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Twentieth Century American Experimental Music and Arts

A Thesis submitted in partial satisfaction of the requirements for the degree Master of Arts

in

Music

by

HunJoo Jung

Committee in charge:

Professor Katharina Rosenberger, Chair
Professor Chinary Ung
Professor Anthony Davis

2013
The Thesis of HunJoo Jung is approved and it is acceptable in quality and form for publication on microfilm and electronically:

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Chair

University of California, San Diego

2013
DEDICATION

to my family, YongIl Jung, BokSung Shin and AeRi Jung
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This thesis was an exploration of two American experimental composers, Ruth Crawford and Edgard Varese and the founder of video artist Nam June Paik. The aim of this thesis is to awaken an interest in and understanding of their innovative explorations of their initial works.
CHAPTER 1: An Analysis of Ruth Crawford-Seeger’s *Diaphonic Suite No.1* for Solo Flute (or Oboe), Third Movement

1.1 Introduction

Ruth Crawford-Seeger’s music has significance for early twentieth century American music history. During her lifetime (1901-1953), American compositional identity was just beginning to take shape in European music circles. Furthermore, after the successful women’s suffrage movement in the United States, women composers were beginning to speak in their own voices. In these circumstances, Crawford made meaningful contributions to the filed of new idea and compositional tools, and helped define the identity of an American sound. Her compositional devices and visions passed to experimental composers such as Eliot Carter and Lou Harrison, and still reverberate through American composition. Henry Cowell said of Crawford that, “she was the only women composer in America who holds its own with our best men composers.”(Gaume, *Ruth Crawford Seeger, Memoirs, Memories, Music*)
Diaphonic Suite No.1 is a work worthy close analysis because of its use of a musical structure, called neumes, based on serial procedures which are manipulated in different ways from Schoenberg’s twelve-tone series and techniques. The aim of this paper is to awaken an interest in and understanding of her creative use of neumetic figures, schemas and serial procedures that provide the form for each phrase in the third movement of Diaphonic Suite No.1.

1.2 Background

Ruth Crawford Seeger was born in East Liverpool, Ohio in 1901. As she was growing up, Crawford studied piano and composition. In 1921, she moved to Chicago to keep pursuing her studies at American Conservatory of Music with Heniot Levy and Louise Robyn, who was aware of the importance of Alexander Scriabin. During these times (1921 to 1929), her music was influenced by Scriabin’s music, which involved dissonance and post-tonal harmonies as well as utilizing irregular rhythms and meters. In addition, Crawford’s music was influenced by Schoenberg’s music, but Crawford had been feeling ambivalence toward Schoenberg’s music; Crawford was attracted to Schoenberg’s twelve-tone series and techniques, but Schonberg’s motivic development was not intriguing for her. In a letter from Ruth Crawford to Carl Sandburg on March 7, 1929, Crawford criticized Schonberg’s early works- Five’s pieces Orchestra and Pierrot Lunaire, as having “too much pattern and too cerebral”. (Tick p118, Ruth Crawford Seeger A composer’s Search for American Music) In 1929, she moved to New York, and continued to learn Schoenberg’s early and other pieces that included Piano
Suite, op.25 and Wind Quintet, op.26 to study twelve-tone serial composition. However, in a letter from Ruth Crawford to Vivian Fine on Feb. 7,1930, Crawford said of those Schonberg’s pieces, Schonberg had “grown too many geometric pages” in his music. Thus, Crawford decided to follow Charles Seeger’s theory instead. (Tick p119, Ruth Crawford Seeger A composer’s Search for American Music)

Charles Seeger, who was the most important teacher for her development, emphasized his role in the 1930s by condescending to Crawford’s earlier works that she composed in Chicago. In the interview of Vivian Fine by Rita Mead on November 15,1974, Fine said:

Seeger believed that she was an “imitator” until she had studied with Seeger …There is no doubt that Crawford wrote all of this interesting music after she met Seeger Generous and sincere with his support and enthusiasm at a crucial moment in Crawford’s career, Seeger overstated his role in such pronouncements. Did Crawford’s artistic achievement provoke anxiety? Pride mingles with envy In Seeger’s pronouncements on what was given. How much credit was due to his prodigious originality as a theorist as opposed to her superior gifts as a composer. (Tick p 121, Ruth Crawford Seeger A composer’s Search for American Music)

Seeger especially stressed the concept of neumes (a term Charles Seeger recontextualized from Gregorian chant notation) to name the smallest melodic unit to result in a significant musical gesture. Seeger revived the term neume as a means of indicating pure melodic direction, but he avoids specifying a melody’s intervalllic span or duration length. Seeger distinguished neume from motive. A neume is defined by the melodic direction between tone beats: Neumes are categorized as binary, consisting of three pitches, and ternary, consisting of four pitches. These binary and ternary shapes are categorized by contour as line movement, which is all in the same direction or twist,
combinations of both up and down motion. (Greer p152-154 A Question of Balance) According to Judith Tick, the internalization of neumes as germinal material rather than abstract ideas comes through in one of Crawford’s’ letters, when she was composing Diaphonic suite No.1, She recalled how they “sang the neumes and continuants”. Seeger coined the term continuant to mean the development of the melodic germ that realized the definite implications contained within the neume itself. Seeger described this process with Crawford informally some year later:

This concept of a continuant, or the technical means of keeping a melody going without coming to a fall, intrigued Ruth, and so large part of the first lesson was spent in my outlining various ways of keeping a melody line and keep it going for ten minutes without its falling, you would be a heaven-storming composer. (Tick p 203, Ruth Carwford Seeger A composer’s Search for American Music)

As Crawford deeply admired the essence of Seeger’s methods, she evolved a highly original approach to melody, utilizing the neumes and continuants. Seeger taught many other students, among them Henry Cowell. Cowell taught the idea of neumes to Lou Harrison. Harrison took an approach similar to the one that Crawford used. Harrison began his Music Primer (1971) with a discussion of these melodicles or neumes.

According to Harrison, Composing with melodicles (or neumes):

In some form...is the oldest known method of musical composition... [Melodicl- es] may be combined and recombined in lovely ways... The melodicles may also be used in backward (retrograde) forms or upside down (inverse) or in both of these at once (retrograde-inverse). One decides with interest whether the neumes should be connected by the joining of their last and first tones, or (unjoined) by moving to an adjacent tone up or down, or by free skips. The melodicles might be used only in their pitch patterns, and the rhythms changed... Henry Cowell taught me most of this. (Harrison p 1 Music Primer; Various Items about Music to 1970)

Crawford used these neumes in her own individual method. Her method of using neumes incorporates many traditional devices for transforming one neume into others. These transforming neumes can be combined with one another to form a larger contour.
The possibilities of preserving contours are then linked with their inversion, retrograde or retro-inversion. These transformations and combinations of neumes create a *phrase neume*. Crawford was concerned with creating larger contours from the structural shapes of neumes. These organic phrases make larger and larger contour phrases. A whole piece, called a *form neume*, it results from a combination of many phrase neumes. Crawford took this idea of the *neumes* from Charles Seeger who had developed from Gregorian notation. Crawford had developed crucial insights into the compositional techniques that dissonated melody, number centricity, the establishment of formal symmetries and their confoundment came all together as resources for the composition of her most important piece, *Diaphonic Suite NO.1*.

1.3 An analysis

*Diaphonic Suite No.1* was composed on April, 1930 while Crawford was in New York. This piece consists of short 4 movements: I) Scherzando, II) Andante, III) Allegro and IV) Moderato: it was premiered in New York on the first of March in 1931 by the flutist Frances Blaisdell, at a League of Composers concert. The period of composing *Diaphonic Suite NO.1* was a crucial moment of her life. As the first women composer to win a Guggenheim Foundation fellowship in 1930, she was able to go to Europe, and to interact with European composers who were exploring twelve-tone serial music. However, before going to Europe, she had already found her own serialism method, which is different from European serialism, based on systematic approaches to form as the expression of modern American dissonant music. According to Judith Tick, Charles
Seeger later summed up the virtues of Crawford’s new atheistic in his praise for *Diaphonic Suite No.1* at its premiere, finding a *breath of joy* in “the shortness of the movements, their freshness and spirited friskiness… the cleanness and leanness… its nice balance and unbalance.” (Tick p 118, *Ruth Carwford Seeger A composer’s Search for American Music*)

For Diaphonic Suite No.1, Crawford listed the following principles as *pointes* about which she felt strongly:

- Clarity of melodic line
- Avoidance of rhythmic stickiness
- Rhythmic independence between parts
- Feeling of tonal and rhythmic center
- Experiment with various means of obtaining as the same time, organic unity and various sorts of dissonance


These values, which comes from one of Seeger’s book, *Tradition and Experiment in (the New) Music* reflects Diaphonic Suite No.1. (Gaume, p 153 *Ruth Crawford Seeger, Memoirs, Memories, Music*)

As far as I know, Crawford never talked about the meaning of the word *diaphonic*, but I assume that *diaphonic* is a combination of two words, *diatonic* and *phonic*. The reason that Crawford used the word *phonic* instead of *tonic* is she wanted to explore the new possibility of twelve-tone serial music, which is familiar as Schoenberg’s serial methods, but also based on the concept of diatonic scale so that she enabled to break the system and formation of traditional western tonal music. The world *tonic* came to refer to the most important of all the different tone centers, which a composer used in a
Western traditional music; Crawford was incensed about tonality. Thus, Crawford might use the word *phonic* instead of *tonic*. Thus, *Diaphonic Suite No.1* has been created all pitches have same value equally.

According to Judith Tick, Crawford described third movement of *Diaphonic Suite No.1* privately as a *triple passacaglia perpetuum mobile* with the triple referring to the controlling number 7.

One 7 refers to the meter 7/8; the second 7 refers to the seven pitch set that generates all the rest of the melodic material, initially through rotational permutation, one set per measure/seven measures per phrase; the third 7 refers to use of seven other transpositions of the row in the rest of the piece, which begin on each of the seven pitches of the first set (Fig. 1.1). Just like Renaissance and early Baroque *passacaglias*, this movement uses a single phrase through which to construct a continuous variation form. As usual, there are loose threads in the design, namely the extra bars at the end of the first two phrases.

The value of Crawford’s description *triple passacaglia* is to remind us how often her precompositional schemes involved a kind of number centricity, or the projection of a single number of a single number in different musical domains. (Tick p 209, *Ruth Crawford Seeger A composer’s Search for American Music*)

<table>
<thead>
<tr>
<th>Meter 7/8</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tbody>
<tr>
<td>Ostinato original:</td>
<td>G</td>
<td>A</td>
<td>G#</td>
<td>B</td>
<td>C</td>
<td>F</td>
<td>C#</td>
</tr>
<tr>
<td>1. m. 9</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>P</td>
</tr>
<tr>
<td>2. m. 17</td>
<td>G#</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>R (Retrograde)</td>
</tr>
<tr>
<td>3. m. 24</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>R</td>
</tr>
<tr>
<td>4. m. 31</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I (Inversion)</td>
</tr>
<tr>
<td>5. m. 38</td>
<td>F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I</td>
</tr>
<tr>
<td>6. m. 45</td>
<td>C#</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>RI</td>
</tr>
<tr>
<td>7. m. 52</td>
<td>G</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RI</td>
</tr>
</tbody>
</table>

Figure 1.1: The plan for *Diaphonic suite No.1* for solo or flute, third movement as a *triple passacaglia* on 7.
Example 1.1. shows the score of the entire third movement of *Diaphonic Suite No.1*. It laid out to reveal its structure of eight phrase neume. Each phrase neume consists of 8 measures except for the second and the last phrase neumes each with 9 measures. All the melodic phrases stem from just two melodic figures, which I have labeled here, have called as the A and the B neumes, which are combined 7 pitches of the first set (see first measure).

Example 1.2. shows the A and B neumes are parts of two segments in a seven-pitch row. This seven-pitch row, which is a range from b to a, is an octave repeating and comprising four half steps, one whole step and one major third for each octave, in which a central pitch f is separated from two chromatic cluster; the lower chromatic cluster, which is range of b to c#, is the B neume, and the upper chromatic cluster, which is range from g to a, is the A neume. This pattern ensures that in a seven-pitch row span more than one octave. Each phrase neume is built from the *A neume* and *B neume*, or from their retrogrades, inversions and retrograde-inversions in seven different transpositions. According to Joseph Nathan Straus, the neumetic principle acts as an understructure to infuse the lines with chromaticism; one neume-the twists of a half and whole step-become a fingerprint in her writing like the *A neume* and *B neume*. As Straus further notes:

Most of her melodies play rapid game of leap-frog, with some new notes balancing old ones around constantly shifting pivots. They often give the impression of living organisms, like amoebas that change shape as they move. They expand and construct, surge forward and hold back, twist and turn, move forward and shrink back and all the while their intervallic identity shifts and changes. Inevitably, then, whatever coherence they may be heard to possess derives not from their content, which is constantly in flux, as from the process of melodic formation. (Straus, *The Music of Ruth Crawford*)
Example 1.1: Diaphonic Suite No.1 for Flute or Oboe, Third Movement

A = A neume
B = B neume
AR = A retrograde neume
BR = B retrograde neume
AI = A inversion neume
BI = B inversion neume
AIR = A retrograde inversion neume
BIR = B retrograde inversion neume
Figure 1.2. shows the first and second phrase neumes are based on the original forms of the A and B neumes; the third and fourth phrase neumes are built on retrograde forms; the fifth and sixth phrase neumes are created by melodic inversion of the original; and the seventh and eighth neumes are built by retrograde-inversion, in which the melodic inversion appears in retrograde. Crawford explored the monophonic ways in which, inversion, retrograde and retrograde-inversion and transposition together with and octave displacement of pitches neumes can be used in a wide range of combination to construct in an entire movement.

Figure 1.2: The original, retrograde, inversion and retrograde-inversion of the forms of the A and B neumes (R= Retrograde, I= inversion and RI= Retrograde-inversion)
Besides, these devices will be familiar as basic techniques of Schoenberg’s serial methods. Schoenberg’s row contains all twelve chromatic pitches with no recurrences, and no pitch can be reiterated until all pitches have occurred. Example 1.3. shows how a row extracted from Schoenberg’s first serial composition, the piano suite op. 25. The pitches are numbered according to their position in the chromatic scale beginning on E, and thus the first note of the row, or the reference pitch is numbered 0. The pitch class numbers of the remaining notes indicate their distance above E in half steps.

In third movement of *Diaphonic Suite No.1*, however, the full series contains only seven-pitch classes, and the complete row is stated eight times within each phrase neume; but each statement of the seven pitch row begins on the second note of the proceeding statement, moving the first pitch to the end for next cycle. Example 1.4. shows how the pitch row in the second measure is cycled, beginning now with the second pitch of the row, and the pitch row in the third measure is cycled from the third note of the row. Each time the cycling occurs, each measure has a different first pitch (starting point for cycle).

Figure 1.3. shows how the first phrase neume (mm. 1 to 8) is constructed by the original forms of the A neume (in black), and the B neume (in brown), together with “incomplete A neumes” (in gray), “incomplete B neumes” (in pink), and “distorted neumes” (in blue) which are caused by the process of cycling, transposing, and octave displacement of the A and B neumes. Even though the incomplete A, B and distorted neumes are simply fragments of the A and B neumes, they generate unanticipated interruptions of the original row. Generally, the forms of the A and B neumes and
incomplete neumes are stated in close registral disposition, but any neume can extend its register by octave displacements, resulting in what I have called distorted neumes. In addition, each phrase neume involves a recurring pitch (marked with XX), which is the sixth note of the position of the order in row. This series of recurring pitches have the same registral position for an entire phrase neume, like a pedal point. With each new phrase neume, the recurring pitch is changed from different tone. While the recurring pitch remains constantly between the A and B neumes, the forms of A neumes with incomplete A neumes and the forms of B neumes with incomplete B neumes laid out by different registers. Each registral space is stated separately, but distorted neumes interrupt and interlock between A with incomplete A and B with incomplete B neumes’ register. Octave displacement sometimes leads to shift of their registers. During the first four measures, at the interval of four measures, the shape of the A neume changes to incomplete A neumes or distorted neumes, while the shape of the B neume maintains its original in due order, while in the next four measures, the situation is reversed; vice versa; this pattern mostly persists for the entire movement. For instance, in mm. 1 to 4, the original form of the A neume is transformed to the A incomplete neumes in the second cycle (measures) or distorted neumes in the third cycle (measures) while the original form of the B neume keeps its figures in a different register between b4 and f5. In mm. 5 to 8, however, the original shape of the B neume alters its shape to the incomplete B neumes in the sixth cyricle or distorted neumes in the fifth and seventh cycle by one octave higher while the recurrent original form of the A neume maintains its shape and registral space.
Figure 1.4. shows how the second phrase neume is constructed by the original form of the A neume, now transposed up by a minor second, and the original form of the B neumes, which are transposed up by a major second, together with their incomplete and distorted forms. The replacing and transforming of the A and B neumes have similar progressions as the first phrase neume. The recurring tone (unchanging pitch g5) remains constant, while the original forms of the B neumes maintain their shapes in mm. 9 to 12 in between c#5 to g6, the original form of the A neume is introduced and is gradually transformed to an incomplete neume that subtracts one by one notes in each cycle. In mm. 13 to 16, the complete B neume is introduced, and is gradually changed to an incomplete neume in the fifth and six cycle and altered distorted neumes in the seventh and eighth cycle, while the original form of the neume maintains their figures between a5 to b5. In m. 18 (the last cycle of the second phrase neume), after long last sustaining note of the last neume, the interrupted rest, which is the first and last for the entire movement, articulates the second phrase neume; this unexpected rest is quite effective articulation method during the constantly recurring same rhythmic gestures. This articulation at the end of second phrase neume enables to shift their manipulation by retrograde contour (the third and fourth phrase neume).

Figure 1.5. shows how retrograde form of the A and B neume, incomplete A and B neumes and distorted neumes construct third phrase neume. The retrograde form of the A neume is transposed down by a major third and the retrograde forms of B neume is transposed by a minor third, together with their incomplete and distorted forms. As an opposed to the previous phrase neumes, in the third and fourth phrase neumes, the
retrograde form of the A neume maintains its shapes at first, and the retrograde forms of the B neume changes its shapes to incomplete A and B neumes or distorted neumes at the interval of four measure, and in next four measures, the situation is reversed; vice versa; this pattern mostly persists for the entire movement. Third phrase neume is mainly stated in the lowest register for the entire movement, and these contours gradually climb up to higher registral place in the fifth phrase neume. The fifth and sixth phrase neumes are constructed by the inversion form of the A and B neume, together with their incomplete A and B neumes and distorted neumes with transposition.

Figure 1.7. and 1.8. shows how these contours are stated in the highest register and attain a positive golden section at the first note of the m 38. This positive golden section is the highest note and biggest dynamic tone (fortesismo) for the entire movement. In subsequent occurrences, distorted neumes expand their shapes and shift their registral place a lot in the fifth and sixth phrase neumes when compared with other phrase neumes. These expanded distorted neumes weaken their own character, so enable to make various contours even though their natures stem from same materials. These distorted neumes could be integrated with pointillistic effects so that these contours widely span their registral ranges. After attaining the highlight part in m. 38, contours gradually clime down through the seventh phrase neume, and toward the end of the eight-phrase neume in the similar register of the first phrase neume.

There are two outstanding features of third movement. First outstanding feature is the manner of manipulating the distorted and incomplete neumes to articulate the phrase
neume. As you can see, example 1 has been laid out to reveal the form neume structure in eight phrase neumes. A pair of two phrase neumes, can be called a “compounded phrase neume”, can be separated from the original compounded phrase neume (the first and second phrase neume), the retrograde compounded phrase neume (the third and fourth phrase neume), the inversion compounded phrase neume (the fifth and sixth phrase neume) and the retrograde-inversion compounded phrase neume (the seventh and eighth phrase neume). Each compounded phrase neume has different version’s neumes and ways of articulations. Even though each phrase neume consists of 8 measures, the second and the last phrase neumes consist of 9 measures. The reason is that the second and eighth phrase neumes are extended in order to articulate the passages that delineate a compounded neume to the end, similar to the functional idea of codetta. Likely the functional idea of codetta, the way of closing the compounded phrase neume enables to define the nature of compounded phrase neumes. In m.18, after long sustaining note of the last neume, the interrupted rest, which is the first and last for the entire movement, delineate the second phrase neume (the first compounded phrase neume); this unexpected interrupted rest is quite effectively articulate the compounded phrase neume as a function for a codetta, but also enable to define the natures of compounded neumes. The end (Codetta) of fourth phrase neume is manipulated by different method, Unlikely, the ending of second phrase neume (the first compounded neume) is employed interrupted rest after long note, codetta of fourth phrase neume is gradually modulate to the fifth phrase neumes by utilizing fragments of incomplete and distorted neumes without complete neumes.
Figure 1.6. shows in mm. 29 to 30, whole two measures (the seventh and eighth cycle at the third phrase neume) are dominated by only incomplete and distorted neumes without any complete the forms of the A and B neumes. The reason is that the incomplete neumes and distorted neumes have weaker properties than complete the forms of A and B neumes, so it is easier to modulate to another compounded neume, which has different version and transposition. Thus, this method enables to shift one to another smoothly. Figure 1.9. shows how a coda of the last phrase neume (mm. 52 to the end) is employed by new rhythmic gesture to articulate the whole movement. In this movement, same rhythmic gestures are recurring constantly except for the last coda. Since entering in m. 52 (the last cycle of the last phrase neume), an abruptly changing rhythmic pattern is the great way of articulate the last compounded phrase neume and delineate for a whole movement. If you might see other ancient neumes of fifteenth century or the codetta of the fugue by Bach, ending is often employed by new rhythmic gesture with cadence to articulate whole piece.

Second outstanding feature is the original form of the A and B neume, phrase neume, compounded phrase neume and a form neume all have similar symmetrical shapes in the manners of a fractal. Figure 1.3. and 1.4. shows at the end of first and second phrase neume, the last neume in the last cycle of the phrase neume tend to return to the previous registral position by one octave lower: the reason is for articulating larger contours from the structural shapes of phrase neumes like the original form of the A and B neume. the pitch relationships of the original form of A and B neume, the contour of first phrase neume and the first compound phrase neume have a all similar shape...
(contour). If you see example 1, the first pitch $g$ of the original form of the A neume leap up to $a$ and then, step back to $g#$. The first pitch $b$ of the original form of the B neume raise up to $f$ and then move back to $c#$. Figure 1.2 shows how the contour of the first phrase neume leaps up to higher register in the sixth and seven cycle and then moves back to the same registral position of the first cycle. In the compound phrase neume’s contour also have similar gesture. Figure 1.11 shows how the shape of the A and B original neumes incorporates with their incomplete and distorted neumes. These combining and transforming neumes can be united the form of the first phrase neume. The first phrase neumes combine with second phrase neumes to articulate the first compound phrase neume. These organic compound phrase neumes grow bigger and bigger to delineate contours from the third phrase neume to the end of the fifth phrase neumes (the third compound phrase neume). The seventh and eighth phrase neumes have similar shape of contours of first and second phrase neume and articulate a whole movement. Finally, a form neume is results from the whole combination contour from compound neume, which compose of a combination of phrase neume. The original form of the A and B neume, phrase neume, compound phrase neume and a form neume (a completed piece) all have similar geometric shapes in the manners of a fractal.

In summary, Crawford took the geometric shapes of *neume* from Seeger who had developed from Gregorian notation, and explored new methods, which are familiar as Schoenberg’s serial methods, with based on the concept *diatonic scale* so that she enabled to break the system and formation of traditional western tonal music. Crawford also had developed crucial insights into the compositional techniques that dissonated
melody, number centricity, the establishment of formal symmetries and their confoundment came all together as resources for the composition of her most important piece, Diaphonic Suite N0.1. Her method of using neumes incorporates many devices for transforming one neume into others. These transforming neumes can be combined with one another to form a larger contour. Crawford explored the traditional ways in which, inversion, retrograde, retrograde-inversion and transposition and octave displacement of neumes can be used in a wide range of combination to construct the entire movement. These transformations and combinations of neumes create a phrase neume. These organic phrases make bigger and bigger compound phrase neumes. Finally, the form neume results from the whole combination of compound phrase neumes.

It is no surprise that Ruth Crawford Seeger was undoubtedly one of the greatest of pioneers in American music history. She contributed the very things that caused the world to recognize American experimental contemporary music. Even though some critics argue that Crawford is doing nothing but using her husband in her music, Crawford has had an important part in introducing American composers to the possibilities of manipulating unconventional techniques to break tonality. She was especially dedicated to neume, based on American way of twelve-tone serial music. Crawford laid out much of the groundwork for several generations of a-tonal followers. She had begun an ongoing serious interaction in regards to our culture’s ever-growing captivation with new American experimental music. Diaphonic Suite NO.1 has been pricelessly valuable in 20 century American music.
Figure 1.3: The First phrase neume

Figure 1.4: The Second phrase neume
Figure 1.5. The Third phrase neume

Figure 1.6: The Fourth phrase neume
Figure 1.7: The Fifth phrase neume

Figure 1.8: The sixth phrase neume
Figure 1.9: The Seventh phrase neume

Figure 1.10: The Eighth Phrase neume
Example 1.2: Seven-pitch from the first set
Example 1.3: Row from Suite, Op. 25, Schoenberg

Example 1.4: The cycling of the first phrase neume

Form neume

The Biggest compound phrase neume

Bigger compound phrase neume

<table>
<thead>
<tr>
<th>First compound phrase neume</th>
<th>Second compound phrase neume</th>
<th>Third compound phrase neume</th>
<th>Fourth compound phrase neume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fifth phrase neume</td>
<td>Second phrase neume</td>
<td>Third phrase neume</td>
<td>Fourth phrase neume</td>
</tr>
<tr>
<td>Sixth phrase neume</td>
<td>Eighth phrase neume</td>
<td>Ninth phrase neume</td>
<td>Tenth phrase neume</td>
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</table>

Figure 1.11: The fractal of third movement
CHAPTER 2: Influence of John Cage on the initial works of Nam June Paik

2.1 Introduction

Nam June Paik (1932 –2006), who was a composer, a performer, and a founder of video art, has had an important part in introducing the viewer and artists to the possibilities of manipulating new technology for artistic expression. (The question of who is the founder of video art is a controversial issue. I describe why arguments have flared up around this issue, and argue that Paik is the founder of video art; see p 29 to 30 of this paper) While conceptual and performance art was just beginning to take shape in the mid-20th century, Paik made meaningful contributions towards exploring the ways in which performances, music, video images, lasers, robots, and the sculptural forms of objects can be used in a wide range of combinations to call our attention to the nature of television as medium. In addition, Paik was very dedicated to incorporating Eastern culture, religion and philosophy into Western art, based on technological practices. Paik laid out much of the groundwork for several generations of multi-media followers. He was responsible for beginning a serious ongoing interaction in regards to our culture’s ever-growing captivation with technology.
The aim of this paper is to awake an interest in and understanding of Paik’s creative use of John Cage’s influence in his initial works as much as it is to describe how Paik combined various forms of objects into his artistic methods from a Korean philosophical perspective; I have often expressed my views about how Paik manipulated incorporated Korean philosophical materials into his works.

2.2 Background

Nam June Paik was born in Seoul, South Korea. As he was growing up, Paik studied piano and composition from Gun-Woo Lee, who, as early as the 1940s, was well aware of the importance of Schoenberg’s twelve-tone serial music. Lee had developed crucial insights into dodecaphony that Paik continued to explore in his own work. Studying Schoenberg had a strong influence on Paik, and was one of the major factors that spurred his decision to become an artist. According to Paik’s interview with Lee:

I believe that Schoenberg’s invention of twelve-tone serial music was inspired by Marxism. Marxism was a symbol of intellectuals in action during the Period of Japanese Occupancy (the World War I and II). Along with them, I also deeply admired Marxism during that period of time… Schonberg believed that becoming an extremist was the only way of reforming the traditional music… Schonberg was a composer who had finally achieved a break a persistent system of tonal music. Twelve-tone serialism set us free from traditional music, and provided me with an excuse for being an extremist as an artist.” (Lee p 41, Nam June Paik! His Life and Art)

Paik and his family had to flee from their home during the Korean War, and moved to Japan in 1950. He continued his studies, and graduated with a degree in Art History from the University of Tokyo, having written his thesis on A Study of Arnold Schoenberg. (It is the first dissertation of twelve-tone serial music that has been recorded
In 1956, Paik moved to Germany to continue his studies at Munich University. In 1958, he dropped out of the program after he met the teacher who had the greatest impact on his development, John Cage, who was a one of the leading figures of the avant-garde artist and a leader of the Fluxus movement, an international “inter-media” artistic movement that challenged traditional concepts of art and art-making practices in favor of a more performance-based, cross-disciplinary which favored audience participation and Dada art. Paik joined the Fluxus movement, collaborating with an international confederation of artists that included Joseph Beuys, Carolee Schneeman, Yoko Ono, and George Maciunas. (Higgins, preface XIII, *Fluxus Experience*) Meeting John Cage in Darmstadt during 1958 was a turning point for Paik. It changed his artistic direction. The meeting jump-started Paik’s efforts to experiment with new musical forms, idea, objects and genres. Paik’s early works demonstrates four features that are clearly inspired by Cage.

To begin with, Cage’s influence enabled Paik to realize the concept of *the organization of sound*. Cage was incensed by the fact that Western music generally consists of seven notes and repeats at an octave. Cage believed that any sounds, including noise, could be considered music.

According to Cage, in a lecture given in 1938:

I BELIEVE THAT THE USE OF NOISE Wherever we are, what we hear is Mostly noise. When we ignore it, it disturbs us. When we listen to it, we find it fascinating. The sound of a truck at 50 mph. Static between the stations. R-a-in. We want to capture and control these sounds, to use them, not as sound effects, but as musical instruments. Every film studio has a library of sound effects recorded on film. With a film phonograph it is now possible to control the amplitude and frequency of any one of these sounds and to give to it rhythms within or beyond the reach of anyone's imagination. Given four film phonogra-
phs, we can compose and perform a quartet for explosive motor, wind heart beat, and landslide. TO MAKE MUSIC If this word, music, is sacred and reserved for eighteenth and nineteenth-century instruments, we can substitute a more meaningful term: organization of sound.” (Kostelanetz, John Cage An Anthology)

This concept of the organization of sound greatly influenced Paik’s work. He pushed hard to expand the definition of Western music.

Cage’s ideas also encouraged Paik to realize the declassing of sound. Cage had never agreed to the idea of a fixed mode of transliteration, by which music is only generated by instruments such as the piano and violin. Paik accepted this idea and tried to break the form, system and orchestration of traditional Western music. Furthermore, Paik revolted against the authority of Western music and art.

According to Paik’s interview with Lee:
Many artists are deal with subjects, related to “sex” in literature, theater and Other kinds of art. However, the topic of “sex” is still a taboo subject in music ... Music is lagging way behind other genres in its revolt against the authority of Western traditional art ... Unfortunately, many artists are just damn swindlers ... It seems like they put some elegant philosophical ideas and their egos into their works, but they are just con men for putting masks of art over nonsense, for being in a league with the authorities of the Western art scene. I hate serious arts and these swindlers. (Lee 304, Nam June Paik! His Life and Art)

After meeting with Cage, Paik began to engage in activism against traditional Western conceptions of art. His early works included violent actions and gestures towards traditional Western art and music; some of these pieces involved smashing or dragging violins across a stage. In other works, Paik destroyed pianos and keyboards with axes or electronic saws.

The third feature of Cage’s influence on Paik involved introducing him to a genre referred to as happening. The term happening was coined by Allan Kappro, who was one
of Cage’s students, defined it as a genre in the spring of 1957 at an art picnic at George Segal’s farm to describe the art pieces. (Bigsby p 45, *A Critical Introduction to Twentieth-Century American Drama*) There were four reasons that *happening* rapidly became an important genre for Fluxus members during the late 1950s. First, *happening* pursues a sense of *temporal duration* and *creating in the present*; this means that *happening* has the opposite aim of traditional Western art, which pursues *definite time* and persistent artistic values. Second, *happening* is based on theatrical events that challenge the concept of traditional music, so that *happening* was a useful method for Fluxus members to reform Western traditional arts. Third, many *happening* artists are not trained as artists, so this genre enabled many people who were not trained in art to explore their artistic expression on an equal-footing with professional artists who believed that art must be created by an intellectual class and/or trained artists. This fact enabled Paik to communicate with many people and artists from other areas, such as architects, poets and actors. Paik took advantage of this aspect of *happening* to break the stratification of artistic knowledge. Fourth, *happening* utilizes a greater degree of viewer participation than earlier forms of expression. In traditional music, performers tend to be conveyers and listeners mainly act as receivers. By attracting voluntary participation from the audience, *happening* eliminates the boundary between performers and the audience, but also between conveyers and receivers.

The most important of Cage's influences on Paik was his interest in Asian culture and philosophy. It is slightly ironic that Paik, who came from Asia, pursued Western arts and learned Zen Buddhism from Cage, who was Westerner and admired Asian
philosophy. Cage had begun to study Indian philosophy and Zen Buddhism in the late 1940s. After Cage attended D.T. Suzuki’s lectures on Zen Buddhism in the early 1950s, Cage became deeply interested in Asian philosophy and began to use Eastern concepts in his work. These were shocking moments and intentions for Paik, who began to realize the importance of Asian philosophy and his own cultural background.

According to Paik’s interview with Lee:
When I first heard that an American composer was going to perform pieces which involved Asian philosophy in Darmstadt in 1958, I cynically did not trust him because I thought it is kinds of impossible for Westerners to understand the essence of Asian culture and philosophy. However, after Cage’s concert, I admitted my prejudice was wrong. Cage has given me new birth since then. (Lee p 77, Nam June Paik His Life and Art)

Paik believed that Cage’s music came out of the insightful, absolute emptiness of Asian atmosphere. Cage showed him how Asian philosophy and cultural elements could mingle with the forms of Western art. Paik chose to focus on Zen Buddhism while Cage was interested in various aspects of Asian cultures and philosophies. At this point, Paik had begun to create works from a perspective that included an Asian angle, and to fuse Asian and Western philosophy in his pieces.

Overall, not only did Cage enable Paik to contribute to reforming traditional Western through the notions of organization of sound and the new genre of happening, he also introduced him to the integration of Asian culture and philosophy with these new forms and genres. One for Violin (1961) is an outstanding example of Paik’s early works that have these features.
2.3. “One for Violin” (1962)

“One for Violin” (1962), which is well known as Nam June Paik’s most famous happening, is a showpiece formed around the destruction of a violin. Paik premiered it on 16th of June 1962, at the Dusseldor Kammerspiel Theater. Paik joined the Fluxus anti-art group in 1961 after meeting George Maciunas, an iconoclast and founding member of the group. “One for Violin” was the first piece on the program at the Neo-Dada in de Musik event presented by the Fluxus movement. (Lee p 82, Nam June Paik! His Life and Art)

Figure 2.1: “One for Violin” (1962) Photo by George Macunia

“One for violin” continues to be preformed, even now. This action has various versions, depending on the performers. It has been performed with different durations and
variations in lighting direction. Figure 2.1 shows the process of “One for Violin” with a description below.

The lights fade onto the center of the stage, where a large wooden table has been placed. A violin has been set on top of the table. The artist enters the stage and takes the violin from the table. The artist holds the neck of the violin. He raises it very slowly for three minutes; some performers spend between two minutes and five minutes raising the violin. He then holds it raised over his head for two to three minutes. The artist then abruptly smashes the violin on to the table towards the audience. As we see from the description of “One for Violin, Cage’s influence deeply contributed to Paik’s initial work.

First, this action contributed to the extension of the role of instruments. In music history, performers generally use instruments for generating pitches (tones). However, in “One for Violin”, an instrument (violin) is used for producing noise, which is generated by smashing the violin; this action demonstrates the extent of the instrument’s potential, by producing noise, which implies sonic mayhem. While Cage’s method of producing noise generally involved non-instruments like feathers, toys, and motors, Paik tried to generate noise, using instruments. This action demonstrates how intensely Paik adopted the idea of the “organization of sound” from Cage, and then adapted it to his own work. According to John Hanhardt “Paik felt that we need to break the proscenium stage. And break it he did, finding the notes an instrument makes when it splinters.” (Hanhardt p 56, The Worlds of Nam June Paik) Furthermore, in traditional Western music, except for opera singers, performers do not act, except by playing their instruments. However, in
“One for Violin”, the performer’s actions, insightfully, include meaningful gestures rather than simply the generation of sound. It means that a performer has the function of both creating sound and performing actions that create visual impact.

Second, smashing the violin implies resistance against the old forms, systems and orchestration of traditional Western music. The violin is one of the oldest instruments used in Western classical music and is often regarded as one of the most important; there are more concertos written for the violin than any other instrument in classical Western music. In the history of traditional Western music, string instruments are often used to play the main melody lines, while the other instruments accompany or support them. This means that the violin has enormous symbolic significance for Western music history. Paik intentionally broke this symbolic instrument to challenge traditional Western music.

Third, this action is based on a theatrical event that implies a Korean shamanistic ritual act. As far as I know, Nam June Paik has never discussed this facet of the performance, but the gesture of this action is similar to the process of a traditional Korean execution; During the Korean War, many South Koreans were massacred by North Koreans in this way, so I think that Paik may have included an action suggesting execution due to trauma experienced during the war. Figure 2.2 shows how an executioner executed offenders, using a large sword in a public setting. In “One for Violin”, the artist raises the violin very slowly as if gripping the hilt of a sword, and then smashes the violin down to the table as if cutting off the head of an offender; this action implies the death of traditional Western music and art. As this performance was also a
theatrical event, the lighting is also an essential element of the work. According to Hoffmann, “the moment the violin was smashed, the lights went out. Here, destruction is associated with complete darkness and thus attains a dimension that the recipient is able to immediately grasp. The apocalypse comes to mind. In addition to the correlation between acoustic and visual experience, the time factor plays an important role in the piece as the anxious anticipation of the violin’s potential destruction is experienced as a moment of great intensity.” (Hoffmann, Artist-Musicians, Musician-Artists)

Figure 2.2: Traditional Korean execution

The last important observation of this action is that Paik had begun considering the “silence” of Zen in this piece. In terms of Japanese Zen, humans live as self-less selves in “nothing”, respectively, in the world of infinite openness. This infinite openness is nothing more than a space of unfathomable stillness, of absolute silence. Man lives in
this world of infinite openness in eloquent silence. It is in this larger context that we can
differentiate three different kinds of silence.

According to Shizuteru Ueda:
1) The first silence is called *damaru* and means: not speaking, to say nothing in
the world of language, i.e. to say nothing during a meeting. 2) the second term
is *chin-moku* — *chin* for sinking; *moku* for silence - meaning silently to sink to
the bottom through silence. It is a pensive silence related to the world of langua-
ge but with an inkling of the absolute silence of infinite openness. (3) The third
silence is calle *moku*; this is originally a Buddhist term and implies “silence per-
se.” The idea is silently to enter the absolute realm of infinite stillness, which is
not disturbed by speaking and cannot be broken, but rather, endows speaking
with a depth of meaning. (Ueda, *Silence and Words in Buddhism*)

Cage took the concept of “silence” in terms of the *emptiness* or *nothing* from
Japanese Zen Buddhism. He also tried to combine these concepts with the Zen concept of
*unimpededness and interpenetration* in his work.

According to Cage in a lecture given in 1951:

Unimpededness is seeing that in all of space each thing and each human being
is at the center and furthermore that each one being at the center is the most ho-
nored one of all. Interpenetration means that each one of these most honored
ones of all is moving out in all directions penetrating and being penetrated by
every other one no matter what the time or what the space… In fact each and
every thing in all of time and space is related to each and every other thing in
all of time and space. (Pritchett P 74 to 75, *The Music of John Cage*)

Cage’s 4’ 33” (1952) is the one of the works where he demonstrates these Zen
concepts. This piece instructs that any instrumentalists play the score, which lays out
empty measures, without notes. On the stage, a performer doesn’t play his/her
instruments, but sits quietly throughout the three movements of the piece. During the
performance, the performer offers the silence of infinite openness and an environment
where the audience is exposed to the unimpeded silence of this infinite time. Intentionally
or unintentionally, the audience makes their own *interpenetration* by making noise,
coughing and talking with other audience members to interlock silence in the time and
space allotted to the performance. Paik adopted these Zen concepts for “One for violin” from Cage. However, while Cage chose to interpret the meaning of silence in terms of Japanese Zen Buddhism, Paik used the meaning of silence associated with Korean Buddhism.

According to Kang in a lecture given in 2004:
The Korean classical painting is accomplished by “not to drawing”. If you see the empty paper, that means fullness and universality. In Korean Buddhism emptiness means infinite openness… everything could be nothing and nothing could be everything… If you draw something on the paper, that means picking the interpenetration from the fullness. (Kang, lecture in 2004, Korean Painting is Created by Not to Drawing)

While Cage’s silence has aspects of *emptiness* and *nothing*, Paik’s silence means *fullness* and *everything*, a space which contains all sounds and noise; in terms of Korean Buddhism, people consciously or unconsciously recognize or ignore these sounds and noises. This fullness of sound harmonizes in our lives like air and nature. However, when someone plays music (interpenetration), this weakens the fullness of this sound. During the event “One for Violin”, when the performer slowly raises the violin over his head, the fullness of silence is filled by the tension from the audience. When the artist pauses, the tension in the audience mounts, as the audience members wonder what fate awaits the instrument. When a performer smashes the violin, the fullness of this silence is interlocked with the interpenetration of noise. Paik’s adopted the concept of *silence* from Cage, but changed his interpretation to capture the fullness of silence.
After Paik moved to Germany, he began to consider the possibility of manipulating television in artistic ways. Since the birth of the television, this technology has had a major impact on people’s lives. Paik took advantage of the fact that many people had been feeling the ambivalent towards television; as many adopted this new invention with enthusiasm, people also became worried that electronic media would come to control their lives. Starting in 1961, Paik began to experiment with television as a medium. In the beginning, this project did not go very well because televisions were extremely expensive at that time, so Paik did not afford one. Fortunately, he got some money from investing in the rising stock market and was able to purchase thirteen used televisions for an exhibition. (Lee p 106 to 107, Nam June Paik! His Life and Art) He held his first exhibition “Exposition of Music- Electronic Television” from the 11th and the 20th of March 1963, at the gallery of architect Rolf Jährling in his private residence; the demarcation lines between family home and architectural practice in Rolf Jährling's house were not clear. Jährling mentioned with regard to the exhibition, “Paik took over my entire house for his show. An Environment was created in the basement, and another in the tub in my mother's room.” (Paik, New Artists Video: A critical anthology.) The show opened for two hours daily, from 7:30 to 9:30pm.

The main purpose of “Exposition of Music- Electronic Television” was to alert people to the seriousness of the situation, using the social realism of television, which was an icon of the 1960s. Paik believed that television made it easier for one political
class to monopolize mass media and popular culture. Using electronic media, elites had frequently misled the people with distorted reports and information, in order to assert control over them. Paik mentioned, “Television is not healthy for us.” (Lee p 110, Nam June Paik! His Life and Art)

Figure 2.3: The poster of “Exposition of Music- Electronic Television”

Figure 2.3 shows that, the poster of “Exposition of Music- Electronic Television” was edited by an article of Korean newspaper, which was published at kyounghyang on nineteenth of April in 1960. This article reported on the April 19 Revolution, which was an uprising in April 1960, led by South Korean labors and students groups, which overthrew the dictator who controlled Korea at that time, Seungman Lee. The movement was touched off by the discovery of a body in Masan Harbor—a student who had been killed by a tear-gas shell in demonstrations against the March elections. At that period of
time, the government controlled most Korean media; Korean media reports distorted the truth about the April 19 Revolution and criticized the movement as a riot. One the other hand, only this article of kyounghyang, which Paik used for the poster for “Exposition of Music- Electronic Television”, reported the truth: that this was a democratic movement, not a riot. I think that Paik used this article, and chose to approach this particular issue, not only because this incident is an example how the truth can be distorted by electronic media in order to control the public, but also because his first exhibition event involved the revolutionary action of manipulating television.

Basically, “Exposition of Music- Electronic Television” indicates Paik’s transition to electronic music. It was centered around prerecorded mechanical sound objects with sculptural forms used in combination with modified TV sets—the display also included four modified pianos and one mannequin in the bathtub. In addition to the displays, the show made use of performance art--including the hanging of the head of a slaughtered ox above the entrance, and the destruction of a piano. Example 4 shows how the happening hit the headlines in Wuppertaler media. Wuppertaler and other German media focused on reporting that this happening included more than twelve TV sets in the main exhibition. Paik complained, “Hanging the head of slaughtered ox as part of the performance had been completely overshadowed by the TV set exhibition.” The performance stirred up a certain amount of controversy. German critics criticized it for being “too violent ”; and even John Cage mentioned this it was an “Extremely violent performance”. (Lee p 103, Nam June Paik! His Life and Art)
Figure 2.4: The head of a slaughtered ox hung over the entrance

However, this performance contains solid meaning in terms of Korean shamanistic ceremony. In the past, when Koreans embarked on a significant venture—before a voyage, a war or some other important activity, they performed an ancestral worship ritual.

Figure 2.5: A Korean ritual ceremony
Figure 2.5 shows how Koreans set ritual foods along with the head of a cow or (pig) on the table during ceremony. In Korean ritual ceremonies, using the head of cow or pig had significant meaning. It was got so that these domesticated animals were very precious in former time. Domestic farm animals were considered to be precious in ancient Korea. At that time, many wars were fought on Korean soil, during which invaders often looted the countryside for food. Therefore, it was extremely hard for Koreans to obtain domesticated pigs and cows. Offering the head of a cow or pig during a ritual meant dedicating a nearly priceless thing to God. This sacrificial ceremony was used when an individual wished to consecrate a particular venture, in order to ensure that it would be successful. As far as I know, Paik had never discussed this aspect of the performance, but I assume that he probably got the idea from this particular Korean shamanistic ritual act. Hanging the head of a slaughtered ox over the entrance to the exhibition implies a sense of beginning to kick off Paik’s ritual artistic ceremony. It also symbolizes the opening of the exhibition. The fact that Paik hung the head of slaughtered ox above entrance, and not somewhere else, suggests that this interpretation is correct. In addition, this performance implies revolt against authority of Western music and art. The action of hanging of an ox head might have a positive meaning in Korea, but the interpretation of this symbol within the context of Western perspectives is likely to be less so. Paik wanted to make his Western audience uncomfortable using a Korean shamanistic ritual practice, which is viewed positively in Korea. In doing this, Paik twists ironic cultural differences and aggressively challenges the Western artistic tradition.
Following the hanging of the ox-head, the next performance-art section of the exhibition involved the breaking of the piano. Joseph Beuys, who was a member of Fluxus and was known as one of the best performance artists, performed this action in the first day of the exhibition. There is the affinity between this happening and “One for Violin”. The first similarity is that both actions involve the concept of “organization of sound”. Breaking the piano produced noise, which was generated by smashing the piano; this action demonstrated the way in which an instrument’s capabilities could be expanded, and generate noise that implies sonic mayhem. In addition, both actions were intended to resist the old form, system and orchestration of Western traditional music. In terms of Korean shamanistic ceremonies, breaking something implies purifying the world by purging it of its evil; traditional Korean wedding ceremonies, as well as other important rituals, involve breaking bowls or gourds. Breaking the piano and hanging the head of ox connotes a similar meaning, and plays on the discomfort caused by showing Korean rituals acts that have a positive meaning to an audience whose artistic traditions condition them to attach a negative meaning to such actions. These actions are meant to demonstrate scorn for traditional Western artistic forms. One the other hand, some of the theatrical devices are different. Example 6 shows how this performance was performed on the ground while “One for Violin” was performed on the stage; Korean theater, opera and music have never had the idea of a stage, historically. Koreans performed on the ground with the audience so that the audience was able to participate in the performances. In terms of happening, this action had the connotation of breaking the boundary between performer and viewer, so that viewer joins in a ritual ceremony.
The biggest difference is that this happening involved pre-recorded mechanical sound objects. At that time, Paik was exploring partial and waves in serial composition with noise, another interest that was inspired by Cage. Paik manipulated sinusoidal oscillation between sound and noise into the form of concrete music for this exhibition. Paik wrote in the program notes for “Exposition of Music- Electronic Television”

One can say that electronic television is not the mere application and expansion of electronic music in the field of optics but represents a contrast to electronic music, which shows a pre-defined, determined tendency both in its serial compositional method and in its ontological form (tape recordings destined for repetition)I have not only expanded from 20 kHz to 4 MHz the material being treated, but have more pronouncedly used the physical property of the electron (indeterminacy, the dual character of corpuscles (particles) and wave (status) (Paik, program notes of “Exposition of Music- Electronic Television”)

Not only did this event involve conceptual and performance art, in the form of breaking piano and hanging the head of a slaughtered ox, it also included pre-recorded
electronic sounds, which filled the exhibition via the TV set display and four specially prepared pianos.

Figure 2.7: shows how the pianos were displayed in the hallway of the gallery. These pianos were also inspired by John Cage’s prepared piano, which was created in 1940; the piano was built to accompany dances by Cage's various collaborators, most frequently Merce Cunningham. Cage decided to try placing various objects on the strings of the instrument in order to produce percussive sounds, inspired by Henry Cowell’s experiments with extended piano techniques (Kostelanetz p 62, Conversing with John Cage). Cage modified the piano to change the timbre of sound for the duration of a performance. Cage wrote, “Composing for the modified piano is not a criticism of the instrument. I'm only being practical." (Cage, booklet text for Ajemian's recording of the cycle) On the other hand, Paik reconstructed and modified the piano for display purposes during the exhibition. Paik’s modified piano had the ability to carry out its own communication experiments with viewer, while accompanied by pre-recorded electronic sound. Paik’s modification of the piano also implied his political intentions. Pianos, which have had the function of generating elegant sounds in Western musical history, are modified and destroyed, hilariously. Example 7 shows how Paik’s special pianos derided the symbolic meaning of the piano and the authority of the Western artistic tradition.

These four pianos were modified in different ways. According Schmit, who was one of Fluxus member and helped Paik set up this project, described the pianos in Paik’s brochure:

The thing about the first piano is invisible but tangible: a board placed beneath the keyboard has jammed it, none of the keys can be depressed, much less pro-
duce chords; the second piano is lying on its back, its innards exposed; this one you play with your feet while walking over it … for all senses the two other pianos; our traditional item of cultural furniture, the piano, now a vehicle for a fairly total spectacle … awaiting the fingertips are all sorts of tactile things (on the keyboard): a cloth soaked in fat, spiky upturned drawing-pins, soft things, rough things, and so on. The capricious mechanics of the piano are used in three different ways: - I press a key, the key moves the hammer, and it strikes the string(s); some of the hammers are doctored by things placed on top of them, and on top of, beneath, or between many of the strings are all manner of objects … I press a key, the key moves the hammer, and it moves whatever happens to be stuck to it or hanging from it; for instance: it makes an old shoe dangling over the lid rock bob up and down. - I press a key, and it squeezes something like a squeaking bellows mounted below it, or maybe an electric switch: there are three different types of circuits pushbutton, flip-flop and dual circuits; examples: when I press he cis", transistor radio starts up; it goes silent as soon as I release the cis key. When I press the f, an electromotor screwed to the soundboard begins to agitate; it calms down when I press f again. - When I press the c, a hot-air fan begins to blow hot air on my legs; the button that makes it stop is hidden beneath in addition to the things listed above, several transistor radios, one or more film projectors, a siren is operated in these ways. One key switches off the entire room lighting for the room. (Paik, AFTERLUDE to the Exposition of Experimental Television)
Figure 2.7: Paiks’ prepared piano continue
Figure 2.7: Paiks’ prepared piano continue
Figure 2.7: Paiks’ prepared piano continue
After passing through the hallway of the gallery, finally, the visitor encountered the twelve modified TV sets, set up in a room between the hall and the garden; four TV sets were placed on top on the desk and the others (eight) were set on the floor, (this picture did not show all of them) as you can see example 8, the room was thrown into complete chaos by the TV sets.

Figure 2.8: Twelve TV sets Part I

These disordered TV sets are linked to the philosophy of Young-Ok Kim, a contemporary South Korean philosopher. Kim mentioned the concept of disorganization within Korean philosophy in a lecture in 2008:

If you see traditional Korean villages, the houses were built on the mountain ranges randomly, in order to avoid disrupting nature. Our ancestors tried to harmonize their lives with nature. However, Western societies traditionally emphasized systematization and organization when founding new villages. They destroyed natural systems, in order to build to neat, clean settlements. Which do you think looks more natural? Disorganized villages, which were built on th m-ountain-side or well-planned, ordered villages, which were built by destroying
the surrounding environment… sometimes, the Western idea of well-ordered organization can undermine the strength of nature and themselves). Artificial ordered objects can lose their essences. (Kim lecture in 2004, Who Are we?)

In terms of chaos, Cage also described music as a purposeless play in a lecture, he described music as a purposeless play which is an affirmation of life; not an attempt to bring order out of chaos nor to suggest improvements in creation, but simply a way of waking up to the very life we are living. (Cage, lecture in 1957 Experimental Music) Thus, the disordered TV set display integrated Korean philosophy with Cage’s “purposeless play”. Paik wanted technological devices to be a part of nature, so he tried to display the 12 TV sets randomly and purposelessly in order to harmonize them with our lives.

Figure 2.8 also shows how some TV sets were set lying on the floor. Four of them are shown in the picture. (Eight TV sets were left on the ground in the room, but this picture does not show them all) According to Daniels, “the term of picture also includes a temporal dimension is derived from more-or-less pre-defined manipulations of the set's electronics, in the four bottom sets the manipulation is such that external influences determine the picture.” (Daniels, Milestones of Media Art) These eight TV sets invoke the main purpose of this exhibition--that electronic media distorts the truth in order to control the public. According to Daniels, “The normal television programs supply the starting material but they are recognizable on most the sets. One of the TV sets shows a negative picture overlaid with a different one the picture on another has been rolled up. Another TV showed the distorted visual images on the screen.” (Daniels, Milestones of Media Art)
The TV display referenced the distortion of information associated with electronic media, by disrupting the functional properties of the TV sets themselves. In addition, these eight TV sets not only had the function being “displayed”, but were also designed to allow viewer participation. One set manipulated visual images and generated electronic sound when the viewer stepped a pedal switch in front of TV. Daniels described the other TV sets: “If you press the switch, the short-circuits of the contact procedure bring about fireworks of instantly disappearing points of light on the screen. Another set is hooked up to a microphone; anyone who speaks into the mike sees an explosion of light dots similar to the other set, but a continuous one this time.” (Daniels, Milestones of Media Art) These devices emphasized the “viewer participation” aspect of the happening. Further, whether intentional or not, the TVs were reconstructed and re-modified by the viewers themselves. According to Schmit, “If something broke down, it was repaired; or replaced by another thing; or simply dropped.” (Paik, AFTERLUDE to the Exposition of Experimental Television) During the process, the happening generated noise to accompany and/or interrupt the pre-recorded electronic sound. Another facet of the way the eight bottom TV sets were displayed is related to Zen Buddhism. Example 9 shows how one set lies facedown and shows its pictures to the parquet floor. These TV sets are related to Zen’s concept of Jeul or self-examination. As far As I know, Japanese and Chinese Buddhist do not practice this kind of meditation; they have different ways of doing it.
Korean Buddhism has various practices. Figure 2.10 shows *Jeul, which is one kind of mediation*. Jeul involves the, recurring the action of lying facedown and then standing up one thousand times. In terms of Korean Buddhism, the purpose of *Jeul* is to reinforce humility, in order to respect one’s own ego and the egos of others—repeating this action a thousand times means that one is trying separate oneself from the earthly desire for attainment, and to realize the essence of ourselves in the realization that we are all *Buddha*. The TV set, lying face down and showing its pictures to the floor, is practicing “*Jeul*” and “self-examination. Figure 2.11 shows how Paik had incorporated the action of *Jeul* into his other works; frankly, this is very important to Paik’s
philosophical essence—when creating these works or doing these performances—he is using his own Buddhist beliefs to inform the pieces he creates.

Figure 2.10: *Jeul*  
Figure 2.11: The Zen for head (1962)

The other four TV sets were displayed on the top with the subtitle in a gallery. These TV sets also referenced Asian influences, again, inspired by Cage. Figure 2.12 shows one TV set, which Paik called the “Zen TV”. This TV set has a white vertical line running through the middle of the screen; this work is related to the ideas of *emptiness* and *interpenetration*, which “One for Violin” also references. One difference is that this “Zen TV” is produced for visualization. One can interpret the black background of screen as both “emptiness” and “fullness”, while a single vertical line interpenetrates on the screen. The last two TV sets in the gallery also relate to Cage’s ideas about viewer
participation and the organization of sound. Figure 2.13 shows that “One point TV” is connected to a radio; in the middle of its screen is a bright point whose size is governed by the current volume of the radio; the louder the radio, the larger the point, the quieter the radio, the smaller the point becomes. (Daniels, Milestones of Media Art)
Figure 2.14 shows another TV set “Kuba TV”. According to Shimit, “Kuba TV is connected to a tape recorder that feeds music to the TV. Parameters of the music determine parameters of the picture. Audience (viewer) have the so to speak, into a cylinder round the vertical center axis of the screen. In what Paik calls the most complicated case there are three independent sinusoidal oscillations attacking the image parameters. The group of two: the lower one has horizontal stripes, the upper one vertical stripes.” (Paik, AFTERLUDE to the Exposition of Experimental Television) Many installation artists continue to use these techniques, which involve the interaction between multi-media and sound, in their works, but Paik’s TV sets were considered to be innovative works at the time. These techniques greatly influenced succeeding generations of installation artists. In the gallery, depending on the audience or viewer operating the TV set, music was changed and interrupted or accompanied by other electronics. That
means that these TV sets broke the boundary between not only the performer and the audience, but also between the conveyer and receiver.

Figure 2.14: “Kuba TV”
Figure 2.14: “Kuba TV” continue
Unfortunately, during the show, this exhibition faced condemnation from German critics and other media. Many German critics criticized this show, saying for example, “This show was nothing except loudness, violence and disturbance”, and made fun of this show for being a “Neo-Dada kindergarten” (Lee p41, Nam June Paik His Life and Art).

German Newspaper reported:

Visitors to the show, which was distributed over the entire house (and did not stop at the private quarters of the Jährling family), experienced the show and its setting as a ‘total event’, many guests taking no more than a perfunctory glance at the room with TV sets. Unlike the Fluxus actions, which took place concurrently, Paik’s project did not attract TV coverage (Daniels, Milestones of Media Art).

Besides, the title “Exhibition of music -Electronic Television” was a controversial issue. People thought it was an awkward title; they did not understand how music could be displayed and why music would be performed in a gallery, rather than a concert hall. People found it hard to understand the title, which combined the term “music” and the technological idiom “Electronic Television”. Some German critics criticized it as being “too clumsy” (Lee p109, Nam June Paik His Life and Art). In an interview with Lee, Paik talked about the reasoning behind the decision to use this title, “it was so risky for me to hold an television exhibition, since people were not familiar with the concept of using televisions to produce art, at that time, so I choose two events that included music and performance actions to minimize the chances of failure at my first exhibition. (Lee p113, Nam June Paik His Life and Art).

Furthermore, this exhibition later sparked controversy over who was primarily responsible for creating the concept of video art. Some critics argue that Wolf Vostell
was the founder of video art. To be frank, Vostell did present the exhibition “Black Room Cycle” in 1958 (five years earlier than Paik’s “Exposition of Music-Electronic Television”). Some other critics argue that “Black Room Cycle” could not be the first example of video art because “Black Room Cycle” incorporates televisions more like sculptures into his works—Vostell used only distorted broadcasts on the screen of televisions. However, some critics argue that Paik is the founder of video art. There are two reasons for this. First, in “Exposition of Music-Electronic Television” Paik went beyond the use of distorted broadcasts on the screens of the televisions in his TV-set display. He also developed visual effects and techniques that laid out much of the groundwork for future video artists. Some critics also argue that video art began when Paik first used a video camera, a Sony Portapak, to shoot footage of Pope Paul VI’s progression through New York City in the autumn of 1965. (Lee p 111, Nam June Paik, His Life and Art)

As far as I am concerned, “Exposition of Music-Electronic Television” could be considered one of the first works of video art because this exhibition definitely delved into the possibility of using visual effects on the screen. It also explored the possible interactions between visual effects and other devices such as lighting and electronic sound, and the incorporation of viewer participation. Paik’s meeting with Cage in 1958 deeply impacted his artistic career. Cage’s influence helped Paik to realize the importance of his own Asian background, and inspired him to begin fusing Asian philosophy and cultural items into Western artistic forms. After the meeting, he also began to create works that were experimental, playful and combined different and various
forms of experimental music with theatrical performance, and happenings that incorporated random events, found objects and sculpture forms involving television and other technologies. Paik’s modifications suggest a wide range of possibilities for using television as a medium--from making it an object of meditation to considering its potential as an object of interaction. His notion of viewer participation, which emphasized the interactive features of a video installation encouraged active rather than passive consumption of information by the viewer, fore-shadowed the present-day discussion about interaction and multimedia as the mass media of the 21st century. As the practice of having musicians display their music at galleries becomes increasingly popular, and musicians continue to collaborate with other kinds of artists to present their work, it is no surprise how much Paik’s idea was innovative and laid out much of the groundwork’s for installation artists. “One for violin” and “Exposition of Music-Electronic Television” have been incredibly valuable to the development of art in the 20th century.
CHAPTER 3: A Study of Tone Color in *Ionisation*

3.1 Introduction

*Ionisation*, which is composed by Edgar Varese (1883-1965), is known as the first and most valuable percussion piece to explore the value of structural and timbral non-pitch sound in early 20 century. Varese has not only had an important part in alerting composers to the importance of *tone color*, but also he made meaningful contribution for percussion instruments to explore the methods in which timbral and registral modulation, defining textures, articulating sections and delineating contours without pitch. In addition, He developed crucial insights into *organized sound* and music concrete (see the description on this paper p 3). Varese laid out much of the groundwork for several generations of electro-acoustic composers. His compositional devices and visions passed to experimental composers such as Wen-Choung Chou and John Cage, and still reverberate through American composition.

The aim of this paper is to awake an interest in and understanding of his creative use of tone color in *Ionisation* as much as to the way that Varese used various structural forms of non-pitch timbre into his artistic methods.
3.1 Background

Edgard Victor Achille Charles Varese was French-born American composer. He was born in Paris, but as he was growing up, he lived mostly in Turin, Italy. During these years, Varese had the first musical lesson and had begun to compose music, mostly opera. In 1895, He composed his first opera, Martin Pas. In 1904, he chose to continue his studies with Albert Roussel at the Schola Cantorum. Afterwards, he moved back to Paris to keep pursuing his studies with Charles-Marie Widor at Paris Conservatory. However, Varese had to flee from his home during World War I, and moved to America in 1915. (Jolivet, p 110, Correspondence 1931-1965) World War I was traumatic for Varese, it left him feeling ambivalent about his choice to pursue the style of neoclassism and impressionism in his compositions, but induced him to begin thinking outside the box. Varese set aside the old his pieces and he changed his first name to Edgard from Edgar after moving to the United States. While Varese had initially been interested in Poetics French impressionism music from the Europe period, he gradually changed his musical direction and started to experiment with both acoustic and electronic music, in America. (MacDonald, Varese Astronomer in Sound)

*Ionisation* reflects his musical transition. *Ionisation* for 13 percussionists was composed in 1930 while he was in Paris; Varese went back to Paris around 1930s, but he returned to American in order to continue pursuing electronic music in 1934. This particular piece premiered in Paris at Steinway Hall on the sixth of March 1933, conducted by Nicolas Slonimsky, to whom the piece was later dedicated. (Chou, Varese:
Ionisation has two clear features.

To begin with, starting with *Ionisation*, Varese had begun to react against tonality, which led him to adopt Schoenberg’s twelve-tone series and techniques. Although he tried to push the boundary of tonal music in his early pieces, Varese’s initial works still followed the form and system of orchestration of Western traditional music. However, since *Ionisation*, Varese integrated the twelve-tone chromatic scale into the traditional music form; Varese did not use the twelve-tone *row* technique, instead, he believed that twelve-tone music could replace old forms of tonality with new ones. Varese used the twelve-tone chromatic scale in the last 17 measures in this piece, but his purpose of using 12 tones of the chromatic scale was for generating cluster (noise) sound rather than creating actual 12 tone melodic contours and harmonic possibilities. According to Williams Andras, “the last 17 measures of *Ionisation* include the musical tones of the "traditional tonal system"*, where any five successive chords contain the 12 tones of the chromatic scale.” (Andras, *The Genesis of a Specific Twelve-Tone System in Works of Varese*)
Second, Varese used the concept of “organized sound” in this piece. It was Varese himself who coined the term “organized sound.” He was one of the first people to suggest the possibility of composing with “pitchless.” Mainly, Varese’s music emphasizes timbre and rhythm. Before that time, musical texture tended to be identified and featured by pitch and rhythm rather than timbre. Pitch used to be the most important element in giving musical texture the property of sound. However, Varese created the idea of organized sound, which means characterized rhythmic cells and certain types of structural timbral sonority can be grouped, and then replaces old types of motivic gestures, which are mainly identified by pitch materials. (Chou, Open Rather Than Bounded) Furthermore, not only did organized sound enable Varese to make the contribution of music concrete in electro-acoustic music area, but also he was greatly influenced on John Cage’s organization of sound.

### 3.2 Analysis

Ionisation is composed for thirteen percussionists to manipulate the concept of organized sound using the twelve tones of the chromatic scale. Varese employed over 40 different non-pitch percussion instruments, including a group of keyboard instruments, which have definite pitch, such as the piano, glockenspiel and chimes; but those keyboard instruments also have the percussive ability to generate tone clusters rather than producing the melody and harmony for this piece. A wide range of percussion instruments organizes and evolves out in different timbral and structural functions and intentions for the entire piece.

These non-pitch percussion instruments generate tone color, which I have labeled.
For this piece, “tone color” means the timbre of the instrument, but also contains the resonance, accents, dynamics, and irregular frequency from each non-pitch percussion instrument: for example, non-pitch percussion instruments produce irregular frequencies by themselves. Once more than two different kinds of non-pitch percussion instruments are played at the same time, not only does each instrument produce their own irregular frequency, but these frequencies also crush and mingle with one to another to generate another irregular frequency among them. These blending, irregular frequencies are changeable and flexible, depending on the positions of the non-pitch percussion instruments on the stage, the style of players, different kinds of mallets, and the value of reverberation in the hall. Varese was well aware of the importance of tone color and tried to explore the possibilities of this into this piece. Although non-pitch percussion instruments don’t produce certain pitch and harmony, tone color takes the place of this function, via timbral and registral modulation, defining textures, articulating phrases and sections without pitch—which are therefore pitchless.

Each percussion instrument is classified into the following six categories according to timbre. I have labeled (M- Metal group, W- Wood group, D- Drum group, R- Rattle-Scratcher, S- Spatial effects, K- keyboard group); I reclassified six categories, based on Chou’s classification into seven categories according to timbre. (Chou, Excerpts from “Ionisation: The Function of Timbre in Its Formal and Temporal Organization) I have also classified and have labeled the numbers of each instrument in each group, depending on the resonance and the register. The higher number and thicker color symbolizes darker resonance and lower register and vice versa. Six categories of instruments are shown below.
1. The group M (Metal)

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anvil</td>
<td>M1 ######</td>
</tr>
<tr>
<td>Triangle</td>
<td>M2 ######</td>
</tr>
<tr>
<td>Cowbell</td>
<td>M3 ######</td>
</tr>
<tr>
<td>Hand symbols</td>
<td>M4 ######</td>
</tr>
<tr>
<td>Suspend symbols</td>
<td>M5 ######</td>
</tr>
<tr>
<td>Crash Symbols</td>
<td>M6 ######</td>
</tr>
<tr>
<td>Gong</td>
<td>M7 ######</td>
</tr>
<tr>
<td>Tam-tams</td>
<td>M8 ######</td>
</tr>
</tbody>
</table>

2. The group D (Drum)

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bongos</td>
<td>D1 ######</td>
</tr>
<tr>
<td>Tarole</td>
<td>D2 ######</td>
</tr>
<tr>
<td>Snare drums</td>
<td>D3 ######</td>
</tr>
<tr>
<td>Parade drum</td>
<td>D4 ######</td>
</tr>
<tr>
<td>Tenor drums</td>
<td>D5 ######</td>
</tr>
<tr>
<td>Bass drums</td>
<td>D6 ######</td>
</tr>
</tbody>
</table>

3. The group W (Wood)

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Claves</td>
<td>W1 ######</td>
</tr>
<tr>
<td>Wood blocks</td>
<td>W2 ######</td>
</tr>
<tr>
<td>Slapstick</td>
<td>W3 ######</td>
</tr>
</tbody>
</table>

4. The group S (Special Effects)

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sirens</td>
<td>S1 ######</td>
</tr>
<tr>
<td>String drums</td>
<td>S2 ######</td>
</tr>
</tbody>
</table>

5. The group K (Keyboard mallet)

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glockenspiel</td>
<td>K1 ######</td>
</tr>
<tr>
<td>Chimes</td>
<td>K2 ######</td>
</tr>
<tr>
<td>Piano</td>
<td>K3 ######</td>
</tr>
</tbody>
</table>

6. The group R (Rattle-Scratcher)

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleigh bells</td>
<td>R1 ######</td>
</tr>
<tr>
<td>Castanets</td>
<td>R2 ######</td>
</tr>
<tr>
<td>Tamourine</td>
<td>R3 ######</td>
</tr>
<tr>
<td>Maracas</td>
<td>R4 ######</td>
</tr>
<tr>
<td>Guiros</td>
<td>R5 ######</td>
</tr>
</tbody>
</table>

Figure 3.1: Six categories of percussion instruments in *Ionisation*
I analyzed Ionisation in terms of the function and tone color, and considered how these things contribute to timbral and registral modulation, defining textures, articulating sections and delineating contours. The timbral function of Ionization is discussed below.

Function A: defining texture

This function involves non-instruments, which have distinctive and/or some characterized combination of timbre that resembles the nature of texture, to identify textures or sections. For example, unconventional instruments, such as sirens and string drums appear only texture A to define the nature of texture A.

Function B: Articulating the section

This function inserts instruments from other different groups, which do not appear whole section, at the end of section to articulate the phrases and sections.

Function C: Switching the rhythmic cells during recurring similar tone color

This function is involves the recurring use of the same instruments groups constantly in two different sections, switching rhythmic patterns from one modulating section to another. While maintaining the same timbral instruments constantly, this function is able to change tone color since the dynamic and irregular frequencies also have effects on tone color.
Function D: Transferring the value of resonance and register, using emphasizing accents or interlocking rhythms

During the manipulation of instruments in the same group, Varese employs certain characterized types of rhythmic accents or certain parts of interlocking rhythm to transfer the value of resonance and register.

Function E: Anticipating next section

Like function B, at the end of section, function E involves inserting instruments from other groups, which do not appear in the initial section but will be used in next section, to anticipate the next section.

Function F: Tone cluster

The keyboard instruments group, which appears at the end of last 16 measures, generates tone cluster as if they were non-pitch percussion instruments.

Function G: Delineating contours

Like Function D, this function involves manipulating darker/blighter resonance and lower/higher register, within the same group of instruments, to delineate contours, resembling melodic function in a traditional music.
This section introduces sustaining pedal sound from the metal group instruments. The low registers of the sustaining metal sonority identify “texture A” with siren and strong drums (function A). Whenever attacking tenor and bass drums, sirens and string drums follow the resonance of these drums in texture A: Sirens and string drums only appears texture A to define it (function A). The bongo and tarole entering in m.5, enable separation between m. 1 to 4 and m. 6 to 8 phrases, in order to delineate sections (function B). Whenever attacking bongo and tarole, tone color is expended to become brighter and thicker from the metal sound. During the sustaining drum and metal group instruments, the timbre of triangle and crash symbols transfers to bongo with tarole and then moves to maracas and tambourine, to delineate timbral contours (function G). Maracas and tambourine instruments anticipate the next section’s tone color (function E) while decaying the steady metal and drum color until m. 8.
Figure 3.3: Section 2 (mm. 9-12): Texture B

Texture B is mainly focused on the drum group, which is parade drum, bass drum, and bongo with maracas. In this section, parade-drum is employed in characterized rhythmic patterns, while bongo and bass drum supply the higher and the lower register with interlocking rhythms (function D). During the sustaining drum group, the succession of contours are stated by hand symbols that transfer to the maracas, which call and response with slap sticks, to delineate timbral contours (function G).

Figure 3.4: Section 3 (mm. 13 to 17): Texture A’+B

In the section 3, the shorter version of Texture A’ and B’ are stated. These succession of Texture A’ and B’ lead to Texture III at m. 18.
Figure 3.5: Section 4 (mm. 18 to 20): Texture C

The tarole and wood block correspond to the succession of distinctive phrases, while the introducing rattle group (sleigh bells, castanets and tambourine) (function A and D); Texture C tends to be defined by the rattle group. From m. 18, The lower and darker register of metal sonorities (Texture A and B) modulate to the higher and more dry sonority of Texture C, which is the combination of the rattle and wood group (function G).

Texture C is assigned to the driest and highest timbral and registral resonance.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Symbol</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bongo</td>
<td>D1</td>
<td>#######</td>
</tr>
<tr>
<td>Tarole</td>
<td>D2</td>
<td>######</td>
</tr>
<tr>
<td>Parade drums</td>
<td>D4</td>
<td>#######</td>
</tr>
<tr>
<td>Bass drums</td>
<td>D6</td>
<td>#######</td>
</tr>
<tr>
<td>Crash Symbols</td>
<td>M6</td>
<td>#######</td>
</tr>
<tr>
<td>Gong</td>
<td>M7</td>
<td>#######</td>
</tr>
<tr>
<td>Tam-tams</td>
<td>M8</td>
<td>#######</td>
</tr>
<tr>
<td>Claves</td>
<td>W1</td>
<td>######</td>
</tr>
<tr>
<td>wood blocks</td>
<td>W2</td>
<td>######</td>
</tr>
<tr>
<td>Slapstick</td>
<td>W3</td>
<td>#######</td>
</tr>
<tr>
<td>Sleigh bells</td>
<td>R1</td>
<td>#######</td>
</tr>
<tr>
<td>Castanets</td>
<td>R2</td>
<td>#######</td>
</tr>
<tr>
<td>Tamourine</td>
<td>R3</td>
<td>#######</td>
</tr>
<tr>
<td>Maracas</td>
<td>R4</td>
<td>#######</td>
</tr>
<tr>
<td>Guiros</td>
<td>R5</td>
<td>#######</td>
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</tbody>
</table>

Figure 3.6: Section 5 (mm. 21-33)
Section 5 begins with Texture B and then, leads to the combination of Texture A+C after m. 25. In this section, the variant of Texture B, which was presented by the succession of the tarole and wood block in the former section 2, develops an accommodation with Texture C to delineate contrapuntally timbral contours while the bongos exchange material with parade drums (function D and G).

Section 6 is a good example of function C. Varese mainly tends to change the instrument groups whenever moving one to another section. However, this section maintains similar instruments from the former section (section 5), but the rhythmic patterns are changed in section 6. Darker timbre and lower resonance sonorities from drum group modulate to the brighter timbre and higher register from metal sound to anticipate brighter tone color of section 7.
The variant of texture B is presented in this section. The vertical sonority in triple rhythm of Texture B, is led by the drum group (bongo, snare, parade and tenor drums) and rattle group (castanets, tambourines, maracas) in this section (function D). The previous version of texture B tends to be led by metal group in the way of contrapuntal progression, which generates ambiguous and cloudy sonority. However, in section 7, the drier timbre of drums and rattle group clearly present the rhythmic pattern of texture B with the vertical progression. Although this section employs the rhythmic pattern of texture B, the vertical rhythmic pattern, which is lead by drier instruments, produces different tone color from the contrapuntal patterns of the previous texture B, which is led by metal group. On top of that, section 7 is also good example of function C (the switching rhythmic cells during the recurring similar tone color) and function D (transferring the value of response and register, using emphasizing accent and interlocking rhythm). From m. 44, Varese employs totally different rhythmic patterns.
during the recurring similar timbre constantly in this section (function C). This rhythmic changes are very effective in modulating tone color, while maintaining similar sonorities (function C). Further, the interlocking rhythmic unison is decorated by the accents and registral changes that create a two against- three cross rhythm (function D).

Section 8 (mm. 51 to 65): Texture A’’’+ B’’’

The end of section 7 leads into the biggest dynamic gesture with regards to vertical sonorities, and abruptly return to texture, A which involves all metal sonorities with anvils in this section. After m. 55, variants of rhythmic patterns from texture B, which is led by tarole and snare drums, interplay metal sonorities from the variant of texture A.

Figure 3.7: Section 9 (m.66 to 74): Texture A’’’ +B’’’+C ‘’

The variant of rhythmic patterns from texture A+B+C applies to each of the
different groups and develops an interplay between the drum group and different rhythmic patterns from other groups for the entire this section. These tone colors generate the greatest dynamic resonance and the deepest and highest tone color highlight.

Figure 3.8: Section 10 (mm. 75 to 91) texture A” with keyboard group (Function F)

In this last section, with the variantion of texture A recurring their sonorities for the entire sections, for this entire section, the keyboard group (piano, chimes and glockenspiel) accompanies cluster sound as if it were non-pitch percussion (function F). The fragments of rhythmic patterns from texture B and C call and response to decollate the highest and drier resonance for the finale.

In conclusion, Ionisation made a contribution to developing new types of organized sound, using tone color, in the early 20th century. In terms of the function of tone color--tone colors have a part in timbral and registral modulation, defining textures, articulating sections and delineating contours for the entire piece. This tone color suggested the possibility of composing with “pitches”. Furthermore, these tone colors have helped to
develop the concept of “music concrete” for electronic music. Frankly, it is hard to analyze *Ionisation* because these non-pitch percussion instruments create quite changeable sound, depending on the position of non-pitch percussion instruments, the style of players, the kinds of mallets used, and the value of reverberation in the hall. However, it is not surprising that many of Varese’s notions were quite innovative and laid out much of the foundation for the later electro-acoustic composers. *Ionisation* has been pricelessly valuable in 20-century music history.
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