): 500, translated by J. Macauley in "Aspects of pitch structure in *Melodien*" (DMA thesis, Cornell University, Aug.1986), 3-4.

individual instrumental lines in terms of phrase structure and thematicism, means that there is perhaps less perceived 'disorder' than in the other two works.

In my analysis of all three works, I have attempted to demonstrate how the concept of 'premise' can be a useful insight into Ligeti's carefully balanced relationship of raw musical material and compositional working-out. It is now timely to compare the nature of working-out in these three pieces, under the headings of structural differences, operation of premise, and harmonic and pitch procedures.

Comparison of compositional working-out

Structural differences

Double Concerto. The second movement is divided into sections starting with a simple dyad, and often ending with a marked registral expansion. There is little referential quality associated with the treatment of these dyads: long-term structure evolves through control of more abstract parameters, such as register (with the weighting of specific areas as goals for progression), and from processes which are not immediately aurally perceptible, such as the pitch control described in the analysis. There is no strong sense of this movement following conventional Concerto models, with little soloistic priority for the Oboe and Flute lines.

Horn Trio. Here, the structure is delineated through repetition, both locally (within the first twelve bars) and globally, with a large-scale A-B-A' shape being articulated. It is important, however to bear in mind Ligeti's proviso that

> The Trio cannot be pigeonholed into any neat stylistic category; it has odd angles and trick floors that do not fit in anywhere.[1]

The listener's sense of literal repetition is toyed with, through subtle manipulation of rhythm within material that is already familiar: thus there is a clear move away from the abstraction of the Double Concerto. Functionality accrues through repetition of material, rather than through gestures which use parameters in similar ways.

Automne à Varsovie. Townsend has defined the etude as 'a piece combining technically difficult piano writing with unified musical structures', with earlier examples using 'idiomatic piano figuration, such as scale passages, broken octaves, and figures deriving from ornamental *fioritura* that are repeated extensively'.[2] *Automne à Varsovie* shows the composer confronting technical challenges alongside the performer: how to write and then play music operating at different speeds simultaneously, with much of the idiomatic piano writing conforming to the norms of the genre.

Here, the structure is divided into three sections, each of which starts from a point of the utmost simplicity of texture, and ends with a registral expansion. As in the Double Concerto, there is an obvious long-term registral framework which

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[1]Ligeti, sleeve note with Sony CD SK 62309, translated by Annelies McVoy and David Feurzeig, 14.

[2]Townsend, "The Problem of Form," 2.

is a controlling force for progression. However, as well as functionality of gesture, there is important use of referential thematic material, although with less direct repetition than in the Horn Trio.

Across the three pieces, therefore, there is a move away from the abstract to the more thematic. Ligeti is reinterpreting older models, together with their reliance on repetition, both literal and modified, but always in his own terms.

> There are various layers in this music, which, taken all together, completely rule out any "postmodern" compositional conception. . . . all of these layers and elements only camouflage a musical reality of an entirely different nature, which remains indecipherable.[1]

Operation of premise

Double Concerto. The analysis describes two primary relationships defined early on in this movement: (i) sustained lines/faster moving figuration, and (ii) stepwise movement/explosive registral expansion. These relationships are not articulated through recurring thematic material; instead, they arise through the juxtaposition of different types of material, with similar functions. In other words, registral divergence does not become associated with a particular motif, but it is possible for function to accrue across the movement, because the different diverging gestures can be related to one another.

These primary relationships are rebalanced at each arrival point, and the elimination of the conflict inherent in each relationship results ultimately in the elimination of the driving processes for the piece as a whole.

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[1] Ligeti, sleeve note with Sony CD SK 62309, translated by Annelies McVoy and David Feurzeig, 14.

Horn Trio. Here too, there is an important primary relationship established within the first twelve bars, but now the treatment of parameters is tied in much more closely with thematicism, out of which local functionality accrues. There is less sense of the primary relationship reaching a 'point of no return' as in the Double Concerto: because such a large section of material is repeated (albeit with rhythmic manipulation), the sense of rebalance is much more subtle.

Automne à Varsovie. Again, the primary relationship is clearly articulated at the beginning, with specific material associated with progression/dynamism (lamento-ostinato) and stasis/stability (ostinato). Like the Double Concerto, there is a strong emphasis on foreground/background relationships, which frequently 'shift': for example, the changing status of the ostinato.

At strategic structural points, the identities of the elements of the premise are always clearly defined, through thematic reference as well as similarity of treatment of parameters, such as register or accentuation. At each of these points, the ostinato/melodic line(s) relationship is rebalanced, and closure for the piece is articulated through the ultimate resolution of this relationship.

In examining the operation of premise, or a defining primary relationship in these very different works, it seems to me that there is very little change in Ligeti's compositional methods, in comparison to the drastic stylistic changes. This is especially noticeable in the Double Concerto and *Automne à Varsovie*.

(i) In both works, the elimination of one of the conflicting elements removes a reference point for the main defining relationship, thus leading to the 'fizzling out' of the other element (note the 'stop as though torn off' type endings to both pieces).

(ii) In both works, a point of extreme stability precedes a controlled 'breakdown'.

(iii) Local syntax is often based on linear expansion towards or away from fixed limits. This creates the norm of registral divergence. Registral development is an important global process for both works, together with quasi-polyphonic textural layering at climactic points (b.117-end in the Double Concerto, b.99-end in *Automne à Varsovie*).

Although the Horn Trio stands apart in some of these aspects, it too has features in common with the other two works, such as prominent registral divergence at climactic points, and obvious polarisation of lines or textures associated with a dynamic or static function.

Ligeti himself has talked of the importance of a common compositional approach across his output:

> To sum up the stylistic changes my music has gone through, first of all I should say that whenever I feel that certain melodic or rhythmic models or formal structures have gone stale, I switch my interest to some other area, but my basic approach remains unchanged.[1]

It seems therefore, in spite of the varied stylistic changes in his output, that my analytical method based on the relationship between premise and working-out is a useful resource for an exploration of these and other works.

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[1] Ligeti, "Ligeti-Peter Varnai" in *Ligeti in conversation*, 31.

Harmonic and pitch procedures.

Double Concerto. As seen in the analysis, there is evidence of rigorous control of pitch on both short- and long-term levels. The harmonic continuum is punctuated by points of simplicity (dyads), which are complicated through chromatic wedging and microtonal movement. We see a presentation of six interval-types, with significant voiceleading and intervallic connections across the introductory section of this movement. Within the later 'expansive' material, there is evidence of free atonal procedure, with use of pitches forming a twelve-note complex, with some prioritisation of centric notes. However, there does not seem to be any serial procedure: i.e., these twelve-note aggregates do not become a long-term thematic resource. In fact, there is strict avoidance of any harmonic-thematic linkage. While the earlier dyads have an underlying pitch relationship, it is not emphasised through any similarity of treatment. This absence of thematicism is clear evidence of Ligeti's desire for abstractionism.

Horn Trio. As seen in Chapter 2, there is a big change in Ligeti's harmonic and pitch procedures in this piece. It is one of his first works to move away from syntax founded on chromatic movement, and from the very opening phrase, he flirts with interval and chords associated with tonality, intensified by his 'false quotation' from *Les Adieux*.

There is a distinct move away from the shifting, chromatic complexes of the Double Concerto, and, as described in the analysis, there are important links between timbre and intervallic type, with the evolution of distinct rules of syntax

for the individual melodic lines. This is very different to the somewhat homogeneous linear syntax of much of the orchestral accompaniment in the Double Concerto, where the 'expansive' writing for the Solo Oboe appears as a major contrast. In the Horn Trio, aspects of this 'expansive' writing are now clothed in a new, expressive form.

The other striking harmonic change is the systemisation of vertical sonority, with important use of functional qualities, which becomes associated with cadential gesture. In contrast to the varying treatment of related dyads in the Double Concerto, Ligeti now emphasises more characteristic three- or four-note chords, using timbre, pitch, register and placement within the phrase. While he juxtaposes consonant and dissonant chords (in tonal terms), there is little evidence of any sense of tonal hierarchy: instead, he plays on a sense of ambiguity. This is heightened by a reappearance of the same free atonal procedure as seen in the Double Concerto, meaning that many of the 'diatonic' elements are couched in an atonal context.

Automne à Varsovie. The opening phrases of this Etude may seem to signal a return by Ligeti to his favourite resource of chromatic/near chromatic motion, which dominates much of the pitch syntax of his works from the sixties and seventies. As described in the analysis, we see the same evolution of strict rules of syntax as in the Horn Trio, but this time in a more complex, contrapuntal texture, with less local prioritisation or functionality of vertical sonority. Again, diatonic/simpler chord-types arise, but as by-products of, and not detracting from, the linear complex.

However, this is not a simple regression to earlier syntactical norms: Ligeti manages to reconcile the complex counterpoint of the earlier pieces with the newer, expressive qualities so appreciated by many commentators in the Horn Trio. As will be discussed later in more detail, this is achieved through use of the lamento-ostinato: the abstractionist tendencies associated with the earlier chromatic saturation are now framed in a new referential context.

Broader contexts

The positioning of these three works spans a significant change in Ligeti's compositional style. He himself has described a change from 'crystalline' to 'proliferating'. Whereas crystalline implies internal logic and coherence, proliferating implies a greater eclecticism and flexibility. It is possible that the experience of the composition of the opera *Le Grand Macabre*, as well as being an endurance test in terms of sheer workload, was also a stimulus to move beyond the compositional norms and methods used in the more tightly-focused orchestral and chamber works of the sixties and seventies.

Works such as *Atmosphères*, the Chamber Concerto and *Lontano* exhibit a complex unfolding of texture, often evolving from simpler crystals or kernels. In *Le Grand Macabre*, Ligeti was able to explore more expressive and dramatic musical possibilities, building on his work in earlier 'characteristic' pieces, such as Ten Pieces for Wind Quintet and *Aventures*.

Instead of using the orchestra/ensemble as one large textural resource, where the individual line was often subordinated to the textural whole, he now explored new 'contoured', expansive lines, which moved away from the more rigorous pattern-meccanico textures, and were perhaps more characteristic of vocal writing. In orchestral works such as *Melodien* and the Double Concerto, we see combinations of both the complex textural gestures and the more expansive writing.

The movement of the Double Concerto analysed in this thesis has some interesting ambiguity in the treatment of the soloists. In much of the work, the soloists are 'masked' by groups of orchestral colleagues. However, at a prominent point of structural change, the solo oboe emerges with more typically soloistic figuration, using more 'expansive'-type material. At the same time, there is little of the long-term soloistic priority or focus seen in the later Concerti for Piano and Violin.

The composition of *Melodien* and the Double Concerto was followed by one of Ligeti's biggest projects, the opera *Le Grand Macabre*. Paul Griffiths has suggested that in this work, with its emphasis on death, together with eclectic references to past genres and styles, such as Monteverdian fanfares, folk and religious music, and parodies of Offenbach and Schumann, Ligeti had confronted the end of musical history:

> . . . the simultaneous availability of multitudinous styles, all of them defunct, with no clear alternative, the seeming inevitability now of recycling the past.[1]

[1] Griffiths, *György Ligeti* (1997) 102

After the aforementioned 'crisis', the composition of the Horn Trio signals a decisive move towards the more expressive. Here, one can speculate that the textural whole is quite often subordinated to the individual lines, with internal coherence and thematic cross-reference predominating, especially in the early horn and violin lines. As described in detail in my earlier analysis, Ligeti turns to simpler structural and harmonic models, but always with a twist. Perhaps a Nancarrow influence is just detectable: more 'accessible' harmonies within a complex rhythmic framework, reusing softer intervals in a new context.

Whereas Ligeti has described his eclectic quotations in *Le Grand Macabre* as

> a weakness, a fault, a passing attitude that I don't like and don't want to use anymore,[1]

it seems to me that his use of allusion and quotation (from *Les Adieux*) in the Horn Trio has a freshness, a more organic, less collage-like quality. He has found a way of incorporating material with connotations of the past, but as an organic resource, and in a new way. There is less emphasis on recycling, and more on proliferating.

Griffiths sees Ligeti as sounding a little defensive on the subject of his conservatism in the Trio, and describes him as steering a careful course between "modernist cliché and reversionist pastiche . . . a highly constructed music could create patterns rich enough to sustain rather simple ideas, and to justify them in a new way."[2] Such a new way includes quasi-thematic material, emphasis upon simultaneous attack and the abandonment of linear chromatic or near chromatic movement. More importantly, there is little emphasis on the textural layering

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[1] Ibid., 100.

[2]Ibid, 104-5.

present in almost all of his works from *Atmosphères*. The defensiveness may come from a fear of 'selling-out', reluctance to 'retreat' into simpler textures and sounds. Historical musicology has treated such reversionists cruelly: for example Copland's admission that he wanted to write music that was more accessible for his audience lost him the critical acclaim of his earlier work.

> Uncertainty . . . is by no means always negative, since it forces us, both individually, and collectively, to ask ourselves a number of fundamental questions about our cultural heritage and our cultural ideology. We should not complain too much about our problems: how dull life would be without them! The word 'crisis' is too often used for situations that are no more than necessary and inevitable transitional stages.[1]

In some ways, the composition of the Trio, coming after a period of crisis in both health and work (he describes beginning and abandoning the commission for the Piano Concerto many times) may have been some kind of catharsis. While Griffiths describes it as a bridge to a 'new style', I would suggest that instead of leading to a new style, the Trio was a useful, but temporary move away from the linear and textural norms associated with his previous output, a momentary step outside the stylistic continuity of his earlier work. It should not be regarded as the first work in a new simpler style, but as one which may be interpreted as a cathartic step on the way to a reappraisal of his compositional process. When Ligeti's output from 1982 onwards is examined, many of the external influences apparent in the Horn Trio can be seen to be taken up in subsequent works, and this will now be examined in more detail.

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[1]Pierre Boulez, "What's new?" in *Orientations: Collected Writings*, edited by Jean-Jacques Nattiez, translated by Martin Cooper (London: Faber and Faber, 1986), 480.

Use of folk material

While Ligeti has described four movements from *Musica Ricercata* as being 'pseudo-folkloristic',[1] there are no folk allusions in many of his other works from the sixties and seventies. However, the return to Bulgarian/Romanian 3+3+2/8 groupings, reminiscent of Bartok *(Dances in Bulgarian rhythms, Mikrokosmos* 6) in the second movement of the Horn Trio, marks a resurgence of folk rhythms and materials. A similar rhythmic ostinato is used in *Fanfares* from Piano Etudes, Book 1, with a 3+2+3/8 grouping. This was followed up in the Viola Sonata, which refers obliquely to a style of Romanian folksong melody: Ligeti cites it as being 'an honorary member of this family of folksongs'.[2] The second movement of the Violin Concerto also features this type of *Mitteleuropa* melody.[3]

> The second movement (of the Horn Trio) is a very quick polymetric dance, inspired by the various folk musics of non-existing peoples. That is to say as if Hungary, Romania and the entire Balkan region were situated somewhere between Africa and the Carribean.[4]

In these works, it seems as if he has gone a step beyond the 'synthetic' folk-tunes of *Le Grand Macabre*. The folk material is less of a surface feature, and has become more integrated into the musical fabric and language of these works, with essences of many cultures perhaps triggering off impulses towards the naive initial musical idea. An example of this was described in Chapter 2: the principle of additive-pulse, as studied by the ethnomusicologist Simha Arom, became a

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[1] Ligeti, sleeve note with Sony CD SK 62309, 8.

[2] Ibid.,16.

[3] Paul Griffiths, sleeve note with Deutsche Grammophon CD 439 808-2, 4.

[4] Ligeti, sleeve note with Erato CD 2292-45360-2, translated by Sid McLauchlan, 21.

useful resource for Ligeti, in that it enabled him to evolve a music moving at several speeds simultaneously. He goes much further than mere taxidermy or citation, however: with Ligeti, there are always many eclectic influences, which he assimilates, and fuses with his own consistent compositional approach.

> Il faut répéter que, dans la musique de Ligeti *se perpétuent* et *se revitalisent* plusieurs des éléments les plus riches de la tradition musicale européenne, le syncrétisme personnel du compositeur se situant au carrefour d'un grand nombre de traditions qui débordent largement les cadres de la musique de concert occidentale. Par le biais de maintes transplantations nerveuses, transfusions sanguines et greffes *in vivo*, Ligeti crée un organisme musical nouveau, viable, refondant les référants culturels et les assumant dans leur potentiel référentiel propre. C'est là un art des plus subtils, des plus sensibles et imaginatifs, et il ne fait aucun doute que les *Six Études pour piano*, de par leur fraîcheur et leur classicisme raffiné, constituent un apport majeur au répertoire.[1]

Referentiality and motivic writing

As discussed in the introduction to this thesis, many commentators have labelled the Horn Trio as the first work in Ligeti's new 'simpler' style, enumerating features such as use of the lamento motif, singable melody, simpler harmonies suggesting diatonicism, and further experiments with polyrhythms.[2]

In the first case, some of these features are not new: Steinitz has traced the antecedents of the lamento motif back to the *Requiem.* Features such as 'singable melody' seem somewhat subjective and difficult to quantify: what of the plaintive and expressive horn duet in *Melodien*, bs.60-64? Simpler interval-signals and chords have featured in Ligeti's output from *Lontano* and *Lux Aeterna* onwards.

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[1]Bouliane, "Les *Six Etudes pour piano* de György Ligeti," 55.

[2]Townsend, "The Problem of Form,"16-17.

As discussed in the opening section of this chapter, Ligeti had been contrasting the more meccanico-type lines with those of greater expansive and expressive import, as far back as the composition of *Aventures* and *Nouvelle Aventures* in 1962-5. That which is new in terms of melody in the Horn Trio is the adoption of a referential or motivic quality, where discernible contours are repeated and modified across the course of a movement, work, or even from work to work.

In the analysis of the Horn Trio, I have examined in detail the use of modified repetition of specific thematic material. Ligeti has described the false *Les Adieux* motif as being

> . . . developed in all four movements, yielding transparent, yet complex metric-rhythmic polyphonic configurations.[1]

Ligeti's lamento-ostinato theme, with its antecedents, and its appearances in many of his works from the eighties, such as the Horn Trio, *Automne à Varsovie*, the Viola Sonata, and the Violin and Piano Concerti, has been written about extensively by scholars such as Steinitz and Taylor, amongst others. With his *idée fixe*, the lamento-ostinato, Ligeti has found a way of imbuing the chromatic/near chromatic syntax that pervades almost all of his works from the sixties onwards, with a new, more expressive character. This recurring three-phrase melody implies a tendency towards quasi-thematicism, and marks an important move away from pure abstractionism. However, it must not be seen as reversionism. The concept of repetition is handled with extreme deftness and subtlety, as illustrated in the analyses of the Horn Trio and *Automne à Varsovie*. His commentary a decade earlier on his abandonment of micropolyphonic textures

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[1] Ligeti, sleeve note with Erato CD 2292-45360-2, 21

is perhaps relevant here: one could extend it to surmise that his use of more thematic material bears traces of the compositional processes honed in the earlier, more abstract pattern-meccanico or motivic cell textures, based on simple models such as single dyads.

> The situation is similar to that which prevailed after the abandonment of serial music. Series no longer existed, yet nonetheless post-serial music bore within itself traces of experiences gained in working with serial techniques. It was not a retreat to a previous phase, but an advance towards a new style and a new structural concept. My musical position following the abandonment of micropolyphony is similar: there pass through my mind inter-linked parts of a melodic character, a polyphonic network in which not all the individual parts are submerged. On the contrary, the melodically shaped parts retain their individuality, they move simultaneously at varying speeds and possess a melodic and rhythmic line of their own, varying from, and independent of the other parts. In this way, melodic shape, that forbidden fruit of modern music, can to some extent be restored.[1]

In the same way, Ligeti, through the experience of the composition of the Horn Trio, has found a way to restore other 'forbidden fruits' of modern music, such as repetition, more 'accessible' sonorities and 'simpler' forms.

Simpler structures

The simpler structural models and formal schemes of the Horn Trio are, in many ways a 'one-off', with Ligeti perhaps even thumbing his nose somewhat at critics and colleagues alike:

> The traditional forms of all four movements are obvious—and I quoted these formal patterns as a sort of rebellion against the established conventions of the avant-garde.[2]

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[1]Ligeti-Ligeti, in *Ligeti in Conversation*, 137.

[2]Ligeti, sleeve note with Sony CD SK 62309, 13-14.

Bossin sees these stylistic changes as representing

> . . . a protest against the taboo of melody and other traditional features; the composer himself described his use of ABA forms as resulting from sheer audacity, for instance.[1]

However, if Ligeti did not persist with large-scale repetition and ABA forms in subsequent works, the composition of the Horn Trio was a valuable experiment in reinterpreting older structural models. One of these, the passacaglia, used in the fourth movement, became a useful resource, subsequently returned to in *Le Grand Macabre*, the Violin Concerto (fourth movement) and the Viola Sonata (sixth movement). These slower movements are often subtitled 'lamento' or 'chaconne', titles carrying an implication of expressive nostalgia. While speaking of the Horn Trio, Ligeti said:

> (this music) has an emotional layer (especially in the fourth movement) which cannot be described in terms of traditional categories. Nostalgia for a homeland that no longer exists?[2]

In all three movements cited above, the passacaglia is based on stepwise movement, with a clearly articulated direction, either ascending or descending. In each case, Ligeti exploits the registral extremes of the instruments involved, playing with juxtaposition of different simultaneous tempi, and often emphasising simultaneous attack and registral divergence at climactic points. In other words, he has found a more expressive way of articulating his perennial compositional concerns. In *Vertige* and *L'escalier du diable* from the Etudes for Piano (Book 2), the material could be seen as deriving from an extension of ground-bass principles, where the repeating unit is modified and extended very slightly each

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[1]J. Bossin, "Gyorgy Ligeti's new lyricism and the aesthetic of currentness," 238-9.

[2]Ligeti, sleeve note with Sony CD SK 62309, 14.

time, generating a *perpetuum mobile* texture. These minute local changes have a longer-term effect on the musical whole, in the manner of fractal geometry, another one of Ligeti's many influences.

> The degeneration of simple premises into chaotic outcomes has a direct parallel in the music of Ligeti, in which the progressive deformation of apparently innocent material can lead to spectacularly anarchic results.[1]

Baroque forms and textures have been a lifetime's interest for Ligeti: one remembers his work as a professor of contrapuntal studies before he left Hungary in 1956. He describes one of his works from this time, the last movement from *Musica Ricercata*, subtitled *Ommagio à Girolano Frescobaldi* as

> . . . a monotonous fugue. . . .A severe, almost noble piece, hovering between academic orthodoxy and deep reflection: between gravity and caricature.[2]

This interest in contrapuntal textures persisted when he moved to the West, and was reinterpreted in the many works of his micropolyphonic period (see studies by Bernard and Rollin, amongst others).[3] Here the relationship between the contrapuntal lines is often inaudible, as it is subsumed into the textural whole—hence micro-polyphony. In these newer passacaglias, whilst there is much textural complexity, more priority is given also to line, and it seems to me that Ligeti feels freer to let the listener hear the internal relationships between these contrapuntal lines. These become more audible through his increased use of

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[1]Richard Steinitz,"Music, maths and chaos," *The Musical Times* 137, no.3 (1996), 16-17.

[2]Ligeti, sleeve note with Sony CD SK 62308, translated by Annelies McVoy and David Feurzeig, 12.

[3]Jonathan Bernard, "Inaudible Structures, Audible Music: Ligeti's Problem and his Solution," *Music Analysis* 6, no.3 (1987), 207-36, and Robert L Rollin, "Ligeti's *Lontano*: Traditional Canonic Technique in a New Guise," *The Music Review* 41, no.4 (1980), 289-96.

referential material and local repetition—again, an expressive reinterpretation of an earlier technique.

Use of non-tempered pitch

Back as far as the *Requiem*, *Volumina* and the second String Quartet, we see Ligeti deviating from equal temperament. In *Ramifications*, he requires half of the string to tune a quarter-tone higher. In performance, this leads to interesting fluctuation and ambiguity of pitch:

> In only a few dense places approximate quarter-tone clusters result; apart from that, we find a new kind of "uncertain" harmony, as though the harmonies had rotted: they have a strong taste and decay has permeated the music.[1]

This notion of "uncertain" harmony permeates all of Ligeti's experiments outside equal temperament. As seen in the Double Concerto, he gives the performer very precise fingerings, but the resulting sonorities are intended to 'defocus' the harmony. Remember again his comments on Partch's work:

> I do not think we need to look for other tonal systems—I abhor all fixed systems, what I really want is the effect of deviation from either pure or equal temperament.[2]

The above quote comes from 1978, and it is interesting how little his views have changed in the meantime. In 1998, he described the intonation system of the Horn Trio as "heterogeneous," playing on the tuning possibilities of the three instruments.

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[1] Ligeti, sleeve note with Wergo CD 60162-50, 15

[2] Ligeti, "Ligeti-Peter Varnai" in *Ligeti in conversation*, 54.

> The sound would be much more beautiful on a true natural horn, but the horn player would then require a short pause to change crooks; as there is not sufficient time for this, I wrote the piece for valve horn. Nevertheless, I was thinking in terms of natural horns pitched in various keys, and I indicate these in the score. In this way, mostly untempered overtones occur, which tend to throw the violinist's fingers off their mark. This is intentional, part of the riddle of this *non-manifest* musical language.[1]

'Non-manifest', 'deviation'—the desire to avoid the systemisation of non-tempered pitch is a constant concern: Ligeti's aesthetic sees this type of pitch as a sound-effect, an extension of timbre, a means of 'muddying the harmonic waters'. We see this most forcibly in the Piano and Violin Concerti, with the use of natural brass harmonics and instruments such as ocarina and slide whistle, which bring their own individual tuning systems. Griffiths describes the *scordatura* effects within the orchestral strings in the Violin Concerto:

> These tunings of [one violin and viola] (A^{b}-E^{b}-B^{b}-F and B-F#-C#-G#), together with those of their normal companions, thus provide a cycle of fifths in just intonation, and provide for the most delicate abrasions between equal temperament and natural resonance.[2]

Apart from some fruitless experiments in retuning the harp and harpsichord,[3] Ligeti does not seem to follow the example of Partch and Hába, who evolved complex tuning systems, using microtones. Ligeti's using of non-tempered pitch seems remarkably consistent across the changes in style. Perhaps the Viola Sonata is one important exception, where the first movement exhibits some modal tendencies, by requiring the soloist to use fingerings which create overtones

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[1] Ligeti, sleeve note with Sony CD SK 62309, 15-16.

[2] Griffiths, *György Ligeti* (1997), 129.

[3] Ibid., 128.

> . . .so that they shimmer between Lydian and Mixolydian; this was described by Bartók as an "acoustic scale" or "acoustic mode." . . .The resulting sound is then mysteriously alien.[1]

Again, Ligeti is unafraid to reinterpret the Balkan influences of his early years, but always with a view to creating a sound world hovering around the boundary between tempered and non-tempered intonation, never quite committing itself to one or the other.

Harmonic procedures

In examining the harmonic development across the three pieces chosen for this study, we see a move from the pure abstractionism of the Double Concerto, to the opposing pole of the radical thematicism and expressive writing of the Horn Trio, with a quasi-rapprochement in *Automne à Varsovie*. Here the complex contrapuntal chromatic background is clothed in a more expressive foreground.

While it is beyond the scope of this study to examine extensively the harmonic procedures and pitch control of all of Ligeti's subsequent works, it is possible to survey briefly some of the significant developments, which seem to be outgrowths of his harmonic procedures used in the above three works.

There is continuing evidence of the use of tonal sonorities in an atonal context. Both Steinitz and Griffiths have commented on his work in this area. Speaking of the Etude *Fanfares*, Steinitz writes:

> Yet the melodies are surprisingly euphonious, the phrase structures neatly proportioned, the harmonies audaciously consonant. . . . *Fanfares* explores every aspect of a singular vision, driving onward relentlessly to the point where we

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[1] Ligeti, sleeve note with Sony CD SK 62309, 16-17.

> experience something new and unique; it is certainly not the comfortable path of reinstating the familiar. Nor is euphony for Ligeti an aesthetic position, as it is for others, but rather the incidental byproduct of a particular purpose, appropriate to one set of premises, not to another. In any case, Ligeti manages to use consonant harmony and yet remain radical through the sheer speed and rhythmic intricacy with which he hurtles unrelated triads before us.[1]

Griffiths also describes this tonal/atonal dichotomy:

> What is new in the Etudes, or at least very much increased, is the acceptance of diatonic figures and chords outside of any tonal frame, and the exactly analogous acceptance of rhythmic groupings with no stable metrical frame: in making these their chief distinguishing features, the Etudes assume a key role in Ligeti's later music.[2]

In the later output, as well as the modal sonorities of the Viola Sonata and Violin Concerto, we find melodic lines with restricted intervallic content, using the same 'rules' as observed in the Horn Trio: examples of this can be found in the orchestral wind lines in the second movement of the Piano Concerto.

Ligeti continues to build textures out of chromatic ascending and descending lines (see the section on simpler structures for more detail), now softened through the incorporation of more thematic elements.

In the midst of this combination of complex chromaticism and expressive referentiality, there are obvious 'Ligeti-moments', where textures evolve from, or are punctuated by, simpler interval signals, which are then complicated through stepwise movement. Good examples are heard in the third movement of the Piano Concerto, and in Etudes for Piano, Book 2, no.10, *Der Zauberlehrling*. Therefore, we see the synthesis of abstract chromaticism with expressive writing (itself an outgrowth of his more 'expansive' lines, going back to *Le Grand Macabre*, and

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[1] Steinitz, "The Dynamics of disorder," 11.

[2] Griffiths, *György Ligeti* (1997), 120.

before), as exemplified in the Etudes for Piano, and continuing in his works from the eighties and nineties.

Conclusion

Finally, in the light of these comparisons of three very different works, what conclusions can one draw about Ligeti's changing style?

Across his musical and compositional career, there are two recurring (and conflicting) themes that I feel must inform any study of his compositional approach. The first of these was present from an early age: the sense of being a 'late starter', of being left behind, with an ensuing desire to 'catch up'. In his teens he was a late beginner at the piano, and lamented his lack of technique. Although already a prolific composer when he entered the local conservatory, he felt that his harmony and counterpoint skills were far behind the rest of the class, and needed a crash course to catch up.

While the few scores and broadcasts available in Hungary whetted his appetite for new music, again, there was the sense of new exciting musical developments in the West, which were inaccessible to him. When he eventually reached Cologne, he immersed himself in detailed studies of serialism (including the analysis of Boulez's *Structures Ia*) and the new resources of the electronic studio.

> On my arrival in Cologne, I soaked up things like a sponge: for several months I did nothing but listen to tapes and discs.[1]

[1] Pierre Michel, *György Ligeti; compositeur d'aujourd'hui* (Paris: Minerve, 1985), 139

Yet, if this need to catch up should imply a lack of self-confidence and a desire to conform, it is strongly negated by the second recurring theme: a desire to avoid any group mentality, to make his way *outside* the path of serialism or any other system. I might suggest that one is hardly going to join a clique defined by rigid aesthetic beliefs, having just escaped from a society where composers were required to conform to strict aesthetic guidelines, and would not be performed if they refused to do so.

> Slick phrases, attractive philosophical systems tend to leave me cold. Schoenberg's twelve-note system is such an attractive dogma, it eliminates the octave.[1]

And in a later interview,

> Samuel. Is the real danger for a composer the temptation to look back, or obsession with the avant-garde?
> Ligeti. I reject them both. The avant-garde, to which I am said to belong, has become academic. As for looking back, there's no point in chewing over an outmoded style. I prefer to follow a third way: being myself, without paying heed either to categorizations or to fashionable gadgetry.[2]

While he assimilates aspects of serialism or other systems, adapting them for his own purposes, he consistently emphasises his desire to be seen as an individual, rather than a member of a particular group. He is as proud now of the critics' inability to pigeonhole him, as he was in 1978.

> They do not know what to do with me. . . . critical opinion assumes that there are always groups, like the Fives, the Sixes, the neoclassical school, the Viennese school, the serialist school, the aleatory school; they feel they have to stick a label on everybody. As I am not labelled, they often do not understand what I am after.[3]

While some commentators see the 'simpler' harmonies and forms of Ligeti's more recent work as part of a trend towards post-modernism, and hence,

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[1] Ligeti, "Ligeti-Peter Varnai" in *Ligeti in conversation*, 27.

[2] Ligeti, "Ligeti-Claude Samuel" in *Ligeti in conversation*, 123.

[3] Ligeti, "Ligeti-Peter Varnai" in *Ligeti in conversation*, 51.

rush to group him with composers such as Gorecki, Schnittke and Pärt, this seems to me to ignore Ligeti's clear statements in this area. While it is obvious that Ligeti has always firmly rejected the clique of the avant-garde, with its notion of 'newness for newness' sake', in his more recent works and writings, he has equally rejected any ideas of pastiche and reversionism. His criticism of the 'negative rules' ethos of integral serialism is balanced by his disapproval of post-modernist reversionism:

> In all art forms, returning means running away.[1]

To me, his rejection of serialism was because its anti-intuitive or anti-subjective aspects were contrary to his nature. He was always reluctant to relinquish control over the raw musical material, or to allow it to be subjugated to a pre-compositional order of elements:

> There was no guarantee that a single basic order would produce analogous structures on the various levels of perception and understanding. On the contrary, adherence to a single basic order led to structures that seemed incompatible. Unity remained fixed at the level of commentary, a verbal description of the composition: it was clapped on from the outside, and had no direct impact on our minds.[2]

One could even say that his rejection of post-modernism is based on the same idea: a rejection of the tendency to adapt pre-existing structures into the creative process, again something anti-intuitive.

Ligeti joins Xenakis, Lutoslawski and Carter in their refusal to countenance any surrender of control over their primary material, in contrast to, say, Cage or Feldman, where 'lack of control' or chance becomes elevated. In this

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[1]Ligeti, "Ligeti-Peter Varnai" in *Ligeti in conversation*, 68.

[2]Ligeti, "Ligeti-Ligeti" in *Ligeti in conversation*, 129.

sense, Ligeti continues to tread the somewhat 'old-fashioned' path that puts the creator at the centre of the decision-making process. In this, he has become a touchstone among composers as someone who has always stood up and spoken out. In his writings, as well as his music, he has always been ready to question prevailing orthodoxies.

In every way, be it in terms of formal structures, harmonic procedures, extra-musical influences such as science and nature, his own background in counterpoint, or the folk music of his youth, Ligeti's output from the eighties, nineties, and, we hope, from the 21st century shows the unending intellectual musical, and wider cultural curiosity of the man. This is teamed with a strong sense of a line of common compositional thought, unbroken across the stylistic changes of his output. The three pieces examined in this study can be seen to exemplify the synthesis of familiar and new, both in procedure and aesthetic, resulting in music that is always forward-looking and revolutionary.

> I have written of influences and approaches, but what I compose is difficult to categorise: it is neither "avant-garde" nor "traditional," neither tonal nor atonal. And in no way post-modern, as the ironic theatricalizing of the past is quite foreign to me.[1]

[1] Ligeti, sleeve note with Sony CD SK 62308, 11-12.

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