Seizing the Frozen Moments:

A Musical Technique Analysis and a Performance Guide for George Crumb's

Zeitgeist, Six Tableaux for Two Amplified Pianos, Book I

by

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ABSTRACT

In the twentieth century, music entered a new period of development and change in musical language. Modernism is an aesthetic position that underlies this period. This period saw a variety of responses that challenged and reinterpreted older categories of music, and innovations that led to new ways of organizing and approaching harmonic, melodic, sonic, and rhythmic aspects of music. “Innovation” is the term that best describes music in the twentieth century, because of all the compositions that pushed existing boundaries and genre definitions, like avant-garde music.

Avant-garde musical ideas of a given period are different from traditional classical music in those periods in several ways: compositional processes, format of scores and performances. Many contemporary composers like John Cage, Henry Cowell, and George Crumb played significant roles in the development of twentieth century avant-garde music.

In my final project document, I will demonstrate how George Crumb combined musical sound and visual elements with his poetic vision by using extended techniques and graphic notations to achieve his musical goal, in addition to how George Crumb’s musical aesthetics related to timbre are seen in his works, specifically in his *Zeitgeist, Six Tableaux for Two Amplified Pianos, Book I*. Moreover, a performance guide for this piece and Crumb’s extended piano techniques used will also be included in this project.

ACKNOWLEDGMENTS

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CHAPTER 1

BIOGRAPHY

A Concise Discussion on Crumb's Life and Reception

George Henry Crumb Jr. was born in a musical family in Charleston, West Virginia, on October 24, 1929. Both of his parents were musicians, clarinetist George Henry Crumb Sr. and cellist Vivian Crumb (née Reed), were members of the Charleston Symphony Orchestra. Crumb studied clarinet with his father and piano with a Charleston-based instructor when he was a child. His younger brother, William Reed Crumb was a flutist. In combination, the family performed together and Crumb gained invaluable experience through his participation in home-based chamber music.

The beginning of Crumb's precise approach to notation and devotion to the visual aspects of music can be attributed to his father's influence. As a result of his father's roles as a music conductor, arranger, and copyist, Crumb was familiar with scores and musical knowledge at an early age.

Additionally, Crumb was profoundly influenced by the auditory surroundings of his youth. His surroundings included local folk music, which was reflected in his choice of unconventional instruments in classical music, and the reverberating sounds of West Virginian nature, which abound in the vibrant reverberating aspects of his compositions.[1]

In his high school years, he composed no less than 10 pieces, most of which were performed by his family chamber ensemble group. The Charleston Symphony Orchestra

[1] David Cohen, *George Crumb: A Bio-Bibliography* (Connecticut: Greenwood Press, 2002), 3.

played two of his symphonic compositions from this era. He also composed an early vocal work in 1947, titled *Three Early Songs*.

Crumb graduated in 1950 and earned a bachelor's degree in piano and composition in Mason College in Charleston. During his second year of college in 1949, he was married to Elizabeth May Brown, another Mason student majoring in music. In 1951, Crumb's family moved to Urbana, Illinois, where he was enrolled in the University of Illinois' master's program in music. Although compositional studies with Eugene Weigel were Crumb's main goal, he also managed to make room in time for viola playing and furthering his study of foreign languages. Crumb graduated in 1952 with a Master of Music in composition. In 1954, Crumb's family moved to Ann Arbor, where Crumb received admission to the University of Michigan's doctoral program. Ross Lee Finney, who instructed Crumb in composition, would strongly influence the development of his career and the qualities of his music. Crumb respected Finney's emphasis on precision and clarity in score notations. Crumb recalled, "these notational concerns he passed along to his students, as well as the admonition to depend upon the inner ear and to hear what you're writing–rather than to approach music in an abstract way. That is what made him such a valuable teacher."[2]

The Elizabeth Croft Scholarship awarded to Crumb in 1955 funded his attendance and composition studies at the Berkshire Music Festival in Tanglewood, Massachusetts under Boris Blacher. It is possible that Crumb's encounter with Blacher sparked his passion regarding pursuing higher education in Germany, as he applied for and was

[2] Ibid., 3.

awarded a Fulbright Fellowship that same year, which he utilized to attend the Hochschule für Musik in Berlin for one year. During this time, he composed *Sonata for Solo Violoncello,* dedicated to his mother, and his family traveled to some of the nearby European countries.

When Crumb returned to Michigan, he continued both teaching and working on his dissertation. In 1959, he finished his dissertation composition, *Variazioni,* for orchestra. Following his 1959 graduation from the University of Michigan, Crumb taught music theory at Hollins College in Virginia, then he was appointed assistant professor of composition and piano at the University of Colorado in Boulder.

During his time at Colorado, Crumb encountered David Burge, whose influence on his compositions would be substantial. Burge was a colleague on the piano faculty at Colorado. Crumb composed the *Five Pieces for Piano* for Burge in 1962, and Burge performed this work as part of a nationwide concert tour to promote Crumb's music.

With the *Five Pieces for Piano,* Crumb had discovered his mature aesthetic and was already receiving support from critics. In 1962 to 1963, he composed *Songs, Drones and Refrains of Death* and *Night Music I*, based on Lorca's poetry, which he had encountered at the University of Michigan. The poem "Gacela de la Terrible Presencia" contained the line "y los arcos rotos donde sufre el tiempo" (and the broken arches where time suffers[3]), which greatly influenced Crumb's artistry. The use of circular notation in *Night Music I* and later work *Night Music II* represent Crumb's dedication to creating cyclical compositions.

[3] Ibid., 6.

Having received a Rockefeller Grant, Crumb was appointed composer-in-residence at SUNY Buffalo for the 1964-1965 academic year. Crumb's year at Buffalo was significant; he became interested in the east coast's classical music culture and moved to Philadelphia. In 1965, he made the decision to join the University of Pennsylvania's music department, where he would stay for the next 32 years.

During his tenure at the University of Pennsylvania, he composed a large number of works and received many honors. Crumb's first piece with a poetic title was *Eleven Echoes of Autumn*, 1965 (*Echoes I*) for violin, alto flute, clarinet and piano, which was once again influenced by his beloved Lorca quotation "and the broken arches where time suffers." Crumb also composed *Echoes of Time and the River* for orchestra in 1967. This was the second composition in the echoing series, which develops the idea of time suspension, and was eventually honored with the Pulitzer Prize in music in 1968. In 1970, he composed Black Angels, for electric string quartet, a work that was inspired by the Vietnam War. This piece also has the unique distinction of inspiring violinist David Harrington to create the critically renowned Kronos Quartet. This was followed in 1971 by *Ancient Voices of Children*, one of Crumb's most popular compositions, which was awarded both the Koussevitzky International Recording Award and the International Rostrum of Composers Award. The work *Vox Balaenae* (1971), for electric flute, electric cello, and amplified piano, was inspired by a tape of whale songs. The performance settings with masked players and darker lighting build a phenomenon of being underwater.[4]

[4] Ibid., 12.

In the same year, Crumb composed the solo piano suite *Makrokosmos I*, also dedicated to David Burge, with more complex extended piano techniques. The following work, *Makrokosmos II*, was published in 1973, concluding the cycle of twenty-four works that were partially inspired by Bartok's *Mikrokosmos* and following the piano tradition of composing 24 Preludes. Then Crumb composed *Music for a Summer Evening* for two pianos and two percussions in 1974 as the third volume in *Makrokosmos*, which was inspired by the work Bartok's *Sonata for Two Pianos and Percussion*.

Star-Child was composed in 1977. Crumb includes an orchestra, a children's chorus, a male speaking choir, bell ringers, and a soprano in his first piece for full orchestra since *Echoes of Time and the River*. Following that, Crumb was awarded a $10,000 fellowship from the National Endowments for the Arts, allowing him the financial support to complete the film *George Crumb: Voice of the Whale*.

Between 1980 to 1983, Crumb composed three works for solo piano: *A Little Suite for Christmas A.D. 1979* (1980), *Gnomic Variations* (1981), *Processional* (1983). What distinguishes these three compositions is their move away from circular notation and less use of extended techniques, in contrast to earlier work *Makrokosmos*.

In 1986, Crumb returned to Lorca's writings in his composition *Federico's Little Songs for Children*, which is performed by a soprano vocal part, flute (piccolo, alto flute, bass flute), and a harp, in order to highlight the childlike innocence and a lighter feel in the music.[5] *Zeitgeist* (1988) is the second work of Crumb for two amplified pianos. At the

[5] Ibid., 20.

same time, Crumb had the honor of serving as the American representative to the Conference of the Union of Soviet Composers.

Crumb slowed down his compositional process beginning around 1990, He finished the complete version of a chamber music *Quest* for guitar, soprano saxophone, harp, double bass, and percussion, though an incomplete version premiered in 1989. The two other works composed in the 1990s were *Easter Dawning* for carillon, and *Mundus Canis* that is based on the characteristics of five dogs that lived alongside the Crumb family throughout the years.

In the spring of 1997, after more than three decades of working at the University of Pennsylvania, Crumb retired from teaching, which afforded him more time to focus on composition and traveling. Crumb traveled around twenty countries during the 90s. In 2000, Crumb was honored with the Grammy Award in the Best Contemporary Composition category for his famous 1977 composition, *Star-Child*. *Otherworldly Resonances* was composed in 2002 for Quattro Mani, for two amplified pianos. During 2003 to 2010, Crumb completed his work, *American Songbook*, a series of seven song cycles based on American folk songs for soprano, baritone, amplified piano and percussion. Three volumes of the *Spanish Songbook* were completed in 2012. On February 6, 2022, at the age of 92, Crumb passed away at his home in Media, Pennsylvania.

Zeitgeist, Six Tableaux for Two Amplified Pianos, Book I

In 1987, Crumb composed *Zeitgeist* that was commissioned by the pianist Peter Degenhardt and Fuat Kent who premiered the piece at the Charles Ives Festival in Duisburg, Germany on 17 January 1988. Later, Crumb revised the composition extensively so that 1988 was adopted as the final date of the composition.

The term "Zeitgeist" in German may be understood as the approximate translation of "spirit of the time." The "Zeitgeist" has a significant and even mystical sense for those who speak German, which inspired Crumb. The subtitle of *Zeitgeist* is *Six Tableaux for Two Amplified Piano, Book I*. Crumb utilized these six images to examine "various concerns which permeate our late-twentieth century musical sensibility,"[6] which expresses his ideas: a new kind of musical primitivism; an obsession with more minimalist modes of expression; the desire to combine with western and non-western music; and involvement with acoustical phenomena and timbre as a potential structural element.[7]

The work *Zeitgeist* recalls compositional techniques from Crumb's early piano larger works, *Makrokosmos* cycle: *Music for a Summer Evening* (1974) for two amplified pianos and percussion, and *Celestial Mechanics* (1979) for amplified piano, four hands, exploring extended techniques and "emphasis on poetic content,"[8] and incorporating unique circular notation. In *Zeitgeist,* Crumb explores new prospects, which includes the

[6] George Crumb, "Program Notes" for *Zeitgeist* (New York: C. F. Peters, 1989), 3.
[7] Ibid.
[8] Ibid.

elements of suspension of the time, extremely dynamic changing and echoing acoustic effect.

Initially, *Zeitgeist* was intended to be the first book in a series of three or four volumes of *Tableaux Vivant*, with Crumb intending to keep to the six-movement structure for each of these books.[9] However, Crumb renounced his initial intentions to continue the series. Instead, he used certain elements for the later expansion of the 2002 work *Otherworldly Resonances*, which is the second book in a series of *Tableaux Vivant*, but this work only includes three movements.

Crumb is hailed as a 20th century pioneer of avant-garde piano music. His entire compositional career is devoted to piano compositions, in which he gradually incorporated technical elements that have come to be considered important components of Crumb's musical language. As one of Crumb's few large compositions for two amplified pianos, *Zeitgeist* holds great significance among his piano works.

[9] Christine Lynn Eisenberg, "Accessing the Spirit: A Methodology for the Preparation and Performance of George Crumb's *Zeitgeist* Based on the Practices of Quattro Mani" (DMA diss., University of Northern Colorado, 2005), 39.

CHAPTER 2

A REVIEW OF EXTENDED TECHNIQUES IN ZEITGEIST AND CRUMB'S OTHER COMPOSITIONS

Overview of Extended Piano Techniques

A variety of musical aesthetics in the twentieth- century had a substantial impact on the emergence of new sound resources. Many twentieth century composers no longer considered melody and harmony to be the most essential compositional elements in their works. They shifted their focus from pitch, measured rhythm, and form to timbre and dynamics. Brindle provides a concise summary of this notion: The utilization of timbral contrasts has historically played a significant role in enhancing the aesthetic appeal of music, particularly during the Romantic era. However, contemporary composers have progressively abandoned conventional musical components such as melody, harmony, and meter, thereby elevating the importance of tone colors as a primary tool in their creative arsenal.[10]

In the twentieth century, color became a crucial component in the evolution of all art forms. During this time, many composers utilized innovative instrumentation and orchestration to create new tonal colors in their works. They created new playing techniques for conventional instruments, modified conventional instruments, utilized non-conventional instruments, or invented new instruments. These "new" performance techniques on traditional instruments are not merely inventions of the twentieth century;

[10] Reginald Smith Brindle, *The New Music: The Avant-Garde since 1945* (New York: Oxford University Press, 1975), 153.

rather, they are extensions of nineteenth century techniques such as muting, harmonics, glissandi, and percussive sounds. Gardner Read indicates:

> The newness, then, is not one of kind but of degree, a further and more extensive development of basic effects found in scores from the late nineteenth century to the present day. Muting, glissandi, harmonics, and even certain percussive devices are instrumental techniques common to the late Romantics (Mahler, in particular), the Impressionists (primarily Debussy, and, to a lesser extent, Ravel), the Expressionists (beginning with Schoenberg, Berg, and Webern), and most certainly including the Neo-Romantics (Prokofiev, Bartók, and Britten, to name a few outstanding representatives).[11]

Read describes the twentieth century conceptual transformation of the piano:

> One can confidently assert that with the single exception of the harp, no modern instrument favored by the musical avant-garde has been so radically altered in conception as the piano. The techniques presently applied to this instrument are poles removed from conventional keyboard methodology. It is not that the piano has become even more solidly entrenched as a percussive instrument, but rather that today's experimental composers have a new awareness of its tone-color potential.[12]

Composers of early twentieth century, including Arnold Schoenberg (1851-1918), Claude Debussy (1862-1918), Maurice Ravel (1875-1937), Igor Stravinsky (1882-1971), Béla Bartók (1881-1945), Charles Ives (1874-1954), discovered means to produce a variety of colors on the piano.[13] In his Concord Sonata (1901-15), Ives instructed the pianist to perform the large clusters with a wooden block, and Bartók treated the piano as a percussion instrument in his Piano Sonata, Sz.80. In the first of Three Piano Pieces, Op.11, Schoenberg employs one of the earliest instances of sympathetic resonances, which is a timbral expansion that generates harmonics by silently depressing the keys and allowing the bridge, soundboard, and surrounding air to vibrate.

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[11] Gardner Read, *Compendium of Modern Instrumental Techniques* (Westport, Connecticut: Greenwood Press, 1993), 3.
[12] Ibid., 205.
[13] Reiko Ishii, "The Development of Extended Piano Techniques in Twentieth-Century American Music." (DMA diss., Florida State University, 2005), 11.

Many significant advancements in piano timbre and techniques can be attributed to the influential contributions made by Henry Cowell (1897-1965). Cowell, widely recognized as the pioneering composer who methodically delved into novel piano sonorities and nontraditional instrumental techniques, expounds upon his concepts and theories in his seminal publication, titled "New Musical Resources."[14] Cowell's creative contributions comprised several methods, including the use of clusters on the keyboard, manipulation of the strings inside the instrument by plucking and stroking, and the execution of glissandi across numerous strings or along a sole string, and modifying the pitch or generating harmonics by stopping the strings, a multitude of composers have employed the interior of the piano as a means to generate novel sonic phenomena. Curtis-Smith, born in 1941, has expanded upon the concepts introduced by Cowell and has notably pioneered the technique of bowing the strings.[15] The bowed piano, invented by Stephen Scott in 1944, was inspired by the work of Curtis-Smith.

One of the most renowned alterations made to the piano is the prepared piano devised by John Cage (1912-92). This technique entails the temporary placement of objects, such as bolts, nails, and nuts, amidst the strings of the instrument, resulting in a diverse range of timbral qualities. Prepared piano partly resulted from Cage's having been commissioned to compose percussion music for a dance ensemble in a confined space that presented spatial constraints for the placement of the percussion ensemble; he thus substituted his prepared piano. His first composition for prepared piano, titled "Bacchanale," came into being in the year 1940. During the 1940s, Cage was asked to

[14] Henry Cowell, *New Musical Resources* (New York: Alfred Knopf, 1930).
[15] David Cope, *New Directions in Music*, 7th ed. (Prospect Heights, Illinois: Waveland Press, 2001), 56.

compose a substantial quantity of works specifically for prepared piano, and toured the country as a pianist accompanying dance groups.[16] He recollected Cowell's prior experiments involving the internal components of the piano and subsequently expanded upon these concepts to formulate the prepared piano:

> Besides studying with Weiss and Schoenberg, I had also studied with Henry Cowell. I had often heard him play a grand piano, changing its sound by plucking and muting the strings with fingers and hands. . . Having decided to change the sound of the piano in order to make a music suitable for Syvilla Fort's *Bacchanale*, I went to the kitchen, got a pie plate, brought it back into the living room, and placed it on the piano strings.[17]

In addition to the before-mentioned techniques, several significant piano techniques were formulated throughout the twentieth century. These items can be classified into the following categories:

1) The act of performing various techniques inside the piano, including striking, stroking, plucking, or rubbing the strings using fingers, fingernails, mallets, or other object, executing glissandi on the strings, performing tremolo on the strings, and employing bows to bow the strings.

2) Keyboard-generated special effects, such as depressed notes played silently and tone clusters.

3) The incorporation of foreign elements, such as the inclusion of a prepared piano.

4) The act of performing within the piano using one hand, while simultaneously playing the keyboard with the other hand, involves techniques such as producing harmonics and applying muting or damping to the strings.

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[16] Josef Christof and Steffen Schleiermacher, "Liner Notes" from *John Cage: Complete Piano Music Vol. 1*, MDG 613 0781-2, Germany, 1997, CD.
[17] Richard Bunger, *The Well-Prepared Piano, Foreword by John Cage* (Colorado Springs: Colorado College Music Press, 1973).

5) The integration of microtones into the musical composition.

6) The utilization of sounds produced on the frame or case of the piano.

7) The implementation of sound amplification techniques.

8) The incorporation of extra-musical devices, including the addition of human vocal sounds such as speaking, whispering, singing, or humming while playing the instruments.

9) The exploration of novel pedal effects.

The primary focus of this study is limited to the examination of the specific piano techniques employed in *Zeitgeist* by George Crumb, among his other works.

Extended Piano Techniques in *Zeitgeist*

Depressing Keys Silently and Sympathetic Vibration

The generation of sound can be achieved by selectively depressing one or multiple keys in a manner that prevents the hammers from striking the strings, while simultaneously releasing the dampers. Subsequently, these strings undergo sympathetic vibration upon the striking and subsequent release of specific other keys. The undamped strings exhibit a response to the overtones produced by the performer's execution of related pitches. Since the early nineteenth century, certain composers have utilized sympathetic vibration as a response to the attack of preceding sounds. The technique employed by Robert Schumann (1810-56) can be observed in his composition *Paganini* from *Carnaval*, Op. 9, as seen in Figure 1.1. The performer silently depresses a higher chord that is related to the overtone series of the preceding chords, plays a loud low chord

four times while holding down the damper pedal to increase the vibrations of the strings, and then release the pedal to reveal the sounds of sympathetically vibrating strings.

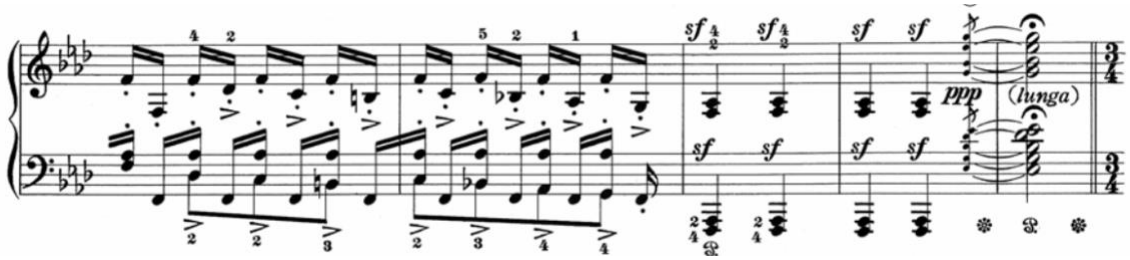

Figure 1.1. Schumann: *Paganini* from *Carnaval*, Op. 9, mm. 33-37.

There are two prevalent methods for generating the phenomenon of sympathetic vibration. Firstly, the pianist initiates the striking of notes while the damper pedal is depressed, subsequently executing the act of playing specific keys silently and releasing the pedal, as seen in Figure 1.1. During the second, the pianist depresses the key in a manner that produces no sound and maintains its position either by using the hand or by utilizing the sostenuto pedal, while striking other keys. Crumb uses this technique in the second movement *Two Harlequins* from *Zeitgeist*, as shown in Figure 1.2. The performer depresses all the black and white keys from the lower registers A to D using both hands, doing so silently, and maintains their positions with the sostenuto pedal, while simultaneously playing other keys. In order to generate the phenomenon of significant sympathetic vibration, it is necessary to sustain the sostenuto pedal throughout the entirety of the movement, as seen in Figure 1.2.

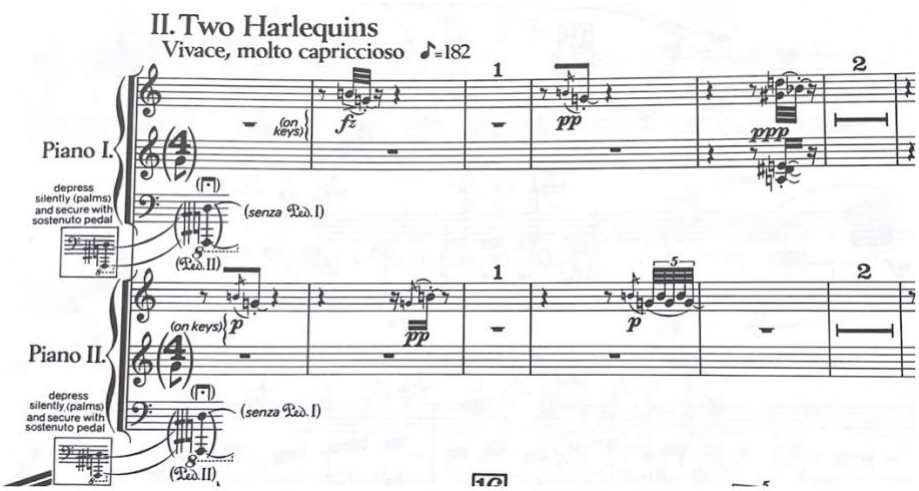

Figure 1.2. Crumb: *Two Harlequins* from *Zeitgeist*, mm. 1-6.

Tone Clusters

Tone clusters are generated by applying pressure on the piano keys using various techniques, such as utilizing the fingers, the flat part of the hand (palms), the forearm, or even the elbow, depending on the range of the cluster. In Henry Cowell's work titled "New Musical Resources," He provides a definition of tone clusters as "chords built from major and minor seconds, which in turn may be derived from the upper reaches of the overtone series."[18] Cowell asserts:

> In order to distinguish groups built on seconds from groups built on thirds or fifths, they will hereafter be called tone clusters.[19]

Tone clusters were employed by Charles Ives prior to Cowell's investigation of this method; however, it was Cowell who made significant contributions by assigning a name to the technique, establishing a systematic approach, and promoting its widespread adoption. Crumb also employs the tone cluster technique, as depicted in Figure 1.2.

[18] Cowell, *New Musical Resources*, 116.
[19] Ibid.

When faced with the presence of substantial clusters, the musician is required to employ both the closed hand and the entirety of the forearm in order to accommodate the extensive range of musical notes. In addition to encompassing a variety of pitches, the cluster natation specifies the utilization of either white keys (Figure 1.3,) black keys (Figure 1.4,) or a combination of both (Figure 1.5.)

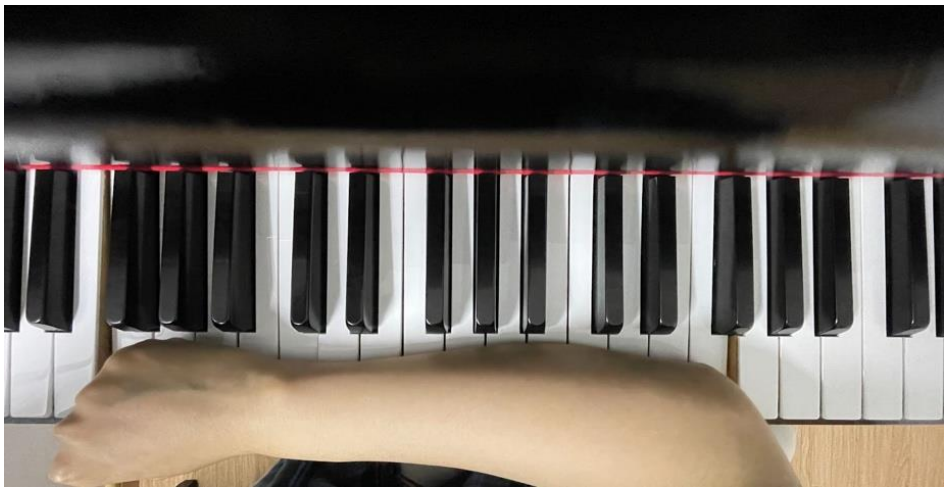

Figure 1.3. Right Forearm Depressing on White Keys.

Figure 1.4. Left Forearm Depressing on Black Keys.

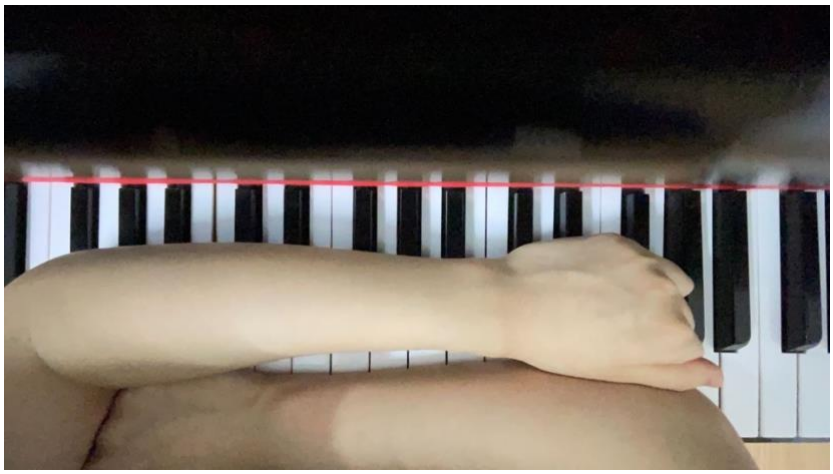

Figure 1.5. Both Forearms Depressing on White and Black Keys.

Plucking the Strings

The predominant technique employed in interior playing involves the act of plucking one or more strings using either the fingertip or the fingernail. In the absence of explicit musical instructions, it is customary for pianists to employ the use of their fingertips. When the string is plucked in proximity to its center, it results in mellower sounds, while plucking closer to the pins generates brighter tones. There are three ways to keep the dampers away from the strings so that you can pluck them to vibrate: firstly, the key that corresponds to the string is silently depressed and held; secondly, the sostenuto pedal is depressed; thirdly, the damper pedal is depressed. The initial two techniques facilitate the pianist in identifying the strings that require plucking. Conversely, the third way necessitates the pianist to assign labels to the strings that are to be plucked, thereby enhancing their ease of identification. In "Performance Notes" for *Zeitgeist*, Crumb mentions:

> When *pizzicato* playing is indicated, the string should be plucked either with fingertip (indicated by "f. t.") or with the fingernail (indicated by "f. n."). In both

cases the string should be plucked towards the center (or, when the longer bass strings are involved, a few inches beyond the dampers).[20]

Crumb provided a lucid directive regarding the score, as depicted in Figure 1.6. In the event that the damper pedal is continuously depressed, the pitch B has been plucked using the left hand's fingertip, as denoted by the notation *pizz.(*f.t.*)*.

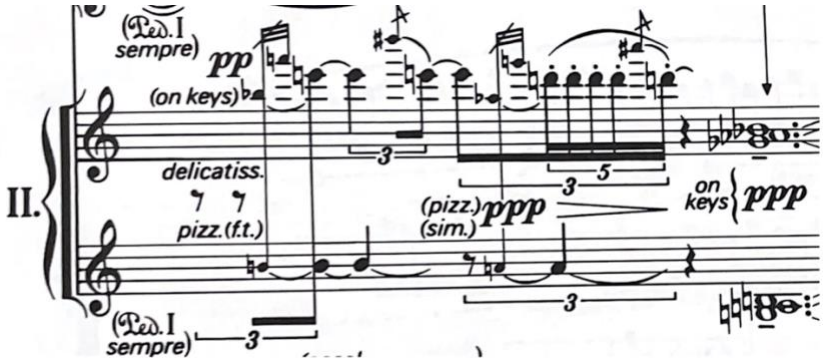

Figure 1.6. Crumb: *Portent* from *Zeitgeist*, system. 4.

Stroking the Strings

The act of stroking the strings involves the application of pressure on the string by either gently rubbing it with the fingertip or scraping it with the fingernail in a motion that spans the entire length of the string. When a performer is required to pluck or strum the strings in a specific direction, it is common for musical scores to include an arrow symbol to denote the intended direction. The direction of motion should be directed towards the performer without any explicit indication.[21] Additionally, the damper pedals are depressed, or specific keys are silently depressed and sustained either manually or with the sostenuto pedal to allow the strings to vibrate. This technique can be found frequently in Crumb's *Zeitgeist*, as seen in Figure 1.7. Each hand employs four

[20] Crumb, "Performance Notes" for *Zeitgeist*, 2.
[21] Larry Dale Stafford, "A Study of Innovative Piano Technique in Published Works of Selected Composers from 1950-1975." (D.A. diss., Ball State University, 1978), 61.

fingernails to scrape along metal winding of strings. The direction of the stroke should be a single swift movement away from the performer. The position of both hands is denoted by a notation that is shown by the placement in relation to the staff. Meanwhile, the damper pedal should always be depressed.

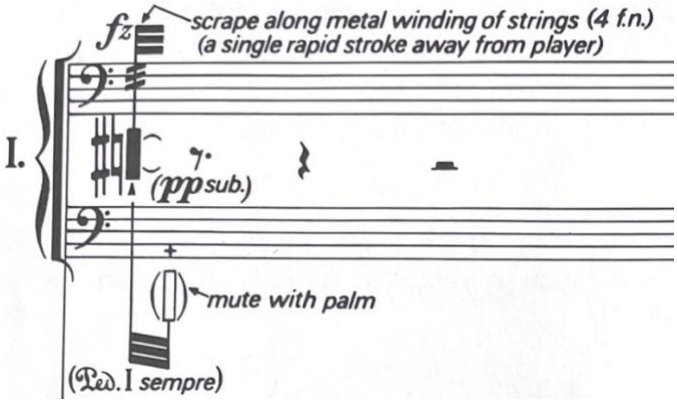

Figure 1.7. Crumb: *Portent* from *Zeitgeist*, system. 2.

Striking the Strings

The act of striking the strings is a technical approach that necessitates the deliberate contact of the strings using the fingertips, fingernails, or the palm of the hand. Typically, the depression of the damper pedal coincides with the striking of the strings by the palm, resulting in a substantial volume of sound. In instances where the score specifies particular pitches to be struck, the player has the option to depress the corresponding keys silently and sustain them either manually with their fingers or by utilizing the sostenuto pedal, or directly striking the specific strings with the damper pedal. In the fourth movement *Day of the Comet* of *Zeitgeist*, as seen in Figure 1.8. Crumb employs the technique of utilizing both palms and four fingernails to strike the strings while simultaneously engaging the damper pedal, resulting in the production of distinct timbral qualities.

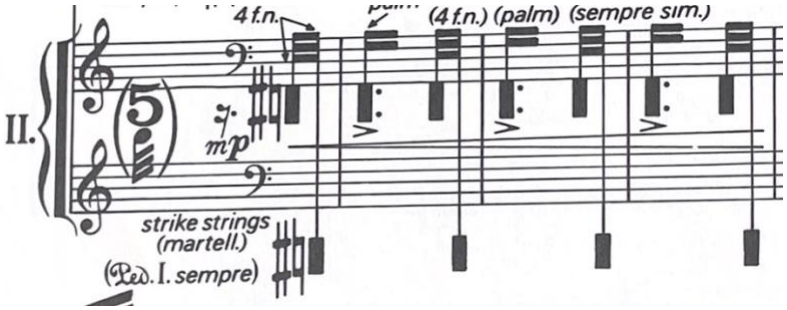

Figure 1.8. Crumb: *Day of the Comet* from *Zeitgeist*, mm.51-54.

Glissandi over the Strings

Interior glissandi on the piano strings can be executed in two ways: laterally and horizontally. Lateral glissandi involve sliding along the length of a single string or several strings, while horizontal glissandi involve sweeping across multiple strings in succession. Typically, the utilization of low, wound bass strings is deemed appropriate for executing lateral glissandi due to their inherent resonance and extended length.[22] The pianist can pluck the strings using various techniques such as the fingertips, fingernails, and other implements, while simultaneously utilizing the damper pedal. The two methods have been utilized in Crumb's *Zeitgeist*. In the fifth movement, *The Realm of Morpheus* from *Zeitgeist*, as seen in Figure 1.9. The player employs left hand to sweep across multiple strings, utilizing the fingertips from the lower A string to the D-sharp string.

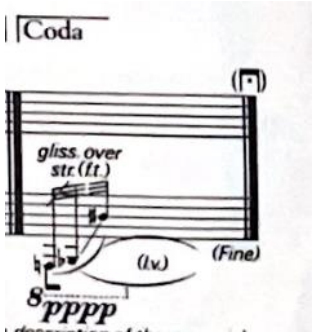

Figure 1.9. Crumb: *The Realm of Morpheus* from *Zeitgeist*, Coda.

[22] Read, *Modern Instrumental Techniques*, 47-48.

According to Figure 2.0, the pianist is required to place a conventional glass tumbler on strings and slide it along the lateral strings.

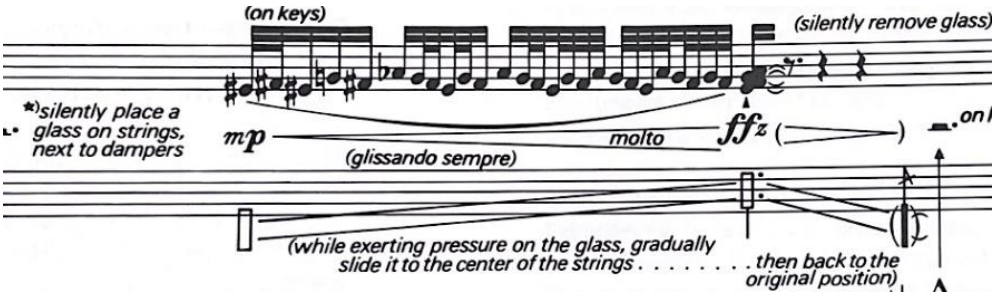

Figure 2.0. Crumb: *Portent* from *Zeitgeist*, Beginning.

Tremolando on the Strings

The rapid repetition of one or more frequencies can be achieved through the continuous plucking of a single string or the continuous strumming of two or more strings. There are two common techniques for producing the tremolo effect. One approach involves the act of strumming a particular string or set of strings by alternating two or three fingertips. In this position, the fingertips are at a 90-degree angle to the length of the strings, and high finger action is utilized. The second method of executing a tremolo is to use the fingertips to strum back and forth across the indicated strings. In this position, the digits are parallel to the length of the strings, and the forearm is flexed downward. When playing tremolo, the damper pedal may be depressed, or certain keys may be discreetly depressed and held with the sostenuto pedal or the hand. In addition to the previously mentioned interior playing techniques, the strings can also be stroked, struck, or slammed with various tools.[23]

[23] Ishii, "The Development of Extended Piano Techniques", 16-7.

In the third movement *Monochord* from *Zeitgeist*, as seen in Figure 2.1. Position the thumb firmly in contact with the bridge of the string. Perform a rapid and measured tremolo by using the fingertip to move back and forth over the metal winding of the lower B-flat string. In the case of the lowest partials, the finger exhibits oscillatory motion over a relatively small portion of the string, measuring approximately half an inch. As one moves towards higher partials, the oscillation extends over a broader segment of the string, accompanied by a gradual reduction in the intensity of contact.

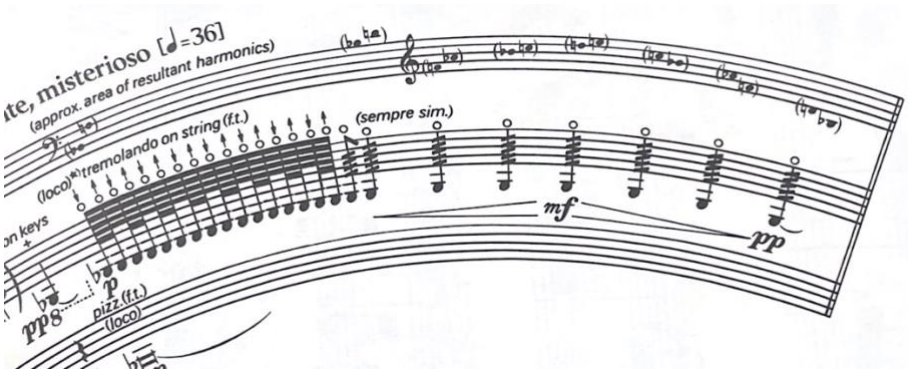

Figure 2.1. Crumb: *Monochord* from *Zeitgeist*, Beginning.

Muting Tones

The timbre of the piano can be altered by employing a muting technique. The pianist positions one hand on the string located between the pins and the dampers, while using the other hand to strike the keys that correspond to the desired notes. The auditory perception can be further modified through variation in pressure; applying strong pressure results in a muted sound, whereas applying gentle pressure induces subtle changes in tone color. The utilization of muted tones is a prevalent feature of Crumb's *Zeitgeist*. The symbol "+" is denoted in the score, as seen in Figure 2.2. To achieve

optimal resonance and tonal quality, it is recommended to apply firm pressure to mute the strings (namely, D, C-sharp, and B-sharp) near the bridge at the final stage.

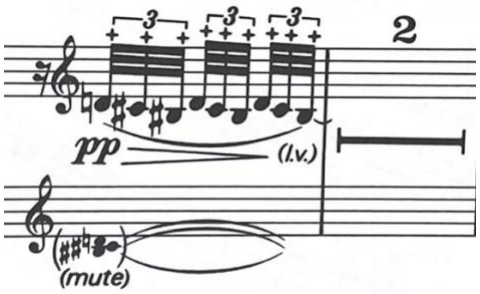

Figure 2.2. Crumb: *Day of the Comet* from *Zeitgeist*, mm.135.

Harmonics

Strings instrument players are frequently required to generate harmonics. The artist delicately positions their finger on a nodal point on the string to generate a precise harmonic. Harmonics on the piano can be generated by selectively placing the fingertip of one hand on the appropriate node of the string and concurrently striking the corresponding note on keyboard with the other hand. When the pianist desires to produce the second harmonic, they touch the node located at the midpoint of the string and afterwards strike the corresponding key, resulting in a sound that is one octave higher than the fundamental note. To accurately determine the exact positions of the nodal points, it is recommended that the performer prepare a short paper sticker at the appropriate locations along the strings, corresponding to the nodes.[24]

Zeitgeist employs the harmonics of the 2nd and 5th partials. Crumb recommends that the precise nodal points can be indicated by affixing tiny slivers of tape to the strings, or by marking the strings with a crayon.[25] The fingers that contact the nodes should be

[24] David Burge, *Twentieth-Century Piano Music* (New York: Schirmer Books, 1990), 216.
[25] Crumb, "Performance Notes" for *Zeitgeist*, 2.

lifted from the strings promptly following the striking of individual harmonics or sets of harmonics, to enhance the resonance and brilliance of the harmonics. Notably, the 5th partial nodes are situated in proximity to the damper, while the 2nd partial nodes are precisely positioned at the middle of the string, as seen in Figure 2.3.

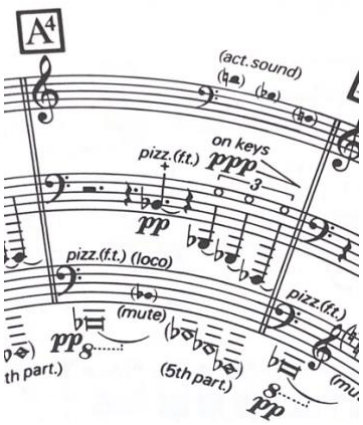

Figure 2.3. Crumb: *Monochord* from *Zeitgeist,* A[4].

Addition of Foreign Materials

While George Crumb does not typically compose specifically for prepared piano with additional objects, he frequently incorporates unconventional things, such as a piece of paper, water glasses, and a light metal chain in his piano works. In addition to a glass tumbler used in the first movement from *Zeitgeist*, Crumb also utilizes other items like paper, and rosin to produce a special timbrel of quality, as seen in Figure 2.4 and 2.5. Crumb states in "Program Note":

> Each pianist will require a glass tumbler for several passages in *Portent* and *Reverberations*. The lateral surface of the tumbler should be smooth and even so that the tumbler is in close contact with all the strings it covers. Some experimentation will be necessary in order to find a tumbler which produces the most beautiful and effective "bending" of the pitches. Each pianist will also require a strip of paper (which is to be placed over the lowest 10 strings in Monochord in order to produce a gentle "jangling" effect). Pianist II will require

a small piece of rosin (in order to produce the eerie 15th partial "whistling" effect in *The Realm of Morpheus*).[26]

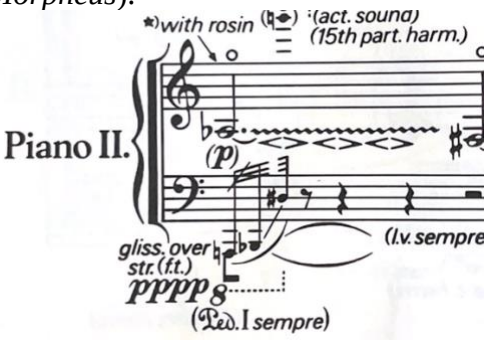

Figure 2.4. Crumb: *The Realm of Morpheus* from *Zeitgeist*, Beginning.

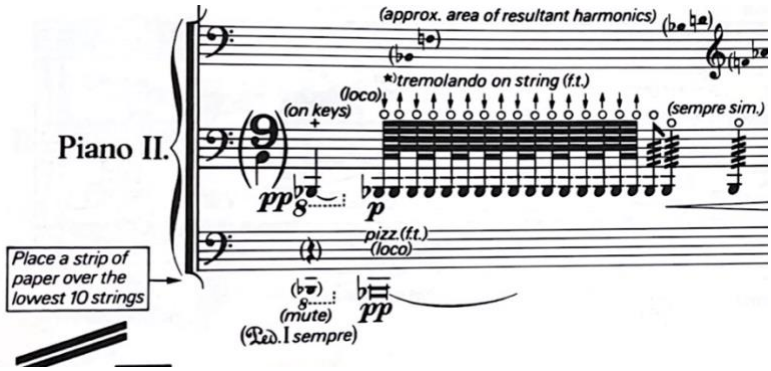

Figure 2.5. Crumb: *Monochord* from *Zeitgeist*, Appendix A, Beginning.

Throughout this chapter, we can explore the concept and introduction of extended piano techniques, revealing that *Zeitgeist* encompasses a significant amount of innovation in these techniques. *Zeitgeist* is an excellent selection for performers aiming to further develop their proficiency in extended piano techniques through a work.

[26] Crumb, "Performance Notes" for *Zeitgeist*, 2

CHAPTER 3

GRAPHIC NOTATION

A Brief Discussion on Graphic Notation

As previously discussed, several composers of the twentieth century used unconventional extended techniques as means to explore novel timbral possibilities. Consequently, corresponding non-traditional notational systems were developed to effectively represent these techniques, furnishing the performers with a more explicit and comprehensive set of instructions for the performances. Furthermore, this unique notation not only facilitates the precise communication of performing techniques, like tone clusters, muting tones, but it also encapsulates the composer's individual artistic vision. The practice of graphic notation, also known as symbolic notation, involves the depiction of musical elements using visual symbols that fall beyond the conventional framework of standard musical notation. The use of graphic notation gained significant popularity throughout the 1950s, often serving as a viable alternative or to complement conventional musical notation.[27]

One of the pioneering figures in the development of this approach was Earle Brown (1926-2002), who along with John Cage, sought to liberate performers from the constraints of notation and make them active participants in the creation of the music. He is credited with the development of "Open form," a genre of musical composition. A significant portion of Brown's artistic output is structured using fixed modules, although

[27] Anthony Pryer, "Graphic Notation." in *The Oxford Companion to Music*, ed. Alison Latham (Oxford: Oxford University Press, 2002).

with unique combinations of notation. In Brown's first "Open form" for orchestra work *Available Forms I*, the sequencing of these modules is intentionally left open-ended, allowing the conductor the freedom to choose sequence during the actual performance. The content is organized into sequentially numbered "events" that are presented on a series of "pages". The conductor uses a placard to signify the page, and with their left hand designates the specific event to be executed, while their right hand initiates a downbeat to start the performance. The tempo and dynamics of the first bear indicate the speed and volume, as seen in Figure 2.6.[28]

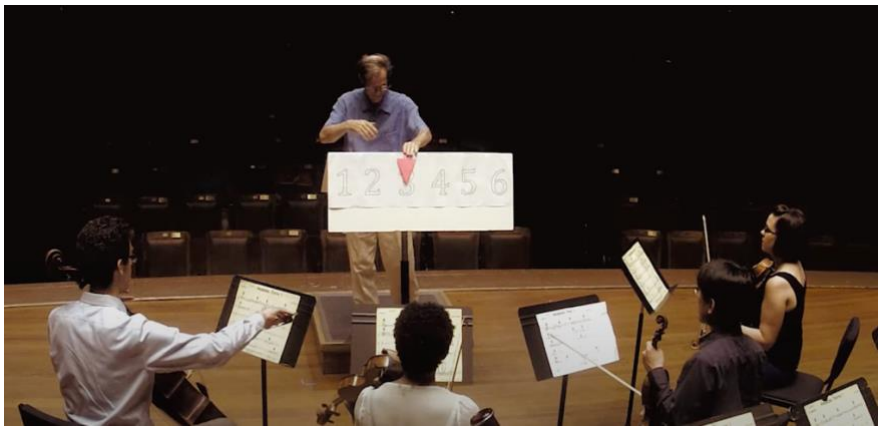

Figure 2.6. Earle Brown: *Available Forms I.*

Brown's other piece with new notation is *Twenty-Five Pages*, as seen in Figure 2.7, composed in 1953, which is also his first piano work. Brown used a system known as "time notation" or "proportional notation" whereby rhythms were represented by their horizontal length and relative positioning, allowing for a flexible interpretation.

[28] Brian Dixon, *Earle Brown: Available Forms I (1993),* filmed 2013 at Jordan Hall, New England Conservatory of Music, https://youtu.be/c2cyAVRxcRI?si=jKYhLqNahHmgzNmB.

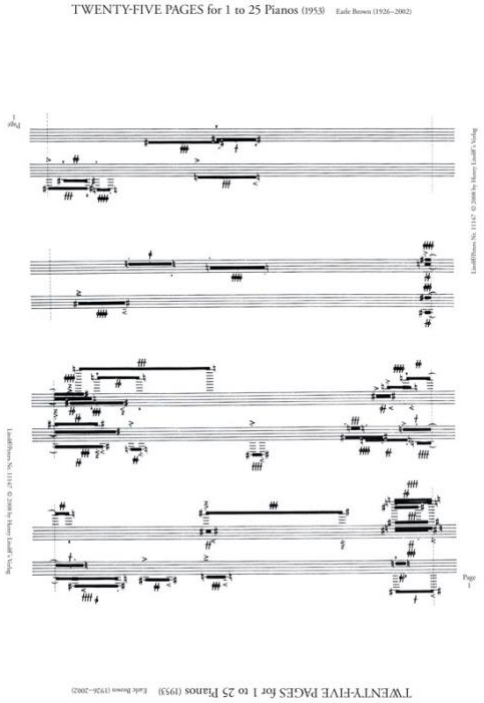

Figure 2.7. Earle Brown: *Twenty-Five Pages.*

Brown mentioned this idea in his interview:

> If you know my *FOLIO* (1952/53) (published by AMP Schirmer), you know that is contains what believe to be the first use of proportional notation, open-form, graphic scores, what I called "time notation" (to differentiate if from metric notation) etc.[29]

Based on the above Figure 2.7, Brown conveys time through the length of horizontal symbol and the placement of space, which is a reflection of the two artists' influences, as outlined by Varga's interview with Brown:

> The Calder and Pollock influences hit me around 1947 but it took me until 1951-52 to discover how to bring the "poetry" of their work into music: not to imitate their work–there is no way to do in TIME (music) what they do in SPACE (painting and sculpture)–but their innovations in how we make and experience art can be translated into the art of sound and performance. At least I thought it could be and it resulted in *FOLIO, TWENTY-FIVE PAGES* and *AVAILABLE FORMS I* and *II*, and other works.[30]

[29] Bálint András Varga, "EARLE BROWN (1926-2002)", *Three Questions for Sixty-Five Composers* (Rochester, New York: University of Rochester Press, 2011), 33.
[30] Ibid, 35.

Several other composers have also included graphic notation in their works. Notable examples include John Cage's composition *Aria*, Morton Feldman's *Projection 1*, Karlheinz Stockhousen's *Prozession*, among others. While it is true that there have been other composers who have used graphic notation, Earle Brown contributed significantly to the initial advancement and evolution of this kind of musical notation. Nevertheless, George Crumb developed his own distinctive aesthetic language via his use of graphic notation.

Graphic Notation in Crumb's *Zeitgeist* and Other Compositions

The notation used by George Crumb does not result in a performance that is characterized by arbitrariness and randomness, in contrast to the approach adopted by Earle Brown. Whereas, Crumb's notation is relatively conventional, consisting of staves, musical notes, and a variety of traditional articulation marks, these are frequently presented in circular forms. Therefore, his graphical notation is also known as "circular notation".

Circular notation was first used by Crumb in his composition *Night Music I* (1963) (Figure 2.8), which was influenced by the poem "The Moon is Rising" written by Federico García Lorca. In 1989, Terry Frost was also influenced by the same poem by Lorca, and he created paintings with circular paintings (Figure 2.9). Initially, the individual's intention in using circular notation was to symbolize the celestial objects of a circular nature. Subsequently, the use of circular notation emerged as a device for avoiding vertical instrument alignment. Crumb states in his interview:

I use a different principle when drawing my score. My pieces of circular notation are aleatoric just in a sense that they erase the vertical alignment of the score. My first circular notation was a piece called *Night Music I*, in 1963. It was also my first setting of a [Federico García] Lorca poem. The two circles in the score were supposed to represent the moon, and so it was suggested by the poem.[31]

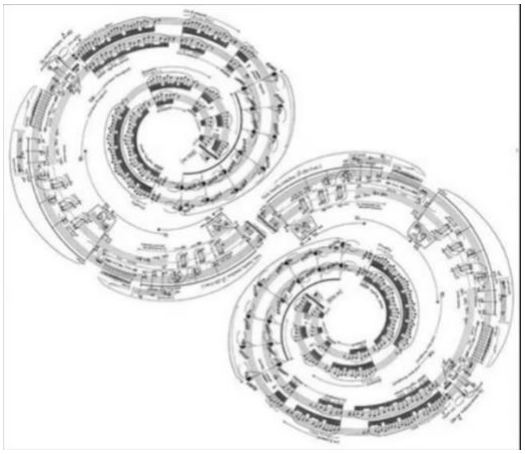

Figure 2.8. George Crumb: *Night Music I*.[32]

Figure 2.9. Terry Frost: Print, The Moon Rising by Federico García Lorca.[33]

Crumb's circular notation establishes a connection between the circles and the concept of the music of the spheres. In his piano work, titled *Spiral Galaxy* from

[31] Victoria Bowles, "Appendix 1. An Interview with George Crumb," in *Neo- Mythologism in Music: From Scriabin and Schoenberg to Schnittke and Crumb* (Martlesham: Boydell & Brewer, 2007), 265.
[32] George Crumb, *Night Music I, for Soprano, Keyboard and Percussion* (New York: Mills Music, 1967).
[33] Terry Frost, Print, *La Luna Asoma*, part of "Eleven Poems" by Federico García Lorca, presented by the Tate Americas Foundation, 2022. https://www.tate.org.uk/art/artworks/frost-the-moon-rising-p15530.

Makrokosmos I (Figure 3.0), marked "Vast, longly, timeless." Kenneth Neal Saxon described the piece, "It is notated on a corkscrew-shaped staff symbolizing the infinite vanishing point of the galaxy."[34]

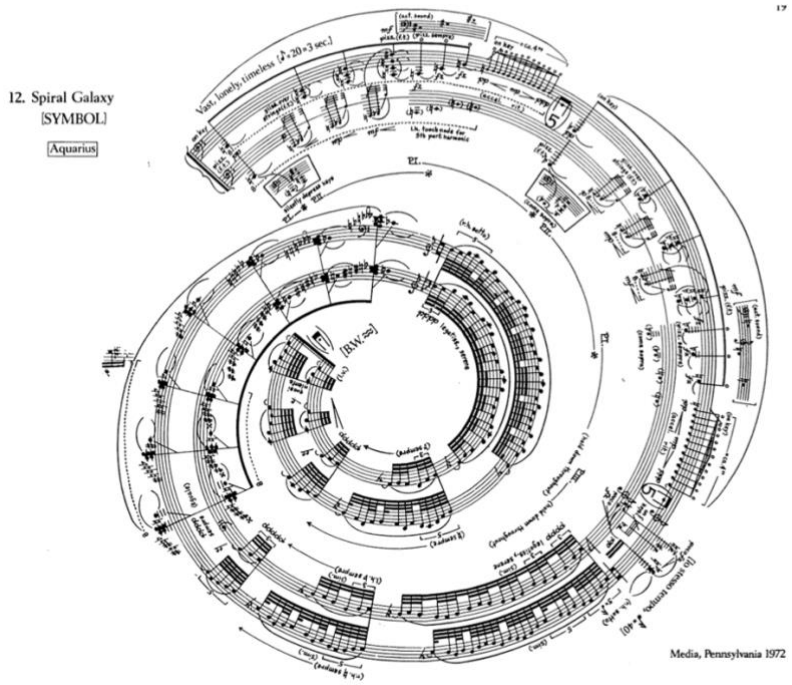

Figure 3.0. Crumb, *Spiral Galaxy* from *Makrokosmos I*[35].

In *Agnus Dei* from *Makrokosmos II* (Figure 3.1), the combination of circular notation and linear notation is seen throughout the musical composition, with the cyclic aspect of the music being most evident in Part D. This section is specifically designated as "like a vision; as if suspended in endless time."[36]

[34] Kenneth Neal Saxon, "A New Kaleidoscope: Extended Piano Techniques, 1910-1975." (DMA diss., Peabody Institute of the John Hopkins University, 1979), 66.
[35] George Crumb, "*Spiral Galaxy"* in *Makrokosmos Volume I, for Amplified Piano* (New York: C. F. Peters, 1974), 19.
[36] Crumb, "A descriptive quote at the beginning of D Section of *Agnus Dei*" in *Makrokosmos Volume II, for Amplified Piano* (New York: C. F. Peters 1974), 19.

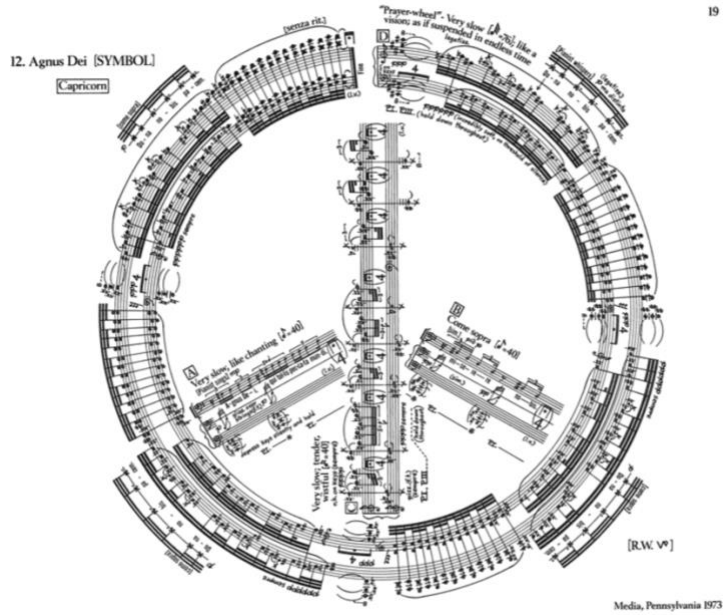

Figure 3.1. Crumb: *Agnus Dei* from *Makrokosmos II*.

Monochord **and** ***The Realm of Morpheus*** **from** ***Zeitgeist***

Monochord (Figure 3.2) is one of the two movements in *Zeitgeist* in which Crumb uses circular notation to convey his musical intentions and reflect the music's circularity. This title is used by Crumb to characterize the exclusive use of B-flat first 15 overtones as compositional parameters for this movement. Crumb had a profound interest in the mechanics behind the production of pure sound and showed a keen curiosity towards the potential application of string harmonic concepts to the realm of piano music. In his treatment of *Monochord*, Crumb provides insightful commentary in Christine Lynn Eisenberg's interview:

> All the notes derive from that instantaneous series of overtones from the low B-flat. It is a demonstration of the physical sound I was aware of when I was writing the piece. This is what one note consists of![37]

[37] Christine Lynn Eisenberg, "Appendix A. Interview with George Crumb," in "Accessing the Spirit," 2005, 233.

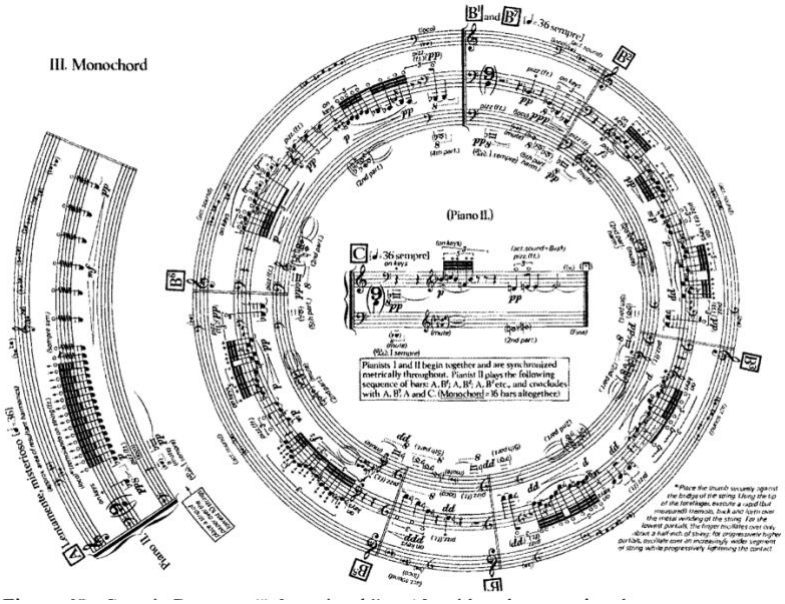

Figure 3.2. Crumb: *Monochord* from *Zeitgeist*, p.18.

Furthermore, Crumb also conveys the concept of circularity via his unique notation in *Monochord*, approaching it from an alternative perspective, which is that Crumb employs the extended technique of "string tremolando" in order to generate a diverse range of partial tones, resulting in a vivid and multifaceted auditory experience. Crumb states in program note to *Zeitgeist*:

> A continuous droning sound (produced alternately by the two pianists) underlies the whole piece. This uncanny effect, which is produced by a rapid oscillating movement of the fingertip in direct contact with the string, results in a veritable rainbow of partial tones.[38]

Crumb effectively conveys the circularity of the movement via the use of circular notation, which graphically represents the essence of his artistic objectives. The concept of a "sense of unbroken timelessness"[39] as envisioned by Crumb is shown on both levels mentioned above. This representation potentially implies that the fundamental themes or

[38] Crumb, "Program Notes" in *Zeitgeist*, 3.
[39] Ibid., 3.

questions pertaining to existence remain timeless, since they are continuously presented in a changing array of settings.

The Realm of Morpheus (Figure 3.3) is another artistic creation by Crumb shown in *Zeitgeist*, which also employs the use of graphic notation. Crumb explores the concept of "the inner eye of dreams"[40] to present a mysterious image where an individual's subconscious mind is vague and uncertain while dreaming. Crumb distinguishes between the two divergent aspects of the subconscious state he is portraying, namely the outer state of consciousness by Piano I and the inner state by Piano II.

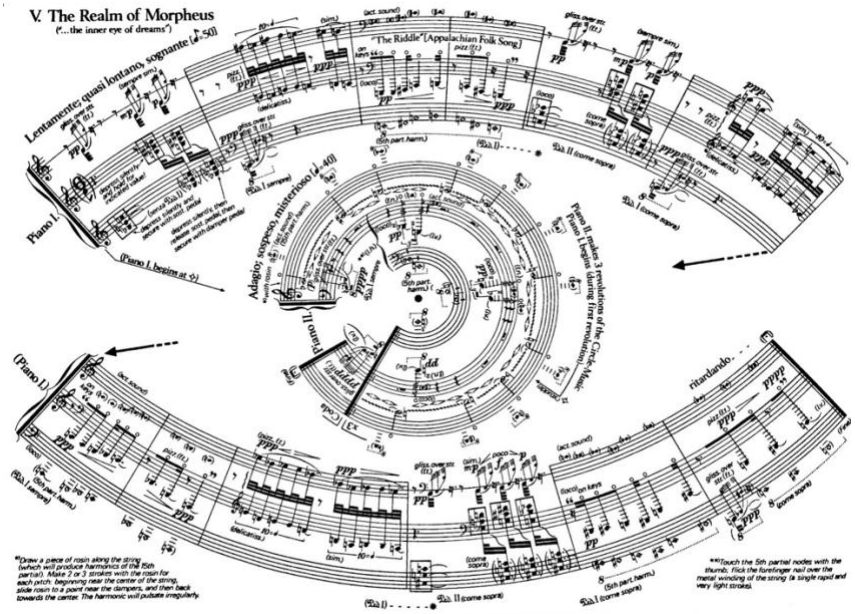

Figure 3.3. Crumb: *The Realm of Morpheus* from *Zeitgeist*, p.26.

The graphic notation establishes an initial visual demarcation, whereby Piano I occupies the outside portion of the image and Piano II occupies the inside section. While the scoring of the two components is done separately, they are interdependent since they are both essential for the realization of Crumb's envisioned dream world and the

[40] Crumb, A descriptive quote at the beginning of *The Realm of Morpheus* in *Zeitgeist*, 26.

formation of the "perceptible configuration of the human eye."[41] The descriptive notations and tempo shown at the start of the score for each individual section exhibit noticeable variations. Piano I is titled as *Lentamente; quasi lontano, sognante* (slowly; as if in the distance, dreamy), with a tempo sign of eighth note=50. Piano II is titled as *Adagio; sospeso, misterioso* (slow; suspended, mysterious), with a tempo marking of quarter note=40. Crumb has effectively delineated the distinct emotional and psychological dimensions of the two musical components using both pictorial and notational means.

The acoustic aspects of the music are closely related to the score of *The Realm of Morpheus*, and the parts of each piano are distinct and independent from each other. In Piano II, Crumb used the application of rosin on the piano strings to facilitate sliding motion, resulting in the generation of a series of high-pitched ostinatos. This technique contributed to the creation of an atmosphere characterized by a sense of remoteness, indistinctness, and mysterious dreams. Upon thorough examination of this timbre, it creates an unstable tone and fades in and out of consistency. It is a voice on the verge of collapsing, fraught with peril and uncertainty, and this effect will bring tension to the listener. In this ambiance, Crumb describes an additional string glissando sound and "disembodied fragments of an Appalachian folk-song (*The Riddle*) emerge and recede"[42] (Piano I) in dream music. The folk song with a tonal melody is a personal memory of Crumb's, which forms a sharp contrast with the high-pitched ostinato, further deepening the sense of the surreal.

[41] Crumb, "Program Notes" in *Zeitgeist*, 3.
[42] Ibid., 3.

The Realm of Morpheus is the only piece within *Zeitgeist* that does not need a high level of collaborative participation. The acoustic aspect presents the mutual opposition between tonal and non-tonal sonorities. This demonstrates the elusive and misty characteristics that Crumb strives for, combined with the graphic notation, which Crumb intends to "express something shadowy and ill-defined-like the mysterious subliminal images which appear in dreams"[43] through the eyes.

Nevertheless, it should be noted that Crumb's graphic notation does not only consist of circular notation. In the composition *Crucifixus* from *Makrokosmos I* (Figure 3.4), the musical notation consists of two crossing straight lines arranged perpendicularly, forming the visual representation of a cross.

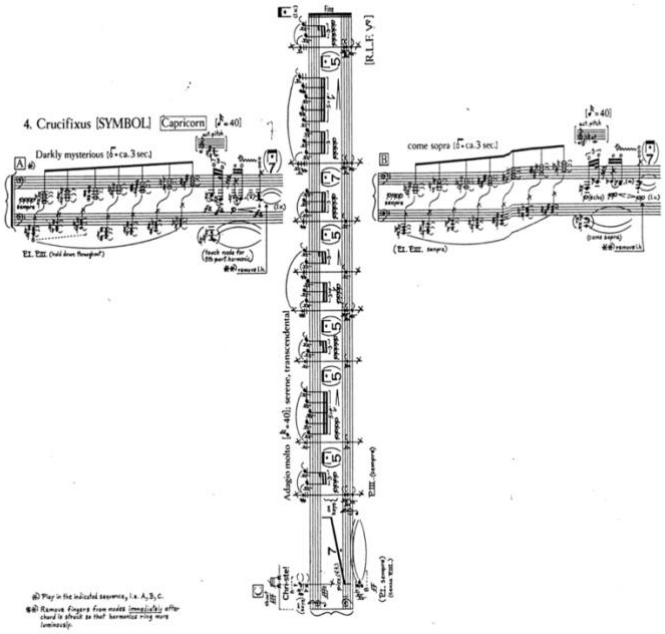

Figure 3.4. Crumb: *Crucifixus* from *Makrokosmos I.*[44]

[43] Ibid., 3.
[44] George Crumb, "*Crucifixus"* in *Makrokosmos Volume I, for Amplified Piano* (New York: C. F. Peters, 1974), 10.

Crumb's graphic notation has a strong correlation with the musical language he seeks to convey and the sound art he displays. This connection is particularly evident in the recurring presence of "timelessness" within his scores and program notes, a topic that will be further explored in the subsequent chapter.

CHAPTER 4

MUSICAL AND COMPOSITIONAL CHARACTERISTICS

From the perspective of notation, Crumb's work *Zeitgeist* incorporates both conventional and unconventional notation, which means that the performers need to process comprehensive readiness to comprehend and execute the piece accurately. This entails studying its musical compositional characteristics, patterns, rhythm, as well as acquiring proficiency in various complex extended techniques, which are then integrated into the performance. Therefore, this chapter aims to examine the main musical characteristics individually, including noteworthy patterns, placement and timing, the rhythms of each movement.

I. *Portent*

Whole Step and Half Step Motif

The primary feature in this composition is characterized by Crumb's use of whole steps and half steps as recurring motifs throughout the piece. *Portent* begins with a motif consisting of a pattern of three notes, each separated by a whole step, which serves as the basis for a significant portion of the movement. (Figure 3.5)

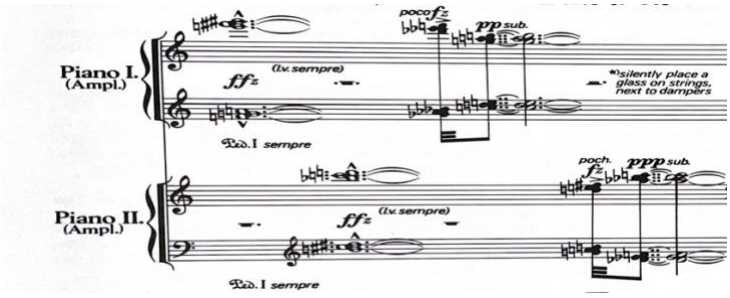

Figure 3.5. The Pattern of Three Whole Step Notes from Crumb: *Portent* from *Zeitgeist,* p.6.

The whole step motif also occurs in the running notes section, (figure 3.6) which is composed of the chordal intervals as a scalar pattern in the left hand part from Piano I (figure 3.5).

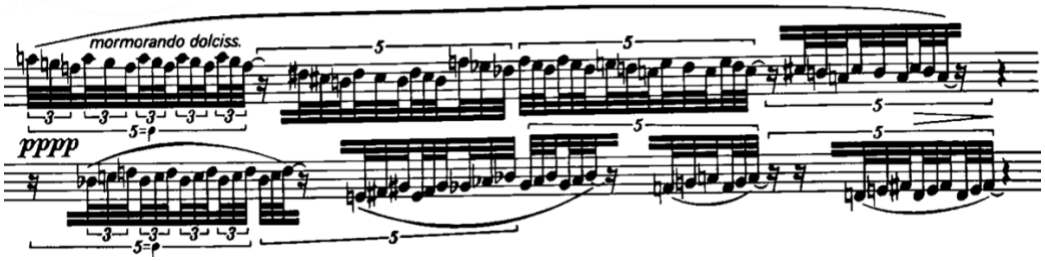

Figure 3.6. The Pattern of Whole Step Running Notes from Crumb: *Portent* from *Zeitgeist*, p.8.

In figure 3.7, there is also a whole step pattern due to the accidentals, albeit a visual change compared to the figure 3.5.

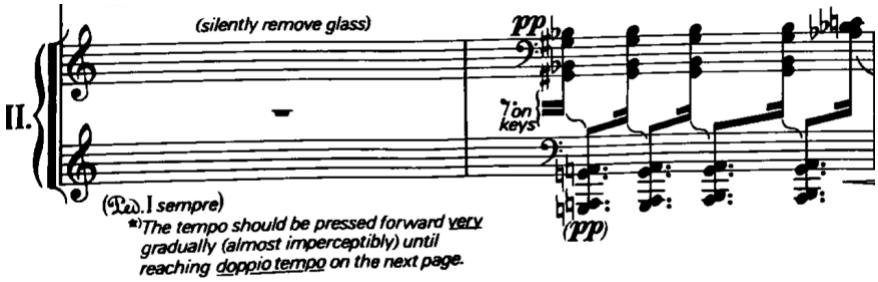

Figure 3.7, The Pattern of Three Whole Step Notes from Crumb: *Portent* from *Zeitgeist*, p.10.

The half step motif is less prevalent in *Portent*, since they are selectively employed for the purpose of enhancing the melodic quality of certain parts, such as the portion featuring the glass tumbler method (see figure 3.8). The recurrence of this passage is evident throughout the opening, middle, and ending portions, serving to highlight the structure.

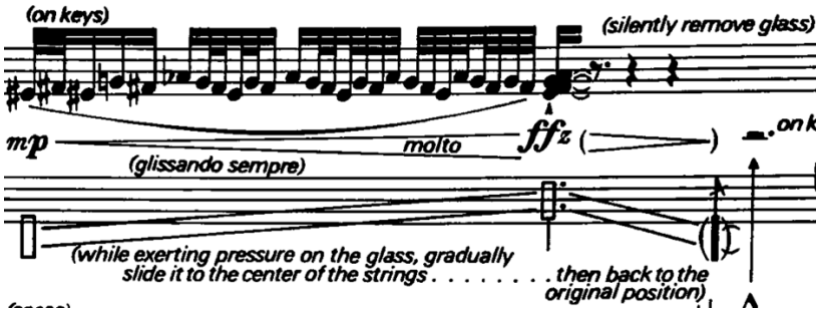

Figure 3.8, The Pattern of Half Step with Extended Technique from Crumb: *Portent* from *Zeitgeist*, p.6.

Tenuto Marks

Although the tenuto marks are briefly present in middle section from *Portent* spanning only four bars, the nuanced nature of these qualities is well-suited for highlighting the melodic line, while also enriching the blending texture and mysterious sound of sections, which clearly presents a new phrase compared to the former section, as seen in Figure 3.9.

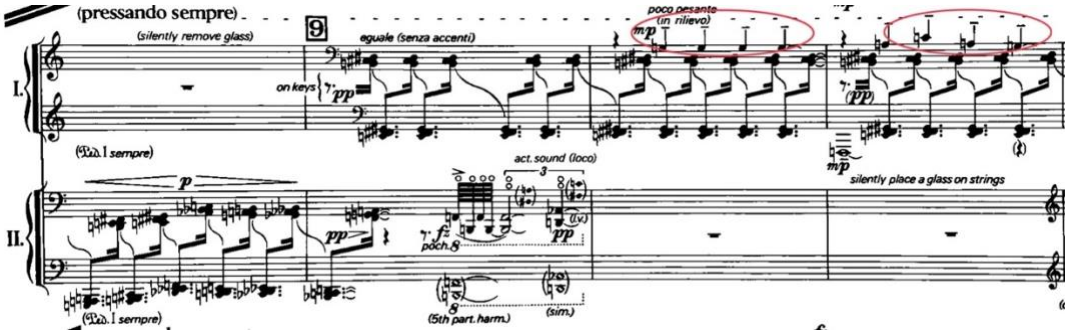

Figure 3.9. Tenuto Marks from Crumb: *Portent* from *Zeitgeist*, p.10.

Dynamic and Tempo changes

In *Portent*, Crumb frequently uses simultaneous changes in speed and dynamics to achieve a more dramatic effect. For example, in figure 4.0, as the dynamic increases,

the speed also becomes more intense, and then spreads out, which creates a sound effect that builds from a distance and gradually disappears again.

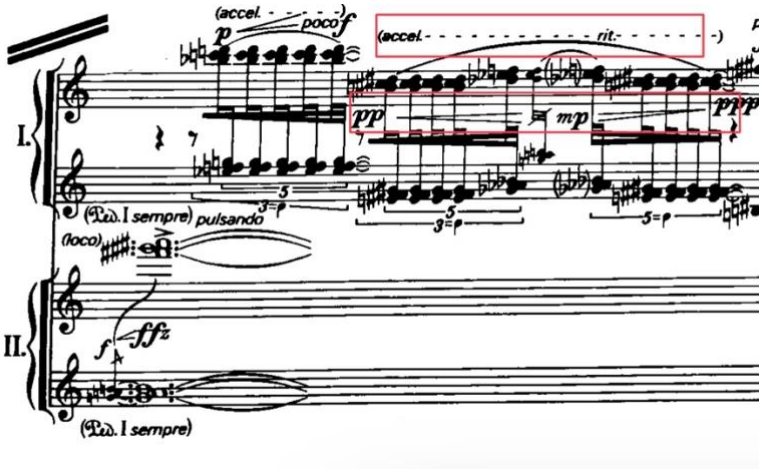

Figure 4.0. Dynamic and Tempo Changes from Crumb: *Portent* from *Zeitgeist*, p.7.

Another example for the similar approach is in figure 4.1, Crumb replicates an accelerando by increasing the quantity of notes, marking a rise in the dynamic intensity. The previous pattern of four notes as a group has been increased to six notes, and the dynamic mark has also changed from ***mf*** to ***ffz***.

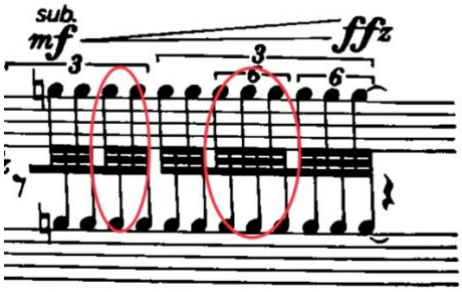

Figure 4.1. Dynamic and Tempo Change from Crumb: *Portent* from *Zeitgeist*, p.8.

II. *Two Harlequins*

<u>Augmented Triad</u>

Crumb uses augmented triads throughout the *Two Harlequins*. In figure 4.2, there are three groups of augmented triads divided between the hands in Piano I, the same interval pattern that is shown in figure 4.3.

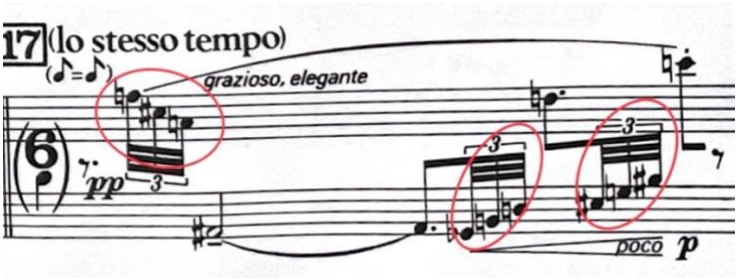

Figure 4.2, Augmented Triad from Crumb: *Two Harlequins* from *Zeitgeist*, p.13.

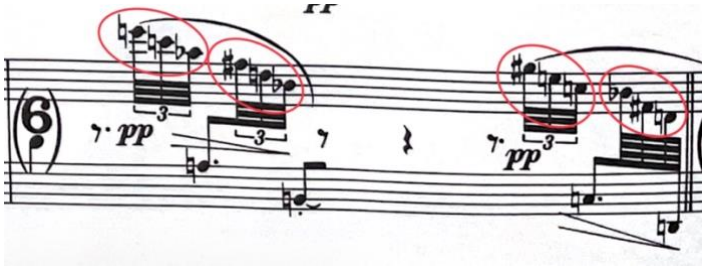

Figure 4.3, Augmented Triad from Crumb: *Two Harlequins* from *Zeitgeist*, p.15.

Tritone Motif

Crumb employs a sequence of whole steps to create the tritone motif, which is performed alternately by Piano I and Piano II in rehearsal no. 24 (figure 4.4). It is advisable to include fingerings in certain sections to maintain consistency and precision. Meanwhile, it is important for performers to pay attention to the rhythmic stability of the unison to help synchronization and the ensemble.

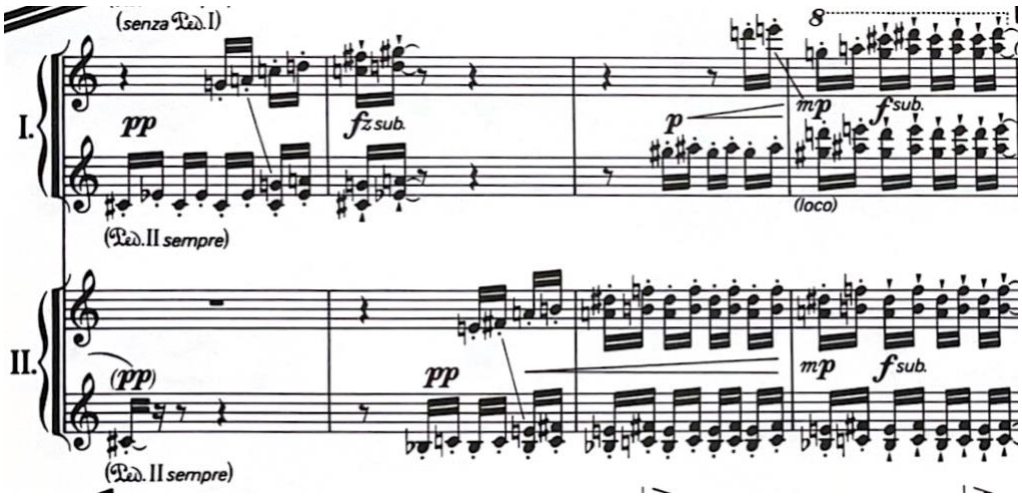

Figure 4.4, Tritone Motif from Crumb: *Two Harlequins* from *Zeitgeist*, p.16.

Whole Step Clusters

In *Two Harlequins*, Crumb also extensively integrated whole step clusters in this piece, as seen in figure 4.5. Through repeated practice and the identification of the pattern's position by locating the bottom and top notes on the keyboard, the performer gradually develops a greater level of ease and proficiency.

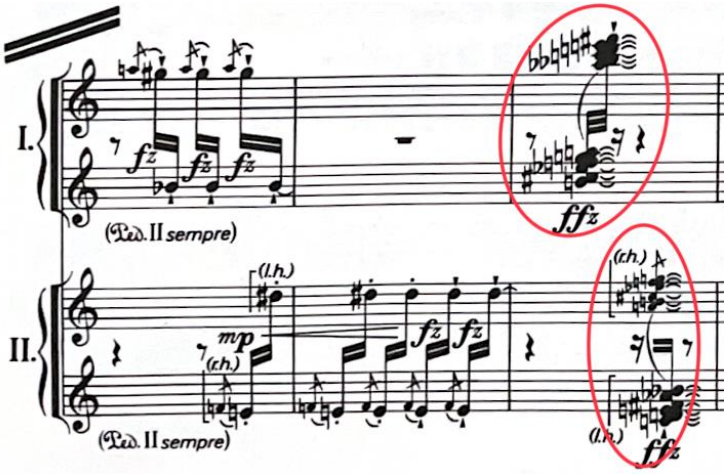

Figure 4.5. Whole Step Clusters from Crumb: *Two Harlequins* from *Zeitgeist*, p.13.

Meter Changes

This movement exhibits a variety of meter changes, alternating between measures of four beats, five beats and six beats. Nevertheless, the eighth-note pulse stays consistent throughout. Figure 4.6 demonstrates the use of a quarter-note beat by Crumb, which serves the purpose of facilitating the performer's adjustment to the triplet rhythm.

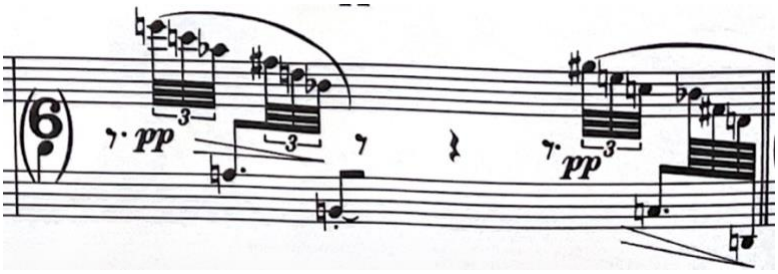

Figure 4.6. Meter Changes from Crumb: *Two Harlequins* from *Zeitgeist*, p.15.

Syncopation

The management of syncopation in a movement characterized by a relatively fast tempo (♪=182) is a technical challenge, although it has significant importance for the overall character. Figure 4.7 demonstrates the alternation of syncopation between Piano I and Piano II. The syncopated note consistently manifests itself during the latter portion of the third beat.

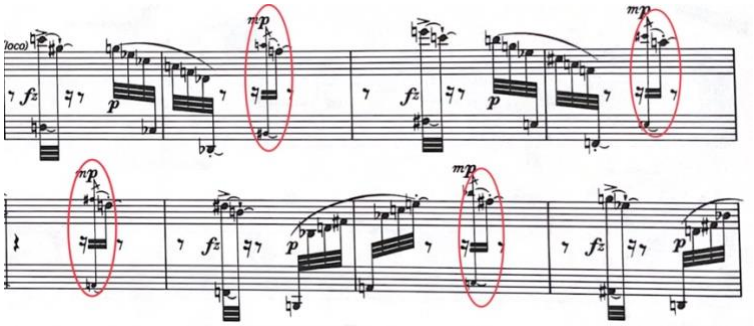

Figure 4.7. Syncopations from Crumb: *Two Harlequins* from *Zeitgeist*, p.16.

III. *Monochord*

The movement *Monochord* serves as an exemplification of the character of "timelessness", which has significant importance within Crumb's musical vocabulary. The "sense of unbroken timelessness"[45] within this movement is established using graphic notation in a strikingly visual way, as well as through the auditory presence of the ostinato between two pianos. This unique sound approach demonstrates an intriguing array of Crumb's extended techniques.

As seen in Figure 4.8, a graphic notation for Piano I, the movement is divided into three distinct parts, denoted as Part A, B, and C, which are present in both Piano I and Piano II. The musical notation for Piano includes a circular score, whereby Part A is represented by six measures, each labeled from A1 to A7 (with A1 and A7 denoting the same measure). Part B and C, on the other hand, consist of a single measure each. According to Crumb's instructions, the performer plays a series of bars in the following manner: A1, B; A2, B; A3, B; A4, B, and so on, ending with A7, B and C.[46] Consequently, the recurring presence of Part B inside the movement leads to a time loop phenomenon, providing the work with a sense of cyclical progression.

[45] Crumb, "Performance Notes" in *Zeitgeist*, 3.
[46] Crumb, Score for *Zeitgeist*, 19.

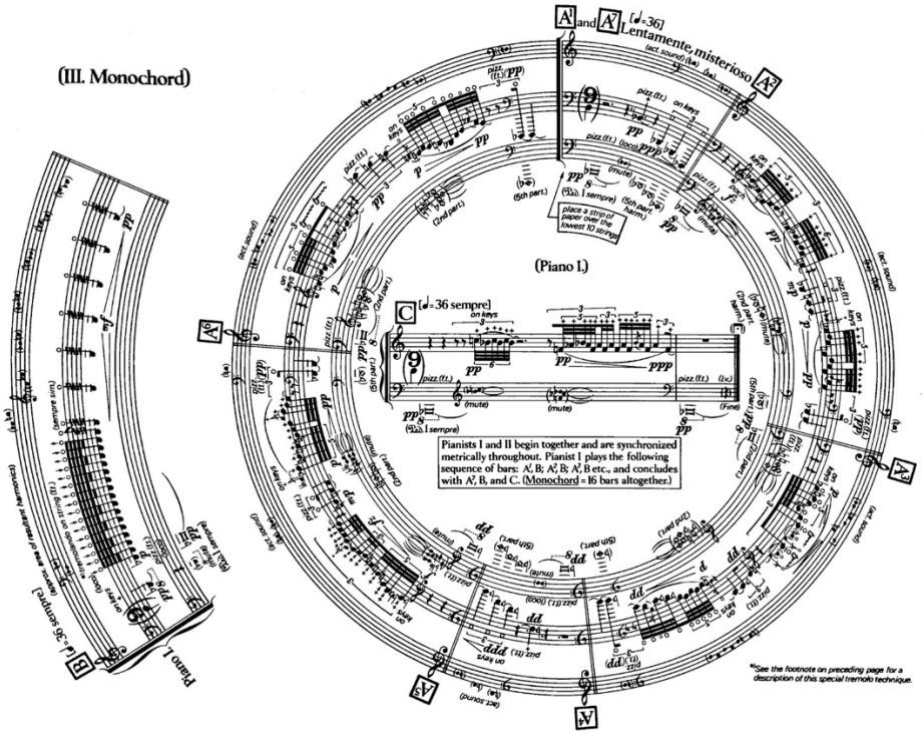

Figure 4.8. Piano I from Crumb: *Monochord* from *Zeitgeist*, p.19.

Tremolando Ostinato

To facilitate the performers' reading of the graphic score, Crumb employs the traditional notation for *Monochord* (figure 4.9). At the beginning, despite the tremolando ostinato maintaining an entire measure in a slow tempo without interruption, the performer should engage in beat subdivision to preserve the stability of the tempo. It is noteworthy to observe that the dynamic climax of the tremolando always happens on the sixth beat. The intensity of the dynamic change should be reflected evenly with the beats. As Piano I prepares to play the triplet, it is important to note that it maintains precise execution of the pizzicato entering the second half of the fifth beat.

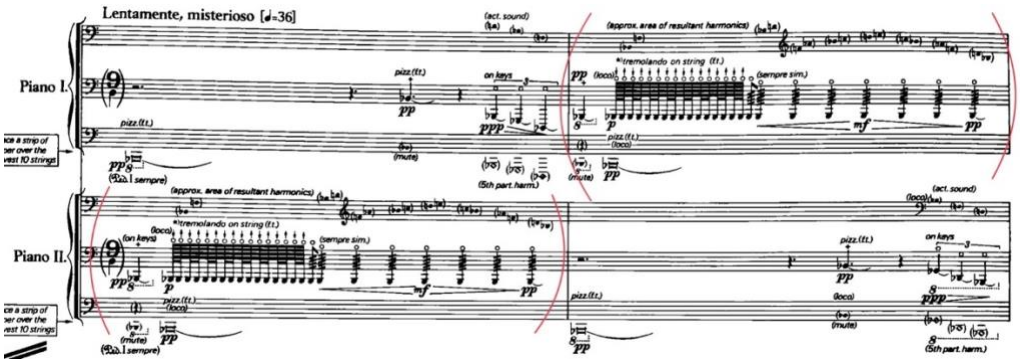

Figure 4.9. Tremolando Ostinato from Crumb: *Monochord* from *Zeitgeist*, p.33, (Appendix A).

Overtones of B-flat

The pitch contents of *Monochord* are determined by the initial fifteen overtones of a harmonic sequence from a low B-flat. The presence of a low B-flat on strings produces a continuous tremolo effect, like a sustained drone, as seen in figure 4.9. Additionally, the overtones produced by playing certain keys on the keyboard are arranged in a cyclic manner, such as the sequence B-flat–C–B-flat–F–B-flat (figure 5.0). This circular image serves to accentuate the inherent circularity of the composition.

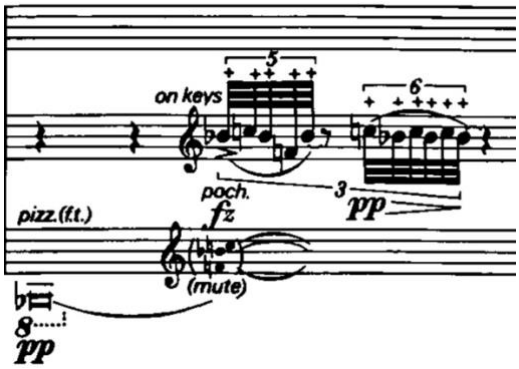

Figure 5.0. Overtone of B-flat from Crumb: *Monochord* from *Zeitgeist*, p.33, (Appendix A).

Division of Beats

Considering the slow tempo (♩= 36) of *Monochord,* it is essential for the performer to engage in beat subdivision to keep rhythmic consistency for the whole piece. In addition to this, it is necessary to modify the number of divided beats according to the different rhythmic patterns. As seen in figure 5.1, the first through fifth beats of the measure are conventionally split into three subdivisions according to the triplet rhythm. At the conclusion of beat six, it is necessary for the performer to transition to a subdivision of two to accurately execute the rhythmic figure that takes place on beat seven. Subsequently, the performer should promptly go back to a division of three.

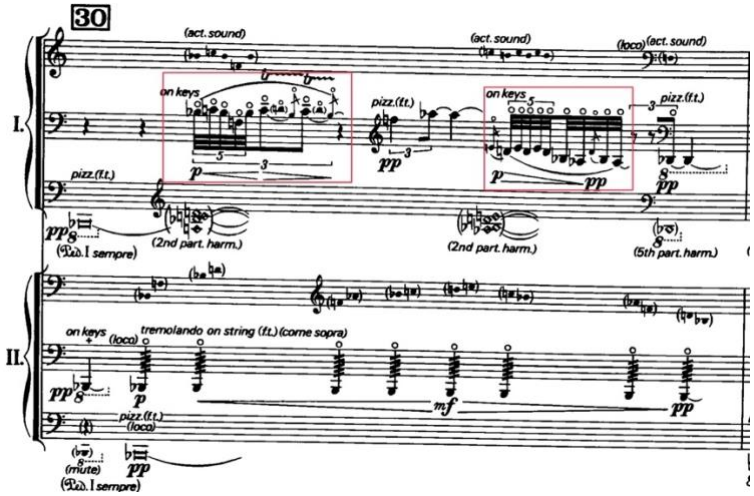

Figure 5.1. Division of Beats from Crumb: *Monochord* from *Zeitgeist*, p.34, (Appendix A).

IV. *Day of the Comet*

Day of the Comet has similarities with *Two Harlequins* in terms of its attention to conventional scores and the challenges it presents due to its fast tempo and complex rhythm patterns in many musical sections. Crumb also integrates many extended piano techniques, enhancing the intricacy of the piece.

Half Step Motif

Crumb mostly uses half step intervals to generate movements characterized by the chromatic scale motive in *Day of the Comet.* As an example, figure 5.2, the first four measures of the piece effectively express the impact of the chromatic scale, and they establish the higher intensity and narrowed nature that dominate the entire movement.

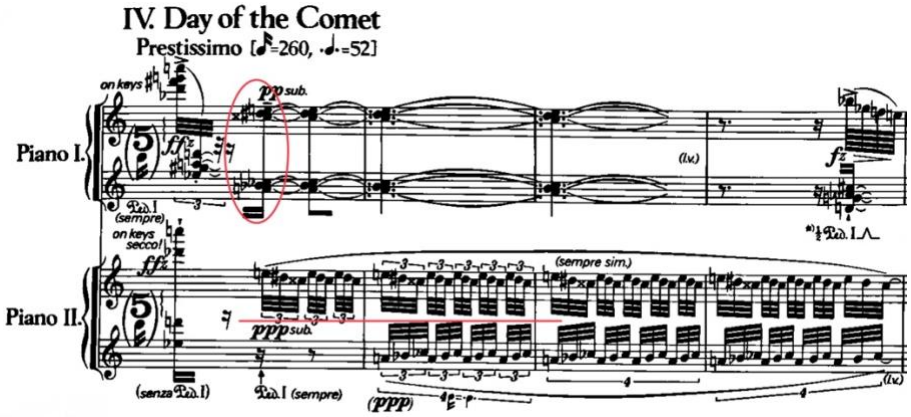

Figure 5.2. Half Step Motif from Crumb: *Day of the Comet* from *Zeitgeist*, p.20.

In addition, the use of Crumb's extended techniques within this movement, including scraping strings, muted tones, and cluster tones, (figure 5.3) further emphasize the characteristics of the chromatic scale.

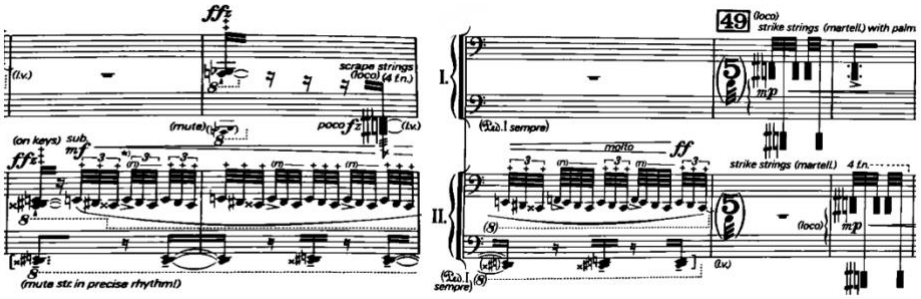

Figure 5.3. Half Step Motif from Crumb: *Day of the Comet* from *Zeitgeist*, p.25.

Tritones and Major Seventh Intervals

As depicted in figure 5.4 and 5.5, a different combination of the half step elements generates the tritone patterns and major seventh intervals, producing a "volatile, yet strangely immaterial"[47] effect.

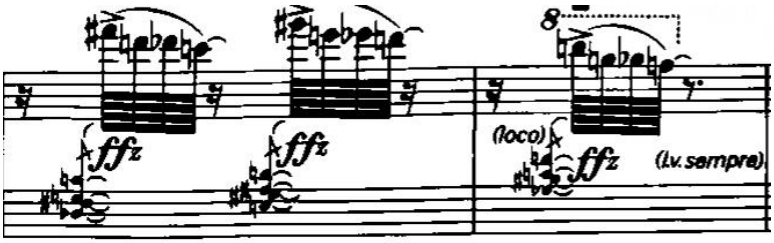

Figure 5.4. Tritones from Crumb: *Day of the Comet* from *Zeitgeist*, p.20.

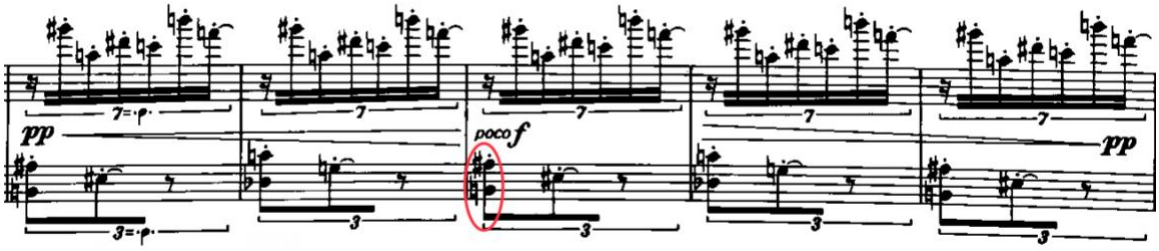

Figure 5.5. Major Seventh Intervals from Crumb: *Day of the Comet* from *Zeitgeist*, p.20.

Cross Rhythms

The complicated cross rhythm challenges between two pianos in *Day of the Comet* are shown in figure 5.6. In Piano II, the adherence to the precise five beats (a triple note as one beat) pulse is maintained, but this non-accented section creates a complex rhythmic challenge for Piano I. To effectively handle the rhythmic pattern, Piano I must transition into a new four beats feeling that against five beats. Returning to the five beats structure in the next measure, Piano I starts playing on the third beat, seamlessly integrating into the eleven beats group, and closing with the ***ffz*** on the fifth beat.

[47] Crumb, "Performance Notes" in *Zeitgeist*, 3.

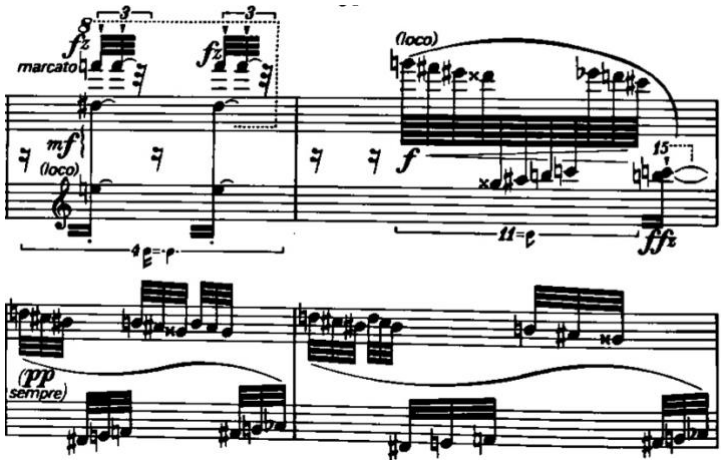

Figure 5.6. Cross Rhythm from Crumb: "Day of the Comet" from *Zeitgeist*, p.23.

Another complex cross rhythmic challenge is seen in Figure 5.7. Within this section, the Piano II is required to execute the downbeat, to subdivide the musical beats into seven equal parts, and integrate the triplet's second beat into the overall performance. The complexity of the piece is increased by the simultaneous five against four rhythmic patterns seen in Piano I. The synchronized arrival at the downbeat once again ensures the accuracy of these various rhythmic patterns.

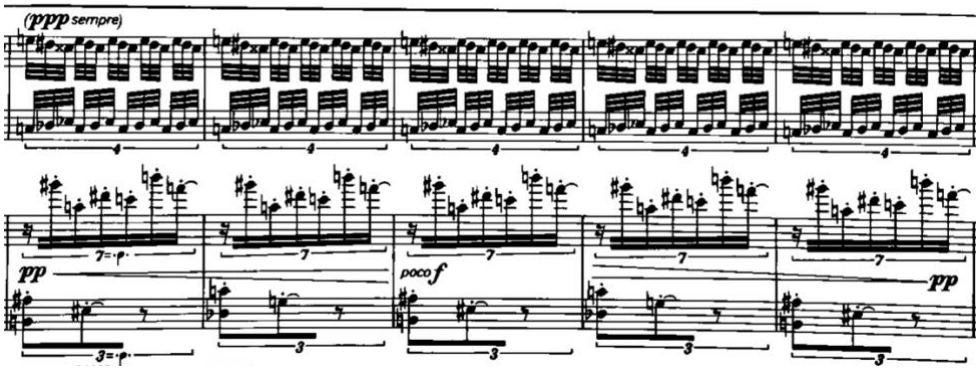

Figure 5.7. Cross Rhythm from Crumb: *Day of the Comet* from *Zeitgeist*, p.20.

V. *The Realm of Morpheus*

Ostinato

The formal design and usage of graphic notation in *The Realm of Morpheus* are akin to those found in *Monochord*. Within this movement, Piano I has the role of incorporating the motive, while Piano II serves the purpose of providing the ostinato, as seen in Figure 5.8. The Piano II part initiates the ostinato before Piano I enters and concludes after Piano I ends.

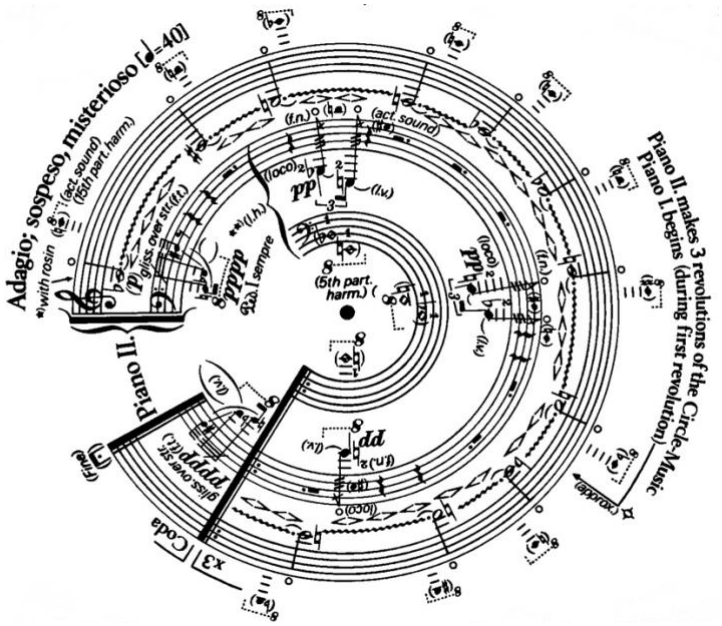

Figure. 5.8. Ostinato from Crumb: *The Realm of Morpheus* from *Zeitgeist*, p.20.

Whole and Half Step

The ostinato consists of the alternating whole and half step harmonic notes in the right hand and glissandi in the left hand. Thus, Crumb maintains the use of these intervals as a main feature of this movement. Crumb has once again included an appendix for Piano II due to the difficulty of interpreting the graphic notation (figure 5.9).

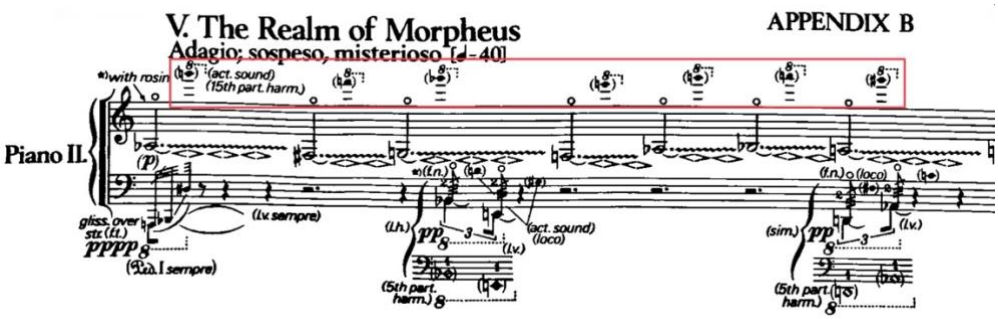

Figure 5.9. Whole and Half Step from Crumb: *The Realm of Morpheus* from *Zeitgeist*, p.36.

The Piano I also combines whole and half step patterns, as seen in figure 6.0. The first piano part is structured into three short sections, each of which is repeated three times throughout the piece in slightly different ways. Crumb employs a combination of alternating whole and half step tones, together with tritone glissandi patterns in the first two sections of the three.

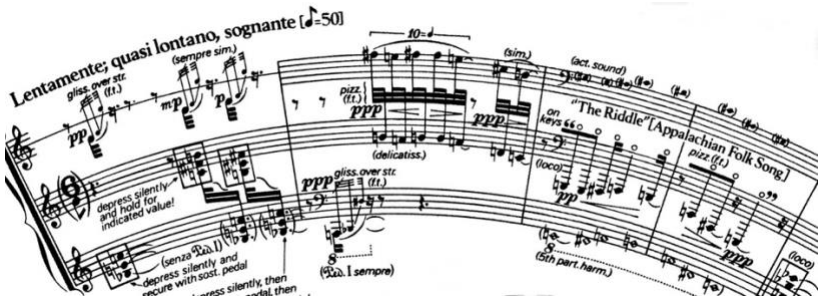

Figure 6.0. Whole and Half Step with Tritones from Crumb: *The Realm of Morpheus* from *Zeitgeist*, p.26.

<u>"The Riddle"</u>

The third section of the three is the segmented melody of a folk song named "The Riddle" (figure 6.1), a lullaby brought to the American Appalachians by English settlers. This section's striking melody stands in stark contrast to the vague atmosphere composed of whole and half tones in the preceding section, which further emphasizes Crumb's intention to convey the notion that reality and dreams are intertwined.

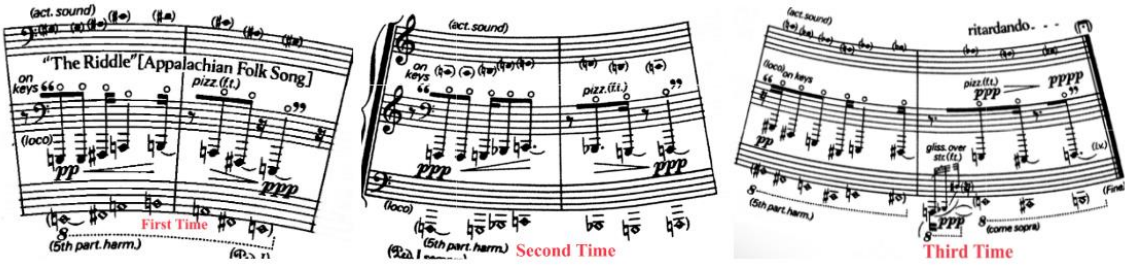

Figure 6.1. "The Riddle" Appalachian Folk Song from Crumb: *The Realm of Morpheus* from *Zeitgeist*, p.26.

VI. *Reverberations*

Echo Dialogue

The movement *Reverberations* incorporates many motives and patterns that have been previously discussed, presenting them in a compilation of patterns derived from the preceding movements. In the score, some segments of this movement are constructed as separate objects. Crumb employs this special notation to graphically depict the echoing characteristic that music aims to convey audibly. The features of the echoing quality, which gradually disappears as the dynamic level decreases, are shown in figure 6.2. This phenomenon is seen in the alternating patterns produced by Piano I and Piano II.

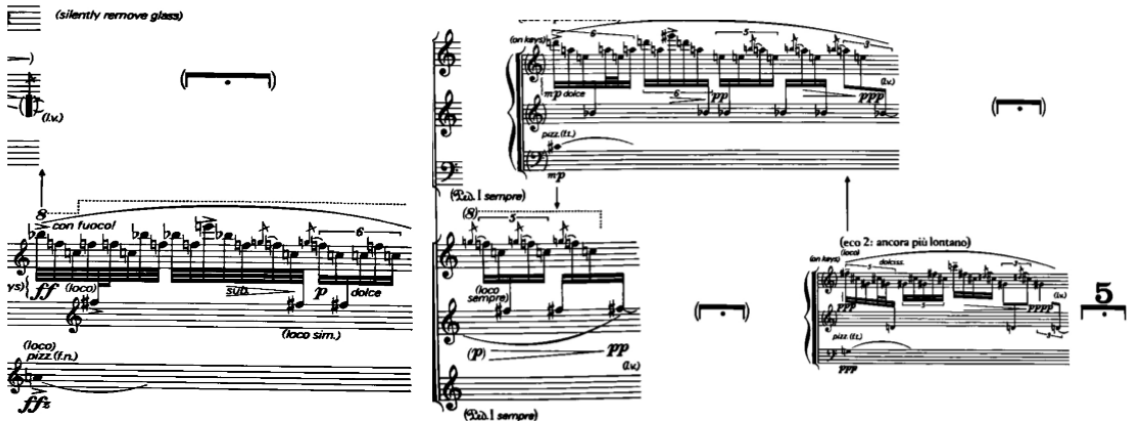

Figure 6.2. Echo Dialogue from Crumb: *Reverberations* from *Zeitgeist*, p.27.

Whole Tone Scale

Crumb used several whole step patterns inside this movement, while also extending the horizontal utilization of the whole tone scale, as seen in figure 6.3, which plays a crucial role in both the opening and closing sections of the work.

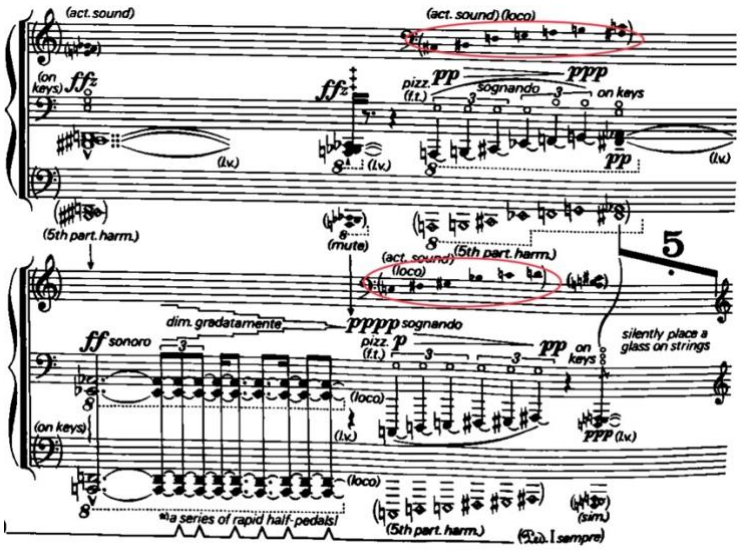

Figure 6.3. Whole Tone Scale from Crumb: *Reverberations* from *Zeitgeist*, p.27.

In addition, figure 6.4 also shows that a part of the whole tone scale is hidden in the left hand part of Piano I.

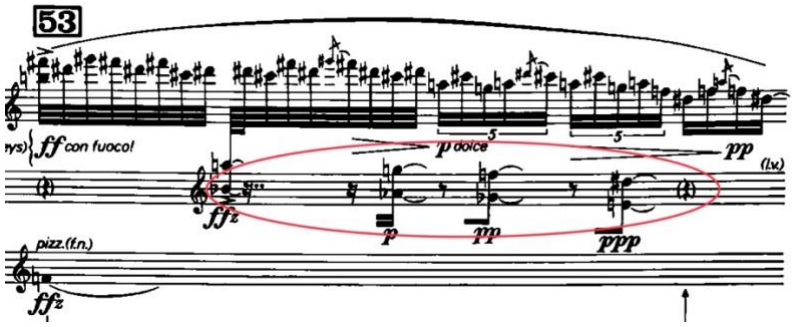

Figure 6.4. Whole Tone Scale from Crumb: *Reverberations* from *Zeitgeist*, p.28.

Note Duration in Dynamic and Tempo Changes

Several of the rhythmic patterns discussed in the previous movements are also present in this movement. In figure 6.5, Crumb employs a technique of progressively stretching note durations to provide a *ritardando* effect, and the dynamic level has been decreased from ***ff*** to ***ppppp***.

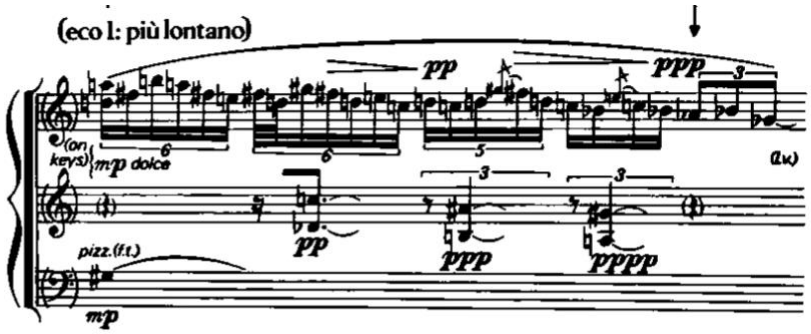

Figure 6.5. *Ritardando* Effect from Crumb: *Reverberations* from *Zeitgeist*, p.28.

Figure 6.6 also demonstrates the same technique that Crumb employs to achieve the opposite effect, which expresses the tension of the music.

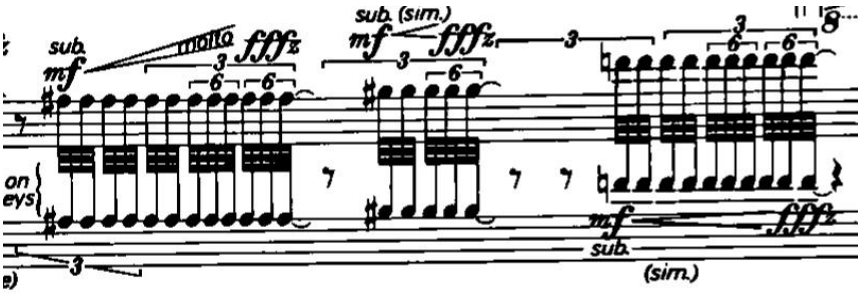

Figure 6.6. *Accelerando* Effect from Crumb: *Reverberations* from *Zeitgeist*, p.30.

Pedal in Dynamic Changes

In *Reverberations,* Crumb employs a method involving the fast alteration of a half pedal to provide a *diminuendo* effect, while allowing the production of another sound, as seen in figure 6.7. Crumb points out his intentions in the score, "The diminuendo should

be carefully controlled so that the chord of harmonics in the other piano emerges only very gradually."[48] He also uses this method in *Day of the Comet*.

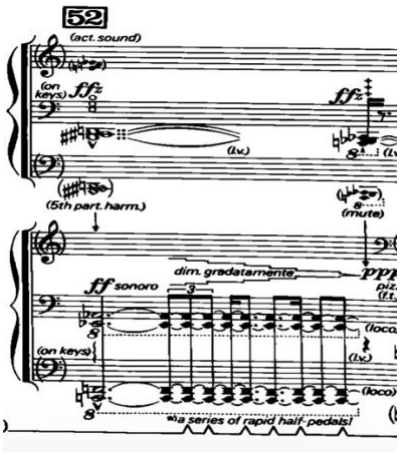

Figure 6.7. Pedal in Dynamic Change from Crumb: *Reverberations* from *Zeitgeist*, p.28

The use of motifs, including both whole and half steps, intervals, tritones, and various complicated rhythmic patterns over all six movements of *Zeitgeist* serves to establish an integrated framework within the composition. The use of recurring techniques within the whole composition contribute to the creation of a circular structure, which allows the performer to adapt to Crumb's compositional style and helps to form a connected performance of *Zeitgeist*.

[48] Crumb, score for *Zeitgeist*, 27.

CHAPTER 5

EXTENDED TECHNIQUES PERFORMANCE GUIDE

This chapter will provide a comprehensive performance guide with specific extended techniques to serve as a valuable reference for musicians seeking to acquire proficiency in performing *Zeitgeist.*

Since an in-depth definition and analysis of each extended technique used in the work *Zeitgeist* has been presented in Chapter 2, I will demonstrate the hand positions inside the piano and provide further explanation on these extended techniques.

I. *Portent*

Glass Tumbler Technique

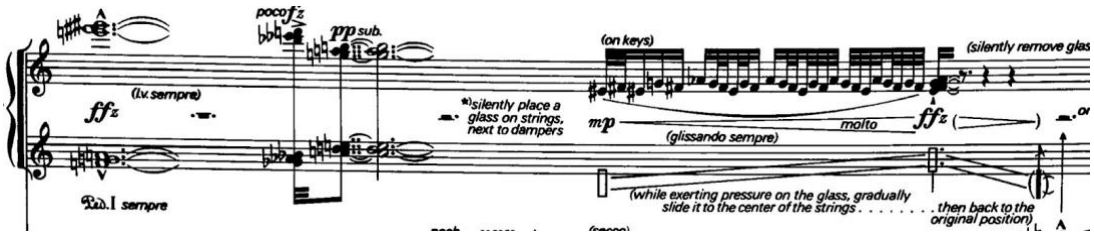

Figure 6.8. Glass Tumbler Technique from Crumb: *Portent* from *Zeitgeist*, p.6.

According to figure 6.8, the glissando effect seen in the beginning of the movement is created via sliding a glass tumbler on the strings while playing the specific notes on the keyboard. In order to meet the requirements of Crumb that "silently place a glass on strings, next to dampers."[49] It is necessary for the performer to first mute the strings using the right hand (figure 6.9) since the damper pedal is down throughout, then place the bottom of a glass silently to avoid breaking against the rough surfaces of the strings (figure 7.0).

[49] Crumb, score for *Zeitgeist*, 6.

Figure 6.9. Muting Strings before Placing a Glass Tumbler from *Portent*, p.6.

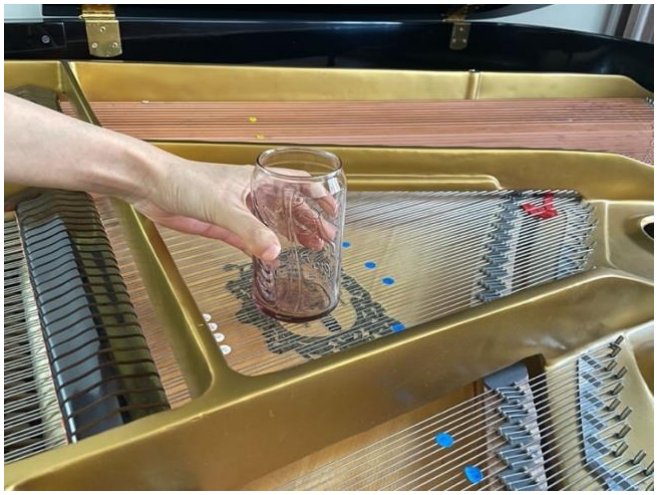

Figure 7.0. Position of a Glass Tumbler from *Portent*, p.6.

Scraping and Muting Strings Technique

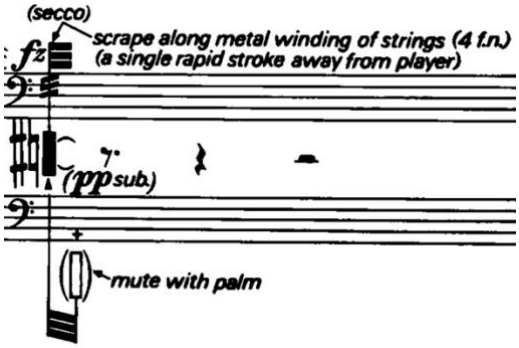

Figure 7.1. Scrape and Mute Strings Technique from *Portent*, p.6.

In figure 7.1, the performer uses four fingernails (f.n.) of the right hand to produce the scraping action that begins near to the dampers and rapidly strokes away from the performer (figure 7.2). The left hand immediately applies enough pressure to focus the muted tone with the palm for consistency (figure 7.3).

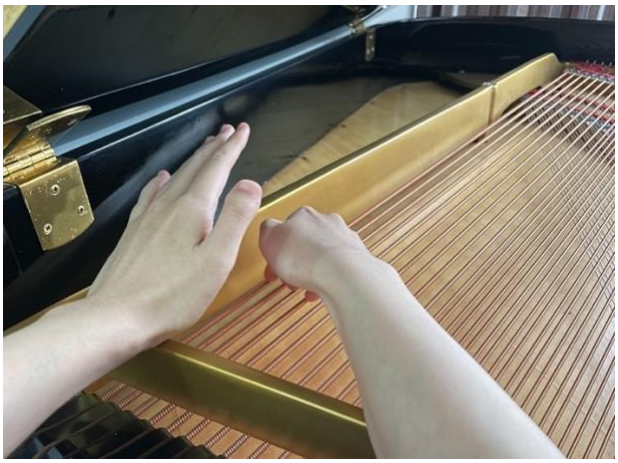

Figure 7.2. Hand Positions of Scraping Action from *Portent,* p.6.

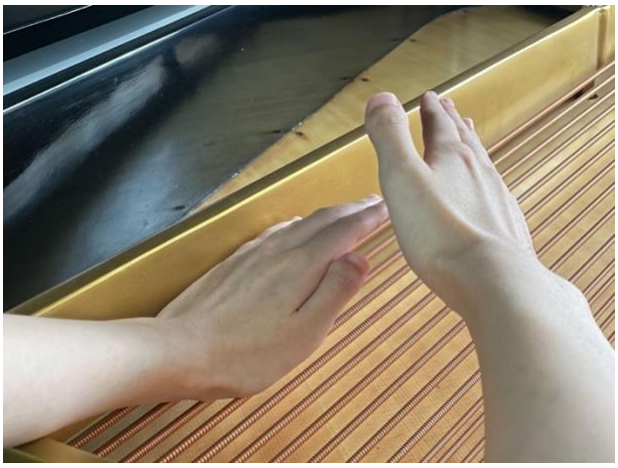

Figure 7.3. Hand Positions of Muting with Palm from *Portent,* p.6.

Glissando Technique

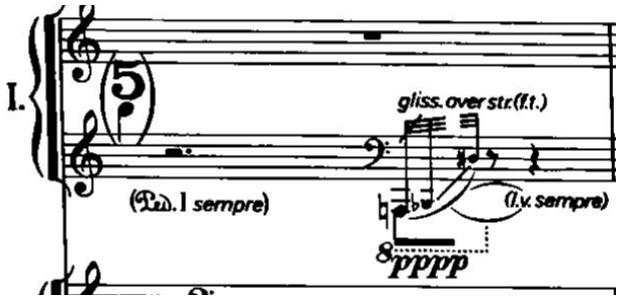

Figure 7.4. Glissando Technique from *Portent,* p.10.

Figure 7.4 presents the glissando technique that is produced by the left hand's fingertip (f.t.) and takes place with the approximate range specified by Crumb in the score (figure 7.5).

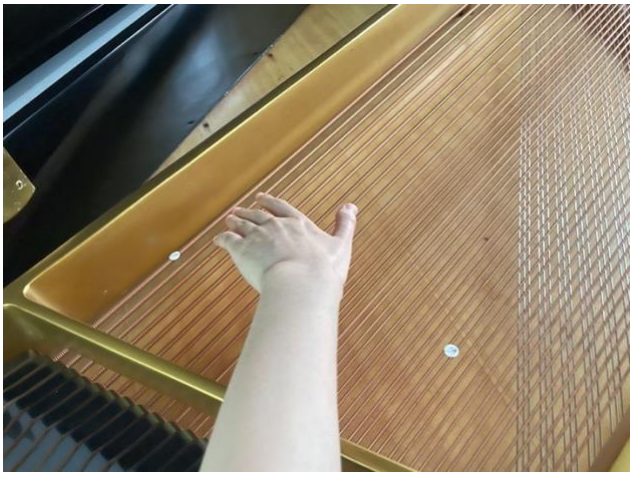
Figure 7.5. Hand Position of Glissando from *Portent,* p.10.

Harmonic Techniques

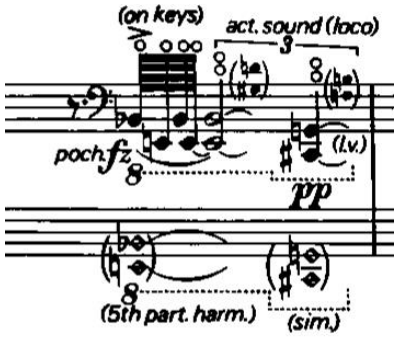

Figure 7.6. Harmonic Technique from *Portent,* p.10.

The production of the 5th partial harmonics includes playing the given notes on the keyboard with the left hand, while softly pressing the prepared nodal points (above yellow tags) with the right hand.

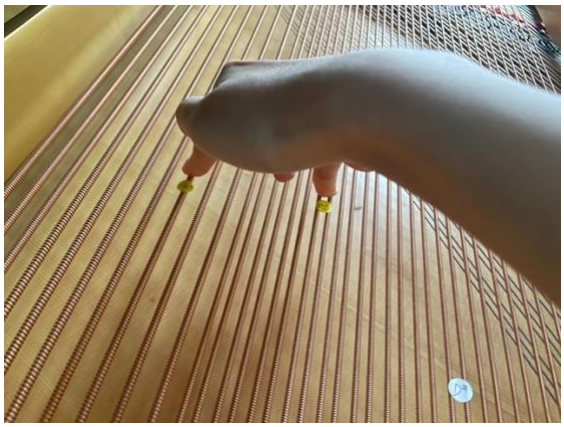

Figure 7.7. Hand Position of 5th Partial Harmonics from *Portent,* p.10.

Scraping and Striking Strings Technique

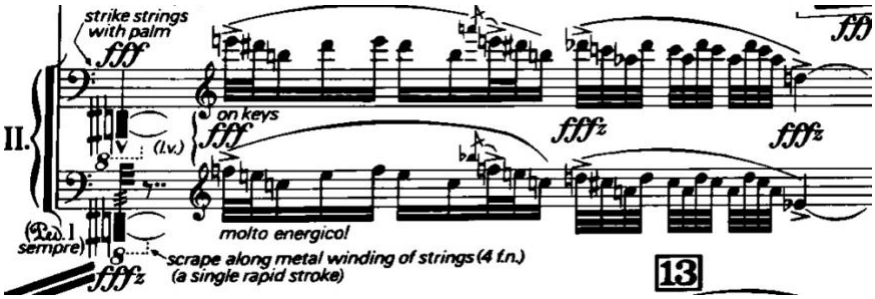

Figure 7.8. Scraping and Striking Strings Technique from *Portent,* p.11.

In figure 7.8 from Piano II, the extended technique combines with striking and scraping on the strings. The position of the left hand is close to the dampers, and scraping away from the performer, while the right hand should strike the strings with palm at a higher location (figure 7.9).

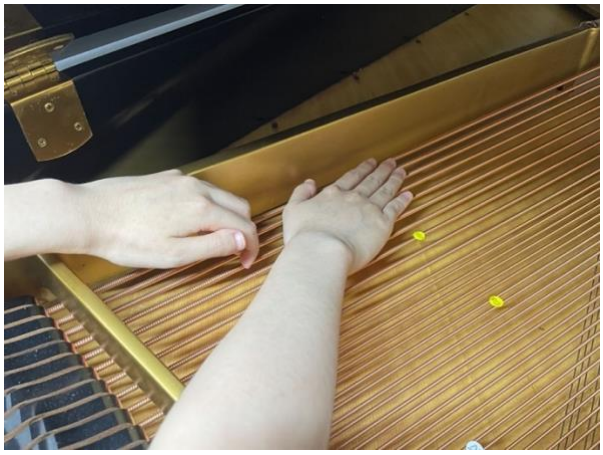

Figure 7.9. Hand Positions of Scraping and Striking Technique from *Portent,* p.11.

Muting Tones Technique

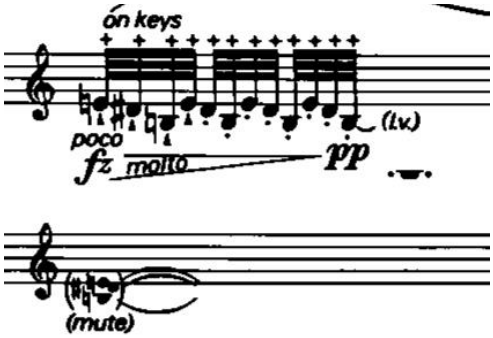

Figure 8.0. Mute Tones Technique from *Portent,* p.12.

Figure 8.0 demonstrates series muted notes, which are produced by the left hand that depresses the strings by fingertips, while the right hand plays the notes on the keyboard (figure 8.1). As mentioned before, the left hand should apply more pressure to ensure the consistency of the muted tone.

Figure 8.1. Hand Position of Mute Tones Technique from *Portent,* p.12.

II. *Two Harlequins*

Depressed Silently

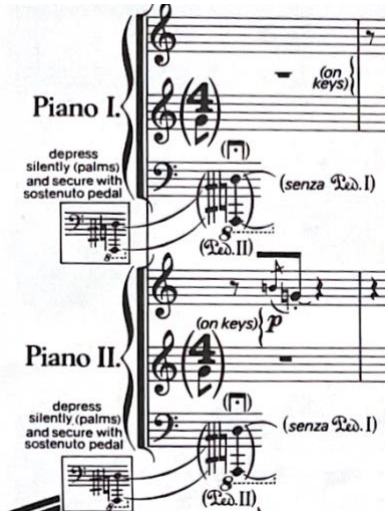

Figure 8.2. Depressed Silently from *Two Harlequins,* p.13.

Two Harlequins is performed only on the keyboard, without including any extended techniques. Resonance effects are accomplished by the sostenuto pedal which sustains the depressed notes from the beginning of the movement, as seen in figure 8.2. The performer needs to depress notes silently by both hands to cover the wide range of notes indicated (figure 8.3).

Figure 8.3. Hand Positions for the Technique of Silently Depressed Keys from *Two Harlequins,* p.13.

III. *Monochord*

Tremolando and Pizzicato Techniques

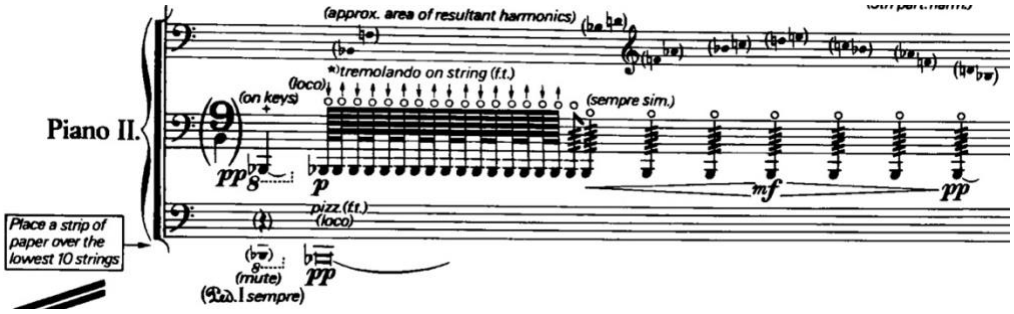

Figure 8.4. Tremolando and Pizzicato Techniques from *Monochord* (Appendix A), p.33.

Figure 8.4 shows the extended technique combined with tremolando and pizzicato. Crumb presents a clear instruction on score:

> Place the thumb securely against the bridge of the strings. Using the tip of the forefinger, execute a rapid (but measured) tremolo, back and forth over the metal winding of the strings. For the lowest partial, the finger oscillates over only about a half-inch of string; for progressively higher partials, oscillates over an increasingly wider segment while progressively lightening the contact.[50]

[50] Crumb, score for *Zeitgeist*, 18.

Firstly, a preparation that "placing s strip of the paper over the lowest 10 strings"[51] and muting the the B-flat notes, to produce a gentle "jangling" effect,[52] as seen in figure 8.5. Placing an eraser above the paper to avoid the paper moving away. Secondly, the right hand thumb is firmly placed on the bridge. Meanwhile, the left hand makes the pizzicato (figure 8.6).

Figure 8.5. Hand Positions of Muted B-flat with a Paper from *Monochord* (Appendix A), p.33.

Figure 8.6. Hand Positions of Tremolando and Pizzicato Techniques from *Monochord* (Appendix A), p.33.

[51] Ibid., 18.
[52] Crumb, "Program Notes" in *Zeitgeist*, 3.

Muted Pizzicato Technique

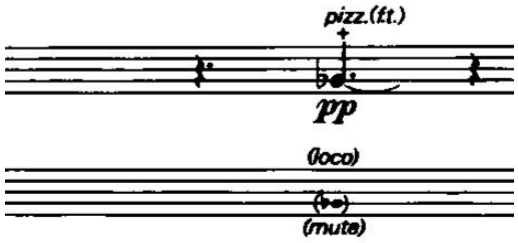

Figure 8.7. Muted Pizzicato Technique from *Monochord* (Appendix A), p.33.

The second extended technique Crumb used in *Monochord* is muted pizzicato technique, as seen in figure 8.7. The performer should use the right hand to pluck above the position of the muted string produced by the left hand (figure 8.8).

Figure 8.8. Hand Positions of Muted Pizzicato Technique from *Monochord* (Appendix A), p.33.

Pizzicato Harmonics Technique

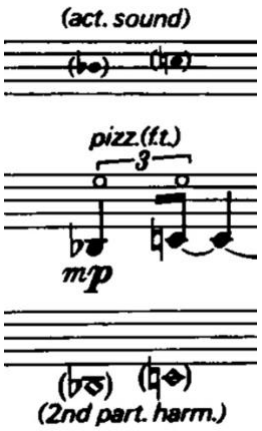

Figure 8.9. Pizzicato Harmonics Technique from *Monochord* (Appendix A), p.33.

Crumb also used the extended technique that combines Pizzicato and harmonics, as seen in figure 8.9. It is important for the performer to clearly mark the harmonic position (figure 9.0.)

Figure 9.0. Hand Positions of Pizzicato Harmonics Technique from *Monochord* (Appendix A), p.33.

Muted Notes with Squeegee

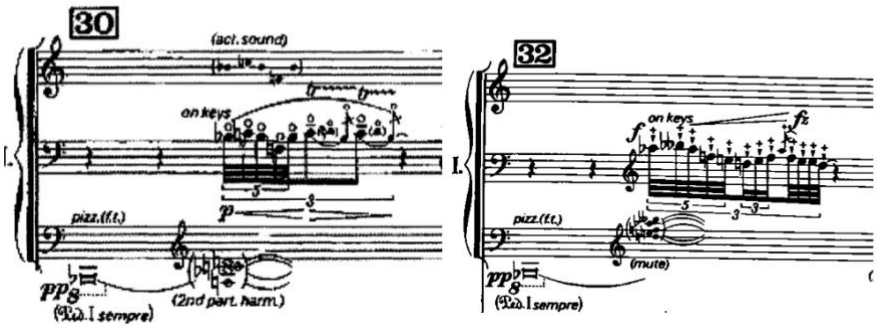

Figure 9.1. Muted Notes with Squeegee from *Monochord* (Appendix A), p.35.

Figure 9.1 demonstrates large muted notes as one of the main characteristics in *Monochord.* To easily cover the series of notes, Crumb recommends using a window cleaning tool, often known as a "squeegee." According to Crumb's program notes:

> For more elaborate passages involving harmonics (as in *Monochord*), many pianists prefer to use a tool designed for cleaning window-glass (which is equipped with a handle and a rubber-edged blade); in this way a whole series of harmonic nodes can be covered with ease and accuracy.[53]

However, the position of the frame on grand pianos depends on their specific sizes. Therefore, figure 9.2 only presents a part of harmonic nodes which has been covered by a squeegee.

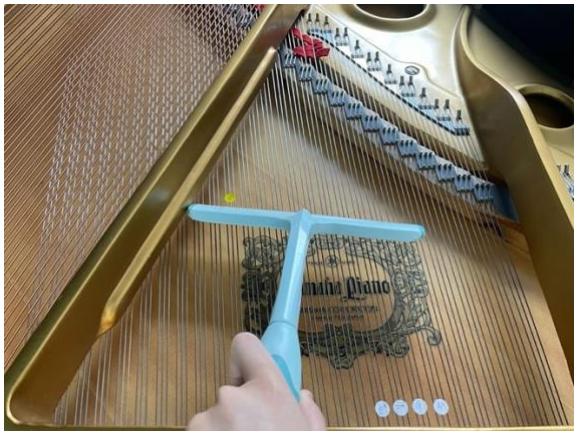

Figure 9.2. The Squeegee Position of Large Muted Harmonic Nodes from *Monochord* (Appendix A), p.35.

[53] Crumb, "Program Note" in *Zeitgeist*, 2.

IV. *Day of the Comet*

Cluster on Strings Technique

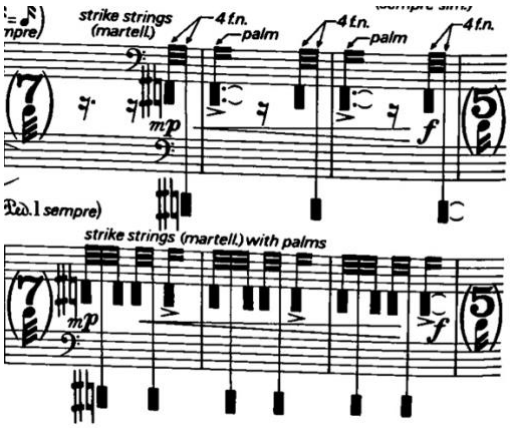

Figure 9.3. Cluster on Strings Technique from *Day of the Comet*, p.20.

Crumb uses a lot of clusters on strings technique, as seen in figure 9.3, which is produced by striking the strings with palms by Piano II (figure 9.4) and with palms and fingernails(f.n.) by Piano I (figure 9.5).

Figure 9.4. Hand Positions When Striking the Strings with Palms from *Day of the Comet*, p.20.

Figure 9.5. Hand Positions of Striking the Strings with Palms and Fingernails from *Day of the Comet,* p.20.

Scraping and Striking Technique

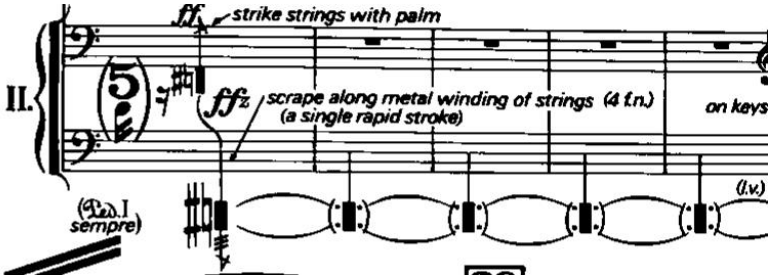

Figure 9.6. Scraping and Striking Technique from *Day of the Comet,* p.21.

Figure 9.6 illustrates an extended technique combined with scraping and striking the strings technique. In this case, it is easier for the performer to scrape the strings with fingernails (f.n.) towards the performer to produce the ***ffz*** effect (figure 9.7).

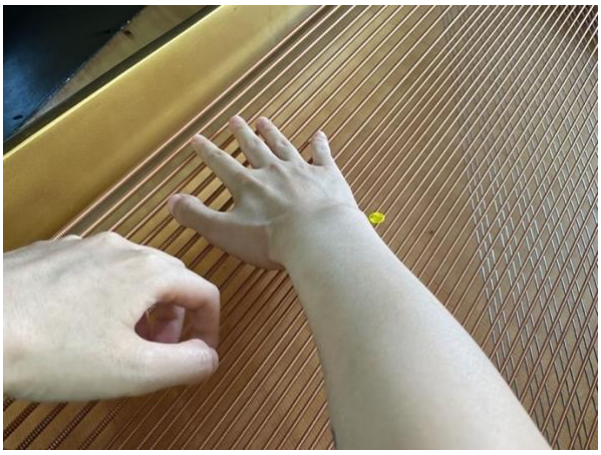

Figure 9.7. Hand Positions of Scraping and Striking Technique from *Day of the Comet,* p.21.

Muting in Rhythm

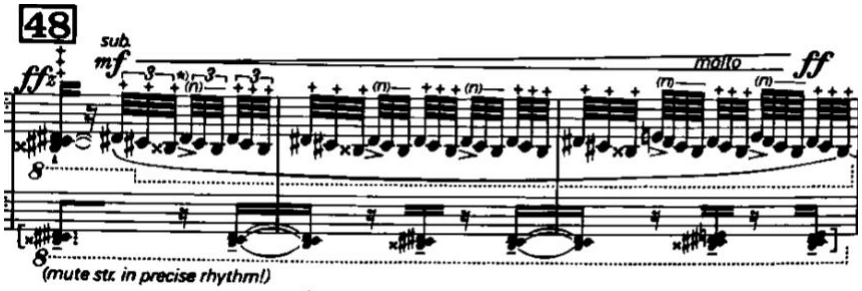

Figure 9.8. Muting in Rhythm from *Day of the Comet,* p.25.

Figure 9.8 clearly demonstrates that the muted notes combine with non-muted notes in precise rhythm, which it takes time to practice getting used to these difficult patterns. Crumb states in the program notes:

> Passages involving rapid alternations of muted and non-muted tones (*vide* the last page of *Day of the Comet*) are precisely marked in the score and should be carefully studied. (Non-muted tones in these passages are marked "*n*," i. e. "normal."[54]

[54] Crumb, "Program Notes" in *Zeitgeist, 2.*

To ensure precision of the muted tones by the left hand, it is helpful to follow the rhythmic patterns in the bottom staff. Crumb also uses accents marked to help the performer to read (figure 9.9).

Figure 9.9. Hand Positions of Muted Tones in Rhythm from *Day of the Comet*, p.25.

V. *The Realm of Morpheus*

Rosin Technique

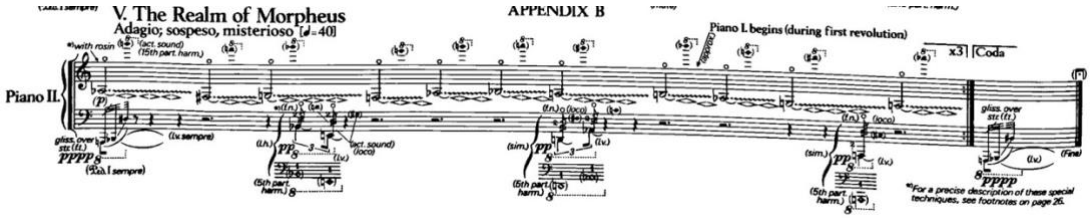

Figure 10.0. Rosin Technique from The *Realm of Morpheus*, Appendix B, p.36.

In this movement, Crumb requests Piano II using a small piece of rosin to produce the eerie 15th partial "whistling" effect,[55] as seen in figure 10.0. Crumb gives a clear definition of this technique:

[55] Ibid., 2.

> Draw a piece of rosin along the string (which will produce harmonics of the 15th partial). Make 2 or 3 strokes with the rosin for each pitch: beginning near the center of the string, slide rosin to a point near the dampers, and then back towards the center. The harmonic will pulsate irregularly.[56]

According to Crumb's instructions, it successfully produced the whistling effect as shown in figure 10.1. However, it is difficult to control the force level of the slide rosin evenly, and there is often an extra harsh noise caused by the friction between the rosin's harder surface and the piano strings. Pianist Alice Rybak recommends applying rosin to the strings before beginning the piece and then rubbing extra rosin directly on the fingers before the movement.[57] Thus, it is easier for fingers to control the sound on the strings (figure 10.2).

Figure 10.1. Hand Position of Sliding Rosin on the Strings from *Realm of Morpheus* Appendix B, p.36.

[56] Crumb, score for *Zeitgeist*, 26.
[57] Eisenberg, "Accessing the Spirit," 2005, 124.

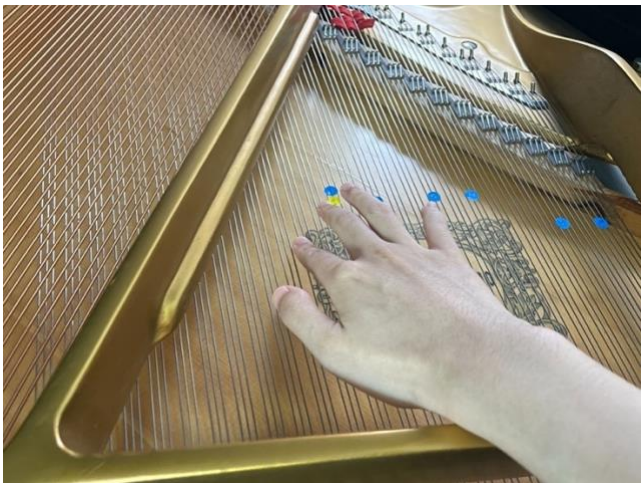

Figure 10.2. Hand Position of Sliding Rosined Fingertip on the Strings from *Realm of Morpheus* Appendix B, p.36.

Harmonic Flicking

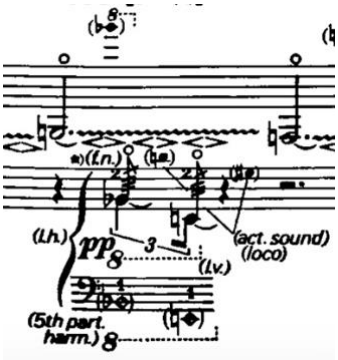

Figure 10.3. Harmonic Flicking Technique from *Realm of Morpheus* Appendix B, p.36.

It is challenging for the performer to do the harmonic flicking technique (figure 10.3) by one hand since the rosin technique is used by another hand. Crumb requests the performer to "touch the 5th partial nodes with the thumb; flick the forefinger nail over the metal winding of the string (a single rapid and very light stroke)."[58] After repeated trials, to achieve a clear harmonic quality, the position of the forefinger should be around one

[58] Crumb, Score for *Zeitgeist*, 26.

inch away from the thumb and the flick motion should be towards the opposite direction of the performer (figure 10.4).

Figure 10.4. Hand Position of Harmonic Flicking Technique from *Realm of Morpheus* Appendix B, p.36.

Harmonic Glissando Technique

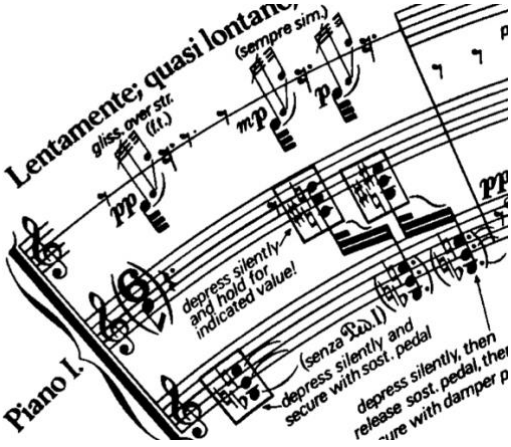

Figure 10.5. Harmonic Glissando Technique from *Realm of Morpheus*, p.26.

At the beginning of Piano I part, Crumb uses the harmonic glissando technique to produce the "Aeolian harp"[59] effect,[60] which is shown in three boxed chords (figure 10.5). In order to maintain the continuity and clarity of the three glissandos, the sostenuto pedal only secures the first boxed chord and next two boxed chords should be held on keyboard by left hand for the indicated value. Releasing the sostenuto pedal after the last chords (figure 10.6).

Figure 10.6. Hands Positions of Harmonic Glissando Technique from *Realm of Morpheus,* p.26.

Two Hands Pizzicato Technique

[59] *Aeolian Harp* (1923) composed by Henry Cowell.
[60] Crumb, "Program Notes" in *Zeitgeist*, 2.

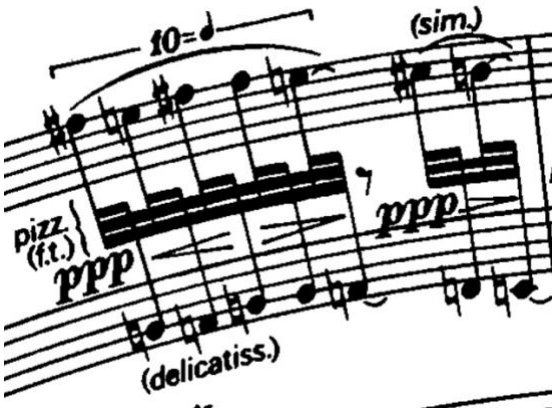

Figure 10.7. Two Hands Pizzicato Technique from *Realm of Morpheus*, p.26.

Figure 10.7 illustrates the pizzicato technique between two hands in Piano I part. It is easy for performers to mark the specific position on the strings (figure 10.8) and practice extra time to keep the accuracy.

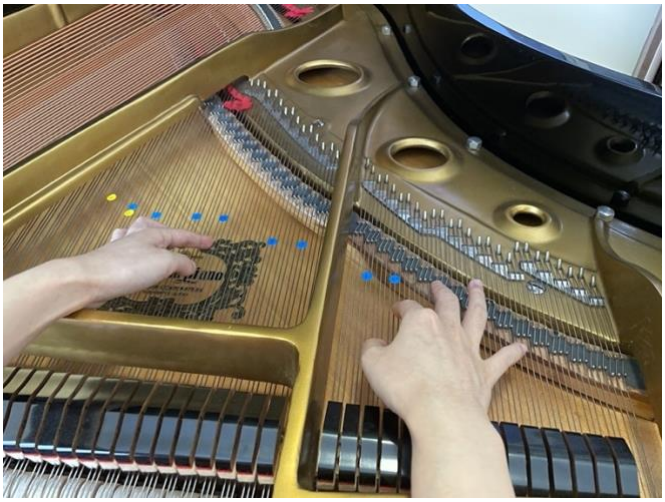
Figure 10.8. Hand Positions of Pizzicato Technique from *Realm of Morpheus*, p.26.

VI. *Reverberations*

As the last movement of *Zeitgeist*, it serves as a conclusion. Therefore, it contains most of the extended techniques from the previous five movements, including harmonic

tones, muted tones, glass tumbler, and pizzicato. However, the repeated extended technique is slightly different in this movement.

High-pitched Muted Tones

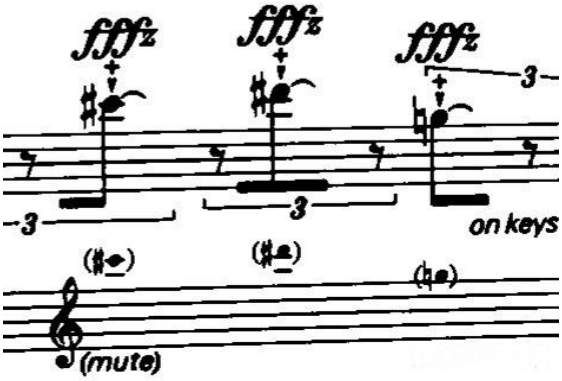

Figure 10.9. High-pitched Muted Tones from *Reverberations*, p.30.

Crumb uses the high-pitched muted tones, which is unusual (figure 10.9). Due to the grand piano's frame, the position of the high-pitched muted tones can't be placed between the performer and the dampers. In contrast, the performer should mute away from the dampers and the performers (figure 11.0).

Figure 11.0. Hand Position of High-pitched Muted Tones from *Reverberations,* p.30.

In summary, Crumb used complex extended techniques in *Zeitgeist* to express his pursuit of sound. Although Crumb demonstrated detailed instructions in the score, there are still many parts of this piece that require the performer's own ideas. For example, consider the different timbres and different sizes of grand pianos, which will change the position of hands. The performers interested in this piece must be ready to spend an extensive amount of time in practicing these techniques. In addition, through the specific study and demonstration of extended technique in this chapter, the performers can be more prepared while approaching the Crumb's repertoire for piano as well as compositions by other contemporary composers.

CHAPTER 6

CONCLUSION

In order to present a successful interpretation of George Crumb's *Zeitgeist*, the performers must develop a thorough understanding of Crumb's unconventional compositional style, to examine Crumb's intended information, to demonstrate a willingness to embrace novel and high demanding performance techniques, and to identify influential elements within the composition. These elements are integrated and structured into a unified whole.

The analysis of *Zeitgeist* encompasses four aspects. Initially, I provide an overview of the extended piano techniques and the introduction of the specific extended techniques in *Zeitgeist*. Then, I offer a brief discussion of graphic notation related with several composers and a description of the visual art based on Crumb's graphic notation and circular notation. Furthermore, I point out references, such as illustrations of repeating patterns, time and rhythm elements, dynamic indications and other important information on the score. Finally, I present a visual demonstration of the extended technique guide including suggestion of hand position, fingerings, pedaling aspect and choreography of tools.

In addition, another important aspect to understand *Zeitgeist* is the influence of the mythology contained within Crumb's music. George Crumb observed in an interview in 1997, "Music tends to be mythological, at least some of it. Some of my music is mythological just in expression. People tell me that it sometimes has this sense of [being]

ancient."[61] Various facets of Crumb's artistic expression are permeated by mythological elements, including its acoustic aesthetic, the character from ancient Greece, the solar system, philosophy, the selection of poetic text, form, musical language and circular notation. The tendency of imagery in Crumb's aesthetics is deeply related to his use of symbolic notation. This in turn corresponds to cyclical and symmetrical patterns, timing dynamics, and pitch organization.

In Tableau I - *Portent*, the word "portent" is often considered "a sign or warning that a momentous or calamitous event is likely to happen."[62] Crumb states in the program notes that "The music will seem to suggest a kind of 'striving' towards something visionary, but somehow elusive." Just like people's pursuit of the future, self, and truth. The movement starts and concludes with a distant, mysterious sound produced by the glass tumbler technique, which makes a sense of foreboding or premonition.

In Tableau II - *Two Harlequins*, this title implies two clowns doing comic little antics. Crumb states that this movement is mythic in a way and related to the old Italian comedy with Harlequin.[63] The entire movement is filled with an echoing effect created by the *sostenuto pedal*, and the impression that two pianos are fighting each other, which depicts the harlequin with a comic, manic and absurd quality.

In Tableau III - *Monochord*, the purpose of this title is use of B-flat overtones in this movement. This "veritable rainbow of partial tones"[64] produces countless

[61] Bowles, "Appendix 1 An Interview with George Crumb," 269.
[62] Oxford English Dictionary.
[63] Eisenberg, Interview with George Crumb, October 20, 2004. 220.
[64] Crumb, "Program Notes" in *Zeitgeist*, 3.

possibilities for the existence of one note, which is an expression of nature and "musical primitivism."[65] Crumb commented in an interview:

> It is what I think of as original basic sounds of early people. There is something mythical about that. It is interwoven with the sounds of nature, which are things that early people were trying to account for: all the animal sounds, the bird sounds, the rhythms of nature like the diurnal cycle, night and day, and seasons, and all those recurrent cyclic things. Even the problem of life and death must have been a concern for all people before even religions were invented. They were aware of those things.[66]

The spirit of Crumb's intentions of this movement is reflected in the recurrent cyclic things of nature, which can be found in the circular symbolic notation and repeating musical patterns. Therefore, the "sense of unbroken timelessness"[67] is actually the effect produced in a series of continuous changes.

The Tableau IV - *Day of the Comet* was inspired by Halley's comet in 1986. It has the characteristic of circularity that is different from *Monochord*, which is a cosmic cycle. Crumb cleverly depicts the movement of comets in the universe through patterns, rhythm, and extended techniques. In ancient times, comets were the source of many myths, and in Greek mythology, comets were associated with great disasters, which can stir people's "volatile, yet strangely immaterial"[68] imaginations.

The title of Tableau V - *The Realm of Morpheus* indicates a close connection with mythology. In ancient Greece, Morpheus was the god of sleep and dreams. In the visual score, the bent staves take on the configuration of the human eye to examine the human consciousness in dreams. In the acoustic experience, the contrast between high-pitched

[65] Ibid.
[66] Eisenberg, Interview with George Crumb, October 20, 2004. 218
[67] Ibid.
[68] Ibid.

ostinato in Piano II and the repeated fragment of the folk song melodies in Piano I produces an otherworldly, shadowy and uncertain atmosphere in dreams.

Reverberation is the result of reflections from multiple sounds or echoes. The Tableau VI - *Reverberations* not only consists of Piano I and Piano II alternately playing repetitive motifs to create an "echoing phenomenon,"[69] but also "recalls the principal thematic and harmonic elements of the first movement."[70] Through the return of the glass tumbler motif, the audience is taken back to the beginning of the story, creating structural symmetry in the piece, and depicting the recollection of a memory from a past life.

Therefore, Crumb used music related to mythology that clarified his own understanding and reaction to life and the universe. It is a crucial attribute of an accomplished performer to understand the composer's intended purpose during a musical performance. While it is impossible to fully understand the philosophy behind Crumb's creations, the significance lies in the performer's efforts to approach the myth and capture the meaning of the music. Only when the further musical ideas are identified, and combined with the theory and performance skills, can the true spirit of music, the great zeitgeist (spirit of the time), be realized.

Furthermore, as *Zeitgeist* is a piano duo ensemble work, each partner must invest a lot of time and energy in the preliminary preparation process. In addition to understanding their individual parts, the performers also need to become familiar with their partner's parts. It is very important to have accurate awareness, responsiveness and listening skills and complete trust in the ensemble partnership.

[69] Ibid.
[70] Ibid.

The unconventional approach to Crumb's music also presented additional challenges to the collaboration. Chapter 4 and 5 clearly illustrate the depth of personal knowledge required before the process of collaboration of *Zeitgeist*. Performers must first understand and absorb Crumb's unique musical language, then prepare the materials to perform and be proficient in Crumb's extended piano techniques. Finally, it is essential for the performers to manage personal coordination.

As one of Crumb's few compositions for two amplified pianos, *Zeitgeist* has a profound impact in the contemporary music performance area. Crumb developed a coherent, exotic belief system or worldview through his bold pursuit of acoustic effect, visual artistry, and the myth behind the music. *Zeitgeist* presents a weird, absurd, and mysterious phenomenon. Even upon repeated listening, it remains a beautiful mystery with a strong appeal. Therefore, *Zeitgeist* is a major contribution to avant-garde music, and adds exciting new repertoire for the piano duo ensembles genre.

It is important to learn more about the possibilities of the timbre that the piano can create through this document. The sound world of *Zeitgeist* combines with special timbral effects and conventional piano sound, which produced Crumb's musical language. Crumb's use of unique extended piano techniques significantly enhances the expressive range of the piano, thereby establishing a new keyboard instrument and expanding the confines of piano performance.

Although driven by Crumb's fascinating sound world and influenced by the musicians who have committed themselves to mastering this special musical language, it is difficult for beginners to translate and perform the complex score. I hope that through the demonstration and analysis of my project, performers have the ability to approach

George Crumb's music with organization, confidence, and effectiveness, and to present a style of the performance that matches the creative concept of the work. Furthermore, it is my aim that through an in-depth understanding and mastery of *Zeitgeist*, it will have a positive impact on improving personal abilities including score reading, performance technique, and the understanding of musical ideas. In this way, performers can face non-conventional contemporary piano works with more confidence.

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