Endangered Species

The Harpsichord and its New Repertoire since 1960

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The candidate confirms that the work submitted is her own and that appropriate credit has been given where reference has been made to the work of others.

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Preface

> I subsequently realized that verbal discussion of specific pieces on a poetical and imaginative level can be extraordinarily dangerous. Repeatedly I have realized that what I have written about a piece distorts or limits what as a performer I feel its content to be. (I have often found myself tacitly engaged at an instrument in combating the misleading and incomplete indications of my own program notes.)[1]

Ralph Kirkpatrick's comment sounds a cautionary note to performers attempting to write about the music they play. However, his renowned study of the life and music of Domenico Scarlatti is a fine example of what can be achieved by combining a performer's experience and insight with a critical approach to a body of music. My fascination with the sound and touch of the historical harpsichord led me to search out new music to play on it. Initially, I was surprised and disheartened that there seemed to be so little new repertoire for the harpsichord. The many facets of the harpsichord sound seemed to me a valuable source for composers to tap into. I was also disenchanted that few harpsichordists seemed enthusiastic about the *idea* of new music for their instrument: in general, the attitude of players is that the keyboard repertoire of the seventeenth and eighteenth centuries is rich and varied enough; why is there a need for new music for the harpsichord?

The historical keyboard repertoire is indeed very rich, and many harpsichordists have built and sustained successful careers by performing it, in some cases specialising still further in the music of a shorter period, a nationality or a single composer. However, the fact that there are people playing the harpsichord in the twenty-first century means that the harpsichord is integrated, to whatever extent, into contemporary musical life, and therefore deserves to have a voice in a contemporary musical language. The survival of an instrument, like the survival of a species, depends upon its ability to adapt, to be an integral part of a larger environment, and for its ability to diversify its repertoire and meet new challenges.

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[1] Ralph Kirkpatrick, *Domenico Scarlatti* (Princeton: Princeton University Press, 1953), vii.

As musicians strive to get closer to the original sounds of historical music, historical instruments must reciprocally be brought into the contemporary artistic mainstream. By writing new music for the harpsichord, generating repertoire for it, and by making sure that this repertoire is played so that audiences become familiar with new harpsichord music, we ensure that the harpsichord has its own contemporary voice alongside other instruments and that its language continues to develop in the twenty-first century.

Learning contemporary harpsichord pieces can be daunting: harpsichordists are often more used to learning works from the historical repertoire whose language and expressive means are more familiar, and there are particular challenges in preparing a piece for its first performance. However, as I started to learn new pieces and find out more about contemporary music for the harpsichord, I discovered that the picture was not as bleak as it first appeared. Though few in number, dedicated harpsichordists in this country and elsewhere are active in commissioning and playing new harpsichord music, and have engaged the interest of many composers to add to the contemporary harpsichord repertoire.

My aims in writing this thesis are twofold, first, to explain how the harpsichord repertoire has got to where it is by tracing its development, and the development of the instrument itself, from the beginnings of the early-music movement in the first decades of the twentieth century to the present, so to be better able to judge where its future lies; and secondly, to give an account of the harpsichord and its repertoire since 1960 through a close critical study of selected works. Though there are reasons to be hopeful, there are still causes for concern. The modern pedal instrument for which much of the repertoire was written is itself in danger of extinction, and it is not yet clear that the efforts of the few players promoting the historical instrument in new music will bring the repertoire and contemporary performance practice to a point where the instrument is accepted, rather than being regarded as an exotic rarity.

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Abstract

The twentieth-century harpsichord has an unusual history: coming out of oblivion at the end of the nineteenth century, it was given a new lease of life, but at the same time acquired a mistaken identity.

This thesis examines, from the perspective of the harpsichordist, the two types of harpsichord prominent in the musical mainstream in the twentieth century, and specific pieces written for both between 1960 and 1990. The two types of instrument under discussion are (1) the modern pedal harpsichord modelled after the instrument tailor-made for Wanda Landowska and (2) the historical instrument which emerged and proliferated in the latter part of the twentieth century.

In particular it focuses on the two different types of music composed for the two instruments, starting with Maurice Ohana's *Carillons pour les heures du jour et de la nuit* (1960), written for the modern pedal harpsichord, through György Ligeti's *Continuum* (1968), also written for the pedal instrument, to two ensemble pieces including the historical harpsichord: Chiel Meijering's *n'Dame scheert haar benen* (1981) for harpsichord and guitar, Ton Bruynèl's *Schrootsonate* (1990) for harpsichord and soundtracks, and Iannis Xenakis's *Khoaï*, for the modern pedal instrument. Finally, it examines Elliott Carter's *Double Concerto for Harpsichord and Piano with Two Chamber Orchestras* (1961), the most elaborate harpsichord work to date.

The detailed analyses encompass a flexible but consistent methodology, drawing on the experience of the performer to elucidate the different ways different composers have related to the different characteristics of the two types of harpsichord.

The thesis concludes by summarising the development of harpsichord repertoire from 1960, making inferences from the foregoing discussion, and commenting on the possibility of continuing development of harpsichord repertoire in the twentieth-first century.

Chapter 1
Introduction

The harpsichord is one of the very few instruments to have been revived after a long period of being almost extinct. In the last century, the invention of the pedal instrument through Wanda Landowska has given its identity an unusual twist: the twentieth-century harpsichord now has its own unique history.

The exoticism of the sonority of the harpsichord helped raise its profile in the early part of the twentieth century, when the early-music movement was gathering momentum. That role of the harpsichord is now diminished: because it is no longer a strange instrument, it has now to be part of the musical mainstream. If the harpsichord is to survive, harpsichordists must be committed to creating, playing and promoting new repertoire which must evolve.

The harpsichord is here to stay: the early-music movement has been successful and has ensured the harpsichord its place in musical culture and education. However its role is geared primarily towards its function as a continuo instrument. In accordance with the spirit of the early-music movement, the replica harpsichord is not going to evolve; the impetus to experiment is much reduced because harpsichord builders are likely to want to get closer to original instruments. After all, the harpsichord is not a modern instrument, relative to the piano, and the replica mindset is not about evolving instrumental capabilities. From that point of view, pending a revival of the modern pedal instrument, composers increasingly find that they have to work with the capabilities and limitations of the historical instrument.

However, the revival of the harpsichord need not only be a performance practice revival. Whereas this aspect of the revival has reintroduced the sounds of the harpsichord and its older repertoire back into the consciousness of musicians and music lovers, if the harpsichord is to have a future and a

voice integral to contemporary musical development, it must have new music written for it; and indeed it has.

In *Harpsichord and Clavichord Music of the Twentieth Century*, Francis Bedford lists around five thousand works.[1] However, much in this catalogue was written for the modern pedal instrument which has now become scarce. Furthermore, much of the music is either unidiomatic on the harpsichord, closer to being piano music, or it is conservative and derivative in character, drawing on the historical and stylistic connotations of the instrument without attempting to give the instrument a distinctive and appropriate contemporary voice. Like any repertoire, there is a lot of bad as well as good. To create a canon of works, there must, necessarily, be works not only of the first order, but of second and third orders also. There must be a collective who play and promote the repertoire, so that they can stimulate composers to write more music for the harpsichord. It is up to harpsichordists themselves to get the harpsichord back into the ears and minds of composers. From an evolutionary point of view this is essential, for without continuity, it is as if composers, performers and audiences have to start from scratch each time the instrument is encountered in a contemporary context.

In the course of the twentieth century, two kinds of repertoire have emerged, one for the modern pedal instrument up to about the 1960s and one for the historical instrument, from then on. Although one type of music may be adapted for the other instrument, the two different kinds of repertoire are predictably not wholly interchangeable. The former tends to make use of the numerous different registers and designates changes in the score; the latter concentrates on using the different aspects of harpsichord technique for differentiation of colour and articulation. In any case, these two strands did not run parallel to each other, but were mainly written at different times. The former, written for the modern pedal instrument, typically has Baroque associations, explicitly or implicitly alluding to specific Baroque formal

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[1] Francis Bedford, *Harpsichord and Clavichord Music of the Twentieth Century* (Berkeley: Fallen Leaf Press, 1993).

preoccupations, for example Elliott Carter's *Sonata for Flute, Oboe, Cello and Harpsichord* (1952); the latter explores aspects of sonority of the historical harpsichord. These two branches of the harpsichord repertoire bring into relief the differences in technique of playing the modern pedal instrument and the historical harpsichord.

Since the historical harpsichord has become much more exposed through the revival of early music from about the 1970s, composers have started to explore its sonority and physicality in their compositions. The moment of energy on the attack is very immediate on the harpsichord, compared with the rounder-toned piano. When a string is plucked, it stretches and then vibrates, causing a non-harmonic buzz at the beginning which decays into a purer sound. There is an aspect of noise in the harpsichord sound which is not present on the piano, which makes harpsichord music more challenging to hear. Some recent works make a feature of the interplay between different levels of energy of the attack on the historical harpsichord, for example Michael Nyman's *Convertibility of Lute Strings* for solo harpsichord (1992).[2]

However, even as late as the 1960s, many harpsichordists still played on modern pedal harpsichords. For example, Virginia Black (then a student studying with George Malcolm and Geraint Jones at the Royal Academy of Music in London) remembers that she was taught to "creep on the sound", referring to the technique of changing registration by gradually putting down the foot pedal, to imitate a *crescendo* on the piano.[3] This indicates that the early-music movement had not yet been established and instruments built after historical models had not reached many music colleges. By the same token, historical performance practice was in its infancy. The very idea that the harpsichord could or should imitate the piano speaks volumes.

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[2] *The Convertibility of Lute Strings* was commissioned for Virginia Black and first performed by her in the Purcell Room, London on 17 November 1992. Black and Nyman were contemporaries at the Royal Academy of Music, and both studied the harpsichord with Geraint Jones.

[3] Interview with Virginia Black, 27 February 2004.

However, scholarship, instrument construction and performance practice were already making progress. Though some pioneers had established ensembles and performance series in the 1950s,[4] the 1970s onwards saw an explosion in the number of groups specialising in authentic performance. Buoyed by the dedication of a number of prominent keyboard players and other instrumentalists, and drawing on and in turn generating an increasing enthusiasm among audiences, concert promoters and recording companies for the fresh and direct sounds and clear interpretative boundaries of early-music performance, many period instrument ensembles were formed: Trevor Pinnock founded The English Concert, Christopher Hogwood the Academy of Ancient Music, both in 1973; the same year saw the establishment of Reinhard Goebel's Musica Antiqua Köln; Ton Koopman founded the Amsterdam Baroque Orchestra in 1979, and in 1986, the Orchestra of the Age of Enlightenment gave its first concert.

The exposure of early music to a wider audience also raised the profile of the historical harpsichord which in turn generated interest for it amongst performers and the public. It was the change in the philosophy of musicians that brought about the change of attitude towards the modern pedal instrument. As soon as there were more harpsichordists who preferred the sound and touch of the historical instrument to the modern pedal harpsichord, it was inevitable that the pedal instrument would be usurped. With the exception of Elisabeth Chojnacka, who still champions the pedal instrument, there is little current interest in it among harpsichordists. Chojnacka specialises in performing works written for the modern pedal instrument to the exclusion of historical repertoire and continues to commission new works. Now, the historical harpsichord has replaced the pedal instrument; indeed harpsichordists who love and are motivated by historical keyboard repertoire can have little sympathy with the modern

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[4] For example, Nikolaus Harnoncourt and his wife Alice founded the Concentus Musicus Wien in 1953 as a specialist ensemble for the performance of early music on authentic instruments of Baroque and Classical music.

pedal harpsichord which does not reveal the many intricacies of that music. Ralph Kirkpatrick, who had been brought up on modern pedal instruments, welcomed the arrival of the historical replica in the 1950s and 60s as it enabled him to balance one register against another by means of touch, allowing him to follow the *piano* and *forte* indications in Bach's Italian Concerto. He relished playing such instruments:

> I now discovered new resources of playing and I enjoyed the privilege of bringing out the beauties of an instrument [the historical harpsichord] rather than being obliged to conceal its [the modern pedal instrument's] defects. I was not only enabled to get rid of all those fancy registrations, but I was able as the action improved to cultivate a vocabulary of articulation that far exceed anything I had before possessed.[5]

It is largely due to the Landowska Pleyel, and the growing dissatisfaction on the part of makers and performers with the sound, touch and expressive limitations of that and other similar instruments, that the notion of original historical harpsichords has been returned to musical consciousness. The subtle vocabulary of articulation on the historical harpsichord is starting to be explored: for example, Brian Ferneyhough meticulously notates many different kinds of articulation in his *Études transcendantales* (1982-5), not only for the harpsichord, but for the soprano voice, flute, oboe and cello which complete the ensemble, so that the dense score is made even denser by these as well as verbal indications in Italian to indicate the changes of style in playing characteristic of this composer. It is doubtful that all the articulation markings can be realised, especially at such fast tempi as, for example ♪= 70, where the music is heavily subdivided into small and irregular rhythmic values.

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[5] Ralph Kirkpatrick, "Fifty Years of Harpsichord Playing", *Early Music*, XI:1 (1983), 38.

There is an accepted outlandishness about writing new music for an old instrument. In the twentieth century, there has been little new music written for other old instruments such as the viol consort or the lute, with the exception of the recorder, another instrument which was revived in the early years of the early-music movement and which has a flourishing contemporary tradition. The sheer size of the new harpsichord repertoire is therefore an exception.

Although our expectations and experience of keyboard style are loaded with the baggage from the piano and organ repertoires of the nineteenth and twentieth centuries, that association with the piano has ensured that composers found the harpsichord an accessible instrument to work with in the twentieth century. Many composers can play the piano and often compose at it. The physicality of hands and fingers is a constant and welcoming familiarity, to the extent that composing for the harpsichord can seem a little like composing for the piano. However, this familiarity can be a barrier in imagining the distinctive sonorities and articulations available on the instrument.

The great composers of the historical keyboard repertoire were also keyboardists themselves. J.S. Bach, Rameau, François Courperin, and Domenico Scarlatti were all virtuosi. All of them had an intimate knowledge of the aspects of keyboard technique, including fingering and articulation, and the subtleties of the harpsichord sound. During the harpsichord renaissance in the twentieth century, composers had, first of all, to work with the modern pedal instrument which in important respects was but a pale imitation of the historical harpsichord: now that truer copies of original instruments have proliferated in the latter part of the twentieth century, those composers who compose for it are, with few exceptions, not harpsichordists themselves. That is not to say that composers who do not play the harpsichord cannot compose good harpsichord music: far from it. György Ligeti and Louis Andriessen have composed works for the historical harpsichord that have become classic. But the lack of composer-

harpsichordists does go some way to explain the limited number of idiomatic pieces composed in the twentieth century.

However, there are exceptions: for example, the Finnish harpsichordist and composer Jukka Tiensuu fulfils the model of the all-round musician; he plays a wide range of repertoire on the harpsichord and piano, teaches, conducts and has written a number of compositions including ones for harpsichord such as *Fantango* (1984) for solo harpsichord, and a number of ensemble pieces including the harpsichord.

The modern pedal harpsichord fell out of favour because it was based on a misconception as to the roots of expression in harpsichord music. Its motivation and strength lay in its possibilities for colouristic effects through numerous and rapid changes of registration, which were of evident interest to composers. However, the true expressive power of the harpsichord lies in its capabilities for different degrees of articulation, which comes from the physical nature of the connection between finger, key, plectrum and string. The plectrum gives the illusion that the player is physically plucking the string and feeling the resistance from the string as it stretches. This is the harpsichordist's touch, and much discoursed upon in historical treatises such as Couperin's *L'art de toucher le clavecin*, and later C.P.E. Bach's *Versuch über die wahre Art das Clavier zu spielen.*[6] Harpsichordists accustomed to the historical tradition of keyboard playing are adroit at exploring nuances of interpretation of that repertoire; it seems that contemporary musical language does not always allow for subtle articulation. The art of articulation arises from a shared understanding of the nature of older musical language; the relationship between that language, the composer, performer and listener; and finally a degree of complicity between the performer's role of conveying subtle feeling, and the listener's role in responding to it.

The conditions of contemporary musical life mean that, by and large, composers usually do not have a shared understanding of this sort. The

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[6] François Couperin, *L'art de toucher le clavecin* (Paris, 1717); Carl Philipp Emanuel Bach, *Versuch über die wahre Art das Clavier zu spielen* (Berlin, 1753).

emancipation of timbre in the music of the twentieth century has led composers to explore and emphasise tone colour and contrast: it sometimes seems as if they strive for effect rather than cultivate *affect*. Neither is musical notation sufficiently discriminating to allow them to specify precisely the sorts of subtlety in touch and articulation that distinguish the best interpretations of historical repertoire. Articulation is about phrasing, and consequently about projecting the formal structure of a piece, making structure intelligible to the listener. Structure in contemporary works, on the other hand, is often conveyed differently—thematically, colouristically, texturally.

Engaging with the harpsichord sound is a prerequisite of composing for it. Most harpsichordists become familiar with its sound through learning earlier repertoire, and therefore associate the harpsichord with particular keyboard styles. Currently, composers seem interested in exploring the historical resonance of the harpsichord in their compositions. Silvina Milstein's large ensemble work for fifteen players *Tigres Azules* (2003) (inspired by a short story by Luis Borges) has in its nucleus a continuo group made up of the harpsichord, piano, celesta and harp, as well as tuned percussion consisting of vibraphone and marimba; it uses the harpsichord "to provide attack, definition, to contribute to heterophonic textures and also for its percussive qualities."[7] The reference to the historical model is explicit: "The continuo group is complemented by five wind and five string instruments in a texture reminiscent of a concerto grosso."[8] Even though a modern pedal instrument was used in the first performance, the composer admits that a historical harpsichord would be a suitable alternative. "Whilst the pedals are not essential, as there are hardly any sudden changes of register, it makes life easier for the harpsichordist who in addition has to alternate between the

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[7] Email interview with Silvina Milstein between 12 and 14 February 2004. *Tigres Azules* was first performed by the London Sinfonietta (conducted by Oliver Knussen) on 23 January 2004 at the Queen Elizabeth Hall, London.

[8] Silvina Milstein, programme note for the concert on 23 January 2004.

harpsichord and the celesta in *Tigres Azules.*"[9] Similarly, the grain of the harpsichord sound was a source of inspiration for other composers. David Harvey's *Elegy* for solo harpsichord (2002) is concerned with exploring the contrast between certain aspects of the harpsichord sound. The title was suggested by an epigraph of Adam Phillips: "So our rage is an elegy, a frenzied nostalgia..."[10] "The collision of these affective terms—rage, nostalgia, frenzied and elegy—brings together many opposites... It is an elegy that holds those tensions and oppositions, not an elegy in the sense of nostalgic passion, [rather] it is nostalgic rage."[11] Although at the time of composing it did not seem to him to refer back to historical models of harpsichord writing, he later commented: "it is a piece which grows from the middle register and therefore is not based on a vertical harmonic conception; a piece in which the counterpoint is of articulation as well as of musical line, and in which the ends of the notes are composed as carefully as their beginnings."[12] Its *rondeau* form is also a way of relating back to formal preoccupations of Baroque music; it is a progressive elaboration and then a return to the music of the opening. And, Robert Keeley finds the idea of reinventing the past, of taking something from it and modelling on it stimulating, citing the neo-classical Stravinsky as a precedent.[13] His *Manoeuvring and Finessing* for solo harpsichord (1999) takes its title from Jane Austen's *Emma,*[14] and explores the rich resonances of particular intervals such as thirds and sixths. "Manoeuvring" and "finessing", both French loan words, came into common English usage in the eighteenth century and have artistic connotations, combining tactical and tactile movement with artful intelligence. In the present context, this alludes to the art of harpsichord playing and harks back to its summit in the eighteenth century.

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[9] Email interview with Silvina Milstein between 12 and 14 February 2004.
[10] Adam Phillips, *The Beast in the Nursery* (London: Faber & Faber, 1998), 101.
[11] Interview with David Harvey, 25 February 2004. *Elegy* was written for and first performed by Chau-Yee Lo in the Great Hall, University of Leeds on 10 October 2002.
[12] Interview with David Harvey, 25 February 2004.
[13] Interview with Robert Keeley, 16 March 2004.
[14] Jane Austen, *Emma* (London: Penguin Classics, 1996/2003), Vol.1: Chapter 18, 138.

However, it is immaterial whether or not a composer has historical associations in mind when he composes for the harpsichord; because he cannot exert influence on the mind of the player or the listener, there will always be expectations, based on the inescapable, though interrupted history of the instrument.

The goal of this thesis is to explore the ways in which composers have approached writing for both the modern pedal instrument and more recently the historical harpsichord. I will set the scene by considering the evolution of the instrument and the culture of the early-music revival, which both formed and was formed by the personalities of some of the instrument's pioneers. With this in mind, the second part of this study consists of detailed critical analyses of selected works for both solo harpsichord and harpsichord in ensemble from the contemporary repertoire from 1960 onwards. These analyses combine a detailed consideration of the music, its character and consistency, with a critical view of the works from the point of view of the performer. Contemporary music demands a particular level of engagement from the performer, who must strive to interpret works in musical languages with which audiences may be unfamiliar. I will show how these pieces are both characteristic of their composers, reflecting their musical style and compositional technique and preoccupations, and also conditioned by the potential of the instrument for which they were written.

The presentation is not chronological. Chapter 4 takes as its starting point *Carillons pour les heures du jour et de la nuit*, a work completed in 1960 for the modern instrument by Maurice Ohana, a composer with a particular ear for colour and sonority. Though written at the threshold of the revival of the replica instrument, its approach to sound is dependent upon changes of density and colour through changes of registration of the pedal harpsichord: paradoxically, the work is not completely successful as a conception for harpsichord. In Chapter 5 György Ligeti's *Continuum* is used as a kind of paradigm to explore three works by different composers written after the

ascendancy of the historical harpsichord. Two chamber works by Dutch composers, conceived for the historical instrument, illustrate some of the ways in which composers have extended and complemented the sound of the harpsichord; in contrast, Xenakis's *Khoaï*, dating from 1976, unashamedly uses the full resources of the modern pedal instrument. Finally, in the longest chapter, Chapter 6, Elliott Carter's *Double Concerto for Harpsichord and Piano with Two Chamber Orchestras* (1961) is examined. This work is the most extended and most comprehensive exploration of the potential of the modern instrument, to the extent that performances on a historical harpsichord are unthinkable. Critically acclaimed at the time of its première and since, it appeared that the harpsichord had arrived in the mainstream of contemporary musical life. However, this piece marked the culmination of the use of the modern pedal instrument by composers. It pushed to the limit the capabilities of that harpsichord, and brought to a climax one of the evolutionary strands of the instrument in the twentieth century: in retrospect however, this strand appears now to be an evolutionary dead-end, with the pedal harpsichord itself taking on the role of an endangered species. The future of the harpsichord in contemporary musical life will depend on a generation of composers becoming familiar with the particular expressive and sonorous capabilities of the historical instrument: fortunately for harpsichordists, the indications are that this is increasingly the case.

Chapter 2
The Twentieth-Century Harpsichord

The first harpsichord that made any impact in the twentieth century was that which was made for Wanda Landowska (1879-1959), referred to here as the Landowska Pleyel. Landowska's belief that keyboard music of the seventeenth and eighteenth centuries should be played on the harpsichord led her to search for one and eventually commission the Parisian piano firm Pleyel to design and build one for her. She had previously been in Berlin, from around 1895 to 1900, and studied composition with Heinrich Urban, who also taught Paderewski, Rudolph Ganz, Josef Hofman, and others. Although she had seen harpsichords which aroused her curiosity, the instruments she came across had been neglected and were not in playing condition, and which in all likelihood did not inspire her. So when she arrived in Paris in 1900 and decided to devote her career to playing seventeenth- and eighteenth- century music on the harpsichord (as opposed to playing harpsichord music on the piano, something which musicians had been and were doing at the time), she wanted to have a harpsichord designed especially for her for that purpose.

The harpsichord was just beginning to be a subject for lively debates, and had not yet become an earnest topic for discussion, nor was it taken seriously as a solo concert instrument. It was more for its antiquity that it was explored, listened to and talked about, although some musicians such as Brahms regarded older music and instruments with a scholarly eye. The poor relics in museums could not have helped promote its true qualities. In any case, it had long been accepted that the piano was the superior keyboard instrument; the consensus was that there was no need to even contemplate reviving the harpsichord.

For Landowska, it was the *music* of the seventeenth and eighteenth centuries that first caught her imagination.[1] She had from an early age longed to play pre-Romantic music, and wanted to draw up a programme of this music to fill a whole recital, when she was living in Poland and studying with Chopin specialists Jan Kleczyński and later Alexander Michałowski. She was also an avid reader and might well have read about the harpsichord. But it was in Paris in 1900 when she properly started her campaign whose main objective was to

> reconstitute a harpsichord approaching as closely as possible those of the middle eighteenth century when they had reached the height of their glory for richness of registers and beauty of sonority. The harpsichord... people knew it only as a museum piece. Adorned with rich carvings, decorated with faded colours and dim gold, they appeared like phantoms, formerly magnificent, now forever mute. What was the voice of these harpsichords of which the musicians of the period speak with such delight? To make it live again, to give it jubilant or pathetic accents, to evoke polyphonic purity, to make the coupled keyboards resound, to sing with lingering tones the amorous cantilenas, such was my dream, a multiple and vast dream.[2]

Landowska's style, both in her playing, and her writings as exemplified in *Landowska on Music*, is unashamedly Romantic.

The Landowska Pleyel and the Modern Pedal Harpsichord

To realise her dream, she turned to the Parisian piano firm Pleyel to design an instrument for her. Their chief engineer M. Lamy was responsible for drawing up plans for the new instrument, which satisfied Landowska's requirements, one of which being the addition of the sixteen-foot register, which she and others claimed was present on instruments played by Bach

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[1] Landowska's ambition is quoted by her disciple and long-time companion Denise Restout in Wanda Landowska, *Landowska on Music*, Denise Restout and Robert Hawkins eds., London 1965, 5-6.

[2] Wanda Landowska, *Landowska on Music* (London: Secker & Warburg, 1965), 11.

and Handel.[3] Although instruments with the sixteen-foot register existed in Bach's lifetime, they were on the whole rare, and were only found on German harpsichords. A particular instrument in a Berlin collection with a sixteen-foot disposition came to be known as the "Bach instrument", through a claim that it was once in Bach's possession. Though widely taken as a model by makers and players, particularly in Germany, its link with the great composer was based more on hope than on fact. Moreover it is almost certain that the sixteen-foot register was not part of its original disposition, but was added later.[4] It is now clear that Landowska's conviction that Bach and Handel used such an instrument as a matter of course is erroneous.[5] On the other hand, it should not be ruled out that Bach, even if he did not own an instrument of this kind, might well have played one, since he took an interest in innovations, commissioned a lute harpsichord, and knew Gottfried Silbermann who built harpsichords with the sixteen-foot register.[6]

The Landowska Pleyel is built almost exactly like a piano, and looks like one. It has been appropriately called the "plucking piano".[7] It has white keys made of ivory, and black keys made of ebony. It has a cast iron frame, and a soundboard made of spruce to the same thickness as that on the piano; its plectra are made of hard leather; it has pedals which engage and disengage the registers; on the upper manual it has an eight-foot stop, a lute stop, and a buff stop; on the lower manual a sixteen-foot, another eight-foot, a four-foot register and a coupler. The Landowska Pleyel has seven pedals; [8] until the 1960s a register was engaged when the pedal was up, but at the suggestion of

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[3] ibid.
[4] Frank Hubbard, *Three Centuries of Harpsichord Making* (Cambridge, Mass.: Harvard University Press, 1965), 183, 331-333.
[5] Wanda Landowska, *Landowska on Music*, 11. Landowska's assertion that Bach and Handel used instruments with a sixteen-foot stop is reported here by Landowska's disciple, Denise Restout.
[6] Hanns Neupert, *Das Cembalo*, translated into English by F.E. Kirby as *Harpsichord Manual: A Historical and Technical Discussion* (Kassel: Bärenreiter, 1960), 75.
[7] Wolfgang Joachim Zuckermann, *The Modern Harpsichord: Twentieth-Century Instruments and their Makers* (London: Peter Owen, 1969), 164.
[8] Similar modern instruments can have five or even nine pedals.

Landowska's student Rafael Puyana (b.1931) this was subsequently changed to be more akin to the mechanism used on the piano, the register engaged when the pedal is depressed.[9] The two manuals are approximately one and a half inches apart, enabling them to be played at the same time by one hand, a feature much exploited by Landowska.[10] Although the key weight on the upper manual is light, when it is coupled, the combined weight of all the jacks makes a heavy touch on the lower manual and can be a strain on the player. It is likely that Landowska found this to be the case and developed her technique accordingly. Films and photographs of her hand positions reveal a claw-like approach to the keyboards with highly developed finger independence.[11]

The sixteen-foot register extends the compass of the instrument by an octave in the bass and offers additional possibilities of tone colours, particularly through combination with the four-foot register, with the lute stop, and by transposing solo playing up an octave to get a bassoon-like sound. However, because the thick sixteen-foot strings add to the tension of the instrument, the soundboard of the harpsichord has to be thickened to take the strain, and the body of the instrument has to be fortified and becomes heavy and rigid. Tone production is invariably sacrificed as harpsichord strings are thin in comparison with piano strings, and cannot resonate well in such an environment. In addition, it is hard to blend tones from the combination of all four registrations on an instrument with the sixteen-foot register.[12] Often the bass with its slacker strings produces a more complex tone which thickens the sound of the whole ensemble of strings, making it opaque and muddy. If the sixteen-foot stop has a place in the harpsichord registration, it must be used with discretion, particularly in contrapuntal music as it can easily cloud

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[9] Wolfgang Joachim Zuckermann, *The Modern Harpsichord*, 165.
[10] Wanda Landowska, *Landowska on Music*, photograph of Landowska's hands, insert 17d. between pages 242-243.
[11] *Landowska: Uncommon Visionary* (New York: Video Artists International, 1997).
[12] Hanns Neupert, *Das Cembalo*, 79.

transparency and the sharp delineation of line.[13] However, Landowska was not alone in whole-heartedly embracing this registration. Others, including the influential maker Hanns Neupert (1902-80), believed that the sixteen-foot provided "a solid acoustical foundation and augments the dynamic range, especially useful as a reserve of sound potentiality in concert instruments."[14] Indeed, Neupert represents a generation of builders who were keen to emulate what they knew to be the sounds of historical instruments whilst being equally keen to innovate and to improve upon older construction methods. Neupert did not want to copy original designs and reproduce what he considered to be the shortcomings of former builders.[15]

Another innovator John Challis (1907-74) built on the model of the Landowska Pleyel and added half-positions (or half-hitches) to the upper and lower manuals to enable further differentiation of dynamic levels. For example, the half-position of the eight-foot register would be roughly half the volume of the full eight-foot. However, this and other innovations introduce significant complexity into the mechanism of the instrument, leading to difficulties in adjustment and voicing. For this reason, this type of modern harpsichord is less stable than a historical instrument.[16] One of the most significant works for the modern pedal harpsichord, the *Double Concerto for Harpsichord and Piano with Two Chamber Orchestras* (1961) by Elliott Carter (b.1908), was written with this Challis instrument in mind, although the composer was aware that other instruments might be used and suggested that "adjustments will have to be made to approximate these registrations."[17] Although Carter goes on to indicate that approximate dynamics are occasionally given to help the harpsichordist, these are rare (bar 67, *ff*; bar 154, *p*; bar 688, *p*).

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[13] Frank Hubbard, *Three Centuries of Harpsichord Making*, 184.
[14] Hanns Neupert, *Das Cembalo*, 77.
[15] Hanns Neupert, *Das Cembalo*, 59.
[16] Wolfgang Joachim Zuckermann, *The Modern Harpsichord*, 51.
[17] See Preface of Elliott Carter's *Double Concerto for Harpsichord and Piano with Two Chamber Orchestras* (New York: United Music Publishers, 1961), vii.

Notwithstanding its inauthenticity vis-à-vis an eighteenth-century instrument, the Landowska Pleyel became an instrument in its own right: two twentieth-century composers wrote substantial works for it even in its early years: Manuel de Falla wrote a concerto (1926) and Francis Poulenc the *Concert Champêtre* (1927-8), both for Landowska. Subsequently many other composers wrote for the modern pedal harpsichord, culminating in the Carter work mentioned above, which was written for Ralph Kirkpatrick.

It was largely due to Landowska's initiative that the early-music movement became charged and accelerated in the second part of the twentieth century. Landowska was able, through her virtuosity and force of personality, to earn the admiration of her audience with the aid of her instrument. Like her, a portion of her audience were firmly rooted in the nineteenth-century tradition, and naturally accepted that such exceptional artists as Landowska should be given unrestricted freedom to pursue their art. These artists would become god-like, tower above the common run of musicians, and be objects of adulation. Those who worshipped her (and there were many) would also be in sympathy with her instrument, a harpsichord designed as a vehicle for solo performances in large halls. In the decades following the birth of the Landowska Pleyel, Neupert, Erard and many other builders produced modern pedal harpsichords in large numbers.[18] Although some of the characteristics of the Pleyel design were left behind (for example, the iron frame, piano-sized keys and keyboard, and the intricate tuning mechanism), these instruments are heavily built to support the extra tension of the sixteen-foot strings, and reflect the background of some of these makers as piano builders. Much new music was written for the modern pedal harpsichord up to about the 1960s, including four pieces which are discussed in this thesis: Maurice Ohana's *Carillons pour les heures du jour et de la nuit* (1960), György Ligeti's *Continuum* (1968), Iannis Xenakis's *Khoaï* (1976) and Carter's Double Concerto (1961).

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[18] See Wolfgang Joachim Zuckermann, *The Modern Harpsichord.*

At the turn of the century, at the same time as Landowska embarked on her mission, Arnold Dolmetsch (1858-1940) had already begun his research into original instruments, instrument building and restoration although he did not specialise only in harpsichords, but extended his interest to other instruments such as clavichords, lutes, viols, and recorders as well. It was Dolmetsch who invented the idea of the half-position which Challis, the first Dolmetsch scholar at Haslemere in 1927, later developed when he returned to the United States to set up his own workshop. Challis also invented the metal soundboard made of anodised aluminium, which made the instrument considerably lighter than one made with a wooden soundboard, stayed in tune longer, and was therefore more stable. Their sound qualities did not meet with universal approval: nevertheless he succeeded in making harpsichords that are as stable as pianos.

Although Challis's instruments are today the subject of controversy, he, and later Frank Hubbard (1920-76) and William Dowd (b.1922) exerted much influence on harpsichord building in the latter part of the twentieth century. In particular Hubbard and Dowd were the first modern makers to build historical harpsichords in large numbers; they gained the reputation for building historical replica, having due regard to traditional building techniques based on systematic and meticulous research into historical harpsichord making. Harpsichord maker Wolfgang Joachim Zuckermann went as far as to say: "if Boston can be said to be the Antwerp of the modern harpsichord, then Frank Hubbard and William Dowd are the Ruckers of the twentieth century."[19] Their thorough and scholarly research shed light upon many aspects of historical harpsichord building and as a result, instruments built were starting to resemble closely their historical counterparts. This development also greatly enhanced the revival of historical performance practice, the increased resonance and richness of sound revealing new and unexpected richness in the works of the Baroque.

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[19] Wolfgang Joachim Zuckermann, *The Modern Harpsichord*, 113.

The Historical Harpsichord

As the early-music movement became more conspicuous, makers began to construct their instruments following historical models. These instruments were being described in greater detail and with greater sympathy than before, as evidenced by the writings of collectors and makers such as Raymond Russell and Frank Hubbard.[20] Hubbard and Dowd revolutionised the concept of harpsichord making in the twentieth century from the 1950s onwards by building faithful copies of historical instruments: from about the late 1960s, historical replica started to be made in large numbers and the production of modern pedal instruments was set to decline. The historical instrument makers abandoned the heavy construction and sixteen-foot registration of the pedal harpsichord, returned to the use of hand-stops to change tone colours, and re-established the physical characteristics and materials of seventeenth- and eighteenth-century instruments as their models.

The harpsichords on which these makers based their designs shared some key characteristics. The case is made of wood and consists of five main parts. From the perspective of the keyboard on the left is the spine, which is long and straight; the tail, a short straight piece which is set at an acute angle to the spine; the bentside, a curving section which runs more or less parallel to the bridge; the cheek piece, a short straight piece to the right of the keyboard; and the bottom is a piece of wood that closes the instrument—thus its function is both structural and acoustical. The wrest plank is set between the cheek piece and the spine, with space below it for the keyboard. Some modern builders have replaced solid wood with plywood.

Inspecting the instrument from the keyboard in a sitting position, the music desk is at eye level, beneath which is the wrest plank. Here tuning pins secure the positions of the strings. Bridges or nuts are present, over which the strings pass, and at this point the vibrating length of a string begins. Iron and brass

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[20] Raymond Russell, *The Harpsichord and Clavichord: An Introductory Study* (London: Faber & Faber, 1959); Frank Hubbard, *Three Centuries of Harpsichord Making*.

have been used as stringing material throughout the history of the harpsichord. Beyond the wrest plank is the jack rail. This covers the action of the instrument and prevents the jacks from jumping out when the keys are played. (This is also the usual position for the hammers in the piano.) The strings continue their course perpendicular to the keyboard to the far end of the instrument and are fastened to the hitch pin rail, which is a narrow strip of wood glued along the inner face of the bentside and the end section of the case. They pass over the bridges secured onto the soundboard; their vibrations are transmitted to the soundboard and are thus amplified. At the point of contact with the bridges the vibrating length of a string ends.

The jack is the essential device in harpsichord action; it is the heart of the instrument. This thin piece of wood carries the plucking mechanism, the plectrum. All harpsichords share this feature although some twentieth-century instruments have jacks made of plastic or hard rubber instead of wood; some Neupert instruments have metal jacks.[21] The top of the jack is set just above the level of the strings, and is just below the jack rail. At this level a small piece of felt is fixed to the side of each jack and acts as a damper. The upper part of each jack is hollowed out in the shape of a rectangle, and into this is inserted a small pivoted tongue, also made of wood. This tongue is pivoted on a pin inserted laterally through it, so that the upper part can be pressed back and away from the string, but is normally kept upright by a small spring, traditionally made of hog's bristle. Jutting out at ninety degrees immediately below the adjacent string is the plectrum which produces the plucking action. Black tail and flight feathers of crow or raven, vulture quills, brass and leather have been used; the Landowska Pleyel and other modern harpsichords use hard leather; replica historical instruments use plastic as the replacement. All produce distinctive tone qualities. The jack rail covers the row of jacks and controls the depth of touch on the harpsichord.

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[21] For information on the metal jack, see Wolfgang Joachim Zuckermann, *The Modern Harpsichord*, 156-157.

The plucking mechanism is simple: when the finger depresses a key, the jack at the back of the key rises. Accordingly, the plectrum rises, passes the string, plucking it. When the finger releases, the jack returns to its original position. The plectrum touches the string a second time on its descent but does not sound because this time the pivoted tongue acts as an escapement and is forced back, allowing the plectrum to pass the string a second time without plucking it. The hog's bristle spring then returns the tongue to its upright position. Finally the damper makes contact with the string and silences it.

In order to broaden the dynamic range of the harpsichord, a second row of strings may be added, placed parallel and level with the first set, and served by a second row of jacks arranged with their plectra facing the opposite way to those of the first. The player selects which set of strings he wishes to engage by means of a hand stop. To augment this range still further, a third set of strings—the four-foot—may be added to the other two sets of eight-foot strings, and is tuned an octave above. The four-foot strings have their own bridge on the wrest plank, and are placed at a lower level than the other two unison sets of eight-foot strings.

Generally harpsichords with more than two sets of strings are provided with two keyboards. In most instruments the lower keyboard controls one eight-foot stop, the four-foot and any additional stops whilst the upper keyboard controls the other eight-foot stop. Usually the upper keyboard can be coupled with the lower manually. Adding or taking away the number of strings that sound at any one time produces appreciable dynamic changes. Varying the force with which the harpsichord key is depressed produces negligible dynamic effect since the degree to which the plectrum extends beyond the string is fixed and the string is displaced by more or less the same amount each time it is plucked. In contrast, in the piano action where the hammer hits the strings, varying the amount of force does produce varying degrees of dynamics.

In addition to the above, it is common that the following stops may be present on a harpsichord: the strings on the upper keyboard may be provided

with a second row of jacks, which pluck them at a point close to the nut, producing a thin and brittle tone: this is the lute stop; small pieces of leather or felt can be slid against the sets of strings at a point close to the nut, muting them to produce a less resonant sound reminiscent of a string *pizzicato*: this is the buff stop.

The longer, thicker, and less supple the plectrum, the greater the resistance produced by it when it presses upwards against the string before plucking it. On instruments with more than one set of jacks, staggered action mitigates the resistance of the plectra. When the finger depresses a key very slowly, each pluck is separate and a distinct sound for each is heard. Thus the action is staggered and the pressure is less than if all the jacks pluck at the same time. When the key is depressed slowly, the finger feels the plectrum pushing against the string on the point of contact; the plectrum plucks the string and the action is complete. The harpsichordist's finger is in direct mechanical contact with the string at the point of plucking: it feels as if it were the plectrum itself, creating an illusion of actual contact with the string. This direct contact is lacking on the piano. The instrument almost becomes the player, making the harpsichord much more malleable than the piano.

Precisely because the plucking action is simple, it demands meticulous responsiveness and elasticity of finger action. The point at which a string is plucked by a plectrum determines the tone colour that is produced. The presence and comparative strengths of individual harmonics and the rate of their growth and decay are the principal factors involved in varying the quality of tone. It is now accepted that faithfulness to the tone qualities of the historical instrument is the highest task of the harpsichord builder; although the Landowska Pleyel and other similar modern instruments have a wider dynamic and tonal range by incorporating the sixteen-foot register, such instruments are significantly less resonant than historical instruments.

The compass of the harpsichord keyboard lacked standardisation until the beginning of the eighteenth century; it has varied with the musical demands of different times, its place of origin, and various owners; the compass of an

instrument might have been altered during the course of its career. The earliest known harpsichord spans just three octaves and a seventh. By the beginning of the eighteenth century, its compass became a standard one of five octaves from F′ to f‴. In the twentieth century, makers of both the modern pedal and historical replica instruments have generally also adopted this range.

Similarly, there was no standardisation of pitch. Instruments were built at a great variety of pitch levels, according to local custom, convenience, and the different practical methods of the instrument makers. It seems that several pitch levels were in use, both higher and lower than modern pitch, a′ at 440 Hz. However, it is generally accepted that harpsichords were tuned at a lower level in the seventeenth and eighteenth centuries. Present day musicians are accustomed to a′ at 415 as an acknowledgement of historical variation, and occasionally a′ at 392 is used. Landowska, however, did not flinch from modern concert pitch. The intricate tuning system devised by Pleyel makes tuning a lengthy process as many turns of the pin produce only a small change in pitch. For this reason, the Landowska Pleyel is more stable than a historical instrument.

Whereas equal temperament is applied to modern pedal harpsichords, tempered tuning is generally used on historical instruments. Some composers in the twentieth century have also experimented with non-traditional tuning, for example microtonal tuning, on instruments built after historical models. Several composers attempted to create the illusion of tempered tuning through the use of false notes on works for the modern pedal harpsichord, for example, Maurice Ohana in *Carillons pour les heures du jour et de la nuit* (1960); others have used different temperaments in the same composition for a double-manual historical instrument, for example, Jukka Tiensuu's *Fantango* for solo harpsichord (1984), where the upper keyboard is tuned microtonally lower than the lower keyboard. In view of the intensity of dissonance in some twentieth-century harpsichord compositions, equal or near equal

temperament is often preferred. The application of a historical temperament would obscure the dissonance and nullify the desired effect.

By way of conclusion, it is worthwhile to consider some of the problems often encountered in harpsichord building and maintenance, so to identify some of the problems faced by early harpsichord builders at the beginning of the harpsichord revival, and to highlight the characteristics that make the harpsichord distinct from other keyboard instruments. These are: the pluck, jack action and the overall instability of the instrument.

The plectrum is an essential component in the plucking mechanism. Leather has been used in the past, as has quill. Some twentieth-century makers including Dowd turned to plastic. Although plastic bends evenly under pressure, at the point of maximum elasticity it unbends with a mechanical sound very different from that of an organic material such as quill. Quality of sound aside, the artificial feel is also dissimilar to the true pluck of a quill. Nevertheless, many players have grown up on instruments with plastic plectra, and are happy with a material that is less brittle, therefore more durable than quill.

The jack action can be intricate on a harpsichord. The necessity for all the jacks to slide up and down the jack guide and return to their original positions is dependent upon many variables, including humidity and temperature. On instruments with several sets of strings, the space for the jack action becomes more limited and is the cause of maintenance problems such as jacks sticking and jack slides jamming. Finally, the relative stability of the instrument is also a function of its tone. To obtain clarity and warmth of tone on the harpsichord, fine strings and a thin soundboard must be matched by a case in proportion made of the appropriate organic materials; accordingly, activities such as expansion, contraction, and shifting must be taken into account.[22]

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[22] Wolfgang Joachim Zuckermann, *The Modern Harpsichord*, 63-64.

This, by extension, also highlights a main objective of early piano builders: hammer action replaces the pluck to offer more volume and a wider range of dynamics. Since the kind of force and the amount with which each key is struck is part of the essence of piano playing, builders began to construct sturdier instruments to withstand force, hence the iron frame, thicker strings, and more numerous—three strings on the piano produce one single tone, stronger case, and complex bracing. The tone of a modern piano is rounder, softer than the harpsichord. It has more tone colours in addition to its wide dynamic range. Its sheer carrying power even in large auditoria ensures its status as a concert instrument. The sustaining pedal makes the piano more forgiving to play; it is easier to sound competent on the piano than on the harpsichord.

All in all, the harpsichord has a lighter touch than the piano. However, its light and therefore quick action can encourage wrong notes; it follows that a neat, precise finger technique that commands subtle control is the crux of harpsichord playing. Because the tone of the harpsichord is short-lived compared to that of the piano, it is more difficult to produce a singing melodic line on the harpsichord, although this focus on the expression of line is of paramount importance in playing the historical instrument and repertoire. Bach urges players to cultivate "a singing style in playing" in the title page of his *Inventionen und Sinfonien*, (BWV 772-801):[23] the flexibility of tone and subtlety of articulation required to approach the ideal of the singing voice are characteristic of the historical instrument, and are lacking in the modern pedal instrument with its heavier construction, lack of resonance, and emphasis on colouristic changes.

The light plucking action enables the beginning of each note to be clearly heard. Its clean tone suggests a characteristic purity that is at once clear and subtle, making it especially suited to contrapuntal writing as each line can be

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[23] Johann Sebastian Bach, *Inventionen und Sinfonien*, BWV 772-801, 1723, title page: "*...am allermeisten... eine cantable* [sic] *Art im Spielen zu erlangen...*"

distinctly perceived. The directness of the mechanism of the harpsichord lends great rhythmic precision; moreover it also allows the rapid repetition of notes, a feature much exploited by composers past and present.

As most parts of the harpsichord are made of organic materials, for example the soundboard, frame, keyboards and keys, the instrument is more sensitive to environmental conditions than the modern piano. The wood expands and contracts, bringing the instrument out of tune; the jacks need regulating; the plectra snap and need replacing. Many harpsichordists tune their instruments and carry out basic repairs, for example, replacing and voicing plectra.

The dual identity of the harpsichord is unique although it is also a source of confusion: although instruments built following historical models are now accepted as authentic instruments, modern harpsichords with pedals have become instruments in their own right. Even if they are considered inappropriate for playing early music, they are the authentic instruments for playing such works as the Carter Double Concerto. Whereas it is stylistically inappropriate to play early music on modern harpsichords with pedals, it would be impossible to play, for example, the Double Concerto, or Xenakis's *Khoaï* on a historical harpsichord. The modern pedal harpsichord is indispensable for music which depends on numerous changes of registration. Although both the historical harpsichord and the modern pedal instrument are known by the same name, they are, as has been shown here, two quite different instruments.

Chapter 3
A Historical Narrative

It is said that many harpsichords, confiscated from the nobility during the French Revolution, were burnt for fuel during the cold winter of 1816.[1] For whatever reason, although they were few and far between in the nineteenth century, some instruments survived, in private homes and in museums, waiting to be discovered. This too was the case with harpsichord music. An increasing quantity of older music became available throughout the nineteenth century, in the collected editions of the works of recognised masters such as Bach and Handel, and later in the more wide-ranging repertoire published in national collections such as *Denkmäler der Tonkunst, Denkmäler Deutscher Tonkunst* and *Denkmäler der Tonkunst in Österreich.*[2] The opportunity was ripe for that music to be heard in something close to its original sound.

However, music is first and foremost about people. There is a continuity from the nineteenth-century pioneers to the performers of the middle of the twentieth century; to set the scene for a more detailed consideration of the impact of the harpsichord on composers and their music in the following decades, this narrative will describe the personal connections and influences between the most significant figures in the revival of the harpsichord and its music.

There were many attempts in the nineteenth century to revive the music of the early Classical, Baroque and Renaissance eras. Some repertoires never disappeared entirely: in particular, Bach's keyboard music had been used by certain teachers, including Beethoven's, in the late eighteenth century, and

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[1] Raymond Russell, *The Harpsichord and Clavichord: An Introductory Study* (London: Faber & Faber, 1973), Howard Schott rev., second edition, 119.

[2] *Denkmäler der Tonkunst* (1869-71), edited by Friedrich Chrysander; *Denkmäler Deutscher Tonkunst* (from 1892), edited by a committee of eminent German musicians and scholars including Chrysander, Spitta, Joachim and Brahms; *Denkmäler der Tonkunst Österreich* (from 1894) under the general editorship of Guido Adler.

was revived in the early part of the nineteenth century to become increasingly widely played and appreciated, albeit on the piano, by many notable performers. Others, however, were more curious about the sound of this music. The French virtuoso pianist and composer Louis Diémer (1843-1919), whose playing had a reputation for precision and purity, organised early-music concerts. He played music, for example, by Bach and Rameau, on the harpsichord in his piano recitals. Diémer's successful concerts of old music featured in the Paris Exhibition of 1890 led him to devote much of his time to promoting the revival of early music: he was a founder of the *Société des Instruments Anciens*, in which he performed on the harpsichord and which included such players as Louis van Waefelghem (1840-1908) (viola d'amore), Laurent Grillet (1851-1901) (viol) and Jules Delsart (1844-1900) (viola da gamba).

Diémer inspired many of his students to continue the work of rediscovery. Among them was Alfredo Casella (1883-1947), who as early as 1906 had played the harpsichord professionally as a member of Henri Casadesus's *Société des Instruments Anciens Casadesus*. Casella later revised and edited the harpsichord and organ works of Frescobaldi;[3] as a composer he showed his indebtedness to early music directly and most notably in *Scarlattiana*, op.44 for piano and small orchestra (1926), and indirectly in his lifelong attempt to create a distinctive Italian instrumental style for the first time since the days of Vivaldi. He was devoted to early music to the end of his life and helped found the *Settimane Senesi* at the *Accademia Chigiana* in Siena in 1939.

Société des Instruments Anciens Casadesus was a collaboration between Henri Casadesus (1879-1947) and Camille Saint-Saëns (1835-1921) whose concerts ran from 1901 to as late as 1939. Together with his brothers Francis and Marius, Henri published what claimed to be editions of unknown works by eighteenth-century composers: there was an *Adagio* for string orchestra

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[3] Published by Istituto Editoriale Italiano, Milan, 1919. Characteristic of their period, Casella's editions are burdened with phrasing, articulation, dynamic and other expressive indications.

attributed to C.P.E. Bach, a violin concerto in D ("Adelaïde") by Mozart, and concerti by C.P.E. and J.C. Bach. Although all of these are now known to be fabrications, this joint venture and similar deceptions by other composers nevertheless give a flavour of the spirit and concerns of the age; musicians were keen to show that they were interested to explore older repertoire.

These were examples typical of the scholarship that combined musical instincts and scholarly investigation to throw light on aspects of music and its history. Saint-Saëns edited the complete works of Rameau,[4] and was instrumental in reviving the works of J.S. Bach, Handel and Mozart in France. He even spent time studying Handel manuscripts in the library at Buckingham Palace whilst visiting this country. Some of his own compositions reflect his preoccupation with older music: for example, the Septet, op.65 (1881) for piano, trumpet, two violins, viola, cello and double bass reinvents seventeenth-century French dances.

Most notably, Johannes Brahms (1833-97) excelled in early-music scholarship, in collecting and editing older repertoire.[5] He moved in the circle of the leading musicologists of his day: Spitta, Chrysander, Nottebohm, and Hanslick all corresponded with him particularly on matters of editing and performance practice. Indeed his edition of the complete works of François Couperin (1888) in collaboration with Chrysander is, remarkably for its time, an Urtext edition.[6] Brahms was an avid collector of rare editions of music and books on music. Eventually, his library contained some of the most important theoretical works of the eighteenth century, and autograph manuscripts of important works by such composers as Mozart, Haydn, and Robert Schumann.[7] Brahms was a regular reader of the important musicological

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[4] Published by Durand, Paris, 1895-1924. After Saint-Saëns's death in 1921, the edition was completed by M. Emmanuel and M. Teneo.

[5] Karl Geiringer, "Brahms as a Musicologist", *The Musical Quarterly*, LXIX (1983), 463-470.

[6] First published in 1888 by Augener, London, and reprinted by Dover, New York, in 1988.

[7] Now in the archive of the Gesellschaft der Musikfreunde, Vienna. See Karl and Irene Geiringer, "The Brahms Library in the Gesellschaft der Musikfreunde, Wien." *Notes* XXX:1 (September 1973), 7-14.

journals of his day—the *Allegemeine musikalische Zeitung*, the *Musikalisches Wochenblatt* and the *Vierteljahresschrift für Musikwissenschaft*—and was appointed to the editorial board of the *Denkmäler Deutscher Tonkunst* by the Prussian Ministry of Culture in 1892.

Another noted pianist and composer was encouraged by Brahms in his early years. Ferruccio Busoni (1866-1924) rejected the subjective and programmatic trends of much nineteenth-century music, placing absolute music at the forefront of artistic ambition and identifying Bach and Beethoven as the sources for this vision.[8] Busoni transcribed some of Bach's works for the piano for his recitals, including the Chaconne from the second partita for unaccompanied violin, and a number of organ works. Although these arrangements were controversial—Busoni made alterations to the original text and gave his own directions for phrasing and dynamics—they nevertheless show his enthusiasm for this music which was then only beginning to be appreciated again. His arrangements and performances played an important part in bringing this music before a new generation of musicians and audiences. As with Brahms, the encounter with old music left its mark on Busoni's compositions: though the monumental *Fantasia Contrappuntistica* (1910-12) is the most thorough-going manifestation of his identification with the musical language and procedures of the Baroque, the more intimate *Sonatina ad usum infantis* (1916) was written for the harpsichord and is recognised as one of the first twentieth-century works for the instrument. Some years earlier in his opera *Die Brautwahl* (1910), he had used the harpsichord, with the instrument on stage at the beginning of the second act.

Busoni was well connected with the leading figures of the early-music revival. Among them, Arnold Dolmetsch (1858-1940) taught him for a short time in 1905 when both were in New York; in the same year Busoni acquired

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[8] Ferruccio Busoni, *Sketch of a New Esthetic of Music* (Trieste, 1907), quoted in Elliott Schwartz and Barney Childs, *Contemporary Composers on Contemporary Music* (New York: Da Capo, 1998), 5-6.

a Dolmetsch harpsichord through the generosity of the firm of Chickering. This instrument subsequently became Ralph Kirkpatrick's first harpsichord.

Dolmetsch's legacy to the early-music movement is manifold: as an instrument maker and restorer, as a player of instruments including the viols, lute and harpsichord; as a writer, his work marks him out as one of the pioneers of the twentieth-century early-music revival. He was not alone, however, in taking an interest in early music at that time. For example, this music was talked about in lectures in Oxbridge, particularly Cambridge. But that his interest was more than academic, that he thirsted to make that music come alive, rather than seeing it as an object of study of antiquity, was rare.

Dolmetsch was born into a family of musicians and learned piano making from his father Rudolph and organ building from his maternal grandfather, Armand Guillouard. Whilst at the Royal College of Music in London, he studied the violin with Henry Holmes and harmony with Frank Bridge. Both in his time as a student and in the following years, the industrialist and encyclopaedist Sir George Grove fostered his growing interest in early music. Dolmetsch made great efforts to seek out older music to add to his repertoire, and his library contained many sixteenth-, seventeenth- and eighteenth-century manuscripts and early editions. His researches led to the publication in 1915 of his book *The Interpretation of the Music of the Seventeenth and Eighteenth Centuries*, a pioneering effort at that time.[9]

At the suggestion of William Morris (1834-96), Dolmetsch built his first harpsichord and exhibited it at the Arts and Crafts Exhibition in London in 1896.[10] He went on to design and build many others, including an unusual triangular harpsichord which is a like a spinet, but with two pedals; this instrument when folded fitted into a London cab. Throughout his life he came into contact with artists and musicians. Important harpsichord makers received their training through Dolmetsch; among these was the American

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[9] See Bibliography for bibliographical reference.

[10] Margaret Campbell, *Dolmetsch: The Man and his Work* (Seattle: University of Washington Presss, 1975), 100.

John Challis (1907-74), who was the first Dolmetsch Foundation scholar at Haslemere in the late 1920s. He subsequently returned to the United States where he became one of the most influential makers of the twentieth century. Continuing Dolmetsch's spirit of innovation, Challis was responsible for designing and building instruments with aluminium soundboards, and using jacks machined from hard rubber.[11]

Other harpsichord makers also owed much to Dolmetsch. Frank Hubbard (1920-76) studied briefly at Haslemere with Dolmetsch before joining Hugh Gough in London in 1947. His book *Three Centuries of Harpsichord Making* remains an influential work on harpsichord building from the sixteenth to eighteenth centuries;[12] Hubbard's one-time partner William Dowd was a pupil of Challis and was responsible for an important design based on the two-manual harpsichords of Pascal Taskin (1723-93); this instrument has since become popular amongst players. In England, Robert Goble (1903-91) worked for Dolmetsch for twelve years from 1925-37 and in 1947 set up his own workshop in Oxford after the War which has since made well over five hundred harpsichords.

Whilst Dolmetsch represents the beginning of a move towards authenticity, the revival instruments of the turn of the twentieth century were far from authentic. Indeed in his case, even the late instruments, including the ones constructed after his death in his workshop, have few features in common with other historical replica such as the Hubbard and Dowd instruments. For example, the cases are often heavily constructed and heavily framed. Dolmetsch was not only concerned with revival, but was also an innovator, and invented features that had nothing to do with the original instruments. His half-hitches (or half-positions) are a case in point. A small movement of the jackslide away from the strings makes the jack pluck at the tip of the

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[11] Challis's innovative use of materials is described in Wolfgang Joachim Zuckermann, *The Modern Harpsichord: Twentieth-Century Instruments and their Makers* (London: Peter Owen, 1969), 92-98.

[12] See Bibliography for bibliographical reference.

plectrum, resulting in a softer tone. This feature was later developed by his student Challis; Elliott Carter's Double Concerto (1961) was written specifically for a Challis instrument with these half-hitches.

Dolmetsch touched upon many facets of early music. He played and taught several instruments, including the viols, lute, clavichord and harpsichord, with Suzanne Bloch (1907-2002) and Diana Poulton (1903-95) among his devoted students. As a young boy living in Haslemere, Robert Donington (1907-90) met Dolmetsch and began his study and performance of early music. However, Dolmetsch was not only important as teacher and performer, but also in setting the precedent of the performer-researcher, and in this respect, Donington has been a chief exponent of informed performance: he was a member of the English Consort of Viols from 1935-9, the London Consort from 1950 to 1960, and founded and directed the Donington Consort of Viols (1956-61). *The Work and Ideas of Arnold Dolmetsch* (1930) is an affirmation of his admiration of Dolmetsch's achievements. More importantly, Donington's book *The Interpretation of Early Music* (1963) is now a standard reference work, and has run to several editions.[13] The later *A Performer's Guide to Baroque Music* (1973) is also popular.[14] These works have their roots in Dolmetsch's *The Interpretation of the Music of the Seventeenth and Eighteenth Centuries*, and echo many of Dolmetsch's ideas.

Far ahead of his time, Dolmetsch frequently consulted treatises such as Couperin's *L'art de toucher le clavecin*, and C.P.E. Bach's *Versuch über die wahre Art das Clavier zu spielen*.[15] His reputation as a researcher into primary sources brought him into contact with professional academics such as F.T. Arnold (1861-1940). Both Dolmetsch and Arnold quote C.P.E. Bach's treatise in their writings. When in 1926 Arnold was about to submit for publication his

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[13] Robert Donington, *The Interpretation of Early Music*, (London: Faber & Faber, 1963).
[14] Robert Donington, *A Performer's Guide to Baroque Music* (London: Faber & Faber, 1973).
[15] See Bibliography for bibliographical references of these two treatises.

substantial work *The Art of Accompaniment from a Thorough-bass as Practised in the Seventeenth and Eighteenth Centuries,*[16] he wrote to Dolmetsch:-

> I go on Tuesday next to Cambridge... to deliver the MS of my book at the University Press, for approval... I don't think any of these people to whom the book will be submitted have any idea of the importance of the subject or sufficient knowledge of it to make them competent critics—they will only realise that it is very long—If you, who are so universally acknowledged as an authority, would write a few lines concerning the need for some such work and adding anything that you could, conscientiously say about my qualifications for the task (you know that I have, at all events, a genuine interest in the music of the period) you would be doing me a great service, and it might just turn the scale between acceptance and rejection.[17]

It is not known what Dolmetsch's reply was on this occasion, but it is certain that the two corresponded avidly throughout their lives and consulted each other on many musicological performance issues.

Dolmetsch was not always admired by the academic or artistic milieu of his time. Not having completed a university degree, he was often frowned upon, particularly by music academics, who did not take his work seriously. He did, however, have staunch supporters. Percy Grainger (1882-1961) attended many of the concerts at the festivals at Haslemere and praised the wide scope of Dolmetsch's pioneering work. He often brought other musicians to these concerts, including Cyril Scott (1879-1970) and Roger Quilter (1877-1953). He was enthusiastic in promoting the festivals in the United States, and in securing engagements for the Dolmetsch family ensemble in America. Although the depression kept these concerts from becoming a reality, it does illustrate the strength of Grainger's friendship towards Dolmetsch. Grainger's

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[16] Although the letter refers to the University Press in Cambridge, in the event the book was published by the Oxford University Press in 1931.
[17] Margaret Campbell, *Dolmetsch: The Man and his Work,* 219.

article "Arnold Dolmetsch, Musical Confucius", published in *The Musical Quarterly* in 1933, similarly talks of Dolmetsch's activities in the most favourable terms. He describes Dolmetsch as a genius and talks of his "universality of vision".[18] In a letter to Dolmetsch in 1935, Grainger writes, "you seem to me to have more artistic commonsense than any musician I have ever met."[19] Later Grainger also edited *The Dolmetsch Collection of English Consorts*, which was published by Schirmer in 1944, four years after the death of Dolmetsch.

Others who benefited from Dolmetsch's advice include Ernest Ansermet (1883-1969) who founded the *Orchestre de la Suisse Romande*. Correspondence between them in 1929 concerns the use of double-dotting and *notes inégales* and the length of *appoggiaturas*.[20] And, writer and critic Ernest Newman (1868-1959) followed much of Dolmetsch's development and struck up a friendship with him. Newman reviewed Dolmetsch's book on *The Interpretation of the Music of the Seventeenth and Eighteenth Centuries* favourably and places it above Edward Dannreuther's *Musical Ornamentation*.[21] He praised Dolmetsch's ability to make old music come alive and intelligible.

Dolmetsch was controversial among musicians, but his contacts did not stop there. By virtue of the many facets of his activities, he drew attention from the élite artistic milieu. The most influential was George Bernard Shaw (1856-1950) who spent six years as a music critic (first with *The Globe*, then from 1890-94 with *The World*) and encountered and reviewed Dolmetsch's playing on the clavichord as early as 1893.[22] His comments in his review show a marked sympathy for the music and for Dolmetsch's efforts to revive appropriate performance: on the strength of this Dolmetsch invited Shaw to subsequent concerts. In particular in *Shaw's Music*, the author refers to an

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[18] Percy Grainger, "Musical Confucius", *The Musical Quarterly* (USA), XIX:2 (1933), 187-198.
[19] Quoted in Margaret Campbell, *Dolmetsch: The Man and his Work*, 294.
[20] Margaret Campbell, 293.
[21] Edward Dannreuther, *Musical Ornamentation* (London: Novello, 1893).
[22] Margaret Campbell, 58.

occasion when Dolmetsch played continuo in the St. Matthew Passion on the piano.[23] Remarkably for such strong-minded and volatile individuals, they remained on good terms throughout their lives, Shaw writing enthusiastically in support of a study of Dolmetsch's contribution to music in 1937:

> Arnold Dolmetsch's work has been of the greatest importance both historical and practical in English music ... How astonishingly Dolmetsch brought it to life after centuries of neglect and oblivion can be appreciated only by those who remember, as I do, how absurdly it was handled before—when it was handled at all. No musical subject could be more worthy of endowment.[24]

Dolmetsch's influence reached beyond the musical world. He made the acquaintance of Edward Burne-Jones (1833-98), who decorated a clavichord Dolmetsch made in 1897. Dolmetsch tapped into the world of the pre-Raphaelites, and became widely known among writers. James Joyce (1882-1941) tried to commission a lute from Dolmetsch and wanted to master the instrument in a short time; Dolmetsch, however, had no time for someone he considered a musical dilettante and dismissed the request (though Joyce in fact came from a musical family, and had a good tenor voice). The subject of the purchase of a Dolmetsch lute does find its way into *Ulysses* in a discussion between Stephen and Bloom.[25]

Sympathetic to the arts-and-crafts movement's goal of recapturing the ethos of the pre-industrial age, Dolmetsch inevitably met numerous others who were like-minded. The most important for our present purposes is Violet Gordon Woodhouse (1871-1948), who first encountered Dolmetsch at one of his concerts at the Artworkers' Guild in London in 1896.[26] Originally a pianist, but learning with Agustin Rubio (1856-1940) who was a cellist, she

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[23] George Bernard Shaw, *Shaw's Music*, Dan H. Lawrence ed. (London: Bodley Head, 1981), vol.2, 777-783, vol.3, 778.
[24] Quoted in Margaret Campbell, *Dolmetsch: The Man and his Work*, 280.
[25] James Joyce, *Ulysses* (London: Penguin Classics, 2000), 771.
[26] Margaret Campbell, *Dolmetsch: The Man and his Work*, 102.

soon took to early instruments. With Dolmetsch's encouragement she became the leading English player of her day, performing in London with Casals amongst others, and making the first commercial recordings of the harpsichord in 1920.[27] Her studies with Dolmetsch extended through a range of early keyboard instruments, including the harpsichord, clavichord, virginals and spinet. Through Dolmetsch she extended her repertoire to include composers such as Dowland, Purcell, and Locke. It was at this time too that she started to take a serious interest in the sonatas of Scarlatti, for which she was to become famous.

Gordon Woodhouse's first harpsichord was made by Thomas Culliford in the workshop of Longman and Broderip in 1785, but came to her from Dolmetsch who, in 1896, perpetrated violence to it unthinkable now (but common in the eighteenth century) by adding an extra manual to the original single-manual instrument. Gordon Woodhouse was happy with his efforts, and indeed commissioned several more instruments from Dolmetsch during her career.

Although they did not always stay in close touch, Dolmetsch and Gordon Woodhouse corresponded on musical matters (for example, a letter from Dolmetsch to Gordon Woodhouse in 1911 talks about the use of clavichords in J.S. Bach's time, in response to Landowska's recently published assertions that Bach did not intend his music to be played on the clavichord[28]), and she remained an important exponent of his ideas. Other artists who attended Dolmetsch's concerts include Louis Van Waefelghem (1840-1908), Henry J. Wood (1869-1944), W.B. Yeats (1865-1939) and Florence Farr (1860-1917).

The prevailing ethos of The Artworkers' Guild: "Time will run back, and fetch the age of gold" was shared by Dolmetsch and his sympathisers, including musicians such as Gordon Woodhouse, Bloch, and Poulton. This motto of John Milton (1608-74) is painted on the lid of a clavichord made for Gordon Woodhouse by Thomas Goff (1898-1975), delivered to her in 1946,

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[27] Jessica Douglas-Home, *Violet* (London: Harvill Press, 1996), 184.
[28] Jessica Douglas-Home, *Violet*, 315-316.

and sums up the concerns of that circle which then dominated the British early-music revival scene. Osbert and Edith Sitwell, who were admirers of Gordon Woodhouse, put this same motto in a notice in *The Times* for six years on each anniversary of her death.[29]

If the idealistic arts and crafts movement was epitomised by the Dolmetsch circle, its antithesis must be Wanda Landowska. Whereas the agenda of the arts-and-crafts movement had social and political overtones, Landowska's aim was simpler. Born a Polish peasant, she had come to love pre-Romantic music from an early age. Whilst she studiously absorbed the works of Chopin and Liszt, she later decided to devote her career to performing the keyboard works of the seventeenth and eighteenth centuries on the instrument for which she thought they had been written—the harpsichord.[30] It is possible that one of the reasons she decided to (more or less[31]) abandon the piano for the harpsichord was that she had suffered from gangrene in her teens,[32] and the large stretches in Romantic piano works gave her trouble. This may also have led her to take up composition at around the same time; she composed songs with piano accompaniment, and made arrangements of Polish folksongs and dances.[33]

Evidently, the idea of playing seventeenth- and eighteenth-century repertoire on the harpsichord took possession of her.[34] With her husband Henry Lew, she set about finding a suitable instrument that would help her realise her ambition. However, she was not satisfied with what she found—partly because there were not many instruments around, and those she found and tried out had been neglected and were in bad condition, and in all probability those that had been restored were badly done so, so that none of

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[29] Jessica Douglas-Home, *Violet*, 311.
[30] Wanda Landowska, *Landowska on Music*, 9.
[31] Landowska played the piano throughout her life in concert, but she devoted most of her energy to the harpsichord.
[32] Allan Evans, "Wanda Landowska", http://arbiterrecords.com/musicresourcescenter/landowska.html, 6 May 2004.
[33] The manuscripts of these are held in the Landowska Center in Lakeville, Connecticut.
[34] Wanda Landowska, *Landowska on Music*, 9.

them exhibited qualities worthy of emulation—and persuaded the piano firm Pleyel to design one for her. After discussions with the Director of Pleyel, Gustave Lyon, and visits to museums, plans were drawn up for Landowska's instrument.

Her two-manual Pleyel harpsichord has an added sixteen-foot, as well as the usual two eight-foot registers, a coupler and a lute stop. The presence of the sixteen-foot requires a more rigid frame, and plucking four sets of strings simultaneously made her harpsichord unwieldy. Consequently she developed a claw-like approach to the instrument, as seen in photographs of her hands.[35] It is true that some of the harpsichords in Bach's time had a sixteen-foot register, but these were rare.[36] However, it is not so much the presence of the sixteen-foot that should be criticised, but her use of it.[37] To many harpsichordists now the sixteen-foot has an ugly sound. It is machine-like and hard on the ear, and seems incongruous with Baroque aesthetics. It lacks resonance and bears no relation to the range of sonority of most other Baroque instruments. The sound of her harpsichord is in part responsible for making her recordings seem dated.

Nevertheless, her sense of mission, her passion to express herself in music, and her desire to be heard made her a force to be reckoned with. She was not afraid of controversy, and was quick to seize on any opportunity to promote her cause. Following the publication of her book *Musique Ancienne* in 1909,[38] a notable and public disagreement with Dolmetsch and others was occasioned

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[35] Wanda Landowska, *Landowska on Music*, inserts 17 a-d, found between 242-243.
[36] See Chapter 2.
[37] This is, however, a question of aesthetics, and as such is beyond the scope of this thesis. Landowska made over one hundred commercial recordings (for discography see Wanda Landowska, *Landowska on Music*, 411-424), and there are over one hundred and ninety reviews of her public performances in newspapers and journals in Europe and the United States between the two World Wars alone. (For a list see A.H. Cash, "Wanda Landowska and the Revival of the Harpsichord", PhD, University of Kentucky, Louisville, 1990, 374-379.)
[38] Wanda Landowska, *Musique Ancienne*, (Paris: 1909).

by her publication "Le clavecin chez Bach" ,[39] in the journal of the recently-established Société Internationale de Musicologie, and in 1911, "Für welches Instrument hat Bach sein [*Das*] *Wohltemperierte Klavier* geschrieben?"[40] In these she asserted that Bach intended none of his keyboard works, specifically not *Das Wohltemperierte Klavier*, to be played on the clavichord, drawing on the evidence of Bach's other titles, an interpretation of the documents describing the instruments forming part of Bach's estate at his death, the nature of the clavichord and intrinsic characteristics of the music. Though both the arguments and counterarguments in this controversy now appear to be either overstated or inaccurate,[41] it is clear that Landowska relished the debate and was happy that attention was being drawn to the music she championed.

It took Landowska many years to establish the harpsichord as a solo concert instrument. She would, to start off with, play only one piece on the harpsichord, and the rest of her programme on the piano in her concerts, and then gradually increased the number of pieces on the harpsichord until eventually she would devote a whole recital to harpsichord music played on the harpsichord. She more or less single-handedly brought the harpsichord into mainstream music, even if the instrument she invented is now incontrovertibly inauthentic.

As teacher she was also formidable and for many years her classes held in her residence in St-Leu-La-Forêt, north of Paris, attracted students from all over Europe and the United States, many of whom became well-known players in their own right. Kirkpatrick went there, as did Sylvia Marlowe, Putnam Aldrich, and Denise Restout. Forced to flee Paris in May 1940 in advance of the German occupation, she established herself at Lakeville, Connecticut, where her students included Rafael Puyana. But the St. Leu

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[39] The article in condensed form appears in *Landowska on Music*, 139-150, under the title *Bach's Keyboard Instruments*.

[40] Wanda Landowska, "Für welches Instrument hat Bach sein [*Das*] *Wohltemperierte Klavier* geschrieben?", *Neue Zeitschrift für Musik* (May 1911).

[41] See Dolmetsch's response in the letter to Violet Gordon Woodhouse cited above; Jessica Douglas-Home, *Violet*, 315-316.

annual summer classes did not only attract harpsichordists: pianists attended, among them Clifford Curzon (1907-82), as did singers and other instrumentalists. At the inaugural concert in July 1927, it was Alfred Cortot (1877-1962) who shared centre stage with Landowska in a programme of music played on two pianos, including the Bach's concerto for two harpsichords in C, and a Mozart Sonata, also played on two pianos. In between, Landowska inserted some pieces by Couperin, Dandrieu, Rameau and Chambonnières, played on her harpsichord.[42]

Landowska developed the modern harpsichord technique, laying particular emphasis on fingering and touch, and the acquisition of a true harpsichord legato and a variety of articulation. She advocates independence of fingers, and invented many exercises for strengthening finger independence. Many did not like her style of teaching, and Kirkpatrick trenchantly criticised her self-glorification,[43] but there were those who were devoted to her, such as Denise Restout (b.1918) (who later gave up her career to be Landowska's companion and secretary, and who now directs the Landowska Center in Lakeville), and Isabelle Nef (who on seeing that Landowska left Paris without her Pleyel during the second World War, sold her own life insurance policy to purchase the last Pleyel instrument available for Landowska).[44]

In addition to her performing activities, Landowska was in the habit of putting down her musical thoughts on paper and often covered paper napkins, scrapbooks, and many other surfaces with her jottings on musical matters. Many of her articles have been published, mostly in French, from the time when she was in Paris at the beginning of the twentieth century although many of her observations are now considered incorrect and unscholarly. In any case, she was inclined to follow her own instincts, and

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[42] Allan Evans, "Wanda Landowska", http://arbiterrecords.com/musicresourcescenter/landowska.html, 6 May 2004.
[43] Larry Palmer, *Harpsichord in America: A Twentieth-Century Revival* (Bloomington and Indianapolis: University of Illinois Press, 1989), 59.
[44] Hal Haney, "Conversation with Harpsichordist Denise Restout", *The Harpsichord,* VII:1 (1974), 15-16.

would over-rule a precedent if she felt there were innate musical reasons for so doing. Her writings are of interest to posterity: by virtue of her position and her contacts with the milieu, she was unique in commenting on the contemporary musical scene, particularly on the beginnings of the early-music revival. She gives us a rare insight into the pioneering efforts at the turn of the century. Her writings give a glimpse of her robust and indefatigable personality, her indestructible self-belief, but also her humour, and her humanity. She remains the only harpsichordist in the twentieth century who has written extensively on her subject, and as such she is unique.

The concerti written for her by De Falla and Poulenc were the first substantial works for the harpsichord in the twentieth century. She was not an ardent supporter of modern music although she liked a wide variety of music, including folk-music and jazz. And of the two works written for her, she preferred the Poulenc which she played many times. She was undoubtedly the central figure in the harpsichord revival in the twentieth century; her ability, her force of personality, and being in the right place at the right time enabled her to take the harpsichord into mainstream music. She was able to take advantage of new ways of travelling including air travel, taking her to numerous places on her concert tours, and the advances in recording technology made her playing much more widely known than would otherwise have been the case.

Whereas Landowska brought the harpsichord to the concert hall, it was left to others to create and promote new repertoire. Though Busoni and Delius had made early steps in contributing new music to the instrument's repertoire, and Landowska's importance in prompting the concerti by Poulenc and De Falla is unquestionable, her students Sylvia Marlowe and Ralph Kirkpatrick were more active in playing and commissioning new works. As early as 1939, Kirkpatrick gave a complete programme of twentieth-century harpsichord works at the Carnegie Chamber Music Hall, featuring composers Ernst Lévy, Otto Luening, Robert Oboussier, H.A. Seaver, John Barrows, Robert McBride and Florent Schmitt, as well as Walter

Piston.[45] In 1965 he gave another programme of contemporary harpsichord music at the University of California at Berkeley,[46] this time including works by Lou Harrison, Peter Mieg, Halsey Stevens, Douglas Allanbrook, Daniel Pinkham, Mel Powell, Vincent Persichetti and David Kraehenbuehl.

Born in 1911, Kirkpatrick studied English at Harvard, and was a classmate of Elliott Carter. Whilst an undergraduate there he decided to devote his life "to the performance of harpsichord and clavichord music in a manner as close as possible to what could be ascertained of the intentions of the composers."[47] He gave his first complete performance of the Goldberg Variations in 1931 and later made his European début in Berlin in 1933 playing the same work. In the same year he went to Paris, to the Bibliothèque Nationale to research harpsichord and clavichord techniques. He went to St-Leu-La-Forêt to study with Landowska,[48] and also to Nadia Boulanger (1887-1979) to study music theory; he studied briefly with Dolmetsch, Heinz Tiessen (1887-1971) and Günther Ramin (1898-1956). During his stay in Berlin in 1933, Eta Harich-Schneider (1897-1986), another student of Landowska, was his mentor. He was an able performer, although his playing can seem dry and inexpressive. As a continuo player, he took part in the annual performances of Bach's St. Matthew Passion with the New York Philharmonic under Bruno Walter between 1943-5.

Curiously, Kirkpatrick claimed to have disliked the harpsichord: during his first years as a harpsichordist on the east coast, he could not find anyone to maintain and repair his instrument:

> I who have never been a gadgeteer was obliged to become my own harpsichord repair man, often under the most onerous and trying

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[45] Larry Palmer, *Harpsichord in America*, 145.
[46] 26 January 1965.
[47] Ralph Kirkpatrick, "Fifty Years of Harpsichord Playing", *Early Music*, XI:1 (1983), 31.
[48] Kirkpatrick subsequently broke away from Landowska: "Landowska is a great artist. But other artists take different ways. It generally means a break." *Time* (3 January 1947), 46. Quoted by Larry Palmer in *Harpsichord in America*, Bloomington, 1989, 96.

> circumstances. Here perhaps may be seen the origin of my profound dislike of the harpsichord.[49]

However, his enthusiasm for the instrument was rekindled by the activities of Hubbard and Dowd, whose instruments he praised. He made recordings of the complete keyboard works of Bach (with the exception of the organ works) on the harpsichord and clavichord, and numerous other works by, for example, François Couperin and Rameau, as well as a collection of early English works such as those of Purcell and Morley. As a scholar he was formidable, completing a monumental work on Scarlatti: *Domenico Scarlatti.*[50] He also chose and edited an Urtext edition of sixty of the Scarlatti Sonatas for Schirmer which have since become part of the staple diet of keyboardists. Kirkpatrick was undoubtedly one of the most meticulous harpsichordist-researchers of his generation. By commissioning he added many new harpsichord pieces to the twentieth-century repertoire, the most notable of which was Elliott Carter's Double Concerto.

The commissioner of the only other work to include the harpsichord by Elliott Carter was Sylvia Marlowe (1908-81),[51] who was much influenced by Landowska. Largely self-taught, Marlow not only commissioned new pieces, but also played jazz on the harpsichord. She had her own weekly radio programme on the NBC network which lasted for ten years. Virgil Thomson reports that Marlowe at the harpsichord with a group of jazz musicians improvised in the "American rhythmic style on melodies from Haydn and Rameau."[52] Through this marathon programme, totalling well over one thousand radio concerts, Marlowe brought the sound of the harpsichord to many American households and thereby helped popularise the instrument. She founded the Harpsichord Quartet in the early 1950s and collaborated

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[49] Ralph Kirkpatrick, "Fifty Years of Harpsichord Playing", 35.
[50] See Bibliography for bibliographical reference.
[51] *The Sonata for Flute, Oboe, Cello and Harpsichord* (1951).
[52] Virgil Thomson, "Transcriptions" in *The Music Scene* (New York: Knopf, 1947), 276. Quoted by Larry Palmer in *Harpsichord in America*, 182.

with Claude Monteux (flautist), Harry Shulman (oboist), and Bernard Greenhouse (cellist). It was for this quartet that the Carter Sonata was written.

However, the harpsichordist who commissioned the largest amount of works in the twentieth century was Swiss-born Antoinette Vischer (1909-73), who was a nervous performer, and did not give many live recitals, but who was responsible for commissioning some thirty composers in the course of a decade. She claimed to have studied with Landowska in St-Leu-La-Forêt.[53] She was adventurous in her choice of composers, and the works written for her vary greatly in style. They range from solo works, from Maurice Ohana, György Ligeti, and Bohuslav Martinu, to larger works such as John Cage's *HPSCHD* (1969). Some of these works are in graphic notation, for example Earle Brown's *Nine Rare Bits* (1965), and Roman Haubenstock-Ramati's *Catch* (1968); Mauricio Kagel's *Recitativarie für singende Cembalistin* (1973) involves elements of theatre. It was Paul Sacher (1906-99) who prompted her to study the harpsichord, knowing that her hands were small. He encouraged her to be open-minded and probably at least indirectly steered her towards contemporary music. Vischer was a lively personality and her correspondence with composers is itself a valuable document of the relationship between contemporary performers and composers.[54]

Early music never completely disappeared from musical consciousness. The music of J.S. Bach, for example, was known and studied throughout the nineteenth century. However, it took certain personalities with curiosity and imagination, and a particular sense of vision, to rediscover this repertoire and to bring it alive in ways that at least in principle aimed to resemble those from the days when their composers were alive.

The harpsichord has been revived and is now a serious concert instrument and of modern creativity. In recordings by harpsichordists from the 1920s

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[53] According to Ule Troxler, in *Antoinette Vischer: Dokumente zu einem Leben für das Cembalo* (Basel : Birkhäuser, 1976), 25, it is uncertain whether Vischer actually studied with Landowska. She was likely to have attended master classes given by Landowska as a spectator there.

[54] The Anotinette Vischer Collection is in the Paul Sacher Stiftung.

onwards there is ample evidence of the evolution of interpretative traditions over the course of the century. Critical and performing editions of music and of treatises are also readily available. The scholarly and critical literature on music is vast and growing. The continuum of musical tradition is indelible, though perhaps this is a mixed blessing. Period performance today finds itself much more constrained than before: it is no longer so easy to let the imagination run wild. Moreover, the explosion of opportunities for recording and performing old music, coupled with the shrinking appreciation of new music amongst a growing musical public, has led many players of more recent generations to specialise increasingly in older music, and in some cases very specific areas of repertoire, rather than explore the possibilities of the instrument in new works. In both cases it is technology that is instrumental in achieving this end.

Because of all this, both the relationship of composers to the instrument and the role of the interpreter have subtly changed. The following case studies will look at some key works in the repertoire of the harpsichord in the second half of the twentieth century, by composers of different nationalities, sensibilities and traditions. The studies will consider how the composers have responded to the challenges of composing for an old instrument with a new tradition, each in a sense writing for a different harpsichord; how their compositional style and practice responded to the physical and sonorous possibilities of the instrument; and how the works present particular challenges and opportunities for the player.

Chapter 4
Finding New Sounds: Maurice Ohana's *Carillons*

> Chère Madame,
>
> Je vous remercie pour votre lettre ainsi que pour l'offre que vous me faites de me commander une pièce pour clavecin. En effet, vous avez raison de penser que cet instrument convient particulièrement aux œuvres de notre temps. Il y a beaucoup d'années que j'en ai fait mon instrument préféré, bien que je n'aie pas la chance d'en posséder un...[1]

The collaboration between Maurice Ohana and Antoinette Vischer was a landmark for both composer and harpsichordist. For Vischer it was the first time she commissioned a composer not based in Germany or Switzerland, her most recent commissionee being Bohuslav Martinů who had written *Sonate pour clavecin* in 1958 and *Deux impromptus* in 1959. For Ohana, the commission came at a time when he was consciously moving away from his Spanish roots towards the French (hence *Carillons*).[2] Whereas up to then his style drew on Mediterranean traditions—the music of North Africa and Spain, in particular the *cante jondo* of flamenco—from the early 1960s he was to transform his musical language into something more subtle, more impressionistic. Throughout his career however, Ohana was attracted by the physicality of sound, and in *Carillons pour les heures du jour et de la nuit* (1960) he places sonority above harmonic and melodic concerns. From the perspective of the development of harpsichord writing, this concern with sonority points forward to the way later composers have approached the instrument.

The harpsichord and carillon are two very different instruments: the carillon is struck whereas the harpsichord is plucked; the carillon is an outdoor,

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[1] An extract of the letter from Ohana to Vischer, dated 15 January 1960, published in Ule Troxler, *Antoinette Vischer: Dokumente zu einem Leben für das Cembalo* (Basel: Birkhäuser, 1976), 59.

[2] Caroline Rae, *The Music of Maurice Ohana* (Aldershot: Ashgate, 2000), 88.

public instrument, the harpsichord indoor, more private in comparison; the carillon is essentially a rhythm instrument for measuring time, the harpsichord a domestic instrument for entertainment, without socio-religious connotations.

However, like the harpsichord, the carillon was a popular musical instrument but suffered a decline in the nineteenth century; like the harpsichord, it was also revived around the beginning of the twentieth century. It is important as a rhythm instrument, but there are many compositions that effectively exploit its tone colours, including music that has been written since its renaissance: for example *Music for Carillon*, nos. 1-5 (1952-67) by John Cage.

Ohana's conception in using the harpsichord to evoke the sounds of bells—carillons—was ingenious. Harpsichord compositions in the former part of the twentieth century tended to reinvent Baroque forms, such as dances, for example *Deux pièces pour clavecin* (1935), *Sonate pour clavecin* (1958) and *Deux impromptus* (1959), by Bohuslav Martinů (1890-1959); and *Petite symphonie concertante* (1945) and *Concert pour clavecin et petit orchestre* (1952) by Frank Martin (1890-1974). Or they were more akin to romantic piano writing, for example, *Sonatina (ad usum infantis Madeline Mx Americanae)* (1915) by Ferruccio Busoni (1866-1924); *Dance for Harpsichord* (1919) by Frederick Delius (1862-1934). Even the de Falla and Poulenc concerti to some extent come under this category.

Composers of all eras have depicted bells in their music, and used bell sounds for all their musical and extra-musical connotations. From the keyboard and chamber repertoire alone, William Byrd wrote a set of keyboard variations on a two-note ground called *The Bells*; François Couperin's *Le réveil-matin* (quartième ordre, premier livre, *Pièces de clavecin*, 1713) imitates the sounds of an alarm clock; Marin Marais' *La sonnerie de Sainte-Geneviève du Mont* (from the *simphonies* of 1723) like Byrd's *Bells* constructs a long movement on a simple ground. Later examples include John Field's rondo *Le midi* (ca.1835) and Debussy's *La cathédrale engloutie*

(premier livre, *Préludes*, 1910). Both Field and Debussy use the piano to imitate bell sounds which is even more effective than the harpsichord, as the sonority of a struck string carries a longer resonance than a plucked string.

Although peals of English bells are not the same as the noise of an alarm clock which in turn has little to do with carillons, and the bells in *Le midi* are not the same as cathedral bells, it is interesting to note that composers have long been using keyboard instruments to evoke the sounds and connotations of bells. However, that Ohana placed sonority—the harpsichord's imitation of the carillon—above formal concerns was rare up to that time.

My aim is to examine how Ohana at this point in his career uses the harpsichord to hold and resolve the tensions between the two traditions (Spanish and French) using the contrasting characteristics of the harpsichord and the carillons. I shall assess *Carillons* as a piece of harpsichord writing, and the nature and extent of Ohana's influence on later harpsichord works. In so doing I will also identify some of the difficulties experienced by many composers in bringing off certain effects on the instrument.

Carillons was written at the time when Ohana was beginning to mature as a composer.[3] He had previously composed for the harpsichord: *Sarabande* (1947) for two pianos (whose material was later incorporated into the guitar concerto, *Trois graphiques*, 1957) was revised in 1950 for harpsichord and orchestra, although neither made it into print; the guitar compositions *Tiento* (1955-7) and *Farruca* (1958) were arranged for the harpsichord, and the orchestra of an earlier large-scale work *Llanto* (1949-50) incorporates the harpsichord and percussion instruments. The harpsichord also features in his later compositions, including the concerto *Chiffres de clavecin* (1967-8), *Deux pièces pour clavecin* (1982-3), and the materials from the opera *La Célestine* (1982-7) were reworked for harpsichord and percussion in *Miroir de Célestine* (1989-90). The incisive attack of the harpsichord captured Ohana's attention throughout his composing career.

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[3] Caroline Rae, *The Music of Maurice Ohana*, 88.

Further, Ohana was acquainted with the first significant works written for the harpsichord in the twentieth century, in particular the Harpsichord Concerto of Manuel de Falla (1923-6). The score of this Concerto, along with that of the composer's *El Retablo de Maese Pedro* (1919-22) (which has a substantial harpsichord part), was one of five that remained at all times in Ohana's kit-bag during the war years when he served as an army officer. The others were: *Prélude à l'après-midi d'un faune* and Nocturnes by Debussy, and Piano Concerto for Left Hand by Ravel. In peacetime, these five scores had a permanent place by his piano in his Parisian home in which he already lived by the time he composed *Carillons*.[4]

Ohana's special identification with the sound of plucked strings (in particular the harpsichord, guitar and zither) with reference to his own native culture was life-long. This is the sense in which he refers to the harpsichord as his "*instrument préféré*" in the letter to Vischer quoted at the start of the chapter. Throughout his career the physicality of plucked sound fascinated him, as did the ability of the guitar and the zither to produce microtones. He transcribes this effect on the harpsichord in *Carillons* by using dissonant intervals such as the minor ninth, implying a bending or mistuning of an octave or other consonant interval.

That he should use a plucked instrument to imitate the carillon (which has a much rounder tone because it is struck) testifies to his belief in the dynamic potential of opposites. The vibrant contrast between darkness and light exemplified in the powerful sounds in *cante jondo* and the less tragic songs and dances of the *flamenco* tradition also manifests in the sun and moon symbolism that Ohana so loved, and which is evident in the full title of *Carillons*—"for the hours of the day and of the night". He was fond of making drawings of this motif as part of his signature for his works, and included the symbols both in the illustration he made for the cover of the copy of *Carillons*

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[4] Caroline Rae, *The Music of Maurice Ohana*, 13.

he presented to Vischer, and in the decoration of a pair of rulers covered in felt which he made for executing the clusters of the work's last section.[5]

Ohana corresponded with Vischer during the gestation period of *Carillons*. In addition, Vischer visited Ohana in Paris: she later recalled that the composer wanted to measure the stretches of her hands exactly—octaves, ninths, thirds and fifths. She also commented that no previous commissionee had done that.[6]

Vischer's harpsichord was a double-manual pedal instrument made by the German firm Neupert (their "Bach" model). Its range spanned five octaves from F' and had the following disposition: on the upper manual, eight-foot plus four-foot plus buff to the eight-foot register; on the lower eight-foot plus sixteen-foot plus buff to the eight-foot. It has a coupler and five pedals. Significantly, Ohana did not visit Vischer in Basel until *after* he had completed the work. Although the composer was familiar with other twentieth-century harpsichord works, and was himself fond of the instrument, he was familiar neither with the specific sonority of Vischer's harpsichord, nor with the different registrations available.[7]

Nevertheless, *Carillons* is innovative in using the harpsichord to imitate the carillon filtered through Ohana's own sound world and sensibility (sensitivity to the physicality of sound). In assigning the harpsichord to imitate the carillon, Ohana identifies and focuses upon an important issue in writing for the harpsichord: how to maximise its sustaining power.

The incisive point of attack on the instrument complements the use of *legato* (on the harpsichord this is achieved by overlapping the end of one note with the start of the next), and at once creates contrast. Ohana's experience of writing for percussion (for example in the *Études chorégraphiques* of 1955) and more particularly for guitar (in *Tiento*, 1955-7) may have influenced his

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[5] Ule Troxler, *Antoinette Vischer*, 58-59.
[6] From the sleeve-notes of *Carillons pour les heures du jour et de la nuit*, His Masters Voice, Schweiz 7 EBZ 507, 1960 (now out of print).
[7] Ule Troxler, *Antoinette Vischer*, 59.

concept of resonance and his treatment of the harpsichord, and it is significant that Ohana arranged the latter work for harpsichord shortly after the composition of the original version.

It may also be significant that Ohana uses the plural of carillon in the title: the composer seems to suggest that the harpsichord is imitating different sets of carillons at daytime and nighttime. Whereas other composers have depicted the continuous passage of time in their works—for example, Debussy's *La mer* (1903-5) (first movement), de Falla's *Noches en los jardines de España* (1911-5), and Respighi's *Fontane di Roma* (1914-6)—Ohana by contrast constructs a fantasy around the daytime and nighttime carillons, and the different ways in which these sounds might be heard—in the open air during the day, muffled by walls and distance at night. This imagery of opposites seems also to allude to the contrasting characters of the carillon and the harpsichord, the former much more resonant than the latter.

Before considering the harmonic structure of *Carillons*, it is necessary to understand the fundamental harmonics of the bell. Each strike of the bell emits a number of partials (which may be consonant or dissonant with the strike note) that resonate for an indefinite time. The lower the partial, the longer the resonance. Of these, the most important for the present discussion form the intervals major and minor third, perfect fifth, octave, and minor ninth. Ohana was evidently trying to reproduce something of their effect within the limitations of the harpsichord and within his own developing style.[8]

In principle, bells are tuned to the notes of a minor triad, with the prominent minor third imparting a typically plangent sound (Example 1). In practice, other partials are present in varying proportion: composers have attempted to capture this over the ages in a variety of ways, and Ohana characteristically favours the more dissonant intervals—tritones and minor ninths (not shown in the example)—in addition to fifths and octaves.

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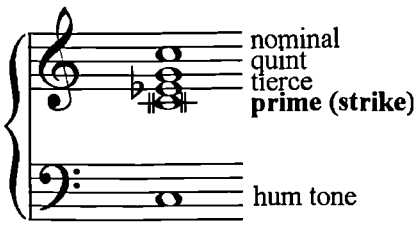
[8] For a more detailed discussion of Ohana's harmonic language see Chapter 6 in Caroline Rae, *The Music of Maurice Ohana*, 171-192.



Example 1 - Prominent partials of the European open bell (of which the carillon is a variety), with the strike note shown as a breve[9]

Although pitch-class analysis does not yield all that is pertinent, a harmonic scheme is nevertheless useful in providing the backbone of the discussion. In *Carillons*, the minor second and the perfect fourth are the basic building blocks, together with the sum of these intervals, which is a tritone. Of the set 4-8 (12) pcs 0, 1, 5, 6 the interval vector is 2 0 0 1 2 1; the four interval classes represented in this set are the minor second, major third, perfect fourth, and tritone. The more dissonant intervals, that is to say, the minor second (and its inversional equivalent) and the tritone, are pervasive. The degree to which the dissonant intervals pervade depends upon their proportion to the more consonant intervals (and their inversional equivalents), and upon the presence of added notes to obscure them. Spatial arrangement of pitches emphasises the more consonant interval classes in the second and fourth sections. The complex and indeterminate harmonic content of the carillon is thus translated into the composer's own language; diatonic melodic aspects relating to it are in the main represented by interval classes 2, 3 and 4, exhibiting characteristics of the pentatonic scale.

On the basis of texture, character and nature of the musical material, the piece falls into five distinct sections arranged in a symmetrically organised arch form: A B C B′ A′ (Example 2, page 55). The B sections are further subdivided, emphasising alternately low and higher registers, with the music

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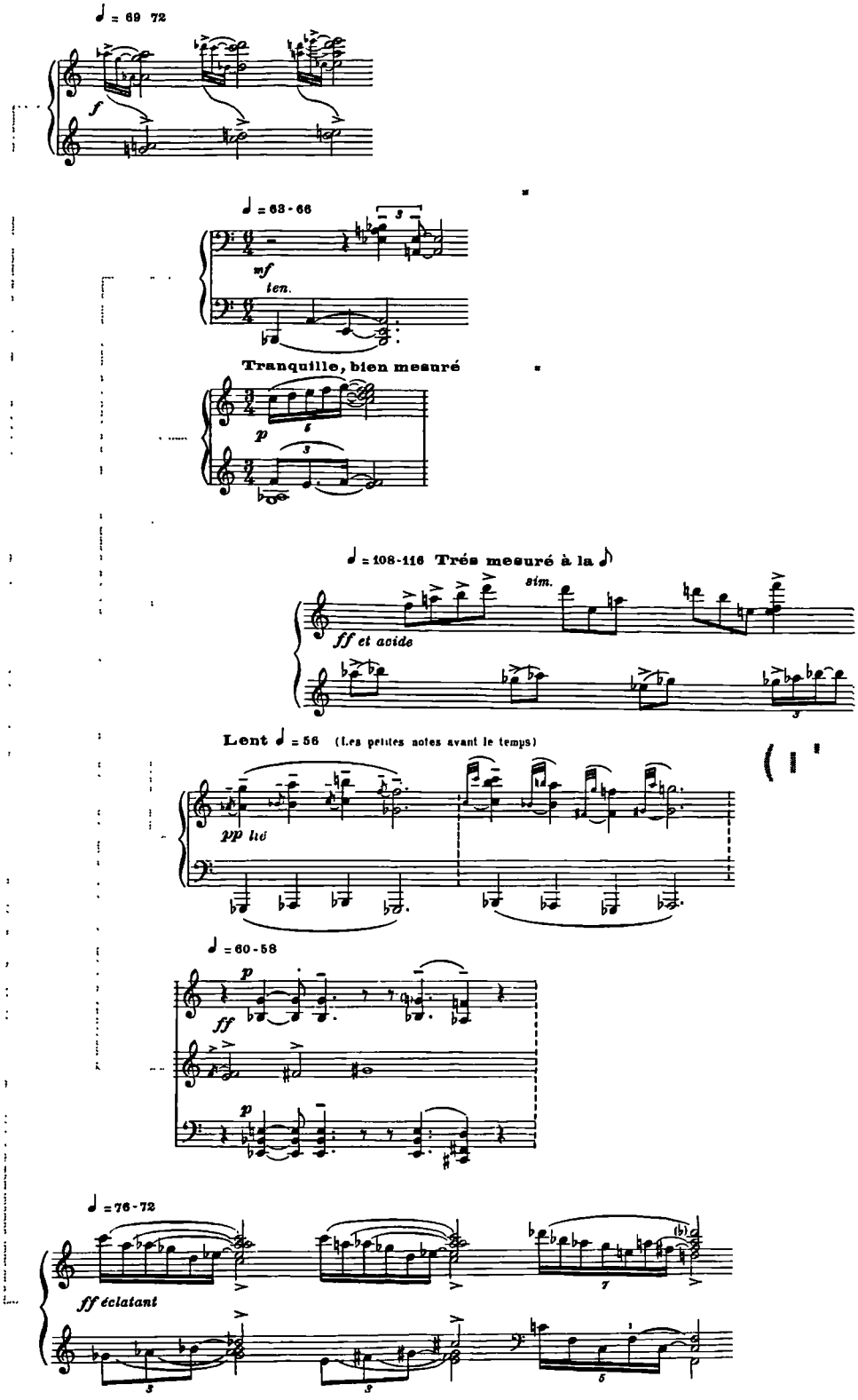
[9] http://gcna.org. (gcna stands for The Guild of Carillonneurs of North America), 1 March 2004.

of the second B section both reversing the order of the subsections of the first and transforming their materials.

Different gestures imitating bells characterise each section; diatonic melodic aspects of the carillon are evident in each. Loud bell notes with their partials are translated into chords in the first section and further thickened into sound masses in the fifth. An Anacrusis falling onto the main beat represents the complex interaction of the partials of a bell when it is struck. The chord clusters at the end of the first and fifth sections seem to imitate the carillon in daytime. In the second and fourth sections, however, more hollow vertical harmony accompanies the single night bells in the left hand. In the third section, unaccompanied melodic fragments shared between the hands seem to suggest random bell sounds during the day.

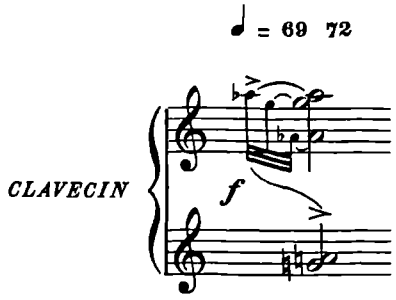
Carillons is unmetred in the first, third and fifth sections. Although improvisatory in style, a tight rhythmic structure is apparent, especially in the third section. The use of bar lines helps to articulate the longer phrases in the second and fourth sections. The indication *très mesuré* applies to some unmetred sections, that is to say, it is not meant to be imprecise when unmetred.

In terms of duration, the fifth section is approximately twice as long as the first (50 and 110 seconds respectively), the same applies to the second and fourth sections (55 and 120 seconds respectively). The third section is the shortest, it being only approximately 35 seconds in length. Thus it can be seen that the return of the A and B sections (in the form A B C B' A') are extended versions of the original, whereas C is the point of convergence for the whole work. The melodic aspect of bells in B(ii) stretches out and becomes chant-like in B(ii)', accompanied by dissonant lower resonances. Ideas exposed in the first and second sections return, and are further developed so that whilst there is no literal repetition, similarity is a cohesive force for uniting the five sections and at the same time prevents monotony.



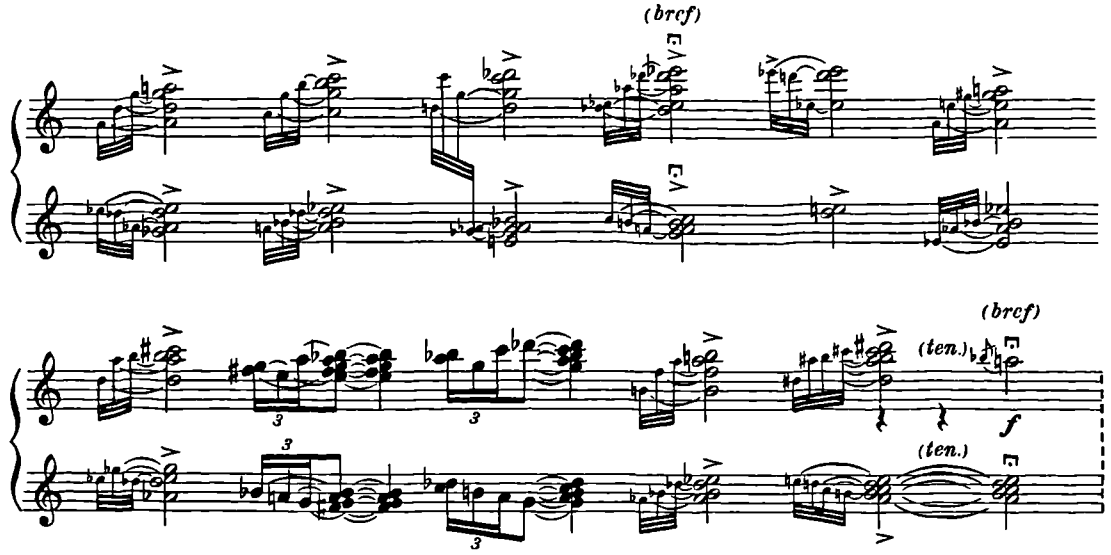
Example 2 - Symmetrical structure of *Carillons*

The opening chord forms the seed of the composition, in terms of harmony and gesture (Example 3):



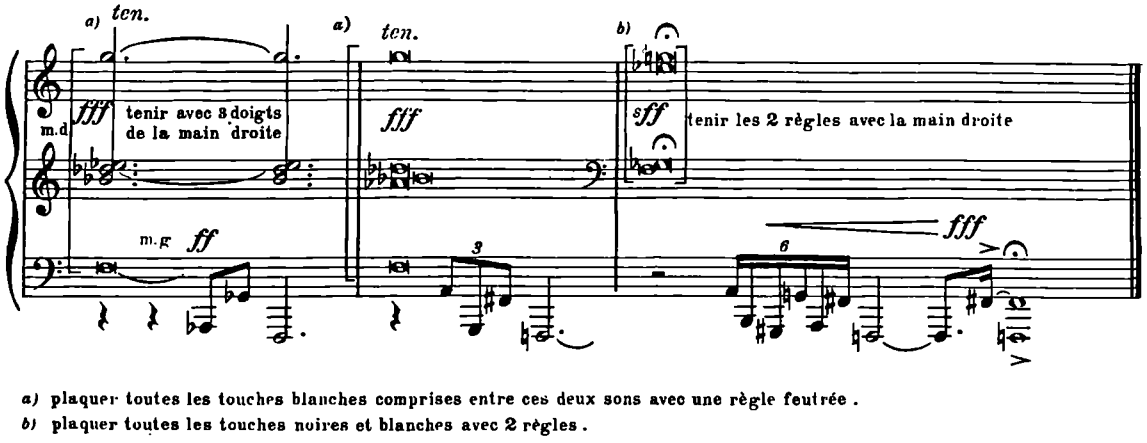
Example 3 - Opening chord of *Carillons*

The descending minor second a♭'' to g'' is doubled an octave below on a♭', to form an anacrusis which falls onto the main bell note g'. This bell note is blurred by a', a major second above. Thus the harpsichord imitates not only each bell note, but also its resonance. That the resonance prefixes the main note gives the illusion of the main note being surrounded by a fullness of sound. The transposition of this opening chord to c'' as the second chord introduces the perfect fourth; together with the minor second, and the sum of these two intervals, the tritone, this forms the nucleus of *Carillons*. The opening gesture, an anacrusis leading into an accented main note, is used more or less throughout the entire first section, and becomes more elaborate in the fifth. Weight is thrown onto the accented note by having more than two notes sounded together. As the first section progresses, the right-hand anacrusis is shared with the left hand in the first section. For example, the increase of the number of notes making up the anacrusis across the first section is accompanied by the increase of the number of consonant intervals packed into the predominantly dissonant harmonic structure, that is to say, as harmonic density increases, the consonant interval classes, the perfect fourth and major third, become more numerous (Example 4):



Example 4 - Page 1, system 3, 4 of *Carillons*

This example also shows how the different kinds of anacrusis used are shared between the hands in different ways: contrary motion, similar motion, ascending and descending. The increase in chord density through the opening section and its reprise at the end of the piece culminates in the use of giant clusters, for which Ohana prescribes the use of two felt-covered rulers, one for each hand, for playing many keys at once (Example 5).



Example 5 - The final bars in *Carillons* showing the chords which are to be played with felt-covered rulers

All the sound masses in the fifth section contain more than one of the interval classes inherent in the set 0, 1, 5, 6. Doubling at the octave increases the

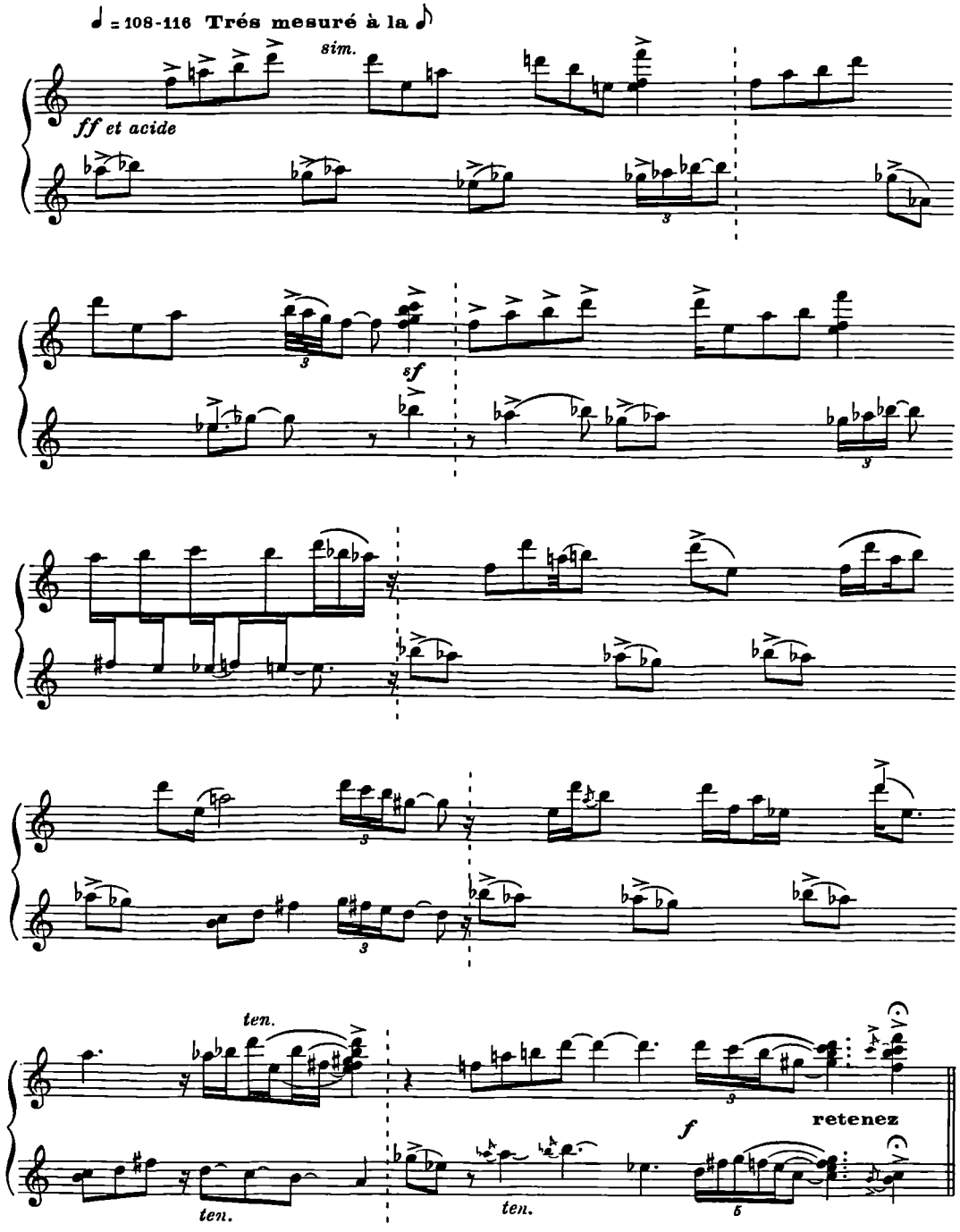
weight of the chord, which Ohana further solidifies by increasing the number of notes sounding together.

The pedal effect on a♭' in the left hand leads to the final section, "*de nouveau éclatant*". Colossal sonorities combine with the octave effect in the bass to ring out the final bell sounds in the deepest register. The juxtaposition of a variety of rhythmic figurations alludes to an improvisatory style, incorporates more added notes than the first section and gives an impression of intensely active bell ringing.

Unlike that of the outer sections, the harmony in the second and fourth is both more static and more transparent, with pedal notes and oscillating harmonies underpinning the texture. The repeated b♭''-a'' appoggiatura in the upper register which closes the first section is transmuted to the B♭' pedal note of the first part of the second section, and the repeated g-a♭ of the second part (marked *Tranquille, bien mesuré*). In the first part, it forms an evenly spaced chord with A and e, reiterating the intervals that are the seed of the work, the minor second and the perfect fourth. The figure "*rapide, clair*" in the second section succinctly expresses the contrast in timbre between these two interval classes. Each single bass note may represent a night bell: the chordal inflexions in the right hand effectively portray the resonance of the lower fundamental bell tones. The melodic aspects of the carillon are carried from the treble in the second section to the bass in the fourth. Perhaps the bells "*tranquille, bien mesuré*" are dawn bells; those which are "*lent, pp lié*" in the fourth section may be night bells.

The interval of the major third (belonging to the interval vector of the set 0, 1, 5, 6) is emphasised in the fourth section. It may form part of a bell melody, or its harmony. In its harmonic function, the major third is in the treble to bring out its full resonance; octave doubling consolidates the chord. The anacrusis, which may consist of as many as four notes, acts as a harmonic shadow, and imitates resonance of the carillon (see also the first and fifth sections).

Interval classes 1 and 6 are used on the top line of the third section (Example 6) for false octave effect.



Example 6 - Section three (C) of *Carillons* divided into six phrases

For example, in the first four right-hand notes, f'' a'' b'' d''', b'' is the false note for b♭'', which would have made the four-quaver figure diatonic. By

placing each false note in between consonant diatonic intervals, the dissonant alludes to the consonant. Similarly, in the first vertical chord e'' f'' f''', e'' is not a harmony note; rather it blurs the octave f''-f'''. The bottom line uses interval classes 2, 3, and 4 as well as 1 and 5, thus resembling the pentatonic scale. At the start of the section, each hand is diatonic but the right and left hands use white and black notes respectively to form a chromatic aggregate so that their complementation takes away the diatonic aspect in each. As the section progresses, this partitioning becomes less distinct, so that by the end of the fifth phrase the left hand also has white notes, and the right hand black notes. The alternation between black and white notes forms small irregular fragments, which further disintegrate any tonal association. In this way the section creates the illusion of a random out-of-tune day carillon.

As well as the use of pitch, the constant alternation between the two hands, their encroachment on one another (the left hand is almost always on top of the right), together with irregular rhythms give the impression of disorder. The material of the first phrase is transformed in the succeeding phrases by permutation and rhythmic and octave displacement. Of the six phrases, the first, third and sixth each lasts eighteen quavers, the second fifteen plus semiquaver, the fourth twenty four plus semiquaver and demisemiquaver, and the fifth twenty plus semiquaver. Thus the first, third and the last phrases help to balance the irregular phrase lengths in the others and to provide structural cohesion. The displacement notes, for example, d''' right-hand semiquaver at the beginning of the second phrase, and a'' right-hand demisemiquaver at the beginning of the third phrase interrupt the quaver pulse and shift emphasis onto the next note. The appoggiaturas in the fifth and sixth phrases create note shadows, blurring pitches to which they are joined (at the beginning of the fifth phrase, right-hand appoggiatura a'', at the beginning of the sixth phrase, left-hand appoggiaturas a♭'' and b♭'', and on the last chord of this section, right-hand c''' and left-hand b').

Vertical chords in the second and fourth sections replace the attacks on single notes in the third. Octave positions in both hands explore sonorities at

the extreme ends of the keyboards; it is possible that long phrases of block chords are more sonorous on the piano. Again the false-note effect blurs the main melodic notes. The dynamics of bars five to ten inclusive in the fourth section—*ff* in the middle stave and *p* in the outer two—cannot be realised on the harpsichord: the distance to be covered by the right hand simultaneously on two keyboards is too great. Similarly the bass bell notes in the second and fourth sections resonate more on a piano, as do block chords. On the harpsichord, dynamic balance is best maintained by playing upper notes in more rapid succession than lower ones because the rate of decay on the upper notes is greater. Cases in point are *tranquille, bien mesuré* in the second section, as well as the first and to an extent the last section.

The technique of chord spreading is evident in the outer sections. Previously, it had been explored in the first and second movements of the de Falla Harpsichord Concerto, and appears in Ohana's output in the harpsichord arrangement of *Tiento* for guitar. In the first section of *Carillons*, the opening spread in the right hand on three descending notes is further developed in the same section where the spread is taken up also by the left hand. The direction of the spreading varies: similar or contrary motion, ascending or descending. Chord spreading becomes still more elaborate in the last section. Again, the harpsichord imitates loud bells; added notes thicken bell resonance. In the final bars where felt-covered rulers are prescribed to press down chord masses, arms may suffice.

The tempo markings in the autograph manuscript differ substantially from the printed edition.[10] For example, the beginning is marked ♩=56 in the autograph manuscript, whereas the published edition has ♩=69 [-] 72. It is possible that revisions were made at the suggestion of Vischer, who would have tried the composition on her instrument and realised that on the harpsichord the sound would be more effectively sustained at faster tempi.

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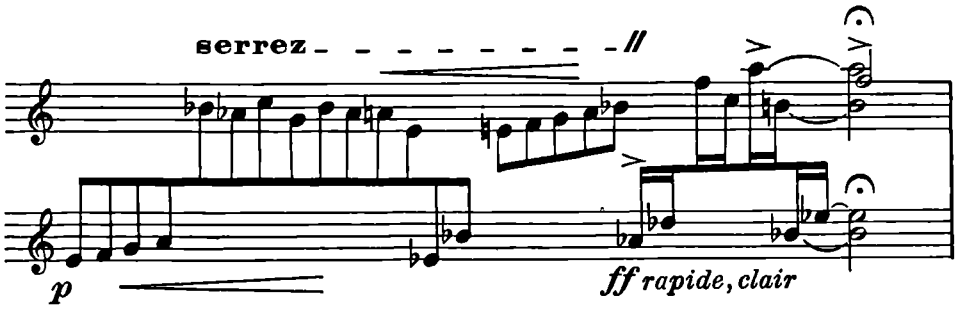
[10] The autograph manuscript is in the Antoinette Vischer Collection at the Paul Sacher Stiftung.

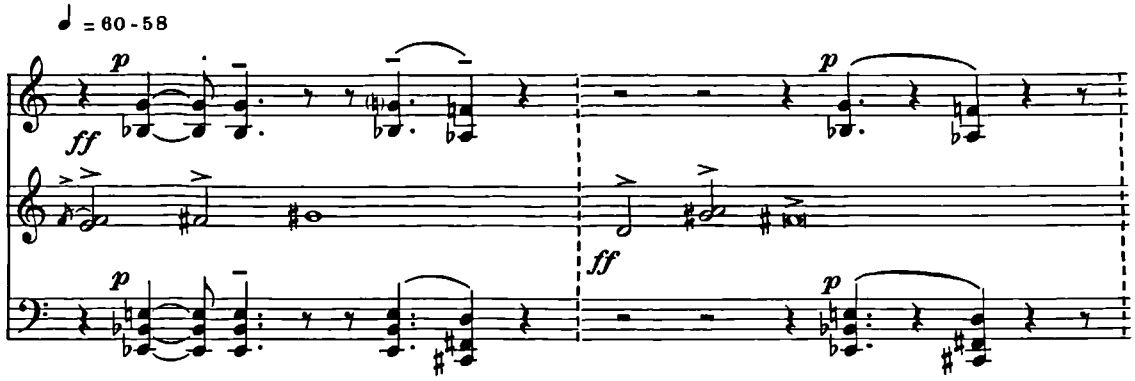
The autograph manuscript also bears Vischer's own registration markings. Evidently Ohana was content for her to experiment with different combinations to realise his instructions: in the published score no registrations are specified. Whereas instructions in the printed edition are in French, those in the autograph manuscript are in Italian.

On the whole the first, third and fifth sections of *Carillons* are more idiomatic: dynamic balance is better maintained, and bell-imitation intentions are better translated on the harpsichord. Given his practice of composing at the piano, this in part accounts for the pianistic nature of the writing in *Carillons*. Although unidiomatic in places, it illustrates some of the difficulties of composing for the harpsichord as distinct from the piano. The harpsichord emphasises the outermost notes in any chord and therefore cannot realise, for example, the accents at the beginning of the last section marked "*éclatant*". Similarly the *crescendi* and *diminuendi* in the score cannot be brought about (Example 7):



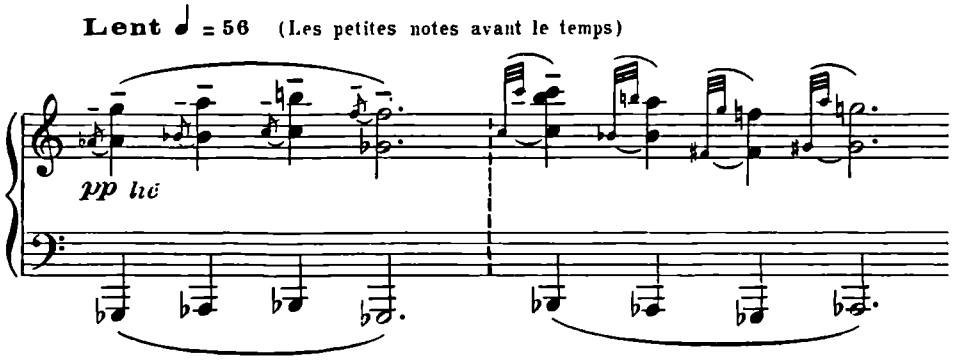
Example 7 - *Crescendi* and accents on page 2, system 3 of *Carillons*

From the point of view of sonority, the balance between the right hand and left hand in the B' section is also problematic (Example 8):



Example 8 - Problematic balance between hands in *Carillons*, B'

The open voicing in the B' section is ineffective: the "noise" at the beginning of the attack on the plucked string of the harpsichord is very different from that of the struck string (or indeed bell) which has a rounder tone, and more immediate pitch content (Example 9). The lack of resonance is particularly acute on the modern pedal instrument.



Example 9 - Ineffective open voicing in *Carillons*, B'

The lack of registration marks may also be due to Ohana's pianistic thinking although this point is inconclusive. Indeed, *Carillons* could have been written for the piano, and works well on the instrument; if it had not been clearly marked *pour clavecin*, one would be none the wiser. Nevertheless, the physicality of playing *Carillons* on a pedal harpsichord is a symbolic gesture of the act of playing a real set of carillons, which has a manually operated baton keyboard with pedals for the lowest notes.

Ohana went on to use the harpsichord many times. *Chiffres de clavecin* (1968) combines the harpsichord with a mixture of tuned and untuned percussion

instruments in a substantial and ambitious work, certain passages of which incorporate a degree of improvisation; *Sacral d'Ilx* (1975) takes its scoring (harpsichord, oboe and horn) from Debussy's proposed but unwritten sonata for the same group which was to have been one of his *Sonates pour divers instruments*. It continues to explore the potential for generating musical structure from manipulating the contrast between the sonority of the harpsichord and other instruments, as does *Miroir de Célestine* (1990), after his opera *La Célestine* (1988),[11] although here it is the contrast between harpsichord and percussion which is focused upon. Apart from *Carillons*, Ohana wrote two more solo harpsichord works, *Deux pieces pour clavecin* (1980-2). In an intriguing reversal of roles, the first piece, *Wamba*, was originally written for the carillons at *Église Saint-Germain-l'Auxerrois* in Paris and then transcribed for the harpsichord. The title is the name given both to an ancient Spanish king and to some of the giant bells of Spanish cathedrals.[12] The opening again features the semitones, tritones and major sevenths which he used in *Carillons* to mimic bell sounds. The second piece, *Conga*, has a tighter rhythmic structure and treats the harpsichord first and foremost as a rhythm instrument.

In all these later works Ohana tackles the problem of writing for the harpsichord in many different ways from the perspective of his mature style. They reveal Ohana's continuing attachment to the sonority of the harpsichord, and underlie the composer's sentiments made evident in the letter quoted at the beginning of this chapter. His solo harpsichord works and the ensemble pieces including the harpsichord can be heard as continuing the attempt to develop idiomatic expression for the instrument within his musical language. Though *Carillons* only partially succeeds in this goal, this should not lead us to underestimate its importance both in Ohana's output and for the twentieth-century harpsichord.

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[11] Interestingly the Spanish composer Felipe Pedrell (1841-1922) had composed an opera *La celestina* (1904) which remains unperformed.
[12] Caroline Rae, *The Music of Maurice Ohana*, 89.

In the wider context, *Carillons* stands as an early example of a new approach to harpsichord writing, emphasising sonority over the instrument's historical associations. Ohana was the first of Vischer's commissionees working in a less conservative musical style: she went on to commission works from some of the more prominent members of the international avant-garde including György Ligeti, Luciano Berio, John Cage, Hans Werner Henze, Earle Brown and Mauricio Kagel. Although it would be fanciful to claim direct influence of Ohana on any of these composers, *Carillons* is evidence of an important point in the evolution of new harpsichord repertoire in the twentieth century.

Chapter 5
Continuum and After: Texture as a Formal Determinant

The end of the Second World War was a time of rebuilding and reshaping: the influx of ideas from performers, composers and musicologists who had escaped the Nazi regime from before the War in the early 1930s to more congenial environments in Europe and the United States, coupled with the general awareness of building a new order after the cataclysm of the war, led to significant new thinking in composition, musicology and performance practice, sowing the seeds for both the compositional avant-garde and the early-music movement. This applied to post-war Germany also where such figures as Stockhausen and Meyer-Eppler led experimentation with electro-acoustics; and, Darmstadt remained the focus of much avant-garde music for many years after the War. These in turn drew on and provoked advances in recording technology, such as long-playing and stereophonic records, and in live and studio recording techniques and editing. Harpsichords reproduced from historical models gradually emerged, bringing about a wider appreciation by musicians and audiences of the features which fundamentally distinguish the harpsichord from the piano and the organ. This emergence also stimulated a variety of new compositions from about the 1960s that have formed the core of the new harpsichord repertoire. Ligeti's three solo pieces, *Continuum* (1968), *Passacaglia ungherese* (1978), and *Hungarian Rock* (1978), have all been played and recorded numerous times, and have become the classics of contemporary repertoire for both the historical and the modern pedal instrument. Unlike the Carter works, these pieces do not rely significantly on registration changes, although *Continuum* and *Hungarian Rock* require a two-manual instrument. While *Passacaglia Ungherese* was written for Eva Nordwall who played a historical instrument, *Continuum* and *Hungarian Rock* were written for performers who played on

modern pedal harpsichords. Nevertheless both are well-suited to historical instruments because Ligeti's starting point in each case is the fundamental nature of the instrument: its pluck. It is this that makes the point of attack on the harpsichord incisive, and this immediacy enables a wide variety of articulation—and therefore subtle rhythmic nuances—on the instrument. Indeed Ligeti himself acknowledges in retrospect that *Continuum* was a "key work for my new rhythmic ideas".[1] Elsewhere he explains that in *Continuum* the rhythmic melodic configurations result from the superimposition of two different voices in both hands.[2] Because of these qualities, *Continuum* is a landmark in the development of contemporary harpsichord writing, and is used here as a kind of paradigm.

Continuum was by no means the first time Ligeti had used the harpsichord: it was already found in the score of *Apparitions* (1959), and the Requiem (1965), as well as *Aventures* (1962) and *Nouvelles Aventures* (1962-65). And later, most notably in *Der Zauberlehrling* from the second book of *Études pour piano* (1988-93), he again put the repetitive capacities of the relevant instrument and the player under scrutiny as he had done in *Continuum* two decades ago.[3] This prompted the player-piano virtuoso Jürgen Hocker to make a transcription of *Continuum* (with permission from Ligeti) some years later, taking the cue from Pierre-Laurent Aimard, who complained that *Coloana Infinită* (from the second book of *Études*) was too difficult for a human pianist.[4] As if to underline the nature of the piece as a musical mechanism, *Continuum* also exists in a version for barrel-organ.[5] But the *étude* that best transcribes onto the harpsichord is *Fém* (which means "metal" in Hungarian, but has a

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[1] György Ligeti, *Über meine Entwicklung als Komponist*. See footnote 2 below.
[2] György Ligeti, *Einige Aspekte meiner Musik*. This article and the above *Über meine Entwicklung als Komponist* are unpublished at the time of writing; both are held at the Paul Sacher Stiftung. Grateful thanks to Matthias Kassel for drawing my attention to these texts.
[3] Ian Pace, programme notes to his solo piano recital at the Great Hall of King's College, London, 11 February 2004, in which he played the first two books of the Ligeti *Études*.
[4] Richard Steinitz, *György Ligeti: Music of the Imagination* (London: Faber & Faber, 2003), 302.
[5] Richard Steinitz, *György Ligeti: Music of the Imagination*, 166.

brighter connotation, as the Hungarian word for light is "fény"[6]), also from the second book of *Études*. Whereas Ligeti makes use of the resources of the harpsichord alone in *Continuum* and the other two solo pieces, other composers have surrounded the harpsichord with different combinations of instruments.

My aim in this chapter is to demonstrate, by way of examples, how subsequent composers have complemented and contradicted the different qualities of the harpsichord in the light of Ligeti's writing for the instrument, with particular reference to *Continuum*. The main works under discussion in this chapter are:

1. Chiel Meijering (1954-) *n'Dame scheert haar benen* (1981) for harpsichord and guitar
2. Ton Bruynèl (1934-98) *Schrootsonate* (1990) for harpsichord and soundtracks
3. Iannis Xenakis (1922-2001) *Khaoï* (1976) for solo harpsichord

In treating the harpsichord as a machine, Ligeti has achieved some unexpectedly musical results. He claims that in *Continuum*, his main challenge was to create a stream of continuous sound out of an instrument with a discontinuous sound.[7] Although the rate of decay of the sound made by plucking a harpsichord string is quicker than on the piano, a note on the harpsichord does in fact sustain strongly between four to six seconds after a string is plucked. The sustaining time depends on where the note is on the keyboard: the longer and thicker the string (the lower the note), the longer the note will be sustained. Jane Chapman refers to *Continuum* as a technical exercise *par excellence*, and returns to it again and again when she wants to focus on finger independence; she also regards it as an important piece for

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[6] György Ligeti, sleeve notes to *György Ligeti Edition*, disc no.3, SK 62308, Sony Classics, 1996. The *Études* are played by Pierre-Laurent Aimard.

[7] From an interview with Peter Vàrnai, 1978, in *Ligeti in Conversation* (London: Eulenburg, 1983), 22.

introducing keyboardists to contemporary harpsichord repertoire and uses it regularly with her students.[8]

Interestingly, Ligeti took pains to write out *Continuum* in long hand, that is to say, he did not write out one figure and simply indicate the number of times he wanted this figure repeated. The striking appearance of the score is a most important indicator of Ligeti's concept behind *Continuum.*[9] By writing this piece out note by note, Ligeti visually emphasises the essence of *Continuum,* which is precisely its continuousness. The notation compels the performer to focus on the sound Ligeti wants. By beaming *all* the notes of the right hand together, and doing the same in the left throughout the score, he shows that all notes have equal value and should be played evenly without articulation. In fact, in the autograph manuscript which he presented to his commissioner Antoinette Vischer, he also wrote *molto legato* next to *prestissimo* at the top of the score.[10]

In composing in the way he did, Ligeti not only joins sound to sound (which after all the harpsichord is capable of doing without special manipulation), but moreover creates a sound web in which individual pitches are no longer distinct from one another. This he does in two ways: by oscillating rapidly between a small number of pitches close together in both hands, but with each hand on a different keyboard so that, for example, in the opening, the pitches G and B♭ alternate *prestissimo* as one continuous sound because the different keyboards enable both pitches to be omnipresent. In addition, the more nasal upper keyboard provides subtle textural contrast to the lower manual. The lighter touch on the harpsichord enables extremely fast repetition of notes; alternating between two notes in a manner demonstrated in the opening enables continuous sounding of the same note but at a much faster speed than simply repeating the same note on the same keyboard. As a recent writer comments,

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[8] Interview with Jane Chapman, 5 March 2004.
[9] See Appendix A.
[10] ibid.

> Ligeti adds increasing embellishment to his solo line at such a rapid rate that the keyboard can barely cope with his demands. Sounds blur into a seamless mesh, moving forward like a Keystone Cops chase sequence played on sped up film. That Ligeti provokes such a fresh sound from this ancient hardware is striking, yet it also has a curious sense of whimsical pathos as the forlorn harpsichord wheezes in agony.[11]

Ligeti uses a uniform texture to draw attention to changes in density and register. Variations in density bring about dynamic shading: more notes, more sound. Coupled with the appropriate use of voice-leading, the harpsichord is well able to effect a crescendo or diminuendo. This technique of dynamic shading has a long tradition and is found abundantly in the music of Bach, see for example the fantasy in the Chromatic Fantasy and Fugue in D minor BWV 903.

Whilst Ligeti did not invent the concept of dynamic shading, he used it in *Continuum* in a context that had not been explored before. Dynamic shading is achieved against a background of uniform quaver motion. By picking out and emphasising the outer notes so that changing from one note to another changes the pulse, Ligeti gives the illusion of dynamic interest in the complete absence of surface rhythmic variation.

The idea of the sound mass in relation to Ohana's *Carillons* has already been discussed.[12] Although sound-masses are not found in *Continuum*, Ligeti had used the same idea in his solo organ work *Volumina* (1966).[13] Later, Iannis Xenakis explores the same idea in yet another way in *Khoaï*. But long before that the Baroque composer Michel Corrette (1709-95) had discovered the percussive dimension to the harpsichord and had made audacious use of

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[11] Philip Clark, "Filthy Temperament", *Wire*, issue 241 (March 2004), 33.
[12] See Chapter 4.
[13] Graphic notation is used throughout to indicate Ligeti's paramount concerns for this work: contour, volume, and density of sounds. *Volumina* remains his only published work in which he uses graphic notation.

clusters at the lower end of the keyboard to represent cannon fire in the *Combat naval* from *Les échos de Boston et la victoire d'un combat naval* (1779). In *Continuum*, as in the later composition *Schrootsonate* (1991) by Ton Bruynèl, rhythm grows incidentally out of the structure of the sound mass, and is inextricably linked to it, though not dominated by it. The sense of movement comes about through changes in density and timbre, arising from the expansion and contraction of the repeated pattern of notes, rather than through a pulse or metrical articulation of a harmonic process.[14] And to some extent in Chiel Meijering's *n'Dame scheert haar benen* (1981), the closing semiquavers that drive the music to its conclusion have a similar quality. These chord clusters are so low down in the bass that their precise pitches are indistinguishable and to a large extent irrelevant; rather, the rhythm they generate carries far greater importance. The percussive aspect of these clusters blends well with that of the guitar, with which the harpsichord forms a duo in *n'Dame scheert haar benen*.

n'Dame scheert haar benen (1981) by Chiel Meijering

> As a composer I've always been interested in simple material and clichés. Like in pop music or in works of artists like Andy Warhol and Jeff Koons I work with formulas that have been used over and over again. I try to use these in such a way that it grabs you again...[15]

Chiel Meijering was born in Amsterdam in 1954 and studied composition with Ton de Leeuw. He is prolific—the list of works on his website extends to over one hundred pieces from solo to orchestral including *Gedoogzone* (1988) for two pianos, written for the hundredth anniversary of the Amsterdam Concertgebouw and an opera *Gershwin in Blue*, also written in the same year—but admits that he is outside the contemporary art music scene in The

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[14] Richard Steinitz, *György Ligeti: Music of the Imagination*, 165.
[15] Chiel Meijering, the composer's website at www.euronet.nl/hubiware/HomeChiel.html, 1 March 2004.

Netherlands. He was for a time a drummer in a Funk band and still likes his music to have a continual exact beat.

Meijering has written a large number of works for the harpsichord, including pieces for harpsichord with unusual combinations of instruments.[16] In particular he has worked closely with Dutch harpsichordist Annelie de Man, and Icelandic harpsichordist Thora Johansen.

The combination of harpsichord with guitar is unusual but effective. There is a small body of works for this ensemble written in the twentieth century, including *Prelude* (ca.1926) and *Sonata* (ca.1936) by Manuel Ponce (1882-1948), *Alias* (1977) by Goffredo Petrassi (1904-2003) and *Duo Concertant* (1968) and *Dialogues* (1976) by Stephen Dodgson (b. 1924).[17] The different sorts of pluck on the two instruments make interesting sound combinations. Plastic plectra of the harpsichord are softer plucking material than human nail which tends to pluck harder, although the harpsichord has many more strings and a bigger soundboard and can sound loudly more easily. On the harpsichord the plectrum plucks closer to the bridge and therefore a more incisive tone is produced; this is possible on the guitar but generally the string is plucked further from the bridge, resulting in a rounder tone. Although the harpsichord sound can overwhelm the guitar, balance is not usually a problem.

The suggestive and eye-catching title *A lady shaves her legs* (hereafter *A Lady*) is characteristic of Meijering's sense of playfulness. It is meant to be provocative: the composer wanted to distinguish himself from the ruling avant-garde and found titles typical of that time dull and unimaginative.[18]

He claims that "no other method of composing is the basis of this piece than the pleasure of writing down the notes that pleased me most at that particular

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[16] See Appendix B.

[17] See Francis Bedford's *Harpsichord and Clavichord Music of the Twentieth Century* (Berkeley: Fallen Leaf Press, 1993) for a catalogue of twentieth-century harpsichord-guitar compositions.

[18] Email interview with Chiel Meijering, various dates, January and February 2004.

time."[19] Notwithstanding this capricious comment, there are some clear principles behind the work's formal and harmonic organisation.

For ease of reference, the points at which the guitar and harpsichord play in unison are summarised below:

Section	1	3	4	6	7
Bars	4 28 49	74-114 119-120 123-129	152-154 165-168	197-201	213-220 222 fine

In isolating these bars in this way, attention can be focused on those in between, that is to say, on the bars where there is textural variation. Meijering uses three different harpsichord sounds in *A Lady*: the lute stop, lower eight-foot on its own, and the two eight-foot stops plus the four-foot. Of course there is no sixteen-foot on a historical harpsichord, and the interaction with the sounds of the guitar and the resultant textural variation are altogether subtler than those in works for the modern instrument. This subtlety also accounts for the more intimate setting for *A Lady*, compared to the more monumental works of Xenakis and Carter.

Much of the energy in *A Lady* is generated by two opposite modes of behaviour: (1) where the two instruments tend to cooperate, for example in bars 1 and 2 (Example 10); (2) where they tend to emphasise their differences, for example, bars 33-38 (Example 11).

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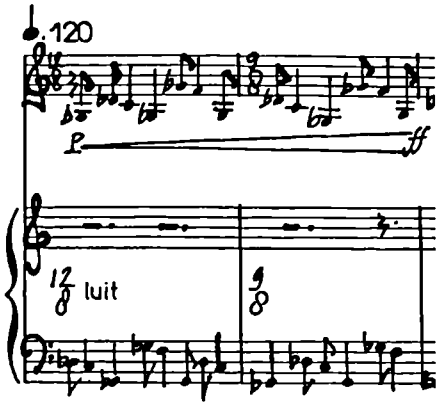
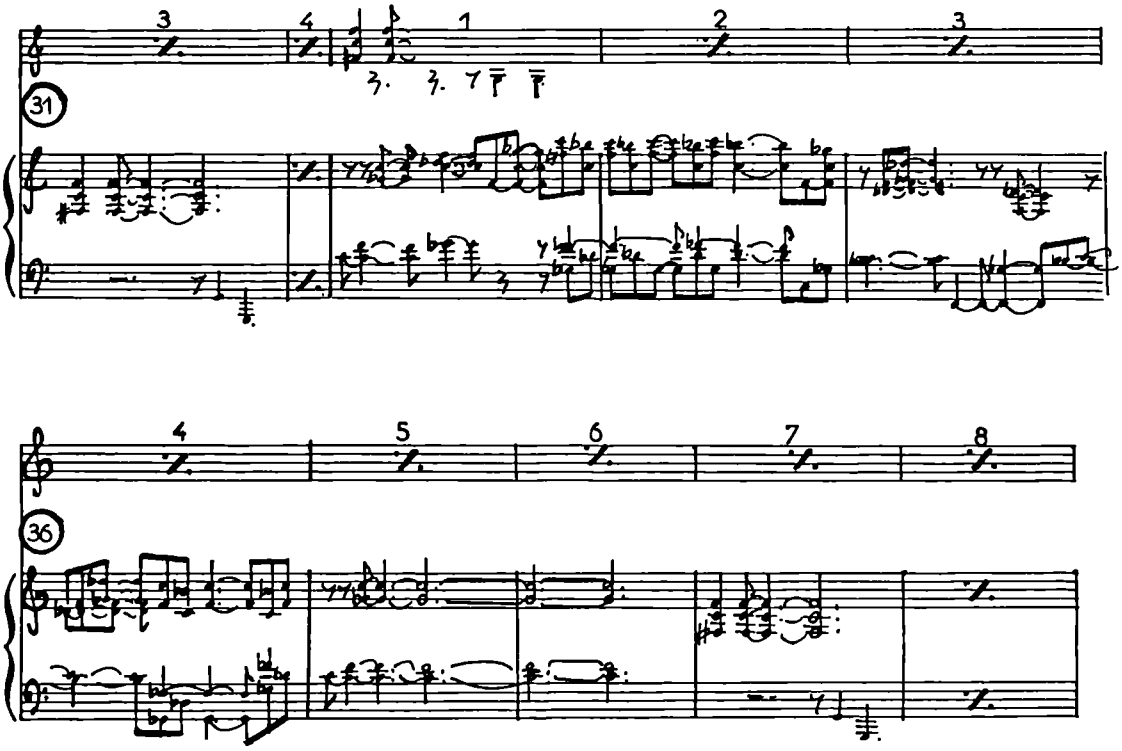
[19] Chiel Meijering, from sleeve notes of CD *A Lady Shaves her Legs*, Erasmus Music Productions, The Netherlands, WVH 072, 1992.



Example 10 - Bars 1 and 2 of *A Lady*



Example 11 - Bars 31 to 40 of *A Lady*

Where the two instruments tend towards cooperation, they also mimic each other gesturally. It is interesting psychologically as one instrument takes on the character of the other in mimicry so that the player is at times under the illusion that he is playing not one but two instruments.

On the basis of tonal centre, material and texture, *A Lady* can be divided into seven sections:

Section	1	2	3	4	5	6	7
Bars	1-49	50-73	74-129	130-168	169-190	191-203	204-222

In the first section (bars 1-49), the music draws out the differences between the harpsichord and guitar, despite the opening two bars where the two instruments play a close canon. At ♩=120, the guitar crescendos from *p* to *ff* in two bars, in a swift and dramatic gesture—all the more so as the harpsichord is using the lute stop (Example 10, page 74).

Although the pluck is a common property between the two instruments, Meijering explores the contrast implicit in the variety of attack available on the guitar against the different resources of the harpsichord throughout *A Lady*. In addition, throughout *A Lady* the composer asks for many different sounds from the guitar.[20] In the first section, he uses *molto vibrato* (for example bars 4 and 7), and in bar 8 he asks the player to slap the strings close to the bridge with the side of the thumb so that the strings bounce off the fingerboard to produce a dry booming sound. Later he uses the Bartók *pizzicato* (for example bars 13-25), and at the beginning of the second section (bars 50-73), microtonal variation (for example bar 51). Other techniques used are discussed below with the relevant sections.

The sound world of the second section (bars 50-73) is different from the first; the lute stop on the harpsichord is not used at all, and there is more cooperation between the two instruments. Rhythmically this section is more synchronised, and the two instruments are in unison in bar 60: both take the bass ostinato G♯-A but only the harpsichord takes the upper fifths d♯-e. From bar 60, the guitar bass doubles that of the harpsichord so that this section is more grounded than the first, and is in essence made up of a melodic line with accompaniment. Although it is static harmonically, there is much surface interest as the beat is subdivided in the right-hand harpsichord part

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[20] Instructions are given in Dutch in the score. Where relevant, I explain the technique in use in the main text.

into semiquavers, eighteen to the bar from bar 62, then twenty to the bar at bar 65, and some of the semiquavers further divide into triplets in bar 69.

The harpsichord and guitar are more or less in unison throughout the third section (bars 74-129); although harmonically the most active music up to this point, this section grinds to a close on a pedal F and repeated chord from bars 84-101. The duo lilts gently in triple time, with melodic interest in the guitar and the right-hand harpsichord part. For much of the section, the two instruments are playing the same notes at the same time, sometimes with octave displacements, and with the occasional grace note. Although there is harmonic fluidity in this section, it is much calmer than the previous two sections, and the harpsichord music is played on the lute stop alone. A more muffled tone replaces the brilliance of the eight-foot register (in the first and second sections) and the music seems to recede.

It is in this section that Meijering first uses silence, exaggerating the gaps between each sound, in bars 95-96, 98-99, and 102-103. A little over halfway, however, from bar 109, activity returns to the surface, the lute stop is disengaged and the lower eight-foot stop dominates once more from bar 114. The arpeggiated chords on the guitar are strummed with the nail so that the sound is hard, in contrast to the darker sonority in the first half of this section. Continuous strumming (the flamenco technique of *rasgueado*) on the guitar and *tremolo* on the harpsichord conclude this section in unison.

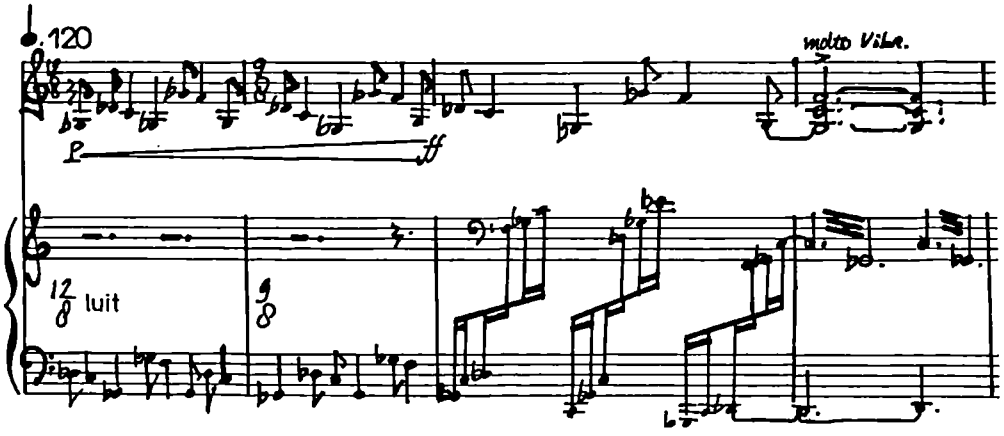
It is the guitar which continues the lilting triple rhythm (first heard in section three) in the fourth section (bars 130-168) which becomes an accelerating ostinato. This in turn is taken up by the harpsichord *a tempo* at bar 152. Soon after, the harpsichord abandons the lute stop at bar 155 in favour of the ensemble of two eight-foot plus the four-foot: this combination stays for the rest of the piece. In this section, microtonal variation (first used in bars 51 and 55) is more extensively used across four bars, in bars 130-133 on the guitar.

In the following section, the fifth (bars 169-190), the bass consists of an ostinato on a chromatic shift between two fifths: A-E and G♯-D♯ (organum).

These fifths recall the music of the second section (bars 60-72). The F pedal of the fourth section is inverted and appears at the top of the texture on the guitar and the right-hand harpsichord part. The idea of chromatic shifting is taken from bar 1 (g♭-d♭ and f-c): whereas in the opening the fifths sweep across the surface, here they are stretched out into a chant-like ostinato.

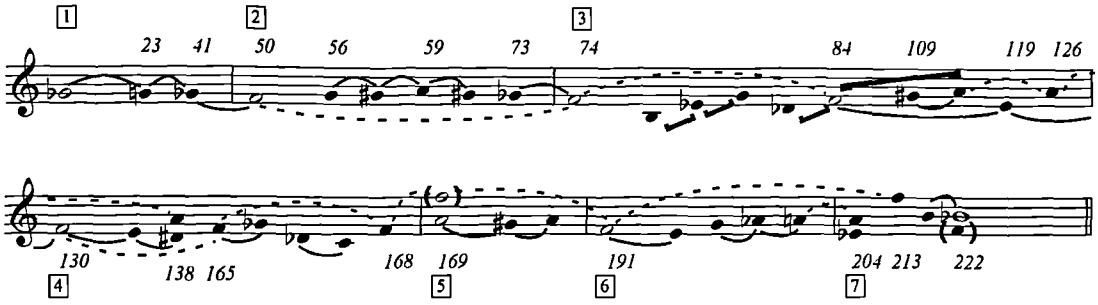
With the change of speed to ♩=160, the sixth section (bars 191-203) moves the F pedal down to the bass; a harpsichord *tremolando* anchors the chromatic frenzy on the guitar, bringing the instruments together in unison in bars 197-199 before its stomping pedal on A in the bass occupies the final section (the seventh, bars 204-222). Continuous strumming precedes a slow glissando (bars 210-212) on the guitar which hangs over the stomping texture. The guitar takes up the obstinate quavers in the bass from bar 216, but with a difference. The guitarist strikes across the damped strings in between the pitched chords, sounding rather like a snare drum. The final chord rests on the tonality of B♭, a resolution implied—or at least not unexpected—as consideration of the work's fundamental material will show.

The harmonic framework for the whole work is set up in the first bar: the chromatic shift between the two fifths (G♭-D♭ and F-C) sets up a tonal expectation which finally resolves in the last section (the seventh) onto a quartal harmony orientated onto B♭ in bar 222.



Example 12 - Bars 1 to 4 of *A Lady*

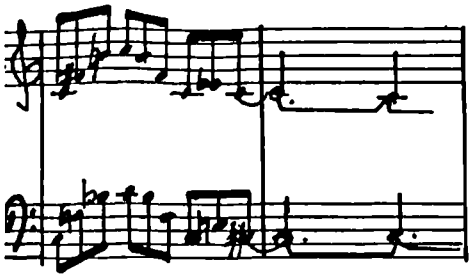
This motive expands across the piece to provide a harmonic skeleton in which key pitches are emphasised by repetition, ostinati and long passages of static harmony (Example 13):



Example 13 – Pitches which govern the harmonic scheme in *A Lady*

G♭ begins and ends section one but shifts a semitone down to F at the beginning of section two, then moves up a semitone to G♭ again at the end of this section (bar 73). In the next four sections (sections three to six) F is more or less a pedal note, occasionally inverted to appear at the top of the texture, see bars 169-190. Finally it moves up to B♭ via A (bar 203). The change in texture in the third section is underlined by an expansion of the harmonic palette, progressing by whole tones and major thirds in contrast to the semitones which characterise the surrounding sections. Where the harmony is static, as is the case in the first two sections, the composer uses a variety of textures and rhythms to develop his discourse. However when the harmony becomes more fluid in the first half of the third section (bars 74-83), the texture tends towards being uniform. But in the finale, he combines static harmony with (more or less) uniform texture, for example from the middle of bar 197 to the end, so that harmony and texture reinforce each other.

The semitones of *A Lady's* fundamental idea are mirrored in much of the harmony, for example in the harpsichord part in bar 10: F♮ against F♯, B♭ against B♮, E♮ against E♭, and C♯ against C♮ (Example 14).

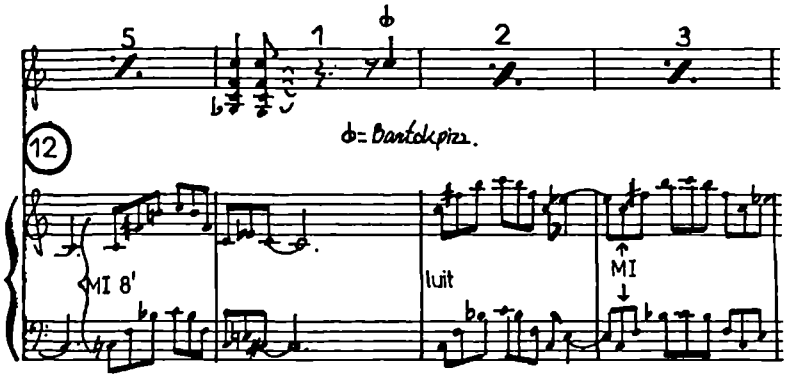


Example 14 - Bars 10 and 11 of *A Lady*

A similar tale continues in bars 12-15 where the use of the lower eight-foot alternates with the lute stop (Example 15 below). As well as making the tuning imprecise in contrast to the previous bars, the semitones anticipate and mimic the microtonal variation on the guitar at bars 51, 55, and 130-133. Here too is an instance of the chromatic shift at work, but rather than providing a larger harmonic hinge, it serves to give local interest.

The harmonic landscape evolves with each change of texture across the seven sections. In the main, homogeneous texture (when the two instruments play in unison or something near to unison) alternates with that which is heterogeneous (when the two emphasise their differences). For example, after a long lull at bars 74-113 where the two instruments play essentially in unison, the music breaks into short fits with the instruments in dialogue (bars 114-122) (notwithstanding two bars joining a single chord, bars 119-120), before a concerted passage—strumming on the guitar, tremolo on the harpsichord—ends the third section (bar 129).

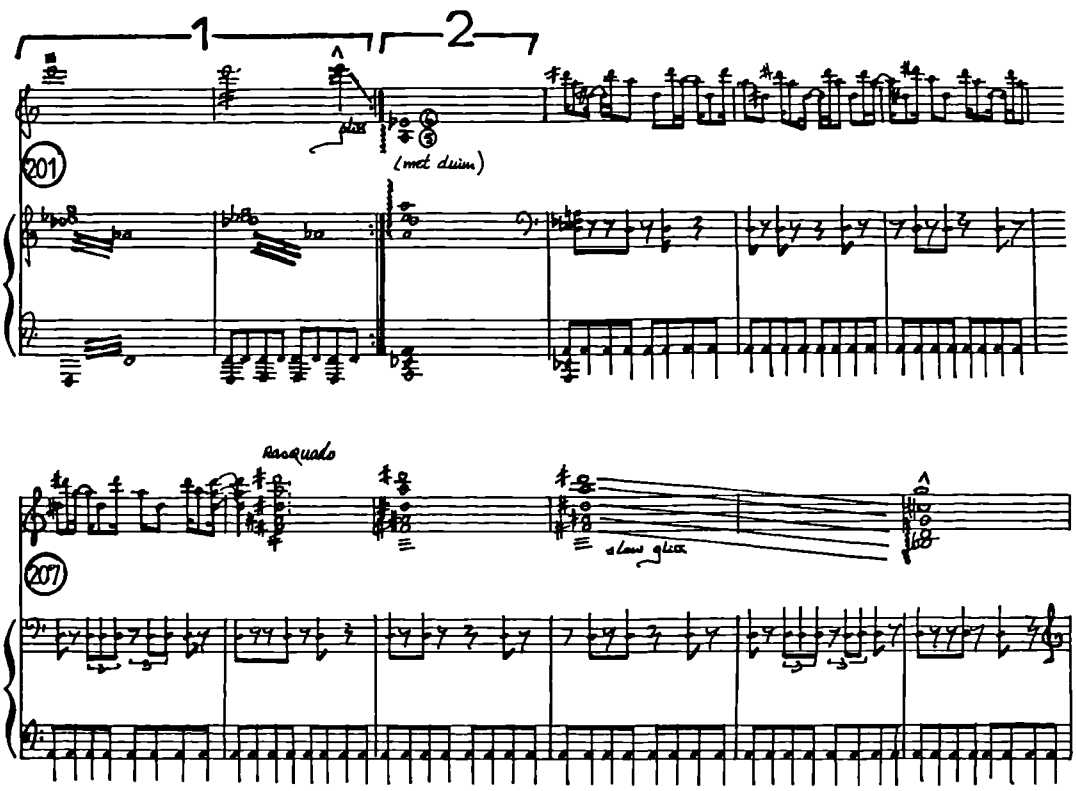
The musical language of *A Lady* is simpler than, say, Xenakis's *Khoaï* or Carter's Double Concerto. Because of this, the differences in sonority between the harpsichord and the guitar play a more obvious part in shaping the structure of the piece. It is written for the historical harpsichord, which is more resonant than a modern pedal instrument. As well as emphasising the differences in sonority between the harpsichord and the guitar, Meijering at times also makes them alike. For example in bars 12-15 he uses the lute stop on the harpsichord to mimic the guitar (Example 15):



Example 15 - Bars 12 to 15 of *A Lady*

The lute stop makes a striking contrast with the more brilliant lower eight-foot; see for example, bars 12-15, where essentially the same figure is transposed to the upper octave, but alternates between the lower eight-foot and the lute stop.[21] The fuller harpsichord sound contrasts with that on the guitar which is drier, for example in bars 33-36, where the syncopation on the harpsichord is a foil against the guitar ostinato, also syncopated. However, from towards the end of the fourth section (bar 157), the lute stop is entirely absent; instead the two eight-foot stops combine with the four-foot in a frenzied finale. The stomping pedal and syncopated top line in the harpsichord (for example bars 204-212, Example 16) is strongly reminiscent of the rhythmic profile in *Les augures printaniers* of Stravinsky's *Le sacre du printemps*.

[21] If the lute stop is on the lower manual, the player has to disengage it by hand between bars 14 and 15; if it is on the upper manual, then the hands simply move between the upper and the lower keyboard in these bars.



Example 16 - Bars 201 to 212 of *A Lady*

Schrootsonate (1990) by Ton Bruynèl

Unlike *A lady*, which is entirely in conventional notation, *Schrootsonate* is written in both conventional and graphic notation.[22] And as Ligeti has used graphic notation in *Volumina* to denote approximate pitch and density of sound, so Bruynèl uses it here for the same ends. The harpsichord part is written using both forms of notation and synchronises with the electronically generated soundtracks which are only notated in part, graphically. The soundtracks' graphic notation is used here primarily to cue in and out the harpsichordist, who is required to start and finish a section of the music in accordance with stop-watch time indicated in circles by the composer. In addition, there are written instructions in the composer's hand in Dutch and English.

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[22] *Schrootsonate* is also known as *Sonata Chatarra*.

Bruynèl's aim as a composer was to produce a beautiful poetic effect through the medium of the soundtracks, requiring the live instrumentalist(s) to blend in with the electronically prepared sounds, that is to say, the harpsichord's role is subordinate to the soundtracks.[23] This is somewhat unusual as the harpsichord is thus used mainly as an extension to the soundtracks, and to provide a visual element in a concert performance. In this respect his music is different from electronic music by other composers who regard the soundtracks and the performer(s) as equal partners to create dialogues. In this case, Bruynèl had already composed the soundtracks before he decided to put a live harpsichord part to it. According to Annelie de Man, for whom the work was written, the graphic notation and all the indications by Bruynèl are the direct result of his picking out what seemed to him to be attractive sounds on the harpsichord. She collaborated closely with the composer who incorporated her suggestions for registration. De Man compares the *Schrootsonate* with *Toccare*, also written for her, adapted from a work with the same title for piano and soundtracks. In the case of *Toccare*, she specifically responded to the capabilities and limitations of the harpsichord sound to try and match as closely as possible those indications in the score, originally written for the piano; for example, she prolonged the sound of a chord by playing the chord on the lower manual, and then carefully taking the same notes to the upper manual whilst holding onto the chord on the lower manual, and suggested a *crescendo* by playing on the upper manual with the four-foot ready on the lower and then play the same pitches an octave lower.[24]

The harpsichord spread chord kicks off the piece and leads into the soundtracks which begins at 0'06". Except at the beginning when the harpsichord precedes the soundtracks, and plays on its own, it always

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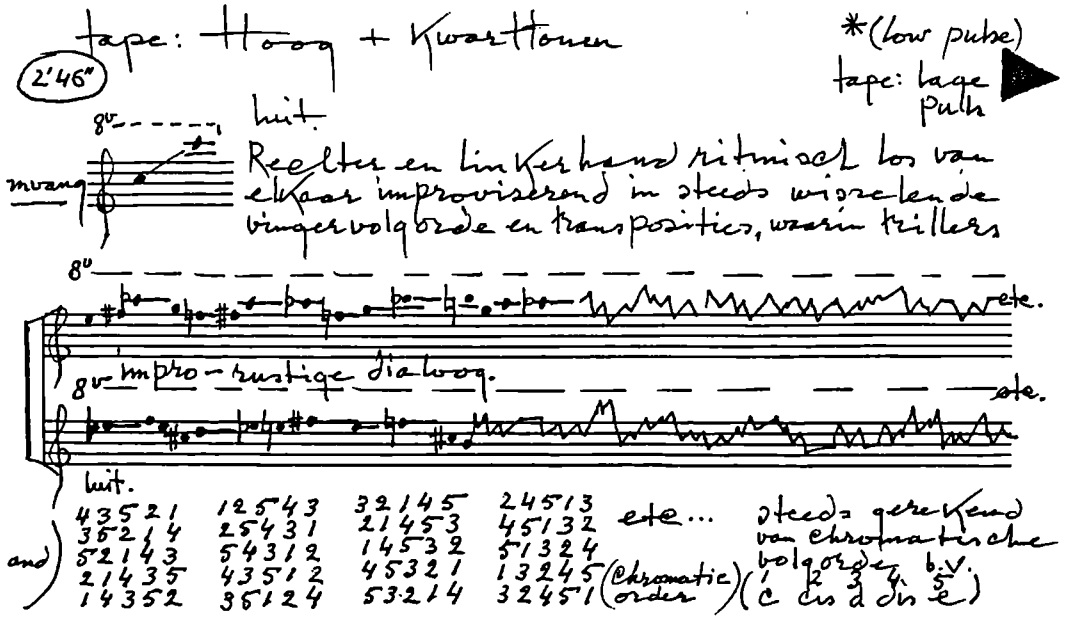
[23] Email interview with Annelie de Man, 25 May 2004. *Schrootsonate* was written for de Man, who also gave its first performance at the Stedelijk Museum, Amsterdam, on 15 December 1990.

[24] Email interview with Annelie de Man, 25 May 2004.

accompanies the soundtracks. The trick here is to synchronise the stop-watch exactly with the soundtracks *at the very beginning* (0'00) so that the harpsichord music coincides with the stop-watch times indicated by the composer. There are sections of the music, for example, near the beginning from 0'34", where the instructions are precise and the harpsichord synchronises exactly with the rhythm of the soundtracks; however, where the music is notated graphically the harpsichordist improvises around permutations of a small range of pitches without having to synchronise, hence a restricted freedom is allowed. Where there is no indication in rhythm, for example in the passage beginning at 2'46", the composer focuses on a particular tessitura and sound on the harpsichord which is to blend in with the soundtracks (Example 17).



Example 17 - Passage beginning at 2'46" of *Schrootsonate*

Where the soundtrack part is not notated in the score, the harpsichordist relies on memory in order to retain contact with it. This kind of music alternates with the machine-like precision music which conjures up visual images of machines in motion, alluded to by the composer in the preface of the printed score:

> *Schrootsonate* (scrap metal sonata) was written on the occasion of the construction of a new foundation under the Concertgebouw in Amsterdam by the firm of Structon, which organized a performance in the big hall with slides and sound.
>
> Also the image of the burnt out frame of a Steinway grand piano, hanging above the ruins of the K & W building in Utrecht recently destroyed by fire, and the bringing down by bulldozers of the Berlin Wall were an inspiration for this piece.
>
> In my imagination I saw and heard a musical saw, bringing an ode to the hammer and sickle, on the debris of the "verschrottete Rakete". Meanwhile the artist Jean Tinguely, to whom I dedicate this sonata, was very present in my mind. His mechanical sculptures formed an important model for my inspiration.[25]

These visual images are translated into musical images in various ways. There are several different types of texture in the Scrap Sonata against a background of regular pulse of some kind in the soundtracks. A direct relationship exists between the types of instructions given to the player and the music which results from the interaction of the player with the soundtracks: the more precise the instructions, the tighter the rhythmic profile. Hence the musical texture fluctuates between that which is pre-determined, and that which is aleatory-sounding. The pre-determined music tends to be associated with regular mechanical motion; the aleatory-sounding sections relate more to the sounds of metal, perhaps in a building site, or a scrap yard. So that musical images relate to visual images of machines in motion, and also to aspects of the physical properties of metal.

It is the plucking on the metallic string that makes the harpsichord apt to translate the images described above into musical images. The harpsichord sound is more metallic than the piano tone which is produced by the action of

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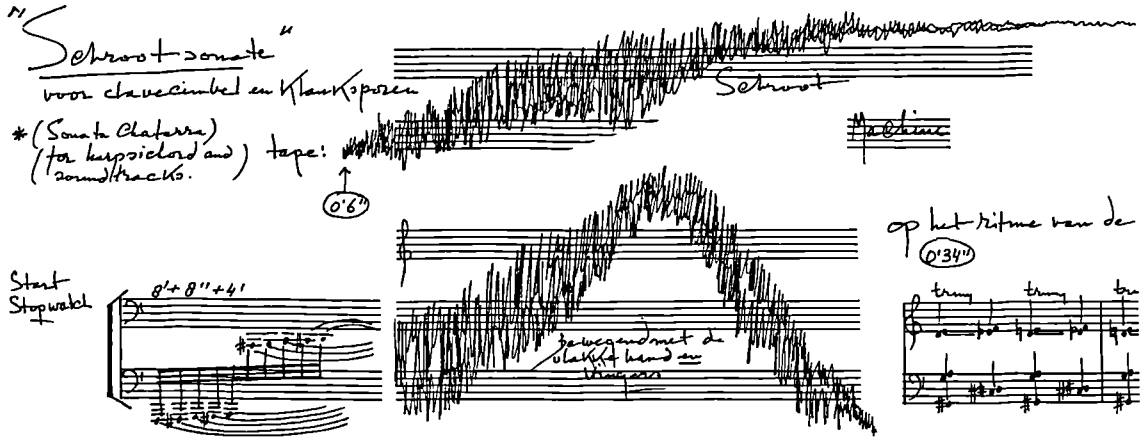
[25] Ton Bruynèl, *Schrootsonate for Harpsichord and Soundtracks* (Amsterdam: Donemus, 1990).

a felt-covered hammer on a string. The harpsichord at times imitates the timbre of the soundtracks, on occasion contradicts them: the opening episode (0'06" - 0'33") is a case in point (Example 18).



Example 18 - Opening of *Schrootsonate*

A band of what sounds like synthesised piano chords moves up the bass register, gradually increasing in volume; at the same time on the soundtracks, there are what seem to be amplified and synthesised harpsichord sounds, mostly in fast motion, piercing through this sound surge, like metal nails that are dropped from a great height.

Against this background of metal scraps, graphic notation instructs the harpsichordist to gradually move up the keyboard and then down again, in fast finger-motion in both hands, so that the soundtracks and the live harpsichord coalesce to form a dense texture which thins out towards 0'34", the soundtracks ending on a high register, the harpsichord in the bass. The combined volume of sound is roughly doubled when the soundtracks and the harpsichord play together, the harpsichord with all of its stops out, and the music is at its most intense when the harpsichord plays its top notes which coincide with the busiest sounds on the soundtracks, at about 0'24". The music peaks roughly two thirds of the way into this episode, after which the two parts move in contrary motion. Whilst the harpsichord part in this episode resembles the shape of an arch, the soundtracks move from the bass

to soprano, so that the musical space opens out and, at the end of this episode, the harpsichord provides a richer tone in the bass in contrast with the soundtracks which make scratching noises in the upper register.

The freer, improvisatory music is not in regular time and contrasts with the mechanical precision music that follows, starting at 0'34". Determined pitch is for the first time an important component of the music, as is regular pulse. A sense of rhythm pervades the *Schrootsonate*, but is at times interrupted by aleatory-sounding passages.

Further contrast lies in the frequent changes in registrations: see for example the un-coupling at the second fermata after 0'49", re-coupling just before 1', and un-coupling again at the fermata at 1'16". The use of the lute stop at 2'46", 3'07", and 5'11" reveals yet another type of sound on the harpsichord. This drier wooden sound stands in relief to the heavier machine-like sounds that surround it. The use of the single eight-foot at 3'42" in the middle register on the harpsichord intimates a quiet sound, but the climate changes imminently at 3'57" to a denser, busier texture.

It is the juxtaposition of contrasting types of timbre that gives the Scrap Sonata its form. It is essentially continuous in structure; it is a musical patchwork, recalling fragmented images of the scenes described above by the composer. The role of the harpsichord is twofold: firstly it interacts with the soundtracks in a pre-determined way wherever precise notation is used; and secondly where certain parameters are given but the player is called upon to improvise, the harpsichordist can be spontaneous, to an extent, in his interaction with the pre-recorded sounds.

The harpsichord vocabulary is select. The semitone and sevenths dominate the texture of the Sonata throughout, alluding to metal-like sounds. Even the scalar motifs which are the precursors to new ideas—see for example the opening harpsichord motif in the bass, and in the middle register at 1'29"—are permeated with these intervals. The soundtracks go further and furnish the music with quarter tones, for example at 2', and an ever wilder range of

synthesised sounds all of which serve as musical metaphors as the Sonata reaches its climax at 5'59".

Although the pre-recorded tracks can have a great variety of loudness and softness, the composer has chosen to keep volume more or less constant. There are fluctuations, such as the surge at the beginning (0'06"-0'33"), but on the whole dynamic shading is done through textural variation, as in Ligeti's *Continuum*. In this way, the harpsichord keeps in character with the soundtracks. Choice of register and the spacing of notes, vertical and horizontal, directly influence the density of texture. In the quietest moments, 3'42"-3'54", single crotchets in a calm ¾ rhythm in the middle register are used; thicker, more pulsating sounds are often written in the bass, see for example 5'18" to the end; and, the passages alluding to high metal-like sounds are in the upper register, for example 2'46"-2'59".

Throughout the Sonata the soundtracks substantiate a kind of underlying pulse which pervades the work. The harpsichord reinforces this but in addition brings into focus, and expands the harmonic landscape of the Sonata; it provides a sharper definition of the tonal interest inherent in the soundtracks. Both parts are distinct in character; both complement and on occasion contrast each other.

In addition to giving the music a sound quality different to that of real instruments, the soundtracks control the time frame of the Scrap Sonata. By using synthesised sound to pre-determine musical events before performance, a small degree of freedom is given to the harpsichordist to interact with it in actual performance. The command to improvise brings forth a variety of response guided by instructions given in the form of graphic notation, supplemented by explanation in words. For example in the passage between 3'57" and 4'22", palm clusters are followed by a fast finger-passage interrupted briefly first by alternating chords in both hands, then later by more palm clusters, before settling on a low undulating pattern *poco a poco rallentando* which ends this passage with a fermata. Whereas the broad

melodic contour is determined, it is up to the player to decide on actual pitches.

Given the instructions from the composer to blend in wherever possible, limited freedom nevertheless presents opportunities for the harpsichordist to adopt a musical language that relates to the instrument itself, its possibilities, its limitations. The incisive attack on the harpsichord enables the palm clusters to be trenchant and, they can be in a range of tempi (for example, accelerating or decelerating into the fast finger-passage, or remaining at one tempo, or accelerating, constant tempo, then decelerating into the fast passage). Even if the primary motive of the harpsichordist is to blend in with the soundtracks, there are opportunities for the player to exploit differences in timbre in the different registers of the harpsichord: from the resonant bass to the more singing tone in the treble, and to explore inherent contrasts between the harpsichord sound world and Bruynèl's electronically prepared sounds.

Khoaï (1976) by Iannis Xenakis

Like *Continuum*, *Khoaï* was its composer's first work for the harpsichord. In the ensuing decade, Xenakis wrote three more works for the instrument, including pieces for harpsichord in ensemble. They are *Komboï* for harpsichord and percussion (1981), *Naama* for solo harpsichord (1984), and *A l'Ile de Gorée* for harpsichord and ensemble (1986). All four pieces were written for the Polish harpsichordist Elisabeth Chojnacka, and all are substantial works—the shortest is about fifteen minutes.

For a time Xenakis was an assistant to Le Corbusier in Paris, at first as an engineer; he later became responsible for many architectural designs, some intended for musical use. In particular he designed the parabola of the Philips Pavilion for the 1958 Exposition in Brussels.[26] He worked closely with Edgard

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[26] Marc Treib, *Space Calculated in Seconds* (Princeton: Princeton University Press, 1996), xvi.

Varèse, who composed *Poème electronique* (1957) to be played there. A landmark in multi-media production, this work was performed by four hundred and twenty-five loudspeakers placed strategically inside the parabola, whilst visual images were projected which were deliberately not synchronised with the music. Xenakis himself composed his *Concert PH* (PH stands for *Paraboles Hyperboliques*) which was interpolated between two playings of *Poème electronique*. It is not unimaginable that John Cage had been impressed by this event: *HPSCHD* (1968) for 1-7 harpsichords, 51 computers and additional audio-visual effects was first performed in the massive Assembly Hall of the University in Illinois with seating for eighteen thousand spectators.

Xenakis's interests in other disciplines such as mathematics and physics led him to adopt scientific terminology in elucidating his musical language. However, he was not alone in this: in the post-war years many composers objectified both their music and the processes of its composition,[27] and their writing about music.[28] Sometimes it is not clear whether this is due to an earnest attempt to explain difficult concepts or wanting to appear scientific and objective.

Unlike the other works considered in this chapter, however, *Khoaï* can only be played on a modern harpsichord with pedals. It is a work of considerable complexity: there are frequent changes of register and leaps from one end of the keyboard(s) to another; and one hand may be required to play on both keyboards at the same time. However, when asked by one interviewer whether he was mindful of physical limitations when composing the work, Xenakis replied "Here is my harpsichord", and produced from a shelf a piece of cardboard, rectangular in shape, folded in a 'terraced' manner, on the

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[27] The examples are well-known: Boulez *Structures* for two pianos; Stockhausen in many of his works; Babbitt, for example *Three Compositions for Piano* (1947), which applies set theory to serial methods.

[28] For example, Milton Babbitt in his paper "The Function of Set Structure in the Twelve-tone System" in 1946; Pierre Boulez in *Penser la musique aujourd'hui*, Paris, 1964; many of Stockhausen's writings of the 1950s; and, Xenakis in *Musiques formelles*, Paris, 1981; translated into English as *Formalized Music*, enlarged second edition, Bloomington, 1992.

horizontal surfaces of which were painted the keyboards of the harpsichord. "I wanted to see how one could play on both keyboards at the same time."[29]

Whereas both works are non-thematic, *Continuum* relies on a more or less constant texture, whilst *Khoaï* depends largely on many distinct textural changes (as do *A Lady* and *Shrootsonate*). In both cases it is texture that gives rise to form. Xenakis wrote for the harpsichord with "that acute, point-like sound in mind".[30] He went on to say that he was "attracted by the fact that the harpsichord has two keyboards and pedals, and the combinations of timbre those make possible."[31] *Khoaï* is representative of his musical inclinations, and particularly of his musical thought of the period. Xenakis was always attracted to the percussiveness of sound; he also favoured "dry" sounds such as plucking, and the sounds of drums.

Earlier, in *Nomos Alpha* (1965-6) for solo cello, he had found ways of coaxing unusual sounds from his chosen instrument, including a dry throbbing sound which is produced by playing two pitches close together simultaneously. And in *Gmeeoorh* (1974) for solo organ, he had already made use of a multiple keyboard instrument with many different registrations. That he subsequently wrote for the harpsichord was a natural outcome of his earlier preoccupations. In both *Gmeeoorh* and *Khoaï* he composed for specific instruments, specific performers.

Khoaï is amongst the most challenging pieces in the contemporary harpsichord repertoire. It calls for complex coordination between hands and feet as well as agility on the keyboards. At times the five digits of one hand have to convey as many as four different lines at once, all with different and intricate rhythms, for example in bars 176-180. In addition, changes of registration happen at lightning speed. It demands the highest level of mental stamina and physical agility. Nothing less than the consummate acrobat-musician will do: it is not a piece for the faint-hearted.

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[29] Bálint A. Varga, *Conversations with Xenakis* (London: Faber & Faber, 1996), 65.
[30] Bálint A. Varga, *Conversations with Xenakis*, 177.
[31] ibid.

The numerous registrations available on a modern pedal harpsichord play an important structural role in *Khoaï*: rather than simply using registration for colouring and dynamic shading (as Carter often does in the Double Concerto), Xenakis uses it to highlight the work's formal structure. The opening is a case in point. Much of it is notated on two systems of two staves each. Typically the bottom system (which denotes the bottom keyboard) annunciates Fs in octaves in an explosive manner using multiple registrations, four-foot plus eight-foot plus sixteen-foot, which trigger a response (on four-foot alone, on the upper keyboard) whose character contrasts with the opening statement.

The player is made aware of two different types of music on the two systems. The bottom system engages three sets of strings in contrast with the top which uses only the four-foot register. The physical effort required to put down those octaves in the bottom system is considerably more than that which is required for playing one set of four-foot strings. In addition, the four-foot strings pluck closer to the bridge than those of the eight-foot, and are therefore lighter to play in comparison.

It is the bottom system that provides gravitas. The explosive opening and its distant response on the top system immediately encompass a wide musical space of six octaves. This space further expands into seven octaves with the added sixteen-foot on the bottom system (reaching beyond the bass note on a normal piano). Increasing the number of notes increases the sound; when these notes are arranged vertically in octaves, musical space expands correspondingly. Xenakis was particularly attracted to the range of the harpsichord and talked of its range being one of the widest of all keyboard instruments.[32] In the opening the four octaves in print become six octaves in reality due to the presence of the four-foot and sixteen-foot. By amplification the effect of the diminuendo can be maximised (Example 19).

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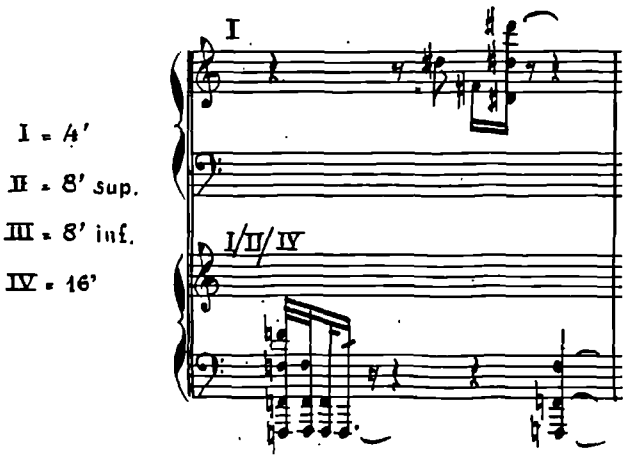
[32] ibid.



Example 19 - Opening bar of *Khoaï*

This opening diminuendo visualises the shape of the harpsichord sound after the attack. Fs in four octaves thin out one by one until a single note flutters on the bottom F, which is tied because Xenakis wants the sound to die away naturally. In fact this statement, which runs across into bar 2, is a prolongation of F. Together these two bars mark the basic pulse of this work, ♩=96. The bottom Fs are on beats one and four in bar 1, and on beat two in bar 2 whilst the upper system fills in beat three in bar 1 with the d♯'' quaver anacrusis. The open ties after each attack on the Fs might well be annotated *laissez vibrer*, a term the composer does use later in the piece (see bar 214).

Whilst Xenakis could have tied the Fs to a definite duration and deleted the rests which separate them (except after the first attack), he clearly wants to make the best use of the incisive attack on the harpsichord. By separating the pitches with rests, he causes the hands to come up from the keyboard, and then descend for the following attack, making each one more crisp and clean than it would have been had the hands been glued to the keyboard.

The opening out of the musical space in bar 1 is impressed upon the player physically: by concentrating both hands in the bass of the lower manual on the repeated octave Fs, and then immediately taking both hands up to the upper end of the upper keyboard, the player feels the sheer distance the hands and body have to travel. The physicality is part of the drama of this

work, whose title means offerings of wine (or they can also be water) to the infernal gods. Xenakis responds to the idea of the ritual, of prescribed and ordered gestures, by writing them into his music.

Khoaï – Form and texture

Khoaï lasts fifteen minutes and is formed into a continuous whole, but it can be subdivided into four sections of two to three minutes each. Distinct harmonic and rhythmic profiles mark each section although there are frequent cross-references of elements. The framework of each section is tabulated below:

Section	Bars	Time	Duration*
I	1-73	0'01"-3'22"	3'22"
II	74-134	3'23"-6'08"	2'46"
III	134-215	6'09"-10'01"	3'53"
IV	215-331	10'02"-15'00"	4'59"

(*At the top of the printed edition, the duration is marked *"15* min. env.". I take the total performance time to be fifteen minutes and have made the above calculations accordingly.)[33]

Section I is comparable in length to section III, with section II being the shortest section. The general tendency otherwise is for sections to become longer as the work progresses. The last section (section IV) occupies almost a third of the total duration. A sense of growth and development is discernible throughout. The prevalence of the arborescence, so called because homophony branches out into polyphony (see for example bars 37-38), increases as the work progresses.[34] Starting from one interpolation in section I (bars 37-38), it interplays with other types of texture in section II. In section III

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[33] Jukka Tiensuu's recording: *The Fantastic Harpsichord*, Finlandia Records, 1576-53357-2, 1987; Elisabeth Chojnacka's recording (Warner Music, 8573-84254-2, 2000) is slower, at 16'47".

[34] "Arborescence" is Xenakis's terminology, and was often used by him.

the texture becomes more continuous and the arborescences and the repeated notes intermingle. Finally a textural balance is reached in section IV where the arborescences and repeated notes occupy roughly the same amount of music. Further, there is a direct relationship between harmony and texture throughout: the denser the texture the harder it is to discern harmonic orientation. In this way all four sections are texturally and harmonically linked.

Broadly speaking, there are two types of texture in *Khoaï*: one that makes prominent specific pitches at assigned registers, de-emphasising other pitches, leaving gaps in the musical fabric; the other which saturates the texture with chromatic notes often formed into clusters. In the former case (Type A), harmonic profile is more clearly defined. Here certain pitches act as tone centres, whilst others pull towards them and are affiliated to them. For example, F (on the bottom system) is the tone centre in bars 1-9, and sets up a dialogue with mainly sharpened notes on the top system. More than one tone centre can operate at any one time and generate friction between them, for example see the passage beginning at bar 74.

In Type B it is the overall melodic contour and density of texture that takes precedence over harmonic orientation. This type of texture is made up of several lines, each of which can be seen as a "random walk".[35] A random walk in the present context is the movement of pitches in successive steps, where the direction, duration or rhythm of each step seems unpredictable.[36] A number of different random walks can occur simultaneously, for example in bars 37-38, to make up the saturated chromatic texture described above. Where the various strands of micro-polyphony superimpose, the two-system notation used in much of section I gives way to six single separate systems, each denoting a random walk. Collectively the strands are also referred to as an arborescence (Example 20).

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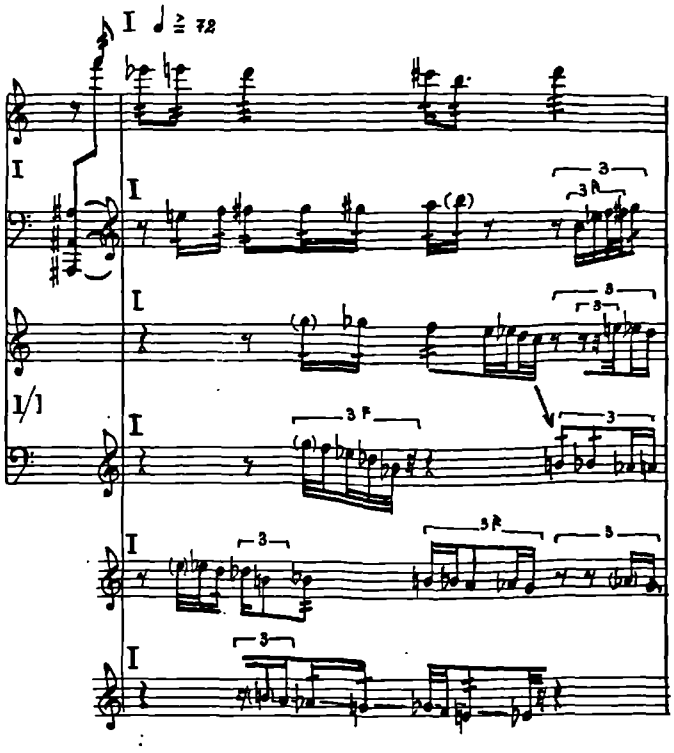
[35] "Random walk" is a scientific term Xenakis borrowed.

[36] Ronald Squibbs, "Xenakis in Miniature: Style and Structure in À R. (Hommage à Ravel for piano, 1987)", *Perspectives of New Music*, XLI:1 (2003), 122.



Example 20 - Bars 36 and 37 of *Khoaï*, showing the music branching out

Section I is in Type A but for one interpolation of a two-bar arborescence at bars 37-38 when the tempo briefly switches down a gear from ♩=96 to ♩=72. The music is arranged on two systems: the lighter four-foot occupies the top for much of the section, with a mixture of heavier registrations at the bottom. Typically the combination four-foot plus the lower eight-foot plus sixteen-foot is used.

The notion of the repeated notes initiated at the very beginning (octaves in F in the bottom system) is developed in section II. That a musical composition is the result of a continual process of expansion, interaction, and transformation of layers of sound, characteristic of Varèse's musical ideas, is evident here also. Varèse too wanted to organise sound in such a way so as to make it appear free and spontaneous. (This idea was taken up by Carter, when he talked about "organised chaos", vis-à-vis the Double Concerto.)

In *Khoaï* Xenakis responds to this idea by manipulating different types of material in the following ways:

1. by cross-cutting,
2. by juxtaposition, and
3. by superimposition.

In section II for example, the process of structural transformation is based on three pitches, B, C, and F. Together they set up the processional rhythm in bars 74-80 in implicit 4/4 time in common with the time signature in section I. This section also continues the two-system practice of that section. The idea of repeated notes is taken up in different ways and is cross-cut twice by extended arborescences, at bars 82-87, and bars 111-117, where the tempo changes first to *plus lent progressivement*, then to *plus lent* the second time. Octaves solidify the processional rhythm, indeed its function is similar to that in section I, namely to provide substance and volume. Doubling emphasises a pitch without blurring it. In the latter part of this section, three-note clusters—which act as thickening by adding pitches close to the main note—creep into the bass to vary the density of the texture.

F, which has been a tone centre in section I is an important pitch in section II also. Its relationship with the pitches B and C is dialectical. The regular pulse set up at the beginning of this section becomes a continuous thread throughout. Even when the rhythm becomes more decorated, the basic pulse is implied. Where the arborescences occur and the tempo changes, however, this pulse is interrupted, for example in bars 111-116.

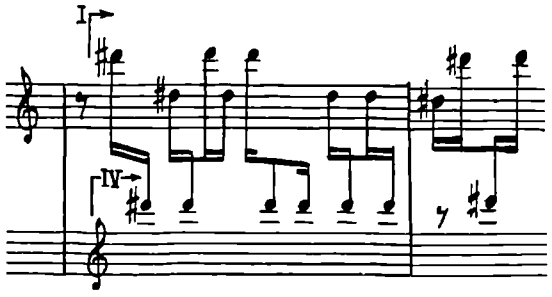
Superimposed intermittently are short contrasting fragments whose material has already been exposed in section I. These are

1. random walks (for example bars 88, 90-91 and 92-93), and
2. repeated notes (for example bars 89-90 and 99-100).

Referring to material in the previous section is a technique of continuity. However, the references are not literal; rather, the ideas are developed so that the material is transformed each time. Different registrations further

differentiate between the underlying pulse (on the bottom system) and the superimposed fragments.

For example, the cross-cutting at bars 80-81 makes use of repeated D♯s which are drawn from two ideas in bar 1; the idea of repeating the same note at the octave takes after the repeated octaves on F at the beginning, and the D♯ which is an important pitch in section I is first exposed in bar 1. The constant right-hand semiquavers in bars 80-81 bring these two ideas together in a new context. Here too is an instance of Xenakis's humour (which does not always come to the fore): how the music looks is not exactly how it sounds. By virtue of the octave displacement on the four-foot and sixteen-foot, combined with the blurring of attack and the rich overtone content of the harpsichord sound, this passage is perceived as the colouring of the single pitch D♯, that is to say, the notes are not predominantly heard as D♯ octaves:



Example 21 - D♯ passage in bars 81-82 of *Khoaï*

Engaging the four-foot and sixteen-foot keeps the right hand above the left hand, on the top and bottom keyboards respectively; the two thumbs (which are stronger than the little fingers) alternate to ensure rapid movement. This demonstrates Xenakis's insight into keyboard playing, in particular the disposition of the harpsichord. These repeated D♯s acquire a denser texture in bars 99-100 where some notes thicken to become three-note clusters. Again, there is a reference to section I (in for example, bars 9 and 11) where clusters occur.

There is further evolution in bars 105-111 where the notion of alternating octaves is modified to accommodate a larger range of intervals forming a uniform texture which is harmonically static. The D♯s are there but are now embedded and so are heard in a different context. This static texture in bars 105-111 breaks up after the following arborescence towards the end of the section in bars 120-125. The return of the processional rhythm (from bars 74-80) provides harmonic fluidity; the alternating octaves (of bars 105-111) acquire further harmonic colouring. E, the bass note of these alternating octaves is doubled at the top and becomes part of a four-note cluster with D♯, B♭, and A immediately below. The added notes thicken and at the same time blur the pitches so that they create a denser texture whilst taking the E away from the foreground.

The constant-semiquaver pattern which ends section II flows into section III. Whereas this pattern dominated section II, it is the arborescences that occupy much of section III. This section, as noted above, is substantially longer than section II, lasting a little under four minutes.

Already in section II repeated notes have crept into the arborescences; see for example bars 82-86, and bars 111-116. In section III they pull out and extend the length of the arborescences considerably. At the climax of this section, bars 205-214, repeated notes, the constant-semiquaver pattern, and arborescence join forces so that there is a summing up of the formal process in these bars, and an attempt to resolve the conflicts between them. The use of the sixteen-foot (starting at bar 205) and later the four-foot (starting at bar 211) solidifies the texture. At the peak of the climax, all four sets of strings are engaged. To encourage the top notes to linger (bar 214), Xenakis inscribes *laissez vibrer*.

The changes of registration bring into relief the contrasting ideas placed side by side in this section. For example the upper and lower eight-foot registers are coupled in bars 139-140 to make distinct material that comes from the first section. The rhythmic and harmonic contour here is similar to that in bar 5 in

section I. The three-note cluster in the right hand of bar 141 (D thickened by C♯ and C below) originates from the cluster in bar 9.

It is interesting that Xenakis uses a notational device to make a distinction between the function of the clusters: (1) he uses a straight stem for the main note (the top note) and then notates the two added notes stemming from it, like branches of a tree, see bar 9 (giving priority to G); (2) he uses one straight stem for all three notes, see bar 43. Structurally both types are identical: each comprises three notes, each note being a semitone apart with its neighbour. In (1) above, the note with the straight stem is a harmonic note, whereas in (2), all three notes assume equal importance. Here it is the rhythmic use of the cluster that is paramount, its harmonic colour being secondary to it.

Juxtaposition of different rhythms is one aspect of cross-cutting which becomes more intricate. The notion of the random walk and of the arborescence intermingle in bars 143, and 144-145; the flourishes which result are more elaborate than those in the previous sections.

From bar 166, and in particular from the double bar (bar 176) the threes-against-fours-against-fives cram the texture with chromatic notes. Together with the use of a mixture of registrations, including all four stops in concert (from bar 176), the irregular rhythmic profile regulates into a constant-semiquaver pattern and urges the music to the climax in a wave-like contour (from bar 206).

Whereas the harmonic foreground is denser and the rhythmic profile more complicated at the beginning of section III, there is an attempt to clarify the formal process from complexity towards relative simplicity by the end of this section.

It is not until the final section (section IV) however, that the formal conflicts are resolved. This is the longest of all four sections and lasts for just under five minutes, about a third of the total duration of the piece. As mentioned above, the formal process in section IV becomes simplified and is tabulated below:

Texture	Bars
Arborescence	215-221
Repeated notes, increasingly with random walks from bar 234, then back to repeated notes from bar 262	222-272
Silence	272-274
Arborescence	275-279
Silence	280-281
Repeated notes	281-295
Silence	296
Arborescence	297-301
Silence	302-303
Repeated notes, with random walk	304-308
Arborescence	309-313
Silence	313-316
Repeated notes	316-317
Arborescence	317-319
Repeated notes, with increasing silence	319-331

By far the longest sub-section occurs between bars 222-274. It begins and ends with repeated chords (though in different ways) and, the use of silence breathes life into the texture after a dense passage (bars 234-261). Rests inject rhythmic vitality into the repeated chords between bars 262-274.

In section IV the rhythmic profile tends towards simplification: clear delineation of the beat and the use of regular rhythms resolve some of the tension in the previous sections. Where random walks are superimposed onto repeated notes, which are a more or less constant feature in the sub-section between bars 222-274, they grow out of and back into the pitches of the repeated notes, thereby sewing them smoothly onto the musical texture.

Harmonically this sub-section favours the note C which first appears on the lute stop in bar 225, and remains either in the right hand, or in the left, or both, more or less throughout. C was also a tone centre in section II, but here it acquires a new significance. It is used as a thread to gather all the music together, rather than forming part of the harmonic dialogue with other pitches (as it did in section II). The lute stop, which has been used comparatively sparingly up to now, is combined with other registrations to

change the texture, see for example bar 281, on lower eight-foot and sixteen-foot with four-foot and upper eight-foot register, then at the end on the sixteen-foot, bars 322-329. Its dry plucking sound contrasts dramatically with the ultimate chord which is played on all four sets of strings without the lute. Coordination between the hands in the last section is the most straight forward of all four sections. From bar 235 the music is notated on one system which is an indication of the desire to simplify.

F does return as a tone centre: it is explicit at the end of the first arborescence in bar 221; it begins the next sub-section, in bar 222. Finally it is implied in the big note cluster at the very end, in bar 331. Throughout this section silence increasingly becomes an important part of the texture. The two notes that frame the last chord, E and D♭, would resolve onto an F chord in tonal harmony. Xenakis deliberately leaves this point to the imagination of the player and listener. Actually, the precise pitches of this bass chord are less important than the thunderous proclamation that makes the ending palpable.

As discussed above, harmonic orientation is obscured by the presence of an arborescence where music fills the texture with chromatic notes. By definition therefore, section III stands out as being the least harmonically orientated. The final section (section IV) sets out to re-orientate the music and brings back the pitches exposed as tone centres in section I, namely F, and later B and C as well in section II.

Learning the notes is a considerable task. There are a large number of them to get into the fingers. Because of the frequent broad leaps between one end of the keyboard(s) to the other, there is plenty of looking up at the score and then looking down to the keyboard(s) to see if the fingers land on the right notes at the right time. The coordination between fingers and feet (for registration changes) is also intricate. I have found that the more I can memorise the score, both in terms of notes and of registration changes, the more the music comes alive. Changes of registration become an integrated physical gesture, part of the sequence of events in the music.

Aside from the notes there are annotations in the score (Salabert, Paris 1976)

which cry out for explanation. There are numbers in circles between bars 43-70 which relate to the four pitch collections Xenakis used in this piece, and it may be that he annotated each entry of a new collection, 2,3, and 4 in the score.[37] Similarly letters A, B and C pepper throughout bars 141-162, with the most enigmatic annotation being "(C+7+3+4)" in bar 161. Xenakis is no longer available to be consulted nor could I find any written explanation by him anywhere. However I was able to ask Jukka Tiensuu, who had recorded *Khoaï*.[38] He told me that he had asked Xenakis the same question but that the composer was reluctant to offer any explanation, asserting that he made these annotations for his own use, and that they do not concern the performer. If this is the case, the published score should be free of these enigmatic annotations which serve no purpose.

Conclusion

Meijering, Bruynèl, Xenakis and Ligeti all wrote more than one work for the harpsichord, so that the harpsichord for each of the composer is not just an occasional instrument. Bruynèl wrote a more substantial piece for harpsichord and soundtracks *Le jardin* (1993); Xenakis wrote another piece for the harpsichord, *Naama* (1984), and two for harpsichord and other instruments: *Komboï* (1981), *A l'lle de Gorée* (1986).

Even though Ligeti wrote for the pedal instruments of Vischer (*Continuum*) and Chojnacka (*Hungarian Rock*), he was concerned with the fundamental nature of the harpsichord—the pluck. *Continuum* in particular represents an extreme response to the nature of the harpsichord, both in terms of the sonority of the instrument and the technique of playing it. He built the piece from the physical because the technique of playing *Continuum* is tied up with the disposition of the two-manual harpsichord. There are only four registration marks in *Continuum*, compared with the numerous changes of

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[37] This idea, which occurred to me independently, is confirmed by Ian Pace in "The Harpsichord Works of Iannis Xenakis", *Contemporary Music Review*, XX:1 (2001), 125-140.
[38] Email interview with Jukka Tiensuu, January 2004.

registration in Xenakis's *Khoaï* and Carter's Double Concerto, the subject of the next chapter.

Paradoxically *Continuum* is also the most abstract of these pieces precisely because it does not have specific views of instrumental colours. In this it contrasts with Carter's Concerto, the Xenakis pieces, and Ohana's pieces, where tone colour is an aspect of musical structure integral to construction. Ligeti shapes *Continuum* not by using textural variation, but by making subtle changes in harmony and rhythm within the texture of continuous semiquavers.

However, all of them worked with the harpsichord in response to a request, or a commission, so the composers had particular players and their instruments in mind. Meijering has been working closely with Thora Johansen and Annelie de Man, and has written for a specific community of musicians in The Netherlands, in particular in Amsterdam. This is also the case with Bruynèl, whose pieces were for de Man. Xenakis wrote all his pieces including the harpsichord for Chojnacka over a period of ten years. For him his contribution to the harpsichord repertoire was inextricably linked firstly with Chojnacka, and secondly with her pedal instrument. And Carter's response to a commission for Kirkpatrick was for Kirkpatrick's Challis instrument with half-hitches.

But each of these composers also brought into their compositions their peculiar compositional preoccupations. Whereas Ligeti was minimalistic, all the other composers were more elaborate and brought the harpsichord into contact with other elements: rock and jazz in Meijering's case (in style echoing Ligeti's *Hungarian Rock*); electronics in Bruynèl's works, although he made less particular demands on the possibilities of the historical harpsichord by extending the range of expression through electronics; and in Xenakis and Carter's music, opening out the view of the traditional harpsichord by making a point of the numerous registrations on a modern pedal instrument.

Carter in particular responded to a special set of circumstances: Kirkpatrick asked him to write a piece for the harpsichord and piano. He found that there

was a need to mediate the contrasts between these instruments, which are in fundamental opposition, hence he added two ensembles to create an elaborate double concerto. As a consequence, the composition was bound to extend the range of contrast in terms of the material and push the possibilities of all the instruments to the extreme. In a sense Carter had to find a stage and create scenery for the pair of instruments to act out their drama. This point will be developed in the next chapter.

If Ligeti was concerned with making much out of little, the other composers extended the palette of the harpsichord in diverse ways, bearing in mind their preoccupations as composers in terms of material, expression, and form. Carter and Xenakis exploited the ability to make changes of registration quickly on the modern pedal instrument. Both Ligeti and Carter wrote for the modern pedal harpsichord: whereas Ligeti essentially creates an illusion of contrast within a constant texture, Carter pushes the possibilities of the different tone colours to the extreme. Ligeti was the more forward-looking because he focused on the pluck of the harpsichord, and was therefore at one with the spirit of the rapidly developing early-music movement: Carter looked back at the instrument essentially created by Landowska, and monumentalised it by creating for it a consummate masterpiece, the Double *Concerto for Harpsichord and Piano with Two Chamber Orchestras.*

Chapter 6

A Masterpiece, by an American Composer: Elliott Carter's *Double Concerto for Harpsichord and Piano with Two Chamber Orchestras* (1961)

Introduction and Context

Since its première in 1961, Elliott Carter's *Double Concerto for Harpsichord and Piano with Two Chamber Orchestras* has remained the most ambitious and in many ways the most elaborate work written for the harpsichord. Kirkpatrick, its commissioner, had envisaged a duo for harpsichord and piano in which both keyboard instruments would assume equal importance.[1] Funding by the Fromm Foundation at Harvard enabled Carter to write for whatever forces he desired: "I made unusual orchestral demands in the score of my Double Concerto because the generous commissioner of the work, Paul Fromm and the Fromm Foundation, assured me of excellent musicians and sufficient rehearsals."[2] The result is a double concerto for harpsichord and piano, each complemented by its own orchestra of solo strings, wind instruments and percussion, amounting to the use of eighteen virtuosi in total.

Carter's output for the harpsichord consists of just two works: the *Sonata for Flute, Oboe, Cello and Harpsichord* was completed in 1952, and the *Double Concerto for Harpsichord and Piano with Two Chamber Orchestras* in 1961. Both were commissions initiated by harpsichordists: the first by Sylvia Marlowe and the Harpsichord Quartet of New York for whom the Sonata was written, the latter by Kirkpatrick, who had been a fellow student of Carter's at Harvard. The significance of both compositions was recognised by two major

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[1] Elliott Carter, notes to the Nonesuch recording of the Double Concerto, 1975, in *Collected Essays and Lectures 1937-95*, Jonathan W. Bernard ed. (New York: University of Rochester Press, 1997), 259.

[2] Elliott Carter, "The Orchestral Composer's Point of View", in *Collected Essays and Lectures*, 243.

awards: the Sonata won the Walter W. Naumburg Musical Foundation Award in 1956 and the Double Concerto the New York Music Critics' Circle Award in 1961. New harpsichord works had not received this level of critical acclaim since the two concerti Wanda Landowska commissioned in the 1920s.

Carter was by no means the only American composer writing for the harpsichord at that time. Both Marlowe and Kirkpatrick requested works from numerous composers, and Marlowe also adapted piano works for the instrument. In Marlowe's repertoire in the 1940s and 50s were works by Arthur Berger, Lou Harrison, Harold Shapero, and Virgil Thomson amongst others: Kirkpatrick too played Harrison's Six Sonatas, along with works by Thomson, Vincent Persichetti, Halsey Stevens and later Henry Cowell.[3] Though Carter would have heard at least some of these pieces, their style remains conventional. Carter's rethinking of the resources of the modern pedal harpsichord is all the more remarkable in this context.

These two Carter works encapsulate a significant development in his technique of composition, and bear evidence of his changing approach to music in the 1950s. It was not long after completing the Double Concerto that Carter started writing down the interval combinations he had frequently been using. This exercise continued and became more systematic over the next twenty years or so, and the result is now published as the *Elliott Carter Harmony Book*.[4]

Elliott Carter and the Harpsichord

"I regard my scores as scenarios, auditory scenarios, for performers to act out their instruments, dramatizing the players as individuals and participants in the ensemble."[5] Throughout his career, Elliott Carter has reiterated this

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[3] See Appendix C for Table of Commissions by Sylvia Marlowe and Ralph Kirkpatrick.
[4] Elliott Carter, *Elliott Carter Harmony Book*, Nicholas Hopkins and John F. Link eds. (New York: Schirmer, 2001).
[5] Elliott Carter, quoted in "Crosstalk" by Bayan Northcott, *The New Statesman*, LXXXVI: 2230 (14 December 1973), 920.

standpoint, his works from solo to orchestral pieces growing from the dramatic possibilities inherent in the sounds of the instruments.[6]

Carter came to write for the harpsichord for the first time in the Sonata. Here the harpsichord is the only soloist, the other instruments being used as a sonorous frame. In particular Carter emphasises the wide range of tone colours available on the modern harpsichord, as well as drawing attention to the different musical characters of the other instruments. In focusing on the harpsichord, he wants to explore its expressive character beyond that which is displayed in the Baroque repertoire.[7] In the Double Concerto however, the harpsichord is antiphonal to the piano, and both keyboards have their own ensemble. In the Sonata the harpsichord is accompanied by non-keyboard instruments—the flute, oboe and cello; in the Double Concerto it is an equal partner with the piano.

The sound and dynamic range of the modern harpsichord conditions all details of the Sonata: its shape, phrasing, rhythm, texture, as well as the large form. This is true also of the Double Concerto. Even earlier, in the Sonata for Cello and Piano (1948), Carter commented that it could be meaningful to make the great differences in sound and expression of the different instruments one of the points of the piece, and to combine these different qualities to make clear the harmonic and rhythmic exposition.[8]

The Challis harpsichord for which the Double Concerto was written has two manuals and pedal stops. All stops except the mute have half-hitches (positions). This includes the coupler, since on the Challis the coupler does not connect the keyboards but adds to the lower manual one additional set of jacks. This plays on the eight-foot strings of the upper manual. Whilst the Sonata was first written for a Pleyel without half-hitches, it was subsequently

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[6] Chau-Yee Lo, "Dramatizing the Harpsichord: The Harpsichord Music of Elliott Carter", *Mitteilungen der Paul Sacher Stiftung*, No.17 (March 2004), 24-28.
[7] Elliott Carter, notes to the Nonesuch recording of the *Sonata for Flute, Oboe, Cello and Harpsichord* (1969) in *Collected Essays and Lectures*, 231.
[8] Elliott Carter, notes to the Nonesuch recording of the Cello Sonata (1969) in *Collected Essays and Lectures*, 230.

recorded on a Challis described above and the printed edition bears instructions for such an instrument.

In his notes to a recording of the Sonata, Carter says: "The dynamic markings for the flute, oboe, and cello should be carefully adjusted to the various degrees of loudness produced by the different registrations of the harpsichord. The latter should always be clearly audible when playing even in a soft registration and when its part is bracketed. The other instruments should play softly enough to allow the harpsichord part clear prominence."[9] In the Double Concerto too, Carter is careful to stipulate that the harpsichord music should always come through by gradation of dynamics of the other instruments playing with it. Indeed throughout the Double Concerto, Carter allows the harpsichord music to come through in different degrees by his instrumentation. Later editions of the full score of the work contain a note on performance suggestions reflecting Carter's concern over balance.[10] Whilst some of the earliest performances did not need amplification, given the combination of seating plan, instrument and the good acoustics of the halls in which the work was played, the uncertainty as to the availability of an adequate instrument nevertheless led Paul Jacobs to commission an instrument from Dowd *specifically* for this work. Even with this instrument, amplification was sometimes necessary. This was controlled during performance, so the *Cadenza for Harpsichord* was generally unamplified, but amplification would increase during the *Coda*. The various performance options give rise to a number of alternative seating plans for the work, described in detail in the score.[11]

The nature and capabilities of the harpsichord shape both the Sonata and the Double Concerto in different ways. Its sharp attack, rapid decay and rich and complex timbre contrasts with the other instruments: this contrast is central to

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[9] ibid.
[10] Elliott Carter, *Double Concerto* (New York: Associated Music Publishers, 1994 printing), ix.
[11] Elliott Carter, *Double Concerto*, iii.

the Sonata, while in the Double Concerto Carter surrounds and complements the harpsichord with pitched and unpitched instruments which both echo and contradict its sonority.

With reference to the Sonata, Carter tells us that he wants to emphasise as much as possible the different tone colours available on the modern harpsichord.[12] These possibilities are many—a large Pleyel with seven pedals can produce thirty-six different colours through different combinations of registration, muting and coupling, a Challis or similar instrument with half-hitches many more. In the Sonata the beginning of each movement is set up by a different combination of registrations on the harpsichord. Each combination determines the character of the movement. The first movement, *Risoluto*, opens with the harpsichord playing *tutti*, the next movement *Lento* with Manual I (lower manual) on half-hitched sixteen-foot and Manual II (upper manual) half-hitched eight-foot, and the final movement *Allegro* I: four-foot plus sixteen-foot register and II: eight-foot register. The full force of the harpsichord starts the first movement with a dramatic gesture; the half-hitched position reduces the volume of the two registers for the more introspective slow movement; the four-foot and sixteen-foot registers open up the harpsichord by two octaves at the start of the *Allegro*: Carter is careful not to overload the musical texture so as to keep the music afloat in the manner of a gondolier's dance.[13]

Carter's desire to "get down to the physical origins of musical sound"[14] is reflected in the shape of the Double Concerto, which begins and ends with unpitched percussion, pitched sounds gradually emerging in both ensembles and introducing the soloists. These in turn become more articulated and differentiated: the harpsichord speaks on its own in its *Cadenza*, and then

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[12] Elliott Carter, notes to the Nonesuch recording of *the Sonata for Flute, Oboe, Cello and Harpsichord*, in *Collected Essays and Lectures*, 230.
[13] Elliott Carter, notes to the Nonesuch recording of the *Sonata for Flute, Oboe, Cello and Harpsichord*, 231.
[14] Elliott Carter, notes to the Nonesuch recording of the Double Concerto, in *Collected Essays and Lectures*, 258.

again in the *Presto*, but eventually pitches disintegrate into chaos from the beginning of the *Coda*.

Although the scale and formal strategies of the Sonata and Double Concerto are distinct, the two works have several points in common. The first movement of the Sonata begins with an explosion of sound that gradually ripples away; this gesture is transferred to the *Coda* of the Double Concerto, the big crash of sound which opens this section dying away in a series of overlapping waves to a single click at the end of the piece. In the *Lento* of the Sonata, energy bubbles up from beneath the calm surface towards the end of the movement (bars 155-178), anticipating the fast dance-like movement *Allegro*; in the Double Concerto, fast music also bursts out towards the end of the *Adagio*, into the *Presto*.

Other details of the harpsichord writing in the Sonata point to the later work. The cross-cutting that Carter talks about with reference to the last movement of the *Sonata*[15] finds its way into the Double Concerto, most extensively in the *Allegro scherzando* where the harpsichord is constantly interrupting the music of the piano and its ensemble.

The four-foot adds brilliance to cadenza-like passages in both works: in the Sonata in the continuous stream of semiquavers in the *Allegro* from bar 296, in the Concerto in the rapid duo with the piano from bar 434 in the *Adagio* and from bar 540 of the *Presto*. These instances demonstrate Carter's skill in instrumentation in giving the harpsichord an individual voice in the musical texture. In both instances, the choice of accompanying instrumentation, pitch register and harpsichord registration allows the harpsichord to come through clearly. The four-foot plus eight-foot combination is just enough in both cases to bring about the effect Carter has in mind. Extending the music an octave down is inappropriate here since it would take away the brilliance Carter desires. The sixteen-foot register is not used here: the weight of the extra set

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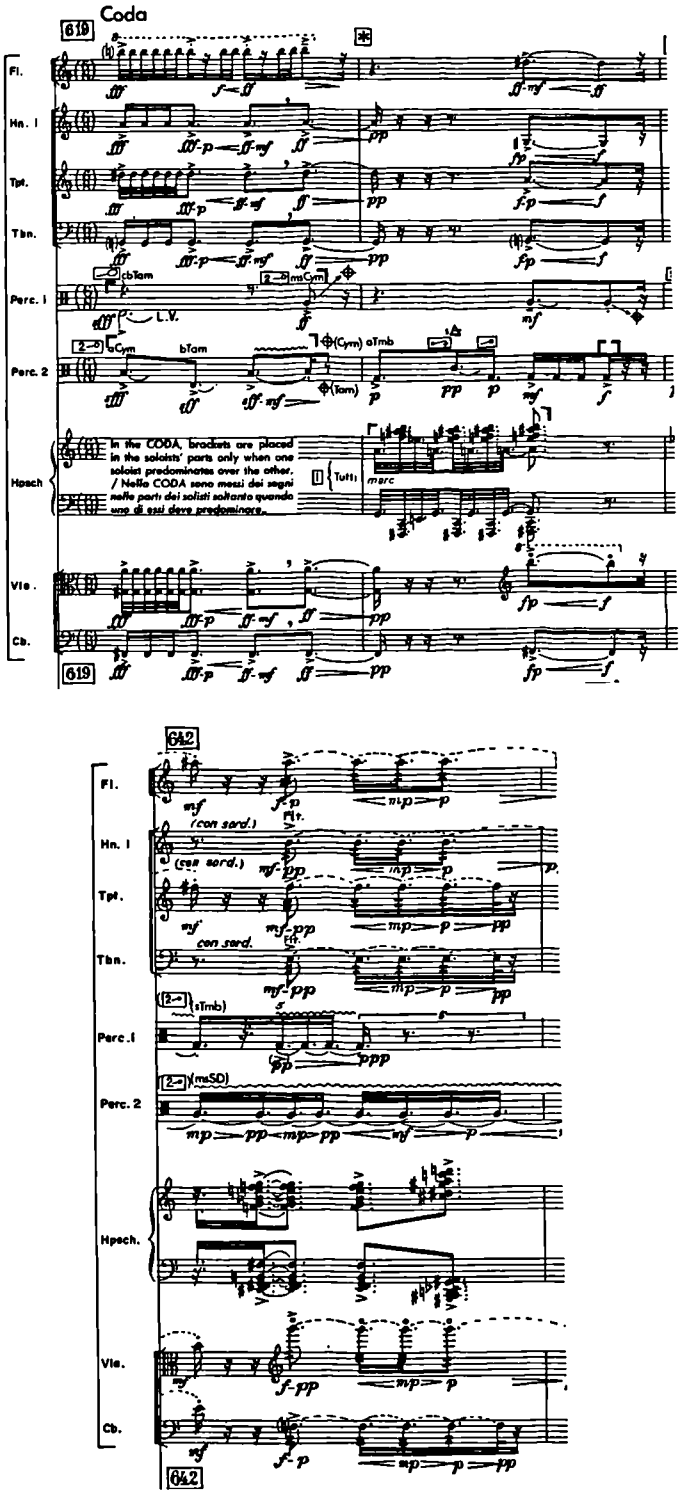
[15] Elliott Carter, notes to the Nonesuch recording of the *Sonata for Flute, Oboe, Cello and Harpsichord*, in *Collected Essays and Lectures*, 231.

of strings would have affected the speed of execution of the semiquavers as well as thickening the sound.

The use of a *legato* line in the accompanying textures pitted against the more percussive sound of the harpsichord appears in both works. For example, the expansive *legato* lines, such as bars 260-270 in the last movement of the Sonata, become more elaborate in the Double Concerto, for instance the passage starting in bar 342, marking the beginning of the *Adagio*. This line is shared between wind instruments in both cases.

The frequent changes in registration in the Sonata become yet more frequent in the Double Concerto; see for example the *Cadenza for Harpsichord* (Example 25, page 123) where very often there is more than one registration change per bar. However, the use of the mute to produce a continuous converging line in the Sonata from bar 121 (*Lento*) is different contextually to its fragmented appearance towards the end of the *Introduction* in the Double Concerto, here made even more fragmentary by the use of staccato (bars 151-152). Whereas the mute is used mainly for textural contrast in the Sonata, it plays a more important part in dynamic shading in the Double Concerto: at the end of the *Introduction* and in the *Adagio* it is also used to blend with and complement the sonority of string *pizzicato* and dry percussion.

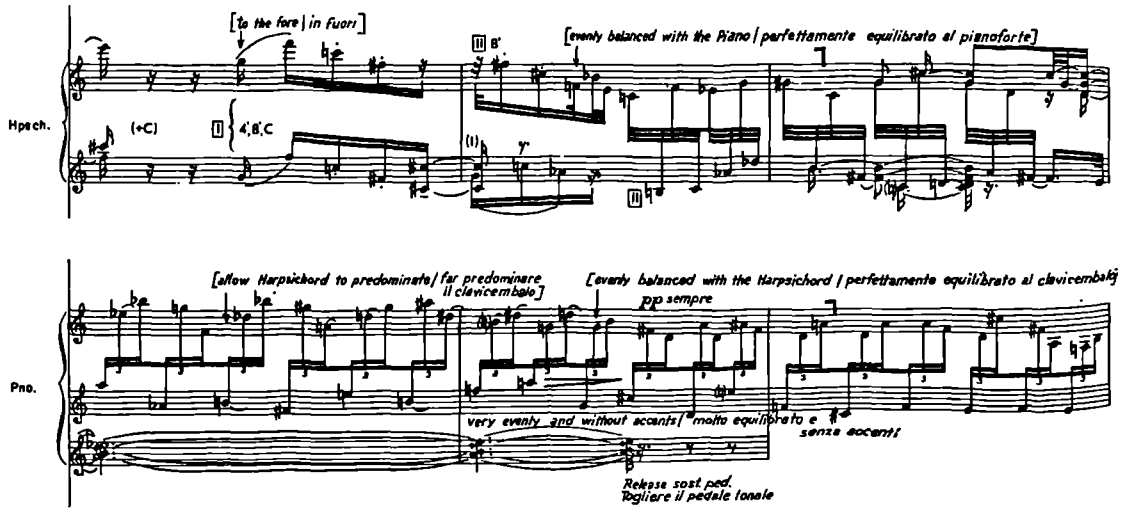
When the harpsichord is used with a small ensemble in the Sonata, it is readily perceived as the main instrument. Against the large number of instruments in the Double Concerto, Carter is careful to either augment its sound, by using other instruments that share its sound qualities, or by using sparse instrumentation, or none at all. The *Cadenza for Harpsichord* is entirely unaccompanied, and much of the harpsichord music in the *Allegro scherzando* and *Presto* has minimal instrumentation. In sections where Carter uses the full force of the ensemble, the harpsichord contributes to the overall sonority by playing heavy cluster-like chords in both hands, for example at the beginning of the *Coda* at bars 619-620, and bar 642 (Example 22).



Example 22 – Elliott Carter Double Concerto, cluster sonorities in harpsichord

In other passages where the harpsichord plays duo with the piano, for instance in the fast music of bars 439-465, (in some way anticipating the

Presto), Carter exploits the combination of the plucked sound of the harpsichord and the more resonant hammer-struck piano (Example 23). In so doing he takes particular care in balancing the texture and dynamics of the two instruments.



Example 23 - Harpsichord/piano balance, bars 439-441

Notwithstanding all of this, in the review of the first performance of the Double Concerto, "New music at Museum", New York Herald Tribune, 7 September 1961, critic Ronald Eyer wrote: "It is a provocative piece with just one major flaw, so far as I am concerned, and that is the role in which the harpsichord found itself. The sound of the instrument is basically too thin to play a leading role in a loud and frequently percussive ensemble. When heard alone, as in its Cadenza, it was lovely."[16]

The question of dynamic balance occupied Carter a great deal in live performances and recordings.

> Unlike my other compositions, this one presents many kinds of special performance problems, the main one being the harpsichord itself. The

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[16] The first performance took place on 6 September 1961, in the Grace Rainey Rogers Auditorium in New York, with Charles Rosen on the piano, and Gustav Meier as conductor.

> instrument is always of unpredictable volume, which varies from hall to hall as well as from instrument to instrument—a fact I was so aware of that, during the work, all the other instruments usually stop altogether or play their softest in their dullest registers when the harpsichord is playing. These precautions do not prevent it from being lost and requiring amplification under many performing conditions but, as it is the soft member of a dialogue 'piano e forte', it cannot be amplified very much. The balance and accuracy of the percussion, its damping, its sticking, have to be worked out with great care, otherwise the work will sink into a miasma of confusion, as it has on a number of occasions, especially when the hall is too resonant.[17]

In particular Carter responded to the first commercial recording by effectively saying that the listener should be able to experience a recording in the same way as if he were in a live performance. He went on to note that a great deal of dynamic contrast had been levelled off in the recording, commenting

> The harpsichord is really too loud in relation to the others. It is always associated with soft sounds, and if amplified, must never sound more than *mf* of the other instruments. To make the harpsichord loud cuts out one important source of variety in the work—that of large dynamic changes.[18]

The Double Concerto

The Double Concerto is something of an anomaly from the harpsichordist's perspective. Although by this time several composers had written concerti for the harpsichord—De Falla, Poulenc, and Roberto Gerhard among them—none had placed it alongside the piano. (In fact the only historical precedent

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[17] Elliott Carter, "The Orchestral Composer's Point of View", in *Collected Essays and Lectures*, 243.

[18] Taken from Carter's one-page typescript, of his responses to the first commercial recording of the Double Concerto, Epic BC 1157 (Stereo 1p) (1962), held in the Carter Collection at the Paul Sacher Stiftung.

appears to be the concerto of 1788 by C.P.E. Bach, W47.) In the Double Concerto Carter creates a dialogue which carries the two keyboards through numerous speed changes and harmonic patterns; the keyboards are in turn amplified and at times obscured by their pitched and unpitched orchestras. The nucleus however, is the duo between the harpsichord and piano: the rest of the music is spun out from it. "[The Double Concerto] has two sound sources treated as opposing members of a pair, with differences of sound quality and types of expression reinforced by giving each member of the pair individualized musical materials, harmonies and rhythms."[19]

The notion of antiphony is heightened by the fact that the harpsichord and piano, with their two ensembles, are differentiated from each other by using mutually exclusive repertoires of intervals, rhythmic groupings and metronomic speeds (Example 24).[20]

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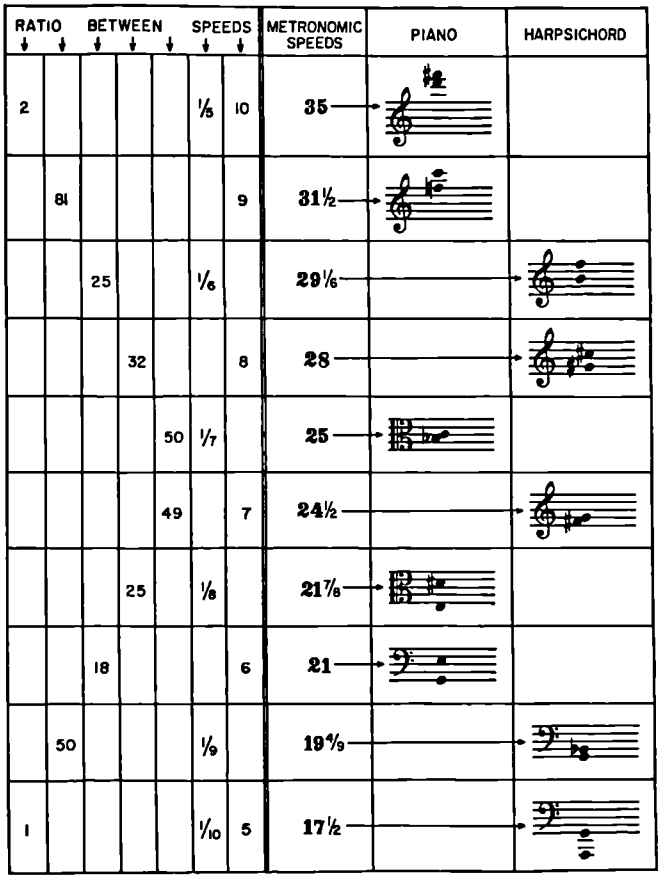
[19] Elliott Carter, notes to the Nonesuch recording of the Double Concerto, in *Collected Essays and Lectures*, 259.

[20] Elliott Carter, "The Orchestral Composer's Point of View", in *Collected Essays and Lectures*, 244.



Example 24 - Carter's chart of intervals and tempi

The harpsichord and its orchestra form materials from the minor second, minor third, perfect fourth, tritone and minor seventh; the piano and its group from the major second, major third, perfect fifth, major sixth and major seventh. The harpsichord and its instruments mainly have rhythmic groupings in 4s and 7s, whilst the piano and its instruments have 3s and 5s. All of the tempi of the work and their interconnections and the various musical characters that emerge from these can be traced back to this fundamental duality, which is not only one of sonority but of intervallic, rhythmic, and even of differences in patterns of musical thought and of character and behaviour.[21] The intervallic disposition can be seen to reflect the fundamental differences in sonority between the harpsichord and piano. The

[21] Elliott Carter, one-page typescript on the Double Concerto, held at the Paul Sacher Stiftung.

harpsichord tends to the harmonically complex, minor intervals —semitone, tritone, minor third, emphasising the rich overtone structure of the instrument's timbre and leading to close, dissonant chords and structures which help the harpsichord sound penetrate. By contrast, the piano has open, consonant intervals—perfect fifth, major third, major second. These grow from the purer sonority of the piano's struck string, and also create space in the musical texture for the harpsichord.

Carter comments that the Double Concerto derives its music from the performing situation: that the musical expression and thought arise from the unique sound and performance technique of the harpsichord and the piano. Carter goes on to say: "The Double Concerto...actually has a shape that parallels this attitude, starting as it does by presenting gradually changing percussion sounds that first 'give birth' to a few musical pitches that in turn become more and more articulated and differentiated, only to sink back eventually to a more chaotic, undifferentiated state near the end."[22]

He also stresses that he only responded to Kirkpatrick's request when "ideas arose whose expression seemed to require those pairs of instruments for which I had been asked to write".[23] Kirkpatrick's suggestion of a piece for harpsichord and piano "ended up in music that surrounds each of the soloists with a small orchestra, and two percussion players, serving sometimes to intensify the special qualities of the solo instruments and at other times to blur their differences."[24] This reinforces the notion that composers write for the instruments that best express their music at the time of composing.

Carter continues talking about the nature of the two soloists: "The harpsichord called for...lacks the piano's uppermost seven notes, but has four rather soft notes below the lowest piano note (these are heard in the harpsichord's last chord, just before the end); even at its loudest, it is very

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[22] Elliott Carter, notes to the Nonesuch recording of the Double Concerto, in *Collected Essays and Lectures*, 258-259.
[23] ibid, 259.
[24] ibid.

much softer than the piano playing moderately (in the fast duet in the middle of the Concerto, the piano has to play very softly for the harpsichord to be heard). This contrast between the two solo instruments dictated the antiphonal character of the Double Concerto, so that the harpsichord would not be overwhelmed by the piano."[25]

Preliminaries to the Analysis

In a seminal article on the analysis of Carter's music, Jonathan Bernard has written: "Dealing with the huge expanses of Carter's scores ... is still not easy ... The prospect of reading, much less writing, a so-called 'complete' analysis carried out according to the methods presented here is truly fearsome to contemplate."[26] The difficulties in analysis of Carter's music are both obvious and long acknowledged. Nevertheless the work of Bernard and others, together with a consideration of Carter's own writing and practices and those of some of his contemporaries, point the way to an understanding of the sorts of continuity we experience in Carter's music.

Analyses of Carter's music typically draw heavily on the composer's own charts of his musical materials. To the extent that these represent the raw materials of the work, this is naturally justified. However, Carter's way of using these materials is not predetermined. His method has always appeared to be the more traditional one of sketching, elaborating, experimenting and extemporising with the material, as evidenced by the many pages of sketches for his major works in collections such as the Paul Sacher Stiftung, Basel and the Library of Congress, Washington, and by much of what he writes about his compositional processes. For example, in connection with the charts of speeds and intervals in the Double Concerto, he states: "As in all my music, such intervallic schemes provide a somewhat ordered substructure (like the triadic harmony of the common-practice period, but more freely used because

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[25] ibid, 259-260.

[26] Jonathan W. Bernard, "Spatial Sets in Recent Music of Elliott Carter", *Music Analysis*, II:1 (1983), 5-32.

it is not adhered to so strictly) as a source of ideas of many degrees of interrelationship on several different levels at once."[27]

Bernard bases his analysis on what he terms spatial sets—collections of pitches whose identity depends on a precise intervallic relation, and not their pitch-class reduction. Looking at Carter's music from the point of view of these sets and their linear relationships is an explicit acceptance of pattern and process in the surface of the music. Although starting from surface details, this points the way to an understanding of the music at a hierarchical level deeper than that of immediate note-to-note continuity through the identification of recurrences and longer-range relationships. Support for such an approach can be found in a pamphlet Carter himself prepared in 1959 for his composition students, setting them exercises to focus their attention on the different aspects of composing.[28] He urges them to consider first the association of single notes in small groups (motives), then in larger groups (sentences and paragraphs). Finally they should turn their minds to the matter of background and foreground texture.

Pattern, Process and Symmetry

The linear coherence described here reflects the concerns of other composers of the modernist generation in the United States. The music of Varèse, Cowell, Ives and Ruggles is characterised by a style which was identified by Cowell as "dissonant counterpoint".[29] One strategy for melodic and formal organisation in this idiom was identified by Charles Seeger as a "phrase neume" or a "form neume".[30] The following summary of its role in the music of Ruth Crawford Seeger could apply directly to Carter's melodic practice

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[27] Elliott Carter, "The Orchestral Composer's Point of View", in *Collected Essays and Lectures*, 246.
[28] Held in the Carter Collection at the Paul Sacher Stiftung.
[29] Henry Cowell, *New Musical Resources* (New York, 1930).
[30] Charles Seeger, *Tradition and Experiment in the New Music* (1930-1) published in *Studies in Musicology II*, Ann Pescatello ed. (Berkeley: University of California Press, 1995). Quoted in Josef N. Straus, *The Music of Ruth Crawford Seeger* (Cambridge: Cambridge University Press, 1995), 57.

too: "...a motive may be projected over a large musical span, through the association of salient surface events. In any melody, notes might be marked for special attention in various ways, as, for example, the highest, loudest, or longest notes in a line. Those salient notes might combine to form larger shapes—spanning phrases, sections, or entire pieces—that are identical to, or closely related to, the motives of the musical surface."[31]

Symmetry has long been recognised as an organising principle in music. The process of symmetry in time is most apparent in the symmetrical layout of the Double Concerto; the beginning of the *Adagio* is also the line of symmetry of the Concerto, and marks the point of maximum coherence between the two disparate instruments and their ensembles. The *Allegro scherzando* and *Presto* approach and lead away from this point, the soloists with their ensembles interacting respectively with more, and then progressively decreasing cooperation. The *Introduction*, in which the sound world of the concerto is gradually built up in a series of waves is mirrored by the *Coda*, in which the process is reversed.

In the vertical dimension of musical space, Carter uses the process of symmetry to focus on a particular sound or a type of sound and is a way of carrying out moment-to-moment coherence. There is a sense in which the music grows from the middle out, away from the harmonic tradition of music grounded in the progression of bass notes defining harmonic and tonal areas. In the Double Concerto this is strikingly evident in the opening where, after growing from the sounds of the percussion of both ensembles, the characteristic intervals of the two ensembles are gradually exposed from the middle register outwards.[32]

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[31] Joseph N. Straus, *The Music of Ruth Crawford Seeger*, 57.

[32] Jonathan Harvey discusses the notion of music growing from the middle out in "Reflection After Composition", *Tempo*, No. 140 (March 1982), 2-4.

Cross-referencing and Cross-cutting

By developing musical patterns and textures that the ear can pick out and remember, and by recalling them or fragments of them, the composer enriches and enlivens the musical discourse by stimulating and challenging the listener; thereby cross-referencing serves also as a type of dramatic metaphor. This works at several levels in the Double Concerto. At a local level, the form of the *Allegro scherzando* and *Presto* movements are collages in which linear continuity of the music of one ensemble is interrupted by the cross-cutting of the other ensemble—on these local levels, the listener hears the linear connections across the interrupting music. This kind of formal organisation was described by Edward T. Cone in an influential article on Stravinsky:[33] in a memorial tribute to Stravinsky, Carter refers to "a brilliant lecture by Edward Cone on the *Symphonies of Wind Instruments*, [which] recalled to me how pervasive cross-cutting was in the music". [34]

On a larger scale, characteristic shapes and sonorities serve to create associations across the entire work. This can range from association by texture and interval through to direct reference to earlier material. Examples of this larger cross-referencing will be discussed as they arise.

Texture and Continuity: An Analysis of the Double Concerto

Notwithstanding Bernard's concerns, the following analysis will at least touch on each of the sections of the work, though at varying length and detail. In it, I shall focus on Carter's use of the raw materials of the work, and on linear patterns and symmetries, primarily as they occur in the harpsichord part and as they are expressed in their relationship to the piano and the other instruments.

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[33] Edward T. Cone, "Stravinsky: The Progress of a Method", *Perspectives of New Music*, I:1 (1962), 18-26; reprinted in *Perspectives on Schoenberg and Stravinsky*, Benjamin Boretz and Edward T. Cone eds. (New York: Norton, 1972), 155-164.

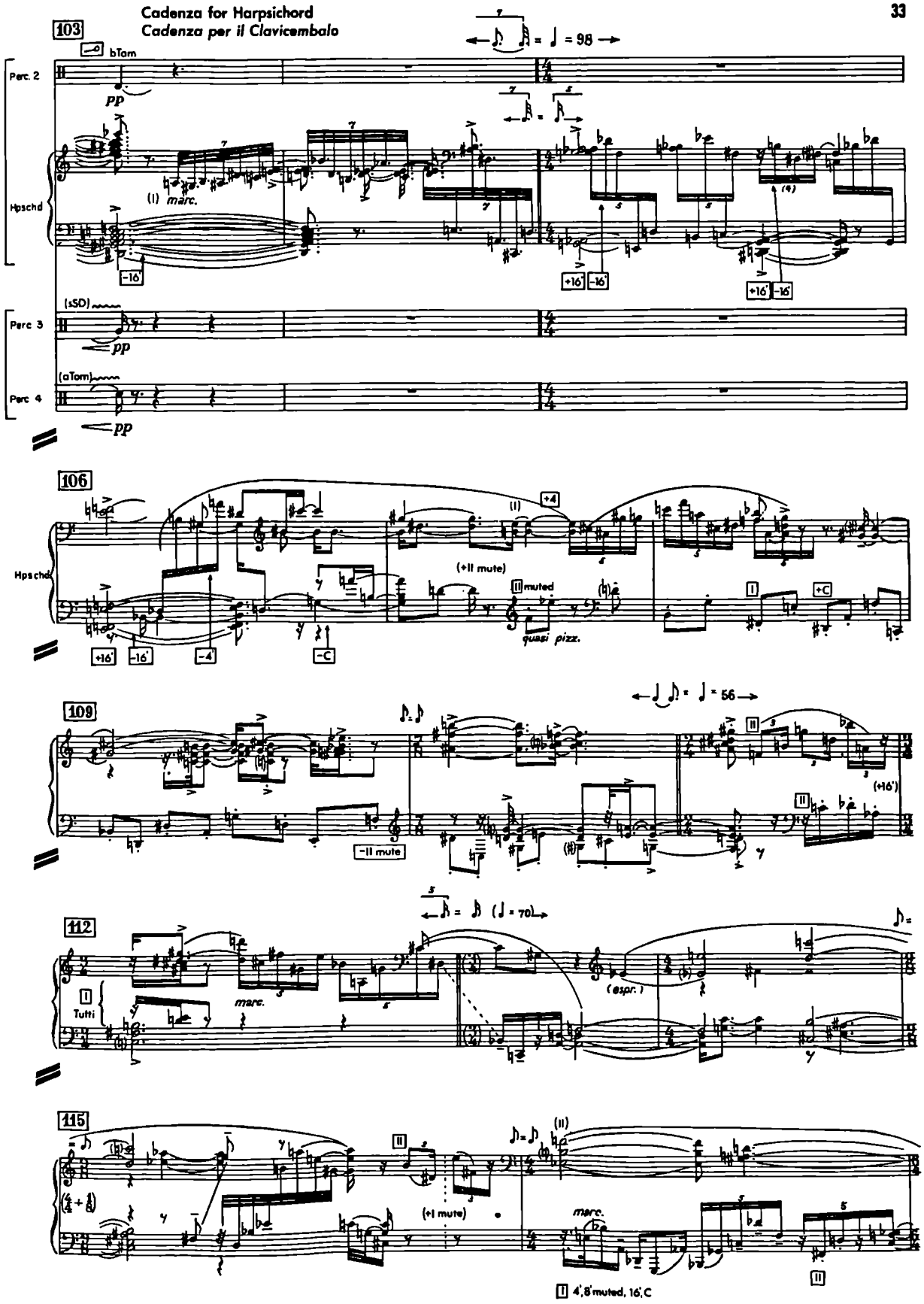
[34] Elliott Carter, "Igor Stravinsky, 1882-1971: Two Tributes", in *Collected Essays and Lectures*, 142.

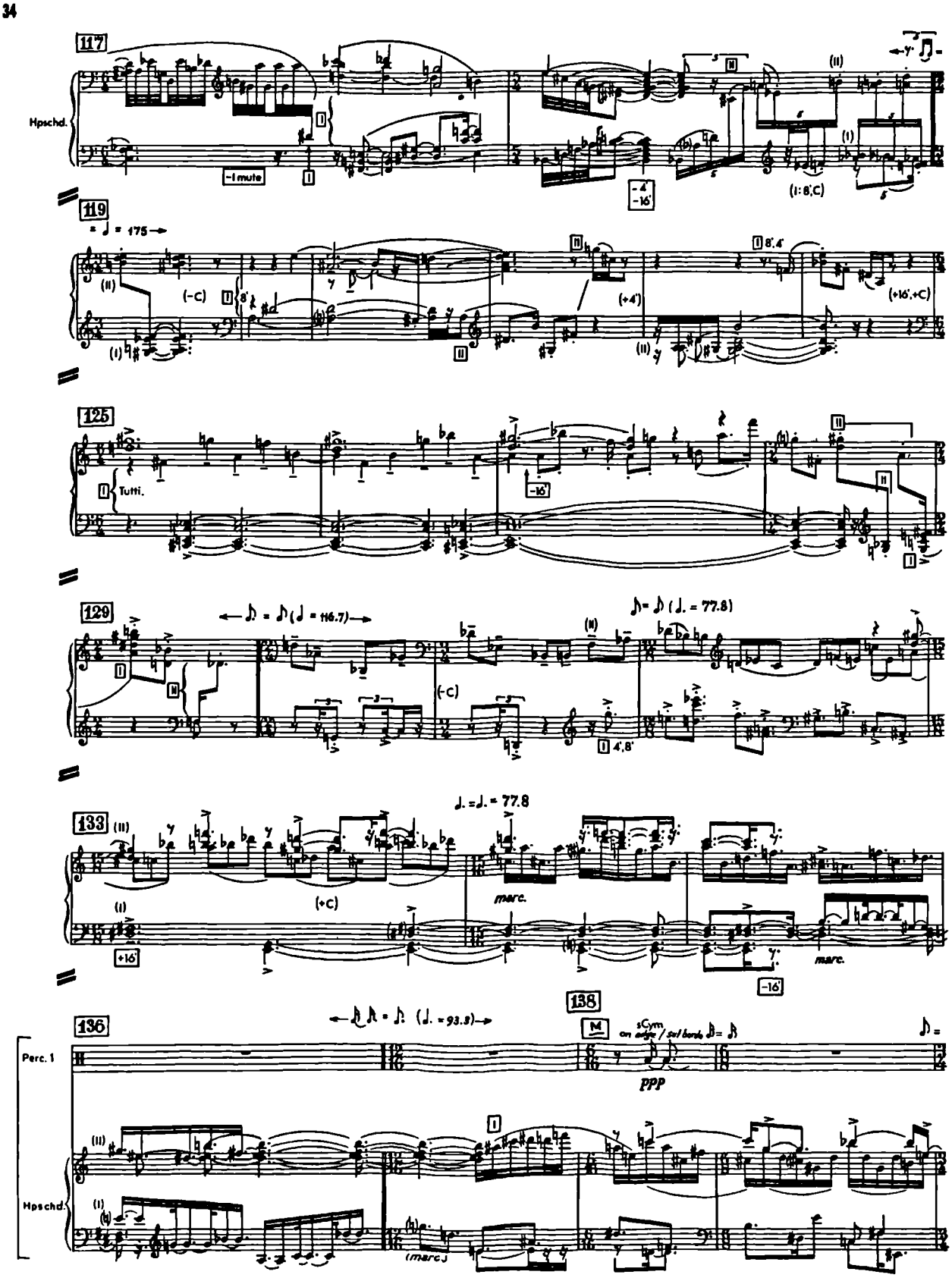
Starting with the *Cadenza for Harpsichord* presents an opportunity to examine Carter's use of the instrument, and of his materials, in their purest form. The most detailed commentary is reserved for a section of the *Presto*, illustrating the types of continuity linking fragments and phrases into larger spans, coordinating the music of the harpsichord, piano and ensembles. Following this, points of interest in the other movements will be discussed.

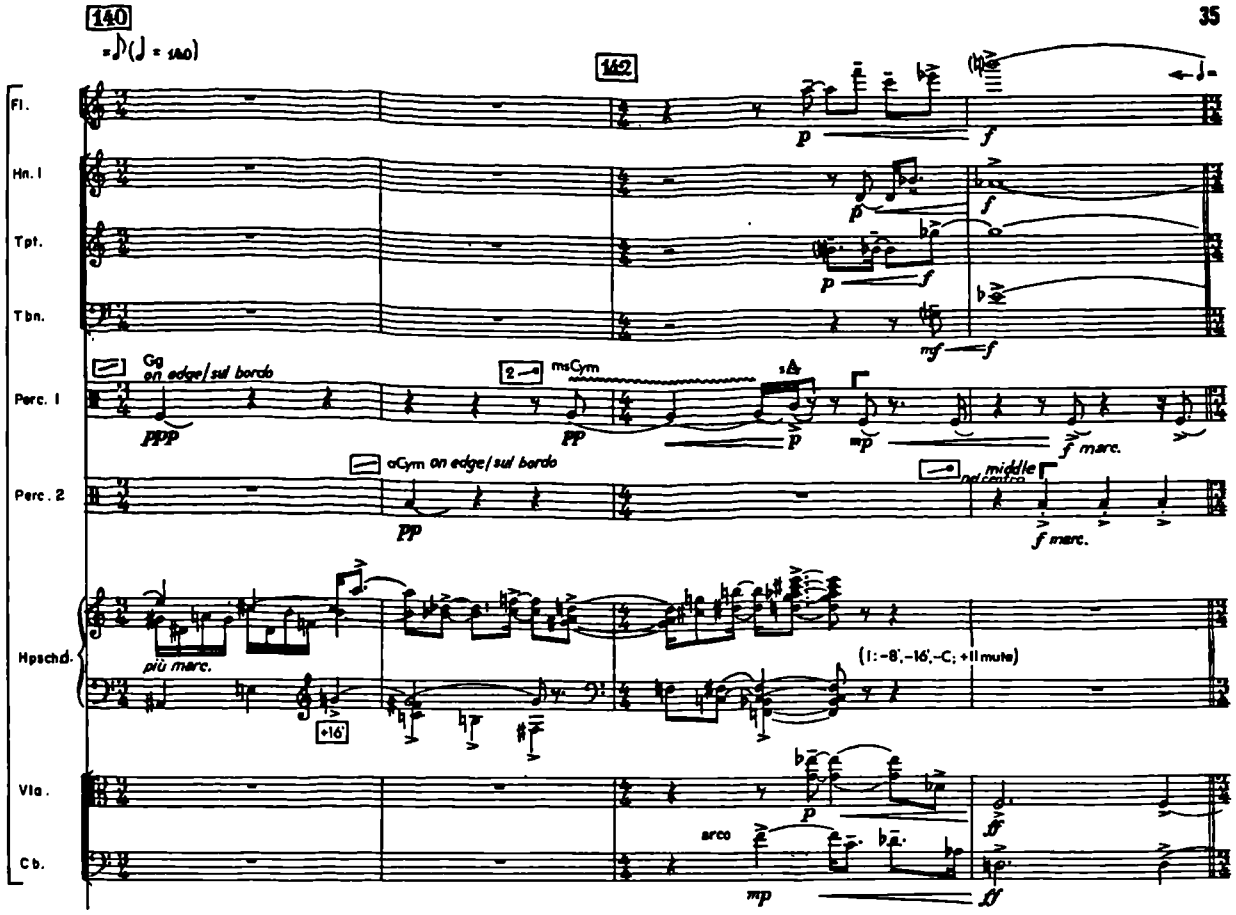
The Harpsichord Cadenza

Whilst the Double Concerto is not written in the concerto tradition established by the nineteenth century, it shares some of its characteristics, one of which is the cadenza. In the Double Concerto, the harpsichord and piano each have one cadenza. The *Cadenza for Harpsichord* (starting at bar 103) precedes that of the piano (starting at bar 525, and considered as part of the *Presto* in my analysis), culminating in cadenza-like passages in the *Coda* (beginning at bar 629, marked *harpsichord and piano to the fore*) where the two keyboards superimpose.

The Cadenza was originally an elaborate prolongation by means of improvisation of a single structural point in the aria and subsequently the concerto—namely the final structural cadence in the tonic key, concluding the tonal argument of a movement. During the course of the nineteenth century, the cadenza became liberated from this limited formal role, as evidenced first by Mendelssohn in his violin concerto, where the cadenza acts as a transition from the development section to the recapitulation. In the twentieth-century concerto, cadenzas can play a number of structural roles: in Carter's Double Concerto, though the symmetry of placing of the harpsichord and piano cadenzas is evident, their structural role is quite different. The harpsichord's measured exposition of its materials contrasts with the piano's last attempts to recover a cooperative discourse from the music as it rushes towards the *Coda*.


Cadenza for Harpsichord
Cadenza per il Clavicembalo
33
103
bTom
Perc. 2
pp
Hpschd
(I) marc.
-16'
+16'
-16'
+16'
-16'
(sSD)
Perc 3
pp
(aTom)
Perc 4
pp
106
Hpschd
(II)
+4
(+II mute)
II muted
quasi pizz.
+16'
-16'
-4'
-C
I
+C
109
-II mute
(+16')
112
I
Tutti
marc.
(espr.)
115
(+I mute)
marc.
I 4',8' muted, 16',C


34
117
Hpschd.
-I mute
119
(-C)
(+4')
(+16',+C)
125
Tutti.
129
(-C)
133
(+C)
marc.
136
138
Perc. 1
Hpschd.
ppp
(marc.)



Example 25 – *Cadenza for Harpsichord*

The *Cadenza for Harpsichord* (given in its entirety in Example 25) is the first substantial solo passage in the Double Concerto, lasting well over a minute. Here the harpsichord speaks on its own for the first time: different articulations are conspicuous, *staccato* in bars 107-110 later to *tenuto*, bars 125-126, emphasising pitches and rhythms pertinent in the musical discourse. Carter is aware that, surrounded by the other instruments, the different articulations on the harpsichord may not be readily audible. Accordingly it is in passages isolated from other instruments that he uses the different degrees of harpsichord articulation most: this is not the case with Carter's writing for the piano, where the additional volume and dynamic range allows for more varied expression when used with the ensemble. By virtue of their differences in character, the two keyboards act as a foil for one another throughout the Concerto, as well as in opposition, to generate friction.

Whereas up to this point in the Concerto the various aspects of the harpsichord have been glimpsed, it is in the Cadenza that they are explored more fully for the first time. Here the different timbres of the harpsichord are heard on their own terms: they are not amplified or blurred by other instruments. Since the orchestra is absent in the Cadenza, the different harpsichord timbres are not immediately associated with particular effects in the orchestras. However, some of these sonorities have been heard already in the *Introduction* when the harpsichord plays *ensemble*. By virtue of previous association the *Cadenza for Harpsichord* may also carry ripples of the sound quality of the other instruments, particularly when reinforced by associations with particular intervals and speeds.

The *Cadenza for Harpsichord* presents the harpsichord repertory of intervals and rhythms in nine mosaic fragments, which are inter-connected in various ways (Table 1):

Fragment	Bars	Description
1	103-107.3	Line spun from all-interval tetrachord.
2	107.3-110	Staccato "walking bass" against sustained chords.
3	111-113.2	Gigue-like melodic fragments.
4	113.2-116	Sustained all-interval tetrachord harmonies.
5	116-120	Line against sustained harmonies, leading to 12-note chord at centre of Cadenza.
6	120-125	Gigue fragments against sustained chords.
7	125-130	Even line against large polyrhythm.
8	130-135.3	Walking line, 3:2, leading to large polyrhythm.
9	135.3-142	All-interval tetrachord lines leading to chords and instrumental entries to conclude Cadenza.

Table 1 – Fragments of the *Cadenza for Harpsichord*

The Cadenza presents the essence of the harpsichord music in the Double Concerto and is effectively an exposition of the harpsichord material. The composer mentions that the Cadenza has "a great number of sudden changes

of registration which reveal almost the full color range of the instrument".[35] Carter is keen to exploit as fully as possible the musical potential of the harpsichord. It is as if the harpsichord here carries the whole weight of the orchestra, and almost exhausts the different combinations of registrations and tone colours as a means of orchestration. By moving rapidly and audibly through a kaleidoscope of different registrations, the Cadenza is truly a cadenza for the instrument, as well as the performer. The physical act of engaging and disengaging registers can be compared to the baton that commands an orchestra. Significant visible gestures play an integral part in furthering the musical drama; the act of engaging a certain sound is a tangible contribution to explaining the intricate musical details in the Cadenza, indeed in the whole of the Concerto.

The All-Interval Tetrachord (AIT)

During the 1940s and 50s, Carter had discovered the two four-note pitch collections which share the property of being able to be divided into pairs of intervals in such a way as to generate all ten intervals. Although one of these appears in the First String Quartet (1951) alongside many other harmonic and melodic configurations, it was not until the composition of the Second Quartet (1959) that Carter used these all-interval tetrachords (AITs) in a more systematic way, and this usage is pursued to an even greater degree in the Double Concerto. Example 26 presents the composer's chart of AITs and their combinations in the work.[36]

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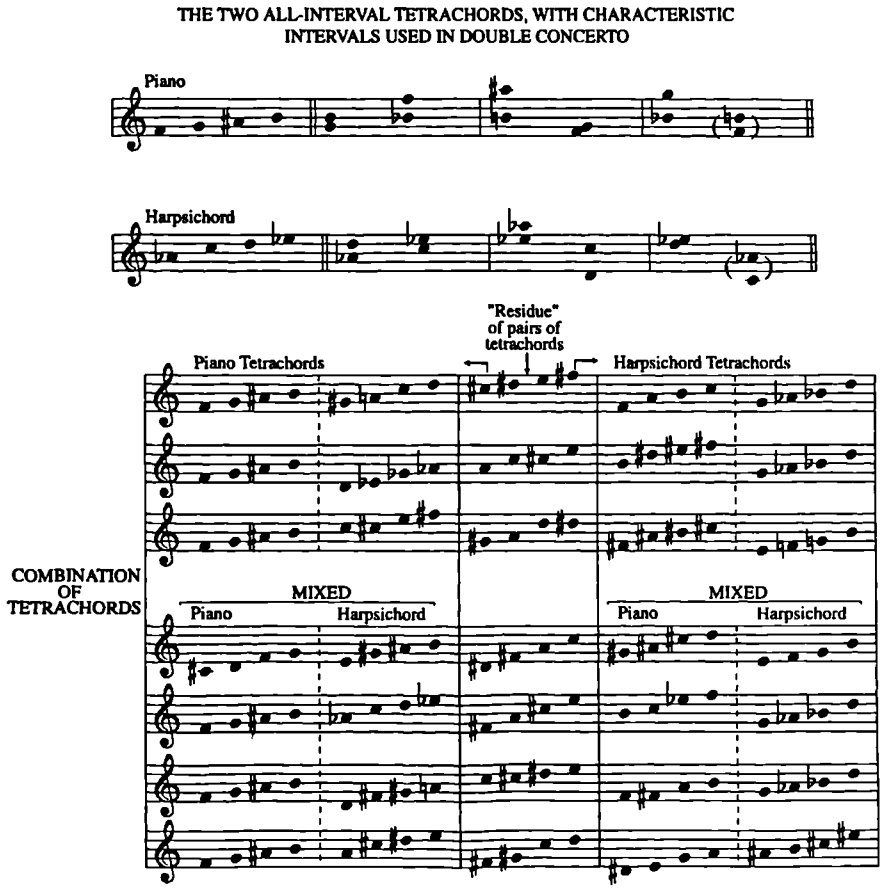
[35] Elliott Carter, notes to the Nonesuch recording of the Double Concerto, in *Collected Essays and Lectures*, 260.
[36] Elliott Carter, "The Orchestral Composer's Point of View", in *Collected Essays and Lectures*, 246.



Example 26 – Carter's chart of AIT combinations and residues

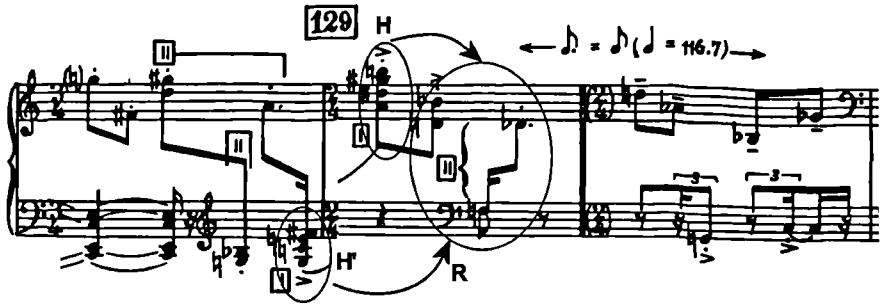
In keeping with the distinction of material in the piece, one of these collections is specifically associated with the harpsichord and its ensemble, the other with the piano and its instruments. The different ways in which pairs of intervals combine in these AITs is one feature which distinguishes the different melodic characters of the two instruments. And whilst Carter is not a serial composer, completion of a twelve-note complex often serves in the music as a local or larger-scale goal. One way in which this is done is by pairing non-overlapping combinations of AITs and completing the twelve-note set by adding the four missing pitches. The possible combinations of similar AITs (each with its own inversion, transposed) and non-similar AITs were charted by Carter: the symmetry whereby each set of residue pitches is associated with two different combinations of AITs gives rise to opportunities for coordinating sonorities within and between the two ensembles.

Pairs of intervals forming AITs and other combinations form a natural and grateful keyboard texture, with one interval per hand or with intervals combined in one hand to form a four-note sonority. The numerous AIT hand positions and the polyrhythmic patterns they generate by different kinds of superimposition within the scheme of speeds and intervals for the work (see Example 24, page 116) contribute to a large extent to the musical continuities that bind together the nine fragments of the Cadenza.

Indeed the linear thinking behind the music and the resultant harmony from superimposing many lines that occur simultaneously or near-simultaneously is highly reminiscent of the contrapuntal writing of the eighteenth century. Whereas the harmonic vocabulary is here more elaborate and the musical texture less transparent than characteristic eighteenth-century harpsichord writing, the compositional procedure is similar. For the harpsichordist, perceiving and prioritising the different lines is essential in making a performance come alive; it is an important way to get into the music. Carter uses the AIT in a number of ways at different stages of the musical argument. These are stated below, generally speaking in order of importance, and are therefore considered out of sequence.

Twelve-note Closure through AIT and Residue Tetrachords

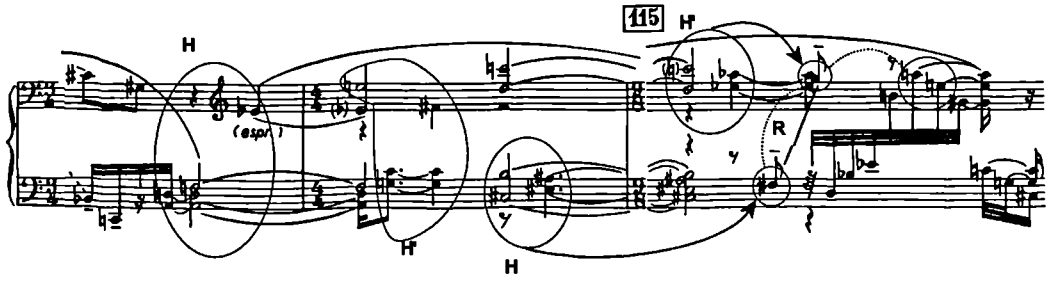
This completes the twelve-note set and achieves a sense of closure somewhat akin to a cadence in tonal music. The last left-hand chord of bar 128 and the first right-hand chord of bar 129, an inverted AIT plus an AIT in its prime form respectively, together with the residual notes, b♭', d', f and d♭', make up the twelve-note set. A harpsichord AIT in its prime form is abbreviated to H, its inverted form to H'; accordingly P and P' denote piano tetrachords. R stands for residue so that for example, H + H' + R = 12 (Example 27).



Example 27 - *Cadenza for Harpsichord*, H+H'+R in bars 128-130

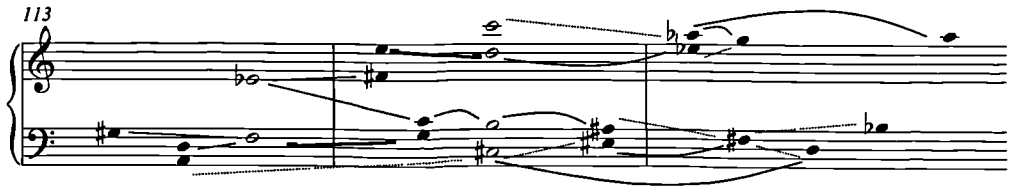
The succinctness of this statement, in consecutive chords, and shared equally between the two hands, balances the heavily right-handed melodic line beginning in bar 125. Carter groups the AITs together, one four-note chord in each hand, then starts to disperse the residue, two-note chord in the right hand followed by two single notes, one in the left hand, finally a staccato d♭' in the right. A descending line and the simultaneous taking away of notes brings about a diminuendo. By placing the AITs far apart from one another Carter opens out the register, at the same time drawing attention to these comparatively extreme sonorities. The immediate steep fall in register and the subtraction of notes so that they become single sounds brings the music to rest temporarily on the middle register which, on the harpsichord, is dynamically less prominent than the registers either side of it.

A further example can be found in bars 113-115 where the residual notes are prominent in the texture following the AIT statement, but dispersed, this time not bringing the music to a close, but continuing the musical argument (Example 28).



Example 28 - *Cadenza for Harpsichord*, H+H'+R in bars 113-115

The AITs are partitioned in a way that extracts the characteristic harpsichord intervals, that is to say the minor intervals, and the perfect fourth. Here the minor seventh and the perfect fourth are prominent sonorities.

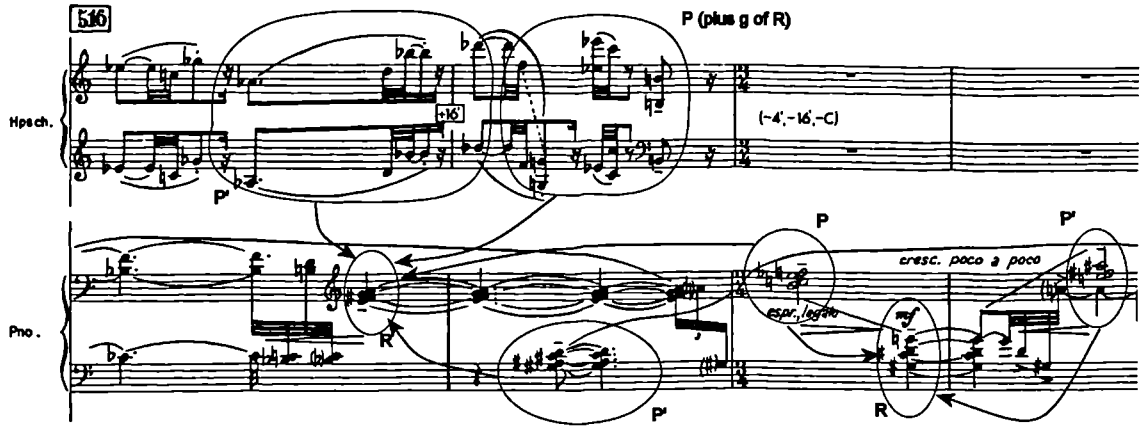


Example 29 – Linear processes, bars 113-115

The annotated reduction given in Example 29 demonstrates the role of several small and medium scale symmetrical processes in this passage. In bar 113, f in the left hand is approached symmetrically from d and g♯, echoed in the connection between the e♭ in bar 113 and f♯ and c′ in bar 114. The prominent minor sevenths sounded together at the third crotchet of bar 114 form a more evident symmetrical configuration, with the outer pitches of the perfect fourths following (e♯-a♯ and e♭″-a♭″) continuing to move symmetrically through semitones to the f♯ and g″ of the residue tetrachord in bar 115 from which point the music flourishes into smaller symmetrical processes again. The prominent movement of the lowest part by major thirds, from the A of bar 113 through c♯ to e♯ in bar 114, is mirrored in the uppermost part's fall from c‴ to a♭″.

In this way, the AITs stimulate and participate in the processes described above so that they act to propel the music forward as well as bringing it to a cadence. Here for the first time the characteristic harpsichord intervals, in particular the minor seventh and the perfect fourth, are heard on *their* instrument in straightforward block chords one interval after another. Furthermore the intervals proceed in the foreground at the slowest speed up to this point.

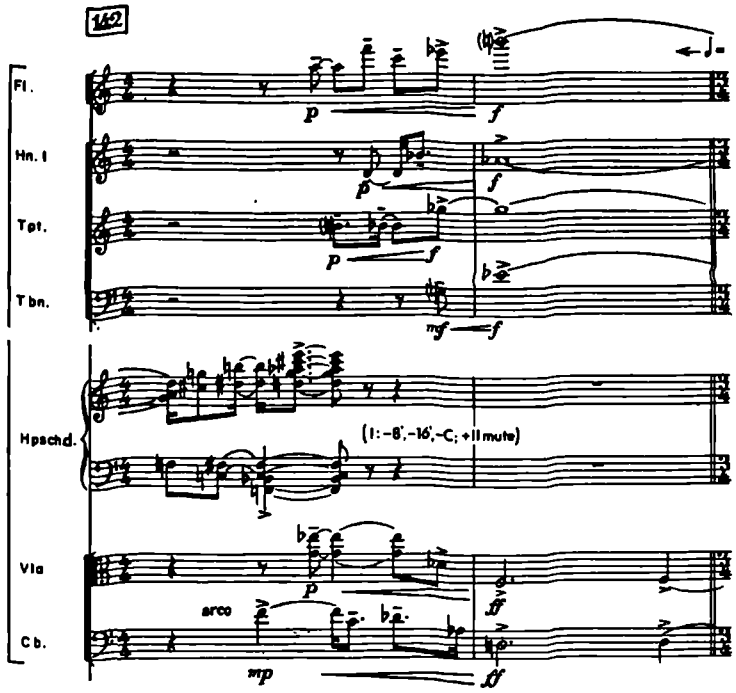
The textural and harmonic closure effected by combining AITs occurs elsewhere in the Concerto. For example, in the *Presto* in bars 516-517 the harpsichord has the AITs belonging to the piano, taking the music across to the second orchestra with the piano playing the residue tetrachord. This initiates a chain of AITs and residues played as four-note chords in the piano, directing the music to the first *Cadenza for Piano* (Example 30).



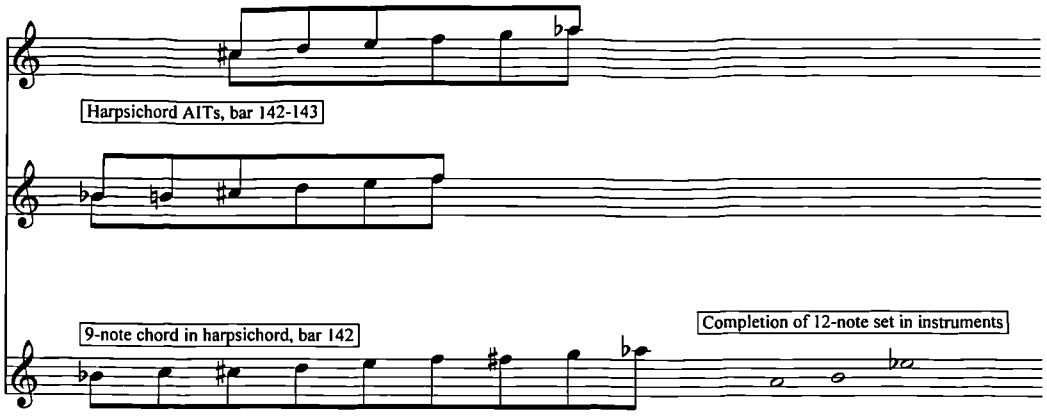
Example 30 – AIT and residue chaining in *Presto*, bars 516-519

AITs and Twelve-note Closure Emphasised by Texture and Instrumentation

The *Cadenza for Harpsichord* closes with a nine-note chord in the harpsichord which both in itself and in the texture approaching the nine-note chord embeds many AIT statements (Example 31). The five notes in the right hand contain a prominent harpsichord AIT d''-a♭''- c♯'''-e''': the addition of the right-hand g'' and the lowest note F forms another harpsichord AIT with the c♯''' and a♭''. Although this nine-note collection is not one of Carter's noted combinations of AITs and residue, the three notes completing the twelve-note set (b', e♭'', a'') are heard in the instruments' first entries following this chord in bars 142-143 (Example 32: the f and c in the bass with the viola's g' double pitches in the harpsichord's chord). The completion of the twelve-note set here acts in a cadential way, serving to articulate an important structural point, and connecting to the next section.



Example 31 -*Cadenza for Harpsichord*, bars 142-143 (percussion omitted)

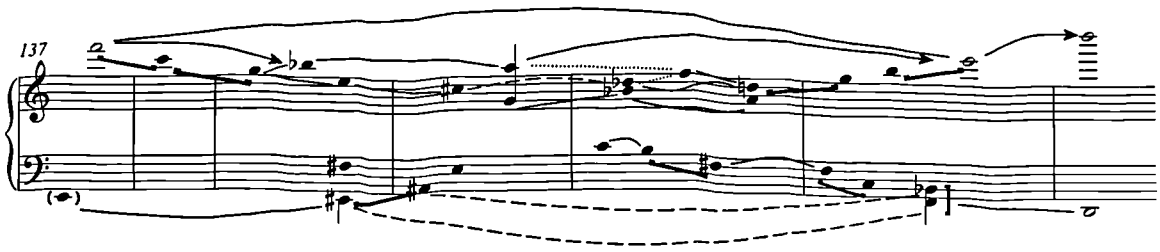


Example 32 – AITs and twelve-note completion, bars 142-143

The immediate build-up to this point, that is, the previous bar (141) plus one note (the high a'' in bar 140), is an example of the different layers of musical continuity, and an idiomatic way of writing a harpsichord crescendo. The widening of the tessitura accompanied by increasing number of notes brings the Cadenza to a climax. This harpsichord crescendo, which lasts for approximately two bars (141-142), is at once imitated by its ensemble, but this

time a more rapid crescendo takes the ensemble from *p* to *f* in just half a bar (across bars 142-143), thus it also amplifies the harpsichord crescendo and is yet another way of connecting its music to that of the other instruments. The full force of the harpsichord, with the sixteen-foot register added at the start of the two-bar crescendo (at the end of bar 140) heightens the climax. In terms of performing, the additional sets of strings (four-foot plus sixteen-foot), as well as the coupler which operates the two eight-foot registers simultaneously, make the instrument pluck harder. The physical act of putting down these notes and the extra muscle-power called for reflect the dynamics of the music. Carter is always meticulous in translating his musical images into notation, carefully grading the harpsichord crescendo (the instrument being less dynamically flexible) over two bars to enable it to register, and following it with a more rapid crescendo in the wind instruments whose dynamic range is far wider. This climax takes the music to the high b''' in the flute (bar 143) which, apart from the high c'''' in the flute in bar 46 coinciding with the rhythmic climax in the *Introduction*, is the highest note thus far in the Concerto.

Once again the pitches contributing to the AIT complex in these bars participate in linear processes of several kinds, generating different layers of continuity (Example 33). This process is physical and here in bars 141-142 is shared between the two hands so that they move in contrary motion, often with one hand-shape mirroring another, all the while adding more notes. As the hands (and fore-arms) move away from one another, the music opens out and the additional notes produce more volume, bringing the music to a cadence by way of a textural and dynamic climax.



Example 33 - Linear processes, bars 137-143

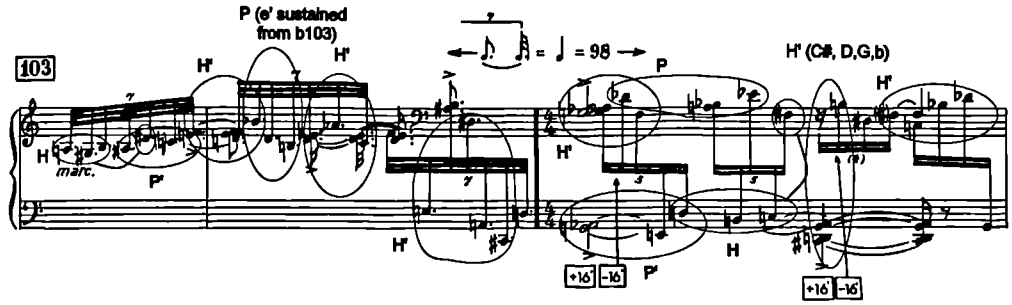
The high f''' in bar 137 echoes the same pitch in the extremes of the preceding section (see bar 133), and remains hanging in this register until the e''' of the chord in bar 142 which closes the Cadenza. This mirrors the movement of the persistent E in the harpsichord left hand of bars 133-135 to E♯ in bar 139 (again, this register is avoided in the intervening bars). The E♯ underpins the texture of the remaining bars of the Cadenza, and reappears as the lowest pitch (F) of the concluding chord in bar 142, with the B♭ (A♯ of bar 140). Between these points, smaller-scale symmetries featuring the harpsichord's characteristic intervals abound. From bar 137, a descent from f''' in perfect fourths through c''' to g'' is partially mirrored by the bass ascending from E♯ to A♯: these fourths are taken up again in the ascent in the right hand to e''' from b'' (preceded by d''-g''), with descending fourths in the left hand arriving at the low F. In bars 139-141 in the right hand, a number of configurations involving minor thirds returns the texture to the middle register (ascending g''-b♭'', and descending from the same g'' to e'' and c♯'' to which is added b♭' in bar 141, approached from the g' a minor third below). The prominent a'' of bar 140, with the following d♭'', converges symmetrically on f'' in bar 141. On a larger scale, this a'' is approached from the b♭'' of bar 139, parallel to the larger descent from f''' to e''' and outlining a pair of fifths in the upper part (f'''-b♭'', a''-e'''') which is extended upward by another fifth with the flute's high b'''' in bar 143. (In the lowest part of the texture, the movement from the sustained E♯/F to the D of the instrumental entries in bar

143 echoes the smaller-scale patterning in minor thirds in the left hand of the last part of the previous fragment and the first part of this final fragment, bars 132-139.)

These symmetries and linear patterns sustain the moment-to-moment continuity here (and elsewhere in the Concerto). Just as Carter proceeds to chain one AIT to another to punctuate important structural points, on a smaller scale he chains intervals together to spin out musical texture. The notation of the harpsichord part here emphasises the distinction between the principal line and accompanying texture. The tied notes further suggest a legato texture and imply that the fingering, at least in the right hand where the music moves by intervals larger than the semitone, should enable the accented top notes to come out as one continuous line. This imparts to the music a sense of gradual and sustained growth which culminates in the climax in bar 142.

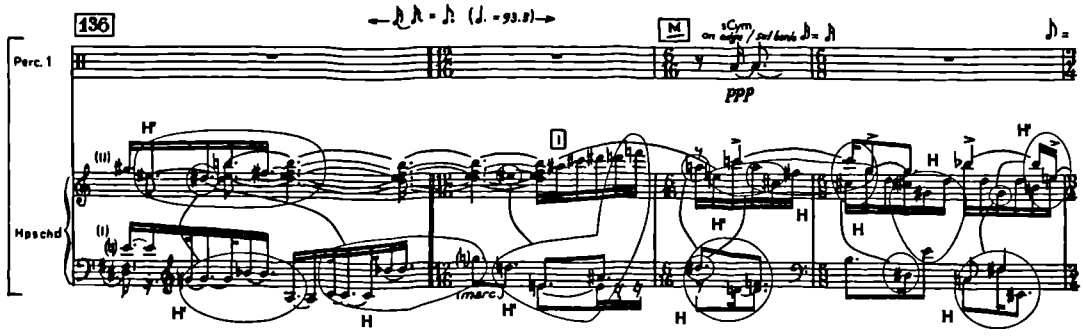
AITs Used to Delineate Foreground Melodic and Rhythmic Interest

Throughout the *Cadenza for Harpsichord*, Carter spins out the musical foreground using his basic building block, the harpsichord (and sometimes the piano) AIT in various ways. For example, at the beginning of the Cadenza (bars 103-104), the right hand moves from one AIT to another, emphasising the semitone all the while, before the left hand joins to emphasise the semitone by doubling at different octaves and adding AIT pitches (Example 34).



Example 34 – AITs at opening of the *Cadenza for Harpsichord*, bars 103-105

More elaborately still, in the last fragment of the Cadenza, from the second half of bar 135, Carter lays out the notes of the AITs in a number of ways to push the music towards the climax at bar 142. The notes of the harpsichord AIT account for nearly all of the music in bars 138-139, in a variety of linear and vertical configurations (Example 35).



Example 35 – Foreground AITs in bars 136-139

In the right hand in bar 136 the four notes of the inverted harpsichord AIT d♯'', e♯'', f♯'', b'' are sustained. The lowest pitch of this configuration, d♯'', combines firstly with the left hand's g', b♭' and a, then with the following c', d♭'' and g'' constituting another two appearances, in inverted and prime form respectively. The left-hand line continues to provide interval groups with the right hand completing AIT statements in various ways: the right hand's sustained e♯'' combining with d'', e', a♯' in the left hand in bar 137, with d''' and the high point f''' prominently repeating the pitches (e♯'' and d'') at a higher octave in the right hand; in the following bar (138), repeated right-hand a'' combining with d', d♯'' and f' in the left hand; that left-hand d♯''

combining with the right-hand a'' again, e'' and c♯'' in the centre of the texture; the a'' and c♯'' in the same bar forming an AIT with the following f♯'' and the g'' in the next bar; the c''' of bar 138 at the top of the texture finally coming to join with c♯'' and g'', and the left-hand d♯ in bar 139, while in the centre of the texture e', g♯', c♯'' and d are heard; in bar 139, the last three left-hand notes, c, f♯, E♯, forming their AIT with the lowest pitch g♯' in the right-hand texture, with the same g♯ joined with the b♭'' and e'' and the b' in the right-hand texture. Most of these statements are direct, and in prominent or contiguous parts of the texture: the use of single pitches and intervals to join AIT statements in a chain of this sort is characteristic of Carter's writing at the time.

Back-tracking three bars to the second half of bar 135, the beginning of the last fragment of the Cadenza, the music is derived from the polyrhythmic conflict of five against three, a momentary suggestion of the characteristic rhythmic patterning of the piano ensemble. The bass line in this section is characterised by large leaps of a minor ninth, expanding the harpsichord's characteristic semitone. Carter draws attention to the bass by asking for it to be played *marcato*, but disengaging the sixteen-foot in bar 135 for the next five bars to add weight to the building up at the end of bar 140. These fives-against-threes hold back the music before the acceleration (to ♩. = 93.3) takes effect at bar 138. By this point both hands play on the lower keyboard, thereby channelling the music on the main keyboard. In the harpsichord's ensemble, the smallest cymbal struck on edge and marked ***ppp*** on the third semiquaver of bar 138 emphasises the top c''' in the harpsichord and prompts the percussion to rejoin the music. This cymbal stroke marks the beginning of the build up to the cadence at bar 142; it hints at picking out the top notes of the right-hand melodic contour from bar 138, all accented by Carter, thus gradually introducing other percussion instruments back into the music.

The near-constant movement in semiquavers of this fragment recalls the movement in demisemiquavers and semiquavers throughout the entire first

fragment of the Cadenza, from bars 103-106. Just as that movement forces the music forward to arrive at the accented octaves in bar 106 (which is also a point of departure), so the momentum is in the last fragment to bring the music into focus at bar 142, forging it ahead and out of the Cadenza. Later in the Concerto, Carter uses a similar technique towards the end of the *Presto* in bars 511-515. There the notes are lengthened and mostly in unison.

In the main, the harpsichord intervals create the long lines that reach up to the high point at bar 142. Surface continuity is sustained by locking characteristic harpsichord intervals together. The perfect fourth, the minor third, the minor seventh, and the compound semitone are particularly prominent in bars 136-137.

AIT as Part of a Twelve-note Statement

In bar 118, the notes of two AITs bunch close together as part of a twelve-note statement, immediately followed by the remaining four notes. The twelve notes are tied together with the thumbs sounding two notes each, bracketed by the composer. This significant gesture occurs later in the Concerto in bar 585 to prefigure the recurrence of the twelve-note chord of the *Introduction* which Carter describes as the "tonic" chord,[37] holding the ensembles' characteristic intervals in their primary registers, and the less differentiated twelve-note statement in the ensembles which constitutes the big crash of sound which opens the *Coda* in bar 619.

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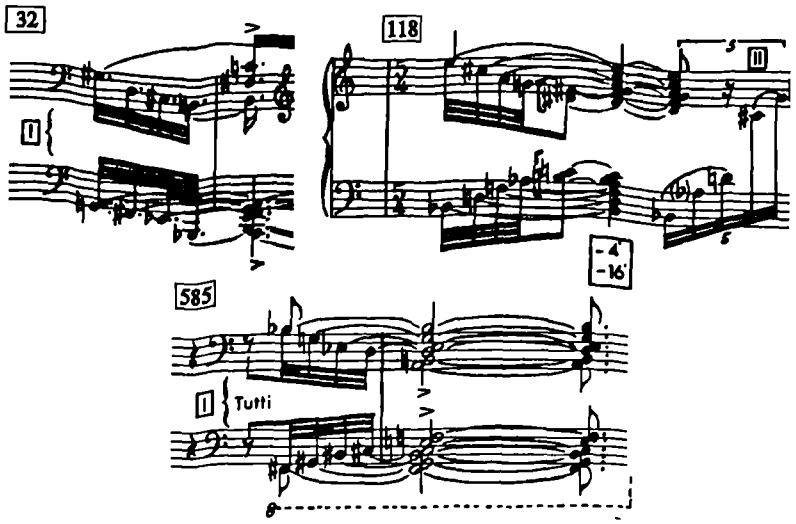
[37] Carter uses terminology in tonal harmony, for example "tonic", to describe harmonic processes in his own music in Benjamin Boretz (revised version), "Conversation with Elliott Carter", *Perspectives of New Music*, VIII:2 (Spring-Summer 1970), 1-22.



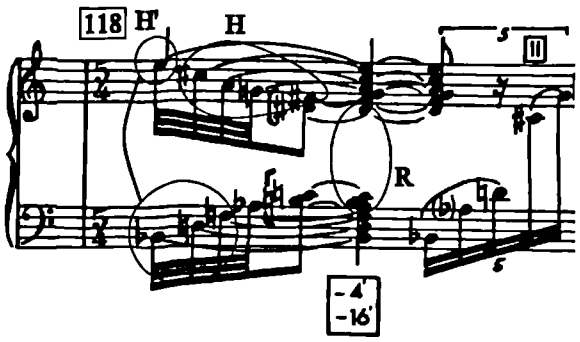
Example 36 – "Folding" gesture in harpsichord, bars 32, 118, and 585

It is interesting that Carter prefigures the explosion of sound by its opposite – an implosion, in bar 118. This figure folds the two hands inwards towards the centre of the keyboard; the folding inwards suggests the opposite of growth and perhaps for Carter represents retreat or retrenchment. Certainly the twelve-note chord is a mass of sound which eventually disintegrates in the *Coda*. Already in the *Introduction*, Carter uses this chord in bar 39, but there, by virtue of the symmetrical form of the Concerto, the twelve-note chord represents the maximum point of growth from the beginning to that point, the point of departure for the Concerto. As with the *Coda* so in the *Introduction*, this statement is prefigured by a dense chord shared between the hands in the harpsichord part, in bar 32, although in this instance not all the notes are tied and the hands proceed in parallel motion downwards. However, the association is carried forward so that when the figure comes round again towards the end of the Concerto, there is a reference to this place in the *Introduction*. This is an example (numerous others are peppered throughout the Concerto) of Carter's technique of cross-reference.

Concentrating on the Cadenza, the implosion in bar 118 is itself a prefiguration of an occurrence of the partly linearised twelve-note statement bars 125-126. The addition of the sixteen-foot and the coupler fortifies the sound so that the harpsichord *tutti* at bars 125-126 matches the weight of the

other two twelve-note statements mentioned above. Further, the presence of the sixteen-foot and four-foot register extends the registers one octave either side of the notated pitches; it highlights this passage, differentiating it from its surroundings. By contrast, the two hands play on separate manuals in bars 123-124, the descending right-hand figure diminishes to a crotchet silence at the end of bar 124 so to add dynamic prominence in bar 125. The crotchet silence also makes time for the harpsichordist to engage the sixteen-foot and the coupler.

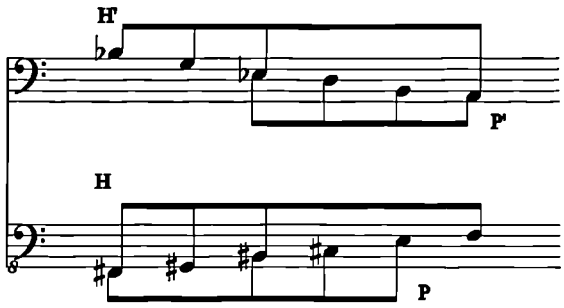
A twelve-note chord necessarily contains all possible tetrachords. However, the vertical and horizontal disposition of the pitches in the statement of bar 118 emphasises the partitioning of the twelve-note set into two harpsichord AITs and a residue tetrachord. The top E (e'') together with the first three left-hand notes, B♭, d and f form an inverted harpsichord AIT; the following four notes in the right hand, c♯'', a', g', f♯' a statement of the AIT in prime form, the remaining pitches a♭, b, c', d♯' arranged so to emphasise their symmetry at the centre of the chord.



Example 37 – AITs and residue in 12-note chord, bar 118

Overlapping AITs and Twelve-note Completion

The twelve-note statement in bar 585 is less evidently constituted from AITs. However, the six pitches played by each hand combine overlapping presentations of two AITs, the right hand the inverted form of the distinct harpsichord and piano AITs, the left hand the prime forms (Example 38):

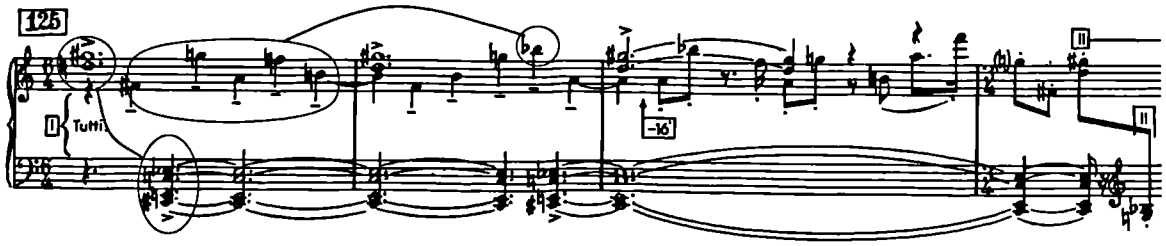


Example 38 - Combining AITs in 12-note statement , bar 585

In each six-note set the two overlapping tetrachords share the tritone interval. The harpsichord AIT accounts for the prominent outer pitches in the music of each hand, the top three pitches with the bottom pitch in the right hand, the lowest three pitches with the highest pitch of the left hand.

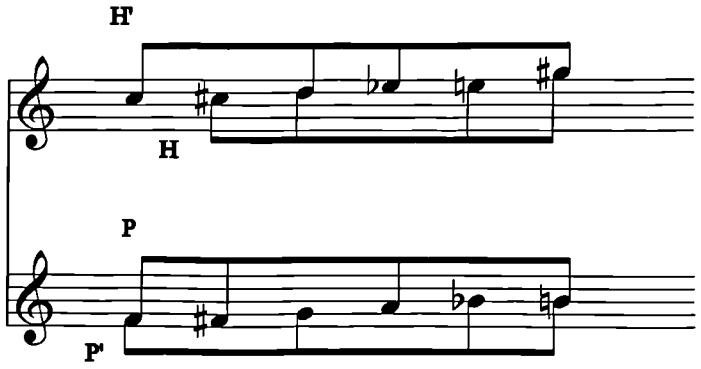
As well as preparing for the return of the twelve-note "tonic" chord and the twelve-note chord which opens the *Coda*, the use of the lower extremity of the harpsichord keyboard (the lowest note here is F♯'') also looks ahead to bar 688 towards the very end of the Concerto where the lowest note on the harpsichord, F'', is used.

An extended and striking example occurs in the seventh fragment of the *Cadenza for Harpsichord*, in bars 125-128 (Example 39):



Example 39 - Overlapping AIT chords and lines, bars 125-128

The six-note chord combining a tritone (d''-g♯'') in the right hand with two minor thirds (C♯-E and c-e♭) in the left is another sonority formed from the superimposition of two AITs, in this case prime and inverted forms of the harpsichord AIT, again sharing a common interval in the tritone (Example 40).

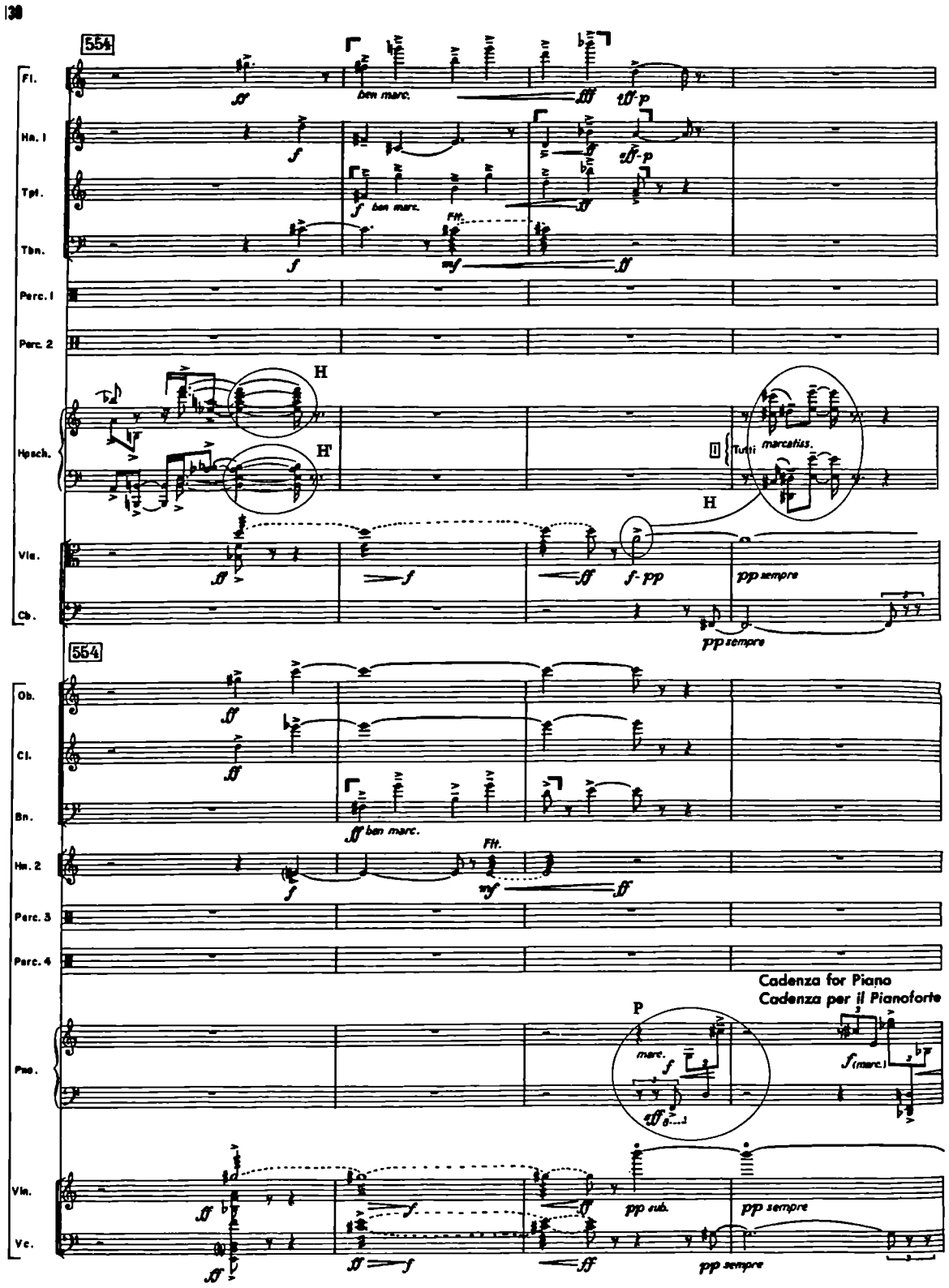


Example 40 – AIT combinations, bars 125-128

The remaining six notes are entwined as a line around the static sonority: these six notes actually derive from two superimposed piano tetrachords, yet Carter takes care that the line expresses as much as possible the characteristic intervals of the harpsichord and its ensemble, to the extent of making g'' and b♭'' prominent in the right hand in bars 126-127—these combine with the d''-g♯'' tritone to form another instance of the harpsichord AIT at the top of the texture.

Later in the Concerto, both ensembles take up the same idea much more expansively between the end of the first *Cadenza for Piano* and the beginning of the second *Cadenza for Piano* in bars 554-556 (Example 41). This statement of the harpsichord's characteristic material in all the instruments, in direct reference to one of the most memorable fragments of the *Cadenza for Harpsichord*, represents the maximum point of isolation of the piano in the dramatic scenario of the Concerto. The line in the flute, trumpet, and bassoon is doubled in three octaves, the ensemble instruments momentarily adopting the registration of the harpsichord, doubling a line played on the eight-foot with the four-foot and sixteen-foot registers. This line reprises the pitches of the crotchet line in bar 125 at exactly the same register and speed (♩=175, 𝅗𝅥=87.5). Likewise, the prominent tritone of the earlier statement (d''-g♯'') appears at exactly the same pitch. Only the remaining notes of the chord are changed, both minor thirds being transposed upwards (to c♯'-e', c'''-e♭'''), heightening the effect of climax at this point. Interestingly the only pitch

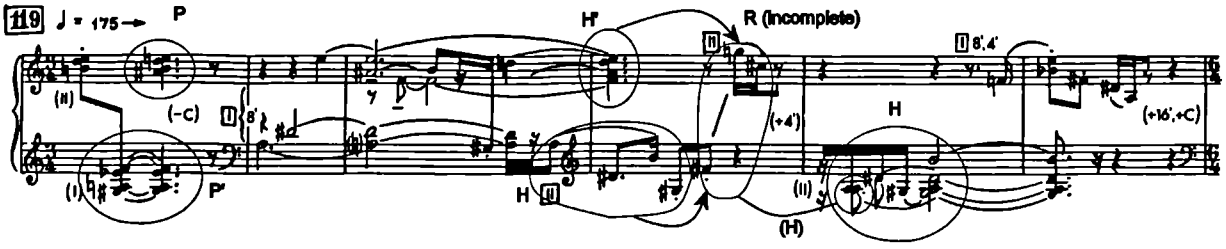
missing from the twelve-note statement in this reference to earlier material is f: in the original statement this pitch has the unique property of wandering through the registers, appearing at f′, f″, f‴. However, before this reprise, this is the last pitch heard in the harpsichord (f‴, the highest note in its chord in bar 554, the chord itself consisting of a harpsichord tetrachord in each hand) and the first in the following piano entry in bar 556 (F′, the first pitch of the statement of the piano tetrachord).



Example 41 – Reference to *Cadenza for Harpsichord* in *Presto*, bars 554-557

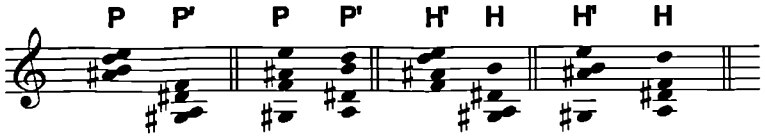
AIT Ambiguity and Delayed Completion of the Twelve-note Set

In bar 119 the harpsichord arrives at an anomalous point: through the last two crotchets of the previous bar the texture becomes a statement of prime and inverted AITs, one in each hand, but these are the piano's characteristic tetrachords (g♯-a-e♭'-f and a♯'-b'd''e''), not the harpsichord AITs. The following five bars dwell on these pitches and introduce the residue pitches g'', c♯'', and f♯'.



Example 42 – AIT ambiguity and re-spelling, bars 119-124

These bars explore the property of AIT combinations noted in Carter's AIT chart for the Double Concerto (Example 26, page 128) whereby any eight-note combination of two AITs can be re-spelled, so to speak, in complementary ways (Example 43 – AIT combinations in eight-note chord, bars 119-124).



Example 43 – AIT combinations in eight-note chord, bars 119-124

The vertical arrangement of two piano AITs is taken apart and reconstituted as two harpsichord AITs around the tritones a-d♯' (left hand) and a♯'-e'' (right hand), emphasising the harpsichord's interval repertoire. In bar 121, b' and g♯ are briefly sounded against f'-a♯'-e, as if attempting to find the note which completes the AIT (though the b' and g♯ against the a♯'-e'' complete yet

another of the harpsichord AITs present in the eight-note chord). Finally the sustained d'' of the third crotchet arrives on an inverted harpsichord AIT statement: this is rapidly followed by a linear statement of the complementary harpsichord AIT in the left hand. An incomplete statement of a residue tetrachord follows (the three pitches f♯', g'', c♯''). Though residual, these three pitches are also a subset of a harpsichord AIT statement, completed with the left-hand a in bar 123.

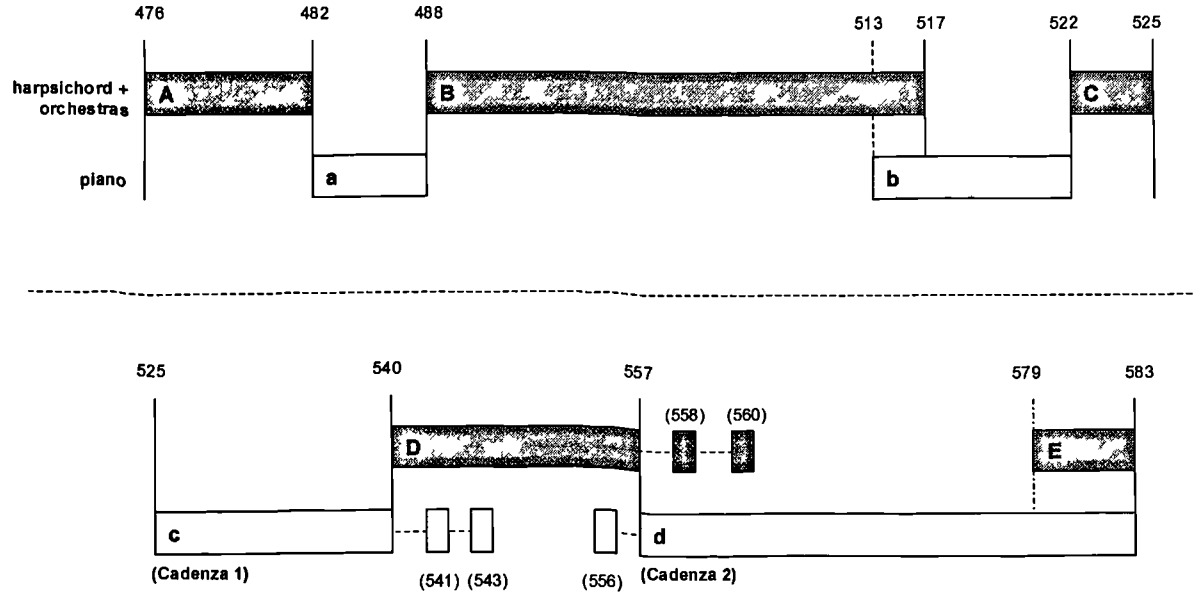
Carter achieves a sense of suspended animation by weaving this music around a set of pitches in a fixed register, and delays completion of the twelve-note set (the missing pitch C is reintroduced in the left-hand chord in bar 125). The physicality of playing reflects the content of the music: in these bars the two hands hover above groups of notes in close proximity to each other so that only a little movement is required to play them. The hands are poised, suspended above the keys while the forward movement of the music is also, temporarily, suspended.

Presto and Cadenzas for Piano

The *Presto* and the *Cadenzas for Piano* are considered as one unit here: they form one large collage, comparable to the form of the *Allegro scherzando* in which the music of the piano and its ensemble is continually cross-cut by the harpsichord and its instruments playing slower music. Here the roles are reversed: the movement is led by the harpsichord, it and all instruments playing the characteristic harpsichord intervals and associated speeds. Even the piano's instruments have defected, leaving the piano to assert its music *maestoso*, alone, its interpolations eventually expanding into its two elaborate Cadenzas. The duration of the *Allegro scherzando* also closely matches that of the *Presto* and *Cadenzas for Piano* together. The *Presto* itself starts with the harpsichord entry in bar 476 (although the tempo indication for *Presto* is only given at bar 479) and ends in bar 583, after which the collage disintegrates into much smaller fragments. From this point the piano interrupts more

frequently and fiercely, provoking the percussion into a brief cadenza of its own in bars 603-611.

The *Presto* consists of five statements, separated by the piano's interpolations (Example 44).



Example 44 - Formal outline of *Presto*

By virtue of the music being spun out of the harpsichord AIT and its associated intervals, the *Presto* has a distinctive sound which is different from the other movements. The collage form enables the harpsichord to be heard without being obscured by the piano and other instruments: when it is accompanied, Carter keeps the accompaniment very light, often using the ensemble to echo and extend the statements of the harpsichord rather than have them playing at the same time. Percussion instruments are noticeably absent, only creeping in at the beginning of the first *Cadenza for Piano* in bars 523-527, and then towards the end of the second, bars 576-583. Their absence makes room for the harpsichord to speak without being amplified or blurred. As the percussion re-emerges to accompany the piano, they collaborate with it to disrupt the orderliness established by the harpsichord, moving from cymbals (bar 560) and gongs (bar 577), to the membraphones starting in bar 576.

The music of the *Presto* grows from the harpsichord's characteristic materials first exposed in the *Cadenza for Harpsichord*. Three types of material are particularly prominent: the arabesques or cascades which open and close the *Cadenza for Harpsichord*, for example at the very start of the *Presto* in bar 476; lines in even rhythmic values, sometimes against arabesques, sometimes against other lines in even rhythmic values as polyrhythms (in the "walking bass" of the second fragment of the *Cadenza for Harpsichord*, from bar 107, and in the *Presto* appearing first in bar 488); and lively fragments built largely from quavers and semiquavers (Cadenza bar 111, in the *Presto* at bar 479). Simultaneously the *Presto* shares the tempo established at bar 119 in the *Cadenza for Harpsichord*, thereby establishing another direct relationship with the *Cadenza for Harpsichord*.

As well as large-scale coherence through these cross-references, internal coherence is sustained in the collage form. This is a paradox: seemingly disparate elements are placed side by side and yet by virtue of constant cross-referencing and the intervallic and linear consistency of the music, the result does not sound incoherent.

By way of example, an analysis of segment B illustrates how immediate continuity is achieved within this segment; the counterstatements either side of it give an overview of the movement as a whole. The *Cadenza for Harpsichord* aside, Segment B of the *Presto* is the longest stretch of harpsichord music which is unaccompanied by the piano, twenty-nine bars from 488 to 517.

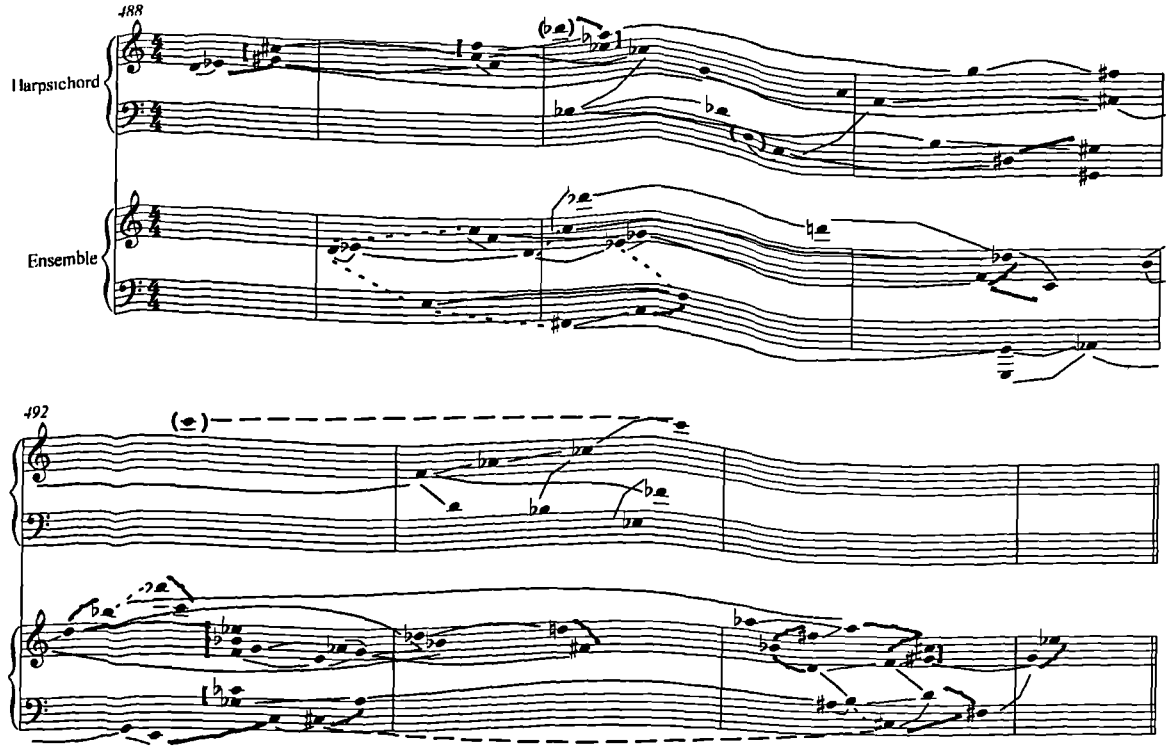
Segment B is itself structured as a micro-collage, falling naturally into three sections. These sections start at bars 488, 495, and 506, with each led by an extended phrase from the harpsichord which is closed by the instruments (the first two phrases) or piano (the third phrase, moving into the first *Cadenza for Piano*). In the commentary which follows, each section is examined in turn to discern how simultaneous or near-simultaneous processes at different levels generate music that is coherent, and the ways in which music of the other instruments relates to the harpsichord music in this segment. The reductions

of the harpsichord and instrumental parts of the score are annotated to identify significant local and medium-scale intervallic relationships: the most important of these are described in the text. The music for this section is reproduced in Appendix D.

First Phrase

The main sonority that starts the segment in bar 488, g♯'-c♯'', is articulated as a perfect fourth, a harpsichord interval in its "tonic" position. These notes are also residual sonorities from the piano AITs, bars 486-488, taken over from the horn and trumpet in the harpsichord ensemble above, with violin providing g'' and harpsichord doubled by cello playing the d' which completes the residue tetrachord. As already described in relation to the *Cadenza for Harpsichord* (page 129) this is a characteristic way of using the AITs and their residue and is a means to tie music from one section to another. Carter completes the twelve-note set by pairing the prime and inversion of an AIT, adding the residual sonorities.

The reduction of these bars in Example 45 shows some of the linear processes and local symmetries at work in this phrase.



Example 45 - Intervals and linear processes, bars 488-495

AIT statements are present at the start of the phrase as described above, and the first four notes of the melodic line articulated by the harpsichord from bar 488 to 491 trace out the harpsichord AIT in inversion; these are the harpsichord top notes c♯'', f'', a♭'' and g''. Also in the last bars of the phrase, the harpsichord AITs fulfil the cadential function of twelve-note completion with a residue tetrachord: the music of bar 494 is spun from the pitches of two superimposed tetrachords (b♭, b, c♯, f plus d, f♯, g♯, a), with the residue tetrachord (c, e♭, e, g) split between the harpsichord's last two notes before the bar, and the oboe's two notes in the following bar. However the music in between, in both harpsichord and ensemble, is spun from interval patterns and symmetries.

Perfect fourths are prominent at the start of the phrase in the harpsichord part, climbing through juxtapositions of the harpsichord's characteristic intervals to the a♭'' in bar 490, which is the highest note of the first part of the phrase (the c♯'' of the first fourth relates by a semitone to the c'' of the second;

this second fourth, c''-f'', is then moved through a minor third to reach the next, e♭''-a♭''). The a♭'' also forms a perfect fourth with the flute's d♭''' at the start of this bar. The harpsichord's upper part then descends in semitones through g'' to f♯'' in bar 492. The descent in the upper part is paralleled in the middle registers, moving from the g♯' of bar 488 via g' in bar 490 to the f♯' in bar 491, and in the lowest part, the e of bar 490, itself a semitone away from the bassoon's f, moving down as part of a line striding in wide intervals to d♯ in bar 491 before a rising fourth to g♯ closes the segment.

Apart from fourths and semitones, the minor third is also significant in this harpsichord fragment: the interval c''-a' is picked out by the clarinet in bar 489 and mirrored by its e♭-g♭ in the following bar; in the harpsichord part b♭-d♭' in bar 490 is mirrored by b-g♯ in bar 491.

The instrumental voices at the beginning of the phrase share and pick out the pitches of the harpsichord part: in bar 489 the e♭'-d' semitone persists as a flute tremolo, the semitone is emphasised with a viola *pizzicato* and the e♭' is picked up by the violin at the end of this bar, also appearing in the clarinet in the next bar. Nevertheless, the clarinet line, and the movement of the cello from the same d' through e to F♯, make it clear that the intervallic basis for the instrumental parts is subtly different, with a pattern initially unfolding in minor sevenths. The flute's leap from c'' to d♭''' (bar 490) introduces another element into the texture, the minor ninth (standing for the harpsichord ensemble's semitone, this interval being Carter's only consistent substitution of an interval-class equivalent for a "real" interval). The minor ninth appears again in the left hand of the harpsichord part: b♭-c♭'' and e-f' in bars 490 and 491. After the d♭''' in bar 490 moves up a semitone to d''' at the end of the bar (parallel to the other ascending semitone lines in the texture already described), the line descends in two leaps of a minor ninth (the viola's d♭''-c' in bar 491), mirrored by an ascending minor ninth in the double bass (G'-A♭).

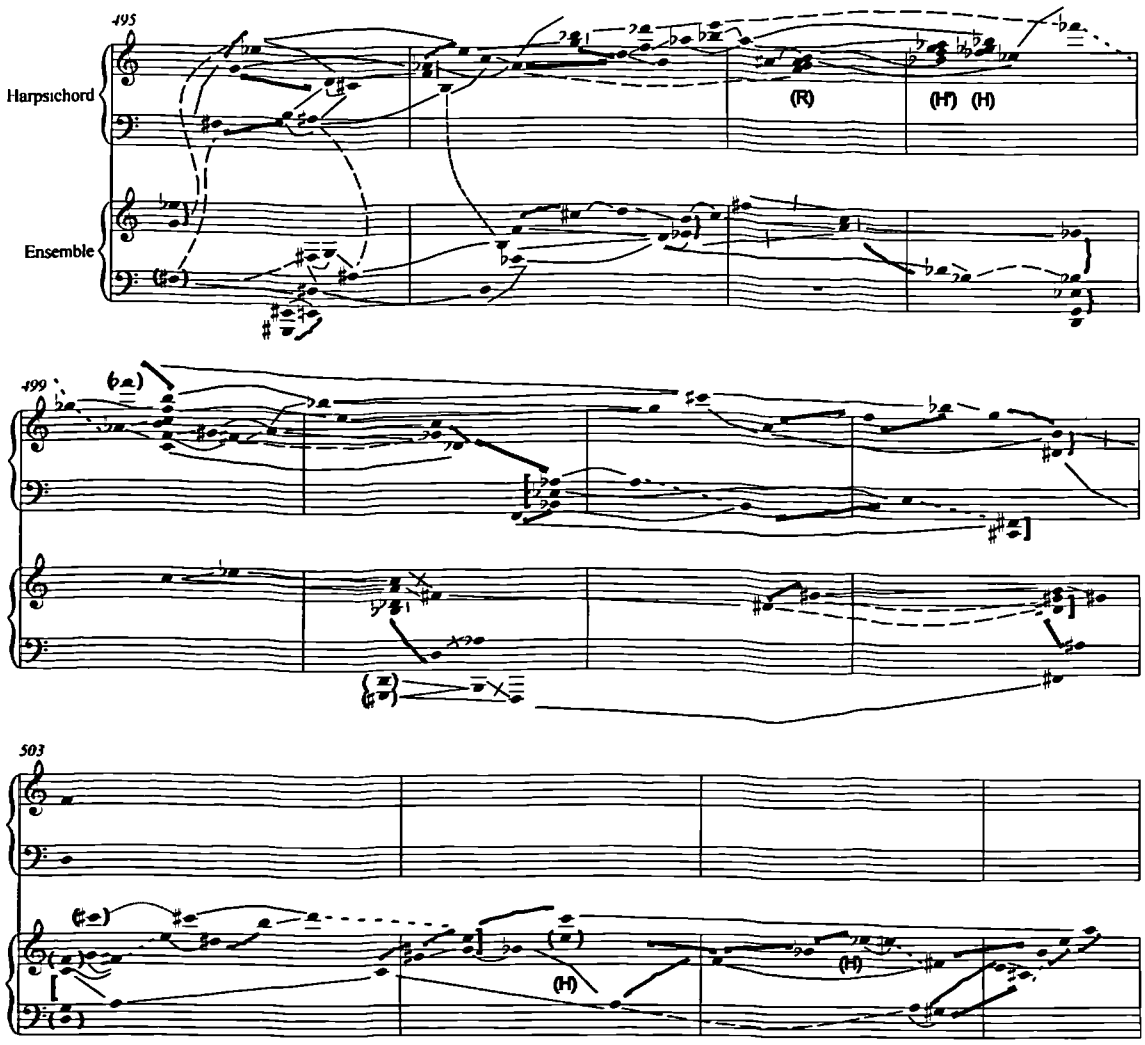
The following three bars present a fragmentary texture as a consequent, as it were, of the harpsichord's phrase. Once again, harpsichord and instruments draw on different parts of the intervallic repertoire, taking up and extending ideas from the first phrase. The motif introduced by the cello, double bass and bassoon in bar 490—a three-note figure formed from a minor third and a minor sixth—introduces the fragment in the clarinet entry at the end of bar 491. The upward leap of a minor sixth is mirrored in the flute: in spite of the strongly articulated *pizzicato* chord in violin and cello half-way through the bar which re-asserts the perfect fourths of the opening of the phrase, it is the configuration of minor third with minor sixth which is the focus of the remaining music, appearing in a variety of forms and permeating the music of bar 494. Meanwhile, the minor ninths introduced prominently in the instruments in the first part of the phrase become the basis for the end of the harpsichord fragment in bar 493, regaining the flute's c''' of bar 492 and reflecting the instrumental parts' descending line in bar 490-491 with a pair of ascending intervals, b♭-c♭''-c'''.

Over the phrase as a whole, consistency is achieved through connections in different registers between prominent pitches in particular registers between the four fragments. Characteristically, this grows from the middle register outwards. The descending line in the harpsichord which spans the whole length of the first fragment, g♯'-g'-f♯', continues with the f' of the harpsichord's entry in bar 493, reaching e' (f♭') at the end of this bar. In the upper register, the flute's d♭''' and d''' in bar 490 prepare for its subsequent c''' in bar 492 and the harpsichord's arrival at that pitch in bar 493. In the lowest parts, after the texture is opened out by the instruments in bar 488, the F♯-A of bar 490 is mirrored by G-E in the bassoon in bar 492, the first pitches of these two intervals emphasising a semitonal ascent F♯-G which mirrors the descents in the upper parts (for example in the flute). The lowest part then moves up through minor sixths and semitones—although the goal of this pattern is the b in the cello part of bar 494, the symmetry of its three-note

entry with the bassoon's at the end of bar 492 reiterates c♯ as a common pitch. Finally, through the symmetries of bar 494 the last crotchet beat arrives at a simultaneous d'-g♯'-c♯'', reaching again three of the four notes of the chord which prominently opens the phrase.

Second Phrase

The second phrase (bars 495-506, Example 46) breaks down into four smaller fragments distinguished by texture and materials. The first (bars 495-497) briefly superimposes two of the harpsichord's characteristic tempi, the second (497-500) is more varied, starting with a flourish that recalls the cascade texture of the *Cadenza for Harpsichord*, following with five notes in an even pulse, then concluding with the syncopated lines also first heard in the Cadenza. The third in bars 500-503 reverts to a polyrhythmic exposition, though at different speeds from the first. The fourth (bars 504-505), for instruments alone, is composed of melodic scraps, heard ultimately against a harmonic statement of the harpsichord AIT (a-b♭'-e''-c''', tremolo strings and flute in bar 504-505).



Example 46 – Intervals and linear processes, bars 495-506

The phrase is linked to the end of the previous phrase through common pitches—the f♯, g′ and e♭″ in the instruments appearing in the first four notes of the harpsichord music in bar 495. Also, the intervallic disposition of the start of the left- and right-hand lines, f♯-g′ and e♭″-d′ respectively, is that of the last pair of intervals in the previous harpsichord fragment in bar 493 (e♭-f♭′, c♭″-c‴), namely a pair of minor ninths, and moving obliquely within the more widely spaced disposition of the earlier pair. The interlocking of these intervals and the subsequent extension of the lines emphasise the perfect fourth, minor third and semitone, the b of bar 495 giving rise to a series of minor third relations (d′, f′, a♭′) before being taken over by the viola as the

first pitch of its entry in bar 496. The uppermost line of this first fragment ascends through a semitone to e'' and then by minor thirds to the e''' at the end of bar 496, marking the high point and culmination of this fragment.

The second fragment (bar 497) begins with a cascade, momentarily and unexpectedly outlining a diatonic tetrachord d''-c''-b'-a'. This is a residue tetrachord: the rest of this cascade consists of direct and symmetrical appearances of inverted and prime transpositions of the harpsichord AITs, completing a twelve-note statement and, through semitones from the c♯'' of the end of the first fragment and the d'' of the cascade, reaching the same pitch e♭'' prominent at the start of the first fragment (first note in the harpsichord in bar 495). The following leap to f♭''' regains the e''' of bar 496, and collapses the space outlined by the entire first fragment into a single interval, doubled in octaves in the instruments. The line proceeds downwards as dramatically as it ascended, in minor sevenths through g♭'' to a♭' (bar 499)—the b'' of the following chord outlines a perfect fourth with the preceding f♭''', this with the f'' of the chord slips by a semitone to close the fragment on the tritone b♭''-e'' which harks back to the minor thirds of bar 496.

The third fragment opens in bar 500 with a chord built from a stack of fourths plus a tritone (F, b♭, e♭, a♭, d♭', g♭', c). The upper tritone of this chord joins in the tritone-minor-third relationship with the f♯'-a' of the previous fragment. The right-hand line in the next bars once again prominently expresses the minor thirds and tritones of the first fragment, here g'', c♯''', b♭''. Beneath this, the notes of the left hand slip the lower part of the chord of bar 500 up a semitone (bars 501-502, a, B, e, F♯-C♯, extending down by an additional fourth), expressing the harpsichord intervals minor seventh and fourth.

Up to this point in the second phrase the instruments have pursued a less independent path than in the first phrase, more frequently doubling pitches or sustaining pitches and intervals in the harpsichord part, though sometimes

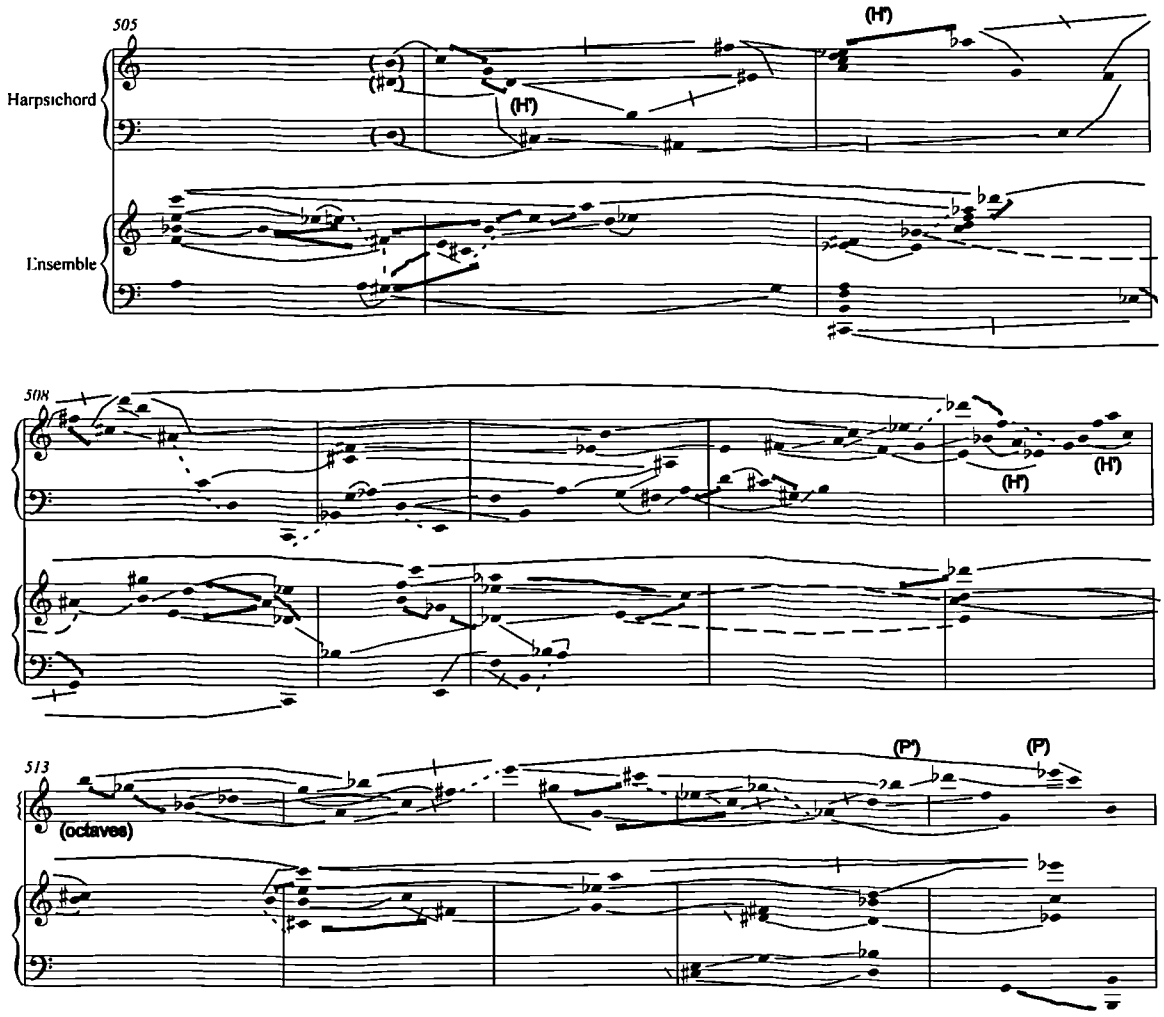
building independent structures from them. For example, the a'-c'' sustained by violin in bar 497 sounds two of the pitches from the residue tetrachord in the first septuplet of the harpsichord's cascade. The interval acquires an additional minor third, b♭-d♭' in bar 498 (cello, clarinet), related by a minor ninth to the upper interval (a'-c''), the minor sixth separating the inner notes and extending the minor-sixth-plus-minor-third spacing of the first phrase, and reprising the sonority of the chord in the left hand of the harpsichord in the *Cadenza for Harpsichord*, bar 125. All four pitches are then sustained in the instruments through to the middle of bar 499 and are touched on again in bar 500. The last fragment in this phrase, starting in bar 503, has the instruments conclude the harpsichord fragments, moving away from the c♯''' of the previous fragment (touched by flute in bar 503) to a c''' sustained by violin tremolo and flute. This forms the highest pitch of a sustained AIT statement in strings (a, b♭', e'', c'''): the lowest pitch a also relating to the a of bar 503, moving down a semitone to g♯ at the end of the bar.

In spite of the detailed elaboration of intervals in the inner parts, the striking characteristic of this second phrase is the consistency in the upper and lower registers. The elaboration in the upper part of the tritones and minor thirds around e'', g', b♭'', c♯''' and e'' has already been noted. In the lower register, a similar long-range elaboration occurs around F', G♯', B, D, with pitches from this complex appearing in bars 495, 498 and 500 before a final minor ninth leap in the low register from F' to F♯.

Third Phrase

The third and last phrase is the longest: lasting for eleven bars from bar 506, it leads into a piano entry that takes the music to the first *Cadenza for Piano* (see Example 47). Here blocks of AITs permeate the texture towards the end of the section (bars 511-512), reflecting the beginning of the *Presto* (bars 476-478). However, the writing at the beginning is different, more reminiscent of

the fantasy in the *Allegro scherzando*, than the orderliness that the harpsichord has established by the end of the *Presto*.



Example 47 – Intervals and linear processes, bars 505-517

This third phrase throws the harpsichord part into sharper relief: its music becomes progressively more continuous, culminating in a line doubled in octaves from bar 513 onwards (*tutti*, and with coupler: the sixteen-foot stop is removed half way through bar 514 and reintroduced to emphasise the end of the line in bar 517). Against this line, the instruments by this stage touch in pitches and intervals, responding to the octave line in the harpsichord and changing registrations by doubling pitches and intervals in turn. This emphasises the sonority of the harpsichord against the entry of the piano in

bar 513, the resonant fifths and major sevenths of the piano writing leaving space in the texture for the doubled line of the harpsichord to cut through.

The phrase initiated by the harpsichord in bar 506 overlaps with the fragments of the last part of the previous phrase, with the pitches of the harpsichord entry growing symmetrically from prominent pitches around the end of its previous fragment in bars 502-503 (b'-d♯'-d moving to c''-d'-c♯ in bar 506). As before, although the music draws on all the harpsichord's characteristic intervals in its melodic development, particular configurations appearing at particular registers bind the music together and generate local coherence. Specifically, the patterns involving minor thirds and tritones noted in connection with the second phrase reappear and govern the upper parts of the texture, starting with the harpsichord c'', f♯'', e♭'' in bars 506 and 507, and a♭'', d''' and b'' in bars 507-508. Following this the harpsichord part leaves the upper register "unresolved" until d♭''' is reached in bar 512, from which point this pitch, b♭'' and e''' are the focus of the upper part. The minor third e'''-c♯''' which is prominent melodically in bar 515 and sustained by the d♭''' of bar 517 moves down by a semitone at the end of bar 516 to e♭'''-c, a "resolution" of sorts which is anticipated in the instruments' earlier focus on minor thirds and tritones around c'', e♭'', and a'' (see for example flute in bars 514-515, oboe in bar 515, and the same oboe line combining with the harpsichord and violin e♭''' of bar 517 and the harpsichord c''' to complete the minor third-tritone configuration). Within this texture, AIT statements once again function as points of arrival and departure; linearised in the harpsichord in bar 506 (g'-d'-c♯-b) and forming the upper part of its cascade in bar 507 (e♭''-d'', then d''-a♭''), close statements appear in both hands in bar 512 (b♭'-a'g'-e♭' and b'-c''-f''-a'') before the harpsichord music thins out to unison octaves over the piano entry. At the end of the phrase the harpsichord part features direct prime and inverted forms of the piano AITs, nevertheless in dispositions which emphasise the harpsichord's rather than the piano's intervals, in a

passage already quoted as an example of AIT and residue chaining (Example 30, page 112).

These three short phrases demonstrate Carter's ability to create coherence using a specific repertoire of material which operates at different levels. AITs are used to articulate and frame the structure, culminating in the impressive example of AIT chaining which opens the *Cadenza for Piano*. Between these points the music is elaborated with considerable fantasy: a full range of textural contrast, from the continuous (in the shape of pitches shared between the harpsichord and ensemble) to the discontinuous (where registers are suddenly broken away from, before being resumed some bars later) provide different modes of progression from one phrase or fragment to the next. Throughout these bars, as in the work as a whole, the relationship between the harpsichord and instruments is well crafted, whether the two are playing in alternation (as in the first phrase) or together. The characterisation of the material reaches back to the exposition of the sounds and textures in the *Cadenza for Harpsichord*. Finally, the increasing tendency of the instruments to double pitches at different octaves (resulting in some textures and sounds that are surprising in an overtly modernist work) seems to be a direct attempt to mimic the capability of the modern pedal harpsichord through registration to open out registral space. This culminates in the short ensemble octave passage (bars 555-556) just before the second *Cadenza for Piano*, quoted above in (Example 41, page 145).

Allegro scherzando

This movement is in the form of a large collage and is led by the piano and its instruments in the main, with the harpsichord initially assuming a more subordinate role. Its interjections answer and often contradict the piano music that precedes it.

Although this movement is not harpsichord led, its interjections display a large variety of music, from very short, snappy statements, for example bars 166-168, to more extensive interpolations such as bars 292-300, tending

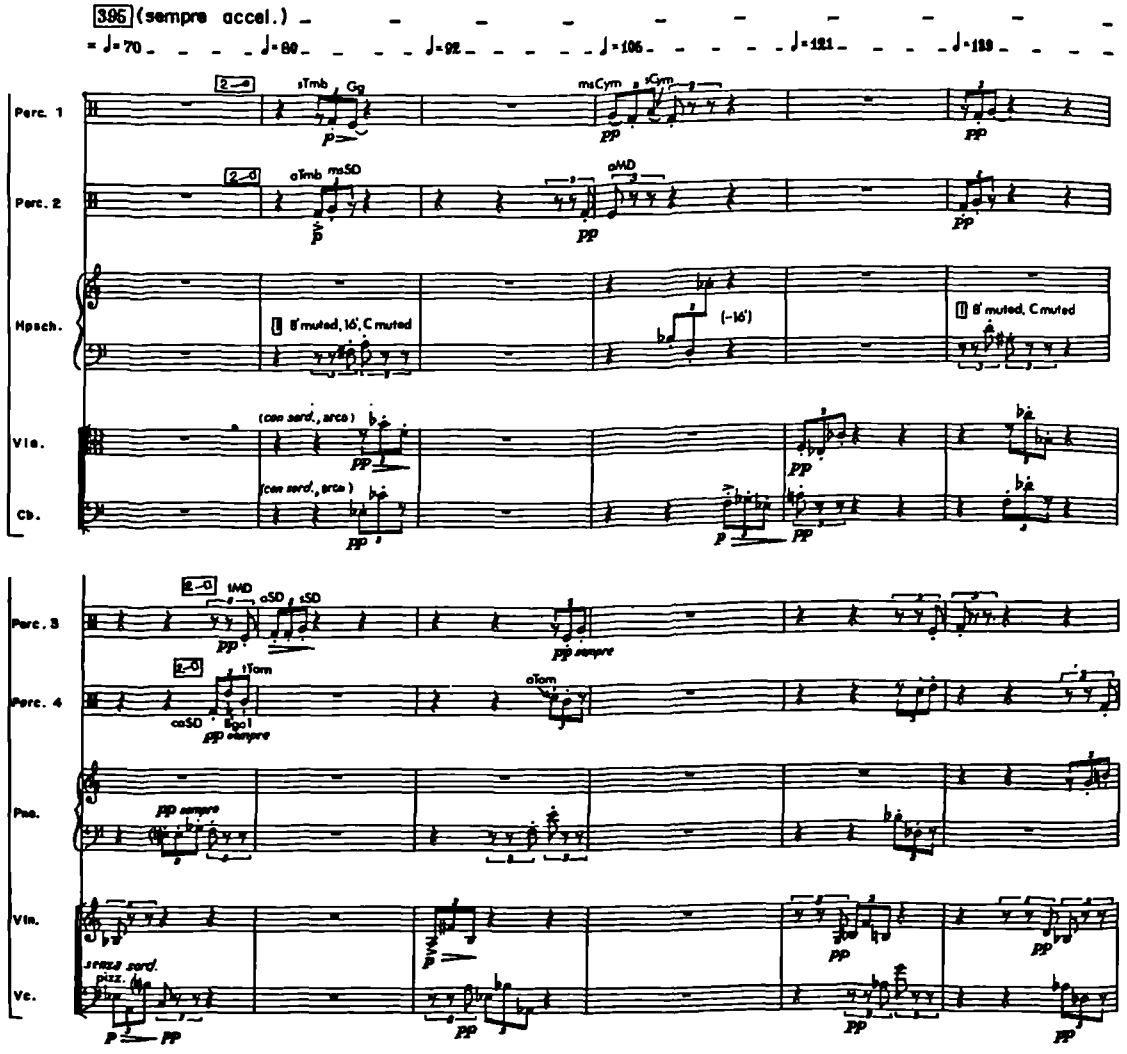
towards longer phrases as the movement progresses, and preparing for the equality of the two instruments attained in the *Adagio*. All draw on characteristic sonorities and textures from the harpsichord writing in the *Introduction* and particularly in the *Cadenza for Harpsichord*. For example, the *tremolando* effect in bar 172 can be traced back to its appearance in bar 117, and the rhythmic stresses in the harpsichord music in bars 262-264 are brought from a different context in bars 108-109 in the Cadenza. The *tremolando* is also used in bars 67-68 at a cadence in the *Introduction* at a point where the harpsichord music becomes increasingly differentiated, pushing it towards the *Cadenza for Harpsichord*. Its altered appearance, in bar 638 in the *Coda*, is now at the beginning of a statement, reversing its cadential role in the *Introduction*.

More substantially, some of the music introduced by the harpsichord's ensemble looks forward to the next movement, *Adagio*, by introducing music more fully developed in the course of the later movement. For example, the flute part in bars 186-190 anticipates some of the pertinent melodic intervals from the *Adagio*, with the muted brass of the harpsichord ensemble providing an even clearer pointer to the slow chorale of the central movement. Other examples include bars 162-164 in the oboe; bars 172-173, with pitches passed from the violin and cello to the winds in ensemble two, then to the winds in ensemble one; bars 265-273 in the brass of the harpsichord ensemble.

Adagio

The beginning of the *Adagio* is also the centre of the Double Concerto. Here Carter creates an oasis of calm around which he builds whirlwinds of sound. The movement marks the point of greatest cooperation in the dramatic scheme of the Concerto: against a chorale-like texture largely sustained by the wind instruments, the harpsichord, with the piano, percussion and *pizzicato* strings, joins in weaving accelerating and decelerating patterns which are threaded in space around the outside of the orchestral disposition. To draw the harpsichord into the sound of the ensemble and to blend with the dry

sound of drums, *pizzicato* strings and piano *staccati*, this movement makes the most extensive use in the Concerto of the mute stop (for example bars 395-400, Example 48).



Example 48 – *Adagio*: use of mute, bars 395-400 (wind instruments omitted)

At the culmination of the last large *accelerando*, the harpsichord and piano join in a fast duo in which at first it sounds as if the two instruments have reached a point of equilibrium. This passage is toccata-like in character, and the harpsichord and the piano are equal partners: although the piano slightly dominates the harpsichord at the beginning (bar 434ff), Carter instructs in the score that they should be evenly balanced (bar 438). However, this equilibrium is short-lived: the piano continues to accelerate until its notes are

a blur, while the harpsichord independently slows down, both instruments reaching a point of stasis by opposite means. By its virtuosity, this passage is also cadenza-like, almost as though Carter superimposes two cadenzas one on top of the other. Carter well understands the differences in action on the two keyboards: although the quicker descent of the key of the harpsichord makes it more agile than the piano and more suitable to play faster notes, the first part of the passage already has the piano playing eighteen notes to the harpsichord's sixteen. When the piano plays faster and more quietly towards the end of this passage from bar 453, the harpsichord slows down so that the piano seems to take on the character of the harpsichord temporarily. Carter is careful to choose a small range of notes generally in the middle of the keyboard for this passage so that the distances between notes are minimised: compact hand positions allow finger action to be as fast as possible. The slow chorale-like melodic fragments of the wind instruments act as an anchor for the soloists, like pegs on which the two keyboardists hang their music.

Introduction and Coda

"The work is built...on ten superimposed slowly beaten out regular speeds (bars 1-40) - five for the orchestra on one side of the stage, and five for the piano and its orchestra on the other side of the stage. A musical interval is associated with the attacks of each of these and used in the *Introduction* as if it were a percussive sound."[38]

Carter's chart of the ratios of speeds and their associated intervals has already been given (Example 24, page 116). He describes the exposition of these materials in the introduction as follows:

> The smallest ratio of speeds is 49:50, which is the first represented. This fans out to the largest, 1:2, in intermediate steps... during the *Introduction*. The ratio 49:50 is represented by alternating rolls of the snare drum on the piano side of the stage at metronome speed 25, and

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[38] Elliott Carter, "The Orchestral Composer's Point of View", in *Collected Essays and Lectures*, 243.

> of the cymbal on the harpsichord side at speed 24.5, starting in an ornamented way in measures 7 and 8 and resolving to the pure lengths combined with the associated intervals in measures 10-12. Then harpsichord speed 28, perfect fourth, and piano speed 21 7/8, major seventh, appear in measures 13-14 - piano speed 21, major sixth, and harpsichord speed 29 1/6, augmented fourth measure 17 - harpsichord speed 19 4/9, minor third, bar 20; piano speed 31.5, perfect fifth, measures 23 and 24 - finally harpsichord speed 17.5, minor seventh in measure 31, and piano speed 35, major third, measure 36. During these measures some of the layers of speed that have been introduced drop out, but they all begin to be sounded as the two climaxes, made by rhythmic unisons, approach. Four of the speeds that fill in the ratio of 35:17.5 are in a ratio of reciprocals, as the chart shows, and these reach a rhythmic unison in measure 45, while the other four speeds fill in 35:17.5 in a ratio of whole numbers and come to a rhythmic unison in measure 46. The two systems engender a pattern of regular beats in the case of the reciprocals and a pattern of acceleration and retardation in the case of the whole numbers.[39]

In this way, Carter gradually builds up, layer by layer, the ten speeds and their corresponding intervals in the first half of the *Introduction*, all the while making the two soloists more prominent. At mid point, the characteristic intervals are heard near-simultaneously (bar 39), with the rhythmic unisons occurring shortly after (bar 45-6). Thereafter the ensembles thin out and the two soloists, in particular the harpsichord, play longer and more distinct phrases, culminating in the solo *Cadenza for Harpsichord.*

The entire Double Concerto grows out of percussion music. In keeping with the concern with the "physical origins of musical sound",[40] the different

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[39] ibid., 243-245.

[40] Elliott Carter, notes to the Nonesuch recording of the Double Concerto, in *Collected Essays and Lectures,* 258.

sounds of the soloists emerge from the percussion instruments in their ensembles, and are initially heard as colouring and extending the percussion sonorities. Carter describes the articulation of each new musical interval by a soloist "as if it were a percussive sound".[41] It is intended to give the impression of musical pitches and intervals made from them as arising from the percussion so that the musical texture is homogeneous. This Concerto makes the percussion the main body of the orchestra, the pitched, blown, and bowed instruments secondary, with the soloists mediating between them. This stands in contrast to the Piano Concerto (1965), which "uses the orchestra mainly as an elaborate ambience, a society of sounds or a sounded stage setting for the piano."[42]

Throughout the Double Concerto Carter uses the extremes of textural differentiation to mark points of structural importance. In the *Introduction*, the climax of homogeneity occurs at bar 39 when all the ten intervals sound near-simultaneously in their "tonic" positions. Interestingly, Carter's writing for the harpsichord at this point is quite different from the other instruments and cross-references to bars 553-554 in the *Presto*. In the *Introduction* this rhythm is not readily heard because all the instruments of the two ensembles are playing loudly: it comes to the fore in bars 553-554. Carter now leaves it totally unaccompanied on the harpsichord so that it is clearly heard, and displaces the climax until the third beat of bar 554 is taken up by the wind instruments of the two ensembles.

The *Coda* completes the symmetry with the *Introduction*, condenses it, and ends the Concerto. Carter has said that it "begins with a crash and then, like a large gong, dies away over many measures in wave-like patterns, with diverse tone colours fading out and returning—each time slightly different,

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[41] Elliott Carter, "The Orchestral Composer's Point of View", in *Collected Essays and Lectures*, 243.
[42] Elliott Carter, "The Orchestral Composer's Point of View", 242.

and each time with less energy—until the work subsides to a quiet close."[43] The explosion of sound at bar 619 gradually dies away through successive waves. These waves generate musical phrases that thin out one by one until the music dissolves at the end. In terms of harpsichord writing, the *Coda* condenses the different figurations and their effects elsewhere in the Concerto, so that throughout this section the music seems to be something new whilst echoing what has been before. In this way, there is no repetition and the end of the Concerto seems as inventive as the *Introduction.*

The first section of the *Coda* starts at bar 619, the second, a simplified and modified version of the first, at bar 653. Principally there is one pattern in each orchestra, led by its percussion members and the soloist; further, a subsidiary pattern can be discerned, which is not percussion led. It is repeated, though modified, in the second section of the *Coda* (beginning at bar 654), so that the ripples of these wave-patterns are equal in number in the two sections. This then creates an internal symmetry and is a way of unifying the section. Each ripple carries something from what precedes it, but all the while reinventing and discarding. The music ends with a click in bar 689.

The piano ensemble "has important attacks every seventh measure with subsidiary ones every thirty-fifth quarter while the harpsichord group emphsizes every fifth measure and secondarily every thirty-fifth dotted eighth—all with many subsidiary patterns and accents."[44] This produces a significant coincidence of the two patterns at bar 654 at the start of second section of the *Coda,* and other near-coincidences, such as bar 633 in the second ensemble and bar 634 in the first, bar 647 in the second and bar 648 in the first; in the latter half of the *Coda,* bar 668 in the second ensemble and bar 669 in the first, bar 682 in the second ensemble and bar 684 in the first; the final coincidence occurs in the very last bar.

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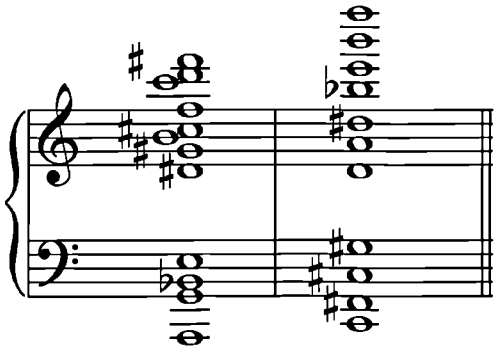
[43] Elliott Carter, notes to the Nonesuch recording of the Double Concerto, in *Collected Essays and Lectures,* 260.

[44] Elliott Carter, "The Orchestral Composer's Point of View", in *Collected Essays and Lectures,* 245-246.

The *Coda* opens in full force with a twelve-note chord made up of perfect fifths and tritones. This musical representation of chaos stands in contrast to the highly differentiated combination of the ensembles' characteristic intervals which make up the work's twelve-note "tonic" chord (for example in bar 39).



Example 49 – Double Concerto, "tonic" and "chaos" chords

The piano and harpsichord join in the second bar of the *Coda* (bar 620). Here at the climax of the Concerto where the texture is most dense (and therefore also dynamically most intense), the harpsichord part is skilfully composed into the texture so as to be heard. Carter creates an environment in which the harpsichord is perceived even when the two orchestras are playing at the same time. He achieves this in a number of ways: each significant harpsichord entry is preceded by a fade out of the orchestral music immediately before; where the harpsichord and the piano superimpose, Carter differentiates the two through pitch levels, and the use of different polyrhythms.

The twelve-note "chaos" chord echoes through the *Coda* in various instrumental combinations and figurations. Often denoting the beginning of a wave, it is successively thinned out by taking notes away, and by means of orchestration. Whilst the full force of the orchestra marks the beginning of the second section of the *Coda*, in each of its subsequent occurrences, the twelve-note chord takes on a different sound until it seems to become an impression of itself at the end of the Concerto. Further, the extremes of textural differentiation are used to mark the structural trajectory of the Concerto, moving from homogeneity to heterogeneity then back. However, this

movement is never straightforwardly linear: even in the waves of the *Coda* the orchestras and soloists create patterns that grow from the percussion's wash, only to return. The patterns of behaviour of the different variables, that is to say, pitch, rhythms and dynamics interact to eliminate linearity. Instead, the music can be likened to something that is multi-dimensional; that is, at any moment a number of different strands can be heard, each assuming a different level of importance.

The half-hitches of the Challis harpsichord are used only twice in the Double Concerto, at the end of the *Introduction* bar 154 and in the penultimate bar (bar 688) of the *Coda*, reflecting the relatedness of the two movements. This is in effect terraced dynamics, and is used at these two particular points to represent dissolving sound, marking the end of the two movements that frame the Double Concerto.

Towards a Critical History

"I like the mood of Carter's Concerto, first of all. It is full of new-found good spirits, as the quartets were not...That the Double Concerto should suggest Berg's towering example in general ways is not surprising, but I hear direct references to the Berg in it, too...I like not only the shape but also the sense of proportion in the Concerto, and I like the harpsichord and piano writing very much, too. And the intended high point, the coda, is the real climax of the piece...I cannot comment upon or add to the composer's own analysis, but analysis as little explains a masterpiece or calls it into being as an ontological proof explains or causes the existence of God. There, I have said it. A masterpiece, by an American Composer."[45]

Stravinsky was a famous early enthusiast of the Double Concerto, and was handsomely repaid by Carter with the dedication of Carter's next work, the Piano Concerto, in 1965. Stravinsky was quick to claim a European descent for the piece, citing Berg as a main source of influence. This claim is re-echoed

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[45] Igor Stravinsky and Robert Craft, *Dialogues* (London: Faber & Faber, 1982), 100-101.

some years later by David Schiff, who comments "the *Double Concerto* at first appeared to be a response to the spatial compositions of Boulez, Stockhausen and Berio."[46]

While the sense of unfolding of an instrumental drama and the musical *coups de théâtre* recall the *Chamber Concerto* and other works by Berg, and while Carter was indeed closely in touch with developments in Europe both before and after the Second World War, what is also striking about the Double Concerto is its culmination of ideas from the stock of American modernism. Varèse is a persistent influence, in the elaborate writing for percussion as an independent voice in a musical argument, and in the strident fanfares and arching chorales of some of the brass and wind music. The elaborate spatial scheme of the work has American antecedents, strikingly in the work of Henry Brant, whose *Antiphony 1*, for five widely spaced orchestral groups, was composed in 1954,[47] and who from the mid 1950s experimented extensively with elaborate spatial dispositions. Ultimately these notions are rooted in the music and ideas of Charles Ives. The complex rhythmic patterns and simultaneities recall the player-piano works of Conlon Nancarrow, while Carter's melodic practice grows not from the new serialism of his European contemporaries, but from the arching and angular lines of composers such as Ruth Crawford Seeger and Carl Ruggles.

Some early critics were less sensitive than Stravinsky to the poetry and drama of the Double Concerto. Wilfrid Mellers, in his important study of American Music *Music in a New Found Land* notes: "The difficulty would seem to be that...the multiplicity and complexity of characters and destinies in the Double Concerto are so extreme that they cannot be adequately performed or heard...the virtual disappearance of lyricism means that the 'life-process' of the musical characters seems decidedly less human. The very important and

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[46] David Schiff, "Elliott Carter, the International Theme", in *Composers-in-Residence: Lucerne Festival, Sommer 2001* (Lucerne, 2001), 38.

[47] Carter notes Brant's pioneering use of space in a review of the 1959 ISCM Festival in Rome. See Elliott Carter, "ISCM Festival, Rome (1959)", in *Collected Essays and Lectures*, 26.

complex percussion parts emphasize this tendency to dehumanisation: or at least if they are human they are often cruel."[48]

This may be attributable to early performances and recordings of the work. Charles Rosen, the pianist in the première in 1961, opens his engrossing account of the early performance history and reception of the Double Concerto by asking "Can a new work of music be played brilliantly by musicians who think that it is impossible to get through it technically with confidence, and also be wildly cheered to the galleries by a public most of whom would claim that it is too complex to understand?"[49] Writing in 1973, he recalled that due to its complexity and the demands on all the instrumentalists, "at its première...it was felt that future performances would be rare...Yet it has been recorded three times and given hundreds of performances by many different groups."[50] The growing familiarity of performers and audiences has led to a "gradual but irregular progress of understanding, perception, and sympathy."[51]

The importance of the work in Carter's output has long been recognised. The Double Concerto is the first extended example of Carter's technique in the differentiation and coordination of two ensembles. It is in the Double Concerto that he first used a referential sonority (the work's "twelve-note tonic chord") and a large-scale polyrhythm to generate form. It was shortly after composing the Double Concerto that Carter started his habit of categorising his musical materials which eventually became his published *Harmony Book.*

Conclusion

Bearing in mind Stravinsky's warning above that "analysis as little explains a masterpiece or calls it into being as an ontological proof explains or causes the

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[48] Wilfrid Mellers, *Music in a New Found Land* (London: Barrie & Rockliff, 1964), 120.
[49] Charles Rosen, "One Easy Piece", reprinted in *The Musical Languages of Elliott Carter* (Washington: Library of Congress, 1984), 21.
[50] Charles Rosen, "One Easy Piece", 23.
[51] Charles Rosen, 30.

existence of God", we can still expect a detailed study of the materials and processes of a piece to demonstrate its coherence and sense of connectedness. From a performer's perspective and ultimately a listener's too, understanding this coherence is of vital importance.

A reason for examining this work at such length is because it is, as Stravinsky noted, a masterpiece. It remains unique in the harpsichord repertoire for its length, complexity, formal and expressive ambition. Against the background of much unremarkable writing for the instrument by his contemporaries, it is notable for its elaborate use of the harpsichord as a sonority *per se*, rather than exploiting it as an instrument for its historical associations.

The earlier Sonata is sometimes played on a historical instrument, but the Double Concerto demands numerous changes of registration including the use of the sixteen-foot register, and is therefore impossible on a historical harpsichord. This in part has led to notably fewer performances in recent years, with the only currently available commercial recording of the work dating from 1975. Given that both the Sonata and the Double Concerto were written for the modern pedal harpsichord, it is interesting to speculate how Carter might write for the historical instrument in the twenty-first century, particularly in the light of the miniatures for one or two instruments which make up such a characteristic part of his output from the 1980s onwards.

It is regrettable that Carter's contemporaries and successors failed to take up the challenge posed by the Double Concerto: with the exception of John Cage and Lejaren Hiller's *HPSCHD* (for 1-7 harpsichords and tape, written for Antoinette Vischer and completed in 1968), there were no significant contributions to the repertoire by major American composers in the decades following. Both Marlowe and Kirkpatrick were notably less active in commissioning new works from the early 1960s, leaving a new generation of European performers and composers to extend the repertoire of the contemporary harpsichord. However, this generation has also to face the problem of the harpsichord's dual identity. Because the historical harpsichord

did not become part of the musical mainstream until the 1970s, its new repertoire is considerably smaller than that of the modern pedal harpsichord. There is yet no work for the historical harpsichord of equivalent stature, leaving the Double Concerto to stand as a challenge to composers for the harpsichord in the twenty-first century.

Chapter 7
Conclusion: Endangered Species

At the threshold of the twenty-first century, the historical harpsichord is firmly established in mainstream music. It has—to all intents and purposes—usurped the modern pedal harpsichord, now a historical instrument in need of a revival of its own.

Moreover, the revival of the historical instrument and authentic performance practice took practitioners away from the contemporary creative mainstream. The preoccupation with historical editions and the special properties of historical instruments appears to preclude many harpsichordists from engaging in contemporary harpsichord repertoire, which is in part self-selecting: one attraction to playing the harpsichord stems from sympathy with the early-music movement, and disenchantment with modern music and performance. The role of the historical harpsichord is still largely restricted to continuo playing and the solo repertoire of the seventeenth and eighteenth centuries. The repertoire of the harpsichord created in the twentieth century is large, but with few idiomatic pieces. To date, there are not enough such pieces to create a canon, and certainly no work of equivalent scope and ambition to the Carter Double Concerto. It will be for twenty-first-century composers to take up the challenge of creating this canon.

If as a group harpsichordists are concerned for the future of their instrument, then it is their responsibility to extend their repertoire to include contemporary works, to commission and work closely with composers, and so generate more new repertoire, and to ensure that these works are given more than one performance. Closer collaboration between player and composer will deepen the composer's knowledge of the capabilities and the limitations of the harpsichord. Furthermore, there is no reason why harpsichordists themselves should not write for their instrument. Jane Chapman advocates that harpsichordists cultivate and enrich their own

"informed contemporary language" by studying historical keyboard repertoire.[1]

Critical reappraisal of the modern harpsichord repertoire from the perspective of the beginning of the twenty-first century aims to regenerate and deepen interest in this important but neglected corpus. Whereas the modern pedal instrument is now seldom used, it has been conspicuous in public concerts in recent months: the ensemble in Matthias Pintscher's *Tenebrae* (2000-1) for viola and small ensemble with live electronic accompaniment includes a modern pedal harpsichord with harp, piano, and percussion.[2] More recently, Silvina Milstein's *Tigres Azules* also used a modern pedal instrument in its first performance.[3] Time will tell whether the modern pedal harpsichord will re-emerge as a solo concert instrument.

The historic role of the harpsichord primarily as a continuo instrument has been the main focus of the harpsichord revival in the twentieth century, although the historical harpsichord repertoire including such works as the Bach Concerti and the Scarlatti Sonatas suggests that its soloistic role was also part of that revival. When historical replica started to make an impact from about the late 1960s, many composers saw it as a challenge to take the harpsichord out of its role as a continuo instrument, so that it is not first and foremost the backbone of an ensemble, but has a unique voice and shines as a solo instrument, or becomes an equal partner with other members of an ensemble. With this aim in mind, composers have looked for ways, through different expressive uses of timbre, instrumentation, and with the aid of technology, to present the harpsichord in different contexts. In so doing, they have widened the expressive vocabulary of the harpsichord, and have given it a possible lifeline in the twentieth-first century. However, to date, there is

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[1] Jane Chapman, "Notes Inégales in Contemporary Music?", *Contemporary Music Review*, XX:1 (2001), 59.

[2] The first performance was given by the London Sinfonietta (conducted by Martyn Brabbins) on 23 April 2003 at the Queen Elizabeth Hall, London.

[3] The first performance was given by the London Sinfonietta (conducted by Oliver Knussen) on 23 January 2004 at the Queen Elizabeth Hall, London.

no equivalent composition for the historical harpsichord as the Carter Double Concerto for the modern pedal instrument. It will be the task of twenty-first-century composers to take up that challenge.

The expressive potential of the modern pedal harpsichord is limited by its reliance on mechanical means to achieve different tone colours, and by the acoustic compromises necessitated by this mechanism and the heavier build of the instrument. Whilst some modern and modernist pieces for the harpsichord prove unidiomatic, others are properly conceived for the historical instrument. The historical harpsichord and perhaps even the modern pedal instrument can have an important role whatever the new musical styles are that take shape in the twenty-first century.

Appendix A
György Ligeti: Facsimile of the Autograph Manuscript of *Continuum*

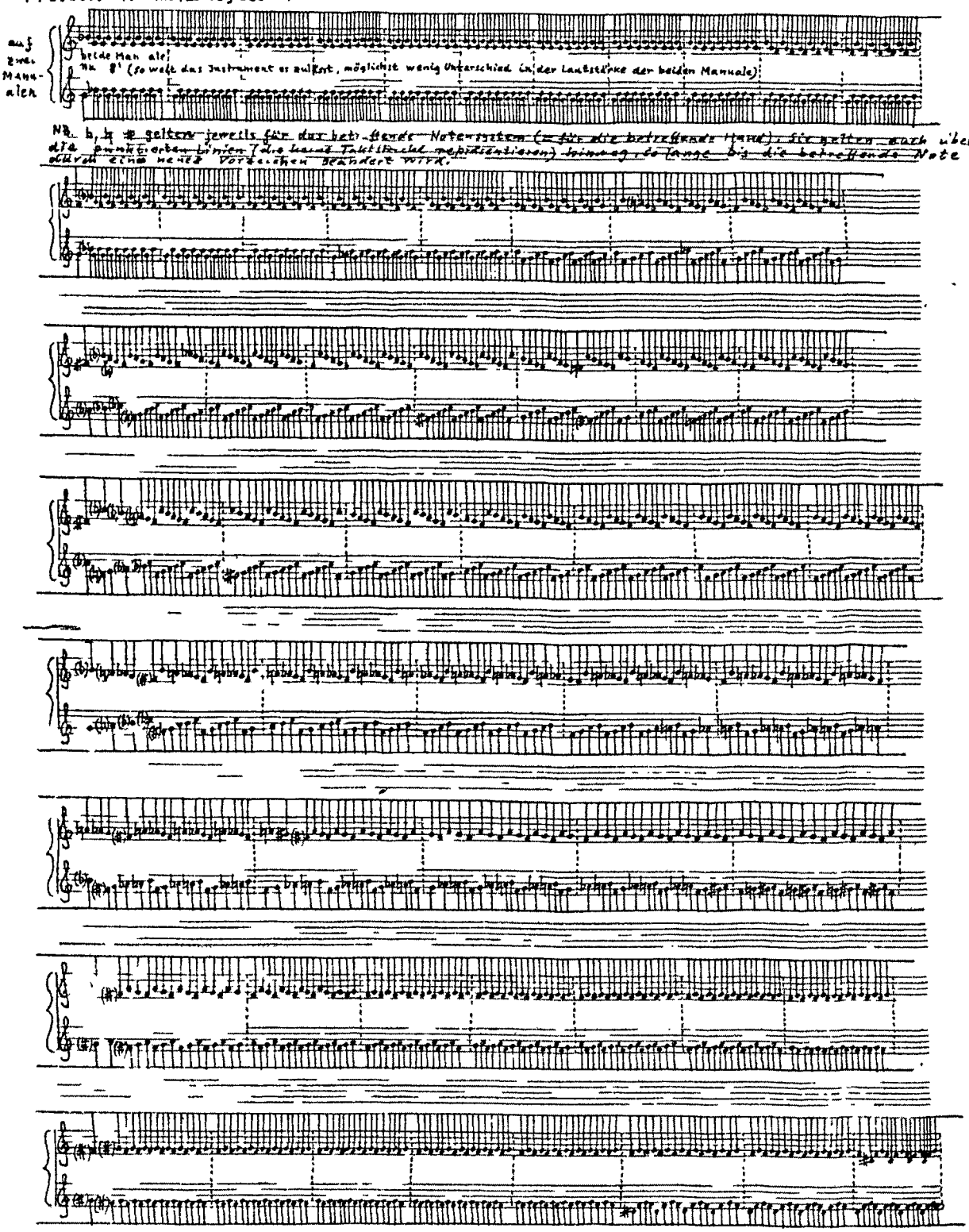
Reproduced from Ule Troxler, *Antoinette Vischer: Dokumente zu einem Leben für das Cembalo* (Basel: Birkhäuser, 1976), 133-136; the autograph manuscript is held in the Antoinette Vischer Collection at the Paul Sacher Stiftung.

Frau Antoinette M. Vischer gewidmet

CONTINUUM für Cembalo

György Ligeti 1

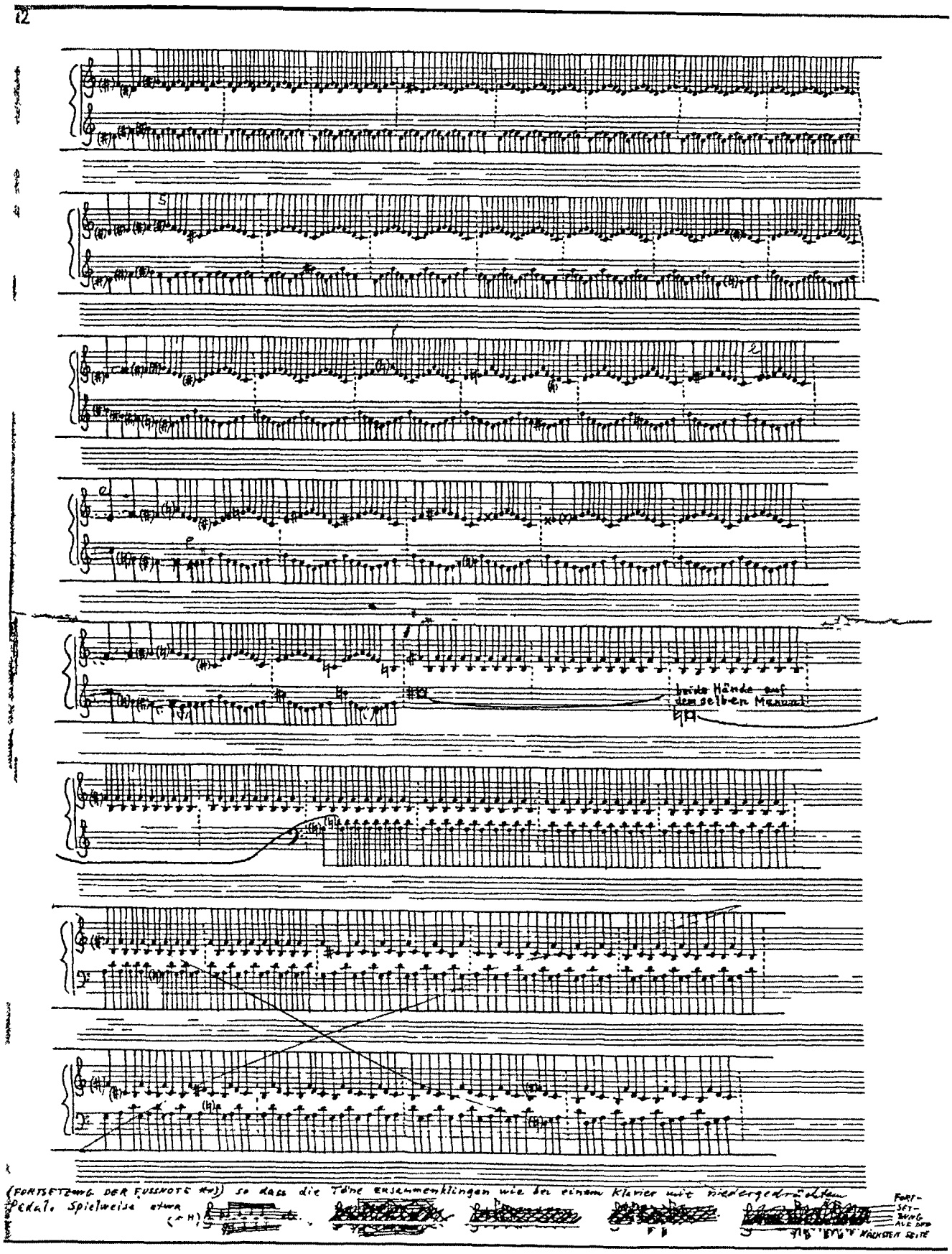
Prestissimo*) molto legato**)

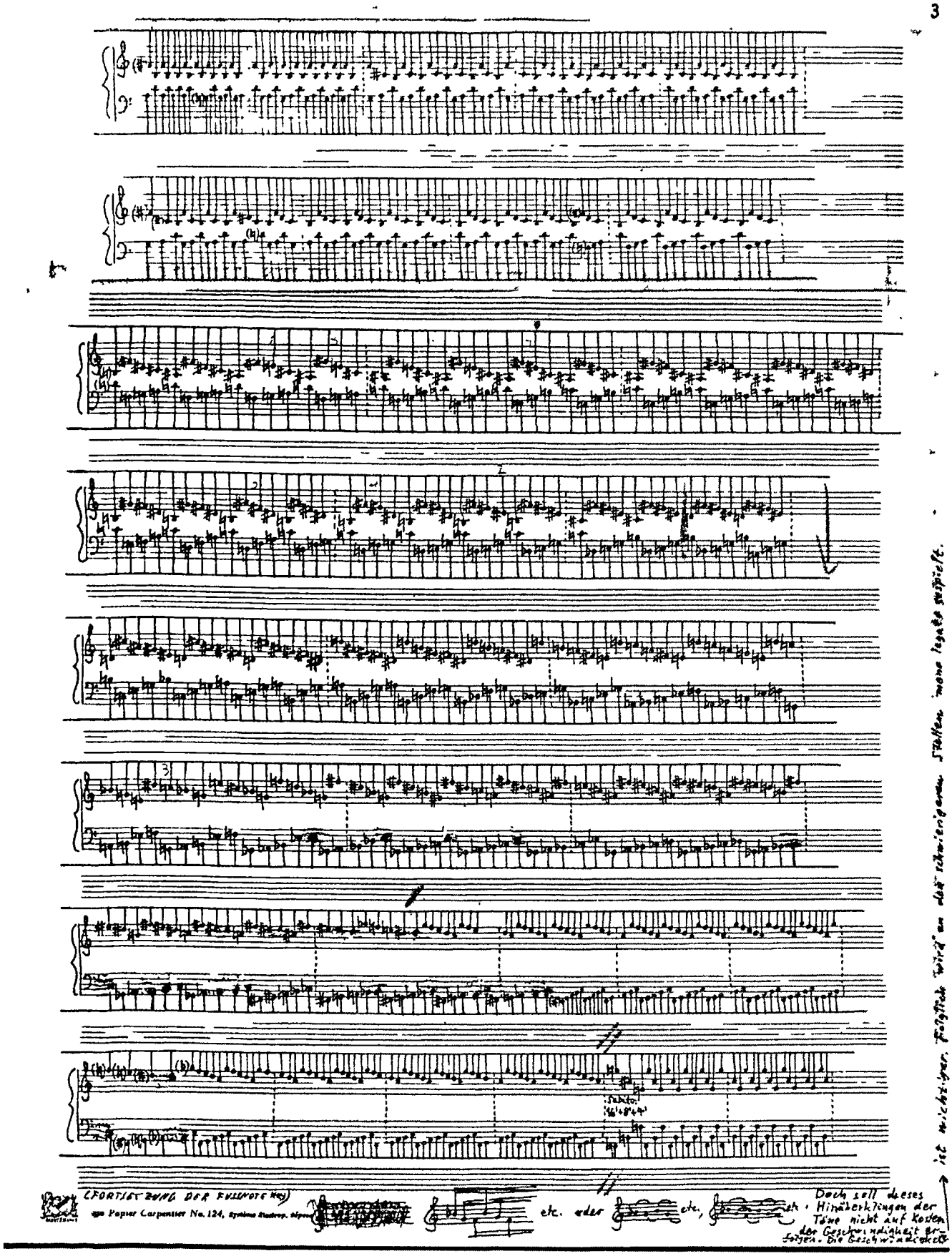


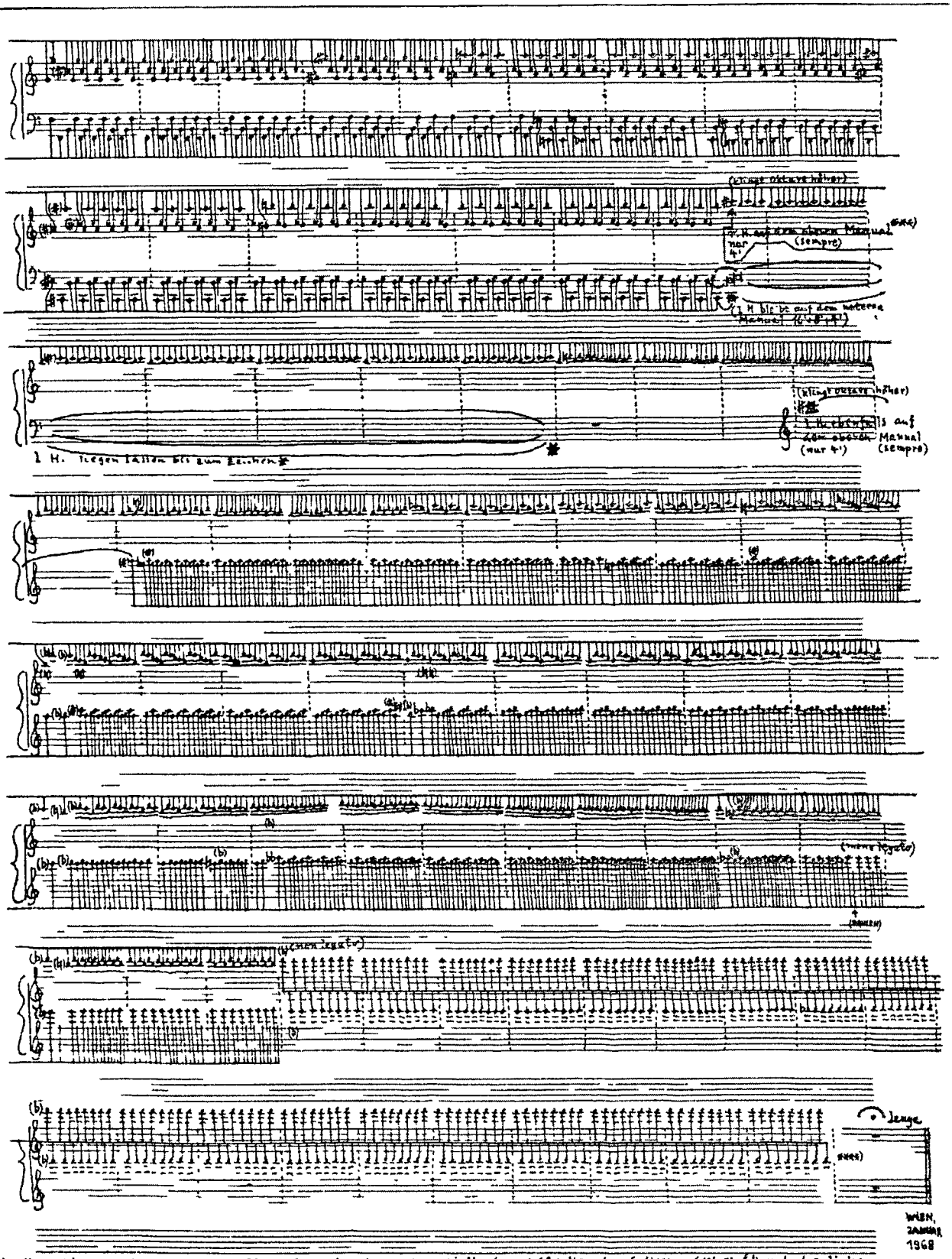
NB. ♭, ♮, ♯ gelten jeweils für das betreffende Notensystem (= für die betreffende Hand); sie gelten auch über die punktierten Linien (die lediglich Taktstriche repräsentieren) hinweg so lange bis die betreffende Note durch ein neues Vorzeichen verändert wird.

*) Prestissimo = extrem schnell, so dass die Einzeltöne als solche kaum mehr wahrgenommen sind, sondern zu einem Kontinuum verschmelzen. Sehr gleichmässig, ohne jene Artikulation spielen. Die vertikalen punktierten Striche sind keine Taktstriche (Takt kein Metrum gibt es hier nicht) sondern dienen nur zur Orientierung für das Zusammenspiel der Hände, und bezeichnen je 16 Anschläge. **) Molto legato = jede angeschlagene Taste bleibt niedergedrückt so lange wie möglich (bis kurz vor ihrem Repetieren bzw bis zu einem neuen Anschlag mit dem selben Finger)

FORTSETZUNG AUF DER NÄCHSTEN SEITE


12
5
2
beide Hände auf
demselben Manual!
(FORTSETZUNG DER FUSSNOTE ***) so dass die Töne ensemblemäßig wie bei einem Klavier mit niedergedrückten
Pedal. Spielweise etwa
FORT-
SET-
ZUNG
AUF DER
NÄCHSTEN SEITE


3
(FORTSETZUNG DER FUSSNOTE 179)
etc. oder
etc.
etc.
Doch soll dieses Hinüberklingen der Töne nicht auf Kosten der Geschwindigkeit gehen. Die Geschwindigkeit



***) Sollte 4' nur auf dem unteren Manual vorhanden sein, spielt die rechte Hand auf diesem (16' 8' ab) und die linke Hand hält Cis-H-cis 8' auf dem oberen Manual (Manualwechsel der linken Hand kurz vorher). In diesem Fall *spielt später (beginnend mit cis''') die linke Hand dann auch auf dem unteren Manual (4') zusammen mit der rechten.

Appendix B

Works Including Harpsichord by Chiel Meijering

I am grateful to Chiel Meijering, Thora Johansen, and Els van Swol for their help in compiling this catalogue. Meijering often makes arrangements of his music for different instrumental combinations; for example, he has made more than one version of *Flash* (1988). I have not included all the arrangements, only the versions in the original instrumentations, except where indicated. Because Meijering has written a large number of works including the harpsichord—some published, some not—it is difficult to be certain that this table is comprehensive. This is further complicated by the fact that at the time of writing, the archive of Muziek Groep/Nederland does not have a complete list of Meijering's published compositions.

Name of piece, date	Instrument(s), duration (where known)	Publication details	Comments
The zombies awake, 1977	Harpsichord, piano, percussion, 2 piccolos, 2 flutes, 2 Bb clarinets, and string quintet (2 violins, viola, cello, double bass), 10′	Not published	No dedicatee, not performed
Hot summer nights in autumn, 1978	Harpsichord, oboe, and 20 recorders, 6′	Donemus, Amsterdam, 1979	No dedicatee, not performed
Scouts of Mars, 1978, revised 1983	Harpsichord, vibraphone, 2 guitars and violin, 8′	Donemus, Amsterdam, 1978	No dedicatee, not performed
The speed king, 1979	Harpsichord, flute, 2 clarinets, alto saxophone, horn, violin, double bass, 10′	Donemus, Amsterdam, 1981	No dedicatee, not performed
Met m'n linkerhand, 1981	2 Harpsichords, guitar, 12′	Donemus, Amsterdam, 1981	Written for Thora Johansen
n'Dame scheert haar benen, 1981	Harpsichord and guitar, 6′	Donemus, Amsterdam, 1981	Written for Snorry, son of Thora Johansen; first performed by Johansen and Wim Hoogewerf
19 centimeter, 1981, revised 1983	Harpsichord and horn, 6′20″	Donemus, Amsterdam, 1981	Written for Rogan; first performed by Thora Johansen and Johan Donker Kaat
Panty's hanging over a chair, 1983	Harpsichord/synthesiser/tape, 8′	Not published	First performed by Thora Johansen
Afscheiding, 1983	Harpsichord solo, 4′	Not published	First performed by Thora Johansen
Gevaar van spatjes, 1985	Harpsichord/celesta/piano, flute, clarinet, percussion, guitar, viola, cello, 10′30″	Donemus, Amsterdam, 1985	Commissioned by NOS, written for Edu Verhulst
Verboden gebied, 1986, revised 1987	Harpsichord and flute, 8′18″	Donemus, Amsterdam, 1986	First performed by Annelie de Man, Leendert de Jonge
Touch down, 1988	Harpsichord, synthesiser, 4-5 percussion,	Not published	Commissioned by the Foundation for

	3'25"		the Creation of Music, not performed
Kommodo dragons, 1988, revised 1990	3 harpsichords, organ, 6 recorders, 3 viola da gambas, 18'	Donemus, Amsterdam, 1988	Commissioned by the Foundation for the Creation of Music; first performed by students
Low Art, 1988	Harpsichord/synthesiser, mezzo soprano, saxophone, percussion, bass, 10'	Donemus, Amsterdam, 1988	First performed by the Bifrons Ensemble
A natural death is a rare thing, 1989	Harpsichord/synthesiser, mezzo soprano, saxophone, percussion, bass, ca. 7'	Not published	First performed by the Bifrons Ensemble
Sex and anarchy, 1989	Harpsichord/synthesiser, mezzo soprano, saxophone, percussion, bass, 5'	Not published	First performed by the Bifrons Ensemble
Cats do not go to heaven, 1989	Harpsichord, alto saxophone, percussion, electric bass guitar, 4'30"	Not published	Written for Thora Johansen
Start from scratch, 1989	Harpsichord, alto saxophone, vibraphone + drum computer, electric bass guitar, 4'	Not published	First performed by Thora Johansen
Predelerium, 1989	Harpsichord, alto saxophone, percussion, electric bass guitar, 8'	Not published	First performed by the Bifrons Ensemble
Testing the limits, 1990	Harpsichord, alto saxophone, percussion, electric bass guitar, 7'	Not published	No dedicatee, not performed

Quadtaerdige uitsetselen, 1990	Harpsichord, alto saxophone, marimba, synthesiser, electric bass, 7'50"	Not published	First performed by the Bifrons Ensemble
He was a great man and he loved baseball, 1990	Harpsichord, bass clarinet, tape, can also be for 4 harpsichords and 2 bass clarinets, 10'	Donemus, Amsterdam, 1990	First performed by Annelie de Man, Harry Sparnaay
A stride at a time, 1990	Harpsichord, alto saxophone, percussion, electric bass guitar, 4'	Not published	First performed by Thora Johansen
Was guckst du mir denn immer in die Bluse? 1993	2 harpsichords, electric guitar, 15'	Not published	First performed by Annelie de Man
Die schleimige Last, 1995	Harpsichord, theorbo and strings, 5'	Not published	No dedicatee, not performed
Bitchchch! 1998	Harpsichord, 6'	Donemus, Amsterdam, 1998	First performed by Thora Johansen
Flash, 1998	Harpsichord/synthesiser, alto saxophone, percussion, electric bass guitar, 3'	Not published	First performed by the Bifrons Ensemble
Flash, 1998	Harpsichord, 3'	Not published	First performed by Thora Johansen
Kick and Rush, 1999	Harpsichord, 3'	Donemus, Amsterdam, 2001	First performed by Thora Johansen

Appendix C
Works Including Harpsichord Commissioned by Sylvia Marlowe and Ralph Kirkpatrick

In addition to the works listed in the table on page 186, the following were also played or recorded by Kirkpatrick or Marlowe:

Lou Harrison: Six Sonatas (premièred by Harrison, San Francisco, California, 1937, also played by Marlowe in mid 1940s, and Kirkpatrick in 1950s or 60s)

Halsey Stevens: Partita (1954, premièred by John Gillespie, Santa Barbara, California, 1955, one movement recorded by Kirkpatrick in 1961)

Vincent Persichetti: Sonata for Harpsichord, Op. 52 (1951, premièred by Fernando Valenti, NYC, 1952, one movement recorded by Kirkpatrick in 1961)

Composer	Work	Composed	Premièred	By	Where
Barrows, John R.	Allegro spiritoso	ca. 1938	1938	Kirkpatrick	Saratoga Springs, New York
Barrows, John R.	Andante espressivo	ca. 1938	1938	Kirkpatrick	Saratoga Springs, New York
Berger, Arthur	Intermezzo	1947		Marlowe	(recording)
Berger, Arthur	Inventions*	1948	1954	Marlowe	New York
Berger, Arthur	Three Bagatelles*	1946	1948	Marlowe	New York
Carter, Elliott	Sonata for Flute, Oboe, Cello and Harpsichord	1952	1953	Marlowe, Harpsichord Quartet of New York	New York
Carter, Elliott	Concerto for Harpsichord, Piano and Two Chamber Orchestras	1959-61	1961	Kirkpatrick, Rosen: cond. Gustave Meier	New York
Cowell, Henry	Set of Four	1960	1961	Kirkpatrick	Berkeley, California
Des Marais, Paul Emile	Theme and Changes	1953	1953	Marlowe	New York
Haleff, Alexei Vasilievich	Three Bagatelles (h/p)	1952	1953	Marlowe	New York
Lessard, John Ayres	Toccata in Four Movements (h/p)	1951	1952	Marlowe	New York
Levy, Ernst	Fantasie Symphonique	1939	1939	Kirkpatrick	New York

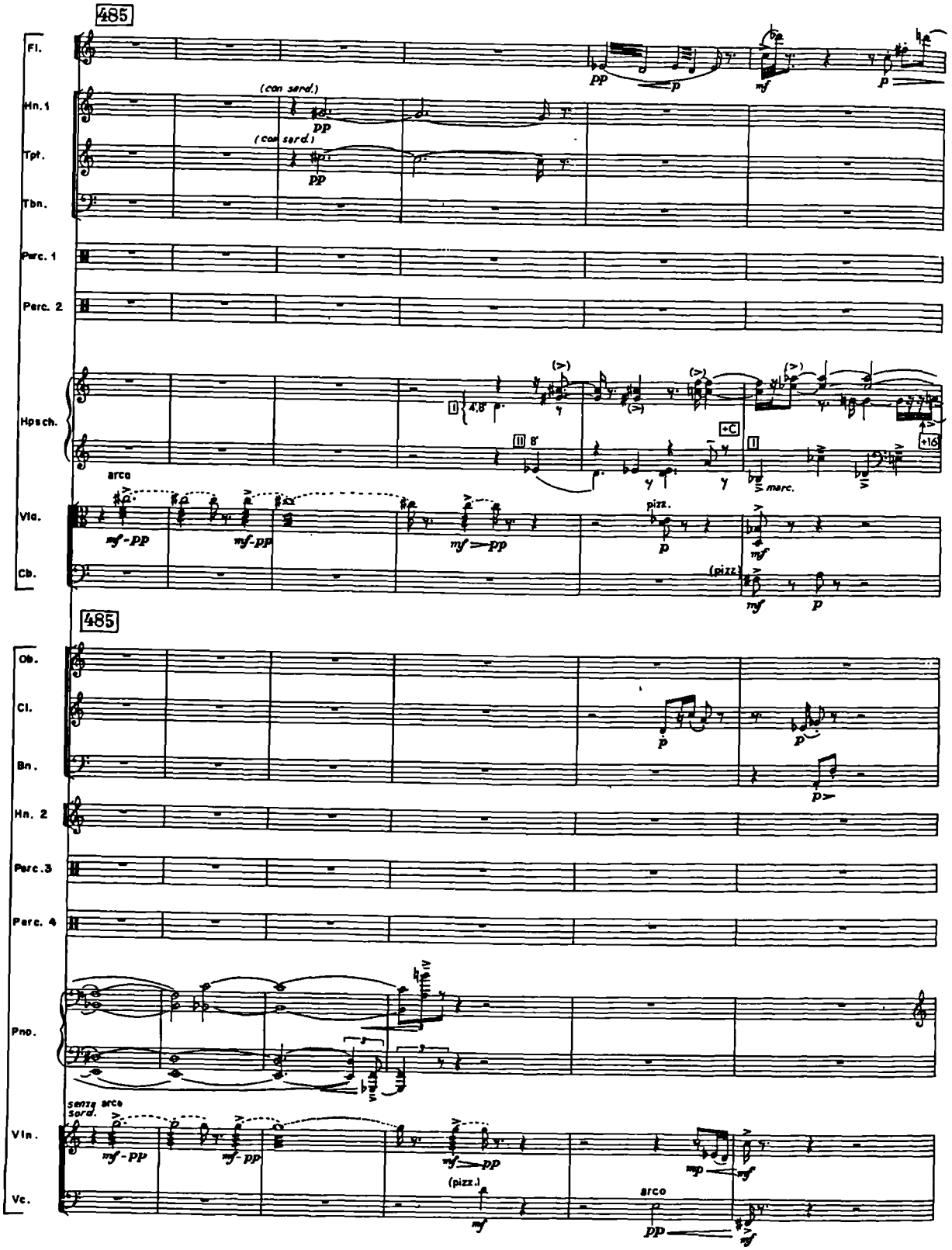
McBride, Robert Guyn	Harpsichord Serenade	1938	1938	Kirkpatrick	Saratoga Springs, New York
Mieg, Peter	Le voyage à Montfort	1956	1961	Kirkpatrick	Berkeley, California
Sauget, Henri	Suite Royale	1962	1963	Marlowe	Geneva
Seaver, Harry A.	Prelude and Fugue	1938	1939	Kirkpatrick	New York
Shapero, Harold S.	Sonata No. 1 in D major*	1944	1953	Marlowe	New York
Shapero, Harold S.	Partita in C	1959	1962	Marlowe	Bennington, Vermont
Thomson, Virgil	Four Portraits*	1935-1940	1953	Marlowe	New York
Thomson, Virgil	Six Portraits	1935-1941	1942	Kirkpatrick	NYC

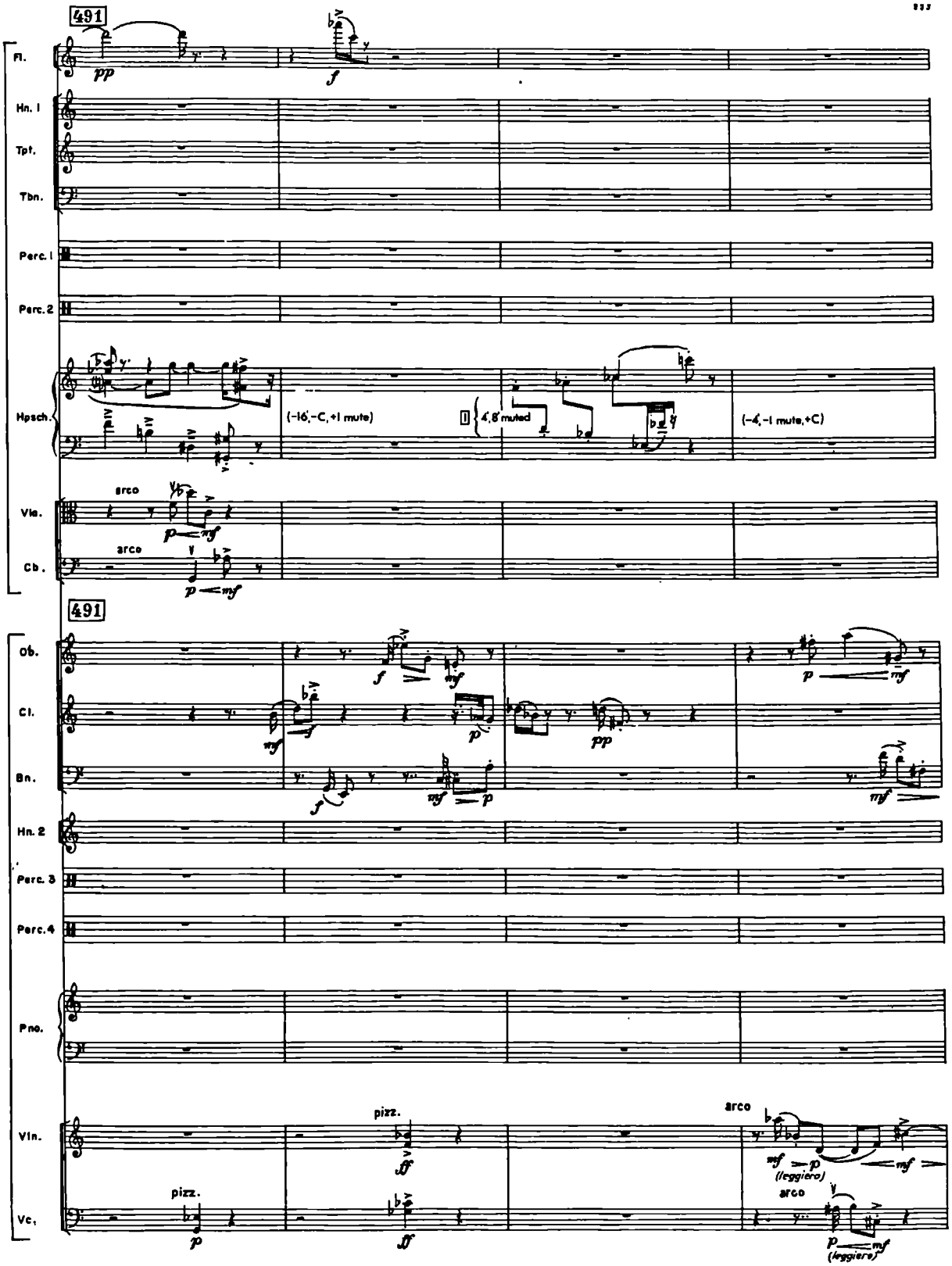
* originally for piano, adapted by Marlowe for harpsichord

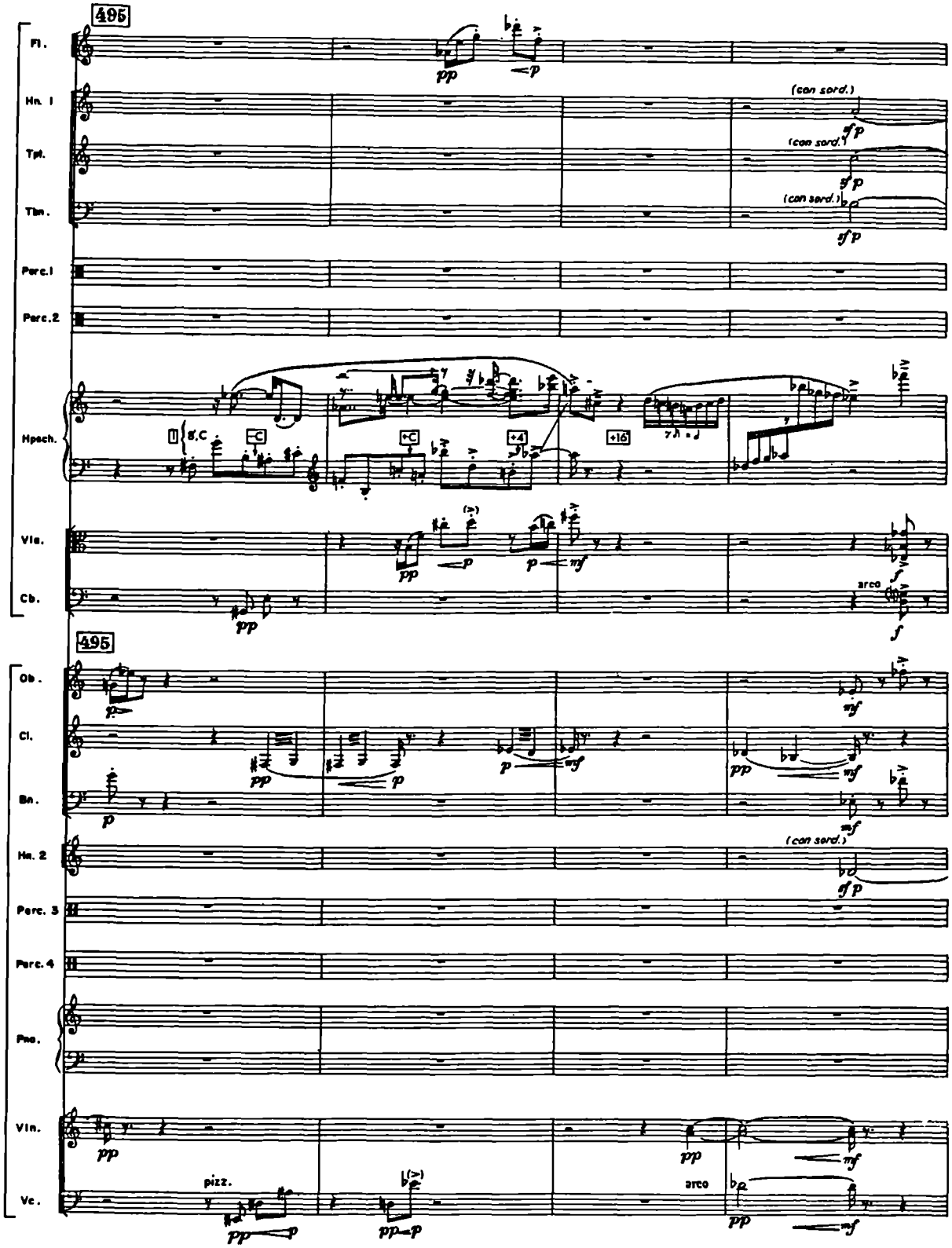
Appendix D

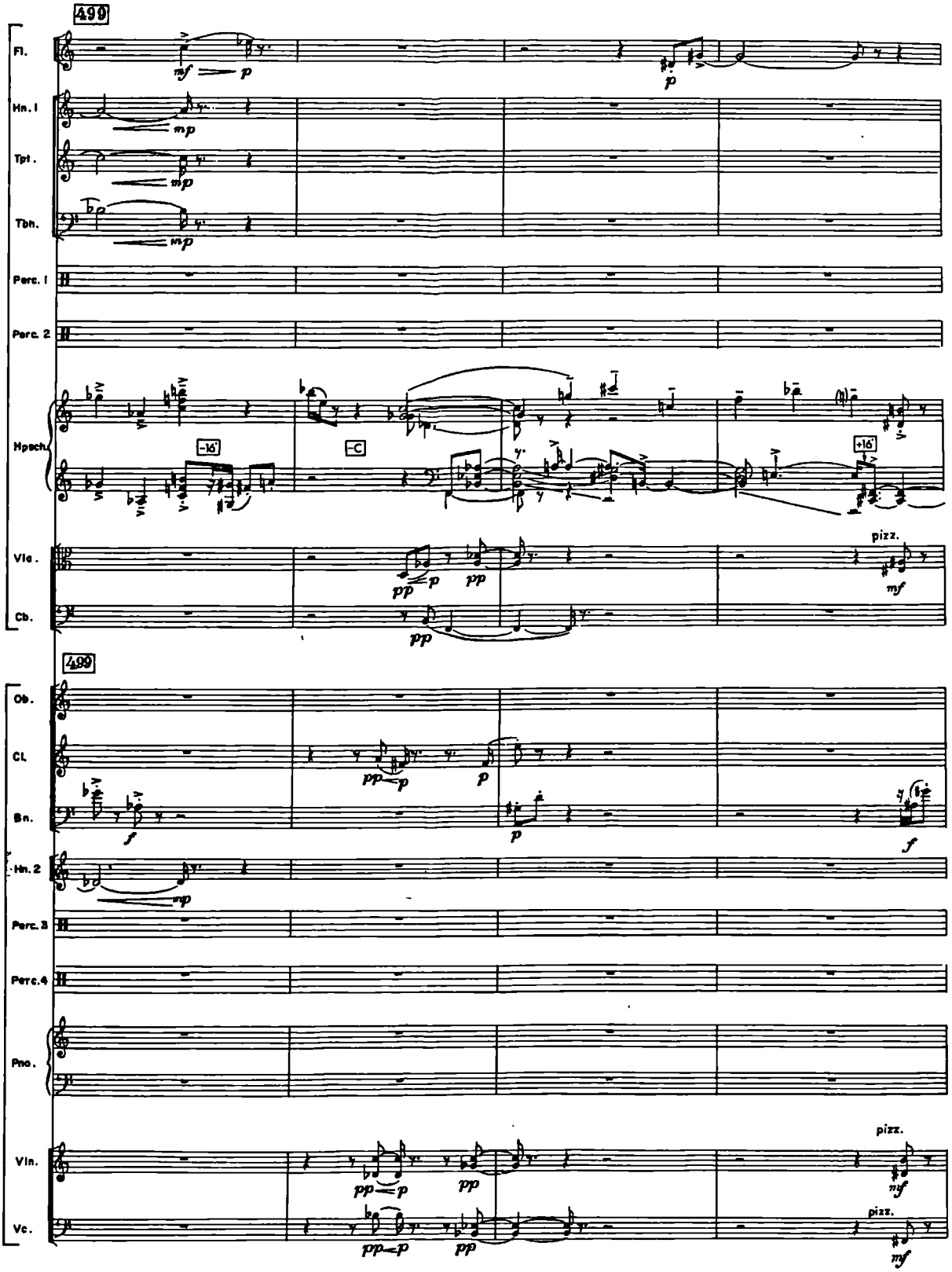
Elliott Carter: Double Concerto *Presto*, bars 485-519

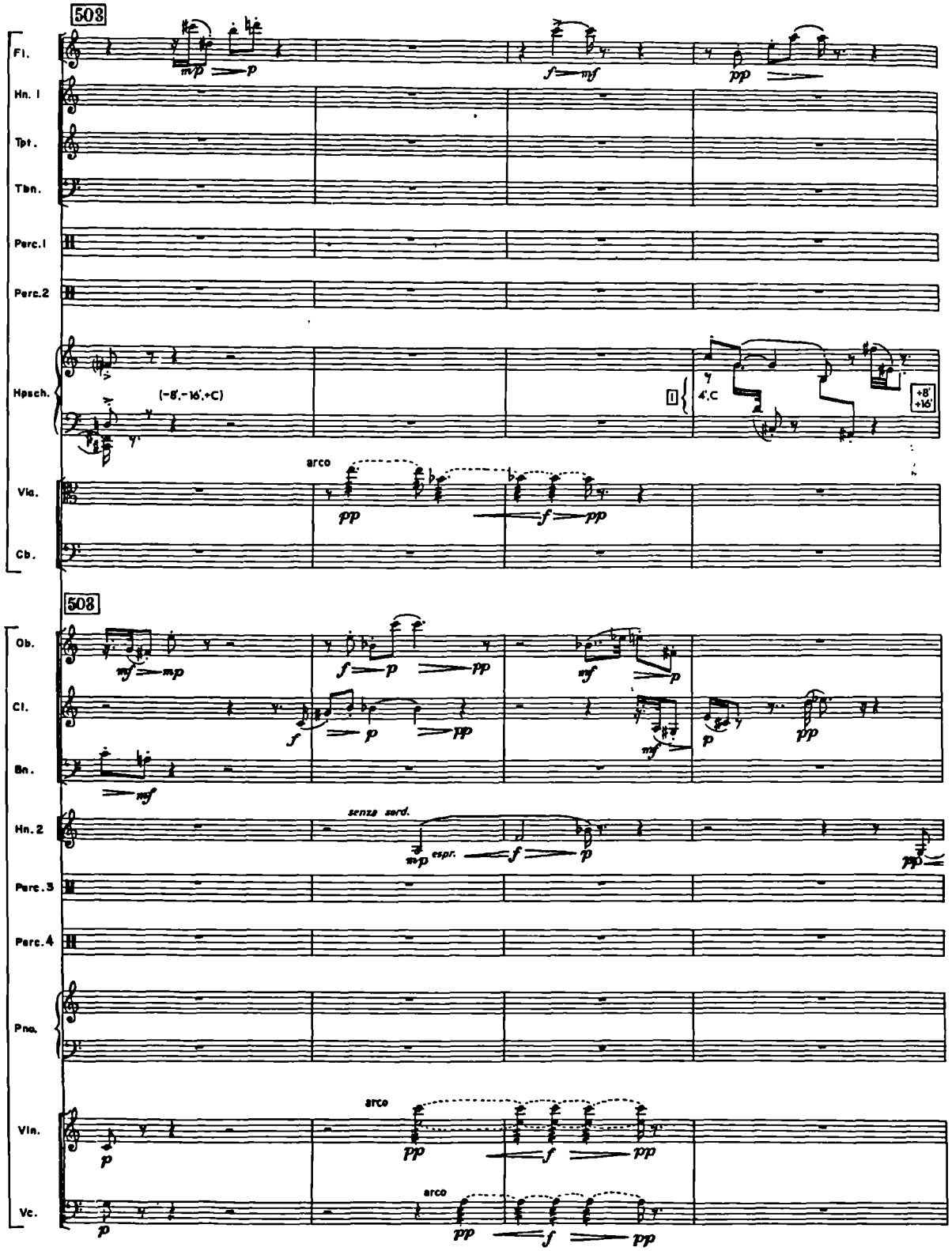
This appendix contains the full score of the passage of the *Presto* considered in the detailed analysis in Chapter 6.

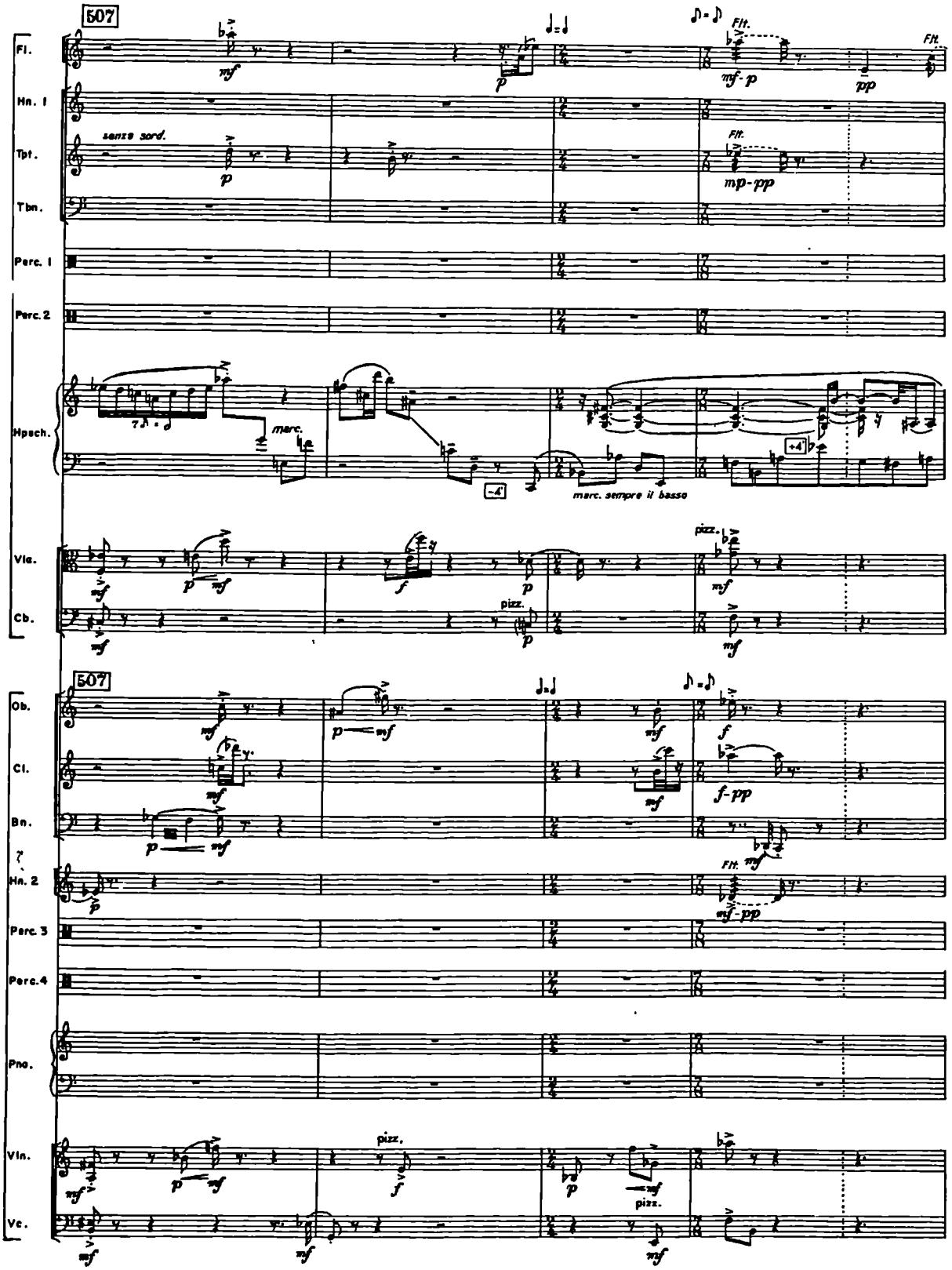

485
Fl.
Hn. 1
(con sord.)
Tpt.
(con sord.)
Tbn.
Perc. 1
Perc. 2
Hpsch.
arca
Vla.
Cb.
pizz.
(pizz.)
485
Ob.
Cl.
Bn.
Hn. 2
Perc. 3
Perc. 4
Pno.
senza sord.
Vln.
Vc.
(pizz.)
arco

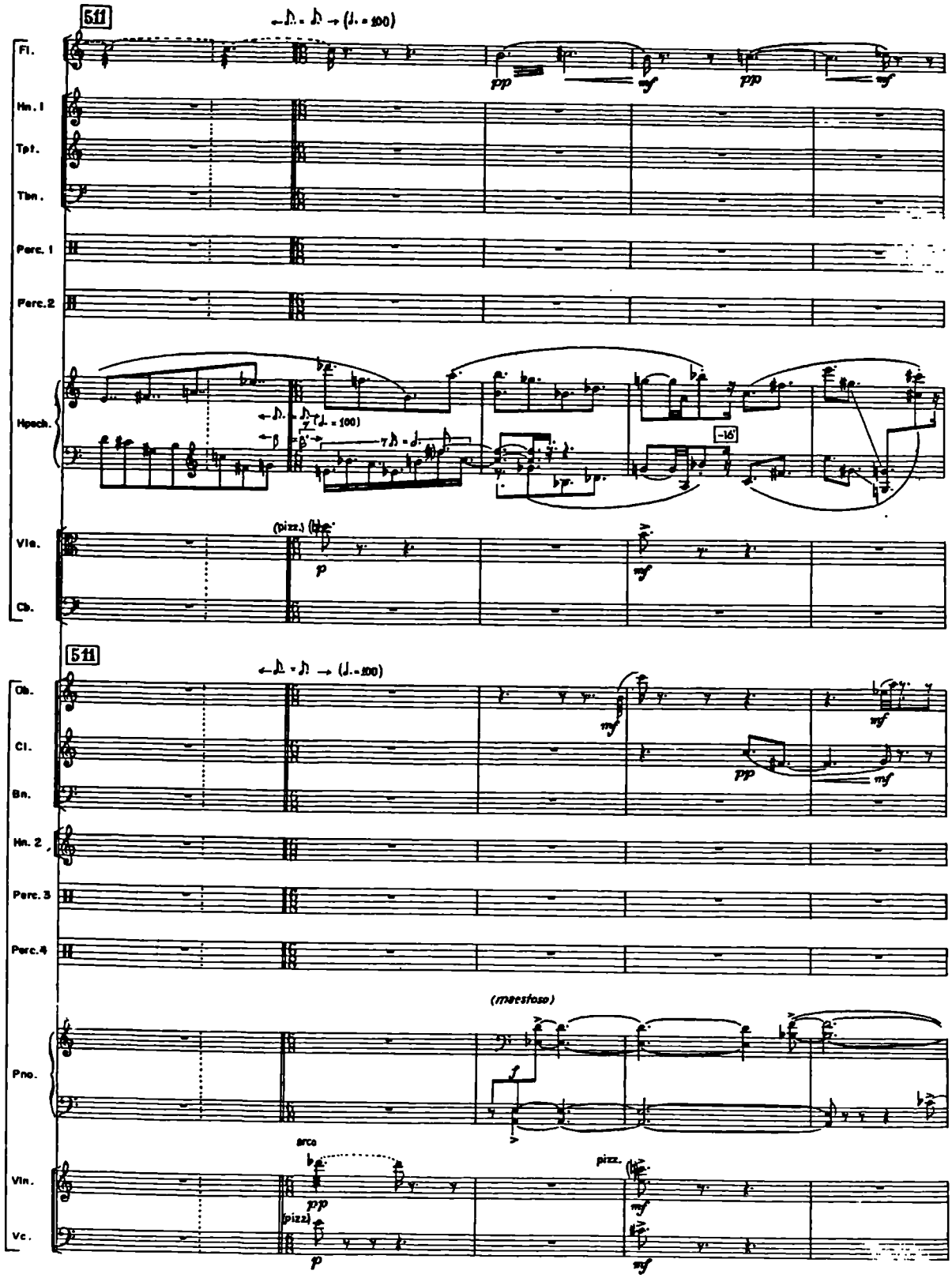

491
Fl.
Hn. I
Tpt.
Tbn.
Perc. I
Perc. 2
Hpsch.
(-16',-C,+1 mute)
4',8' muted
(-4',-1 mute,+C)
arco
Vla.
arco
Cb.
491
Ob.
Cl.
Bn.
Hn. 2
Perc. 3
Perc. 4
Pno.
Vln.
pizz.
arco
(leggiero)
Vc.
pizz.
arco
(leggiero)

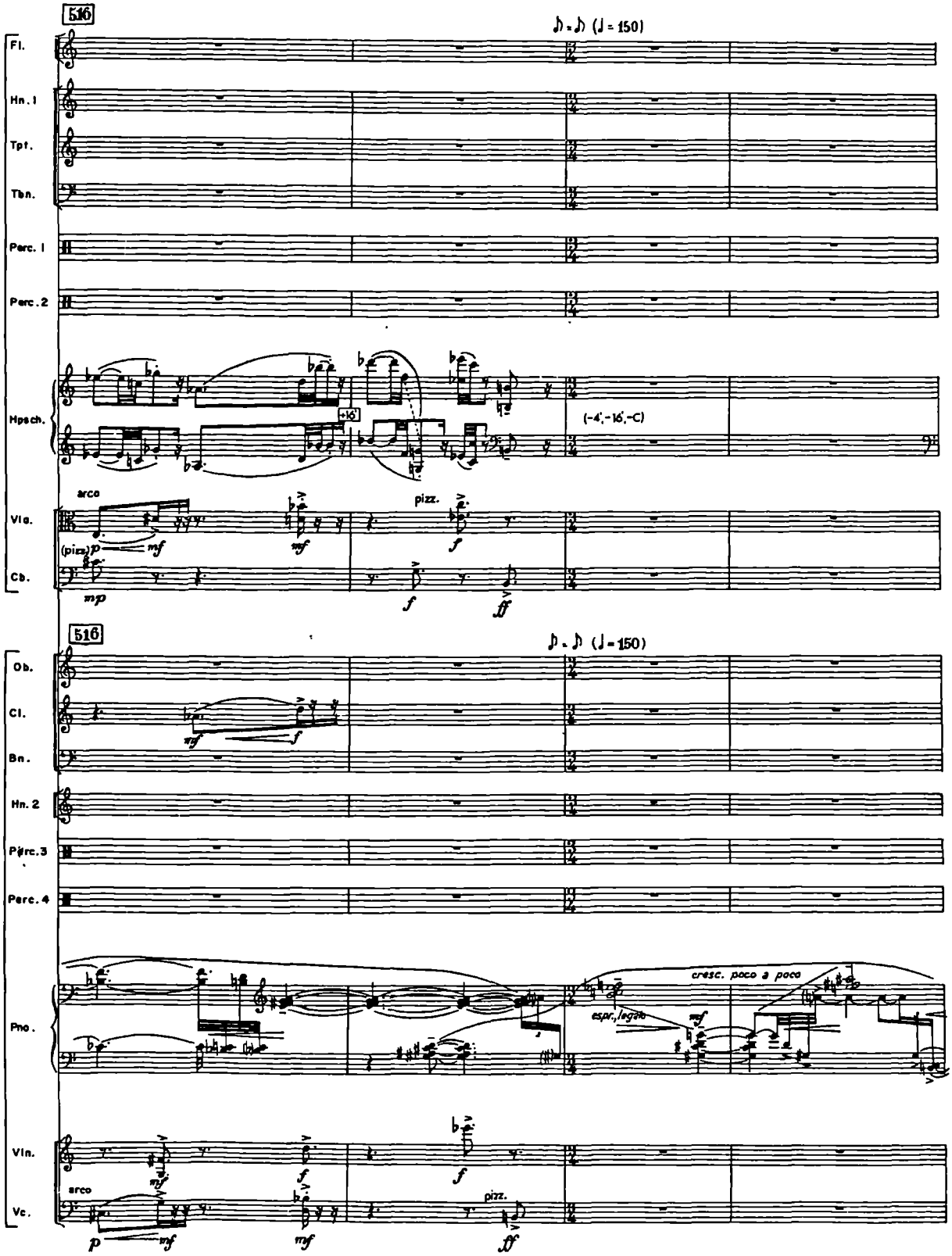

495
Fl.
Hn. 1
Tpt.
Tbn.
Perc.1
Perc.2
Hpsch.
Vla.
Cb.
(con sord.)
(con sord.)
(con sord.)
arco
495
Ob.
Cl.
Bn.
Hn. 2
Perc. 3
Perc. 4
Pno.
Vln.
Vc.
(con sord.)
pizz.
arco


499
Fl.
Hn. I
Tpt.
Tbn.
Perc. I
Perc. 2
Hpsch.
-16'
-C
+16'
Vla.
Cb.
pizz.
499
Ob.
Cl.
Bn.
Hn. 2
Perc. 3
Perc. 4
Pno.
Vln.
Vc.
pizz.
pizz.


503
Fl.
Hn. I
Tpt.
Tbn.
Perc.I
Perc.2
Hpsch.
(-8',-16',+C)
4',C
+8'
+16'
Vla.
arco
Cb.
503
Ob.
Cl.
Bn.
Hn. 2
senza sord.
espr.
Perc.3
Perc.4
Pno.
Vln.
arco
Vc.
arco


507
Fl.
Hn. 1
senza sord.
Tpt.
Tbn.
Perc. 1
Perc. 2
Hpsch.
marc.
marc. sempre il basso
Vla.
Cb.
pizz.
507
Ob.
Cl.
Bn.
Hn. 2
Perc. 3
Perc. 4
Pno.
Vln.
Vc.
pizz.


511
Fl.
Hn. 1
Tpt.
Tbn.
Perc. 1
Perc. 2
Hpsch.
Vla.
Cb.
(pizz.)
511
Ob.
Cl.
Bn.
Hn. 2
Perc. 3
Perc. 4
(maestoso)
Pno.
arco
Vln.
Vc.
(pizz.)
pizz.


516
♪ = ♪ (♩ = 150)
Fl.
Hn. 1
Tpt.
Tbn.
Perc. 1
Perc. 2
Hpsch.
+16'
(-4', -16', -C)
Vla.
arco
pizz.
(pizz.)
Cb.
516
♪ . ♪ (♩ = 150)
Ob.
Cl.
Bn.
Hn. 2
Perc. 3
Perc. 4
Pno.
cresc. poco a poco
espr., legato
Vln.
Vc.
arco
pizz.

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Colophon

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