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Performance Guide to Makrokosmos Volume II

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## Dedication

I dedicate this dissertation to my loving parents, Kayoko and Tsutomu Tayake, who have given me courage and strength to follow my dream.

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## Chapter 1: Expanding the Sonic Horizon of the Piano

The history of piano repertoire is long and diverse. Great composers of the last several centuries have explored and developed new harmonic and melodic language using the keyboard as their medium. Piano repertoire developed in parallel with the development of the instrument itself. The first string instruments with struck strings were the hammered dulcimers. By the 17th century, the mechanisms of keyboard instruments such as the clavichord and the harpsichord were well established. In a clavichord, the strings are struck by tangents, while in a harpsichord they are plucked by quills. While the clavichord allowed expressive control of volume and sustain, it was too quiet for large performance venues. The harpsichord produced a sufficiently loud sound, but performers had little expressive control over each note. The piano was likely formed as an attempt to combine loudness with control, avoiding the undesirable traits of available instruments.

Piano-making flourished during the late 18th century in the Viennese school. Viennese-style pianos were built with leather-covered hammers and two strings per note. In the period lasting from about 1790 to 1860, the Mozart-era piano underwent tremendous changes that led to the modern form of the instrument. This evolution included more powerful sustained piano sound, made possible by the ongoing Industrial Revolution with resources such as high-quality piano wire and the production of cast iron frames. Over time, the tonal range of the piano increased from five octaves to the seven or more octaves found on the modern piano.

Since the beginning of the keyboard instrument, composers of all nationalities were searching for exciting and different modes of expression. At the beginning of the twentieth century, classical music composers were experimenting with an increasingly dissonant pitch language which sometimes yielded atonal pieces. While Arnold Schoenberg explored unorthodox harmonies, Claude Debussy was fascinated by Eastern music and the whole-tone scale. Avant-garde composers such as Edgard Varèse explored the manipulation of rhythms rather than melodic/harmonic schemes. While some composers remained true to the traditional forms of music, some composers were starting to experiment in new ways with traditional instruments such as the "prepared piano".

The technological advancement in the twentieth century brought a new freedom and allowed wide experimentation with new musical styles and forms that challenged the accepted rules of music from earlier periods. The twentieth century saw a boom in music listening as the technological advances led to the birth of electronic music and the radio gained popularity worldwide. Additionally, new media and technologies were developed to record, capture, reproduce and distribute music. The invention of musical amplification and electronic instruments, especially the synthesizer, in the mid-twentieth century revolutionized popular music and accelerated the development of new forms of music. Not constricted by rules of the classical period, twentieth century composers had the freedom to compose however they pleased.

With piano repertoire, the use of extended performance technique was an influencing factor in the development and direction of composers in the early 1900's.

Though these techniques seemed new, altering the sound of the piano had been experimented with since the 1780's by means of pedals introduced by various piano makers. From around 1780 to the 1830's, it was popular to have multiple pedals on the piano that would produce unconventional sounds. For example, the Janissary pedal, also referred to as a Turkish pedal, produced a bell-like sound when the pedal was applied. Similar to the Turkish pedal, the Bassoon pedal produced a buzzing bassoon-like sound by allowing silk or paper to come in contact with the strings. For the most part, pedals from 1750 to the 1830's were added for volume alteration purposes. Therefore it was a norm of the period to see multiple moderator pedals such as the lute, the celeste, as well as the una corda. These pedals altered the sound by pressing a piece of leather or cloth against the strings to muffle the sound.

In extended piano technique, the sound is manipulated through the direct or indirect contact of foreign objects or sounds against the interior of the piano. In this sense, the idea of extended piano technique had already been explored, to some extent, in the 1780's through the evolution of the pedal. Ever since the beginning of the invention of the keyboard instrument, musicians have consistently explored ways to expand its idiom. The development of the pedal was at its peak from 1760's to the 1850's. As interesting and as ornate these extra pedals were they did not remain in the classical piano realm. Successful composers and keyboard masters of the time often regarded these sound qualities to be less professional and thus would not use them in their compositions. Therefore, piano repertoire took the direction of employing conventional piano performing techniques until the early 1900's.

The current trend is three standard pedals: damper, sostenuto, and una corda. The una corda pedal was introduced in the early nineteenth century after 1805; however, it was the norm of the Viennese piano to have four or five pedals (typically sustaining, moderator, una corda, and bassoon). It wasn't until the 1840's that the two-pedal (damper and una corda) pattern became common on the grand piano. The sostenuto pedal was invented in Europe, but was not popular until it was introduced in United States in the late 1860's and 1870's.

The early 1900's piano, with its unique quality that employed both string and percussion sounds, became a platform for twentieth century composers to experiment with various new techniques and ideas. For composers such as John Cage, Henry Cowell, and George Crumb, the piano was transformed into an instrument that was capable of producing harp or drum sounds, and it was also able to operate as an amplifying device. In other words, the piano presented a performance platform that included chordophone, aerophone, and idiophone. Foreign objects such as erasers, paper clips, chains, bolts, and paper were inserted between the strings. Strings were plucked or strummed by fingers or metal thimbles or played by objects such as chains, tumblers, and wire brushes. Percussive sounds were produced by tapping and knocking on the interior of the piano.

John Cage and Henry Cowell are two of the most famous composers when it comes to prepared piano and extended piano technique. However, it is important that George Crumb's works be examined with a different perspective than Cage and Cowell and given proper acknowledgement. Crumb was one of the earliest composers to develop this new

piano technique to a whole new realm. Despite the appreciation for the new ideas and exploration of the medium, composers whose works include extended piano technique and prepared piano pieces often times produce a metallic inhumane sounds that takes the beauty away from the music. Frequently, prepared piano pieces simply sound percussive, where the traditional pianistic melodic quality has been dismissed for the purpose of a new idea. What distinguishes George Crumb's music is his hauntingly beautiful sonorities, despite (or because of) the use of foreign objects or new techniques. For Crumb, it seems that the idea of the prepared piano did not drive him to compose. It was the new harmonic and tonal language that could only be achieved through extended piano technique that became the impulse for his composition. Crumb took piano playing in a new direction, creating a genre of music that can withstand the challenge of time.

The term prepared piano is often times mixed with the term extended piano technique, but the foundation of the idea is slightly different. A prepared piano involves foreign objects placed at specific locations inside the piano, while extended piano technique includes prepared piano technique as well as performer's direct contact with the interior of the piano and sounds made without the usage of the instrument, e.g., the addition of whistling, snapping, singing, etc. Sometimes, the altered sound is subtle and amplification is used to project the sound produced inside the piano. These pieces are titled "for amplified piano". George Crumb's *Makrokosmos Volume I and II* are for amplified piano and when studying the score, the reason for amplification becomes apparent.

In *Makrokosmos Volume I* and *Volume II*, Crumb's details for sound quality are clearly indicated in the score. The specific duration of the rests and the subtle differences in dynamic is outlined in utmost clarity. Crumb's music sounds as if there is no durational boundary, and at times it even sounds improvisational. In spite of this, the performer is given a limited amount of time in which to execute different techniques and coordinate the movement of hands between the keys and strings. One of the challenges of this type of composition is to create a wandering, free-flowing sonority while adhering to the score's indications. These unconventional pianistic skills make unusual challenges for a pianist in learning how to maneuver (and manipulate) the piano in a completely new manner.

With extended piano technique, keys are no longer the only place to produce sound. It is imperative to develop a visual understanding of string alignment. As Margaret Leng-Tan, a celebrated Crumb interpreter, states, "extended piano playing is like a choreographed dancing". Each movement needs to be carefully planned and practiced. George Crumb has often stated that he is drawn to the theatrical or balletic qualities in musical performances, and the choreographic aspect of the performance is important to the music. A movement naturally leads into another movement, and everything must be carefully planned to make the music flow easy. Some pieces require the performer to sing. In this case breathing must be planned out as well as the placement of the feet for body balance, while using multiple pedals and reaching inside the piano.

Crumb's notation for the dynamic, rhythmic, and of each work is very detailed. However, words can only explain so much when it comes to execution of the new

technique that involves playing inside the instrument. When applying a glass tumbler or key chain, the exact placement of these objects inside the piano is somewhat vague in his indications, as well as how much force is to be placed on the object to create the proper effect. Also, the sound quality produced by the objects will differ depending on the quality of the objects. In the *Primeval Sound* (Volume I), the explanation of the quality of the chain - how thick, how long, from how high it needs to be dropped - is lacking. In *Cosmic Wind* (Volume II), the indication of how to create dynamic changes using a wire brush, or the execution of tremolo using the fingertips, seems inadequate when compared to the detailed indication of the dynamic ranges and detailed rhythmic accuracy. Pedaling is yet another aspect of performing the *Makrokosmos* that will present challenges to the performer at every turn.

For a pianist who has been trained to perform traditional piano music, diving into Crumb's *Makrokosmos* requires a certain amount of basic knowledge about extended piano technique. Keep in mind that the preparation and movements inside the piano will vary according to the size of the grand piano due to the placement of the cast iron frame and the placement of the beams. The performer must first be comfortable with the understanding of string alignment, as well as the notation for the new technique. Other issues such as amplification and placement of the amplifier are unfortunately mentioned very briefly in the performance notes by the composer, and details are left to the performer or sound engineer to decide.

In this dissertation, the study of the approach and execution of the performing technique in *Makrokosmos Volume II* will be examined in detail and discussed, with the hope of making the performance of *Makrokosmos Volume II* as an entire cycle more accessible for pianists. Prior to deciding on this topic for my dissertation, I studied previous dissertations written on *Makrokosmos* and to my surprise, none went into specific detail regarding the execution of the extended technique, sitting positions on the bench, body coordination, and pedaling. Most of the dissertations on *Makrokosmos* focus on the theoretical analysis of the work and thus, I felt the need for research on how to approach this work from a performer's perspective. Composers nowadays write music that involves extended technique and it is becoming more frequent. As a twenty-first century pianist, one must be comfortable approaching and studying these scores. *Makrokosmos* provides a wonderful foundation for understanding and training new performance technique and I strongly believe that pianist who can perform this work will be ready to take up any new challenge that involves new technique.

This dissertation will cover details of the extended piano technique with photographic explanations. Commentaries on the technique will be discussed with the author's suggestions. For a reference, the DVD of Margaret Leng-Tan's performance of the work will be used in the examination of the various techniques.

## Chapter 2: Background of the composer: George Crumb

George Crumb was born in Charleston, West Virginia, the eldest son in a musical family. Crumb grew up listening to live chamber music performed by his father and mother. His father was a clarinetist who played and conducted in the local symphony, and also worked as a professional music copyist and arranger. His mother was a professional cellist who played in the Charleston Symphony for twenty-five years. Crumb was raised in the Appalachian River Valley, where he grew up playing in a nature-rich environment. In his interviews, Crumb recalls his youthful days and mentions that where he grew up played an important role in his composition. In fact, in *Voices from the Corona Borealis (Volume II)*, the Appalachian Mountain revival hymn “*Will There Be Any Stars in My Crown*” is whistled. Other West Virginian influences can be found in his compositions, which use instruments such as the musical saw, the banjo, and the Jew’s harp.

Music was the focal point in Crumb’s life from an early age. He found school unexciting and preferred listening to his father’s LP records and studying scores in his library. His first formal training began with an E-flat clarinet lesson from his father at about age seven. By age ten, he was composing simple Mozart-like pieces. During high school, he studied piano, flute; and composition, and played clarinet in the school orchestra, as well as playing with his family in their chamber music concerts at home. At age 17, he composed his first two orchestral essays: *Poem* and *Gethsemane* – both performed by the Charleston Symphony. After high school, he married his first and only girlfriend, Elizabeth, a pianist and a teacher.

After graduating high school, Crumb started his piano studies at Mason College. After graduation from Mason, he moved to Illinois to work on his Master of Music degree at Champagne Urbana, where he studied both piano and viola. Crumb switched to a composition major as he started his Doctor of Musical Arts (DMA) degree program at the University of Michigan. During his studies there, he was awarded the Elizabeth Croft Scholarship and a Fulbright Fellowship to study at the Hochschule für Musik in Berlin for a year. Completing the year-long program in Germany, he returned to Michigan to finish his DMA degree in 1959. During his time at the University of Michigan, he was introduced to Federico Garcia Lorca's poetry through the work of a colleague. This was the start of Crumb's fascination with Lorca, which eventually led to his "Lorca-cycle". For his dissertation, Crumb submitted '*Variazioni for Large Orchestra*', which included a 12-tone theme and other Schoenberg influences.

After Crumb completed his DMA degree, he immediately took a teaching position at the University of Colorado as a secondary piano and contemporary music instructor. This is where he met David Burge, a pianist colleague who commissioned and premiered Crumb's very first prepared piano piece, *Five Pieces for Piano*. In 1964, Crumb received a Rockefeller grant, which afforded the opportunity to serve as composer-in-residence at the Buffalo Center for the Creative and Performing Arts. Crumb remained on the East Coast and was appointed later as Professor of Composition at the University of Pennsylvania.

Crumb has been awarded numerous national and international prizes including the Guggenheim Fellowship, the Pulitzer Prize in Music, the Koussevitzky International Recording Award, UNESCO award, and National Institute of Arts and Letters Award.

### Chapter 3: Musical traits in *Makrokosmos*

The frequently debated Cage-Crumb and Cowell-Crumb ties regarding extended piano pieces are interesting speculation and seem highly likely, even though; it is a well-known fact that Crumb denies influences from either Cage or Cowell. Rather, he acknowledges Debussy, and Chopin. In an interview with Robert Shuffett, Crumb also acknowledges the influence of the following twentieth century composers: Bartók, Webern, Messiaen, Berio, and Ives.

Andrew Stiller strongly believes that Crumb must have had critical influence from Cage, due to the time of Crumb's compositional crisis (1960's) and interior-piano writing, indeterminacy and performance-art (music theater) elements all coming out after their having been introduced by Cage. Although such speculation is interesting, it seems less important who influenced whom in the sense of extended piano technique. It is more important to focus on how different these new techniques are implied and used as a vehicle for Crumb's compositions.

John Cage agrees in his interviews and in his books that he was insensitive to sound. His intention for prepared-piano music was to invent a new way in creating unconventional sound using the piano, whereas Crumb's intention for the prepared-piano was to explore the limitations of the piano idiom and develop a new melodic language that could only be created through unconventional piano technique. Virtually every imaginable pianistic tone color is exploited in *Makrokosmos*. The palette of traditional pianistic colors - those produced by playing on the keyboard - are enriched by crisscrossing the entire pitch

range of the instrument, using different pedal effects, and exploiting the wide dynamic range with the aid of amplification. In addition, all three pedals are used to create numerous gradations of color.

In his 1980 interview for *The Kenyon Review*, Crumb talks about the evolution of the piano idiom:

In the hands of Beethoven the expressive range of the instrument was progressively enlarged. The gradual expansion of the piano in terms of range, sustaining power, and brilliance and the introduction of the *una corda* pedal effect were fully exploited in the enormous body of literature which Beethoven conceived for the instrument. And shortly after Beethoven's death in 1827, Chopin published the Etudes, Opus 10. This astonishing new style, based essentially on the simple device of allowing widely spaced figuration to continue vibrating by means of the depressed damper pedal, opened up a whole new approach to the instrument. Important new breakthroughs in piano idiom were then achieved by Debussy around the turn of the century and by Bartok a few years later. And in our own day, the concept of piano idiom has been enormously enlarged once again by the technique of producing sound through direct contact with the strings. I think it can truly be said that the potential resources of instruments can never be exhausted: the next generation will always find new ways!

In the same article, he also mentions the evolution of rhythm:

Perhaps of all the most basic elements of music, rhythm most directly affects our central nervous system. Although in our analysis of music we have inherited a definite bias in favor of pitch, rather than rhythm, as being primary, I suspect that we are simply unable to cope with rhythmic phenomena in verbal terms. The problem now seems to be the composition of convincing fast music, or more exactly, how to give our music a sense of propulsion without clinging too slavishly to past procedures, for example the Bartokian type of kinetic rhythm. Complexity in itself, of course,

will not provide rhythmic thrust; and it is true that harmonic rhythm has to operate in conjunction with actual rhythm in order to affect a sense of propulsion.

Three composers- two traditional and one contemporary -especially interest me with regard to their imaginative handling of rhythm, and might possibly have some bearing on our current approach to rhythmic structure. The first is Beethoven, whose sense of rhythmic control was absolutely uncanny. Of all composers, he was the master of the widest possible range of tempos, from prestissimo to molto adagio. The Beethoven adagio, particularly of the third style period, offers a format which might be further explored in contemporary terms: within the context of an extremely slow pulse, a sense of much faster movement is achieved by tiny subdivisions of the beat. Such a device offers contrast and yet gives a sense of organic unity. Another composer whose rhythmic sensitivity impresses me is Chopin. I am thinking primarily of certain of the nocturnes, in which he achieves a sense of “suspended time” but also provides a feeling of growth and progression through time. And lastly, I would mention Messiaen with regard to his use of the “additive rhythmic principle,” which, in his *Technique of My Musical Language*, he associates with Hindu music. I feel that this principle could become increasingly important in the further development of our rhythmical language. (Gillespie, 1986).

Crumb continued to question and explore his own musical language, and it was not until 1962 that the composer’s unique style starts to surface in his compositions. In his own words, he can “remember quite literally waking up one night in a cold sweat with the realization that I had thus far simply been rewriting the music of other composers.” (Crumb, *Interviews with George Crumb*, 1980).

Crumb's former student, Christopher Rouse, observed that "by 1962, Crumb had come to prefer minor seconds and ninths, sevenths (usually major) and tritones - all dissonant intervals - to the apparent exclusion of virtually any other interval." (Rouse, 1980). By 1965, his musical vocabulary had enlarged significantly. In the interview with Robert Shuffett, Crumb states:

I recall feeling quite restricted by the limitations of an unrelieved chromaticism and felt I had to open up my language. I feel now that virtually any elements can coexist in a musical style, but of course it is nonetheless incumbent upon the composer to make that stylistic synthesis sound cohesive and integrated. (Crumb, Interviews with George Crumb, 1980).

Every contemporary composer who works with multi-media and extended performance technique, is cursed with the fact that often at times, their musical language gets lost in the midst of new techniques. With Crumb's *Makrokosmos*, it is easy to focus on the unique graphic notation and be overwhelmed with new piano techniques employing foreign objects; however, these are surface aspects. Crumb's work is much deeper in both technical and musical difficulty. When it comes to interpretation of the piece, Crumb's compositions do not allow for wide personal interpretation, for multiple reasons. First and foremost, Crumb's work is very concise in construction. He has a clear idea of the sound he is after, and due to the rhythmic and dynamic complexity, perhaps the personal interpretation can only be added by the way the strings are plucked or by subtle differences in the dynamic coloration of the piece. Secondly, every piece has a descriptive title and a

character setting. Crumb makes extensive use of musical quotation to communicate extra-musical ideas. In the performance note of *Makrokosmos*, Crumb writes:

While composing *Makrokosmos*, I was aware of certain recurrent haunting images. At times quite vivid, at times vague and almost subliminal, these images seemed to coalesce around the following several ideas (given in no logical sequence, since there is none): the “Magical properties” of music; the problem of the origin of evil; the “timelessness” of time; a sense of the profound ironies of life (so beautifully expressed in the music of Mozart and Mahler); the haunting words of Pascal: “Le silence éternel des espaces infinis m’effraie” (“The eternal silence of infinite space terrifies me”); and these few lines of Rilke: “Und in den Nächten fällt die schwere Erde aus allen Sternen in die Einsamkeit. Wir alle fallen. Und doch ist Einer, welcher dieses Fallen unendlich sanft in seinen Händen hält” -“And in the nights the heavy earth is falling from all the stars down into loneliness. We are all falling. And yet there is one who holds this falling endlessly gently in his hands.” (Crumb, *Makrokosmos*, Volume I, for Amplified Piano, 1972).

It was not until 1971-1974 that Crumb started to work intensively on his *Makrokosmos* series. Volume I and II were composed in 1972 and 1973. After the completion of *Five Pieces for Piano* in 1962, Crumb wanted to write a sequel. But, after several attempts, he aborted all further work, and only the sketches remained. After several years, two or three minor ideas from the sketches evolved into *Makrokosmos*. Each of the solo volumes consists of twelve pieces, where each piece is inscribed with the initials of a person whose astrological sign corresponds to that associated with the piece. The solo volumes use all the timbre devices found in *Five Pieces for Piano*, but in a much more elaborate manner. Although *Makrokosmos* is larger in construction, David Burge and

Margaret Leng-Tan, both celebrated Crumb interpreters, agree that *Five Piano Pieces* present more challenge than the *Makrokosmos*.

It is important for the performer not to limit their main focus to the new piano techniques in *Makrokosmos*, but rather to pay closer attention to all the details of the dynamic and rhythmic indications, as well as the descriptive title and tempo/character markings. Crumb is always searching for the greatest inherent beauty and evocative sound from the instrument. He avoids classes of sound that will be categorized as ugly or harsh. He also avoids performance effects that cannot be duplicated under all performance conditions.

Attention to the details of dynamics is almost impossible to execute, even with the aid of amplification. The differentiation between ppp - pppp - ppppp or fff - ffff - fffz is first, debatable, and second, it is silly to take the dynamic differences at face value. It seems wise to understand that these slight dynamic changes not only indicate the dynamic differences, but more so the composer's intent to alter the quality and character of the sound.

Highly detailed rhythmic notation is another aspect of Crumb's work that adds to his compositional traits. Often times Crumb's music does not have bar-lines. This creates a sense of free-flowing improvisation, though; his indication of 32<sup>nd</sup> and 64<sup>th</sup> rests between the notes must carefully be followed. These rests can easily get lost when performing the work, especially when they involve coordinating a simultaneous playing of both the keys

and inside the piano. However, everything in Crumb's music has a meaning, and when the rests are ignored, the piece lacks in format and loses its magic.

Frédéric Chopin is another composer who influenced Crumb. Crumb talks about time suspension, how time perceptibly slows and seems to stand still in Chopin's works. It is apparent that the idea of time suspension is applied in Crumb's music. *Makrokosmos*, when performed honestly to the score indications, creates a like effect trance where the melodies appear and disappear into nowhere. There is a sense of flow, though not so much a sense of beat, in the music.

Although it is easy to fidget and fake one's way through these types of twentieth century music, it does not do justice to the beauty of the music if it is not performed as the score indicates. When these scores are performed with strict attention to detail, one realizes why Crumb has written the score the way he has. Every detail has a meaning and, to one's surprise, it is easier to perform the work when it is performed as written. It is extremely challenging to figure out the coordination of the body movements, because these movements are different and non-pianistic when compared to traditional performance technique. It takes time and practices for a performer to feel comfortable reaching inside the piano with one arm while the other arm remains playing the keys. The performer must coordinate these movements carefully, as it almost seems impossible to execute everything as indicated at first in the score. However, Crumb provides just enough time between the different techniques, allowing the body to flow one movement into another in a floating, almost dance-like manner.

## Chapter 4: Makrokosmos – Sketches

Crumb's compositional process is extremely slow and involves sketching a great deal of material that often gets thrown away. In his own words: "Composition is a laborious process involving the testing of, and choosing from among, various possibilities." (Gillespie, 1986). In his office, he has hundreds of sketches everywhere containing all sorts of musical ideas. Crumb begins his composition process with an intuitive sense of the "ethos" - the essential innate character of a piece of music. He often takes a motif and plays it repeatedly, in different variations until he finds the sound he is content with. These motifs are then set aside as a sketch, waiting to be placed into a frame-work. Sometimes the compositional process takes so long that Crumb himself forgets the character of the piece, and it takes him several trials until he can remember what his intentions were. Richard Wernick recalls visiting Crumb's office, where the composer had sketches of a frame-work of the composition with empty spaces between where melodies needed to be added.

The sketches for a work reveal Crumb's thorough planning, from the large-scale formal shape of each volume down to the smallest details. One of Crumb's sketch pages reveals his intention to write "an all-inclusive technical work for piano (using all conceivable techniques)." (Gillespie, 1986)

Christopher Wilkinson's article on Crumb's compositional process in *Makrokosmos* is both in depth and an interesting read. At one stage in composing *Makrokosmos*, Crumb had planned three volumes, each with nine pieces and an Epilogue. He eventually settled on

24 “fantasy-pieces”, where the twelve pieces of each volume are grouped into three sections of four pieces each. The most well-known precursor of this kind of work is Bach’s *Well-Tempered Clavier*, comprising two volumes, each with twenty-four preludes and fugues. Crumb has specifically acknowledged the influence of Bela Bartók’s *Mikrokosmos* and Claude Debussy’s *Preludes*. Crumb highlights the formal design of the three sections by notating the last piece of each group with a “symbol.” At the end of each piece, Crumb assigns a sign of the Zodiac, to which he then appends the initials of a person born under the corresponding Zodiacal sign. Recalling Debussy’s *Preludes*, each piece has an evocative title. *Volume I*, as a whole, was composed in memory of Béla Bartók and is dedicated to David Burge. *Volume II* is in memory of Gustav Mahler and is dedicated to Robert Miller.

On the surface, the usage of foreign objects along with unconventional performance techniques seems to capture the audience’s attention more than the music itself. However, more fascinating in effect is Crumb’s “psychological curve” - the broad dramatic contour, to which each piece will in turn contribute either increasing tension or gradual release that he had carefully constructed within each volume. When performed in its entirety, each piece becomes a part of the gigantic form comprising the entire Volume. Crumb’s sketch of the ground-plan of *Makrokosmos*, dating from July 1971 to January 1972, reveals that the number of pieces to be included in each volume changed from ten (nine pieces and an Epilogue) to thirteen (twelve pieces and an Epilogue). He later decided to use these Epilogues in Volume III of *Makrokosmos*, and thus, Volume I and Volume II were pared down to twelve pieces each. The groupings within the volume also underwent changes

from three groups of three pieces, to four groups of three, to, finally, three groups of four. During the beginning stages of composition, Crumb had entitled each volume “*The Mysterious Universe: 13 ‘fantasy Pieces’ for Piano.*” Initially, “*Makrokosmos*” was a title given to the Epilogues, and each Epilogue was associated with a literary quotation. An excerpt from Blaise Pascal’s *Pensées* was used for Volume I, and a quotation from Rainer Maria Rilke, for Volume II. These quotations were later transplanted, along with their associated musical material, in *Music for a Summer Evening (Makrokosmos Volume III)*. The locations of symbolically notated movements were carefully decided and other pieces also changed their titles and locations within the volumes, evolving over time to shape the intended “psychological curve.”

## Chapter 5: Challenges in performing *Makrokosmos Volume II*

My first encounter with George Crumb's piano work, *Makrokosmos*, was at a monthly salon concert held at the International House in New York. One of my colleagues performed the part I of *Makrokosmos Volume II*. The 'symbolic elements in Crumb's work were well known, and I had already seen previously the symbolic spiral and peace sign notations. However, it was my first time experiencing Crumb's music in a live performance. With only a limited knowledge of the cycle, I was pleasantly surprised and shocked to hear the buzzing vibrations coming out of the piano when *Morning Music* started. The performer used the score during the performance, and it left a striking impression when she started to rotate the score while performing the 'symbolic' movement of part I, the *Twin Suns*. It was unlike anything I had ever heard or seen. It did not strike me as a melodically beautiful piece that could immediately capture every listener's heart, but there was something about the total sonar experience that left a very deep and strong impression.

The music fascinated me and immediately after the concert, I went to the library and found myself a copy of the score. Up to that point, I had only been introduced to the standard piano repertoires that used conventional piano techniques. I had heard of extended performance technique, of course, but I was not interested in learning works that employed these techniques. For one, I was not convinced that extended performance technique would revolutionize the sonar experience. *Makrokosmos* changed all that. With *Makrokosmos*,

the piano becomes an amplifier as well as the mixing board for extended performance technique, where the new technique aims at challenging the limitations of the piano idiom. In the *Voices of Corona Borealis*, the piano almost resembles the quality of an aerophone when the whistle is blown into the instrument, triggering synthetic vibration from the strings - while in the *Ghost Nocturne*, the piano becomes an idiophone when the glass tumbler is pressed against the strings and bends the pitches.

Whereas the first encounter with Crumb's score was a delightful experience, it was filled with unknown notations that triggered a number of questions. I tried sight reading the score and, having barely gone through a single stanza, I was stuck by unknown musical notations, things that I had never seen before. Unlike today, at that time there were limited sources as well as limited access to references when studying contemporary music scores. YouTube and other user friendly audio and video sites were not around and, moreover, recorded performances of *Makrokosmos* were scarce. I was determined to learn how to perform such scores. However, my academic life and learning the standard piano repertoires for my study were my immediate focus, and Crumb's scores would have to wait.

After my first encounter with *Makrokosmos*, ten years passed, and I found myself still fascinated with his work. When I was contemplating my DMA recital program, it seemed that it was the right time to take up the challenge of Crumb. Understanding the unconventional notation did not require much time; undoubtedly the most challenging aspect of this style of music was the lack of performance expectations. Compared to Beethoven, Chopin and other composers whose written works have become standard piano

literature, George Crumb's work is rarely performed live. Thus, there were few preconceived expectations for the quality of sound or the execution of extended piano techniques.

From the score's notation, it is apparent that Crumb pays very close attention to every detail and quality of sound. The difficulty of following all of these details is that, without proper body coordination, it is impossible to execute all of the techniques in the amount of time given to the performer. Unless the movements are carefully choreographed, the small rests start to be omitted and get sacrificed in maneuvering between the keys and interior of the piano. Facing yet again the lack of resources in learning the score, Margaret Leng-Tan's DVD – George Crumb Makrokosmos I & II - immediately became my Bible. The DVD answered many questions regarding these techniques e.g. where or how to strum the strings, where to place an object, etc.

Another challenge in learning these pieces regards reading the notes from the score. 'Symbolic' works such as *Twin Suns*, *A Prophecy of Nostradamus* and *Agnus Dei* are all very beautiful from a visual point of view. But, when it comes to learning them, it is extremely difficult to get through each one, simply because of how the music is notated. Crumb clearly indicates in his preliminary performance notes to have the 'symbolic' movements memorized. In order to aid the learning process, it is recommended to make a photo copy of the music, cut it into pieces, and lay the pieces down on a sheet of paper so that everything can be read without having to twist one's head, or the score.

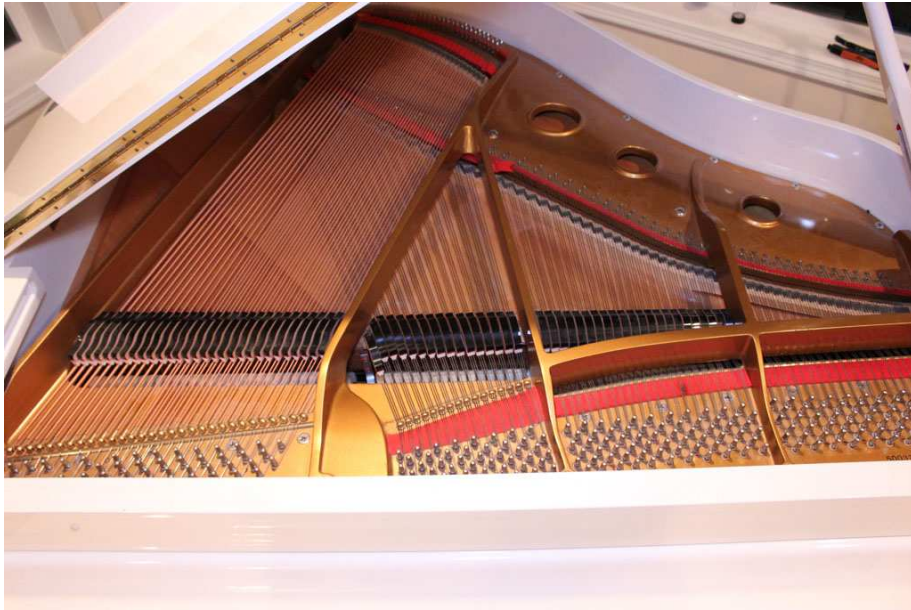
Once the score is memorized, the next challenge the performer encounters is in coordinating their body to successfully execute what is written on the page. There are many sections where the damper pedal is held throughout, while the performer is playing both on the keys and inside the piano. It sounds like a simple task in principle. But, when performing, there is only a micro-second in which to maneuver between the keys and strings. It becomes very important to know how to balance and coordinate the body. To produce a resonating pizzicato, a certain amount of body weight and upper body control is required. When one's foot is 'tied' to the damper pedal, pressure is placed on the knee, as well as restricting the distance the arm can reach inside the piano. One way to resolve the problem with the damper pedal is to apply a pedal block (only possible if the pedal is to be held throughout). Margaret Leng-Tan uses a tuner rubber stop placed on the pedal. Some other possibilities are a nail polish block, or a felt blackboard eraser.

Amplification of the piano is a challenge that is often neglected or left to the stage engineer to resolve. Crumb discusses this aspect of the work in the opening performance notes as such:

A conventional microphone (suspended over the bass strings) should be used for the amplification of the piano. The level of amplification should be set rather high so that the loudest passages are very powerful in effect, but without distortion. The amplification should also enhance the vocally-produced effects. The level of amplification should not be adjusted during the performance. (Crumb, *Makrokosmos, Volume II, for Amplified Piano*, 1973).

It makes a difference where the microphone is placed, as this will have a direct impact on the sound that the audience hears produced by the amplifiers. In a live performance setting, depending on the size of the venue, the audience might hear the acoustic piano sound as well as the amplified sound. In larger venues, the performer should consider integrating the sound from the amplifier into the venue's audio system.

Lastly, it is important to understand the beam placement of the grand piano. The size of the piano and the placement of the beams inside vary with each manufacturer's design, and changes with each model. For ease of reference, the Steinway piano is used here. To successfully perform *Makrokosmos*, a Concert Grand (8'11") is recommended, as the Baby Grand (5'1") and Music Room Grand (Size B, 6'11") do not provide enough space for the glass tumbler either on the treble or bass range for *Ghost Nocturne*. Also, with baby grand pianos, the beam placement does not allow, for instance, for the glissando played with a wire brush in the *Cosmic Wind*. Depending on the size of the grand piano, the break in the alignment of the strings will vary as well. For a successful performance of the work, it is important that the performer work on a piano that allows necessary space for the new technique.



**Figure 1: Baby Grand: 5'1"**



**Figure 2: Music Room Grand: 6'11"**



**Figure 3: Concert Grand: 8'11"**

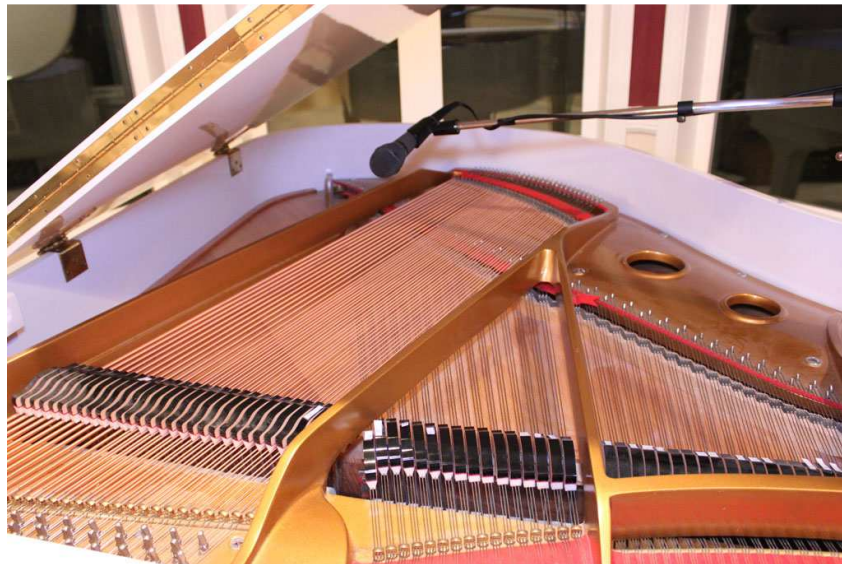
## Chapter 6: Issues with Amplification

Although the mention of amplification in Crumb's performance notes is minimal, it would be beneficial to discuss and understand the challenges presented by such. Placement of the microphone inside the piano is very important when trying to pick up subtle differences in the tone. Technological advances have made it possible for the performer to place a high quality microphone inside the piano that will pick up the most sensitive gradations of tonal color changes.

From Crumb's notes, his main reason for using a microphone is to enhance the more powerful sections. However, amplification comes in very handy for the extremely soft sections as well. The finger trills played on the cross beam in *The Voices from Corona Borealis*, without the aid of amplification, will most likely be too soft and would not be audible if performed in a fairly large venue.

Hypothetically, the amplification level should be set extremely high if the work is performed in a large venue, in order to transmit the softest dynamics to the back of the hall. At this point, a good portion of the sound the audience is hearing is the raw sound coming out of the piano, as well as the amplified electronic sound the microphone has picked up. In this case, the softest sounds the audiences hear are not coming from the piano, but from the amplifier itself. As frequently happens in a studio recording or live performance environment that uses amplifiers, it is necessary to place a set of microphones on the amplifier itself, as the choice of both amplifier and volume can easily change the desired

sound. In order to achieve the appropriate volume and sound, double amplification might even be required.



**Figure 4: Conventional microphone suspended over bass strings**



**Figure 5: Amplifying the sound from the amp**

## Chapter 7: Detailed Study of the Individual Pieces

1. Morning Music (Genesis II) - Cancer
2. The Mystic Chord - Sagittarius
3. Rain-Death Variations - Pisces
4. Twin Suns (Doppelgänger aus der Ewigkeit) [SYMBOL] - Gemini
5. Ghost Nocturne: for the Druids of Stonehenge (Night-Spell II) - Virgo
6. Gargoyles - Taurus
7. Tora! Tora! Tora! (Cadenza Apocalittica) - Scorpio
8. A Prophecy of Nostradamus [SYMBOL] - Aries
9. Cosmic Wind - Libra
10. Voices from “Corona Borealis” - Aquarius
11. Litany of the Galactic Bells - Leo
12. Agnus Dei [SYMBOL] - Capricorn

## 1. Morning Music (Genesis II): [Cancer]

Exuberantly, with primitive energy

Musical Signs:



Figure 6: Large accidentals apply to all the tones indicated



Figure 7: Pause for the indicated number of second(s)



Figure 8: Grace note

PI

Figure 9: Damper pedal

### Preparation Needed:

- Placing the strip of paper on the strings on the indicated range of pitches

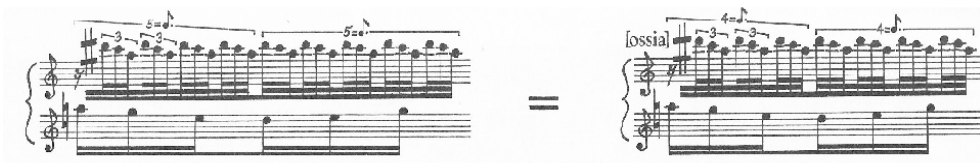
### Performing the Piece:

A strip of paper is placed on the strings spanning the distance from E3 to D5. To place the paper on the strings, lift the dampers with the pedal and slightly tuck the paper under the dampers, so it will not move from the indicated range with the vibration of the strings. The weight and size of the paper can be determined by the performer; lighter paper will result in a slightly brighter sound. It is recommended to use a fairly large size paper in order to give more contact points between the paper and strings to produce louder vibration. At the end of the piece, before removing the paper from the strings, make sure to wait until the resonance is completely gone in order to prevent any unwanted buzz. When removing the paper, take time and make sure the damper pedal is off. Crumb indicates to use the damper pedal throughout the piece. Full pedal throughout will result in muddiness especially at lower range; therefore, it is recommended to use a partial pedal; half or quarter pedal at staccato sections will minimize any muddiness of tone.



**Figure 10: Placement of the paper on the strings**

The difficulty of this piece comes from the rhythm and the need for cleanliness in the sound. Due to the use of the damper pedal, every note must be played with a quick attack. The difficult passage involving triplets against sixteenth notes can be played in two ways. As noted in Crumb's performance note, the first way is to play as written, and the second option is to play as:



**Figure 11: First and Second options**

## 2. Mystic Chord [Sagittarius]

Adagio molto; serene, desireless, like a Nirvana-trance

Musical Signs:



Figure 12: 2nd partial harmonics

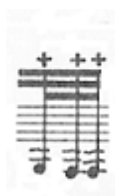


Figure 13: Mute strings near the pins



Figure 14: Glissando



Figure 15: Depress the indicated notes silently and secure with sostenuto



**Figure 16: Fermata**

PI

**Figure 17: Damper pedal**

PII

**Figure 18: Sostenuto pedal**

f.t.

**Figure 19: Fingertips**

Preparation Needed:

- Erasable chalk on the strings

Performing the Piece:

*Mystic Chord* is one of the pieces in *Makrokosmos* that requires carefully choreographed movements. The performer will need to stay seated in order to use the pedals, while reaching inside the piano to access the strings. The sitting position is a key factor which will influence the ease of performance. The recommended sitting position is to sit as high and as close to the keyboard as possible, allowing enough space for the performer to play on the keys while having good visual awareness and the fullest reach possible inside the piano. Unlike traditional piano performance technique, this sitting position limits upper arm flexibility, requiring different muscle movements while playing on the keys.

The most difficult aspect of this piece is being able to maneuver between the keys and strings in the limited amount of time while staying seated. Although the tempo is *Adagio molto*, the time given to the performer is not sufficient to search and check whether or not you are playing on the correct string(s) inside. Dampers should be labeled with note names, and a general understanding of the string alignment and visual fluency with the piano interior is mandatory. In this piece, pizzicato is done only with the fingertips. Even with the aid of amplification, a good amount of force is required to produce a good pizzicato sound. Just like playing on the keys, the pizzicato can be assigned a fingering. For example, when plucking A-B-F, performer can use either 2-3-1 or 3-4-1. Whichever produces the stronger sound should be used. There is no indication of the use of metal thimble or guitar finger picks; however, application of these in the pizzicato section will enhance the volume and quality of the sound. The challenge in using the finger picks is to figure out when to take them off. It is recommended to experiment with different finger picks to prevent building calluses on the fingertips.

The section where the string is plucked while being altered to make the 2<sup>nd</sup> partial harmonic requires the practice of eye-hand coordination. It is impossible to remember the exact placement on the strings for the second partial harmonics. Every piano will have a slightly different placement due to the length of the strings. Larger grand pianos longer strings; therefore, the placement of the harmonics should be marked with an erasable chalk. Any water soluble marking pencil used for fabrics will also work well, and can easily be removed during clean-up.



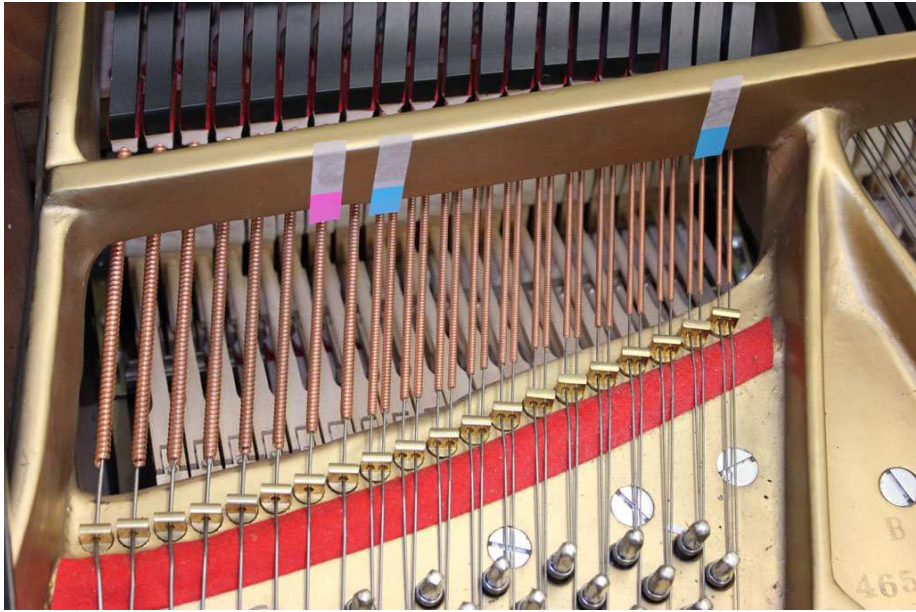
**Figure 20: Chalk markings for the 2nd harmonic**

When pressing the marked locations on the strings to produce the 2nd partial harmonics, make sure the fingers pressing the strings are firm and on the correct space. The other hand playing the notes should be pressed with enough force to offset the muting of the strings.



**Figure 21: Pressing on strings for the 2nd harmonic**

For the muted section of the *Music of Strife*, it would be wise to label the range near the pins. It takes practice to coordinate the movement from finishing playing the chords on the keys to playing the glissando on the strings with the right hand, and then muting the indicated range with the left hand while the right hand gets back on the keys to play the notes. While the right hand is playing the glissando, the left hand should already move toward the bass strings in order to prepare for the mute.

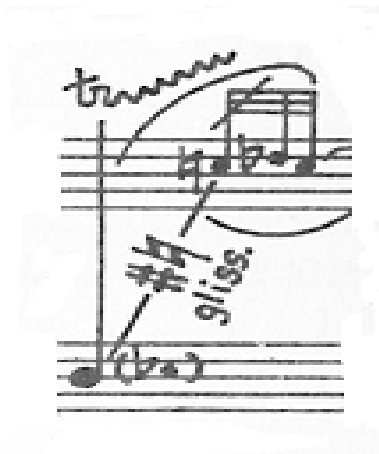


**Figure 22: Label for where to mute**



**Figure 23: Muting the strings**

For the last measure of the piece, both hands should be on the strings. The right hand plays the trills, moving up from the starting note to the indicated finish note, while the left hand follows the right hand with the glissando on the strings.



**Figure 24: Trills with glissando**

### 3. Rain-Death Variations [Pisces]

Crystalline, with elegance

Musical Signs:



Figure 25: 2nd partial harmonics

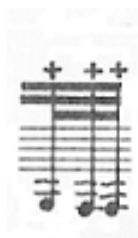


Figure 26: Muting strings near the pins



Figure 27: Depress silently and secure with the sostenuto pedal



Figure 28: Fermata

PI

**Figure 29: Damper pedal**

PII

**Figure 30: Sostenuato pedal**

Preparation Needed:

- Mark the dampers that needs to be muted
- Mark the 2<sup>nd</sup> partial node on the strings

Performing the Piece:

This piece is perhaps one of the few that is closest to conventional piano playing. The interaction with the interior of the piano is minimal, and the majority of the material in this piece is rhythmically very simple and straight-forward. The detailed dynamic indications must be followed to create the right mood, not only for the “Rain”, but also for the “Death” as well.

#### 4. Twin Suns (Doppelgänger aus der Ewigkeit): [Gemini]

“Hymn for the Advent of the Star-Child” - “Majestic”

Musical Signs:



Figure 31: Depress silently and secure with sostenuto pedal



Figure 32: Glissando over strings



Figure 33: Fermata

PI

Figure 34: Damper pedal

PII

Figure 35: Sostenuto pedal

f.t.

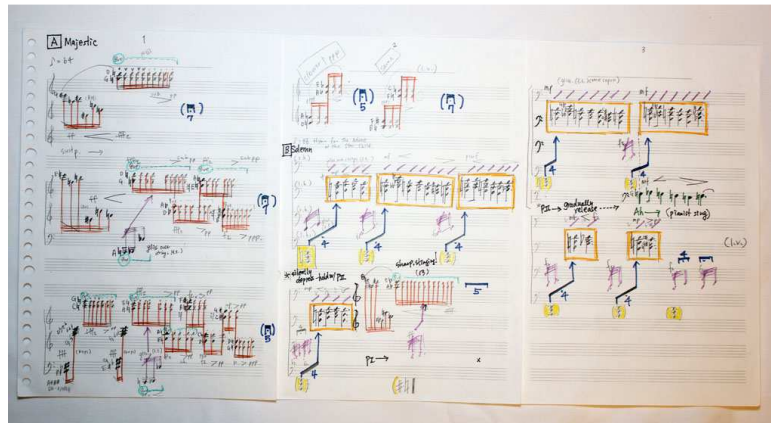
**Figure 36: Finger tips**

Preparation Needed:

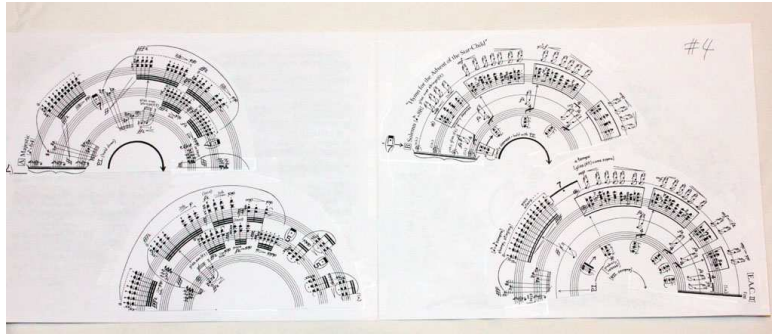
- Preparation not necessary

Performing the Piece:

This piece is the first ‘symbolic’ piece in Volume II. To make the learning process easier, the performer can either write out the score in standard notation, or make a photocopy of the score and cut it into four parts. If performing the work, Crumb recommends the performer to memorize all of the ‘symbolic’ pieces.



**Figure 37: Score written out on a staff sheet**



**Figure 38: Score cut into four sections**



**Figure 39: Hand position for the boxed notes**

The boxed notes are to be pressed silently. The movements in the hands at this time are completely opposite. The left hand is controlled and playing slowly and as lightly as possible, the right hand is strumming the strings as strong as possible. There is a sense of careful preparation and of great release.

## 5. Ghost-Nocturne: for the Druids of Stonehenge (Night-Spell II) [Virgo]

Dark, “fantasmic”, subliminal

Musical Signs:



Figure 40: Dampen string with fingertip immediately after plucking

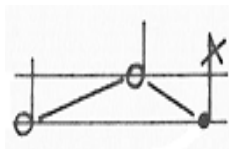


Figure 41: Glissando using the glass tumbler



Figure 42: Strike glass tumbler lightly with flat fingers



Figure 43: Fermata

PI

**Figure 44: Damper pedal**

l.v.

**Figure 45: Let vibrato (ring)**

f.t.

**Figure 46: Fingertips**

Preparation Needed:

- Markers on the dampers and strings
- 2 glass tumblers placed on the indicated ranges

Performing the Piece:

Ghost-Nocturne is another piece that requires a great amount of body coordination. Both interior and on-the-key playing are interchanged frequently here, and the performer should feel as if one movement leads into another. Unlike traditional piano playing, the performer's hands will be operating different tasks. While the left hand remains inside the piano interior, the right hand moves to prepare for the next move and vice-versa.

When placing the glass tumbler on the treble and bass range, place the tumbler on the string and pull it firmly toward the dampers. It is recommended to have the music memorized; though, if necessary, the score can be placed on the right side of the piano interior. The rhythmic interplay between the trill in the right hand and the use of glass

tumbler in the left sets the pulse for the piece. Therefore, it is very important to carefully coordinate the moment where the tumbler switches from the push to the pull movement.

The two glass tumblers are placed on the indicated range of strings next to the dampers. The tumblers will be pressed against the strings to create the “bending” of the pitches. The glass tumblers must be long enough to cover the interval of a minor 7<sup>th</sup>, and must be perfectly straight on the edges and flat the full length in order to create successful pitch bending. The direction of the tumbler’s opening will have an effect on the sound. Therefore, the performer should experiment which direction the opening of the tumbler should be pointed for the desired sound. Although the glass should not break from the vibration of the strings, it is recommended to use a thick glass for the purpose of safety and to allow heavy pressure to be placed against the strings to create bending pitches that resonate well.

For a successful bending of the pitches, a steady amount of heavy pressure is necessary. The motion in which the tumbler is moved against the string should be a straight push and a slight roll of the wrist, with the arm outstretched. For a clear stop of vibration before letting of the tumbler, keep a firm pressure on the tumbler all the way back to the dampers. If the pressure is loosened at the end, the tumbler will continue to roll on the strings, making an unwanted buzzing sound.

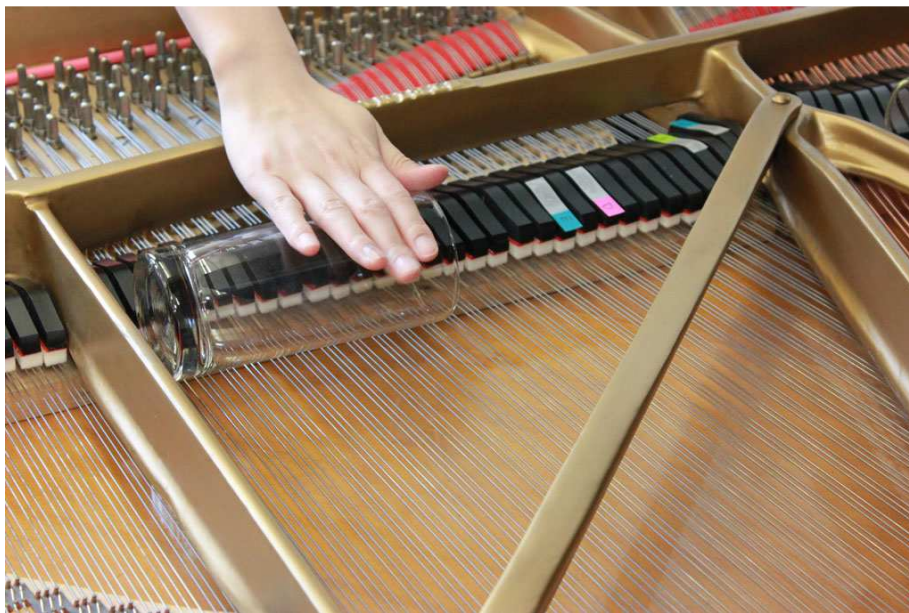


**Figure 47: Tumbler placement**

This piece requires the performer to sing a short syllable. Crumb's notes indicate the pronunciation of the  $\tilde{a}$  of  $w\tilde{a}-\tilde{o}$ , as the French nasal "i" (as in *vin*) and pronounce  $\tilde{o}$  as the French nasal "o" (as in *bon*). The phrase is recited in one breath and the volume must match the dynamic range of the pizzicato note. It is very important to coordinate the timing of the breathing; specifically, when to take a deep breath prior to the vocal part in order to prevent losing intensity in the recitation.

The performer must remain standing to maneuver the tumblers, with the pedal held throughout. The performer must find a good balancing spot for the left foot to withstand the far reach inside the piano in both the treble and bass ranges. Although Crumb does not

indicate the use of a pedal block; it would be wise to use one in order to allow the damper pedal to be held down.



**Figure 48: Striking the glass tumbler with flat fingers**



**Figure 49: Dampening string and plucking immediately after**

On a smaller grand piano, the placement of the crossbeams will direct the performer where to pluck. Figure 50 shows insufficient space for the performer.



**Figure 50: Insufficient space to pluck the strings**



**Figure 51: Insufficient space to roll the glass tumbler in the bass range**



**Figure 52: More space for the glass tumbler in the bass range but not in the treble range**

## 6. Gargoyles [Taurus]

Marcia grottesca: savagely, with irony

Musical Signs:



Figure 53: Depress silently with palms and secure with sostenuto pedal



Figure 54: Glissando over strings using finger nail



Figure 55: Fermata

PI

Figure 56: Damper pedal

PII

Figure 57: Sostenuto pedal

l.v.

**Figure 58: Let vibrate**

f.n.

**Figure 59: Fingernail**

Preparation Needed:

- Preparation not necessary

Performing the Piece:

*Gargoyles* is one of the pieces that requires minimal involvement with the piano interior. Most of the playing takes place on the keys. This piece is composed of clusters and repeated note figures written in 5/8 time signature, where the eighth note is played at 144 beats per minute. The piece moves rapidly but, unlike the other pieces, there is enough time for the right hand to move from the keys to the strings and back. The suggested fingering for the repeated note figure works well, but alternating 2-1 also makes it easy to produce *sempre ff*. The glissando on the strings must be made quick and in a scooping motion in order to let the strings vibrate well. Careful pedaling must be done before the repeated note figures start so that the overtone from the previous note does not carry over.



**Figure 60: Glissando on the strings**

## 7. Tora! Tora! Tora! (Cadenza Apocalitica) [Scorpio]

Dramatic, with great intensity; violent, relentless

Musical Signs:



Figure 61: Chromatic clusters played with palm



Figure 62: Double glissando

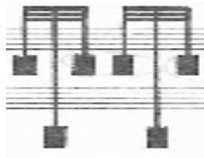


Figure 63: Strike strings with all fingernails to produce chromatic clusters



Figure 64: Shouting

PI

**Figure 65: Damper pedal**

l.v.

**Figure 66: Let vibrate**

f.n.

**Figure 67: Fingernail**

Preparation Needed:

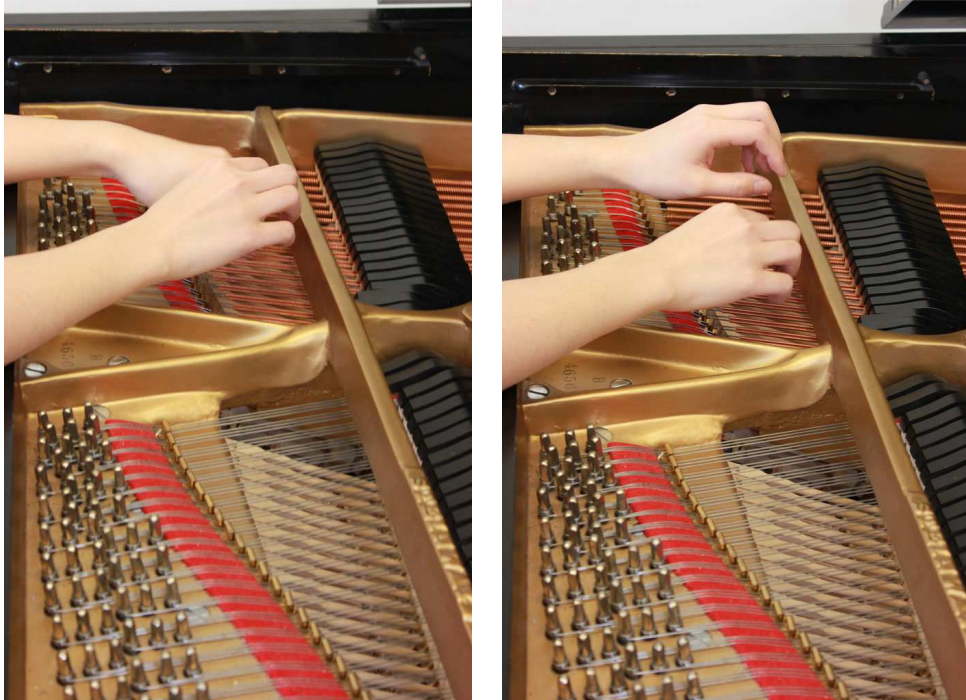
- No preparation necessary

Performing the Piece:

Tora!Tora!Tora! is mostly played on the keys, again with limited involvement inside the piano. Since the damper pedal is held throughout, it can be secured with a pedal block if desired. However, as this piece is played mostly using conventional piano techniques, this probably won't be necessary.

The opening six clusters are played with the palms. Apply all the weight from the upper body to produce an accented strong sound.

The marcato sections are played by striking the strings sharply with all the fingernails in order to produce percussive and metallic chromatic clusters. Apply heavy pressure through the nails to produce a bold heavy sound.



**Figure 68: Striking the strings with fingernails**

Once the piece starts, there is absolutely no let-up, and the dynamic stays in the ff-fff range with the damper pedal held throughout. It is important that every note be played with a sharp attack so as to produce a crystal clear tone that does not end up blurring the overall sound. Before the vocal part enters, coordinate a breathing point so that the vocal part is supported with enough air.

Double glissandos are to be played fortissimo. It is slightly easier to produce a stronger sound by playing with both palms facing downward.



**Figure 69: Strong vs. weak glissando**

## 8. A Prophecy of Nostradamus [Aries]

Stark, powerful; molto pesante!

Musical Signs:



Figure 70: Depress silently



Figure 71: Glissando over strings

PI

Figure 72: Damper pedal

PII

Figure 73: Sostenuto pedal

PIII

Figure 74: Una corda pedal

f.n.

Figure 75: Fingernail

f.t.

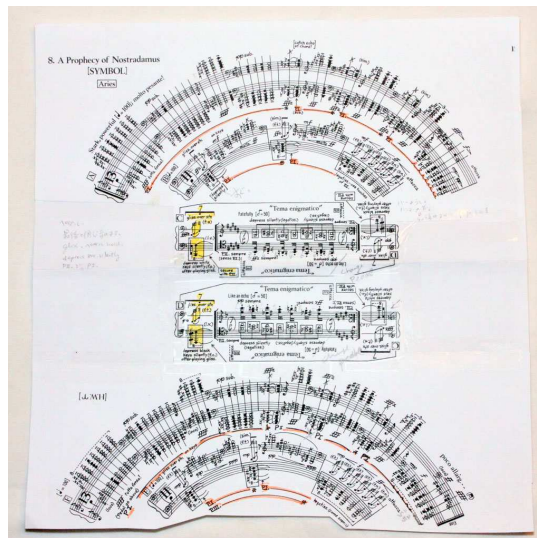
**Figure 76: Fingertip**

Preparation Needed:

- Preparation not necessary

Performing the Piece:

*A Prophecy of Nostradamus* is the second ‘symbolic’ piece of Volume II. The graphic symbol for this movement is a circle with two gaps in each end, with a line in a middle that creates a symmetrical half circle. The movement is divided into six sections labeled A, B, C, D, E and F. After completing the first three sections, the music is flipped upside down to continue the remaining three sections. For the purpose of studying the score, make a photocopy of the music and cut the score into three sections; A and B then C and D then E and F. In addition, make another copy of the C and D section.



**Figure 77: Score divided into playable sections**

Undoubtedly, pedaling is the most difficult aspect of this movement. Both the damper and the sostenuto pedals must be timed carefully in order to produce the intended resonance. In section A and F, to clearly catch the echo of the chord, apply the damper pedal once the hammer has hit the string and the dampers have fallen back onto the strings. If the damper pedal is applied too early, it will create a muddy sound.

The connection between sections B and C, and sections C and D is extremely intricate in the pedaling. The last part of section B employs a fingernail glissando on the strings, followed by the section C's *ffz* fingernail glissando on the strings. The glissando in section B is held with the damper pedal, which is changed right before the section C glissando starts. Once the section C glissando takes place, let it vibrate with the damper pedal while silently depressing the indicated notes. Once the notes are silently depressed, very carefully switch the damper pedal to the sostenuto pedal.

These movements have to be coordinated within the indicated seven seconds before the “Tema enigmatico” starts. There should always be resonance between the sections. When the pedaling is not executed correctly, the resonance will stop. This might be caused either by the lack of fortissimo effect created by the *fffz* glissando, or bad pedaling changes between the damper and sostenuto pedals. In sections B and E, the damper pedal is applied immediately after the glissando over the strings and held until the start of the next glissando.

In this movement, Crumb uses a wide range of dynamics; from *ffff* – *ffz*- *fff-ff-f-fmp* – *pp-ppp*. Allow the dynamic range to vary; however, every note should have needle-point cleanliness and direction to the tone.

## 9. Cosmic Wind [Libra]

Ghostly, shadowy, tremulous

Musical Signs:



Figure 78: Glissando over the strings with wire brush as indicated

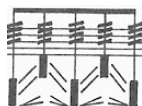


Figure 79: Tremolo on the strings with fingers on the strings

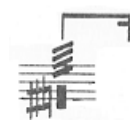


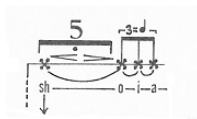
Figure 80: Tremolo with wire brush



Figure 81: Scrape strings with the fingernail



**Figure 82: Pizzicato with fingertips and dampening with fingertips**



**Figure 83: Unvoiced singing**

PI

**Figure 84: Damper pedal**

l.v.

**Figure 85: Let vibrato**

f.t.

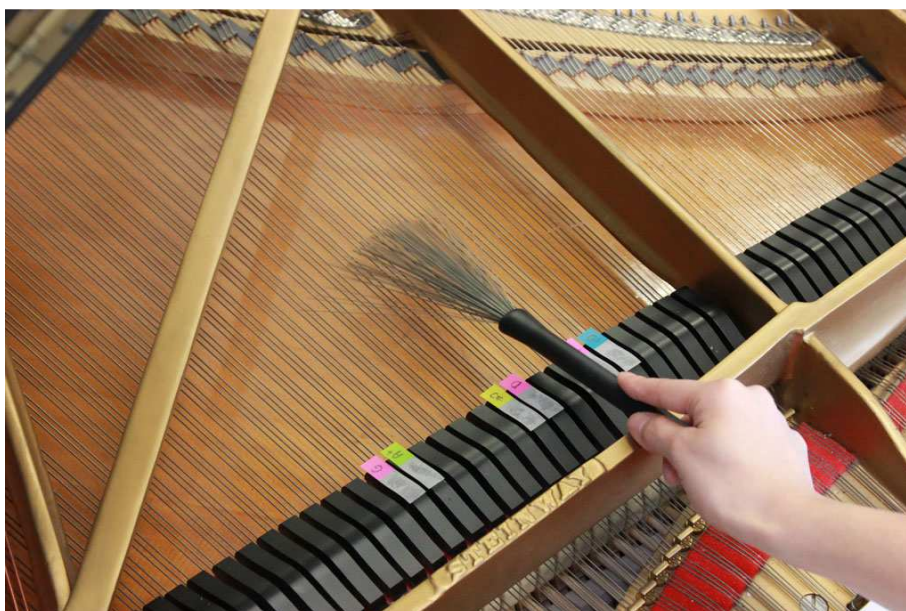
**Figure 86: Fingertips**

Preparation Needed:

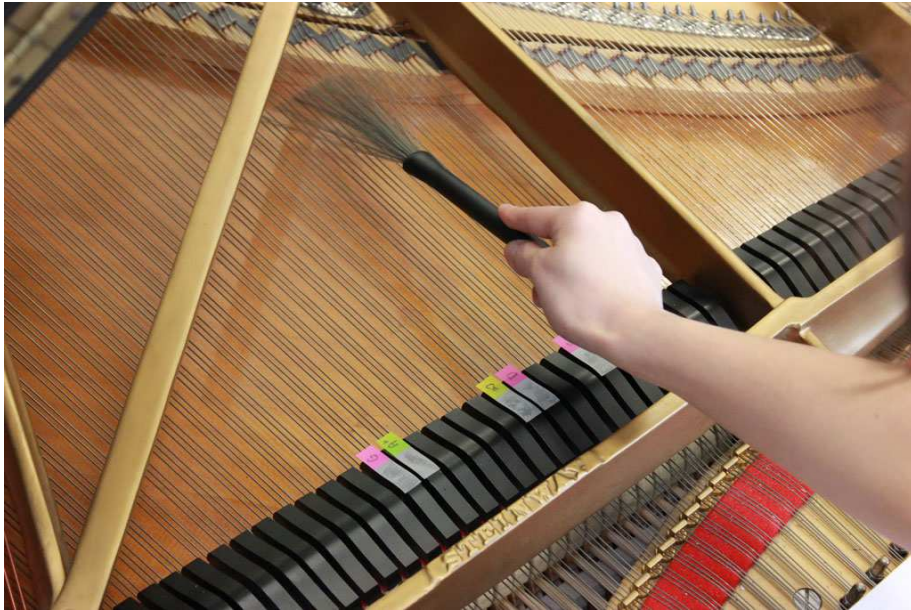
- Markers on the dampers and strings
- Wire brush
- (Pedal block) not indicated but recommended

### Performing the Piece:

*Cosmic Wind* uses a wire brush normally used for drumming. When the string is attacked with a downward vertical motion with the wire brush, it might accidentally strike certain strings harder than others, making a specific note resonate. Apply the wire brush flat against the strings to create a nice glissando and tremolo effect. To create a dynamic difference from ppp to fz using the wire brush on the strings, attempt to laterally move (shake) the wire brush while moving up and down the strings. Adding more speed to the tremolo motion will create a stronger sound.



**Figure 87: Starting position with wire brush**

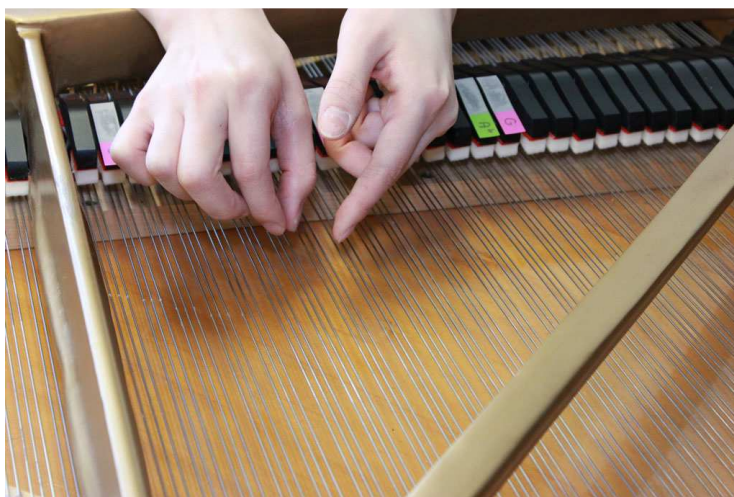


**Figure 88: Ending position with wire brush - return to starting position**



**Figure 89: For a glissando, brush the strings in a lateral motion with a firm consistent weight**

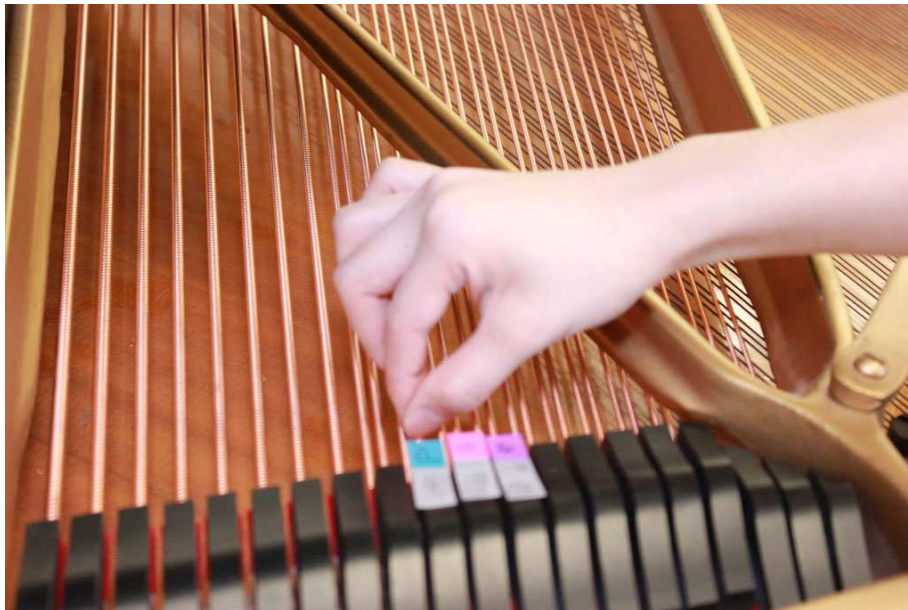
The pizzicato on the strings should be executed with both hands as the stem indicates. As a reminder, the pizzicato can be assigned fingering.



**Figure 90: Fingering pizzicato**

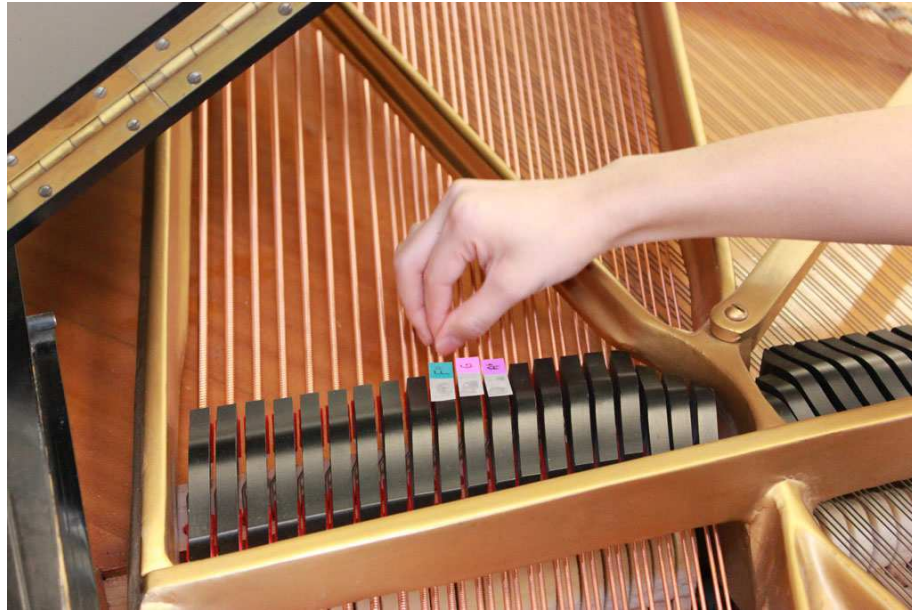
The unvoiced singing is like a forced out whisper. When applying the crescendo and diminuendo to the part, using body movement (when getting louder, move the upper body closer towards the piano and when getting softer, move away from the piano) will add a more dramatic effect in the sound created.

When scraping a single string with the fingernail, Crumb indicates to scrape the fingernail over the metal winding of string, making a rapid stroke over several inches of string near the pins with a motion away from the performer.



**Figure 91: Scraping the metal wound string with the fingernail**

For scraping a cluster, Crumb indicates to use four fingernails in a single rapid stroke over a stretch of about four inches of metal string, and towards the middle of the string, in a motion away from the performer.



**Figure 92: Four fingernail scraping technique**

The pedal is held throughout the movement while the performer remains standing. As with *Ghost Nocturne*, to allow easier movement without being tied to the pedal, it is recommended to use some sort of a pedal block that will allow the damper pedal to be held down. When the wire brush is not being used, it should be placed inside the piano where it is easy to access. The piano will be amplified; therefore, in order not to create any unintended sounds, have a felt or cloth holder for the wire brush inside the piano.

## 10. Voices from “Corona Borealis” [Aquarius]

Passacaglia: very slow, with majestic calm

Musical Signs:



Figure 93: Touch node for 5th partial harmonics



Figure 94: Scrape string with fingernail while touching node for 5th partial harmonics

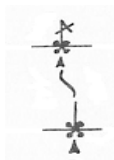


Figure 95: Strike the cross beams with knuckles

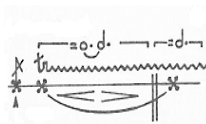


Figure 96: Rapid trill on the cross beam

CB

**Figure 97: Cross beams**

PI

**Figure 98: Damper pedal**

f.n.

**Figure 99: Fingernail**

f.t.

**Figure 100: Fingertip**

Preparation Needed:

- Markers on the dampers and strings
- Chalk
- Optional:
  - Pitch fork (for checking the pitch of the whistler)
  - Metal thimble (for scraping)
  - Pedal block

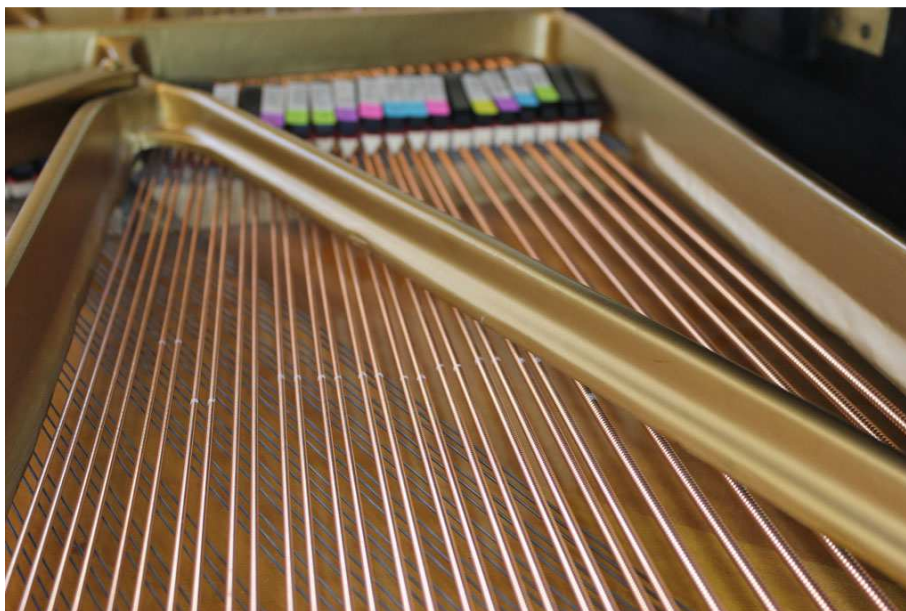
Performing the Piece:

*Voices from “Corona Borealis”* starts with the performer whistling into the piano to produce strong sympathetic vibrations from the strings. Crumb’s note indicates that each whistled tone should be approximately one eighth-note shorter than its notated value, because the echo of the tones will provide the intended legato effect. The whistling part is very challenging and requires great pitch and air control. On top of that, the performer has to produce different pitches while playing in the interior of the piano at the same time.

Unless the performer has great whistling technique, it might be wise to invite another performer who is not playing.

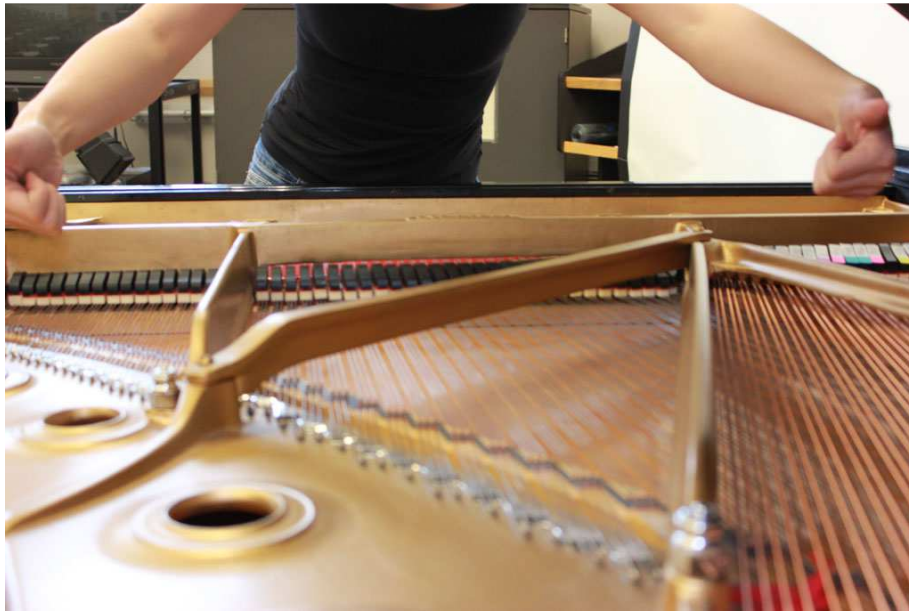
For this piece, a pedal block should be applied to hold the damper pedal down throughout the piece. To produce the 5<sup>th</sup> partial harmonics, the performer must reach far inside the piano. Applying the pedal block will allow the performer to comfortably reach the interior of the piano. This will allow the necessary amount of force and weight of the upper body to dampen the strings and to reach the correct strings in time without being tied to the damper pedal.

To produce the 5<sup>th</sup> partial harmonics, it is impossible to eye-ball the exact spot to press on the strings. It is important to mark both the note on the damper and where the 5<sup>th</sup> partial harmonic starts on the strings with chalk.



**Figure 101: Chalk indicators for finger positions**

When striking the cross beams with knuckles, make sure that the knuckles are very firm.  
Strike the beams as if the knuckles are hitting the drones.

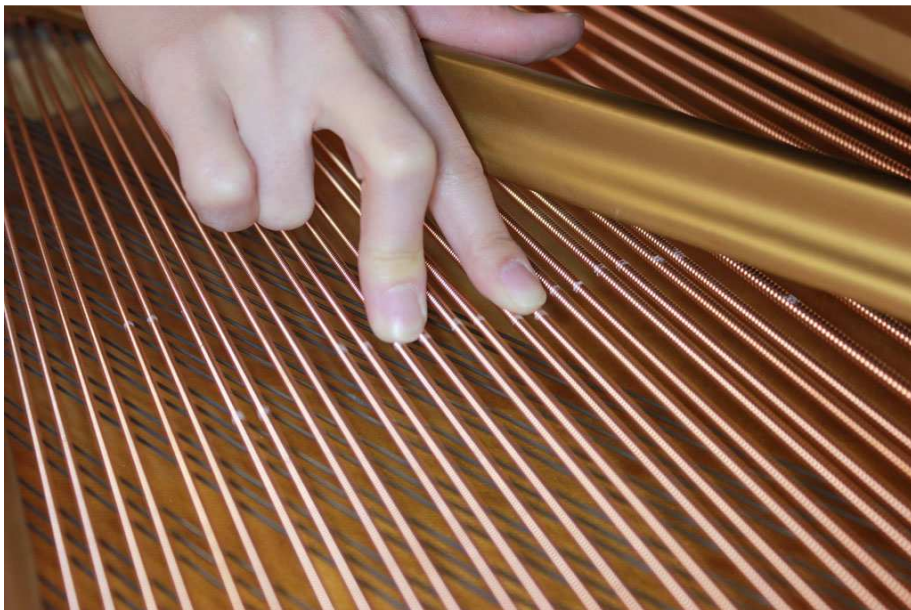


**Figure 102: Knuckles striking the cross beam**

The trilling on the cross beam does not produce much sound. In order to create maximum sound from the fingers, apply enough pressure on the fingertips and have the amplification microphone as close to the beam as possible.



**Figure 103: Fingertip position for the trill on the cross beam**



**Figure 104: Touching node for 5th partial harmonics**

## 11. Litany of the Galactic Bells [Leo]

Jubilant; metallic, incisive, echoing

Musical Signs:



Figure 105: Glissando over strings

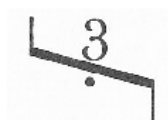


Figure 106: Rest for the indicated number of seconds



Figure 107: Pause for the indicated number of second(s)

PI

Figure 108: Damper pedal

PIII

Figure 109: Una corda pedal

f.t.

**Figure 110: Fingertip**

Preparation Needed:

- Preparation not necessary

Performing the Piece:

*Litany of the Galactic Bells* is another one of the pieces that requires minimal involvement with the interior of the piano. Most of the playing will take place on the keys, and is similar to *Gargoyles* and *Tora!Tora!Tora!* in that the piece is composed of clusters. The clusters are to be played rapidly on the keys, but Crumb gives adequate time for the left hand to move from the keys to the strings and back. The glissando on the strings must be made quick and in a scooping motion from left to right.

Crumb demonstrates symmetry with Volume I in this piece by incorporating a direct quotation from a famous composition. In Volume I of *Makrokosmos*, a quotation from Chopin's *Fantasie Impromptu* was used and in Volume II, a quotation from Beethoven's *Hammerklavier* Sonata is used.

It is hard to determine which part is portraying the bell, as every motif is off-set by a similar motif played in the opposite dynamic range. The opening six clusters are played *fff*, followed by a four-beat pause and six similar clusters played *ppp*, which creates an echo-effect. The first six *fff* clusters become the initial ringing of the bell and the six *ppp*

clusters after the pause are the echoes. The descant and quotation in the middle and at the end of the piece comes out of nowhere creating a hauntingly surreal effect that smoothly flows into the last movement, *Agnus Dei*.

## 12. Agnus Dei [Capricorn]

- A. Very slow, like chanting
- B. Come sopra
- C. Very slow; tender, wistful
- D. “Prayer-wheel” - Very slow like a vision, as if suspended in endless time

### Musical Signs:



Figure 111: Chanting



Figure 112: Depress keys silently and hold



Figure 113: Glissando over strings



Figure 114: Plucking strings with the fingertips



**Figure 115: Pause for the indicated number of seconds**

PI

**Figure 116: Damper pedal**

PIII

**Figure 117: Una corda pedal**

f.t.

**Figure 118: Fingertips**

Preparation Needed:

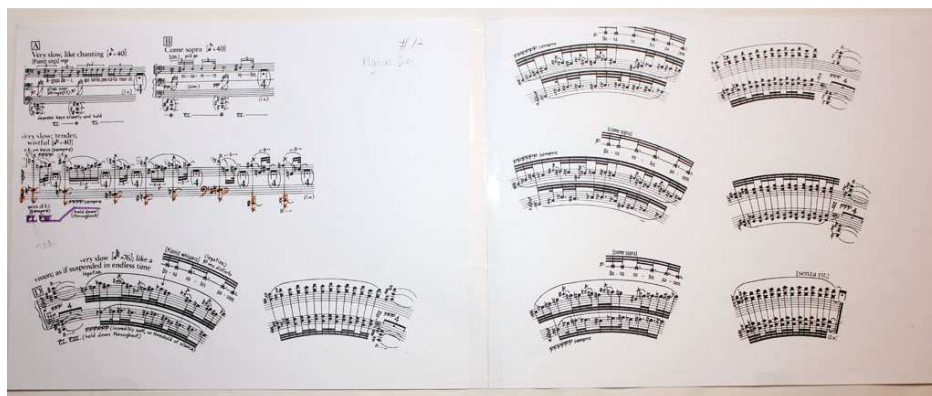
- Markers on the dampers and strings

Performing the Piece:

*Agnus Dei* is the last ‘symbolic’ piece of the Volume. The graphic symbol for this movement is a peace sign in correspondence to the given title. The movement is divided into four sections labeled A, B, C, and D. Sections A and B utilize glissando and chanting. Section C follows with a mixture of interior pizzicato playing and playing on the keys. Section D, the last section of the movement and the last section of the cycle, is a mixture of playing on the keys and chanting.

The loudest section of the piece is the chanting at the opening which is indicated as mp. As the section continues, the dynamic gets softer and softer and by section D, the dynamic is indicated as pppppp – just barely letting the hammer strike the strings. When executed correctly, this piece creates a haunting sonority that appears and disappears out of nowhere and leaves the listener in a moment of reverie. It is a powerful ending to the entire cycle.

For the purpose of studying the score faster, make a photocopy of the score and cut the score into eleven sections; A, B, C and D (section D is cut into 8 sections).



**Figure 119: Cutting the score into sections**

The pizzicato in section C should be done very lightly on the strings, using the four-beat pause to slowly prepare for the pizzicato notes that follow.



**Figure 120: Pizzicato performed lightly**



**Figure 121: Pizzicato played lightly on the bass range**

The chanting in the opening is the most pronounced part of the piece. Each syllable should be clearly enunciated and rhythmically executed. Crumb repeats the phrase “Dona nobis pacem” four times. Each time, the phrase is transposed down from C# to A# to G to E, adumbrating a diminished 7<sup>th</sup> chord.

Agnus Dei, qui tollis peccata mundi, miserere nobis

(Lamb of God, who takes away the sins of the world, have mercy on us)

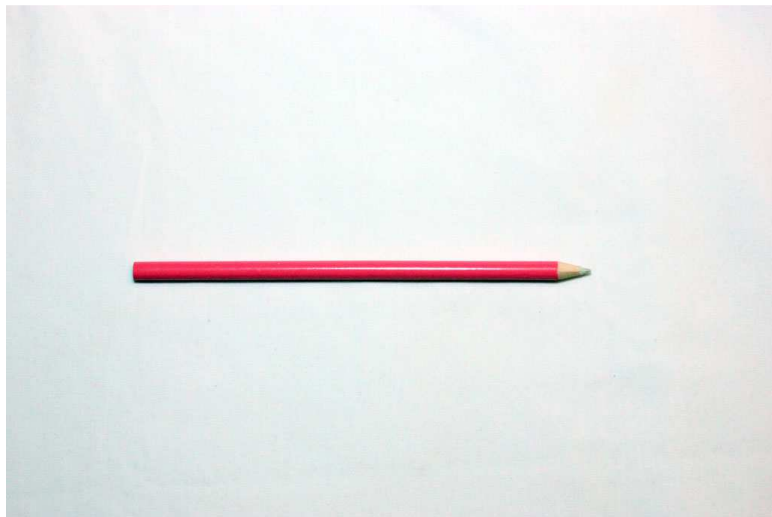
Dona nobis pacem

(Grant us peace)

Chapter 8: Index of materials used in Makrokosmos Volume II



**Figure 122: Markers**



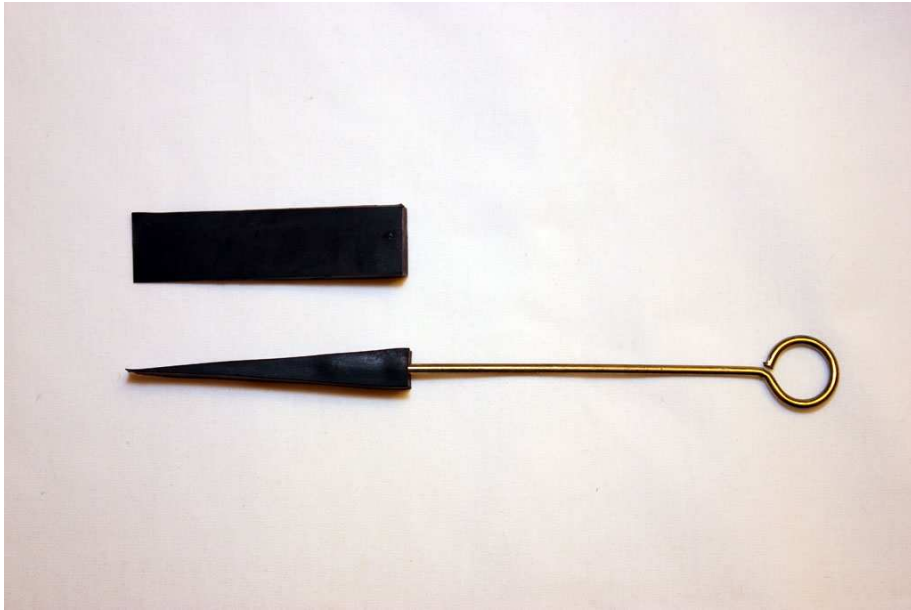
**Figure 123: Fabric chalk**



**Figure 124: Wire brush**



**Figure 125: Glass tumbler(s)**



**Figure 126: Tuner rubber - Pedal block**



**Figure 127: Guitar finger picks**



**Figure 128: Conventional microphone**



**Figure 129: Tuning fork**



**Figure 130: Amplifier**

Makrokosmos, Volume I  
Twelve Fantasy-Pieces after the Zodiac for Amplified Piano

Part One

1. Primeval Sounds (Genesis I) Cancer
2. Proteus Pisces
3. Pastorale (from the Kingdom of Atlantis, ca. 10,000 B.C.) Taurus
4. Crucifixus [SYMBOL] Capricorn

Part Two

5. The Phantom Gondolier Scorpio
6. Night-Spell I Sagittarius
7. Music of Shadows (for Aeolian Harp) Libra
8. The Magic Circle of Infinity (Moto perpetuo) [SYMBOL] Leo

Part Three

9. The Abyss of Time Virgo
10. Spring-Fire Aries
11. Dream Images (Love-Death Music) Gemini
12. Spiral Galaxy [SYMBOL] Aquarius

## Makrokosmos Volume II

### Twelve Fantasy-Pieces after the Zodiac for Amplified Piano

#### Part One

1. Morning Music (Genesis II) Cancer
2. The Mystic Chord Sagittarius
3. Rain-Death Variations Pisces
4. Twin Suns (Doppelgänger aus der Ewigkeit) [SYMBOL] Gemini

#### Part Two

5. Ghost Nocturne: for the Druids of Stonehenge (Night-Spell II) Virgo
6. Gargoyles Taurus
7. Tora! Tora! Tora! (Cadenza Apocalittica) Scorpio
8. A Prophecy of Nostradamus [SYMBOL] Aries

#### Part Three

9. Cosmic Wind Libra
10. Voices from "Corona Borealis" Aquarius
11. Litany of the Galactic Bells Leo
12. Agnus Dei [SYMBOL] Capricorn

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