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0-612-50702-5



Abstract

 \underline{X} is a composition for a chamber orchestra with a duration of approximately 13'30". The title \underline{X} (read as "cross") refers to a crossweave pattern created by superimposing the trills and written-out tremolos in the piece. While the trills and tremolos are used throughout the piece to create a sense of textural variety, they have an important function in controlling the formal structure of the piece. The texture, which is one of the important features of the composition, makes the overall form apparent.

<u>Résumé</u>

 \underline{X} est une composition pour orchestre de chambre d' une durée approximative de 13'30". Le titre \underline{X} (prononcer "cross") réfère à un motif en croix qui est formé d'une superposition de trilles et trémolos écrits. Bien que les trilles et les trémolos soient employés toute la pièce pour faire une variété de texture, ils ont une fonction structurale importante sur la forme. La texture, qui est un d'aspect important de la composition, devient la forme apparente.

Acknowledgements

I would like to express my sincere appreciation to Professor Brian Cherney, who has given me valuable advice, time and support during my work on this thesis, as well as during my study at McGill University.

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Analysis

Overview

 \underline{X} is a composition for chamber orchestra consisting of five woodwinds (flute, oboe, Bb clarinet, bass clarinet and bassoon), three brass (horn, C trumpet and trombone), piano, one percussion, and strings (2-1-1-1). The title \underline{X} (read as "cross") refers to a cross-weave pattern created by superimposing the independent lines of trills and written-out tremolos in the piece. In general, trills and tremolos are often used as ornamental figures in music. In X, however, there are a few important differences as to how trills and tremolos are used. Firstly, the trills and tremolos in this piece are used to create a sense of textural or timbral variety. Secondly, the texture, which contains superimposed trills and tremolos, has an important function in controlling the formal structure of the piece. In X, several independent layers, which produce the entire texture, frequently control the pulse, dynamics and harmony, influencing the micro-level form of the piece. The subdivision of the beat also controls the acceleration and deceleration of the music, which causes irregularity in phrases. In addition, the layers of long trills and tremolos provide continuity in the

music which often results in crossing or transitional material. As a result, the structure of the composition becomes more linearly oriented. The continuity of sound is one of the important elements in the piece.

Texture and Formal Organisation

As has already been mentioned, the formal structure of the piece is generally a result of texture, often caused by the use of written-out trill and tremolo lines. In \underline{X} , the texture, which is created by the interaction of the trill and tremolo lines, controls the overall shape of the composition. The written-out trills and tremolos, which often subdivide the beat in various ways, determine the how texture evolves linearly over time, while the superimposition of the trill and tremolo lines determines the density of the texture. Although the use of long trills and tremolos has a tendency to sound static because of the small intervals applied and because of their inherently restricted pitch movements, in \underline{X} the lines are frequently transformed by octave displacement or by development of melodic elements out of the trills and tremolos. As a result, the written-out trills and tremolos, which are used throughout the piece, are the one component in \underline{X} which controls both the linearity and the verticality of the composition.

The piece, with a total duration of thirteen minutes and thirty seconds, can be divided into three large sections. Each section has a different length, as seen in the chart on the following page:

Section	Measures	Duration
I	1-120	4' 40"
II	121-162	2' 27"
III	163-275	6' 23"

The apparent demarcation of each section emerges only through the silence or pause due to the fading away of the trills and tremolos. It is, however, possible to examine the subdivisions of the sections in this piece by closely analysing the texture.

Section I

In the first subdivision of Section I -- Subdivision A -- there is a unison on the note B4. A single-note timbral modulation starts from the very transparent sound produced by the combination of piccolo, crotales, plucked piano string and harmonic played on the violoncello. As these instruments fade away, the same pitch is introduced in the strings (playing tremolos), in a muted trumpet and in the clarinet (playing a timbral trill produced by alternating two different fingerings). As the instruments slowly fade in and out, the timbre of the note is

changed. As the intervals above the note are explored, the harmonic content is expanded. In measures 5 and 6, grace notes appear in the trumpet and oboe parts, and are eventually transformed into long written-out trills in the clarinet (starting at measure 10). At the end of measure 13 and into measure 14, as the clarinet starts to fade away, there is a slight textural transformation with the introduction of the trichord B, C* and D, introduced in the woodwinds and strings. As the activity in the individual parts starts to increase, the overall register of the instruments expands slightly, and the viola (and later the oboe) reintroduces the written-out trills and tremolos. When the tempo changes from $\frac{1}{2} = 78$ to $\frac{1}{2} = 96$ at measure 29, the number of instruments which play trills and tremolos also increases and, as a result, the first climax of the piece is reached at measure 36.

The climactic point at measure 36 produces a mass of sound, as the dynamic level of all the instruments has gradually increased from p to f. There are several other factors which contribute to the creation of the first climax. The growing internal speed of subdivisions of the written-out trills and tremolos allows the pulse to accelerate without having any tempo marking changes. For example, an accelerando is notated in the oboe line starting at measure 30, although the word 'accelerando' does not appear in the score. The pulse in the oboe line is set with a simple eighth-note at P = 192 in measure 31. In the next

measure, it accelerates to a quintuplet eighth-note at $\int_{0}^{5.4} = 240$. In measure 34, the triplet eighth-note at $\int_{0}^{3} = 288$ turns into the sixteenth-note at $\int_{0}^{3} = 384$, further accelerating the pulse. Finally, the pulse reaches the point where the quintuplet sixteenth-note is at $\int_{0}^{3} = 480$, increasing the rate of pulse almost two and half times that of measure 31. In addition, none of the instruments which play writtenout trills and tremolos have rhythmic subdivisions which coincide with each other. The passages constructed with the superimposition of different subdivisions give rise to a very dense texture due to the complex composite rhythm created.

Oboe: Pulse Acceleration - mm. 30-36





The sudden change in texture at measure 37 marks the beginning of the next subsection -- Subsection B. At measure 37, most of the instruments, which had been playing trills and tremolos, suddenly drop out, leaving only the piano and strings. In this subsection, the piano and glockenspiel are prominently featured, while the woodwinds, brass and strings provide a background sound or soundscape which supports the featured instruments. Some of techniques which have been used earlier in Subsection A, are applied in writing the piano and glockenspiel lines in Subsection B. For example, in measure 42, the piano uses combinations of various irrational subdivisions in a non-systematic manner, thereby constantly changing the subdivision of the beat. The rate of secondary pulse thus increases and decreases due to various subdivisions of the beat, giving the piano line a greater sense of elasticity. Furthermore, the melodic elements in the phrase are derived from the written-out trill and tremolo lines. The continual use of trills and tremolos maintains a sense of continuity between the music of the two subsections, while the integration of the melodic elements with the trills and tremolos explores new directions. Lastly, the octave displacements, which are applied to the trills and tremolos, help the piano line transform into a melodic pattern, giving more flexibility.

Piano: Octave Displacement - mm. 45-50



The piano and glockenspiel gradually fade out in measure 59, as the viola quietly continues to play the written-out tremolo. The pulse manipulation can also be observed here. The note values of the viola tremolos in measures 57 to 59 (between notes B and F) slowly and gradually increase from an eighth-note to a dotted eighth-note in measures 60. By measure 68, the note value is up to a quarter-note

plus a sixteenth-note. In measures 64, a process which is almost the reverse of that described above is superimposed on the piano line. The continuous change in note value results in the acceleration and deceleration of the pulse, until the pulse stops completely at measure 68, halting on the note F#.

Subsection C begins at measure 71 with the unison on F#, leading into a timbral modulation resembling that seen at the beginning of the composition. To a certain extent, the materials used in Subsection C, from measures 69 to 120, are related to the materials used in the previous two subsections. The texture which is used to compose this subsection is the combination of the two ideas which are present in Subsection A and B. Firstly, the timbral modulation in unison, which in this case is applied to the note F# in measure 71, is composed from written-out trills and tremolos that spread over several instruments in order to transform the timbre or colour of the note. Secondly, a similar combination of instruments is used to produce the timbre. The timbre, which was created by using the piano in a high register with the glockenspiel in Subsection B, is replaced by the piano playing in a high register with the vibraphone. The use of hard mallets on the vibraphone helps to produce a timbral characteristic similar to that of the glockenspiel.

The sudden thickening of the texture, such as that leading up to the climactic point in measure 36, cannot be found in this subsection; however, the overall texture is considerably denser than it was in the previous two subsections for the following reasons. Firstly, there are now more instruments playing their own independent lines, resulting in more interactions between the instruments. Secondly, the durations of passages in which the instruments play written-out trills and tremolo lines are longer. The result is that there are more overlaps of instruments, playing written-out trills, thus creating a dense texture. In addition, the superimposition of different subdivisions creates very complex composite rhythms. As a result, the texture of Subsection C is considerably denser than the textures of subsections A or B.

Section II

Section II of the piece, from measure 121 to measure 162, is much shorter in length than the other two sections. With a duration of two minutes and twenty-seven seconds, the length of the section is roughly half the length of Section I, and about one-third the length of Section III. Because of its length, the musical materials are presented in a simple manner, and there are no subsections.

In measure 121, the first group, which is comprised of first violin, viola, violoncello and double bass, all play long held notes. The strings, whose initial attacks are masked by the vibraphone, help to prolong the vibraphone sound and extend the trichord (C#, D#, E) until measure 124, with some changes in dynamics. Toward the end of measure 125, the strings start to fade out one by one, as the second group of flute, oboe, clarinet and horn enters as a block, playing trills. Although the duration of the trills played by the second group is rather short (approximately 3 quarter-notes), the appearance of the trills is a sudden textural contrast from the long held notes played by the first group. In

measure 128, the trills are repeated once again, changing the timbre slightly by using a different combination of instruments. The tongue slap on the bass clarinet and the snap pizzicato on the double bass, followed by a figure in muted trumpet, trigger a superimposition of the first and second groups. From measure 131 until the end of the Section II, the long held notes, played by the woodwinds, brass and percussion, against the written-out trills and tremolos, played by the strings and piano, create the texture of the remaining part of Section II.

The major difference between Section I and II is that Section II does not contain any melodic elements. The melodic figuration, which is found throughout in Section I, cannot be found at all in the second section. The overall texture of Section II is composed of layers of independent lines containing textural elements, such as trills and tremolos, and using two different instrumental groups to create contrast, making the interplay of the various layers more audible.

Section III

The final section of the composition, measures 163 to 275, is the longest section of the piece, with a duration of approximately six minutes and twenty-three seconds. The music of this section is

composed in such a way that there is no silence or pause (except for measure 196) for the entire duration of the section. The continuity of the music, through use of texture, is one of the important elements in this section. There are a total of six subsections in Section III, and it is important to look at the relationship between the divisions of the subsections and the manner in which the texture is composed.

The Section III contains a total of eight tempo changes, ranging from $\int_{0}^{\pi} = 52$ to $\int_{0}^{\pi} = 78$. The change of tempo does not always correspond with the divisions of subsections. In addition, as mentioned before, there are no silences or pauses (except for measure in 196) that clearly indicate the beginnings or endings of subsections. The absence of silences or pauses is a direct result of having the individual layers or the instrumental groups overlapped or superimposed constantly. The layers often continue over into the next subsection, avoiding any breaks between the subsections. Consequently, the music remains relatively continuous.

In addition, the written-out trills and tremolos, which have been featured prominently in last two sections, appear sparsely, and only as a part of the individual layer supporting the texture. In place of the written-out trills and tremolos, there is an increase in the use of melodic elements or figures in individual lines. The use of additional percussion instruments and the use of techniques such as

multiphonics, allows the timbre of the instruments to be modified and extended in a new direction. As a result, the texture created in Section III is unlike the texture in the previous two sections of the piece.

In order to show the overall design of the Section III, a chart is presented below:

Subsection	Measures	Duration
A	163-173	0' 45"
В	174-196	1, 19,
С	197-207	0' 40"
D	208-221	0' 39"
E	222-238	1'02"
F	239-275	1' 58"

Subsection A begins in measure 163, as the first violin and double bass disappear at the end of Section II. After a brief silence, measure 163 starts slowly and quietly, exploring the new timbre of the instruments in two extreme registers. The very low register, played by piano and double bass, is contrasted with the very high register, produced by the use of artificial harmonics in the violins. The use of extreme registers is one of the efficient ways of differentiating layers

used in this subsection. When two groups of instruments are juxtaposed immediately one after another, however, a technique, such as cross fading, is necessary in order to make smooth transitions between different timbres. For example, in measure 164, the simultaneous occurrence of fading in and fading out of instruments enables two different timbres to mix. As the sustained piano sound naturally starts to decay, the string sound starts to crescendo from ppp and mp, blending two extreme registers, as well as extending the piano decay. In addition, the use of the gong and tam-tam with the piano and strings helps to articulate the attack, while the sound of the percussion instruments enriches the timbre produced by the piano and strings. In measure 170, the melodic activity in the piano is contrasted against instruments such as flute, oboc, clarinet and violoncello, playing long held notes. The contrasting texture of the two layers helps to clarify the definition of each layer, thus making the melodic activities in the piano audible.

In measure 174, the attack on a trichord (C-F-B) marks the beginning of Subsection B. As has been seen in the previous subsection, this subsection continuously uses groups of instruments, which provide the underlying texture of the subsection. The individual lines are used to emphasize the group of instruments. In this case, in measures 174 to 177, the artificial harmonics played by the strings are

accentuated by the different sonorities of the percussion instruments. As the subsection progresses, it becomes more active. The short melodic figures, as can be seen in measure 178 in the clarinet line and in measure 179 in the bass clarinet line, begin to appear sporadically. In addition, the trills, which have been absent for sometime, start to reappear as a derivative of the short melodic figures. Because the trills are used as a part of the melodic figures, the overlapping of several instrumental lines causes trills to be prolonged for several measures. For instance, in measure 181, the trill between the pitches G and Ab in the trumpet is overlapped by the oboe, which thus prolongs the trills. The same trill is then transferred to the clarinet in measure182, as a part of a quasi-imitation occurring between the trumpet, the oboe and the clarinet. Similarly in measure184, the trill between the pitches C# and D is prolonged by several instruments (oboe, clarinet, first violin and violoncello); this is also a result of melodic imitation. The writtenout tremolos reappear, in measures 191 to 192, in the clarinet and flute parts, respectively. This brief appearance of written-out tremolos does not function like the tremolos in the Section I. The tremolos in this subsection only appear for the sake of creating texture, not in order to manipulate pulse or to serve as material from which melodic figures can be derived.

Subsection C, which begins at measure 197, is a short subsection that lasts only for forty seconds. Nonetheless, within this short subsection, the way in which the texture is composed further subdivides this subsection into two. First of all, the brief silence of approximately 2 quarter-rests in measure 196 enables an instant change of texture from Subsection B. Subsection C begins quietly with only two instruments, flute and double bass, playing natural harmonics. The first part of Subsection C mainly consists of long held notes, played by a group of strings. Another abrupt change in texture starts the second part of the subsection. Triggered by a plucked pizzicato in the double bass in measure 203, the group of strings is replaced by the group of wind instruments. Furthermore, the individual layers, which until now have played mostly long held notes, start to take on a more independent role. From measure 203 to the end of Subsection C at measure 207, the texture is the result of the interaction of independent lines in the woodwinds, using quasiimitation between the oboe and the clarinet. In this subsection, the manner in which the instruments are grouped and the way in which the two instrumental groups are juxtaposed to construct two sections within the subsection are rather unforeseen. It appears that there is no direct connection between this and any other subsection of the piece. In addition, there is no relationship between the texture created by the

strings and the texture created by the winds. This all to indicates that Subsection C occurs independently, surrounded by the abrupt changes of texture both at the beginning and at the ending of the subsection.

With the tempo changing to $\int = 78$ in measure 208, Subsection D begins with a sudden change of texture. For the first time in the entire piece, nearly all the instruments have a simultaneous attack with the dynamic marking of sfpp, with a crescendo to f. In this subsection, measures 208 to 221, similar kind of attacks happen several times, defining the vertical sonority as well as strongly articulating the vertical aspect of the piece. For instance, starting at measure 213, the attack, played by the bass clarinet, bassoon, horn, trombone and double bass, appears three times in succession; each attack is then followed by a crescendo. In addition, the initial dynamic marking of the attack is also increased with the each attack. For example, the first attack has the initial dynamic marking of mp, and the dynamic marking of the second attack in measure 214 is increased to mf. Finally, the last attack is set at ff, thus intensifying the attack each time it is played. The dynamic markings play an important role in shaping and designing the linear phrase structure. However, the entire texture of this subsection is not structured only by the vertical attacks. There are several independent layers of instrumental lines that use techniques such as superimposition, imitation and cross fading. In addition, the

appearance of new percussion instruments (chimes and tom-toms), used in combination with piano adds timbral variety to this subsection.

At the beginning of Subsection E in measure 222, a note which is sustained from the previous subsection in the violoncello becomes a trill. This subsection contains some materials from previous subsections; however, it also contains some materials from the next subsection of piece, foreshadowing the finale of the composition. In this subsection, the trills and tremolos, which were featured repeatedly prior to this subsection, mainly function to add texture to the music. The repeated notes, which appear in measures 228 to 231, foreshadow the final subsection of the piece; as well, they are used compositionally in a manner similar to the tremolos used in Section I. The repeated notes contain various subdivisions of the beat and they are played against layers of other instruments. As a result, in measure 228, the texture starts to thicken temporarily, as the various subdivisions are played simultaneously by the oboe, French horn, trumpet, second violin and viola. Furthermore, the crescendos from pp to mf or f, along with increasing subdivisions in all the instruments, help to build up the texture effectively. Once again, the plucked pizzicato in both violoncello and double bass acts as a signal to end the repeated notes in various instruments. Indeed, the short repeated notes stop temporarily, but long repeated notes return briefly after that: in the bass clarinet in

measure 232 and in the French horn in measure 234. The quintuplets and sextuplets, which were placed prominently, are replaced with triplets and eighth-notes. The layers that contain subdivision of the beat no longer create a mass of sound, but rather, are independently treated as parts of the texture.

The texture of the Subsection E is enriched also by the use of different playing techniques that significantly modify the instrumental colour. One of the examples can be seen in measure 229 in the bass clarinet. The multiphonics are obtained from the combination of special fingerings and embouchure control by means of applying a strong pressure with the lips. The effect achieved is a sound which contains simultaneous soundings of several partials, as notated in the part below:

Bass Clarinet: Multiphonics - mm. 229-231

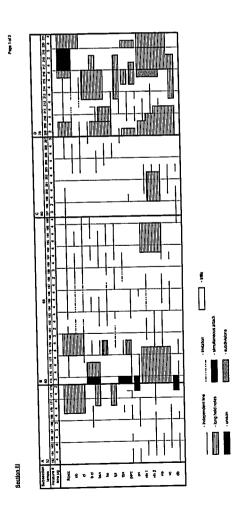


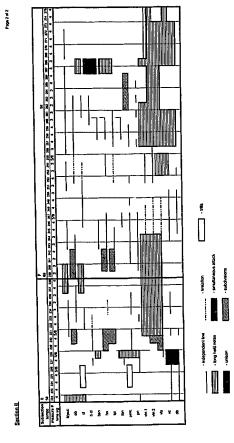
Other techniques in this subsection include *cuivré* – brassy sound – in the French horn, *sul ponticello* in the second violin and viola, in order to maximize the full extent of timbral colours of the instruments.

The final subsection of the composition is from measure 239 until the end of the piece. The texture does not immediately change at measure 239, as the flute, clarinet, violins and viola continue to play from the previous Subsection E. In this subsection, a number of textural features that have been presented in the earlier subsections appear in places. Firstly, the repeated notes, which had been foreshadowed in Subsection E, start to appear in measure 240, in oboe, horn and trumpet. As described earlier, increasing the subdivision of the beat, along with the crescendo, is an effective way of building up the texture. Secondly, the block of string instruments that plays long held notes in this subsection appear to provide the textural foundation of the entire subsection. The dynamic markings applied to the layers of the long held notes are the key to the shaping of Subsection F. Thirdly, in measures 252 to 255, the quasi-imitations appear in three independent lines. What seems to be the ornamented trill in the clarinet is imitated by the trumpet, then by the oboe. This use of imitation helps to vary and transform the timbre of a trill (G and Ab) from the clarinet to horn in measure 254. In addition, it enables the instruments to prolong the similar type of gestures or melodic figures. Lastly, the repeated notes reappear in the percussion part, starting at measure 262. Unlike the various subdivisions used in previous subsections, the glockenspiel plays constant septuplets, clearly defining a pulse, setting the

individual pulse at $\int_{0}^{7} = 406$. Toward the end of the piece, the instruments, including the glockenspiel, decrescendo one by one into nothing, leaving only a single layer of strings, which had been the basis of the texture in Subsection F.

The formal organization of Section III is summarized in a chart on the following page. Each subsection is organized according to its texture, which is one of the primary means of making form apparent in \underline{X} .



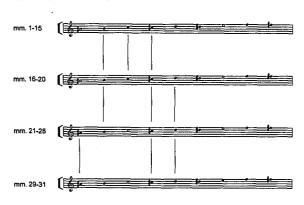


Some aspects of the pitch organisation

Although there is no systematic pitch organisation, controlling the entire composition of \underline{X} , there are several collections of pitch classes which are prominent in the piece. A detailed look reveals that the majority of the piece is constructed from several groups of pitch classes that very much resemble a chromatic scale with a few pitch classes missing. This is a direct result of having pitch collections of dyads and trichords which slowly and gradually expand chromatically in both upward and downward directions, in order to form a larger set of pitch collections. The dyads and trichords, which are the sources of the pitch collections, are in fact, the focal point or the basis of the pitch organisation in the piece.

The first large pitch collection appears in measure 29. As was mentioned earlier, these seven pitch classes, C# D, D#, E, F, F# and A#, are derived from a trichord. A simple process of freely adding and removing the pitch classes is shown on the following page:

Pitch Collection - mm. 1-29



* black note heads indicate the pitches present

As one can see, the first pitch introduced in the piece is B. With the use of trills, glissandi and grace notes, the two chromatic pitch classes, C and C#, are added to the original pitch, forming a trichord or a chromatic cluster (B, C and C#). Shortly after, another neighbouring chromatic pitch class (D) is added, resulting in a chromatic tetrachord. The process of adding and removing the pitch classes continues until measure 29, where all seven pitch classes are stabilized and are used to compose the measures of music up to measures 36.

Another example can be found in measure 71. The timbral change on F#, played by flute, clarinet, viola and violoncello, explores the upper chromatic pitch class (G) in the form of grace notes or trills to produce chromatic dyads (F# and G). In measure 77, the simultaneous entry on pitch class B by the bass clarinet and double bass creates a trichord (B, F# and G) temporarily which in measure 80 quickly transforms into another trichord (A#, B and E) in the strings and piano (excluding the flute passage). The introduction of written-out trills such as are found in the piano in measure 80, slowly and gradually starts to expand the pitch collection. The written-out trills in the clarinet and bassoon in measure 83 and in the viola and clarinet in measure 89 all contribute to form a quasi-chromatic pitch collection (A#, B, C, C#, D, E, F, F# and G) in measure 89.

A similar process which is almost the reverse of that described above can be observed in the subsequent measures. As the texture begins to thin out, several pitch classes are removed from the pitch collection in measure 89. In measure 92, three pitch classes are removed to form a new pitch collection (A#, B, C#, D, E and G). The further reduction of the texture results in a trichord (D, F and F#) in measure 112, and the process ends by returning to the initial pitch class (G) to complete the cycle.

The dyads and trichords, upon which the pitch collections are based, appear by themselves six times in the piece. Interestingly, most of the dyads and trichords highlighted are placed at the beginning of the sections or subsections, suggesting that the new pitch collections are reestablished in connection with the formal organisation of the piece. In conclusion, the method of adding and removing chromatic neighbouring pitch classes from the original dyads and trichords enables the creation of harmonic structure, which is continuously evolving.

Conclusion

In analysing the composition \underline{X} , it is evident that the texture is the most important feature in the composition. In \underline{X} , the texture, which is a direct result of using a combination of aspects such as timbres, dynamics, articulations, register, rhythm and spacing, helps to reveal the formal organisation of the composition. The texture of the music can never be fully described in words, however, and it is only in a performance that the all aspects combined can be realized and appreciated. Music can only start to unfold its character entirely when other parameters such as orchestration, tempo and rhythmic organisation are considered.

 $\overset{cross}{X}$ for chamber orchestra (1998)

Keiko Yamanaka

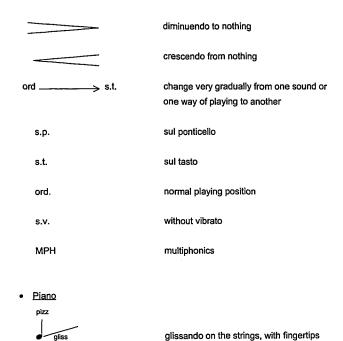
Instrumentation:

```
flute/piccolo
oboe
clarinet in Bb
bass clarinet
bassoon
horn in F
trumpet in C
trombone
percussion (1 player)
      tam-tam
      snare drum
      suspended cymbal
      bass drum
      tom-toms
       gong
       crotales
       glockenspiel
       timpani
       vibraphone
       chimes
 piano
 2 violins
 viola
 violoncello
 double bass
```

Duration: approximately 13'30"

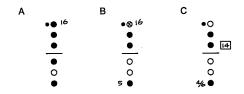
Notation:

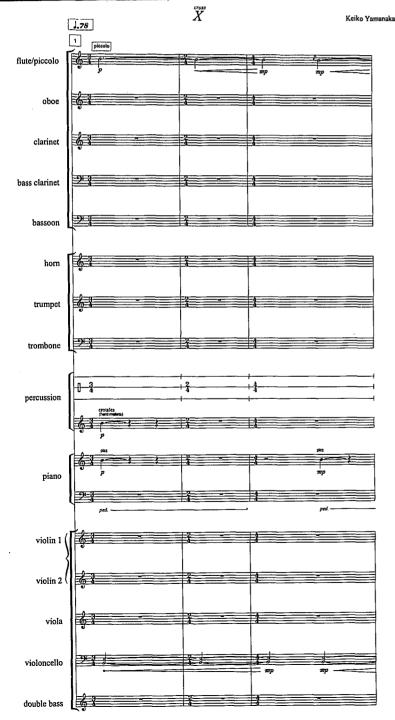
- The score is written in C with the usual octave transpositions of the double bass, glockenspiel and crotales.
- Crotales and glockenspiel sound two octaves higher than written.
- All harmonics in the double bass are marked in octave transposition, except for the natural harmonics in treble clef, which are notated at actual pitch.
- Accidentals carry through the whole measure.



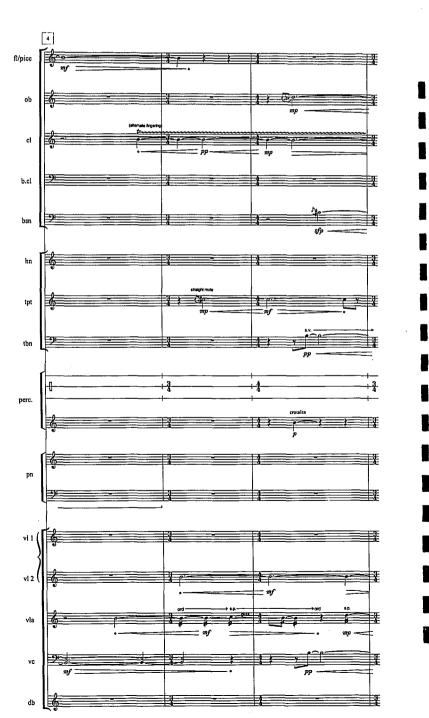
Bass Clarinet

The fingerings for the multiphonics in the measures 229-231 are as follows:





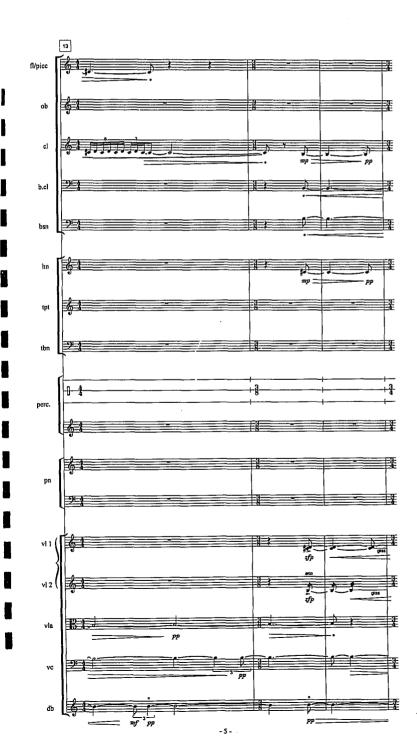
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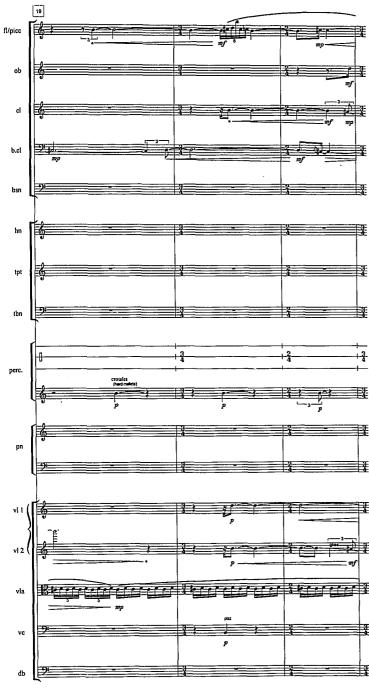
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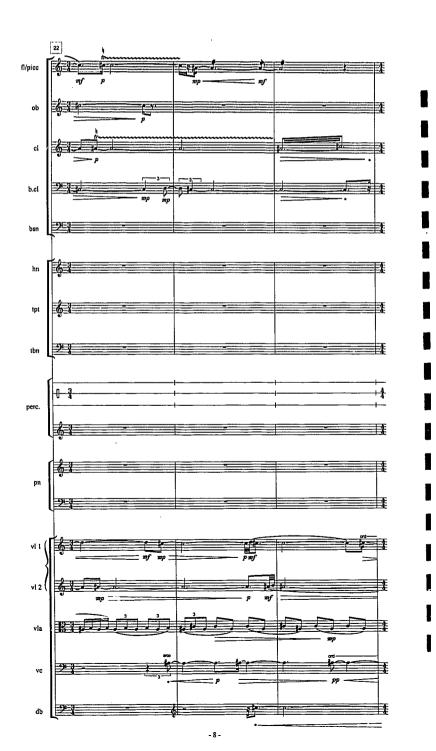


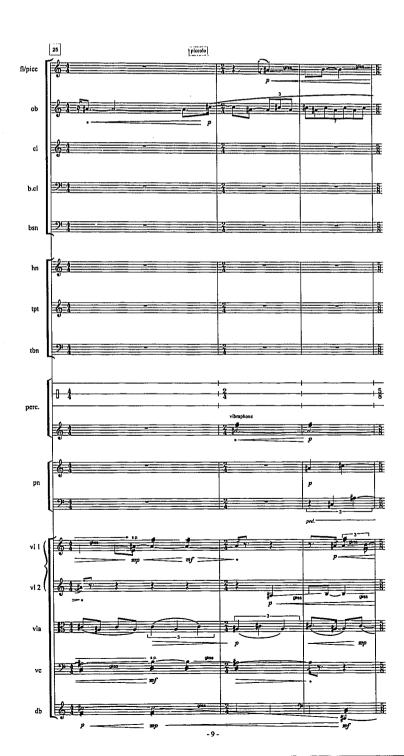


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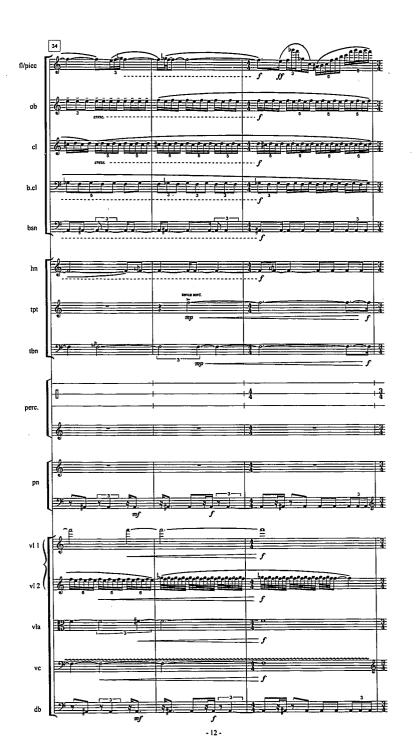


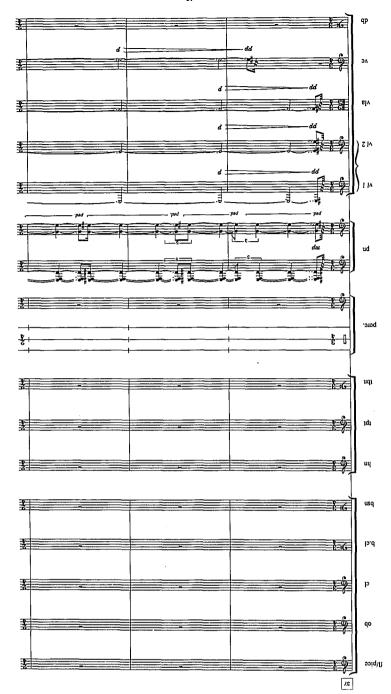


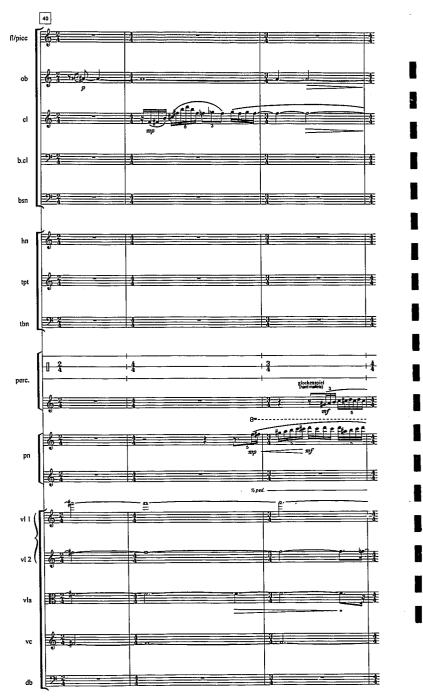




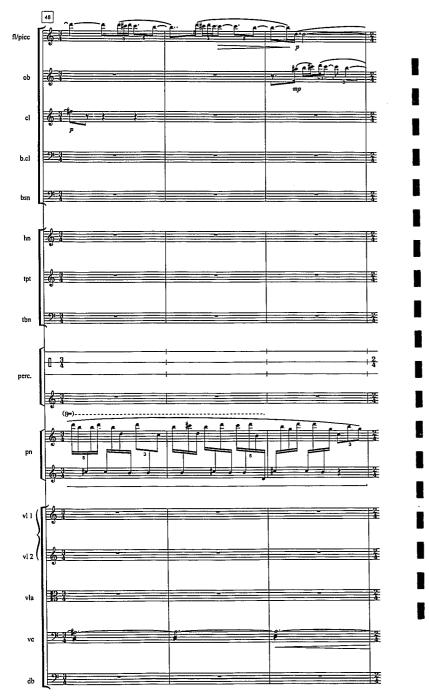




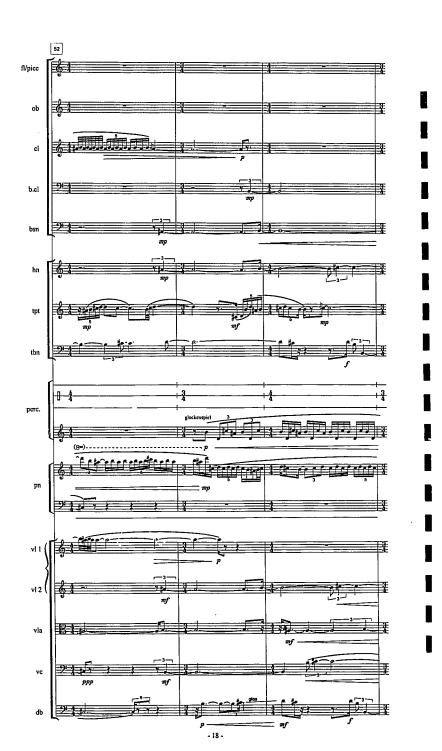








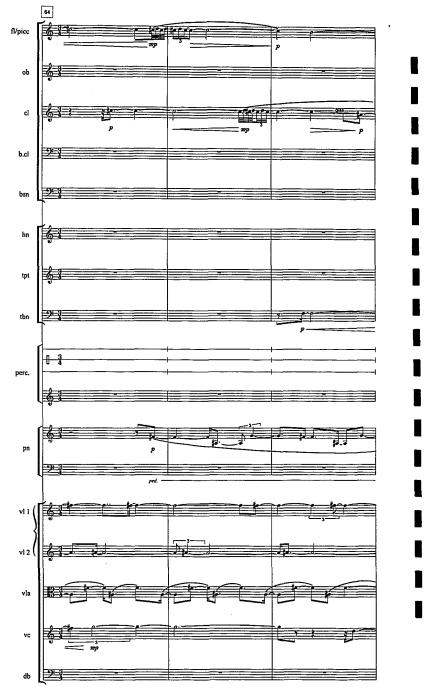






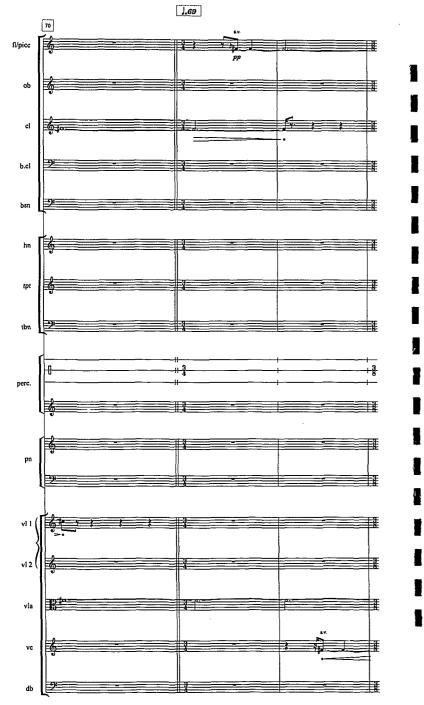








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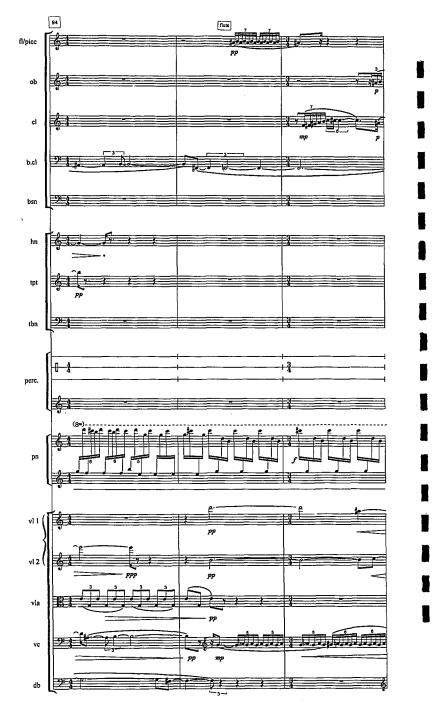
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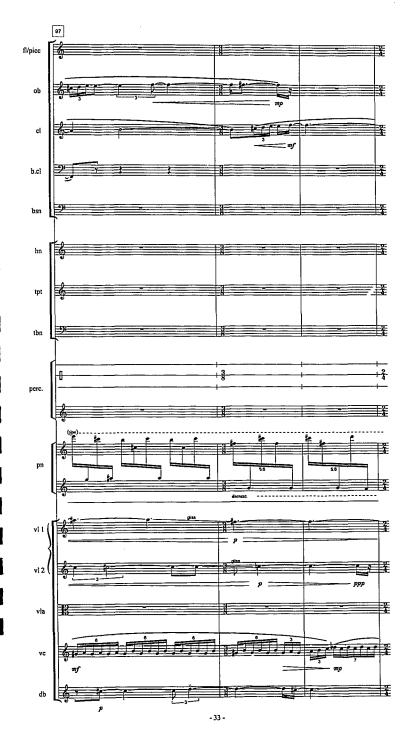






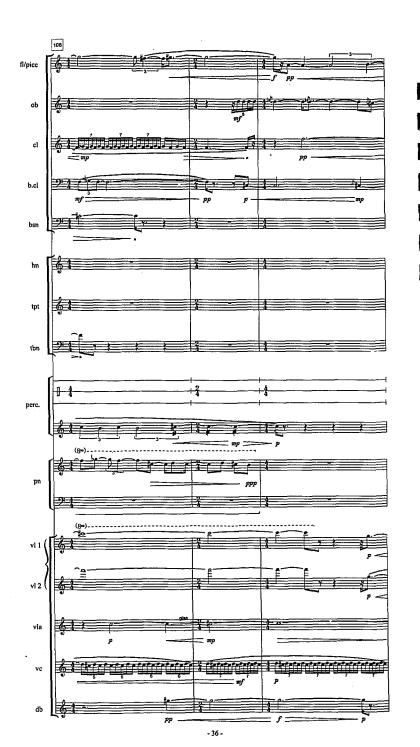


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