THE USE OF LIMITED MATERIAL TO ACHIEVE EXPRESSIVE QUALITY IN ELLIOTT CARTER'S *EIGHT PIECES FOR FOUR TIMPANI*: A PIVOTAL WORK IN ESTABLISHING THE TIMPANI AS SOLO INSTRUMENTS

by

JILLIAN DAMITRA BAXTER

(Under the Direction of Timothy K. Adams, Jr.)

ABSTRACT

This capstone project is divided into four major sections. Section one offers a brief history of the timpani from their use as military instruments to their twentieth century use as solo instruments with modification to aid increased tuning changes. Section two provides insight into Elliott Carter's childhood, influences, and writing style with a brief biography. Section three provides an examination of the *Six Pieces for Kettledrums* written in the 1950s. Section four provides an examination of the two pieces "Adagio" and "Canto" which were included in his 1966 revision *Eight Pieces for Timpani* when Carter sought to take advantage of the extended tuning capabilities of the instrument. Sections three and four focus on elements showcasing unique qualities not found in compositions of the same time period, such as modulation techniques, interval usage, mallet choices, and special effects. These elements will also be related to how they challenge the performer in their execution of the piece as well as challenge the listener to experience the distinctions of the performance.

INDEX WORDS: Metrical modulation, Temporal modulation, Timbre, Sympathetic Resonance, Harmonics, Articulation, Pulse Polyphony, Timpani

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Introduction

The kettledrum, or timpani, originated as a "naker," a small drum of less than sixteen inches in diameter. These nakers were used for military signals and communication in the thirteenth through the sixteenth century. From the sixteenth century to the present, timpani have undergone significant development of the mechanical aspects of the instrument, with compositional innovations keeping pace. In the twentieth century, timpani repertoire began to become more complex by requiring four or more drums, quick tuning changes, advanced playing technique, and a wide color palette related to mallet choice, stroke type, and strike zones on the head.

The composition chosen for this discourse, *Eight Pieces for Four Timpani*, will showcase the six aforementioned intricacies involved in the performance of solo literature for timpani. This piece was chosen because it was a groundbreaking composition for timpani and there was not another composition before its creation that provides as many distinctions. An examination of such a piece is important to educate musicians and non-musicians of the capabilities of timpani as solo instruments. Due to the large amount of performances available to the public, educators, instrumentalists, and non-musicians where timpani are a part of small or large ensemble, onlookers can make the mistake that those venues are the only ones available for the timpani. There are hundreds of examples of timpani in orchestras and bands, but not as many examples where they are featured solo instruments. Periodicals such as the *Instrumentalist* and *Percussive Notes* host more articles about keyboard percussion instruments as solo instruments

in the percussion family. Specifically *Percussive Notes* has sections for drumset, marching percussion, world percussion, education, keyboard, symphonic, technology, and research in each volume. Any timpani articles would be found under the heading symphonic or education. There have not been enough documents written about timpani for it to receive its own section in the periodical. The lack of timpani documents concerning performance practice has contributed to the perception that timpani are not used as solo instruments.

Timpani are one of the oldest membrane instruments in the percussion family, and there have been a number of publications written to document the physical changes in the body of the timpani. These changes include size, shape, and mechanical operation. The purpose of the publications was to inform composers of the available possibilities when writing for timpani in the orchestra. There are, however, no comparable writings documenting the expansion of solo literature due to these changes. Timpani are often perceived as "glorified concert toms," lacking a variety of melodic content. Stanley Leonard, former principal timpanist of the Pittsburgh Symphony Orchestra, even went as far as to say "timpani are fundamental instruments that are too often treated as drums with no special voice. The contemporary timpanist must know and understand both the limits and the limitlessness of timpani."[1] The purpose of this presentation is to show the wealth of opportunities available when writing for or performing on timpani. Ultimately, it is hoped that teachers, composers, and performers will be inspired to embrace the instrument not just as a part of a band or orchestra, but equally as stand-alone solo instruments.

[1] Lauren Vogel Weiss, "Stanley Leonard: The Contemporary Timpanist," *Percussive Notes* 34, no. 5 (October 1996): 55.

Brief Overview of Timpani Design

Joseph Adato and George Judy define the kettledrum of the twentieth century as "a drum made out of copper or fiberglass bowls shaped like kettles that produce definite pitches. The drums are single headed and usually equipped with a foot pedal for tuning."[2] The early kettledrums were much smaller and lacked foot pedals, especially due to utility of the instrument. In Europe these drums were a component of military practices signaling travel into specific areas or royal entry into the courts. Because these drums were carried, their size was much more compact than the typical drums one might see today that range from twenty to thirty-three inches. The early kettledrum, called a naker, was only thirteen inches in head diameter, which can be compared to a modern day symphonic snare drum. A pair of Baroque timpani can be seen in figure 1.

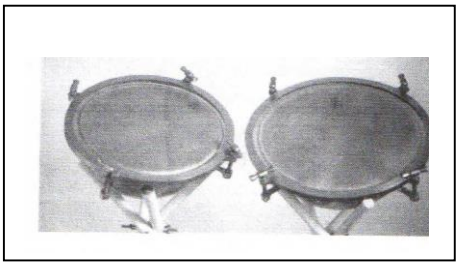

Figure 1. Edmund Bowles, *The Timpani: A History in Pictures and Documents*, Ernst Gobler, Small Baroque Timpani, Diameters: 13 ¼ and 15 ¾ inches, pg. 342

[2]Adato, Joseph and George Judy, ed. *The Percussionist's Dictionary: Translations, Descriptions and Photographs from Around the World.* Miami: Belwin Mills, 1984.

Figure 2. Edmund Bowles, *The Timpani Supplement*, London, Buckingham Palace Parade Grounds Mounted Timpanist, pg. 116

The smaller dimensions of the drum can be attributed to the need for it to be portable enough to be on the back of another person or by a rider on horseback (figure 2). This drum was played in this manner by Muslims, Ottomon Turks and Mongols before the fashion spread to Europe in the 15th century. Ownership of these drums was considered a high privilege available only to royalty and nobility.[3] The kettledrummer was also considered of high stature and it was only possible to play the instrument by being chosen as an apprentice and learning the art of playing by rote. Due to this tradition, for many years nothing was written down in the form of sheet music.

In the 17th century, timpani music was finally notated in the form of orchestral parts. Because they were no longer carried, the size of the bowls and heads increased. This increase in size also allowed the instruments to produce more pitches than was possible on the earlier instruments. One of the first mechanisms used to keep tension on the heads were different types of screws (Figures 3 and 4 on page 5).

[3] Zarro, Domenico E. "Timpani: An Introspective Look," *Percussive Notes* 36, no. 3 (June 1998): 57.

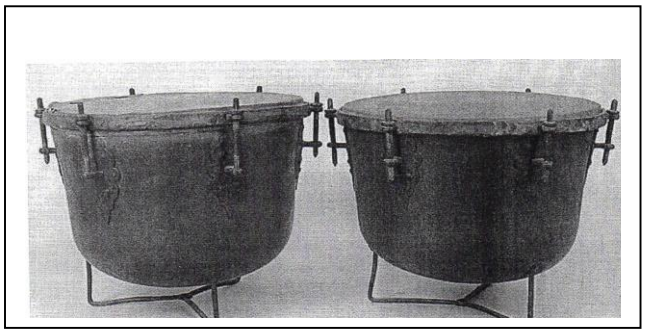

Figure 3. Edmund Bowles, *The Timpani Supplement*, Baroque timpani (Prussian or Bavarian) primitive tuning mechanisms *ca.* 1660-1700, pg. 17

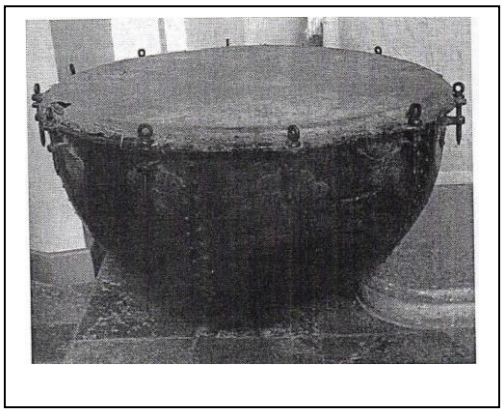

Figure 4. Edmund Bowles, *The Timpani Supplement*, Vilnius, Church of SS Peter & Paul Kettledrum (Turkish, 1663) Primitive "screw-eye" tuning bolts, pg. 17

"The tension was at first adjusted by a dozen bolts threaded into receptacles along the sides of the drums."[4] While this allowed the timpanist to make some changes, the process to accomplish the task was tedious and slow. Another way to hold the tension while providing faster pitch changes was to change the large bolts and screws into handles which could be adjusted by hand. These hand screw timpani (Figure 5 on page 6) had less than a dozen turning points which proved effective in increasing tuning speed but still did not address the concern of equal tension at each rod. Without equal tension the head would be out of tune with itself at different portions of the playing surface and would degrade the performance life in which a head.

One of the earliest documented examples of a machine timpani was produced by Gerhard Cramer (Figure 6 on page 6). These machine timpani increased tuning speed by implementing "a single handle leading to a massive system of gears invented in Munich in 1812."[5]

[4] Zarro, Domenico E. "Timpani: An Introspective Look," *Percussive Notes* 36, no. 3 (June 1998): 57.
[5] Montagu, Jeremy. *Timpani & Percussion*. (New Haven: Yale University Press, 2002): 120.

Figure 5. Bowles, *The Timpani Supplement*, The Hague, Royal Conservatory of Music
Late 19th Century Hand-Screw Timpani, pg. 23

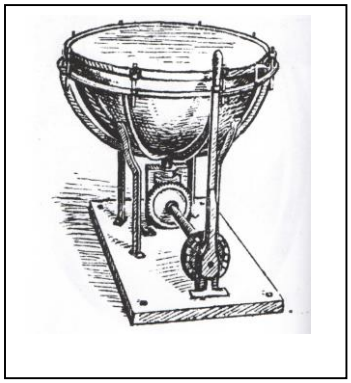

Figure 6. Bowles, *The Timpani: A History of Pictures and Documents*, Gerhard Cramer,
Sketch for the First So-Called Machine Drum, pg. 270

Unfortunately, this mechanism did not last very long. Shortly after this, Johann Stumpff invented a rotary type mechanism which can be seen in Figure 7 on page 7. Rotary-tuned timpani worked off a design where spinning the drum to the right raised the pitch and spinning the drum to the left lowered the pitch. The biggest concern with this design was the change of playing spot. Once a drum head is mounted, it will not respond exactly the same at each inch of the circumference. This means the area directly in front of the player may have a quick and

Figure 7. Jeremy Montagu, *Timpani & Percussion*,
Pair of Stumpff system rotary-tuned timpani, pg. 121

sharp response, while a spot 90 degrees to the right could yield a thinner and slower response. Ultimately, in this design when the timpani are turned, the best sounding area could be moved away from the player's reach. A modification which combined the idea of Cramer's handle and Stumpff's rotary design was the chain timpani. In the chain-timpani (figure 8) the tension is increased or released with the use of a master handle. This handle is connected to a chain which moves all the tension rods at one time. Unlike some of its predecessors, chain-timpani can still be found and are used exclusively, or in combination with, other machine timpani by some percussionists.

Between 1830 and 1870, different types of tuning mechanisms were attempted. During this span each design included some type of single handle to avoid the necessity of spinning the actual drum. Two such designs included a cable system and T-rod style handles. With the T-rod handle, the player was able to change the pitch on each drum quicker because the amount of turning points was reduced. One of the most successful single handle styles came from Johann Kasper Einbigler in 1836. The three advantages to this style were "a) the mechanism was not

attached to the drum shell, either internally or externally, so the shell was suspended in a frame

Figure 8. Bowles, *The Timpani Supplement*, Hans Anheier Chain-Tuning Drums, pg. 71

and was free to vibrate and improve the sound; b) the shape of the shell, which became the typical Dresden pattern, was one that was ideal for tone quality, and c) the mechanism was simple, elegant, and efficient."[6] There are no surviving drums from the 1800s, but there are examples of the Einbigler system as seen in figure 9. This style remained popular because this was one of the first systems which allowed each drum to have equal tension across the entire head at all times, while still allowing for spot tuning at each tension rod.

Figure 9. Jeremy Montagu, *Timpani & Percussion*, Tram Handle Timpani with Einbigler System, pg. 126

[6] Montagu, Jeremy. *Timpani & Percussion*. (New Haven: Yale University Press, 2002): 123.

Ernst Pfundt and Carl Hoffman, both from Leipzig, made improvements to the Einbigler system. The frames of the mechanism (Figure 10) were made heavier, which resulted in having a lighter bowl to balance the increased weight on the frame. Without a lighter bowl, moving the drums could require more than two men to move the move them. The lighter bowl would also have a thinner construction which would cause sound waves to travel faster thus allowing more room to vibate. The overall weight of the instruments, however, resulted in it being essential to have multiple people to move one drum.

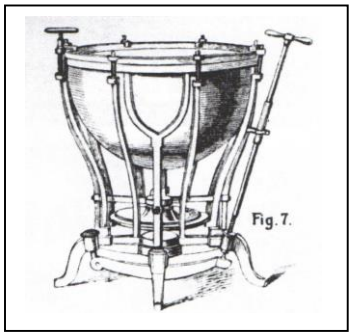

Figure 10. Edmund Bowles, *The Timpani: A History in Pictures and Documents*, So-Called Pfundt-Hoofman Improved Lever, or Machine, Timpani (Leipzeig *ca*. 1850), pg. 288

Finally, in 1881 a man named Carl Pittrich, from Dresden, made even more improvements to the design by adding a pitch gauge and a pedal. A performer could now change pitch by using the attached foot pedal, and with these additions, the modern day pedal timpani was born. Since this design fit into the Pfundt/Hoffman design, the single handle could also be used in conjunction with the pedal as seen in Figure 11 and 12 on page 10.

The first American design came from William F. Ludwig around 1911. This design used a hydraulic system for the pedal. His brother-in-law, Robert Danly, helped to enhance the design

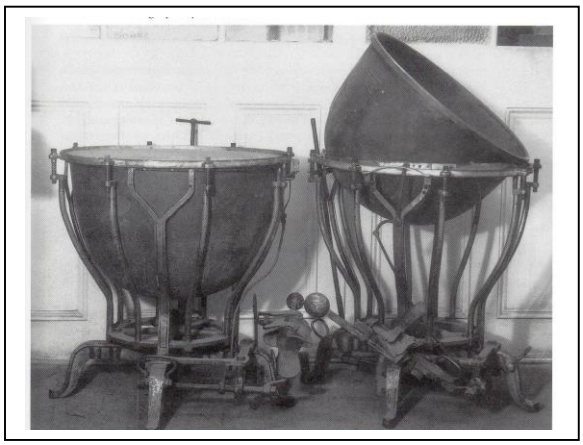

Figure 11. Jeremy Montagu, *Timpani & Percussion*, Pittrich-system timpani, pg. 127

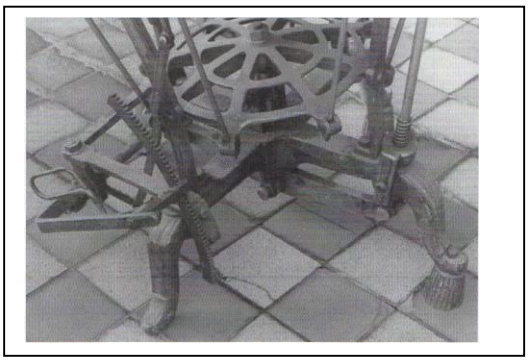

Figure 12. Edmund Bowles, *The Timpani: A History in Pictures and Documents*, Detail of Pedal and Attachment to Lever Timpano, pg. 304

by adding cables to connect the pedal to the tuning handles. By 1920, the design which is commonly seen today throughout many band rooms in America was accepted (Figure 13 on page 11).

> Both the hydraulic and the cable model used a gland on the pedal gripping a curved post to control the pedal's travel…... The balanced action depended on an extremely powerful spring in a housing above the pedal….. which, as on all other systems, travelled up and down, a rocking pedal on which pressing with the toe raised the pitch and pressing with the heel lowered it, the pedal itself remaining balanced on its axle.[7]

Ulysses G. Leedy created a design that divided the timpani into three distinct pieces (Figure 14 on page 11). These three pieces were the pedal, the bowl, and the drum, and the system made it easy to transport the instrument and even fit it in a vehicle. The pedal in this design features a clutch, push-release system, where the player had to first depress the pedal forward to release the lock. The pedal could then be moved to the desired position and would lock in place again when the foot pressure was removed.

[7] Montagu, Jeremy. *Timpani & Percussion*. (New Haven: Yale University Press, 2002): 129-130.

"In 1960, Ludwig introduced their Dresden model. This had a deeper shell, which improved the tone quality and, they claimed more importantly, had the mechanism outside the drum instead of inside it."[8]

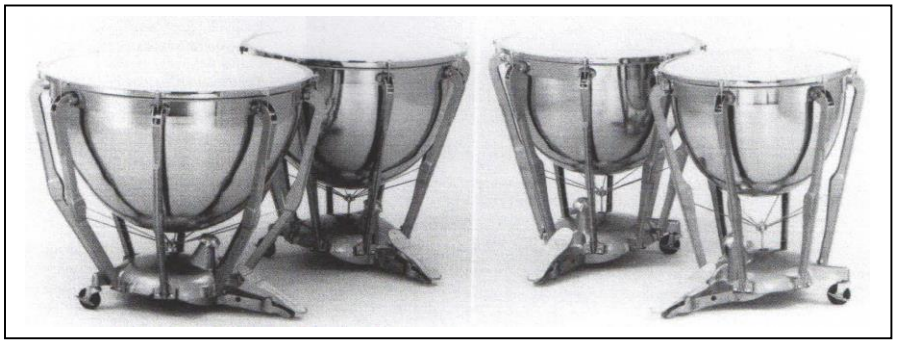

Figure 13. Edmund Bowles, *The Timpani: A History in Pictures and Documents*, Ludwig Professional Model Timpani Featuring Suspended Bowl Construction and "Balanced Action" Pedal Mechanism, pg. 344

Figure 14. Jeremy Montagu, *Timpani & Percussion*, Pair of Pedal Timpani by Leedy, Indianapolis, Pre-1929, the Smaller Dismounted to Show the Pedal and the Screw in the Base of the Drum, pg. 129

Over the last fifty years, the Ludwig model and Dresden model (Figure 15 on page 12) have become the most used styles by secondary schools and universities in the United States.

[8] Montagu, Jeremy. *Timpani & Percussion*. (New Haven: Yale University Press, 2002): 130.

Different manufactures may have changed minute aesthetical features, but the original concept behind the design has endured until today. The musical examples in this discourse will be performed today on timpani based on these designs. Elliott Carter sought to encompass timbre

Figure 15. Edmund Bowles, *The Timpani: A History in Pictures and Documents*
Metropolitan Model B Dresden Style Timpano, pg. 347

possibilities in his writing with these designs in mind. By listening to excerpts on these designs, the listener can form their own opinion about the elements such as resonance, decay, projection, and overall sound quality. It is desirable that audience members leave with a greater understanding of the changes the timpani have gone through and also a greater appreciation for what the timpani can do as solo instruments.

Elliott Carter Biography

Elliott Carter (1908-2012) is considered a well-known American composer having won two Pulitzer Prizes and writing numerous types of works from orchestral works to choral and solo vocal pieces. These fall within the outline of the three types of pieces he wrote: discards, studies, and masterpieces. Carter did not come from a family who readily engaged in his musical journey. His grandfather, Eli C. Carter, was a successful businessman in the lace importing business, a prominent endeavor during the early 1900s. After the business E.C. Carter & Son was sold to Elliott Carter, Sr., it was seemingly expected for young Carter to join into the family business. In New York, Carter was given the best possible education including trips to Europe to prepare him for entry into the lace curtain business. Even though Carter chose not to enter into the family business, his parents did not go against his desire to pursue music. It was, however from other composers that Carter received most of his musical encouragement.

It was during his time in Europe that Carter was exposed to music which inspired him to learn compositional techniques. These techniques were enhanced through advanced degrees and eventual private study with different composers. Charles Ives impacted Carter's life by posing questions dealing with instrumentation and the ability to hear contrasting voices moving at different velocities. The challenges Ives invoked, along with Carter's curiosity, motivated him to seek music which could contain an America aesthetic, yet feature complexity such as that found in works by Igor Stravinsky, Arnold Schoenberg, and Bela Bartók.

During the 1940s, Carter became interested in a continuous, unbroken rhythmic flow focusing on gradual change. Carter's interest in elements of rhythm may have been influenced by his exposure to the works of three musicians: Charles Ives, Henry Cowell, and Colon Nancarrow. Each of these composers composed works highlighting rhythm, and they are each mentioned in a 1955 article written by Carter. The contributions from Ives include: "(1) superposition of different speeds notated in a common unit; (2) noted rubati played against strict time, (3) unrelated levels heard simultaneously, including the use of softly played background that could be heard distinctly only during the silences between fragments of louder music."[9]

The word "simultaneity" is of special interest in the later works of Carter. Many compositions utilize changing moods, sections, and movements, but these commonly are seen with segues, cadential connections, continuous flowing ideas, and/or many other ways to keep the music going. These types of works would have been using rhythmic succession to propel the music forward. The aforementioned idea of "simultaneity" is

> the projection during some passage in a composition of two or more distinctly different rhythmic patterns, often taking the form of different speeds and usually occurring as separate strands or parts of the musical texture. By "succession" is meant the temporal arrangement of two or more different rhythmic patterns such that one pattern is followed by a second (and the second by a third, and so on) as the music progresses, either within the same part or from one part to another, with the first pattern either being abruptly superseded by the second or-as in the case of metric modulation, to be discussed-undergoing a transformation or a series of transformations that gradually produces the second rhythmic pattern from the first.[10]

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[9] Bernard, Jonathan W. "The Evolution of Carter's Rhythmic Practice." *Perspectives of New Music* 26, no. 2 (Summer 1988): 165.

[10] Bernard, Jonathan W. "The Evolution of Carter's Rhythmic Practice." *Perspectives of New Music* 26, no. 2 (Summer 1988): 166.

This idea is the forefront for metrical and temporal modulation for which Carter became known. William Glock, director of the Third Programme of the BBC, engaged in numerous correspondences with Carter, and even specifically asked how this metrical modulation idea came about in a letter dated May 5, 1955. By looking at a sample of the correspondence, one can see Carter really did not intentionally come up with what we term today as metrical modulation and specifically said in his response on May 9, 1955:

> I really have no idea of how the notion of "metrical modulation" came to me. I only remember that one day while writing the second movement of my cello sonata (which was written first) I realized that the groupings of 1/8 notes often seemed to fall into threes and that it might be interesting to shift to another speed and then suddenly the whole idea came to me with its many arithmetical possibilities, which I worked out on paper as an amusement…..And I decided to try and write a work which was in constant change – in which each phrase modulated metrically into the very material of the work. Since the whole method involves continual change, it seemed to me that the main ideas of this work were ideas of change of character – this affected its whole plan.[11]

This correspondence shows Carter simply wanted to design works which embodied gradual change. He defines this as gearing continually fluctuating speeds in precise notation. This shift was developed because he considered the neo-classicism of the 1940s as "static repetitiveness" and "squared off articulation." By looking at his *Eight Pieces for Four Timpani*, one can see the techniques that Carter used to embellish the idea of rhythm and time, along with his treatment of a narrow scope of resources with only four pitches.

[11] Felix Meyer and Anne C. Shreffler. *Elliott Carter: A Centennial Portrait in Letters and Documents.* (Woodbridge: The Boydell Press, 2008): 118.

Carter had a distinct perception of time, and "*Eight Pieces*" was written on this basis. It is what he felt made music interesting. Musical time for Carter is contrapuntal and relative; it is superimposed on the random experiences of everyday life and the measured time of clocks, which taken together and later turned into published compositional studies define the borders of our experience of time. While the original work written in 1950, *Six Pieces for Kettledrums*, was written to be a compositional study piece for an orchestration course at Columbia University, photocopies of it still found its ways into the libraries of percussionists of the era such as Paul Price. It was written alongside another compositional example, *Eight Etudes and a Fantasy* for flute, oboe, clarinet, and bassoon. *Six Pieces for Kettledrums* was not intended to be published, but after several percussionists learned the pieces, performed them, and expressed interest, Carter decided to publish two of the pieces in 1960 as a set, "Recitative and Improvisation."[12] In the following chapters there will be further examination of each individual piece, showcasing the original autographs when available, along with the revisions made in 1966. Detail will be given to any unique elements and special effects that challenge the kettledrummer, as well as listener, to look at the instrument in a different way.

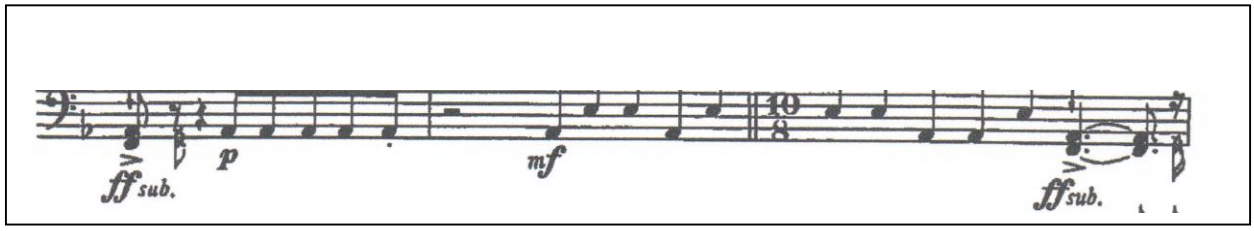
[12] Williams, Jan. "Elliott Carter's *Eight Pieces for Timpani* – The 1966 Revisions." *Percussive Notes* 38, no. 6 (December 2000): 8.

1950-1960 Publications: Six Pieces for Kettledrums

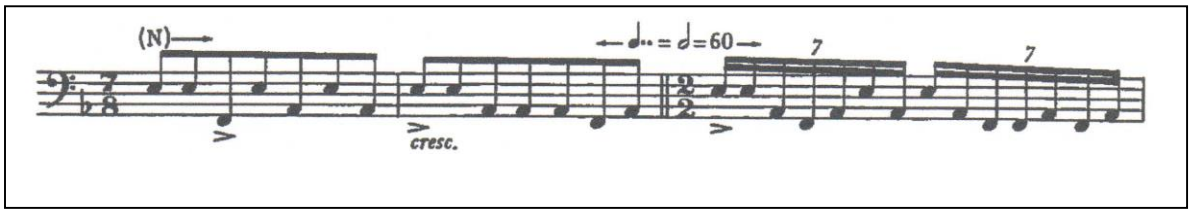
Improvisation

"Improvisation" is one of the two pieces from *Six Pieces for Kettledrums* published in 1960. There are two elements centering around notation and dampening that set this piece apart from the rest of the works in the set. When comparing this piece to some of the other movements, "Improvisation" has simpler notation. One of the things which make the notational style seem simpler is the way modulations are effected. Most of the modulations which occur involve entire beats instead of segments of beats making calculations easier to count. For example in measure 19 to 20 (example 1-1), the eighth notes grouped in a set of five directly equal the set of five in the beginning of measure 20. The same type of transition happens in measure 25 to 26, example 1-2, where the set of seven sixteenth notes enter at the same speed as the preceding set of seven eighth note.

Example 1-1: "Improvisation," mm. 18-20

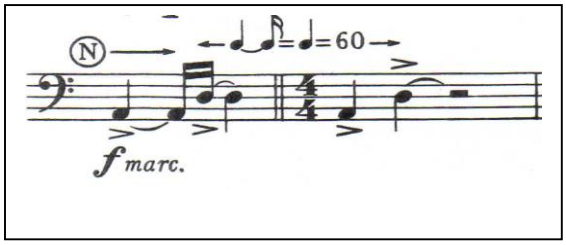


Example 1-2: “Improvisation,” mm. 24-26

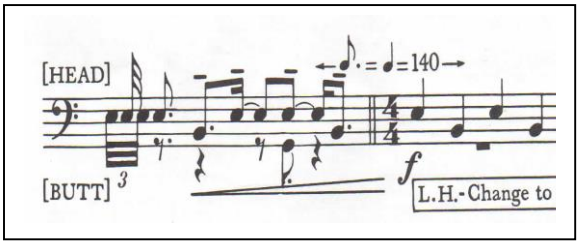


This is different from transitions seen in other pieces such as measures 25-26 in “Saëta,” example 1-3, or measures 14 to 15 in “March,” example 1-4.

Example 1-3: “Saëta,” mm. 25-26



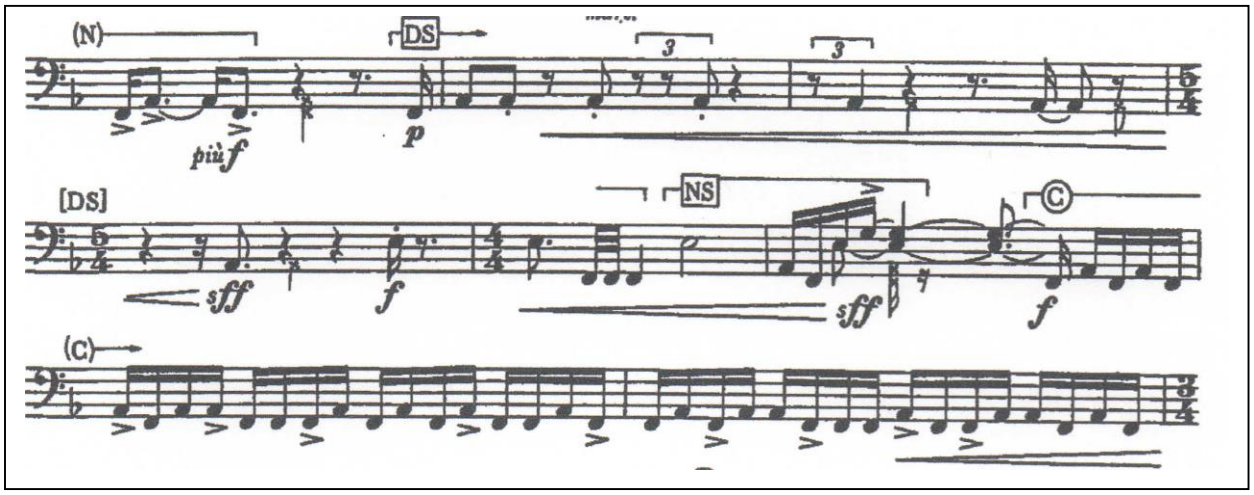
Example 1-4: “March,” mm. 14-15



In both of these examples a composite rhythm becomes the quarter note in the later measure. For the performer, this may take a little more mental practice to make sure these two ideas equal each other. For instance in mm 25-26, one could rush or drag the quarter note and have a delayed reaction to feel the beat. This delay may cause the transition to take several measures to settle in, rather than immediately as desired. Also, in the segment from “March,” a syncopated rhythm written in the time frame of three beats must become the quarter note in the next four beats.

One way Carter establishes the perception of an improvised style is by the large amount of syncopation he employs from beginning to end. This syncopation lends itself to what one would expect in a jazz composition when soloists are allowed to adlib. One example is found in measures 7-14.

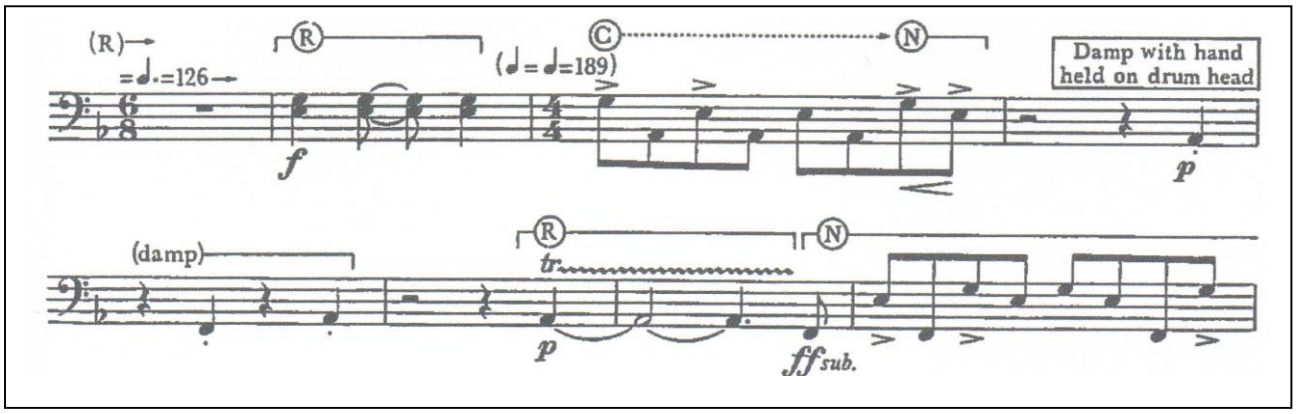
Example 1-5: “Improvisation,” mm. 7-14



Starting in measure 8, a special stroke called the dead stroke, denoted by DS, is used to hasten the decay. A dead stroke is executed by leaving the mallet on the playing surface after striking the head. This causes an immediate silencing of the sound. The only notes on the beat in measures 8 to 11 occur at the beginning of the eighth measure and the last beat of measure ten. Measure 13-14 hosts one of the popular measure segments which numerous timpanists spend multiple practice sessions to master. While the two measures contain only sixteenth notes, there are accents in many different places and across two drums. These accents and drum designations require the performer to develop strategic sticking. This phrase will not simply alternate from left to right without the hands getting tangled up because of uncomfortable crossing. Also the accents may dictate the use of a specific hand over the other due to that hand being stronger. Carter uses accented patterns throughout the piece to develop a syncopated feel while also leaving an attainable groove.

The second element which is used is a special type of hand dampening. It is typical for a timpanist to muffle with their hand when there are notated rests or there is a need to keep a previously played note from overshadowing another. In measures 99-100 (Example 1-6), there is a marking to keep the hand on the drum while a note is played. This creates a different timbre than the dead stroke. With the dead stroke there is opportunity to hear abrupt decay, but, if the hand is already on the head, the head will produce the most staccato sound possible when struck. This is the driest tone heard in "*Six Pieces"* as well as "*Eight Pieces*."

Example 1-6: "Improvisation," mm. 96-103



Carter strategically places his timbre choices to close out the movement. After this hand dampening, notes are played on the rim at piano. For the last three lines, the listener is taken back through all the timbres which have been created throughout the piece, including playing in different playing spots, using single attacks, and incorporating rolls for sustain. Before the final fortissimo, the volume drops to pianissimo, and is marked *ma sonoro*, which translates as "but

resoundingly, resonantly, ringingly."[13] Here the sustained notes are not extended with rolls, but allowed to decay naturally.

Moto Perpetuo

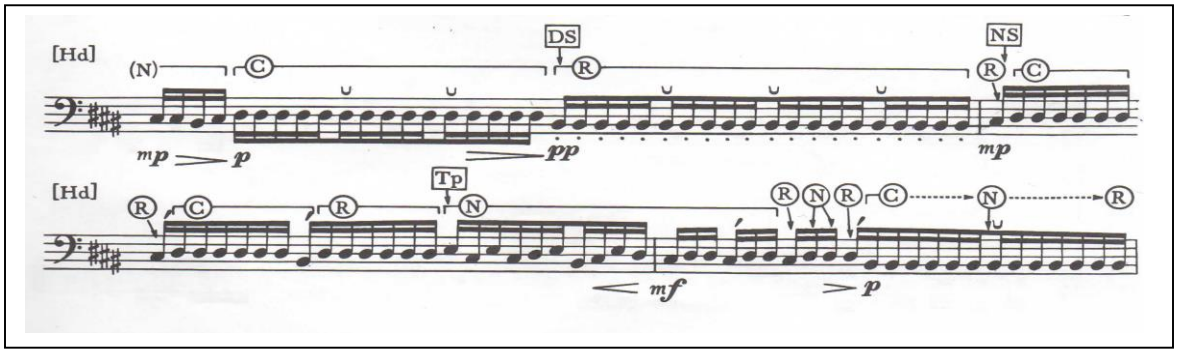
"Moto Perpetuo" is a piece centered on perpetual motion, just as the title indicates. The piece begins on the second sixteenth of a set of seven connected sixteenth notes and once it begins, takes no break until the final note. In order to prevent the piece from becoming a drone to the ear, Carter creates discernable patterns for the listener. Just as a pattern becomes recognizable, the set of groupings change slightly by either number or pitch. Measures are not established by equal partitions with a specific time signature, but by statements of contrasting ideas and sounds. The pitches chosen are the closest intervals of the set (B-sharp, C-sharp, D-sharp, E), which also helps to create a continual unbroken effect. The pitch set (0,1,3,4) is the same chord featured in *Eight Etudes and a Fantasy*. It is also the same set/tuning found in "Improvisation," but only affected in closer spacing.

Because of the constant motion, "Moto" is the only piece in "*Six Pieces*" that does not use any type of metrical or tempo modulation. With the revisions to specify playing areas on the head, this piece becomes one of the most diverse examples of contrasting timbre. In example 2-1, there is a normal area (N), center area (C), dead stroke (DS), rim area (R), and normal stroke (NS), just as seen in "Improvisation." These provide different tone colors for the listener and

[13] Theodore Baker, ed. *Pocket Manual of Musical Terms*. (New York: Schirmer Trade Books, 1995): 138, 216.

also challenge the performer to bring out the difference at a low volume. The grouping in measure 17 (Example 2-1) begins with a set of four sixteenth-notes, followed by sets of five. The set on pitch D-sharp remain in the center of the head providing a far less resonant sound versus the preceding full ring of the timpani. A set of dead strokes begin on pitch B on the rim.

Example 2-1: "Moto Perpetuo," mm. 17-20



Two items which are only found in "Moto," are the special mallet indication and the associated notation. Cloth-covered rattan mallets are specified in the performance notes and can be created by applying chamois to rattan shafts. The cloth is not to be the same layering on the entire mallet head. One layer is to be wrapped around the top or tip of the mallet and two to three layers are to be wrapped around the side of the mallet.

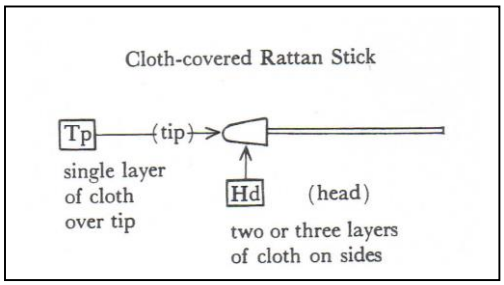


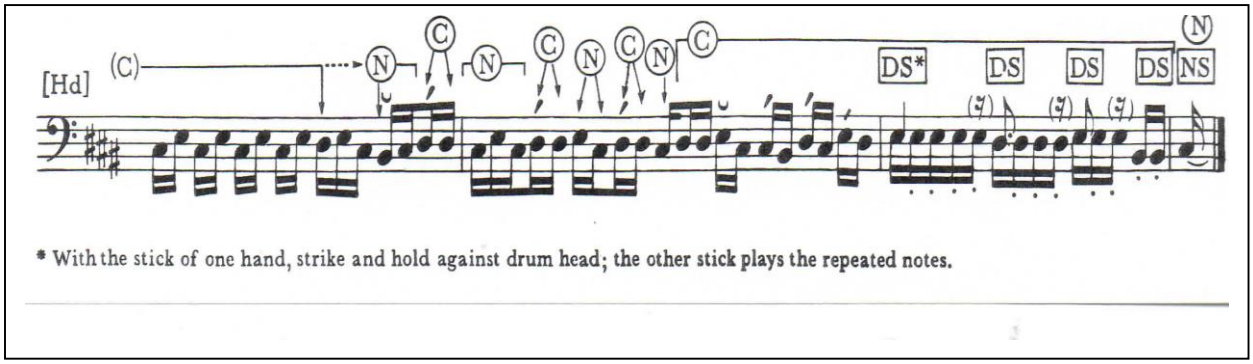
Figure 16. Elliott Carter, *Eight Pieces*, Performance notes

As seen in Figure 16, when the performer is to play with the head of the mallet, which is the natural playing spot on the mallet, there is a designation of Hd. In contrast, this piece allows for the performer to use the tip of the mallet, designated as Tp, for an additional timbre change. The single layer of cloth provides a thinner sound quality. If this is multiplied by the amount of playing areas and stroke types on the head, there are a total of twelve different timbres. These timbres can be summarized as: Normal Stoke a) Hd in center b) Hd on rim c) Hd in normal playing; Dead Stroke a) Hd in center b) Hd on rim c) Hd in normal playing; Normal Stroke a) Tp in center b) Tp on rim c) Tp in normal playing; and Dead Stroke a) Tp in center b) Tp on rim c) Tp in normal playing. Out of these twelve possibilities only four are not used: dead stroke 1) Hd normal 2) Tp normal 3) Tp center 4) Tp rim. This proves to be a great challenge for the performer to distinguish these sounds enough to where they can be perceived as different.

Along with the challenge of exhibiting the eight different timbres, the performer must execute these rhythmic figures at a fast rate of speed, quarter note equals 120, and at low dynamic levels. The dynamics of the piece range from pianissimo to forte. The louder levels are the fewest number of times seen in the piece, with mezzo forte appearing three times for half of a measure and forte appearing for only one measure. The piece spends most of its time at pianissimo, with very small crescendos to piano or mezzo piano. The previous example 2-1, gives a sample of the many intricacies which must be conveyed in a short amount of time. Within these three bars, there are seven timbre changes and four dynamic levels. The longest period of consistency occurs in measure 17 when there is a dead stroke on the rim at pianissimo on the same drum for twenty sixteenth notes.

There are only two places in the piece which use the dead stroke. The first occurs in measure 17, example 2-1, and the second is found in the last two bars of the piece, example 2-2.

Example 2-2: "Moto Perpetuo," mm. 38-41



Measure 39 sets up a series of alternations from normal to center. By the time measure 40 has been reached the listener has experienced the center timbre for almost half a measure. This is where the dead stroke is implemented. Playing in the center already gives a short decay. By adding the dead stroke, an almost instant decay is produced with no overtones. The recommendation to get the desired sound is to hold one mallet on the head while the other mallet plays the subsequent notes. This means each note with an upward stem could be played with the left hand, while the notes with downward stems could be played with the right hand, or vice versa.

The title of this piece stems from the latin term *Perpetuum mobile*. Paganini and Weber are two of the composers who use this term, translated to *Moto Perpetuo* in Italian. The concept refers to pieces that proceed from beginning to end in the same rapid motion, e.g., sixteenth notes

in presto.[14] Carter uses this technique to create "Moto Perpetuo." In measure 40-41 the piece descends by diminishing note groupings of five, four, three, two, and one as if he is counting down to zero, with zero being the final silence of the piece. During the countdown the listener gets no resonance (DS), but finally receives full resonance on the last note (N), which has a slur marking implying to let the note ring. This final stroke serves as a resting place for the continual movement and sound performed throughout the piece. The final resonance releases the tension which Carter develops from beginning to end. Because of the many timbres, rapid motion from drum to drum, and the challenge of playing quietly, "Moto Perpetuo" is one of the least played movements. It truly challenges the performer to expand not only his ear, but the listener's as well.

Saëta

Saëta is "an Andalusian song of improvisatory character sung during an outdoor religious procession, usually at Easter. It is said to be the descendant of a rain ceremony during which an arrow (Saëta) was shot into the clouds to release rain. This type of song would typically be unaccompanied and complement street processions and other outdoor devotional activities."[15] Andalusia is located in Spain on the Iberian Peninsula and currently has approximately 8 million people. In listening to many Andalusian folksongs, the author that the music has many groupings of two and three. The groupings also seemed to take on a repetitive pattern only to be

[14] Don Michael Randel, ed., *Harvard Concise Dictionary of Music.* (Cambridge: The Belknap Press of Harvard University Press, 1978): 384

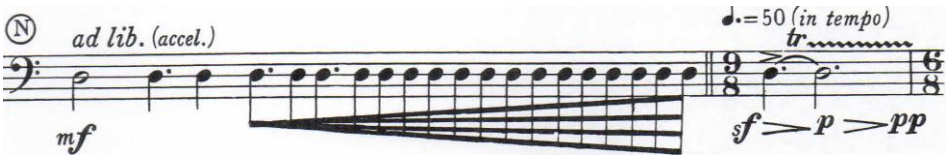
[15] David Schiff. *The Music of Elliott Carter*. (New York: Cornell University Press, 1983): 132.

interrupted by an odd pattern. An example of this might be 3+3+2, 3+3+2, 2+2+3+2, 3+3+2 and so on.

Three elements are highlighted in "Saëta" that do not occur in its surrounding pieces. The first element is the use major and perfect of intervals such as M2, P4, P5, P8. As indicated, an octave is present in this work, and it is the only octave found in "*Eight Pieces*." A M2 is found between the top two notes, D and E, as well. This is also the only time two Perfect 4ths will appear beside each other in a movement. This open spacing (E, A, D, E) provides a rocking motion from one cadence to the other so the listener may be able to perceive there may be a tonic, but cannot determine if it is A or D with any certainty.

The second element is seen in the first, third, and last line of the piece. In these measures, there is a written out accelerando which culminates in a roll. In example 3-1, the first appearance of this gesture is interrupted by the first two measures of the theme. Measure 7-8 brings in another written out accelerando which moves into a roll. It is important to notice that the notes chosen for these rolls are D followed by A. These rolls outline the two notes which will serve as the melody notes for the dance once it begins. Within "*Eight Pieces*," this is the only time Carter uses the accelerando to create a roll.

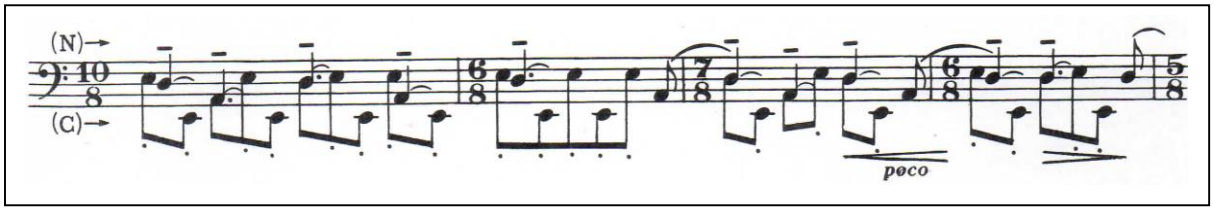
Example 3-1: "Saëta," mm. 1-2



In the original sketches of this piece, there were no altered playing spots designated. It is in the latest publication that the upward stems specify playing the normal (N) playing area and the downward stems refer to playing in the center (C) of the drum (Example 3-2 on page 27). This is the third element distinctive to "Saëta." Playing toward the center of the drum hastens the decay of the note and removes the overtones, yet leaves the fundamental. This makes it easier to hear and execute the notes emphasized on A and D performed in the normal playing spots. While other pieces in the set employ different head placements in the revisions, only "Saëta" requires playing in the different spots at the same time, such as in Examples 3-1 and 3-2. During these phrases, one hand must play in the center while the other plays in the normal area. This showcases single notes and double stops, which are two notes played simultaneously.

In example 3-2, one hears and sees the mixed groupings in combination with the emphasized A and D.

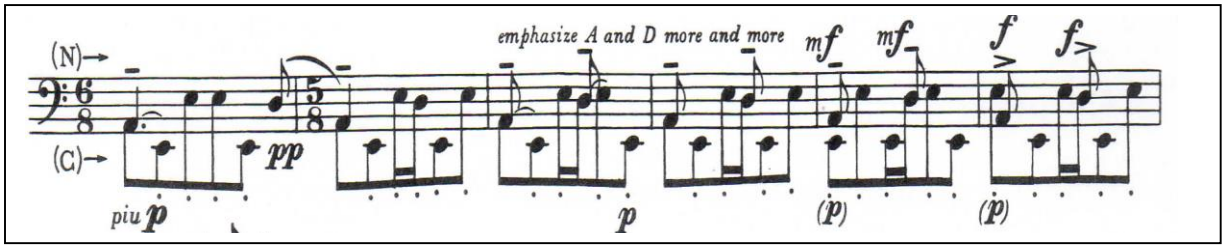
Example 3-2: "Saëta," mm. 10-13



While the other pieces may use an emphasis on notes, this is the only piece in the set that uses the same side of the mallet while changing the playing area to get the desired effect. It is with this A and D that Carter creates the first metric modulation. In measure 20-24 (Example 3-3), the A and D set up the corresponding section by allowing these two notes to become beat 1 and subsequently beat 2 of line 7. Only the pitches A and D crescendo while the outer notes remain

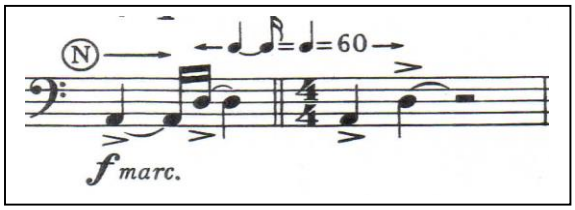
piano. This strong transition lands the performer firmly in the new tempo of quarter note equals 60.

Example 3-3: “Saëta,” mm. 19-24



Measure 25 shows the A and D minus the outer E. Because of the constant movement, the first time the ear suspects there is something different is in measure 26, where the first rests occur.

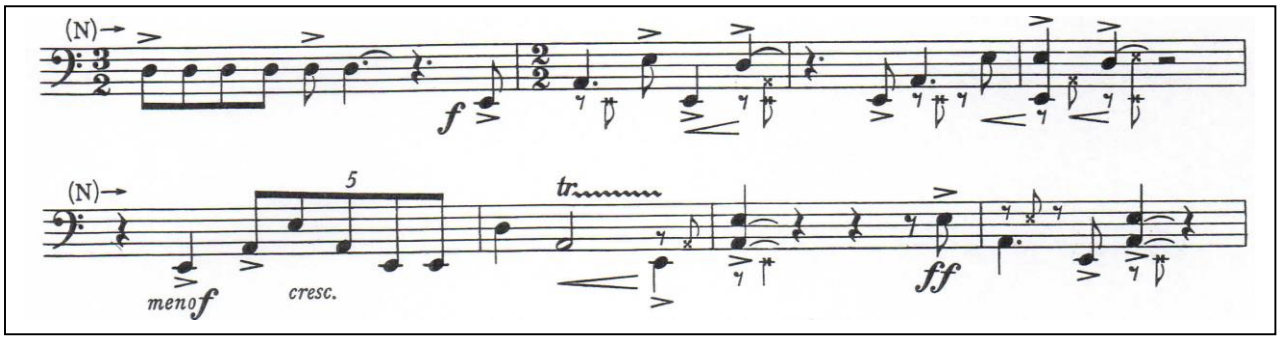
Example 3-4: “Saëta,” mm. 25-26



The contrast from a larger theme, example 3-2, to a more condensed theme, example 3-3, can be termed as pulse polyphony. Two additional items which are unique to the piece and pose a challenge to the performer occur in the transition from the second page to the third page. First is the use of smaller stemmed notes, example 3-5, which indicate the need to muffle or stop the sound on a particular drum.

In many timpani method books, the performer is trained to muffle a drum when there are rests to avoid certain notes being overshadowed by the preceding note(s). The most effective way to do this is to place the fingers or hand directly on the head, which will cause an instant decay of a sound. In "Saëta," the player must not only muffle a note, but must also muffle the

Example 3-5: "Saëta," mm. 42-49

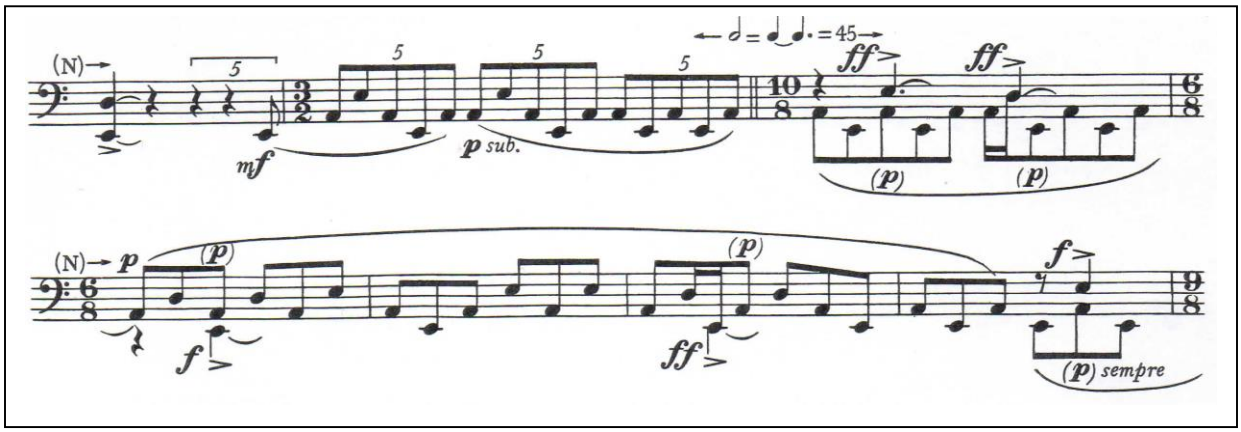


note in the notated rhythm. During the rhythmic muffling, the player will also be holding a mallet in each hand. Technique must be developed to avoid dropping the mallet while pressing his fingers into the drum head. This can be accomplished by rolling the mallet in between the thumb and pointer finger where the two fingers meet into the palm of the hand. The player would also need to roll the mallet back into playing position to be prepared to execute the next pitch.

The second item which challenges the performer is the use of accented notes in one hand, while the other hand remains at a low volume. The first metric modulation seen in example 3-2 and 3-3 requires the player to emphasize certain notes and eventually crescendo these accented notes while the other notes remained at piano. In Example 3-6, on page 30, the accented notes at forte and fortissimo occur not only in the moving line, but also simultaneously with a softer note.

In measure 56, the sets of five between A and E must utilize a combination of alternating strokes and doubled strokes (right, right or left, left) to keep the figure moving. While this piano figures moves, there is an E and D which seemingly come out of nowhere at the level of fortissimo. Just because the E and D are at a higher volume, it does not mean that the rest of the measure is

Example 3-6: "Saëta" mm. 54-60

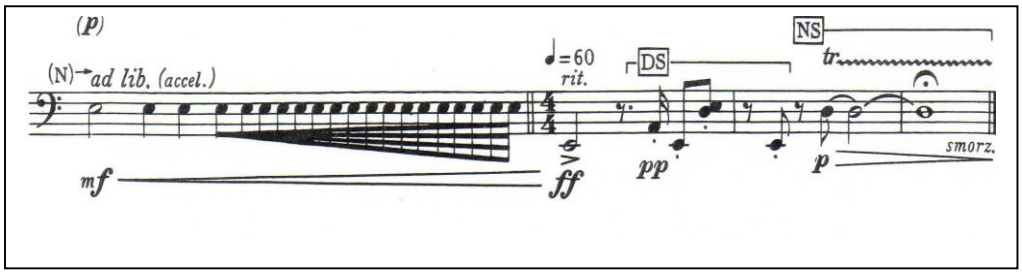


insignificant. Special care must be taken to ensure that all the piano pitches are still heard to enhance the contrast set up in the phrase. This requires dexterity to have each hand play at different volumes at the same time. In many timpani compositions, both hands will operate at the same volume simultaneously. Because this is not the case in this phrase, the performer must practice varying velocity and stick height to achieve the desired effect.

A recapitulation of the theme presented from measure 9-26 occurs in measures 76-91. The sections are almost identical except that the first phrase is seventeen measures long while the last phrase is fifteen measures long. Measures 14-15 and 20 are left out in the last phrase and measure 24 is repeated. The piece ends with a modulation similar to example 3-3 through 3-4 only a low E is added to the second beat. Measure 91-92 provide the last glance of the dance

motion in expanded form followed by the last written out roll on E. The first and only dead stroke (DS) is introduced in measure 95, which is produced by leaving the mallet on the timpani head when striking the note. This stroke provides significant contrast to the preceding, resonant roll, as seen in Example 3-7.

Example 3-7: "Saëta," mm. 93-96



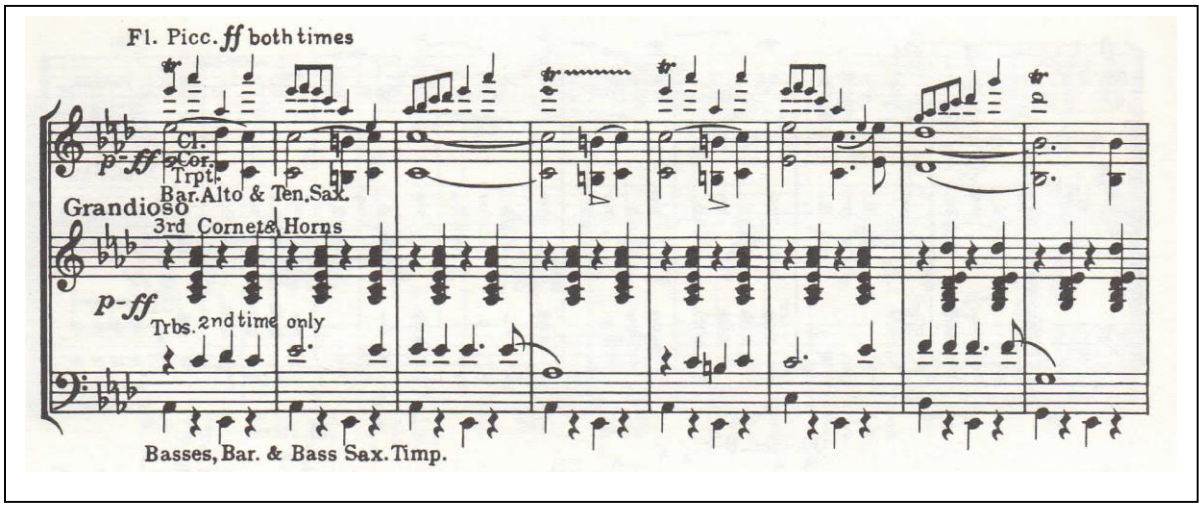
Finally the piece seems as if it would end with the sequence E to A because of the numerous times it has been heard throughout the piece. It could also provide a final Amen cadence, however, Carter moves from E to D, which may be a surprise to some listeners.

March

In "March," Carter establishes the bass line which would normally be found in a march such as one written by John P. Sousa. This bass line, Example 4-1, on page 32, is typically carried by the low brass section, especially the tuba or sousaphone. In order to bring out this movement from tonic to dominant, Carter specified the use of the butt end of the stick in the left hand. To contrast this sound, the right hand plays with the normal head of the mallet

demonstrating a lighter timbre such as could be found in the melody line the woodwinds would carry in the typical march. This piece is the only one of the set that uses different ends of the stick in each hand. It is also the only one in the original *Six Pieces for Kettledrums* that does not require playing in different areas of the head. The two later pieces, "Adagio" and "Canto," added in the 1966 revisions, are the only other pieces sharing this characteristic.

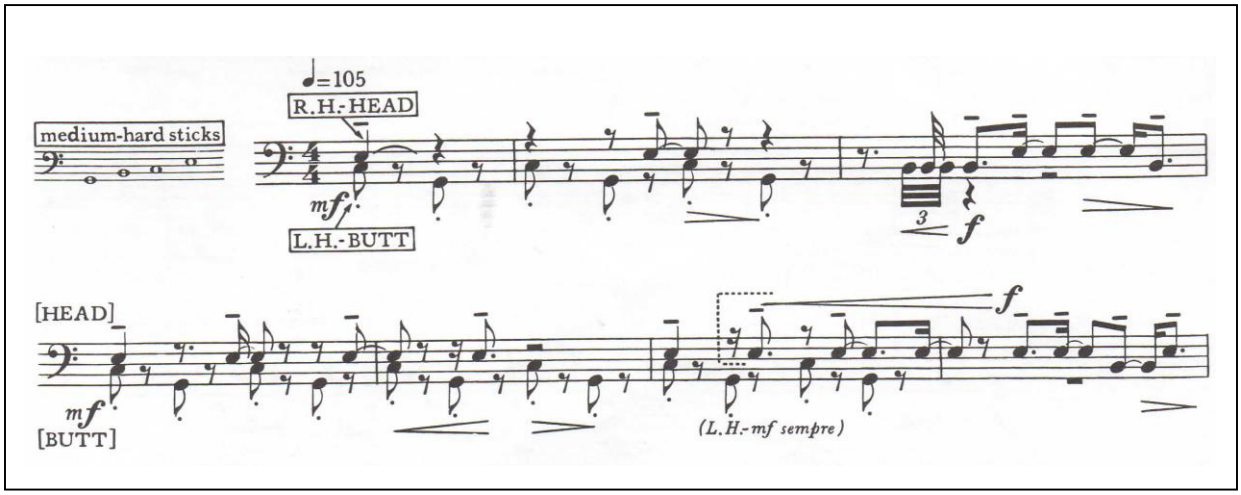
Example 4-1: "Stars and Stripes Forever," mm. 95-102



One idea of focus for "March" is providing the sound of the soprano melody over a supportive bass however there is another documented idea of what "March" may have been trying to convey which some may call Ivesian humor. In the opening bars, Example 4-2, the bass line is placed on the lowest drum and the third drum requiring the player to continually reach across the body and one of the drums. The right hand is seated on the first and fourth drum. Each duet of drums uses an interval of a fourth but the fourths are overlapped in the middle by a minor second which also brings the Perfect fourth into play. This second inversion

C major-seventh chord is the only fully stacked chord that can be found when all the intervals from each piece are compared. Other movements carry major and minor dyads along with triads, but "March" exhibits the only seventh chord. This is useful in developing a more singable tune. The tune starts but seems to be interrupted by a measure long statement. This can be seen in the following sequence. After measures 1-2 there is an interjection in measure three. For the next seven measures, these same patterns continue with the melody becoming more and more intricate and with interruptions between each statement. In this author's opinion, this interplay brings in

Example 4-2: "March," mm. 1-7

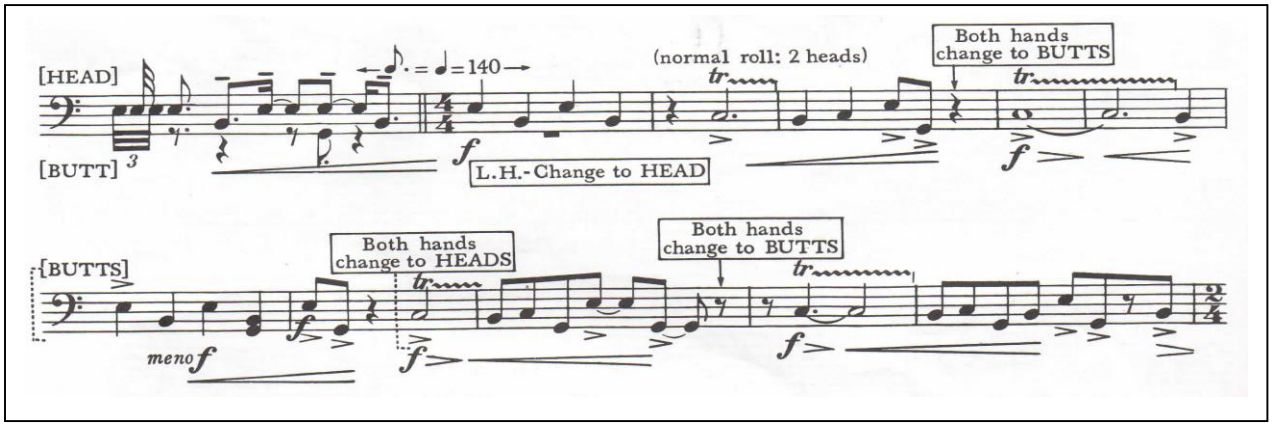


the idea of humor, which may come from playing two marches at the same time but at different speeds. If one can imagine the different timbres and hands being a separate march, the song takes on an even more contrapuntal element.

In measure 15, Carter introduces another important technique which sets this piece apart. He begins to require the performer to flip the sticks. The player must first flip the stick in the left hand, which has been playing with the butt end of the stick. At this point both sticks are playing

with the normal head of the mallet. Within two measures the player must flip both the sticks to butt-ends and then this sequence is repeated. The constant changing of direction of the mallet requires the player to have to develop almost acrobatic movements. As seen in Example 4-3, Carter does not allow more than a single quarter note for the change to occur. The performer can either flip the stick in the air to make the change or turn the mallet into their body to facilitate the change. In each one of these instances, there is a chance the performer could drop one or both of the mallets which would end the forward momentum of the piece. These acrobatic motions turn

Example 4-3: "March" mm. 14-24



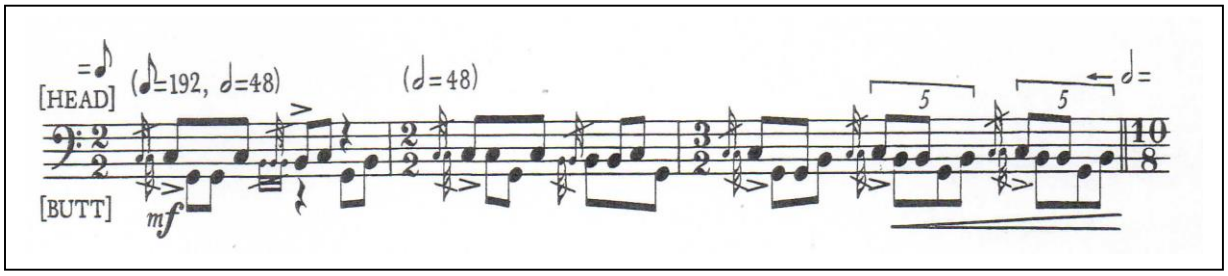
the performer into something like a baton twirler. One interpretation of the piece is as follows: "Two drummers approach each other playing at different speeds. They meet and 'challenge' each other, imitating each other's figures and outdoing one another in virtuosity. Having established their equal credentials they then march away at different speeds."[16]

While dealing with the different mallet directions, special attention must also be given to the stem direction in "March." In sections where mallets are facing different directions, upward

[16] David Schiff. *The Music of Elliott Carter*. (New York: Cornell University Press, 1983): 135.

stems denote the right hand and downward stems denote the left hand. In the main theme found in measures 1-14, this seems self-explanatory, but when embellishments are included involving both hands this can prove to be tricky. In Example 4-4, the performer must begin each figure with the correct mallet end so the correct articulation and timbre is accomplished. In most sections of the piece, one can use the notes to determine which hand is used because the pitches C and G are always the left hand, while pitches B and E are always the right hand. In this example however, both hands are used on pitches C and B. In subsequent measures, both hands

Example 4-4: "March" mm. 42-44

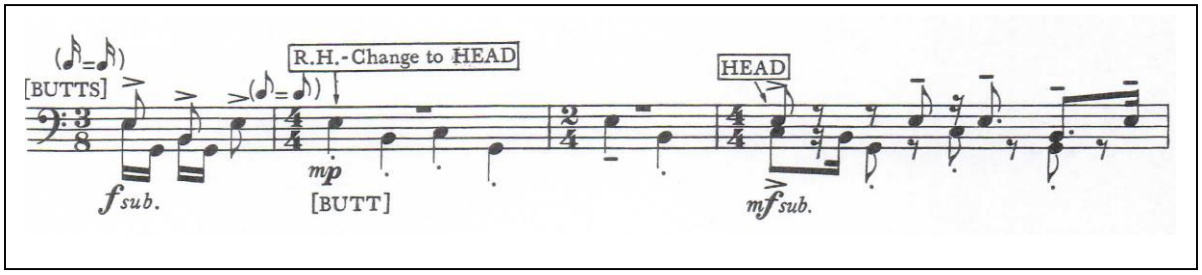


are also used on the lowest pitch G. Because Carter's writings have been very particular in placement, instrumentation, and timbre within all his compositions, this is another challenge to the performer to achieve the distinct sounds and choreography Carter designed.

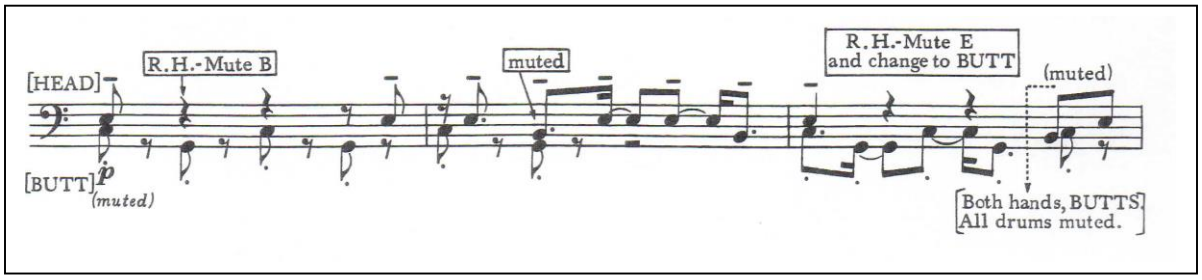
The last element which sets this piece apart from the others is the use of mutes. In measures 62 to the end (Example 4-5), Carter has a recapitulation of the first theme introduced in measures 1-14. The figures do not occur in the same order and where a figure may have been in one measure, it is extended over two measures. The performer is required at different times to

put a mute on one or two of the drums. This has to be executed while the performer is still playing with one hand, as in Example 4-6.

Example 4-5: "March," mm. 61-64



Example 4-6: "March" mm. 74-76



Due to the almost flamboyant nature of "March," it has become one of the most performed of Carter's timpani pieces. This can be partially attributed it to being listed as a required etude in many college entrance auditions and on music competition lists across the United States. Because of the forward momentum of the bass line, it lends itself well to audiences who have not been exposed to some of the timbre possibilities of the timpani.

Recitative

"Recitative" is one of the two original pieces, along with "Improvisation," which was published in 1960. These were often performed as a set because of how they complimented each other by showing two different possibilities on the drums. A recitative is considered a vocal style found principally in opera oratorios and cantatas which imitates the rhythm of ordinary speech. This style is seen when there needs to be narrative to convey important information in the story line or action. Many times the recitative would segue one song or scene to the next. It is useful to know the different types of recitatives and how they sounded before studying "Recitative." This provides a platform to perform the piece as close as possible to what the title expresses. Three types of recitative can be identified during the 17th century: *recitative arioso*, *recitative secco*, and *recitative accompagnato or stromentato*.

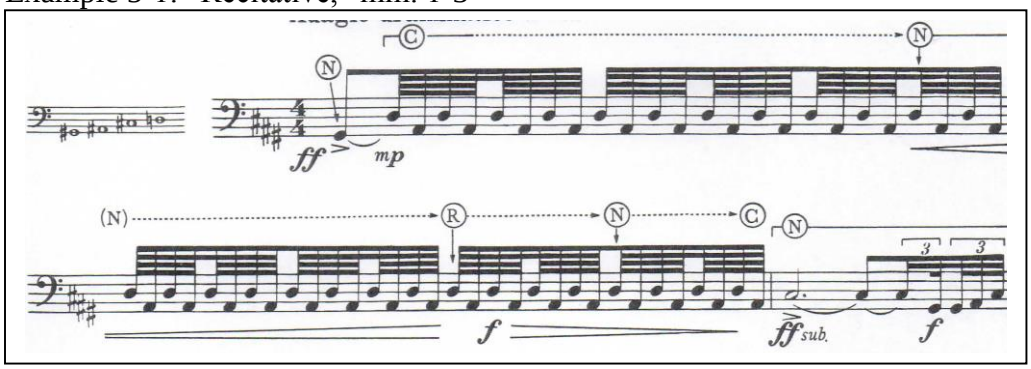
Recitative arioso grew into what is called the aria. This particular early style had a strong melodic contour and easy to distinguish phrases intended to convey the emotion of the text. The *recitative secco* came into play around the 18th century and was often accompanied by a keyboard or continuo. In contrast to the previous recitative this had elements just like its name "secco," or dry. Instead of having a flowing melodic character, this style was more static and some could describe it as closer to talking rather than singing. Finally the *recitative accompagnato or stromentato* was very similar to *recitative secco* but utilized orchestra accompaniment.

In "Recitative" Carter uses the four pitches G-sharp, A-sharp, C-sharp, and D, which are the second closest interval combination used in the "*Eight Pieces*," with "Moto Perpetuo" having the closet. The major 2nd (G-sharp to A-sharp), Perfect 4th (G-sharp to C-sharp) and minor 3rd

(A-sharp to C-sharp) would equal the 1st, 2nd, and 4th note in any major or minor scale. It is with the fourth pitch, D, that Carter interrupts the major scale and creates more dissonance. D which could have been the 5th scale degree had a D-sharp been written. It is only with the A-sharp, enharmonically spelled as B-flat, that a major 3rd would be see in combination with the D. The melodic line features a single large and lengthy accented note followed by numerous softer quicker notes. It is in the author of this discourse's opinion that these embody the semblance of utterances which could follow a dramatic event, possibly the whispers that occur after a startling occurrence, or even the sound of frantic scared voices trying to escape a dangerous area. These quicker notes could also serve as the tremolos which would be heard by the accompanying orchestra. However one decides to define this sound it is important to recognize the great contrast Carter creates with large dynamic changes and velocity of notes.

As seen in example 5-1, the fortissimo note could represent the chord which would be played by the harpsichord before the singers enter. It is also the author's opinion that the following notes represent the rapid speech that would then ensue as the performer delivers the narrative of the story. It might also represent the tremolos from the accompanying orchestra. There are also crescendos and decrescendos written in with these moving notes to showcase the rise and fall which would normally occur in an opera where the drama and storyline are being pushed forward. Carter also makes a more distinction in his later revision by using different areas on the drum head. The strong opening notes of the phrase will always be on the normal, most resonant part, of the head. These notes travel from center (C), normal (N) and rim (R) as well as in the opposite direction. ollowing speech like utterances will mostly have variations from the rim (R) and center (C) with some return to the normal (N) area. Because the high drama exercised in a recitative and aria is being emulated in "Recitative," this provides a

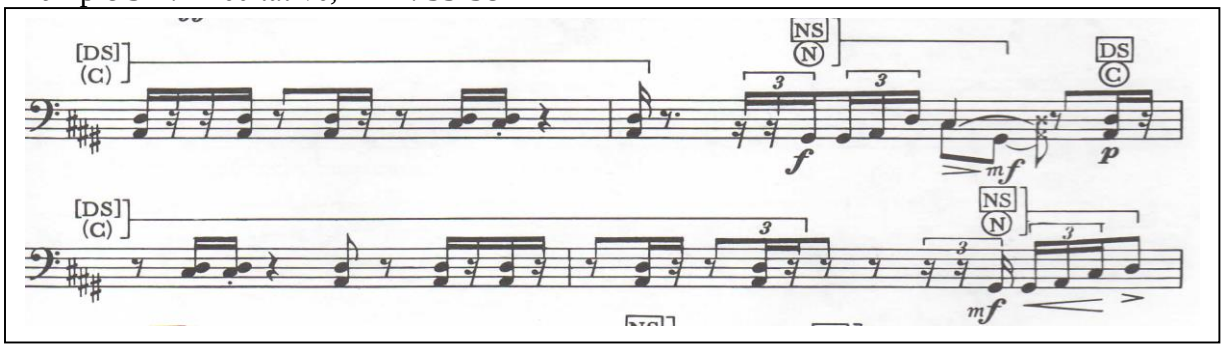
Example 5-1: “Recitative,” mm. 1-3



possible reason why Carter may have chosen the tempo of a quarter note equals 49. This is the second slowest piece in “*Eight Pieces*” with the directive Adagio drammatico, slow and dramatic.

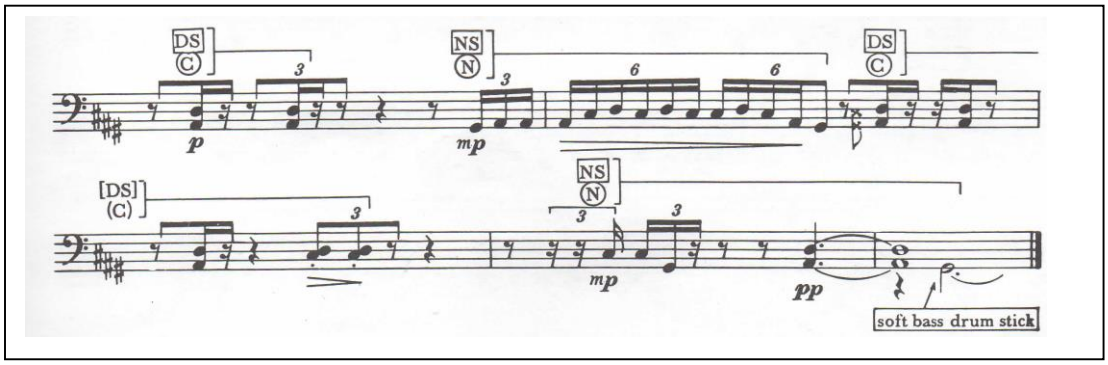
One way Carter provides difference occurs on the last page, example 5-2, where he incorporates the use of the dead stroke (DS). To create an even faster decay, these dead strokes are played in the center of the head, a place where there is already less resonance and overtones. At this point in the piece, more syncopated rhythms are implemented, which are easily distinguished due to the contrast of character and dryness of tone.

Example 5-2: “Recitative,” mm. 35-38



There is no marking for a specific mallet to perform the entire piece, but he does make a special notation for the last note. A soft bass drum mallet creates the last sound heard and is marked to "let ring." The use of a bass drum mallet provides a wider, less pointed attack. It is also notable that the bass drum note is preceded by another long double stop on the resonate part of the head. This is the only time in the piece two longer sustained notes appear in succession. This attack at pianissimo, in the normal playing area, and a return to the G-sharp first heard at the beginning of the work also provide the largest contrast to what has been heard from all the preceding measures.

Example 5-3: "Recitative" mm. 45-49



Canaries

"Canaries" was originally the last work in *Six Pieces for Kettledrums* before it was moved to the seventh piece in *Eight Pieces*. The name is a reference to a Renaissance dance imported from the "wild men" of the Canary Islands. This work is a study in 6/8 rhythms, where the dactylic rhythm of the old dance serves as a contrast to the even pulses of many of Carter's

Letter Names	Interval	Enharmonic Spelling	Interval
E to B	Perfect Fifth		
E to C-sharp	Major Sixth	E to D-flat	Diminished Seventh
E to F	Minor Second		
B to C-sharp	Major Second	B to D-flat	Diminished Third
B to F	Diminished Fifth		
B to E	Perfect Fourth		
C-sharp to F	Diminished Fourth	D-flat to F	Major Third
C-sharp to E	Minor Third	D-flat to E	Augmented Second
C-sharp to B	Minor Seventh	D-flat to B	Augmented Sixth
F to E	Major Seventh		
F to B	Augmented Fourth	F to C-flat	Diminished Fifth
F to C-sharp	Augmented Fifth	F to D-flat	Minor Sixth

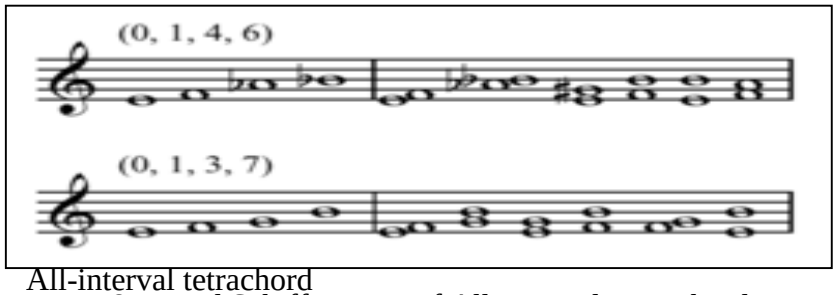
Figure 17: Summary of Intervallic Relationships

works. At the same time, a polyrhythmic pattern is introduced that is exploited in numerous ways.[17]

[17] David Schiff. *The Music of Elliott Carter*. (New York: Cornell University Press, 1983): 134.

The basic structure of the rhythm is a cross-pulse and at almost any two points, pulse speeds are articulated; the proportions of the pulses rarely coincide. The tuning of the piece (E, B, C-sharp, and F) uses the all-interval tetrachord now in wide spacing, which serves to define harmonic motion even with four changing pitches. Figure 17, on page 41, shows all the intervals achieved throughout the piece in regular and enharmonic spelling, providing the majority of the intervals available in the chromatic scale.

. The idea of the all-interval tetrachord was expanded on by John Link where he also defines the all-interval chord and all interval hexachord as popular sources Carter used to write his music. The all-interval chord is sometimes referred to as the 'Link" chord.



All-interval tetrachord

Figure 18: David Schiff Listing of All-Interval Tetrachords

Because "Canaries" was used by Carter in his lecture "Music and the Time Screen" and several music theory books as an example for metrical modulation, this piece has the most analyzed portions in print by multiple sources. Use of different playing areas on the timpani head are utilized in the later editions of the work, such as Center (playing in the center of head which creates a deader sounds), Normal (playing a couple inches from edge for full resonance), and Rim (playing on edge to engage the sound of the bowl), to enhance the rhythmic and metric

features of the piece. These designations were added to clarify the pitches and correct the muddiness Carter was originally displeased with from his composition of the piece in the 1950's.

The first twenty-five measures of Canaries are commonly used as the example in many lectures for metric modulation. Figure 19 shows an autograph of the first page of Canaries before the revisions. This copy does not have the designations for mallet placement and also shows the original title and movement order before the changes (Canary to Jig to Canaries, Movement VI to Movement VIII).

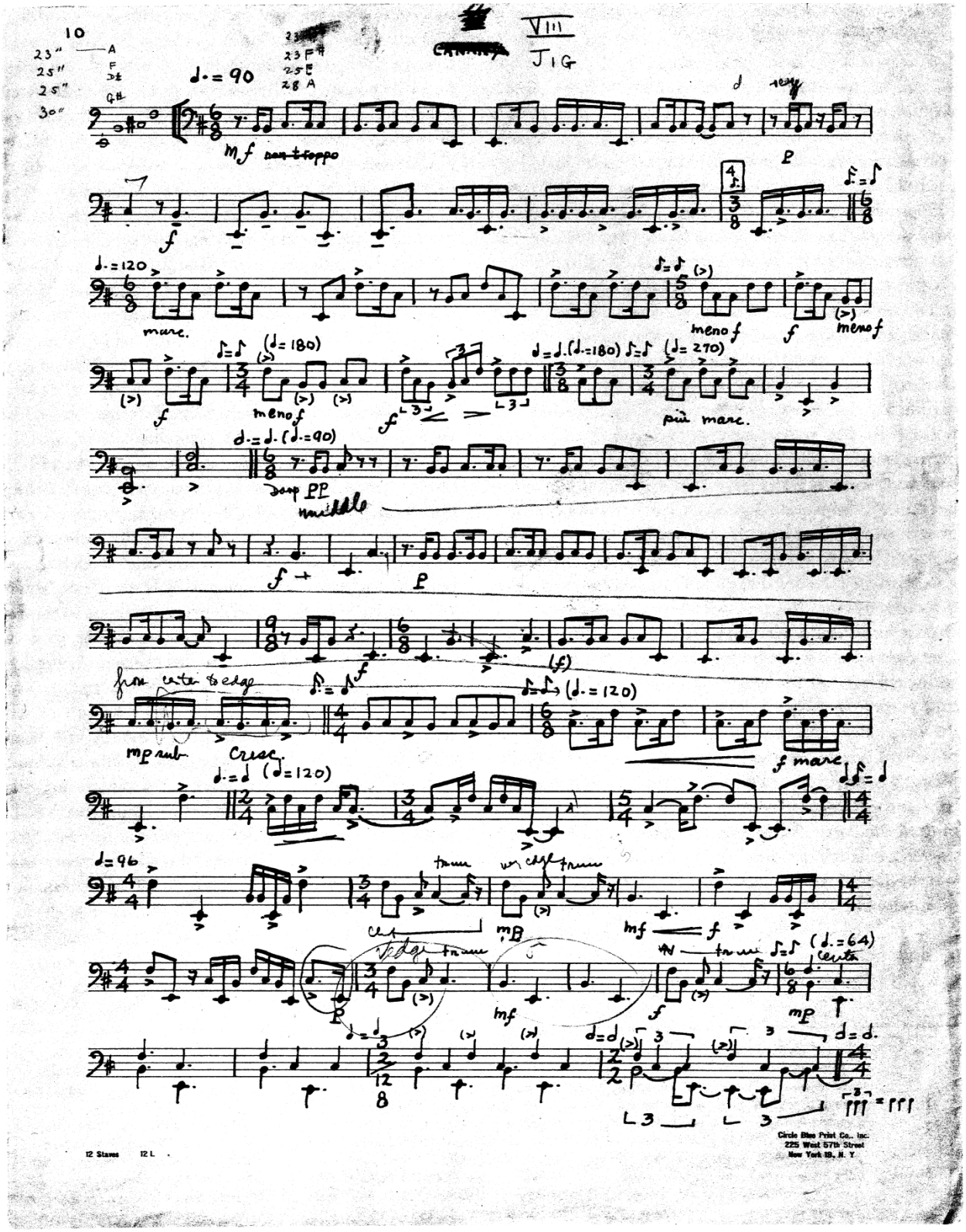
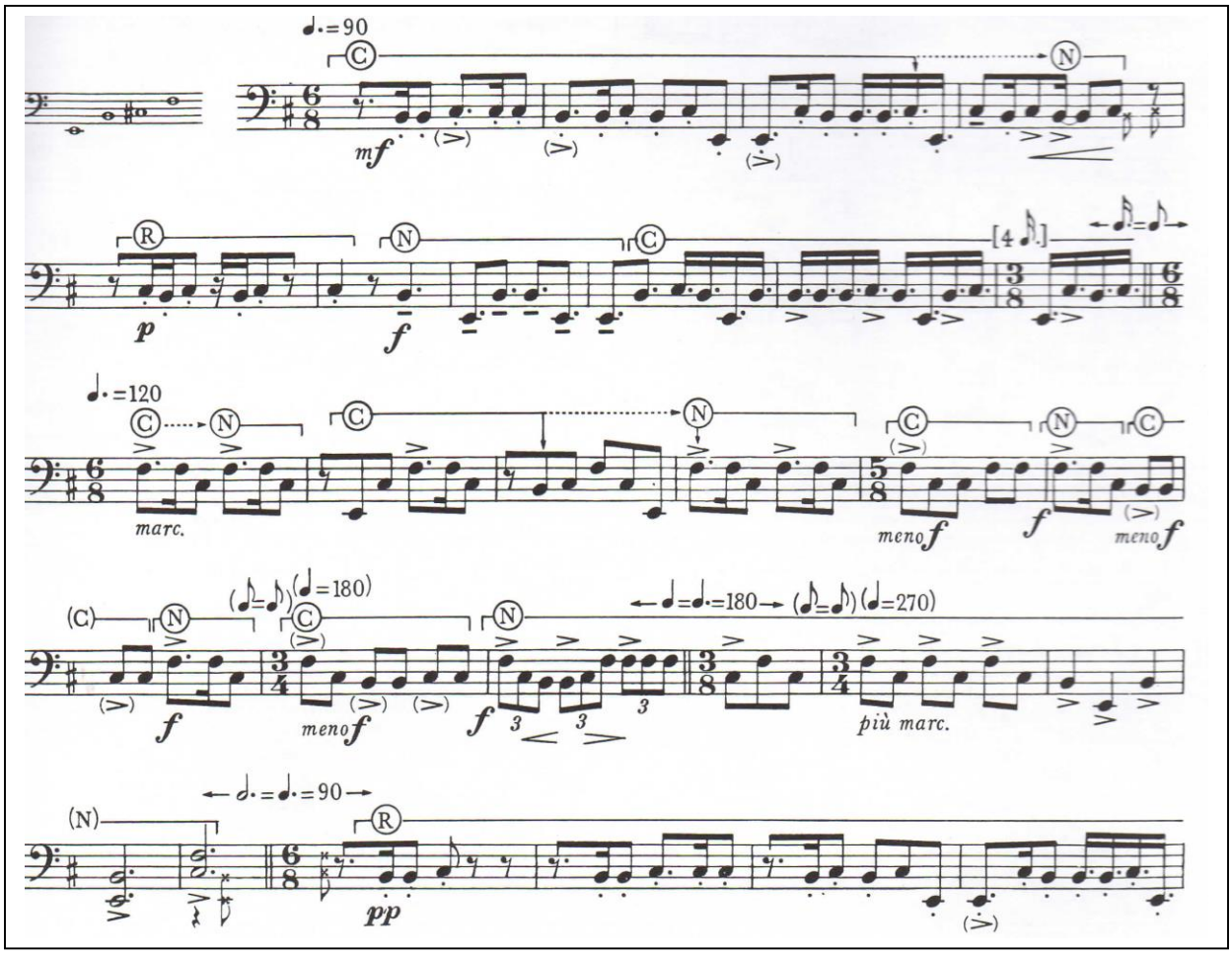


Figure 19: Elliott Carter, “Canaries,” Autograph Page 1

Carter establishes the opening tempo which must be followed to ensure each subsequent figure will not be played too fast. The first modulation, Example 6-1, is set up starting in measure eight with the use of four dotted sixteenth notes played in succession. These notes are accented in groups of three. By measure ten, the time signature of 3/8 is seen with one last four note figure; the last three dotted sixteenths equal the first three eighth notes in measure eleven.

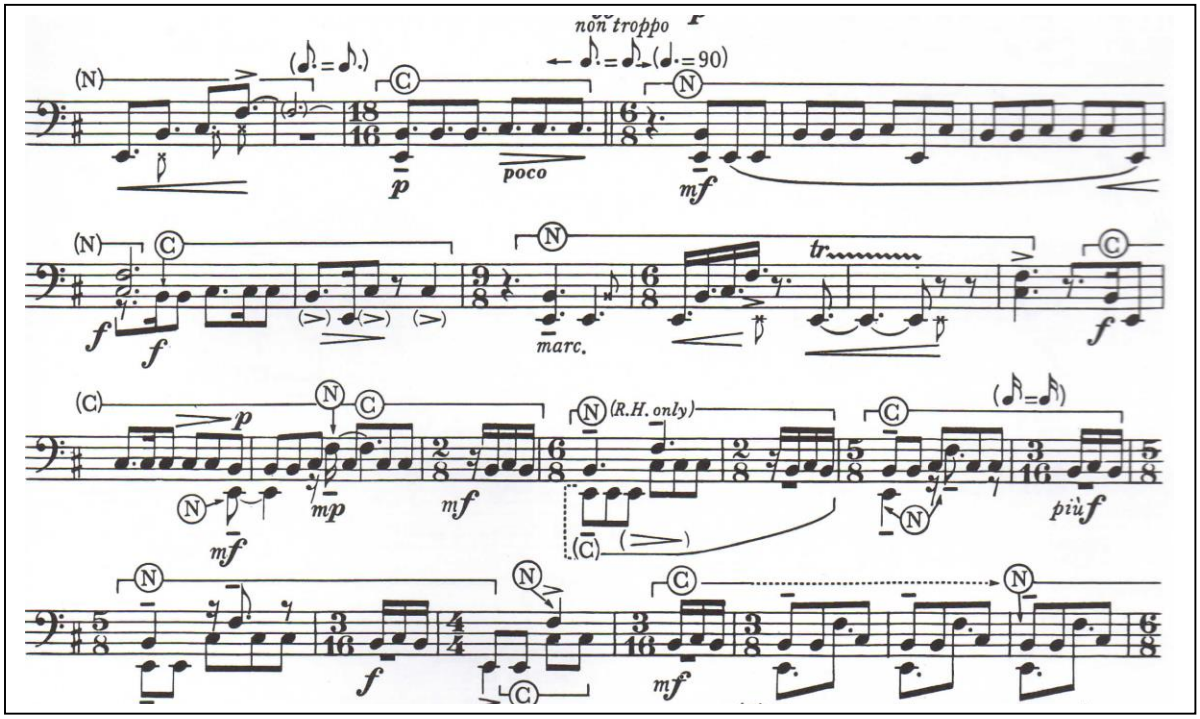
Example 6-1: "Canaries," mm. 1-28



This duple to triple pulse change is only the first example in this movement of a smooth transition, and an example of the simultaneity defined earlier in Jonathan Bernard's article "The Evolution of Carter's Rhythm Practice." By the time the listener realizes there is a possible change in meter or tempo, Carter initiates another modulation. By measure fifteen an eighth note to eighth note equivalency occurs. This is prepared in measure fourteen by accents on the set of three eighth notes.

In the last section of the piece, marked *non troppo*, Carter once again provides a juxtaposition of melody versus accompaniment. What makes this particular passage stand out and challenge the performer is the necessity for the melody to sing above the inner notes while not emphasizing any sticking or placements. The pitches E, B and F-sharp can be considered the melodic notes at specific points due to the notation. Each time the F-sharp is seen in measures 117-130, Figure 6-2, it is to be placed on the normal (N) part of the head, while the pitches E and B also alternate entrances in the normal playing spot. Any pitches outside of this pattern are played in the center. The contrasting timbres assist the normal (N) pitches in establishing a stronger presence for the listener. A type of diminution is set up with the entrance of each normal (N) pitch. This motion begins in measure 117 where the pitch E enters on the sixth eighth note. The next melody note, pitch F, does not sound until seven sixteenth notes later. In measure 120, the the two melody notes B and F are separated by five sixteenth notes resulting in the F entering on the sixth sixteenth note. In measure 122 and 124, the melody notes E and F are separated by four sixteenth notes and the entrance is on the fifth sixteenth note. Finally, the E and F enter in measure 126, the distance of three sixteenth notes remains the same, as with the figures found in measures 128-130.

Example 6-2: "Canaries," mm. 105-130



A full summary of all the modulations with ratios and note equivalencies in Canaries is given in Figure 20, followed by a chart summarizing the aforementioned examples in Figure 21. Canaries, through many master classes and lectures in the United States, continues to show Carter's tendency toward what can be called "process – how one moves from one metre to another, how one segments that harmonic field into those registers, and how one makes this grouping coincide with another."[18]

[18] MacDonald, Malcolm. Liner notes to Elliott Carter, *Eight Pieces for Four Timpani*. Performed by Daniel Druckman. Bridge Records, 2001. CD

Measure	Pulse	Tempo	Ratio	Note Value
1	Dotted Quarter Note = 90	Quarter Note = 135	2:3	Dotted Quarter Note
10-11	Dotted Sixteenth Note = Eighth Note Dotted Quarter Note = 120	Quarter Note = 180	2:3 1:1	3 Dotted Sixteenth Notes = 3 Eighth Notes
18	Eighth Note = Eighth Note	Quarter Note = 180	1:1	Eighth Note
20-21	Quarter Note = Dotted Quarter Note = 180 Eighth Note = Eighth Note	Quarter Note = 270	3:2 1:1	Quarter Note, Dotted Quarter Note Eighth Note = Eighth Note
24-25	Dotted Half Note = Dotted Quarter Note = 90	Dotted Quarter Note = 90 Quarter Note = 135	1:2	Dotted Half Note Dotted Quarter Note
42-44	Dotted Sixteenth Note = Eighth Note Eighth Note = Eighth Note	Dotted Quarter Note = 120 Quarter Note = 180	5:2 1:1	Dotted Sixteenth Note, Eighth Note Eighth Note, Eighth Note
46-47	Dotted Quarter Note = Quarter Note = 120	Quarter = 120	2:3	Dotted Quarter Note Quarter Note
49-50	Quarter Note Tied to Sixteenth Note = Quarter Note = 96	Quarter Note = 96	4:5	Quarter Note Tied to Sixteenth Note Quarter Note
59-60	Eighth Note = Eighth Note Dotted Quarter Note = 64	Dotted Quarter Note = 64 Quarter Note = 96	1:1	Eighth Note, Eighth Note
64-65	3 Quarter Note Triplets = 3 Quarter Notes Half Note = Dotted Half Note	Half Note = 72 Quarter Note = 144	2:3	Half Note, Dotted Half Note
66-67	3 Quarter Note Triplets = 3 Quarter Notes Half Note = Dotted Half Note = 72	Dotted Half Note = 72, Half Note = 108, Quarter Note = 216	2:3	Half Note, Dotted Half Note
72-73	Half Note = Dotted Half Note = 108	Dotted Half Note = 108	2:3	Half Note, Dotted Half Note
76-78	Quarter Note = Eighth Note, Dotted Quarter Note = 108 Eighth Note = Eighth Note, Quarter Note = 162	Dotted Quarter Note = 108, Quarter Note = 162	2:1	Quarter Note, Eighth Note
90-91, 95	Half Note = Quarter Note Tied to Dotted Quarter Note	Half Note = 81 Dotted Quarter Note = 135	4:5	Half Note, Quarter Note Tied to Dotted Quarter Note
107-109	Dotted Eighth Note = Dotted Eighth Note, Dotted Quarter Note = 90 Dotted Eighth Note = Eighth Note	Dotted Eighth Note = 90	1:1 3:2	Dotted Eighth Note, Dotted Eighth Note Dotted Eighth Note, Eighth Note
123-124	Sixteenth Note = Sixteenth Note	Dotted Quarter Note = 90 Quarter Note = 135	1:1	Sixteenth Note, Sixteenth Note

Figure 20: Summary of Modulations

Measure number	Pitch 1 entrance	Distance between	Pitch 2 entrance
117-118	E on last eighth note of 117	6 sixteenth notes	F on seventh sixteenth note
120	B on beat 1	5 sixteenth notes	F on sixth sixteenth note
122	E on beat 1	4 sixteenth notes	F on fifth sixteenth note
124	B on beat 1	4 sixteenth notes	F on fifth sixteenth note
126	E on beat 1	3 sixteenth notes	F on fourth sixteenth note
128-130	E on beat 1	3 sixteenth notes	F on fourth sixteenth note

Figure 21. Summary of Entrance Reductions in Canaries mm. 117-130

1960 Writings for Pedal Timpani

Adagio

Carter gave a lecture on February 13, 1957 at the University of California in Los Angeles. This lecture featured the elements of sound and silence. He stated:

> From a musician's point of view, music is a succession of special kinds of sounds projected on a background of silence during a period of time. These sounds, these silences, and this time are thought of in the composer's mind and transmitted to the listener's mind through the physical sound world. The ear can perceive very minute graduations of pitch, loudness and softness, and diversions of time; it can assemble them in groups and dissociate them according to the way the composer draws attention to them. In this silence there seems to be a limit to the amount of crowding the ear can sort out clearly into separate pitches before it begins to group then into single effects.[19]

It is from this idea that we can appreciate the last two pieces which Carter composed to expand *Six Pieces for Kettledrum* to the revised *Eight Pieces for Timpani*. In 1965, Carter was at a session in New York featuring the performance of what was then *Six Pieces for Kettledrums*. Jan Williams performed these six pieces over two days and was then approached by Carter with possible revisions. At the time only "Recitative" and "Improvisation" were in print, and the edition would be soon expiring. This was an opportunity to expand the tonal qualities of the *Six Pieces*. After spending time with Williams and discerning different sounds created by playing in different spots on the head, Carter choose three areas for striking: Normal (N), Center (C), and Rim (R). These are now standard in the 1966 revised copy of the pieces. By using different

[19] Meyer, Felix and Anne C. Shreffler. *Elliott Carter: A Centennial Portrait in Letters and Documents*. (Woodbridge: The Boydell Press, 2008): 132-133.

portions of the head, Carter was able to stretch the gamut of sound the listener could hear in each piece. To add even more color to the pieces, Williams helped him decide which mallets would be used in order for each piece to develop a more independent character of its own.

One of the reasons Carter was displeased with his first writings on the timpani was the muddy and unclear sound due to lack of clarity between pitches. As in all of his pieces, Carter was particular about the set of pitches he used. Most important with the timpani were the intervals between the drums and not the actual notes themselves. He was particular about the intervals because they were used to establish the periodicity and tonal rhythm. As Charles Rosen explains:

> The interval of a sixth, for example, has a specific kind of sonority and, in Carter, its own rhythm that brings this out. As Carter uses them in the Piano Concerto, sixths are generally given a rather heavy sound and a slow periodicity, with an almost Brahmsian characteristic. The interval of a second, by contrast, has a much lighter sound and faster period, and this gives a scherzando quality to the sections which it dominates.[20]

Carter first used purposeful compositional restriction in *Eight Etudes and a Fantasy*. In that piece, he limited the range and the textures used with a woodwind quartet. Specific limits were established for the amount of measures, the amount of notes, type of note values used, and which instrumental techniques used in each etude. After this piece, he went a step further with the *Six Pieces for Kettledrums* utilizing only 4 timpani with fixed pitches. Each piece had four pitches which employed specific interval structures.

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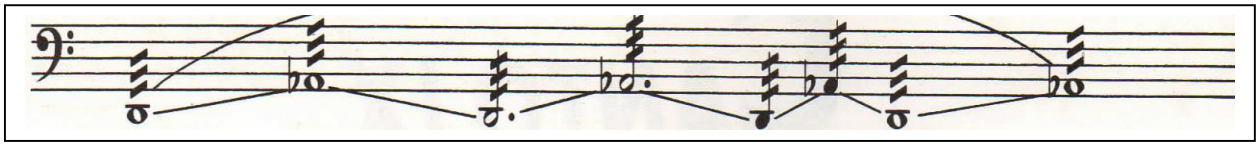
[20] Rosen, Charles. *Elliot Carter: The Musical Languages of Elliot Carter*. (Washington: Library of Congress Music Division, 1984): 13.

After several hours with Williams, Carter had already experimented with using different striking zones of the timpani head, multiple stick types, and the idea of a separate sound in each hand for contrast. Carter posed the question of harmonics and their possibility on the instrument. Out of this question was born the piece "Adagio." This piece, by measure and note count, is the shortest, but also the slowest, of the set, with a metronome marking of quarter note equals 36. The tempo adagio on a metronome normally ranges from 55-68 beats per minute; however, Carter chose an even slower tempo to allow the listener to have time to experience the many chromatic notes. If the tempo was any faster, the moving notes could become a blur not only for the listener, but for the performer as well.

The movement begins with the notation that only the third timpani (typically a 26" or 25" drum) needs to be tuned before the piece begins. This proves to be helpful if performed after another piece by reducing one of the common problems with timpani: dead air while the timpanist tunes all four timpani! The highest note of the first system to the downbeat of the second system covers the range of a minor tenth. It is important to pay special attention to the size of the note heads which provide the distinction between notes that are struck and notes that sound without being rearticulated. This resulting gliding motion is not to be mistaken as a standard glissando. On timpani, a glissando normally has a notated stating note (Example 7.1) and ending note, but does not show the notes in-between.

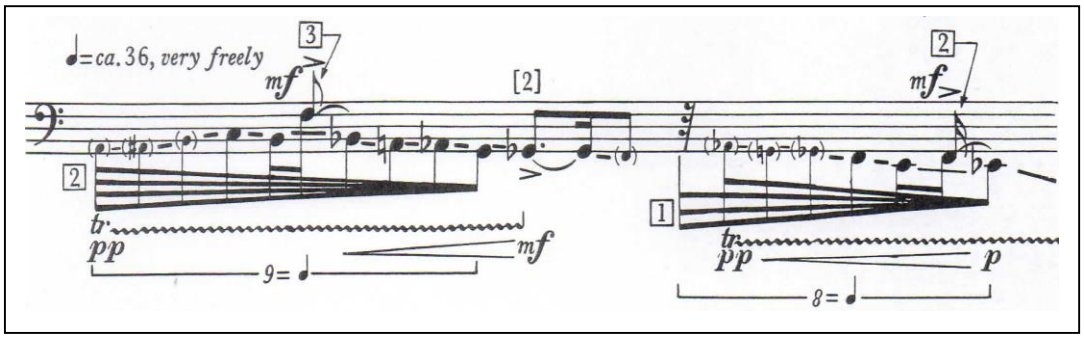
Example 7-1: Samuel Adler, *Canto IX*, Movement I, m. 1



This type of notation signifies movement between two distinct pitches over a certain period of time, but not necessarily how long one should rest on one pitch.

In the first phrase of "Adagio," seen in example 7-2, Carter takes time to notate each pitch that the drum should move over, showing his meticulous use of pitch as tonal rhythm. Also the feathered beam notation provides a graphic depiction of the decelerando that should occur as the performer moves from one pitch to the next.

Example 7-2: "Adagio," system 1

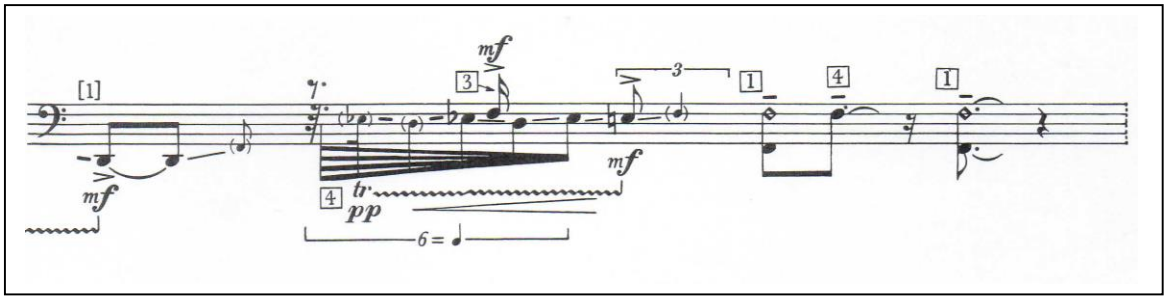


With this type of notation, the performer must make sure to play each chromatic note in a fashion to distinguish each pitch. This specifically means when the first A moves to the A-sharp they must be in completely in tune to avoid obscuring the tonal line. When a note returns, such as the first A pitch versus the eighth A pitch, they should also match each other so that a tonal pyramid can be complete.

While this piece does not use notation for different areas on the drum, it is specific to which drum should be used. Numbers are written above the staff to show which timpani should be used for specific notes. This numbering from 1 to 4 goes by the lowest to the highest drum, which becomes especially important to aid two other features of the piece: harmonics and

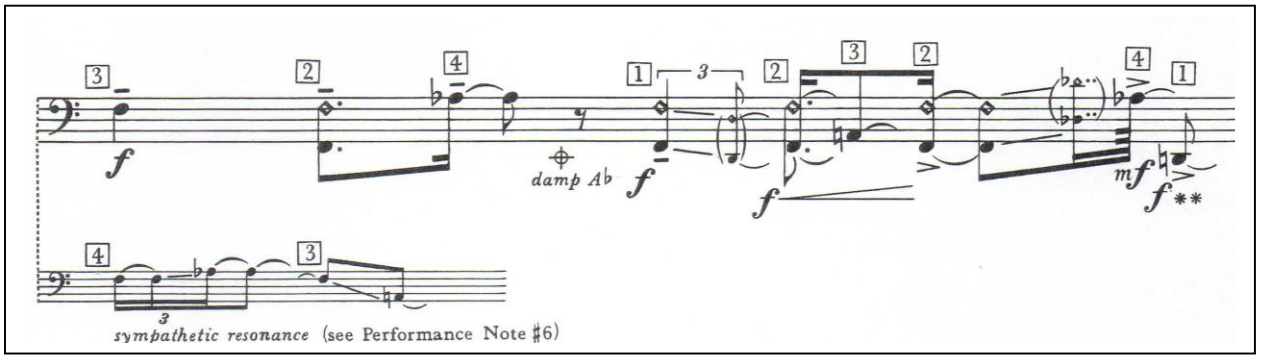
sympathetic resonance. Line two shows the first harmonic, the diamond shaped note head, which corresponds to a high F on drum 4, being produced using the low F on drum 1 (Example 7.3). This can be achieved "by pressing one or two fingers on the head of the drum half-way between the rim and center, and striking near the rim."[21]

Example 7-3: "Adagio," system 2



On line three one gets to see sympathetic resonance, which is notated on the smaller line below the main theme, (Example 7-4).

Example 7-4: "Adagio," system 3



[21] Carter, Elliott. *Eight Pieces for Timpani (one player)*. New York: Associated Music Publishers, Inc., 1995.

Here it is especially important to pay attention to the drum numberings to know where the resonance is to be heard. The pitch F articulated on drum 3 will simultaneously be heard sympathetically on drum 4 and glide up to the A-flat as shown on incomplete line of Example 7.4 above. This is a very difficult action to achieve due to factors such as decay and volume for each drum, and the smaller notes could be covered up by other freshly struck notes. For this reason, in Carter's later edition of "Adagio," there is a special performance guide indicating the performer can strike the drum softly on the small notes to activate the pitch and ensure the glissando audible. This particular piece is one of the least performed of the series simply because many people cannot accurately achieve the harmonics and resonance required. Different drum types (such as Ludwig, Yamaha, etc.), pedal styles (Dresden, hydraulic, etc.), heads, and depths of bowls can all be factors that affect these elements, and experimentation is recommended. When Williams worked on this piece with Carter, he used Ludwig Professional Timpani with plastic heads. Due to the input by Williams, Carter chose to dedicate this movement, as well as "Canto," to Jan Williams.

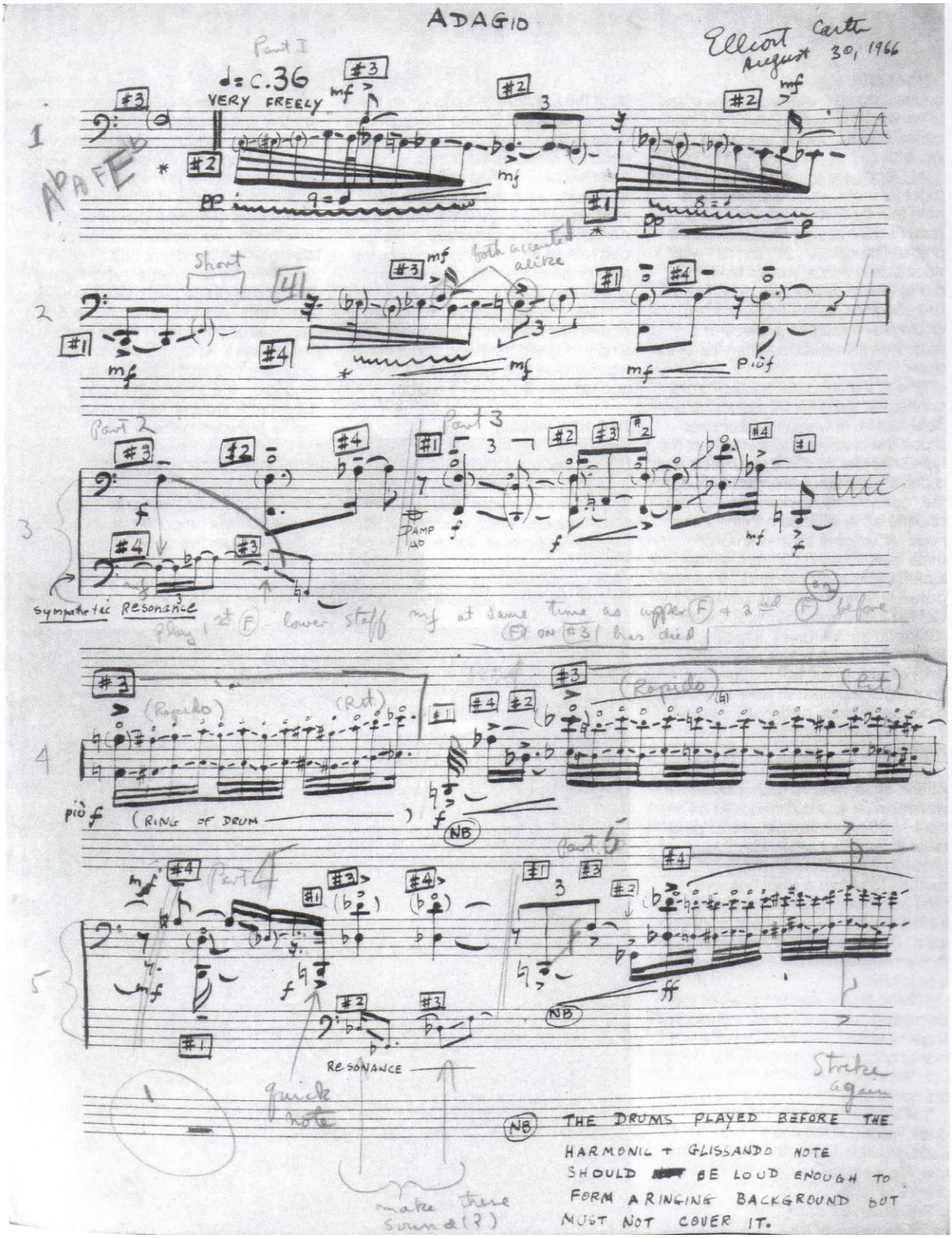


Figure 22. Elliott Carter, "Adagio," Autograph pg. 1

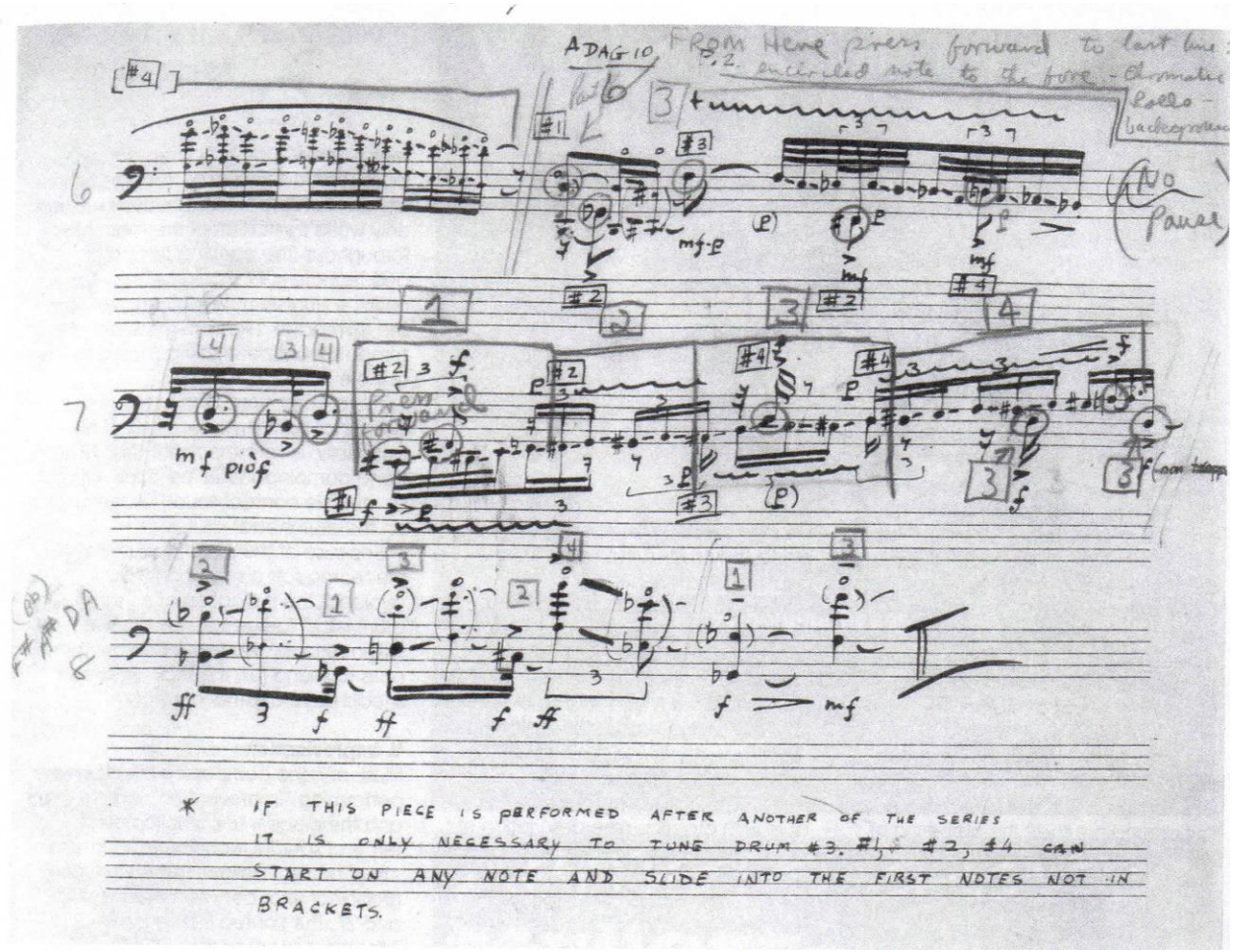


Figure 23. Elliott Carter, "Adagio," Autograph pg. 2

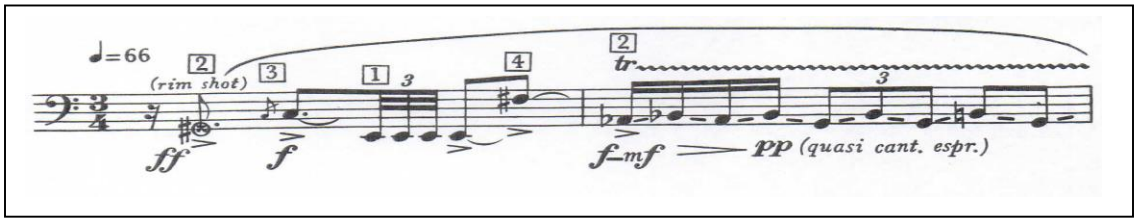
Canto

"Canto" was also inspired by the sessions Jan Williams spent with Carter to make revisions to the *Six Pieces for Kettledrum*. Unlike "Adagio," all four drums must be tuned before the piece has begins. The movement is the only one to suggest the use of snare drum sticks and begins with a rim shot. Carter liked the sound of rolling on the drums with snare drum sticks but he questioned the articulation he believed would be caused by the bead of the stick which he

described as "patter." After Williams provided a recording using both hard felt timpani mallets and snare drum sticks, they both decided the snare drum sticks would be the best choice.[22]

Canto can be defined as a "song; melody; soprano; or plain song."[23] It can also be related to the Latin term *cantus*. In this piece, glissando is used along with continued rolls. More connected rolls are found in "Canto" than any other piece in the set. In Example 8-1, each pitch must be played in a specified time while also keeping a steady roll with both hands. One of

Example 8-1: "Canto," mm. 1-2



the reasons this may prove challenging is because the left and right foot might not be equally skilled in maneuvering the pedals. This can also be affected by the type of pedal system the performer chooses to play on such as a Dresden style or Ludwig style pedal. The pedal system used would be left up to the performer and/or which system is available for performance. The first glissando could be played by the left or right foot but the upper body position may dictate which foot has to be used. If the weaker foot needs to be used, a lot of time may have to be dedicated to endurance and muscle development in the foot, along with muscle memory. On each drum specific intervals require different distances for the pedal to reach them. For example,

[22] Williams, Jan. "Elliott Carter's 'Eight Pieces for Timpani' – The 1966 Revisions. *Percussive Notes* 38, no. 6 (December 2000): 11-12.

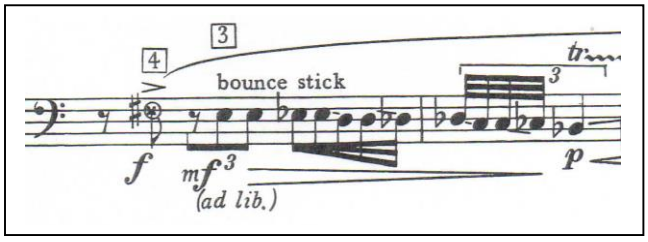
[23] Randel, Don M, ed. *Harvard Concise Dictionary of Music.* (Cambridge: The Belknap Press of Harvard University Press, 1978): 81.

the major second shown in measure two may only require moving the pedal an eighth of an inch on the second drum while moving to a drum of larger diameter may require a fourth to half an inch. In the instance where there is movement from G to B-flat followed by G to B natural, the player must be careful not to go past the bottom note while the distance upward increases.

With the possibility to place figures on more than one specific timpani, Carter provides a numbering system to show where each note should be played. The timpani are numbered from lowest to highest, meaning the largest drum would be number one and the smallest drum would be number four. Each number appears in squares above the appropriate note(s) and the performer will remain on the same timpani until another number appears indicating movement to a different drum. While for some this may seem tricky at first, this makes it easier to know where each pitch should be played, removing the need for performer choice. With so many tuning changes across all the drums, the performer can lose track of which note has been tuned on which timpani. The numbering system keeps the player in the right place at the right time. The numbering also keeps the pitches in their best sounding range since the ranges of the four timpani overlap. A note such as A-flat can be achieved on the lowest drum, around thirty-two inches in diameter, and the next smallest drum, around twenty-nine inches. When this A-flat is played on the lowest drum, the pedal will have to be pushed forward to the top of the range. Because there is so much tension on the head to achieve this note, the pitch will decay faster, have less resonance, and, in some cases, could sound choked. In comparison, this same A-flat on the next smallest drum will result from the pedal being slightly below the middle of the pedal range. This will provide more resonance and a longer decay. The added resonance and decay proves to be very important in a piece such as “Canto” where the tempo is slow, quarter note equals 66, and pitches should remain connected.

In addition to the stick choice, multiple tuning, and drum numbering, there is one more element which is unique to this piece. Carter makes a notation to bounce the stick in three different measures (See Example 83 for mm. 10-11) . When rolling on timpani, one will use the single stroke which means motions will move from hand to hand with no doubled notes. Bouncing the sticks is normally associated with a double, triple, or multiple bounce roll, a technique normally used on snare drum and other membrane- based percussion instruments. Deciding snare drum sticks produced the desired sounds may have led to the incorporation of bouncing and rimshot strokes more common in snare drum performance. Additionally, these stokes also provide two different timbres which have not been heard before, in "*Eight Pieces*."

Example 8-2: "Canto," mm. 10-11

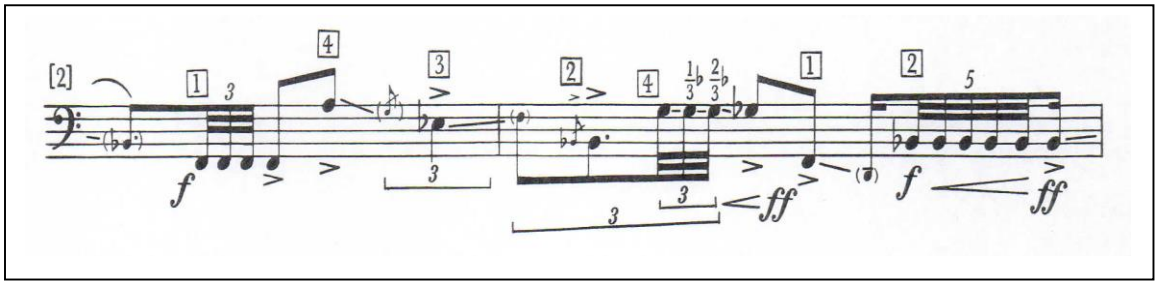


On in the second page of the autograph, Figure 25, Carter specified what he means by bouncing he sticks. "Bouncing Stick: (snare drum sticks or back of timp sticks) – Hold stick loosely between thumb and 2nd finger and let drop very close to rim of drum. The length of time the stick bounces can be lengthened slightly assisting the bounce with finger or forearm movement."[24]

[24] Williams, Jan. "Elliott Carter's 'Eight Pieces for Timpani' – The 1966 Revisions. *Percussive Notes* 38, no. 6 (December 2000): 15-16.

The last thing Carter does that is not found in any other movement is a specific notation of how much individual notes should be moved when changing from one pitch to the next. In Example 8-3, the triplet shows how the descent from G to G-flat should accomplished. The first note is the sounding G, the second G is to be a third lower but not G-flat yet. The third G is to be two thirds lower than the first G but still not all the way to G-flat. Finally on beat three, the G-flat arrives. Having a single note broken into three parts requires precision because the distance of a half step on the highest drum is a very short distance. This is just another example of how Carter challenges the player while also writing concepts which had not previously been utilized on timpani. The entire movement is found in Figure 24 and 25 on pages 62 and 63.

Example 8-3: “Canto,” mm. 32



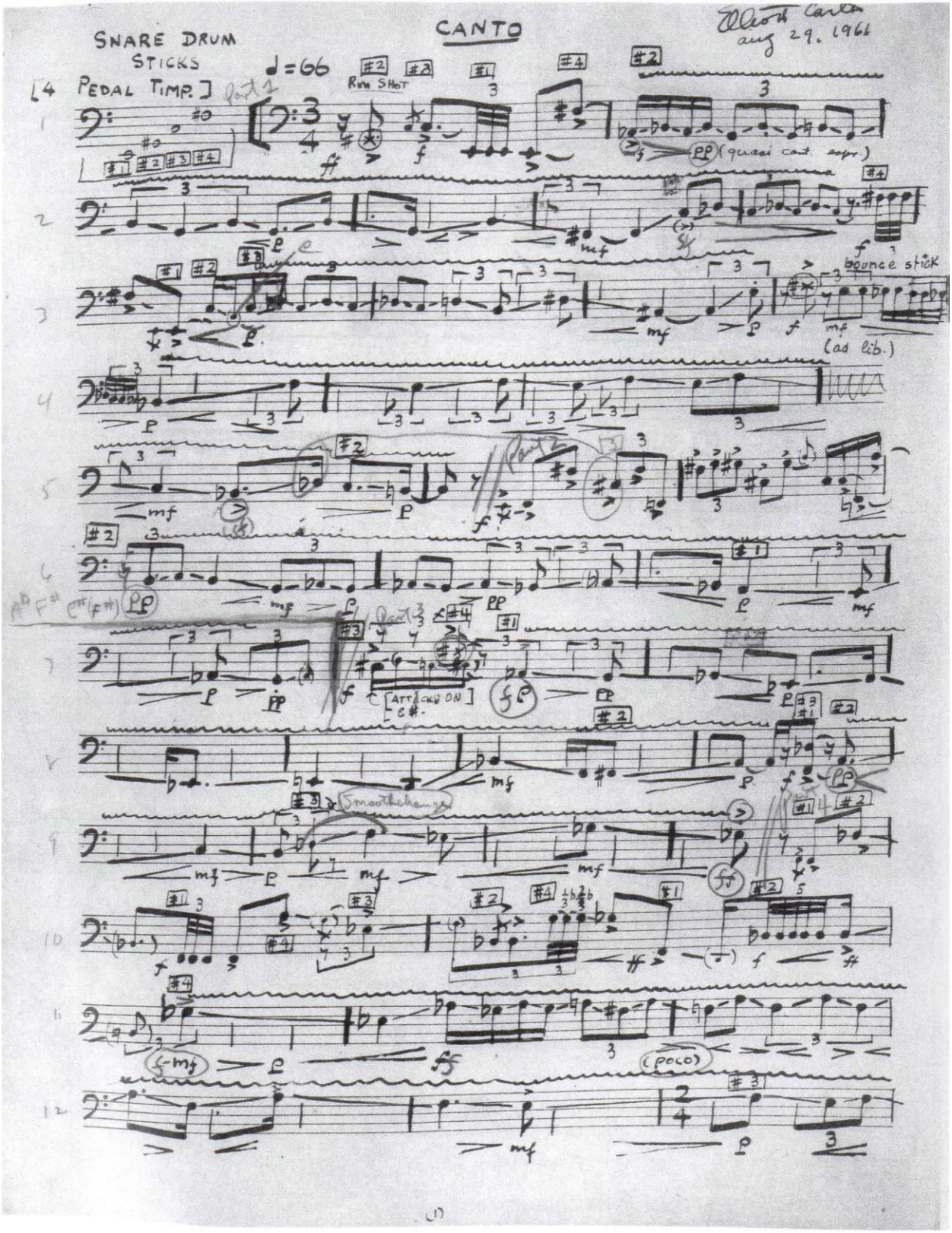


Figure 24. Elliott Carter, "Canto," autograph page 1

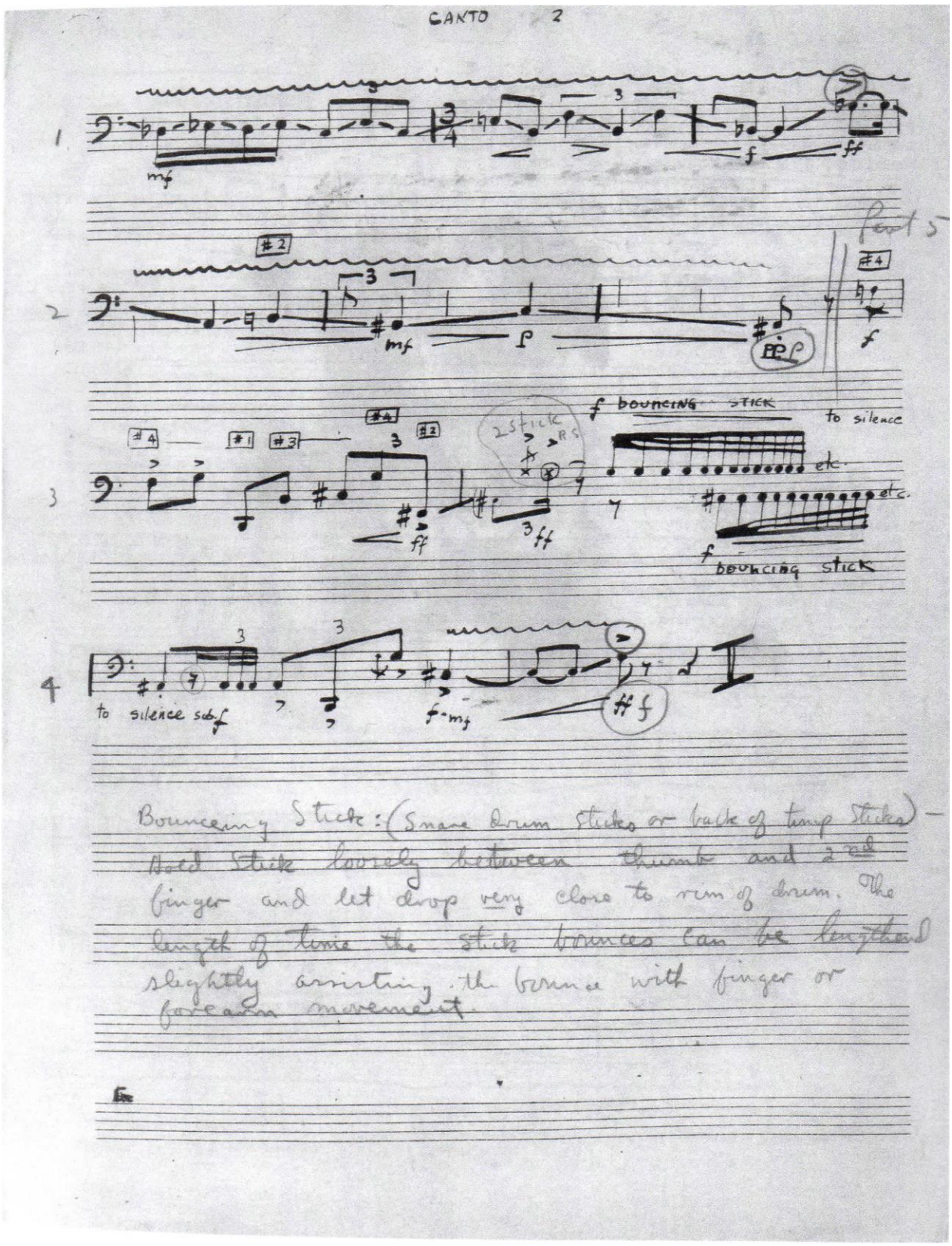


Figure 25. Elliott Carter, "Canto," Autograph page 2

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Appendix

Lecture Script

Good evening. The instruments before you are known as timpani by some or kettledrums by others, however if we were able to travel back in time we would find these drums were called nakers. We'd also find that these instruments were much smaller and did not have all the mechanisms that are common in the 21st century. Originally these nakers filled the purpose of communication and military signals in the thirteenth through the sixteenth century (slide #2). By design the nakers could not immediately change pitch and had to be carried on the back of another person or mounted on a horse. Since the thirteenth century timpani have experienced significant physical changes such as expanding the circumference of the head and depth of the bowl (slide #3); adding rods (slide #4), chains (slide #5), handles (slide #6), pedals for tuning (slide #7-9); and utilizing different drum head material such as calfskin and plastic.

Because timpani developed while existing in the role of an accompaniment instrument (slide #10), it is often presented as a supporting instrument such as in an orchestra or a band. However, there was a composer who saw the potential of the instrument to shine as a stand-alone solo instrument. This man was named Elliott Carter (slide #11). In the 1950s, he wrote two compositional study pieces for an orchestration course at Columbia University which were *Eight Etudes and a Fantasy* and *Eight Pieces for Four Timpani*. *Eight Pieces* actually started as a set of six pieces and were not meant to be published. This set was called *Six Pieces for Kettledrums* and he did eventually publish two of the pieces while the manuscripts for the other pieces were passed around in the percussion community (slide #12). *Eight Pieces*, which was fully published

in 1968, is a groundbreaking set of compositions for timpani. Prior to *Eight Pieces* there were no other compositions that showcased as much variety in the capacity of timpani. It was also after this piece that more composers began to write for solo timpani. Today we will be looking at what made these pieces so pivotal in the life of solo timpani repertoire.

Everything we will discuss today falls into two categories which are rhythm and timbre. In relation to rhythm Carter became known for what many call "metric modulation" or "tempo modulation" which is a technique where a rhythmic pattern is superimposed on another and eventually becomes the new pulse in the music. It is interesting to know that Carter did not purposely design "metric" or "tempo" modulation when he wrote this compositional set. One of the clearest examples of this idea of modulation appears in "Improvisation" which is the first of the pieces in the original *Six Pieces for Kettledrums* (slide # 13). One way Carter established the improvised style is by the large amount of syncopation from beginning to end. This syncopation lends itself to what one would expect in a jazz composition when soloists are allowed to adlib.

Here is an excerpt from "Improvisation. (Performance of measure# 12-30)

From this example you should notice that timpani have the ability to carry a sound for a matter of seconds before it decays.

(Strike each timpani to show length of sound).

When playing multiple drums, the pitches would begin to blend together.

(Play each drum in overlapping pattern to show blended sound)

This is perfect if you were trying to achieve particular dyads or triads. However this could cause a problem if you wanted to have a single melody line. At the top of the page, you will see a special stroke called the dead stroke, denoted by DS, which is used to hasten the decay. A dead

stroke is executed by leaving the mallet on the playing surface upon striking the surface. This is how a dead stroke sounds.

(Demonstrate dead stroke on one drum)

This modulation example is one of the clearest ones notated in *Eight Pieces*. For contrast I would like to show you a more intricate modulation in the piece called "Canaries" (slide #14). The first page of Canaries was commonly used as an example in many lectures for metric modulation by Carter. Here you can see an autograph of the original first page of Canaries before the revisions. This autograph does not have the designations of mallet placement and also shows the original title and movement order before the changes.

On this updated version (slide #15), it is clearer to see how Carter has used smaller note values to create forward motion. Specifically at the end of the second line, Carter sets up a modulation by using accents on the dotted sixteenth notes. The accent falls on every third note and the set of three becomes the pulse for the following line where you see a tempo marking of 120 versus the tempo of 90 which the piece began with. A question that could be rendered is how did Carter get from a dotted quarter equaling 90 followed by increases of tempo through 120, 180, 270 and still return the theme to the original tempo. With this idea in mind if you were to leave the click of the metronome on 90 but played all the modulations, theoretically you should arrive at the downbeat of m. 25 in the tempo of 90. I will play this first excerpt so you can hear if this theory is true.

(Perform measures 1-47 with the metronome remaining on 90 the entire time)

Amazingly, it will fall correctly back in the original time which showcases the great compositional skills for which Elliott Carter was famous. It is much easier to write equivalencies throughout a piece but to move through multiple speeds and then land exactly where one started

is not easy. This also shows why Carter used this particular piece most often for his lecture to explain and demonstrate how modulation works.

In relation to this rhythm type modulation, Carter questioned the possibility for tonal rhythm and timbre manipulation when he met with percussionist Jan Williams in New York while listening to several performances of the pieces (slide #16). Carter was displeased with how the pieces sounded because they were muddy and undiscernible. After collaborating with Williams, Carter designed a piece which utilized rhythm by combining pitch changes the timpani could produce. After several hours with Williams, Carter had already experimented with using different striking zones of the timpani head, multiple stick types, and the idea of a separate sound in each hand for contrast. Finally, Carter posed the question of harmonics and their possibility on the instrument. From this the piece "Adagio" was born (slide #17).

"Adagio" by measure and note count is the shortest piece in the entire set but is also the slowest with a metronome marking of quarter note equals 36. This movement begins with the notation of only the third timpani (typically 26" or 25" drum) having the need to be tuned before the piece begins. This aids in the ability to use the piece after the performance of another. This proves to be helpful if performed after another piece by reducing one of the common problems with timpani performance which is existence of dead air occurring while the timpanist must tune all four timpani possibly losing the attention of the audience (slide #18). At first glance the first phrase could be mistaken as standard glissandi but there is a big difference. At the bottom of the slide is an example of what a percussionist would see if they were supposed to play a glissando on a drum. This example would sound like this.

(Play first line of Adler's Canto)

Notice that there is a notated starting note and ending note but it does not show the notes in between and how fast you should move between the notes. Carter did not want such ambiguity and made markings and timings for each pitch which should be heard. Let's look closely at the first line on the slide which comes from "Adagio." In slow motion, this is what the movement would sound like.

(Play 1st phrase with a note on each beat rather than nine within a beat)

Now that you've heard each pitch in the progression, this is what it would sound like in real time.

(Play first phrase with correct timing.)

This particular piece also has two other elements which are unique and can be employed on the instrument which are harmonics and sympathetic resonance. While this piece does not use notation for different areas on the drum it is specific to which drum should be used. Numbers are written above the staff to show which timpani should be used for specific notes. This numbering from 1 to 4 goes by the lowest drum to the highest drum. Line two shows the first harmonic (slide #19) which is a high F on drum 4 mirroring the low F on drum 1. The diamond shaped note head shows the harmonic note. This can be achieved "by pressing one or two fingers on the head of the drum half-way between the rim and center, and striking near the rim."[25]

This is what the harmonic would sound like.

(Play low note on bottom timpani followed by note an octave higher on top drum)

On line three one gets to see sympathetic resonance which is notated on the smaller line seen at the bottom of the slide.

(Play sympathetic resonance measures)

[25] Carter, Elliott. *Eight Pieces for Timpani (one player)*. New York: Associated Music Publishers, Inc., 1995.

It is a very difficult action to achieve the resonance due to factors such as decay of each drum and volume where the smaller notes could be covered up by other notes. For this reason in Carter's later edition of "Adagio" there is special note that one can strike the drum shown on the small notes softly to activate the pitch and for the glissando to be heard.

(play again striking drum #4)

On the last line of this page (slide 20), Carter also has another example of tonal rhythm coupled with harmonics which sounds like this.

(Play last line of the page)

The three pieces "Improvisation," "Canaries," and "Adagio" provided insight into the idea of rhythm. The remaining five pieces will be used to show examples within the category of timbre. With all of these pieces Carter sought to explore the expanse of sound the timpani could achieve which would set it apart from the other percussion instruments as well as conventional wind instruments. One of these elements Carter discovered while working with Jan Williams was the sound differences between areas on the drum head. Three specific areas provided different levels of decay and overtones which he notated as Normal (N), Center (C), and Rim (R) (slide #21).

The piece "Moto Perpetuo" is one of the best examples to hear these different playing areas. It also introduces a specific type of mallet with the following design (slide #22).

From the diagram you can see "Moto" calls for cloth-covered rattan mallets which can be created by applying chamois to rattan shafts. The distinction shows the cloth is not to be the same layering on the entire mallet head. One layer is to be wrapped around the top or tip of the mallet and two to three layers are to be wrapped around the side of the mallet. Because of two different playing areas on the mallets, the number of possible timbres has also increased. The notation of

Hd, head of the mallet, and Tp, tip of the mallet, are provided in the score. When the performer takes into account the three different playing areas, two different stroke types, and two placements on the mallets, a total of twelve sounds are possible. This is where a great challenge occurs for the performer to make sure the listener can hear each of these sounds while also moving quickly across the four drums outlined (slide #23).

If you look at the chart on the screen, here are the twelve possible sounds.

(Play examples of each of the 12 sounds on 26" drum)

Here is an excerpt from the piece highlighting eight of these combinations (slide #24).

In addition to the idea of tone color which we examined in "Moto Perpetuo," Carter uses distinct markings for articulation. The piece "Recitative" will be used to show some of Carter's articulation markings. Articulation is a quality which can be missed in the writing of some percussion music. Because of the nature of resonance, percussion instruments like marimba, timpani, and snare drum often have no indication markings for staccato, tenuto, or legato.

(Slide #25)

Here Carter incorporates the use of the dead stroke (DS). To create an even faster decay, these dead strokes are played in the center of the head, a place where there is already less resonance and overtones. At this point in the piece, more syncopated rhythms are implemented which are easily distinguished due to contrast of character and dryness of tone. This could seem be symbolic of an irregular heart murmur.

There is no marking for a specific mallet to perform the entire piece, but he does make a special notation for the last note. A soft bass drum mallet creates the last sound heard and is marked to let ring. The mallets I use for this piece would sound like this on the last note.

(play G# with performance mallets)

The use of a bass drum mallet provides a wider less pointed attack and sounds like this.

(play G# with bass drum mallet)

It is also notable that the bass drum note is preceded by another long double stop on the resonate part of the head. This is the only time in the piece two longer sustained notes appear in succession. Carter is exact in his notation of staccato, tenuto, legato, and silence in this last page

(Play last page)

While "Recitative" does have dynamic contrast, I would like to utilize the piece "Saëta" to expound further on the element of volume and control (slide #26). "Saëta" challenges the performer by using accented notes in one hand while the other hand remains at a low volume. In measure 56, the set of five eighth notes between pitch A and E requires a combination of alternating strokes and doubled strokes such as right-right or left-left to keep the figure moving. While the piano figure moves, there is a pitch E and D which seemingly come out of nowhere at the level of fortissimo. Just because these pitches are at a higher volume does not mean the rest of the measure is insignificant. Special care must be made to ensure that all the piano pitches are still heard to enhance the contrast set up in the phrase. This requires dexterity to have each hand play at different volumes at the same time. Practicing varying velocity and stick heights would have to be incorporated to achieve the desired effect.

(play "Saëta" example)

"Canto" (slide #27) was also inspired by the sessions Jan Williams spent with Carter to make revisions to the *Six Pieces for Kettledrum*. Unlike "Adagio," all four drums must be tuned before the piece has begun. "Canto" is the only piece to suggest the use of snare drum sticks and begins with a rim shot. Carter did like the sound of rolling on the drums with snare drum sticks

but he questioned the articulation he believed would be caused by the bead of the stick which he described as "patter." After Williams provided a recording using both hard felt timpani mallets and snare drum sticks, they both decided the snare drum sticks would be the best choice.[26] With the possibilities of figures being able to fit on multiple timpani ranges, Carter provides a numbering system to show where each note should be played similar to what was used in "Adagio." The numbering system keeps the player in the right place at the right time and also keeps the pitches in their best sounding range because the ranges of the set of four timpani will overlap.

In addition to the stick choice, multiple tuning and drum numbering, there is one more element which is unique to this piece. Carter makes a notation to bounce the stick in three different measures. When rolling on timpani, one will normally use the single stroke which means motions will move from hand to hand with no doubled notes like this:
(play single stroke roll on 26" drum). Bouncing the sticks is normally associated with a double, triple, or multiple bounce roll which is seen on snare drum and other membrane based percussion instruments. The double bounce and rim shot are more common in snare drum performance and may have been incorporated when snare drum sticks were designated for the piece. This also provides two different timbres which have not been heard before.
It is in the second page of the autograph (slide #28), that Carter specified what he means by bouncing the sticks. You can see in his handwriting at the bottom of the page: "Bouncing Stick: (snare drum sticks or back of timp sticks) – Hold stick loosely between thumb and 2nd finger and

[26] Williams, Jan. "Elliott Carter's 'Eight Pieces for Timpani' – The 1966 Revisions. *Percussive Notes* 38, no. 6 (December 2000): 11-12.

let drop very close to rim of drum. The length of time the stick bounces can be lengthened slightly assisting the bounce with finger or forearm movement."[27]

Here is what the published version of the first page looks like (slide #29) and I will play this excerpt as well.

(Play 1st page excerpt)

As you have looked at the various music examples today, you may have noticed small notes which look like x's on the stems of some note values. These are notations for muffling. Muffling is a process where the sound and decay of the drum is ceased by way of an external source. A method of muffling was used in "Recitative" where the performer uses the mallets to stop the sound of the drum like this:

(show muffling with mallets)

Also a method was used in "Moto Perpetuo" where one mallet was placed on the drum head while the other mallet played designated pitches and sounded like this:

(play last measure of Moto)

In addition there are also other ways a performer can stop the sound on a timpani. One of the most common ways is simply to place your hand on the timpani after the desired pitch like this.

(Play note followed by hand muffling)

Carter decided to utilize a form of muffling outside of the physical body by using mutes. Mutes allow sound but affect the decay and tone quality of the note. These muffled notes could be described like sound off in the distance which is synonymous to the character which is depicted in the piece "March."

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[27] Williams, Jan. "Elliott Carter's 'Eight Pieces for Timpani' – The 1966 Revisions. *Percussive Notes* 38, no. 6 (December 2000): 15-16.

"March" also calls for different mallet directions with the right hand playing with the head of the mallet and the left hand playing with the butt of the mallet. For this reason special attention must also be given to the stem direction in "March." In sections where mallets are facing different directions upward stems denote the right hand and downward stems denote the left hand (slide #30). The performer is required to put a mute on one or two of the drums at a time. This has to be executed while the performer is still playing with one hand such as in the example shown. The type of mute used is left up to the discretion of the performer. The design I have chosen is based off a cotton material which has magnets sewn into one end. The magnets attach the material to the rim of the drum. In the indicated sections I roll the material out with my hand like this:

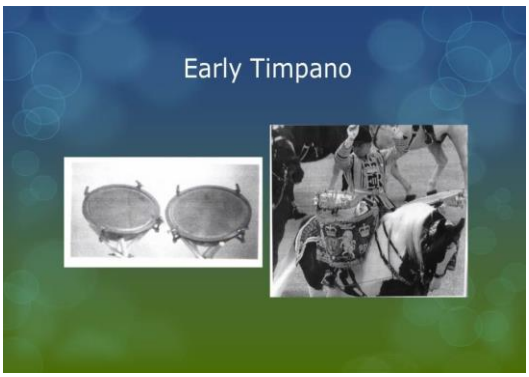
(Place a mute on a drum and roll it out)

Due to the almost flamboyant nature of "March," it has become one of the most performed of Carter's timpani pieces. This can be partially attributed to being listed as a required etude in many college entrance auditions and on music competition lists across the United States. Because of the forward momentum of the bass line it lends itself well to audiences who have not been exposed to some of the timbre possibilities of the timpani.

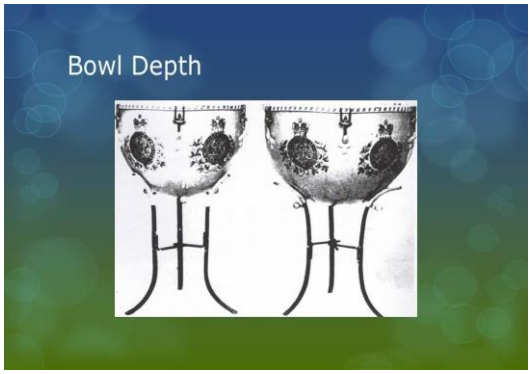
Because of the magnitude of elements which can be discussed about Eight Pieces I have only been able to outline a few of the distinctive features of the set. In the program you were given you will find many more points concerning each piece which we were not able to discuss within the time frame allotted. This piece has been the groundwork for what has been seen written for the timpani since the 1970s to present. I want to take the time to express my appreciation to everyone who was able to attend and those who have been a continual

encouragement to me along the way. I will complete this lecture with the final excerpt from "March" which I hope you enjoy.

Slide 1



Slide 2



Slide 3

Slide 4

Slide 5

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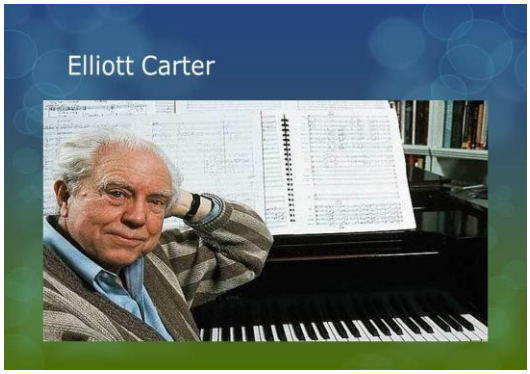
Slide 7

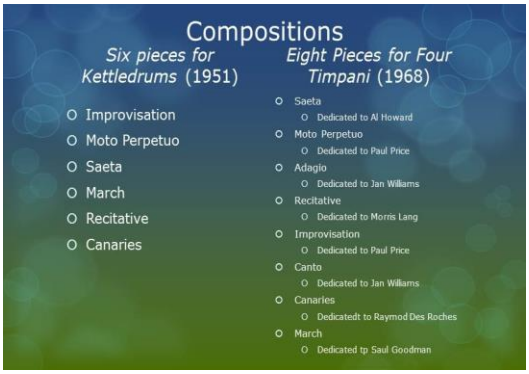
Slide 8

Slide 9

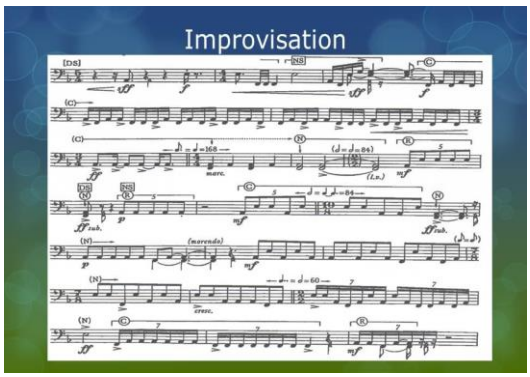
Slide 10



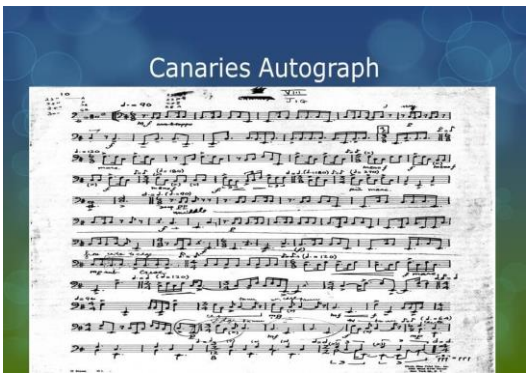
Slide 11



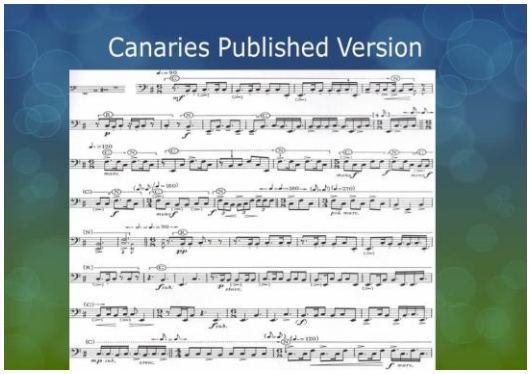
Slide 12



Slide 13



Slide 14



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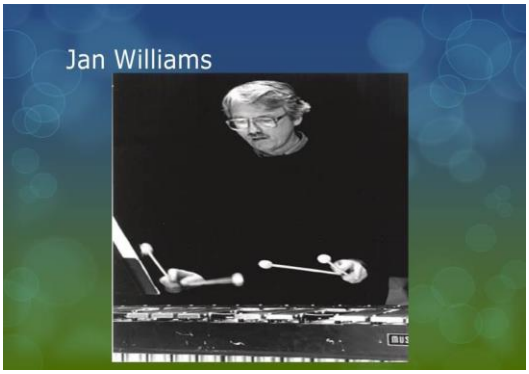

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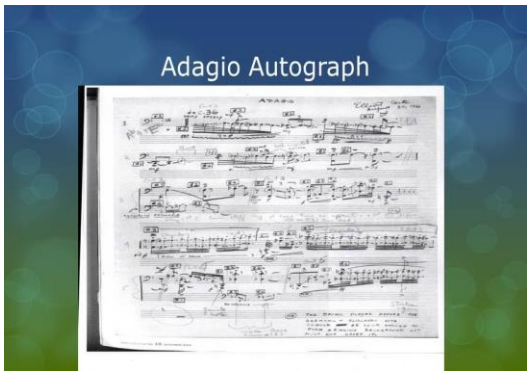

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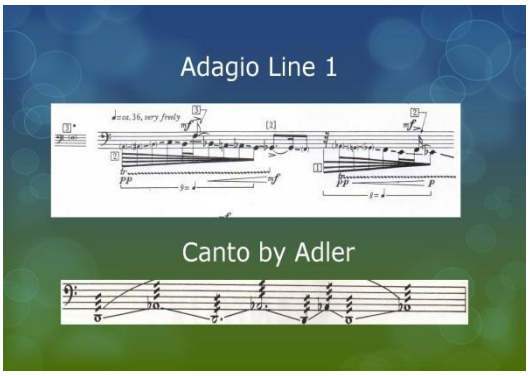

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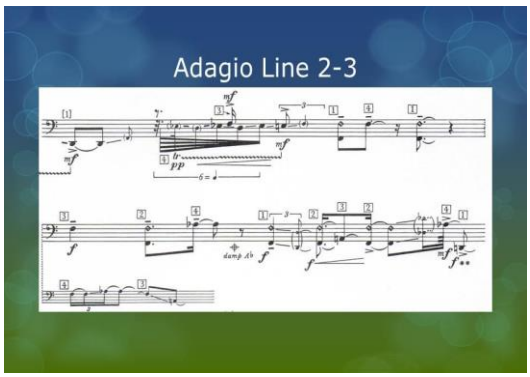

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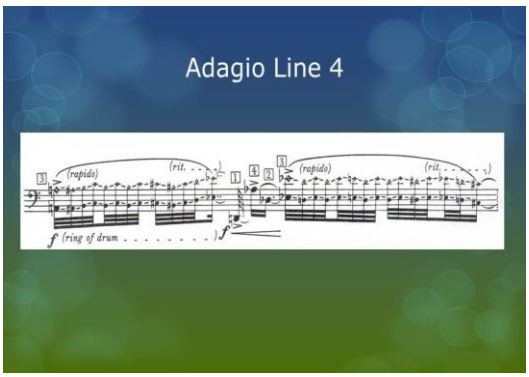

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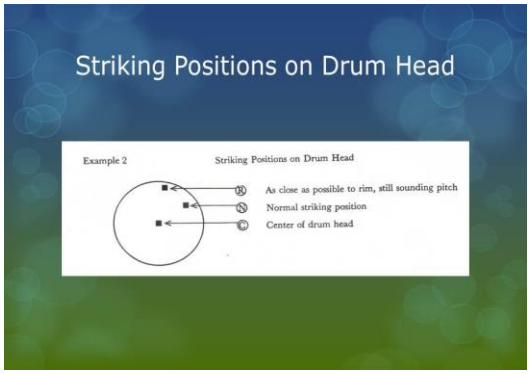

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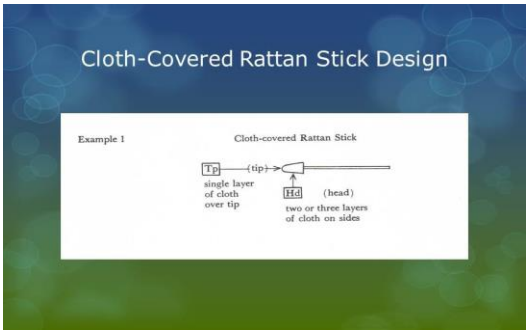

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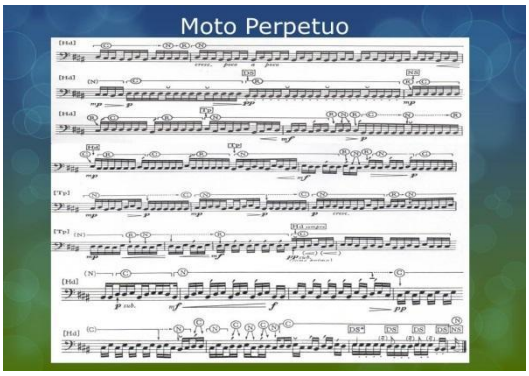

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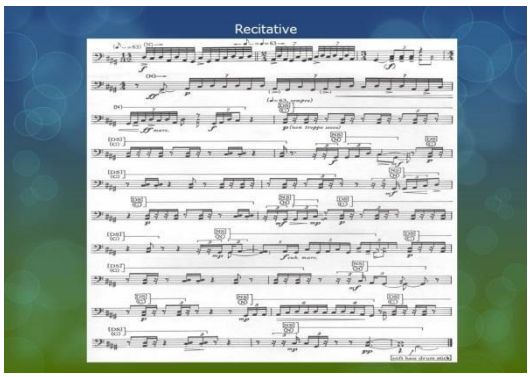

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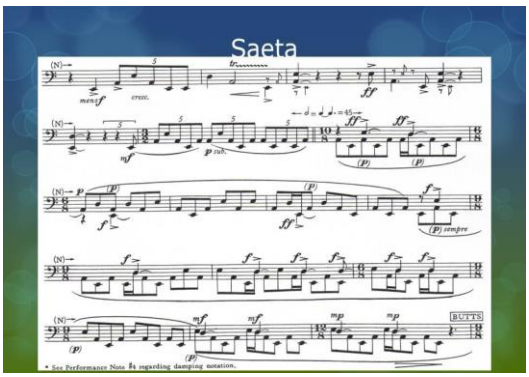

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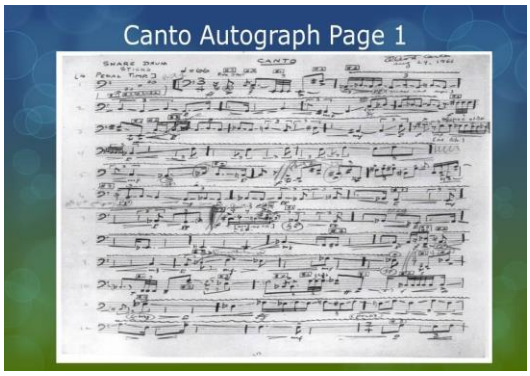

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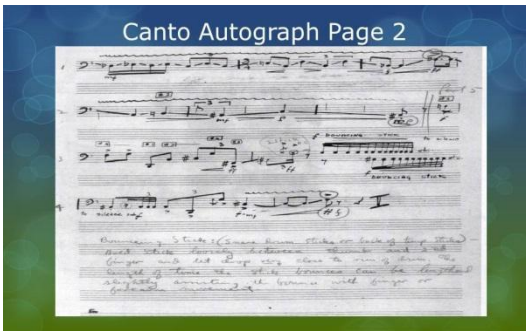

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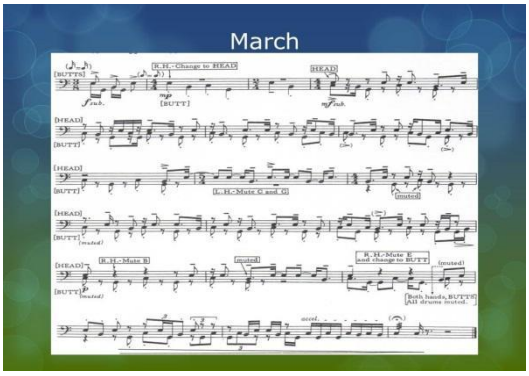

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