2012

The Use of Controls in the Music of Lou Harrison: An Analytical Study

Christopher Jason Koontz
West Virginia University

Follow this and additional works at: <https://researchrepository.wvu.edu/etd>

Recommended Citation

Koontz, Christopher Jason, "The Use of Controls in the Music of Lou Harrison: An Analytical Study" (2012). *Graduate Theses, Dissertations, and Problem Reports*. 3590.
<https://researchrepository.wvu.edu/etd/3590>

This Dissertation is protected by copyright and/or related rights. It has been brought to you by the The Research Repository @ WVU with permission from the rights-holder(s). You are free to use this Dissertation in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you must obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/ or on the work itself. This Dissertation has been accepted for inclusion in WVU Graduate Theses, Dissertations, and Problem Reports collection by an authorized administrator of The Research Repository @ WVU. For more information, please contact researchrepository@mail.wvu.edu.

“The Use of Controls in the Music of Lou Harrison: An Analytical Study”

Christopher Jason Koontz

Research Project submitted to the College of Creative Arts
Department of Music at West Virginia University
in partial fulfillment of the requirements
for the degree of

Doctor
of
Musical Arts

Dr. Christopher Wilkinson, Committee Chair

Dr. David Taddie, Research Advisor

Dr. Keith Jackson

Dr. Joy Saab

Prof. George Willis

Department of Music

Morgantown, West Virginia

April 12, 2012

Keywords: Harrison; atonal; theory; saraband; composition; analysis

ABSTRACT

“The Use of Controls in the Music of Lou Harrison: An Analytical Study”

Christopher Jason Koontz

This research project provides insight into composer Lou Harrison’s formative years, with particular attention given to events that would prove influential upon his later development as a composer. An overview of Harrison’s compositional training with both Henry Cowell and Arnold Schoenberg serves as a means of understanding how some of his atonal compositional techniques developed.

Theoretical analyses of two compositions from Harrison’s early catalogue illustrate a synthesis of atonal procedures he used to unify the formal, intervallic, serial, melodic, and harmonic content of the selected works.

TABLE OF CONTENTS

I.	Beginnings.....	4
II.	Musical Influences in San Francisco (1934 – 1942).....	6
III.	Los Angeles Period.....	13
IV.	New York Period.....	18
V.	Interval Control - <i>Saraband</i> (1937).....	28
VI.	Rotational Serialism – “Polka” from <i>Symphony on G</i>	41
VII.	Conclusion.....	66
VIII.	Bibliography.....	68

The Use of Controls in the Music of Lou Harrison: An Analytical Study

Lou Silver Harrison (*b* Portland, OR, 14 May 1917; *d* Lafayette, IN, 2 Feb 2003) truly embodied what the term “renaissance man” implies. In addition to his lifelong work as a composer, he pursued interests in choreography, dance, painting, poetry, sculpture, and instrument building. He held many jobs, working for short periods as a music critic, veterinarian, forest ranger, florist, and conductor. He was considered a world music expert, was an advocate for the Esperanto language, and participated in anti-war activism. His unfailing curiosity about other cultures, sound sources, and disciplines, helped to shape his career. A self-ascribed sensualist, he claimed that he wandered into music because of his avaricious interests and appetites, without ever once making a decision to be a musician.¹ Be that as it may, he enjoyed a sixty-year composing career, produced a catalogue of over three hundred published works, and is considered by some to be a direct connection to our national musical heritage, along with Charles Ives, John J. Becker, Wallingford Riegger, Henry Cowell, and Carl Ruggles.² He was a friend and supporter of Charles Ives, a student of both Arnold Schoenberg and Henry Cowell, and a colleague to John Cage, Virgil Thompson, Harry Partch, and Aaron Copland. Like these composers, Harrison succeeded in creating his own musical voice, and utilized his own methods of composing that produced music which is anything but predictable. In fact, Lou Harrison was one of our most unique and eclectic American composers.

The compositional methods Harrison employed in his works are as diverse as his interests, and he freely changed his approach from piece to piece, and sometimes from movement to movement in a single work. Harrison delighted in the challenge of composition, often comparing it to playing a game of solitaire, and when doing so would follow with the comment “one does not usually cheat at solitaire.”³ His method was one

¹ William Duckworth, *Talking Music: Conversations with John Cage, Philip Glass, Laurie Anderson, and Five Generations of American Experimental Composers* (New York: Schirmer, 1995), 94.

² H. Von Gunden: *The Music of Lou Harrison* (Metuchen, NJ, 1995), vi.

³ Lou Harrison, *Music Primer* (NY: Peters, 1971), 16.

of sifting through the vast array of possibilities to arrive at a coherent and integral work of art, and he often started the compositional process by imposing on himself severe restrictions, which he called “controls.”

These controls may take the form of a limited selection of intervals, melodic shapes, or rhythmic figures; or a tightly regulated organization of the material by extra-musical factors (such as John Cage’s “square root” system, which defines a fixed mathematical relationship among the various subdivisions of the composition, from the length of the smallest phrase to that of the overall work).⁴

As a student and young composer, Harrison developed both interval controls and durational controls (sometimes called icti controls), and used them primarily in his early atonal works. Rather than being limiting, he felt his use of controls liberating, providing him with compositional choices that at the same time afforded structure and continuity.

Both Henry Cowell and Arnold Schoenberg were equally influential in Harrison’s development of controls. They shared with Harrison their own compositional techniques, which he was quick both to adopt and to modify to suit his artistic needs. In modifying some of these techniques and utilizing his own system of controls, Harrison was able to create music that was distinctly non-tonal in function while still allowing for pitch centricity when it suited his purpose. In turn, he influenced a number of composers such as Robert Hughes, Richard Dee, Seymour Barab, and Janice Giteck. Additionally, Harrison claimed to have influenced more senior composers such as Virgil Thompson and Aaron Copland to experiment with more chromaticism in their compositions.⁵

The goal of this analytical study is to illustrate compositional techniques that are unique to Lou Harrison’s music. Specifically, I will focus on Harrison’s use of compositional controls that are a trademark of his compositions from 1937-1959. I have chosen to analyze two compositions for this project, and although they represent only a small

⁴ L.E. Miller and F. Lieberman: *Lou Harrison: Composing a World* (New York and London, 1998), 206.

⁵ Kostelanetz Richard, and Lou Harrison. “A Conversation, in Eleven-Minus-One Parts, with Lou Harrison About Music/Theater.” *The Musical Quarterly* 76.3 (1992): 404.

portion of his musical output during this early period, they clearly illustrate how Harrison applied these controls at multiple levels within a work to achieve cohesion, unity, and synthesis.

I. Beginnings

At the age of nine, Lou Harrison started on what would become a series of family relocations during his childhood. In 1926 his father chased a variety of business opportunities in California and the family first moved to Woodland, California. His family relocated every year or two from Woodland to Sacramento, Stockton, Berkeley, San Francisco, Los Gatos, Redwood City, Belmont, and finally to Burlingame, where he graduated from high school.⁶ According to Harrison, by graduation he had been enrolled in eighteen different schools, which taught him to adapt and survive in any situation.⁷ His parents were intent on exposing him to the arts from a young age, and in addition to studying piano privately, he was enrolled in a ballroom dance class and took a course in Gregorian chant at Mission Dolores in San Francisco.

Although Harrison's first composition dates from his early childhood in California (a lament for piano signed "Lou Silver Harrison, ten years old"), his first formal compositional training with Howard Cooper, a student of Domenico Brescia at Mills College in Oakland, took place while attending high school. Cooper assigned the young student variations, canon, fugue, and occasionally a free-style piece.⁸ Harrison's early musical talents were also recognized by Otis Carrington, the music instructor at Sequoia High School in Redwood City, who featured him as a soprano soloist during a school concert in 1931, and also gave him the opportunity to conduct the overture to Glinka's *Russlan and Ludmilla* with the school orchestra. He continued to compose piano and chamber music during his high school years, and one of his compositions "Blue Glass" for piano and flute was used during the commencement of his graduation from Burlingame High School. Harrison disparagingly dismissed these early compositions,

⁶ L.E. Miller and F. Lieberman: *Lou Harrison: Composing a World* (New York and London, 1998), 6.

⁷ William Duckworth, *Talking Music: Conversations with John Cage, Philip Glass, Laurie Anderson, and Five Generations of American Experimental Composers* (New York: Schirmer, 1995), 100.

⁸ H. Von Gunden: *The Music of Lou Harrison* (Metuchen, NJ, 1995), 4.

including a solo violin suite that has been resurrected by a variety of performers and performed several times in recent years.⁹

⁹ L.E. Miller and F. Lieberman: *Lou Harrison: Composing a World* (New York and London, 1998), 8.

II. Musical Influences in San Francisco (1934 – 1942)

After Harrison graduated from high school, his family moved to San Francisco in 1934 where he attended San Francisco State College (now San Francisco State University) for three semesters. He continued his musical education there by studying French horn and clarinet, took up harpsichord and recorder in an early music consort, and sang in vocal ensembles, including a madrigal group. This was an extremely influential period in his life:

During the eight years between his graduation from high school and his move to Los Angeles in 1942, Harrison explored the musical and cultural resources that would subsequently shape his compositions: the percussion ensemble, Chinese and Japanese music, the Indonesian gamelan, modern dance, Baroque music, and the works of Charles Ives, Henry Cowell, and Arnold Schoenberg.¹⁰

Among these influences, by far the most important was Henry Cowell, whom Harrison described as a “central information booth” for two or three generations of American composers.¹¹ Prior to their first meeting, Harrison knew of Cowell, and had already read his *New Musical Resources* (1930) and *American Composers on American Music* (1933). In the fall of 1934 Cowell had just returned from studying comparative musicology in Berlin and was scheduled to teach a new course called “Music of the Peoples of the World” at the University of California, San Francisco. Harrison enrolled in the course in the spring of 1935. Cowell’s embrace of world music traditions struck a sympathetic chord with the young composer, and he became one of Cowell’s most avid students. Through this course Harrison became enamored with non-western music, especially Asian music, and began frequenting Chinese opera performances several times a week, captivated by the music and spectacle.¹²

Cowell believed melody to be the unifying factor between all different kinds of music, and demonstrated in his teaching that a large part of the world’s music consists primarily

¹⁰ L.E. Miller and F. Lieberman: *Lou Harrison: Composing a World* (New York and London, 1998), 9.

¹¹ Ibid 9.

¹² L.E. Miller and F. Lieberman: *Lou Harrison - American Composers* (U. of Ill. Press, 2006), 13.

of a melody supported by some type of rhythmic underpinning. In addition, as western music over the centuries developed sophisticated techniques for handling simultaneous interactions of melody, rhythm, and harmony, it necessarily left behind the melodic and rhythmic subtlety that were part of its original inheritance.¹³ Cowell's plea to recapture this subtlety was particularly inspiring to Harrison, as was his teacher's command of melody in his own compositions. In the summer of 1935, Harrison recalled that he was most impressed with the freely interwoven melodic and rhythmic motives in Cowell's theater piece *Fanati* (1935), later commenting to Cowell's widow Sidney that it was one of the most extraordinary works that he had ever heard.¹⁴ Over time the two men began to develop a closer personal and professional relationship, and when Harrison approached Cowell for private composition lessons during the fall of 1935, he agreed.

Cowell's ideas about melodic development, which served as the starting point for his composition lessons with Harrison, would later be articulated in his unpublished treatise *The Nature Of Melody* (1937). This treatise discusses the pedagogy of melodic writing, relating melody to its original form in neumes and its role in strict and free counterpoint, scale theory, and various methods of melodic construction.¹⁵ One of Harrison's first assignments was to use several three- and four-note motives to generate complete melodic lines. Cowell suggested that Harrison should manipulate them by using transposition, retrograde, inversion, inverted retrograde, and either connect them by a common tone, or separate them by a determined interval. This technique of composition using these tone motives, or "melodicles," is outlined by Harrison on the first page of his *Music Primer* (1971), a compilation articulating his many musical and philosophical ideas:

¹³ Leta Miller. "The Art of Noise: John Cage, Lou Harrison, and the West Coast Percussion Ensemble," in *Perspectives on American Music* (New York, 2000), 252.

¹⁴ L.E. Miller and F. Lieberman: *Lou Harrison - American Composers* (U. of Ill. Press, 2006), 13.

¹⁵ Nancy Yunwha Rao. "American Compositional Theory in the 1930's: Scale and Exoticism in 'The Nature of Melody' by Henry Cowell," *The Musical Quarterly* 85.4 (2001): 595.

Composing with melodicles (or neumes): In some form is the oldest known method of musical composition, probably deriving from Mesopotamia & Egypt. One makes a mosaic, so to speak. A choice may be made of several melodicles..... [and] such may be combined and recombined in lovely ways. One may transpose the melodicles up or down the tones of whatever mode....5, 6, 7, or more toned mode; or even chromatically (or in free-style too, I think). The melodicles may also be used in backward (retrograde) forms or upside down (inverse) or in both of these at once (retrograde-inverse). One decides with interest whether the neumes should be connected by the joining of their last and first tones, or (unjoined) by moving to an adjacent tone up or down, or by free skips. The melodicles might be used only in their pitch-patterns, and the rhythms changed....either for text or not. Octave transpositions, up or down, of single tones of a melodicle might be used.... Henry Cowell taught me most of this.¹⁶

Harrison's first use of melodicles is in his *Six Cembalo Sonatas* (1934-43), and was influenced by his interest in Spanish baroque keyboard music. Cowell approved of his young student's compositional efforts using this approach, and suggested the use of more sophisticated metric relationships, which are apparent in *Sonata No. 1* for piano (1936), *Ground* (1936), and his *Reel, Homage to Henry Cowell* for piano (1936).¹⁷

During this time, Harrison became intrigued with the music of Charles Ives. He had encountered Ives' music in the *New Music Edition*, and through Cowell's essay on Ives that was published in *American Composers on American Music*. Just before his departure from San Francisco for Los Angeles, Harrison was encouraged by Cowell to write to Ives and ask for some scores of his music. His first letter to Ives on March 25, 1936 requested scores for piano sonatas that he could perform in student recitals.¹⁸ Ives quickly responded to his request. Harrison followed up with another letter requesting Ives to send him some of his chamber music. To Harrison's great surprise, a large crate containing photostatic copies of eleven volumes of chamber music, the 'Emerson' sonata, four violin sonatas, and two string quartets showed up on his doorstep a few weeks later. It should be mentioned that the cost of preparing these copies would have been a considerable expense to Ives.

¹⁶ Lou Harrison, *Music Primer* (NY: Peters, 1971), 1.

¹⁷ H. Von Gunden: *The Music of Lou Harrison* (Metuchen, NJ, 1995), 11.

¹⁸ L.E. Miller and F. Lieberman: *Lou Harrison - American Composers* (U. of Ill. Press, 2006), 16.

Over a period of ten years, Harrison studied these scores religiously at the piano and continued his correspondence with Ives, fostering a relationship with the senior composer that would become important after his move to New York a few years later. Harrison has stated on many occasions that his exposure to Ives's works had a profound influence on his development as a composer, and that having acquired an extensive collection of Ives's works, he was the first composer able to gain great insight into this composer's musical language.¹⁹

Harrison spent hours in the San Francisco Public Library, which he believed to be a crucial part of his education, going through scores of Rameau and Lully operas, the Pedrell collection from Spain, French organ works of the 19th century, Tudor collections of madrigals and church music, and poured over the available works of Carl Ruggles and Arnold Schoenberg. Through his study of these various sources, Harrison developed his own notion of using quintal, secunda, and tertian counterpoint (counterpoint using fifths, seconds, and thirds as the most prevalent melodic and harmonic intervals).²⁰ This knowledge proved valuable in completing assignments given by Cowell, as Harrison was asked to construct melodic lines in tertian or secunda counterpoint against a given cantus firmus. Cowell, like Harrison, enjoyed the sound of dissonant counterpoint, and often suggested that composers consider the possibilities of reversing contrapuntal rules, replacing consonances with dissonances and vice versa.²¹

Harrison ultimately felt he needed to expand the tonal range in his compositional projects, and that the melodic lines he had been using worked well in contrapuntal textures, but seemed to limit chromatic and harmonic interest. Because melodic lines were motives, their intervals are not always fixed; for example a second could be major or minor.²² Lessons with Cowell often included discussions about serialism, and to explore a

¹⁹ L.E. Miller and F. Lieberman: *Lou Harrison: Composing a World* (New York and London, 1998), 17.

²⁰ Ibid 13.

²¹ H. Von Gunden: *The Music of Lou Harrison* (Metuchen, NJ, 1995), 10.

²² Ibid 16.

technique that would offer more chromaticism, Cowell encouraged Harrison to write a serial piece, but suggested that using smaller collections of pitches was more appealing than using all twelve-tones:

Henry said anything but twelve. Take ten or seven or something, and he was right. What do you want with those four extra notes that don't sound right? He spent all his life trying to get around those strictures, so by that time I also invented my own way of dealing with chromatic material.²³ (Harrison on Cowell)

In 1937 Harrison began using his own approach to composing serial music that allowed for more freedom than composing with a tone row, while at the same time utilizing all twelve-tones. Harrison describes his method of composing serial music by using “interval controls” in his *Music Primer* (1971):

In the “classic” (harmonic) music of Europe, one is aware that a kind of difference of function was used, as regards intervals. For example: melodies were generally felt to progress by “seconds,” chords were constituted of “thirds,” & their roots often proceeded by “fourths” & “fifths.” Considering that in equal temperament there are only, really, six intervals, (others being inversions), it is possible freely to select certain intervals for (at least) melodic and chordal functions, & maintain them in these functions.....This method of controlling the use of intervals provides another way of dealing with twelve-tones. It is possible that this method might be used, too, in composition in free-style.²⁴

Harrison's first composition to use interval controls was his *Saraband* for piano (1937), analyzed later in this document. In this composition he used two sets of controls, one set of three intervals for the horizontal (melodic) line, and another set of three intervals for the vertical (harmonic) accompaniment, thus using all six possible interval classes in equal temperament. In September of 1937 he completed the companion piece to the *Saraband* titled *Prelude for Grand Piano*. These two pieces were published together in the *New Music Quarterly*, a journal that Cowell started in 1927.²⁵ Aaron Copland gave

²³ Richard Kostelanetz. “A Conversation, in Eleven-Minus-One Parts with Lou Harrison about Music/Theater,” *Musical Quarterly* 76.3 (1992): 384.

²⁴ Lou Harrison, *Music Primer* (NY: Peters, 1971), 16-17.

²⁵ Lou Harrison. “Saraband,” *New Music Quarterly* 11.4 (1938): 8.

both pieces an unfavorable review in an article he wrote in *Modern Music*, describing them as “none too original pieces in that old radical tradition.”²⁶ Despite this criticism, the compositions were nonetheless a major accomplishment for the twenty one year-old Harrison. He continued the use of interval controls in his next two works, the *Third Piano Sonata* (1938), and *Concerto for Flute and Percussion* (1939). Although this method of composing is more characteristic of his early period, it was also used in his *Concerto for Violin and Percussion* (1959), and *New Moon* (1986).

Composition lessons with Cowell continued, despite the fact that in 1946 Cowell was imprisoned in San Quentin for four years on a morals charge involving homosexual activity. Harrison visited Cowell often, and in addition to discussing musical composition through prison bars, the two men had opportunities to collaborate on projects to create music for dance productions. On one of these projects, Cowell introduced Harrison to the concept of a musical “kit,” (Cowell’s term was “elastic form”) which consisted of a series of single measures and several through-composed pieces.²⁷ These short pieces formed a flexible performance score in which elements can be rearranged at will by the performer. Harrison expanded on this concept by including rhythms for percussion, chords, several melodies, recitations, and recommendations for makeup and other designs. He used this “kit” with many of the dance and music collaborations that he was involved with during his time in San Francisco, such as *Jepthe’s Daughter* (1941), and later in such works as *Ariadne* (1988), and *Rhymes with Silver* (1996).

Cowell’s penchant for extended keyboard techniques, including strumming or plucking the strings and striking the keyboard with fists, heel of the hand, or forearms, inspired Harrison to incorporate these sound effects into many of his piano works. One such work is his *Prelude for Grandpiano* (1937), in which intricate scalar passages are juxtaposed with meditative strummed sections. To aid in the performance of tone clusters, Harrison ingeniously invented a device called an octave bar that could be used by the performer to

²⁶ Aaron Copland, “Scores and Records,” *Modern Music* 16.1 (1938): 125.

²⁷ L.E. Miller and F. Lieberman: *Lou Harrison: Composing a World* (New York and London, 1998), 13.

accurately press all of the notes in an octave down simultaneously with great speed. The octave bar was essentially a flat wooden bar an octave long, with a slightly concave rubber bottom which caused the outside notes of the octave cluster to sound a little louder than the inside notes. Though the octave bar grew from Ives' and Cowell's aural model, it ultimately enhanced Harrison's idiom: he used it to emphasize the percussive foot-stomping character of his many estampie movements.²⁸

Among the many lessons that Harrison learned from Cowell, perhaps the most significant was learning to compose musical ideas with a set of limited controls. This compositional approach was both adopted and modified by Harrison, and was used continually throughout his career in various ways. Harrison no doubt took pride in creating works that evoke a sense of spontaneity while at the same time adhering to a set of rules, and was motivated by the challenge of working out the puzzle imposed by these limitations. This structure brought order to his fertile imagination that might otherwise have generated too many ideas to be manageable: controls helped assure coherence despite an often rhapsodic surface.²⁹

²⁸ L.E. Miller and F. Lieberman: *Lou Harrison - American Composers* (U. of Ill. Press, 2006), 15.

²⁹ Ibid 14.

III. Los Angeles Period – Studies with Arnold Schoenberg

In 1942 Harrison, and a close friend who was pursuing a career in dance, followed the Lester Horton Dance Company to Los Angeles. Harrison, who had worked with the company for a number of years in San Francisco, was able to continue his collaborations. In addition, he was hired to teach dance notation (labanotation), to teach form to dancers, and to accompany dance classes at the University of California, Los Angeles. He continued to compose dance-inspired pieces as he had done with Cowell in San Francisco, and his ability to teach, create, and notate both body movement and music made Harrison a highly valuable asset to both Horton and UCLA. The word quickly spread about his work, and he began to meet influential people in the Los Angeles music scene who wanted to program his music. Life was going well for the young composer, and he was finding many opportunities to perform his own compositions. Perhaps a great coincidence was that Arnold Schoenberg was also teaching at UCLA during this time. In 1943 Harrison pursued the chance to study with Schoenberg by enrolling in his weekly composition seminar.

Although only at UCLA for a short time, Schoenberg had, according to some accounts, earned a reputation as a difficult instructor, and himself admitted on several occasions that his composition students all had to find their way alone, because the secret art of musical composition is "a science which cannot be taught at all.....it is inborn or it is not there."³⁰ This statement might suggest that aside from outlining a method of composition, such as his twelve-tone technique, Schoenberg might have nothing else to offer a student where compositional instruction was concerned. In fact, John Cage who had also studied with Schoenberg ten years prior to Harrison, wrote that Schoenberg had "provided no structural means, only a method - the twelve-tone system - the nonstructural character of which forces its composer and his followers continually to make negative steps: he has always to avoid those combinations of sound that would refer too banally to

³⁰ Walter H. Rulsamen. "Schoenberg in America." *The Musical Quarterly*, 37.4 (1951): 473.

harmony and tonality."³¹ Cage is well known for criticizing composers for in his words “using the twelve-tone technique out of nothing more than a European weakness for tradition,” and he was especially critical of composers who used the twelve-tone technique with forms from the past (e.g., allemandes).³²

What is true, is that Schoenberg never focused exclusively on his twelve-tone method of composition in his seminars, but also taught more traditional styles of composition, which could be a possible reason for his reputation:

During his years in America, Schoenberg caused quite a stir in the ranks of his disciples by alternating between the twelve-tone and the traditional (tonal) methods of composition. Apparently he sometimes reverted to the earlier style to show that he was just as capable of writing tonally as otherwise, perhaps in response to the oft-heard accusation that the atonalists resort to unadulterated dissonance in order to cover up their lack of technique in working with traditional means; or because the tonal pieces in question were intended for a less sophisticated, general public; or because he desired to put into practice what he had been teaching to many classes of students – harmonic analysis, counterpoint, fugue, and the elements of composition, all according to traditional methods. In response to queries concerning this matter. . . . [Schoenberg] would refer to the classical masters who felt an urge to compose in an archaic style after they had learned a more advanced technique, and admits that "a longing to return to the older style was always vigorous in me; and from time to time I had to yield to that urge."³³

It is clear that the prior composition experience of the students enrolled, and the academic level (both undergraduate and graduate), would certainly be a consideration as to what examples were utilized and how the seminar was taught. With less experienced pupils, Schoenberg primarily focused on the compositional models of Bach, Beethoven, Mozart, Haydn, Schubert, Schumann, and Brahms. In these classes, he taught students to use only traditional and tonal means of composition but allowed much freedom of expression and style, which resulted in the compositions of his pupils differing greatly from one another.

³¹ Michael Hicks. “John Cage's Studies with Schoenberg” *American Music*, 8.2 (1990): 131.

³² Ibid 131.

³³ Walter H. Rubsamen. “Schoenberg in America.” *The Musical Quarterly*, 37.4 (1951): 470.

It would seem that only advanced composers in graduate seminars were allowed to write atonally, and then only if they so desired.³⁴

Schoenberg eschewed the term “atonal” in favor of the term “pan-tonal” due to his belief that since tonality is not a condition imposed by nature, it is meaningless to insist on preserving it because of natural law. Therefore in his pan-tonal compositions, his goal was to signify the relationship of all tones to one another, regardless of occasional departures from the chosen row-form. This was assured by the circumstance of a common origin.³⁵ To compose in a musical language that reflected this pan-tonality, Arnold Schoenberg developed the twelve-tone or “serial” method of composition.

For Schoenberg, the dissolution of tonality was a logical and inevitable step in the evolution of Western music. In the twelve-tone method each composition is based on a row, or series, using all twelve notes of the chromatic scale in an order chosen by the composer. Besides being presented in its original form, the row may be inverted, played backward, played backward in inversion, or transposed to any scale step. All harmonies and melodies in a composition are derived from its special row; thus, unity is assured. While some critics feared that music written in this way might become mechanical and inexpressive, Schoenberg continued to write highly personal and expressive compositions, using the expanded resources made available by the new method.³⁶

In contrast to John Cage, Harrison’s memories of the seminar were positive, and described Schoenberg as a very sweet, humorous, and extremely encouraging teacher. He recalled that after playing his neoclassical piano composition *Gigue and Musette* (1941) in class, that Schoenberg said, “I wish I could write light music - everything I touch turns to lead.”³⁷ Feeling encouraged, Harrison decided to bring in the third movement, “Conductus,” from his *Suite for Piano* (1942) for Schoenberg’s help. This was a serial composition, and Harrison had become stuck in this movement by trying to use all forty-

³⁴ Walter H. Rubsamen. “Schoenberg in America.” *The Musical Quarterly*, 37.4 (1951): 470.

³⁵ Noel Heath Taylor. “The Schoenberg Concept.” *Music & Letters*, 20.2 (1939): 185.

³⁶ Alexander Goehr. “The Theoretical Writings of Arnold Schoenberg.” *Proceedings of the Royal Musical Association*, 100. (1973 - 1974): 89.

³⁷ H. Von Gunden: *The Music of Lou Harrison* (Metuchen, NJ, 1995), 55.

eight forms of the row. He had been warned by Schoenberg's assistant, Harold Halma, that students were generally discouraged from bringing serial compositions to class for Schoenberg's help, but Harrison decided to bring it in any way, knowing that in doing so he might upset his teacher:

I played for him what I had done in the third movement, and I said, I'm having trouble; I don't know what to do." And he said, "Is this twelve-tone?" And I said – trembling – "Yes it is." He said, "It is good. Go on. Go on." And then he just plunged in. "Nothing but the essentials," he said, "Only the salient things, don't complicate it. Go where the line goes." And, boy, was I relieved because it sort of threw all this garbage off me and it meant take the salient line wherever the music goes. So that was a real help all the way down the line; I've never forgotten it.³⁸

Harrison also remembered that in addition to providing feedback on student works, Schoenberg was always willing to analyze one of his own pieces for the students when they asked, showing them his techniques and making comments such as, "it is very easy to write once you know the tricks."³⁹ If there were no student compositions to be shared, Harrison recalled that the class would sit and listen to birds, or Schoenberg "would ask [them] to analyze a part of a Beethoven symphony or something."⁴⁰ Schoenberg always emphasized studying the music of the masters, and when Harrison decided to leave Los Angeles for New York, Schoenberg told him, "Don't study with anybody; you don't need to study with anybody. Study only Mozart."⁴¹

Harrison viewed Schoenberg's serial technique as another manifestation of a compositional control; a method already learned from Cowell. According to Harrison, this was a way of composing which controlled an essentially chaotic affair by arranging an order of succession through the unrelated pitches while systematically avoiding the only related ones – the octaves. Thus, Schoenberg substituted an order of succession for a

³⁸ William Duckworth, *Talking Music: Conversations with John Cage, Philip Glass, Laurie Anderson, and Five Generations of American Experimental Composers* (New York: Schirmer, 1995), 104.

³⁹ Ibid 103.

⁴⁰ Ibid 103.

⁴¹ Ibid 104.

hierarchy of relationships.⁴² What truly impressed Harrison was not Schoenberg's serial technique, but his ability to build large-scale structures from simple and coherent phrase relationships. The respect was mutual, as illustrated in the following excerpt:

Schoenberg thought highly enough of Lou's work to single him out for praise during class meetings. In one lesson he played his *Saraband* and *Prelude for Grand Piano* (which incidentally uses Lou's own convention of interval control), already published in the *New Music Quarterly*. Schoenberg looked up at the members of the seminar and said, "Why don't *you* bring me music like this?"⁴³

Two years later Schoenberg included Harrison in a list of promising American composers in a letter to Roy Harris (May 17, 1945):

I used to name you, Mr. Harris, always among the first whom I considered characteristic for American music. Besides I have to mention: Aaron Copland, Roger Sessions, William Schuman, David Diamond, Louis Gruenberg, Walter Piston, Anis Fuleihan, Henry Cowell, Adolphe Weiss, Gerald Strang. And among younger and lesser-known people I would like to mention Lou Harrison and Miss Dika Newlin.⁴⁴

After moving to New York in 1943, Harrison contributed the lead article about Schoenberg's late works to the issue of *Modern Music*'s honoring the composer's seventieth birthday.⁴⁵ In the article he praised Schoenberg's orchestration, phrase structure, and tone row construction in his *Piano Concerto* (Opus 42), stating that the work displayed "[a] clarity and simplicity of form, differentiation of musical idea and intense dramatic contrast, and freedom within a sensitive over-all balance," and that Schoenberg was "the most reliable compendium of musical knowledge in existence."⁴⁶

⁴² Lou Harrison, *Music Primer* (NY: Peters, 1971), 15.

⁴³ L.E. Miller and F. Lieberman: *Lou Harrison: Composing a World* (New York and London, 1998), 22.

⁴⁴ Ibid 22-23.

⁴⁵ Lou Harrison, "Homage to Schoenberg: His Late Works," *Modern Music* 21.3 (Mar.-Apr. 1944): 136.

⁴⁶ H. Von Gunden: *The Music of Lou Harrison* (Metuchen, NJ, 1995), 65.

IV. New York Period

Lou Harrison moved from Los Angeles to New York City in the fall of 1943, following his companion William Weaver and the Lester Horton Dance Company. Although he was initially optimistic about the move, he quickly found that life in New York City would be difficult. He found the noise level of the city to be overwhelming, and suffered from depression and loneliness after the relationship with Weaver dissolved. He struggled financially to make ends meet, and was forced to work odd jobs as an elevator operator at Radio City Music Hall, a music copyist, and private composition instructor. Harrison's living accommodations didn't help his situation. He could only afford to rent a cold-water flat on the fourth floor with no central heat. In the winter he was forced to carry kerosene cans across the street and up the stairs to fuel his small heater. Composing at the piano in his apartment also proved difficult because of noise complaints, so Harrison experimented with building himself a clavichord that could be played very quietly.⁴⁷ This project in instrument building would ultimately fuel his interest in non-standard tuning systems, a subject that he studied intensely after becoming familiar with Harry Partch's book *Genesis of Music*.

Despite the many obstacles and struggles he encountered after moving to New York, Harrison eventually integrated into the city's musical life. He found opportunities to program his music on concerts, and his social circle began to widen. He was able to reconnect with his mentor Henry Cowell and friend John Cage. They had both established an artistic circle of friends in the city and introduced Harrison to composers such as Virgil Thompson, Wallingford Riegger, Frank Wigglesworth, Carl Ruggles, Alan Hovhaness, and choreographer Jean Erdman. It was common for Cage, Cowell, Harrison, and Thompson to gather at each other's apartments to listen to, discuss, and compose music.⁴⁸ Of all the individuals with whom Harrison became acquainted with during this period, perhaps the most influential and helpful was Virgil Thompson.

⁴⁷ L.E. Miller and F. Lieberman: *Lou Harrison: Composing a World* (New York and London, 1998), 20.

⁴⁸ Ibid 31.

Harrison had read Thompson's book *State of Music* prior to moving to New York, so he was pleased to get the opportunity to develop both a personal and professional relationship with the older composer. Although he considered Thompson more of a senior colleague than a teacher, Harrison admittedly learned a great deal from him musically:

[Because] it dawned on me at once that just as serial music is a watertight system, so is the extreme simplicity of Virgil. And they represent the polar balances – in the middle is a sort of lush romanticism. But the polar balance is this clear, sharp wit of Virgil's music and the closed, perfectly functioning system of Schoenberg.⁴⁹

Harrison's description of Thompson's compositional approach as "extremely simple" perhaps refers to its melodic and harmonic accessibility, or the lack of systematic (serial) organization. Virgil Thompson himself stated that generally his music is understood because it is not deliberately obscure.⁵⁰ As Harrison describes the two very different approaches to composition employed by Schoenberg and Thompson, his own music attempts to incorporate elements of these polar opposites of approach. Harrison's use of controls was systematic but allowed for greater flexibility by offering choices. Often the choices made by Harrison favored tonal sounding melodic lines and traditional harmonic structures rather than atonal ones. Therefore, he intentionally bridged these two approaches to create music that was both systematic but approachable. Harrison spent much more time with Thompson than he did with Schoenberg, and both composers discovered that they had much in common. They would frequently attend concerts together, exchange work for each other's criticism, and ultimately developed a deep friendship that would remain unbroken until Thompson's death in 1989.⁵¹

⁴⁹ William Duckworth, *Talking Music: Conversations with John Cage, Philip Glass, Laurie Anderson, and Five Generations of American Experimental Composers* (New York: Schirmer, 1995), 106.

⁵⁰ Duffie, Bruce. Telephone interview. November 26, 1985.

⁵¹ L.E. Miller and F. Lieberman: *Lou Harrison: Composing a World* (New York and London, 1998), 27.

Thompson's wisdom makes its way into Harrison's *Music Primer*, and illustrates the type of mentoring that undoubtedly took place between the two composers:

Virgil Thompson has a fine method for reactivating anyone who is "blocked." Simply compose one short piece a day. It must be a complete composition each day. It is like "kindling" ~ one day along will come a more important idea that will require extensive work ~ the flame is thus lit & ~ away you go! It is important, he says, to keep regular appointments with the muse ~ if she doesn't arrive then it's not your fault, at least You are there!⁵²

Harrison regularly referred to his time in New York as being unproductive regarding his own compositional output, despite the fact that in an eight year period (between 1943 to 1951) while living in New York, he completed over twenty-eight works including an Easter Cantata, several works for chamber orchestra, a string trio, a string septet, two suites for string orchestra, a solo flute piece, four ballets, and a symphony. It would seem obvious from this body of work that Harrison kept his appointments with the muse and was granted the required inspiration to fuel his musical creativity. Unfortunately, composition alone could not help him pay his rent or keep food on his table. Like most composers throughout history, Harrison was forced to find an alternative means of earning income.

With the help of Thompson, Harrison was able to procure a job writing concert reviews for the journal *Modern Music*, and in 1944 began working part-time for Thompson as a concert reviewer for the *New York Herald Tribune*. Although Harrison has admitted occasionally that the business of writing concert reviews was tedious work, it did provide him with exposure to a full range of musical experience: from major orchestral works to synagogue compositions to Chinese music to jazz (and performance quality ranging from outstanding to dismal).⁵³ Harrison recognized the inherent benefits of his frequent concert going since it helped to fill in gaps in his musical education which lacked an intensive study of the standard European repertoire: "That was a wonderful period for me

⁵² Lou Harrison, *Music Primer* (NY: Peters, 1971), 35.

⁵³ L.E. Miller and F. Lieberman: *Lou Harrison: Composing a World* (New York and London, 1998), 27.

because I learned my European classics, sitting in the concert hall concentrating while listening and having to write and clarify my views about it.”⁵⁴

Harrison would sometimes review as many as three concerts per week, and between 1944 and 1947, he completed nearly 300 reviews. He used Virgil Thompson’s opinionated reviews as his model, and, like Thompson, did not shy away from awarding praise where it was deserved, nor hesitate to dole out a scathing review for a lackluster performance. His ability to create strongly written and insightful reviews led to more work. He was contracted to write reviews and articles for *Listen: The Guide to Good Music*, Charles Henri Ford’s avant-garde arts magazine *View*, in addition to writing for *Modern Music*. In articles for *View*, Harrison was granted the freedom to write on anything he wanted, and occasionally used the articles as a platform to express his historical and contemporary musical preferences:

The writer [Harrison] is incorrigibly fond of those American composers who have variously been called “primitives, naives, and iconoclasts.” He is equally addicted to the contemporary Austrian school of 12-tone composition, and to a vast amount of old music mostly dating before Bach. In more definite terms, then, he considers the standard of excellence among Americans to be measured principally by Charles Ives, Carl Ruggles, and Edgar Varèse; among modern European composers he understands and is interested in Schoenberg, Berg, Webern, and on occasion, Bartók. His standards in the history of music are determined largely by the stylistic orientations of Machault [sic], Victoria, Gibbons, Frescobaldi, Gesualdo, Purcell, Locke, Handel, and Couperin, with a glance at Montiverdi.⁵⁵

One reaction to a critical review by Harrison created an opportunity that would further establish him as a composer, conductor, and ultimately help him achieve his goal of making the music of Charles Ives more well known. After his unfavorable review of a performance by the New York Little Symphony on December 3, 1944, the Symphony’s conductor Joseph Barone offered Harrison a gracious challenge. Barone asked Harrison if he would like to share the podium with him for a concert the following season. Harrison quickly accepted and made plans to program Ruggles’ *Portals*, his own *Motet for the Day*

⁵⁴ H. Von Gunden: *The Music of Lou Harrison* (Metuchen, NJ, 1995), 64.

⁵⁵ Lou Harrison. “Music – Ruggles, Ives, Varèse.” *View*, Nov. (1945): 11.

of *Ascension*, and with Ives's endorsement, the premiere of his Third Symphony. The concert would take place a year later on April 5, 1946 in Carnegie Hall, which allowed Harrison plenty of time to copy parts, restructure segments of Ives's symphony, finish his own score for *Motet for the Day of Ascension*, and prepare himself mentally. Although Harrison was given only three hours of rehearsal for his portion of the concert, the performance was a major success.

In a review published in the *New York Times* by Noel Strauss, the performance was deemed excellent and praised the Ives symphony and especially Harrison's conducting, stating: "Mr. Harrison conducted this difficult symphony in a manner that made known a real gift for the baton," and additionally "the young director led with an easy sense of authority, a simplicity and directness, a command of orchestral tone, and a fine rhythmic security that spoke well for his future in the field."⁵⁶ Harrison also received a complimentary letter from Charles Ives's wife, Harmony, who attended the concert. Sadly, Ives himself was unable to attend the concert, as he had been an invalid for some time. The following year the Pulitzer committee awarded Ives its composition prize for the Third Symphony. Harrison's skillful conducting and direction of the performance during the premiere of this Symphony was partly responsible for the recognition that Ives's masterpiece, written some thirty years prior, finally received. Ives was grateful to Harrison for his work, and later arranged to share half of the Pulitzer Prize money he received for this work with Harrison.

Although Harrison was in correspondence with Ives for almost ten years prior to the premiere of the Third Symphony, they had not met. After the performance, Harrison received an invitation from Ives to visit him at his home, and on February 19, 1947 he made the trip to Danbury, Connecticut with composer and friend Frank Wigglesworth. After being greeted with open arms, Harrison was asked by Ives if he would consider editing his complete works saying "I want you to be my eyes."⁵⁷ After some thought,

⁵⁶ Noel Strauss, "Symphony by Ives in World Premiere," *New York Times*, April 6, 1946.

⁵⁷ H. Von Gunden: *The Music of Lou Harrison* (Metuchen, NJ, 1995), 76.

Harrison politely declined the offer, realizing that it would be an enormous commitment of time and effort, and would require him to abandon composing his own music for a time. He did however agree to help Ives with several smaller projects such as editing the Second String Quartet and the First Piano Sonata, reconstructing sections of the *Robert Browning Overture* and orchestrating Ives's World War One song "He is There!"⁵⁸ Harrison often found the Ives' manuscripts in such a state of disarray that he would have to decipher marginal scrawls and re-construct illegible passages. Fortunately for Harrison, he had lived with the music of Ives for so long that he had little difficulty in finding the correct language to complete the task. In fact, Harrison stated that when the manuscript of the *Robert Browning Overture* turned up in Ives's barn some years later, the passages he had to reconstruct matched the originals almost exactly.⁵⁹

Despite the success of this concert, his compositional productivity, and steady work writing reviews and articles for newspaper and publications, Harrison was not well. It has been suggested that his mental health was in steady decline for some time, starting with his move to New York City. He expressed his low self-esteem in a letter to Ruggles written as early as May 1, 1945. "Sometimes I wish I didn't write music; life would be so much simpler. And besides, I am always so tortured and distressed during a performance of my own music that I don't really hear a note of it anyway."⁶⁰

A year later in a letter written to Harmony Ives, Harrison responds to Ives's offer to help him publish some of his music, particularly the *Motet for the Day of Ascension*:

I am very touched by Mr. Ives' kindness in offering to publish my compositions: But the truth is, that while in the past I have twice been represented in *New Music* I am now unsure that anything I have written is yet ready for the unblushing declaration of print. After the performance of my 'Motet for the Day of Ascension' I ripped it apart & have not yet assembled it.⁶¹

⁵⁸ L.E. Miller and F. Lieberman: *Lou Harrison - American Composers* (U. of Ill. Press, 2006), 20.

⁵⁹ L.E. Miller and F. Lieberman: *Lou Harrison: Composing a World* (New York and London, 1998), 33.

⁶⁰ Ibid 35.

⁶¹ Ibid 35.

Harrison had also struggled with a persistent ulcer and declining physical health which he attributed to the noise and hectic pace of city life. There was also the issue of his homosexuality, and the resulting hostility that he sometimes encountered. His close friends, such as Thompson, and Cage, often found him to be depressed, reclusive, and at times unable to communicate. He would occasionally escape to the country with them in an attempt to recover both physically and mentally, which provided some respite. Eventually they would have to return to the city, and Harrison would soon find himself in the same state of ill health. In addition, Harrison was a pacifist, and very much opposed to World War II. His sickness was greatly exacerbated by the dropping of the bombs on Hiroshima and Nagasaki. In fact, in some of Harrison's personal correspondence from this period, he dates events in his life as taking place B.B. (Before the Bomb) and A.B. (After the Bomb).⁶²

In May of 1947, Harrison suffered a mental breakdown and was taken by John Cage to Stony Lodge, a sanatorium in Ossining-on-Hudson. He remained there for several weeks until he could be admitted to the Psychoanalytic Clinic at Presbyterian Hospital in New York City. Harrison participated in residential treatment for nine months, and found the quiet hospital environment to be very comforting to his mental health. He also found the environment extremely conducive to composing, and during his stay he composed a majority of his *Symphony on G*, including the first two movements and the scherzo, which is comprised of four sub-movements. He dedicated each of the movements in this mini-suite to individuals who helped him during his breakdown. Two of the movements, the "Waltzes" and "Polka", are dedicated to two fellow patients, the "Song" to John Cage, and the "Rondeau" to Jack Heliker, Harrison's painter friend who rescued him the night he experienced his break with reality. Harrison was resilient, and not only overcame his illness, but emerged from his hospitalization and treatment with a renewed energy, determination, and new compositional voice.

⁶² L.E. Miller and F. Lieberman: *Lou Harrison - American Composers* (U. of Ill. Press, 2006), 98.

Harrison remained in New York for four years after his break down. He continued his concert review work, continued to compose, and spent a great deal of time researching Western music theory. After reading the writings of Boethius and Harry Partch's book *Genesis of a Music*⁶³, Harrison became fascinated with the concept of just intonation, a tuning system based on mathematically "pure" intervals (3:2, 4:3, 5:4 etc). In an effort to study the sound of just intonation and other systems of tuning, Harrison would experiment with different tuning systems by frequently retuning his piano. One of the first compositions to emerge from these studies was his *Seven Pastorals* for chamber ensemble, based on the Pythagorean tuning of his piano.⁶⁴ Although his compositional output was somewhat diminished during his post breakdown years in New York City, he did complete several chamber ensemble and solo works. In 1951, Harrison was offered a teaching position at Black Mountain College in North Carolina where he spent the next two years. This was an extremely productive time in Harrison's life. He was able to complete a few works that he started in New York, and additionally compose over twenty new works. The slower pace of the country life in North Carolina agreed with Harrison, and he vowed never to live in the city again.⁶⁵ In 1953 Harrison moved back to California, finally settling in Aptos, where he remained for the rest of his life.

The works listed below, written between 1934 and 1959, represent a period of composing prior to Harrison's dive into music that is more modal in nature, and use a mixture of twelve-tone serialism, interval controls, rhythmic controls, and dissonant counterpoint procedures⁶⁶:

Six Cembalo Sonatas (1934-1943)

Ground in e Minor (1936)

⁶³ Harry Partch: *Genesis of a Music*. Madison: University of Wisconsin Press, 1949.

⁶⁴ L.E. Miller and F. Lieberman: *Lou Harrison: Composing a World* (New York and London, 1998), 45.

⁶⁵ William Duckworth, *Talking Music: Conversations with John Cage, Philip Glass, Laurie Anderson, and Five Generations of American Experimental Composers* (New York: Schirmer, 1995), 109.

⁶⁶ Ibid 220.

Suite for Symphonic Strings (1936)
 Saraband and Prelude for Piano (1937)
 Third Sonata for Pianoforte (1938)
 First Concerto (1939)
 Fugue for Percussion (1941)
 Suite for Piano (1943)
 Alleluia (1944)
 Shoenbergiana for six woodwinds (1945)
 Praises for Michael the Archangel (1946)
 Trio for Violin, Viola, and Violincello (1946)
 Symphony on G (1948)
 Rapunzel (1952)
 Concerto for Violin and Percussion Orchestra (1959)

Composer Janice Gitteck notes that after his opera *Rapunzel* (1952) and the *Concerto for Violin and Percussion Orchestra* (1959), Harrison was ready for a new direction, and made an interesting transition out of styles and techniques associated with the Western concert musical tradition into those commonly used in Asian vernacular music. Harrison himself admits that while he was hospitalized for his nervous breakdown, he became less interested in composing with the disintegrating Western schemes, and more attracted to the world schemes.⁶⁷ Essentially he desired to move away from serialism and the method of composing which relied on controls. Harrison's departure from Western music is also significant in that he largely abandoned serialism at a time when American composers young and old increasingly embraced it as the new postwar credo.⁶⁸

I have chosen two compositions from Harrison's early period (1934 – 1959) to illustrate his use of interval controls, and twelve-tone serialism; they are the *Saraband* (1937), and

⁶⁷ Mark Swed, "Lou Harrison," *Schwann Opus* Winter 1996/97, 16A.

⁶⁸ L.E. Miller and F. Lieberman: *Lou Harrison: Composing a World* (New York and London, 1998), 215-217.

the “Polka” from *Symphony on G* (1948). The Saraband is significant as it was his first published composition, and clearly illustrates his use of interval controls, while the “Polka” is intriguing due to the fact that it sounds more tonal despite the fact that it utilizes interval controls within a serial context. The procedures Harrison used for each of these selections are discussed briefly in Heidi Von Gunden’s *The Music of Lou Harrison*,⁶⁹ and helped to provide a starting point for organizing my own analytical study.

⁶⁹ H. Von Gunden: *The Music of Lou Harrison* (Metuchen, NJ, 1995).

V. Interval Control - *Saraband* (1937)

Harrison composed many pieces for dance, and frequently used various dance forms in his instrumental compositions. The Saraband, or Sarabande, originated from the vigorous Central American dance called the Zarabanda, dating back to as early as 1539.⁷⁰ In its original form, the Zarabanda was a fast-paced couples dance accompanied with castanets. It eventually made its way across the Atlantic Ocean to Spain only to be banned by the church in 1583 for its provocative character. By the early 17th century, it was modified into a slow dignified court dance in binary form and triple meter that made its way to the courts of both France and Italy through Spanish guitar repertoire. It eventually became one of the most popular dance forms of the baroque period and typically can be found as the third movement (Allemande, Courante, Sarabande, Gigue) in the many Baroque Keyboard Suites, and Orchestral Suites written in the Baroque Period by composers such as Henry Purcell, J.S. Bach, and G.F. Handel.

In May of 1937 Harrison completed *Saraband* for piano. This was his first published work, and his first piece to use interval controls. It was a turning point to his composing, because through the use of interval controls he developed his own personal approach to serial composition. Although he had become quite proficient in composing with twelve-tone rows, he preferred working with a smaller series. Instead of using a twelve-tone row, he chose specific intervals to govern his melodic and harmonic material. Because there are only six possible interval-classes in equal temperament, the use of three horizontal (melodic) and three vertical (harmonic) intervals cover all possible interval-classes when dividing the octave into twelve equal steps.

My goal in analyzing this composition was to discover how strictly Harrison used these controls, as well as to understand why he chose one specific interval over another in creating both the melodic and harmonic content. Additionally, it was my hope to discover

⁷⁰ Don Michael Randel, "Saraband," *The Harvard Dictionary of Music* 4th ed. (Cambridge, Massachusetts: Belknap Press of Harvard University Press, 2003), pp. 754-755.

how Harrison used tertian harmonic references through the use of both chordal and linear material.

The *Saraband* is in binary form with repeated periods. The periods are asymmetrical, with the first containing eight measures, and the second containing twelve measures. Each period contains two symmetrical phrases.⁷¹ Rhythmically, Harrison utilized several motives as a means of unifying the two periods. The most identifiable motive is a recurring four sixteenth note grouping articulated on beat three throughout the composition. This motive always features a leap of a major seventh (inverted minor second) to the fourth note of the group and helps to create forward motion to the next measure after the elongated second beat. Dotted rhythms, a standard rhythmic characteristic of a Sarabande, are found throughout, moving from the alto or counter melodic voice in the first period to the bass voice in the second period, then back again. Additionally, the dotted eighth-sixteenth note rhythmic motive is prevalent throughout the composition. Harrison also used a doubly dotted rhythmic motive in both the treble and bass clef voices during the second period (meas. 15-18) to create an effective climactic punctuation before diminishing in intensity to the final cadence.

Rhythmic emphasis on the second beat of the measure, another characteristic of the Baroque Sarabande, is common throughout this composition. Harrison achieves this emphasis using a combination of dotted rhythmic motives, breath marks, rests, and fermatas. Specifically, he places chords in both treble and bass clef voices on the first beat of each phrase, accompanied by both a fermata and a breath mark following the chord (measures 1, 5, 9), or on the second beat emphasized by either a fermata or by a breath mark following the articulation (measures 8, 15, 20). In both instances, there is more length given to the second beat, either in anticipation of, or following the chord articulation.

⁷¹ The first period contains two four-measure phrases, while the second contains two six-measure phrases.

The texture of Harrison's *Saraband* includes both chordal and linear materials generated from the controls, in two to four voices. Each period begins with a two-part texture before adding the third voice. The three-part texture of the first period remains harmonic, utilizing dyads regulated by the vertical control set (Maj2, min3, dim5) for counterpoint, and simultaneous chords in both treble and bass clef to serve as cadential points. In the two-part texture at the beginning of the second period, the bass voice presents linear material in octaves against the sixteenth note rhythmic motive first presented in the first period. By measure eleven, a three-part texture is introduced with two melodic lines in the treble voice, and is organized by the horizontal control set (P4, min2, Maj3). For both periods, the textural activity generally forecasts the cadence by becoming more rhythmically active. The penultimate bar of the composition (meas. 19) provides the only occurrence of a four-part texture. The figure below illustrates Harrison's use of vertical interval controls (red), horizontal interval controls (black), emphasis on dotted and doubly dotted rhythms, and four-part texture. The intervals marked in blue ink designate interval-classes outside of the control set.

Fig. 1

The figure shows a musical score for Harrison's *Saraband*, measures 17 through 19. The score is written for piano, with a treble and bass clef. Measure 17 begins with a forte (*ff*) dynamic. The music features a complex texture with multiple voices. Red circles and lines highlight specific vertical intervals: *d5* (diminished fifth) and *m3* (minor third). Black lines and labels indicate horizontal intervals: *m2* (minor second), *M3* (major third), *P4* (perfect fourth), and *M2* (major second). Blue ink marks intervals outside the control set: *d5*, *m3*, *M3*, *P4*, *M3*, and *m2*. A blue label *dim.* is also present. The score includes a *pp* (pianissimo) dynamic marking and the instruction *Observe repeats*. A green circle highlights a *C min.* (C minor) chord. A red arrow points to a *Cross Voicing* section. The text *San Francisco, Calif. May 24, 1937* is written at the bottom.

Typically the Sarabande, as a compositional form, follows a standard harmonic progression: I-IV-I-V-I. In Harrison's *Saraband* the chromatic melody derived from the

use of a control interval set, does not require the chords to function harmonically with the melody. The treble and bass clef voices imply dual pitch centers, as both feature major and minor chord structures played simultaneously. The following figures illustrate Harrison's use of dual pitch centricity (chords in green) and horizontal interval control (m2, M3, P4).

Fig. 2

Fig. 3

Although the two chords played in unison throughout the composition seem unrelated to each other, when looking at both the treble and bass clef chords independently, and mapping out the progression with the subsequent chords found in each respective voice, the *Saraband* contains the following harmonic progression:

A [:I:] - B [:V-I:]

The triads in the first period occur at the beginning of each four-measure phrase (with a reiteration of the (I – V) and (I to iv) in the second phrase), while the chords occur after every six-measure phrase in the second section. The following outline illustrates the chord progression of both the treble and bass clef voices throughout the piece:

First Period: Top voice -DMaj(I) to Abmin in bar 5, then reiterated in bar 7 and 8.

Bottom Voice -Cmin(I) to Fmin(iv) in bar 5, then reiterated in bar 7 and 8.

Second Period: Top Voice – AMaj(V) to AbMaj – (parallel major to Abmin in 1st period) at meas. 15. Beat 2 meas.15 – AbMaj to GMaj on second beat meas. 15. Returning to Cmin/DMaj (I) voice exchange in meas. 20.

Bottom voice – GMaj (V) to FMaj – (parallel major to Fmin in 1st period) at meas. 15. Beat 2, meas. 15 – Fmaj to C#Maj on second beat meas. 15. Returning to DMaj/Cmin (I) voice exchange in meas. 20.

It should be pointed out that a major chord inverts to a minor chord when using interval classes. As all triads contain only major or minor thirds in relationship to the root of the chord, this relationship connects all of the triads harmonically within the composition (e.g. the order of intervals in the D major chord are inverted to produce the (2nd inversion) Ab minor chord). When analyzing linear harmonic root movement of the triads within the composition, I have found that there is a lack of consistency as both vertical or horizontal set intervals are utilized. However, each time two chords are played simultaneously, the interval between the ‘root’ of the chord always follows the Vertical control set (M2, m3, d5).

The most consistent adherence to a control set within the composition is with the vertical intervals between any two dyads. After examining these two-note intervals, there is only one instance where Harrison deviates from the vertical control set within the work, utilizing a minor 2nd (meas. 13 beat three). When tabulating all of the vertical dyad intervals within the composition, you can find the following:

Major 2nd – 24 iterations

Minor 3rd - 18 iterations

Diminished 5th – 11 iterations

* Minor 2nd – 1

I have also observed that triadic variations presented within the piece, major over minor, major over major, and minor over minor are all used, but minor over major only occurs on beat one of the last measure which leads to the opening major over minor chord via a voice-exchange. The melodic content of the piece is chromatic, and generated using interval controls.

According to Heidi Von Gunden's short analysis, the horizontal controls for the top voice are a perfect fourth, a minor second, and a major third.⁷² The vertical controls consist of a major second, minor third, and diminished fifth, which affect the bass voice. When followed consistently, the control set of intervals and their inversions generate a chromatic line much like a tone-row. In regard to Harrison's use of interval control, Von Gunden claims "Harrison preferred this situation to a tone-row, in which the next tone or interval is predetermined."⁷³ She then makes two statements concerning Harrison's adherence to controls that are somewhat misleading. Von Gunden states:

For Harrison, interval controls had several advantages. The composer was freer – if the three intervals were being used, such as a minor second, major third, and major sixth, the composer had six choices: up a minor second, down a minor second, up a major third, down a major third, up a major sixth, and down a major sixth." And that "Harrison was strict in adhering only to his six choices."⁷⁴

Von Gunden also asserts that the minor second, major second, minor third, major third, perfect fourth and diminished fifth are the only six intervals possible in equal temperament. It is clear that she has confused the terms "interval" with "interval-class." Interval-class takes into account the inversions of each interval and relates those interval inversions to their most compact spacial/tonal relationship. Contrary to Von Gunden's analysis, my own analysis of the *Saraband* illustrates that Harrison did permit inversions

⁷² H. Von Gunden: *The Music of Lou Harrison* (Metuchen, NJ, 1995), 17.

⁷³ Ibid 17.

⁷⁴ Ibid 17.

of the control intervals. In fact, these interval inversions occur quite frequently. Therefore, instead of six possible choices, each subsequent pitch selected to compose melodic or harmonic material (using a three interval set) could actually have twelve possible choices; the chosen interval ascending or descending, and the ascending or descending inversion of the chosen interval. It should also be noted that if a diminished fifth is used as one of the interval-classes within the control set, only ten possible choices exist, due to the fact that this interval does not invert.

Harrison himself admits that he permitted inversions in composing the *Saraband*:

In my *Saraband* (New Music Edition, 1938) the melodies employ the “minor second” (with inversions), the “major third” (same), & the “fourth” (same) ~ while the counterpoints employ (“vertically”) the remaining “major seconds,” “diminished fifths,” & “minor thirds.” In other compositions I explored other functional divisions of the six intervals.⁷⁵

To determine just how Harrison used these controls, I analyzed every interval of the composition, both vertically and horizontally. I immediately realized that using vertical and horizontal for descriptors for the control sets proved inconsistent. Contrary to Von Gunden’s analysis, I found that Harrison used both control sets for horizontal/melodic material, sometimes strictly, but on other occasions, a bit more liberally. In general, his use of one specific control set is more consistent during the first period, and less consistent during the second period. These control sets become more of a reference than a control for Harrison, and he “borrows” intervals from the other control set to create a more melodically driven line. The following example of the first section (meas. 6) illustrates how Harrison switches control sets for the middle voice (dotted eighth-sixteenth note line) from horizontal to vertical, but borrows again from the horizontal control set twice on the third beat of meas. 6 (C to E to C – Major 3rds). Intervals in blue ink designate intervals outside of the control set.

⁷⁵ Lou Harrison, *Music Primer* (NY: Peters, 1971), 16.

2nd voice, (dotted eighth rhythm) treble clef - horizontal set (min2, Maj3, P4)

min2 – 3x

P4 – 1x

measure 6 – this voice shifts to vertical control set (Maj2, min3, d5)

Maj2 – 1x

min3 – 1x

d5 – 2x

*Maj3 (2x) borrowed from horizontal control set

3rd voice (counterpoint dyads) enter in measure 7 – vertical control set

(Maj2, min3, d5)

Maj2 – 1x

min3 – 1

d5 – 1x

2nd period – First Phrase (m. 9-14):

1st voice, bass clef (9-10), treble clef (11-14) - horizontal set (min2, Maj3, P4)

min2 – 14x

Maj3 – 6x

P4 – 9x

*Maj2 (1x) borrowed from vertical control set

2nd voice, treble clef – beginning in bar 11 (mixture of control sets)

min2 – 3x

Maj2 – 3x

min3 – 5x

Maj3 – 2x

P4 – 4x

d5 – 4x

3rd voice, bass clef – horizontal set

min2 – 9x

Maj3 – 10x

P4 – 6x

*min3 – (4x), Maj2 – (1x), d5 – (3x), borrowed from vertical control set

The second phrase of the second period (measures 15 -20) presents the most textural variety in the composition, with a mixture of linear motives, octaves, dyads, triads, and four-part counterpoint. This section shows the most varied use of control sets within the composition, and features two motives borrowed from the first period, suggesting a rounding of the form. The doubly dotted motives (measures 15-18) are similar to the single dotted variety introduced in the first period, but provide greater rhythmic stress in this phrase and emphasize the emotional and dynamic peak of the composition. Also featured in this phrase is the sixteenth note motive prominent in the 1st period.

The most interesting and consistent use of a control set is Harrison's use of the vertical control set with all dyad counterpoint material. Because all of the vertical dyads occur as simultaneous articulations and form harmonic intervals (sometimes in inversion), it is my belief that his strict use of these intervals provides the composition with a sense of harmonic unity. Although these harmonic intervals occur between a variety of pitches, and can either be found as intervals in the control set (Maj2, min3, d5), or the inversions of those intervals (min7, Maj6), the consistency of the harmonic interval does provide a point of reference for the chromatic material used horizontally/melodically. The following example illustrates how Harrison reiterated the harmonic intervals of the major second, minor third, and diminished fifth (circled in red) from the vertical control set between the top two voices in measures 11-13 of the second period.

Horizontal Controls: P4, m2, M3

Vertical (Harmonic) Controls: M2, m3, d5

SARABAND

Slow and with feeling

LOU HARRISON

The musical score for "SARABAND" by Lou Harrison is presented in three systems. The key signature is one sharp (F#), and the time signature is 3/4. The score is annotated with various musical controls and intervals.

System 1 (Measures 1-4):

- Measure 1:** Treble clef has a D Major triad (D, F#, A) circled in green, labeled "D Maj.". Bass clef has a C minor triad (C, E, G) circled in green, labeled "C min.". Dynamics: *pp*.
- Measure 2:** Treble clef has a D Major triad (D, F#, A) circled in green, labeled "D Maj.". Bass clef has a C minor triad (C, E, G) circled in green, labeled "C min.". Intervals: m2, M3, m2, M2 (red), m2, M3, m2, M2 (red).
- Measure 3:** Treble clef has a D Major triad (D, F#, A) circled in green, labeled "D Maj.". Bass clef has a C minor triad (C, E, G) circled in green, labeled "C min.". Intervals: m2, M3, m2, M2 (red), m2, M3, m2, M2 (red).
- Measure 4:** Treble clef has a D Major triad (D, F#, A) circled in green, labeled "D Maj.". Bass clef has a C minor triad (C, E, G) circled in green, labeled "C min.". Intervals: m2, M3, m2, M2 (red), m2, M3, m2, M2 (red).

System 2 (Measures 5-8):

- Measure 5:** Treble clef has a D Major triad (D, F#, A) circled in green, labeled "D Maj.". Bass clef has a C minor triad (C, E, G) circled in green, labeled "C min.". Intervals: m2, M3, m2, M2 (red), m2, M3, m2, M2 (red).
- Measure 6:** Treble clef has a D Major triad (D, F#, A) circled in green, labeled "D Maj.". Bass clef has a C minor triad (C, E, G) circled in green, labeled "C min.". Intervals: m2, M3, m2, M2 (red), m2, M3, m2, M2 (red).
- Measure 7:** Treble clef has a D Major triad (D, F#, A) circled in green, labeled "D Maj.". Bass clef has a C minor triad (C, E, G) circled in green, labeled "C min.". Intervals: m2, M3, m2, M2 (red), m2, M3, m2, M2 (red).
- Measure 8:** Treble clef has a D Major triad (D, F#, A) circled in green, labeled "D Maj.". Bass clef has a C minor triad (C, E, G) circled in green, labeled "C min.". Intervals: m2, M3, m2, M2 (red), m2, M3, m2, M2 (red).

System 3 (Measures 9-12):

- Measure 9:** Treble clef has a D Major triad (D, F#, A) circled in green, labeled "D Maj.". Bass clef has a C minor triad (C, E, G) circled in green, labeled "C min.". Intervals: m2, M3, m2, M2 (red), m2, M3, m2, M2 (red).
- Measure 10:** Treble clef has a D Major triad (D, F#, A) circled in green, labeled "D Maj.". Bass clef has a C minor triad (C, E, G) circled in green, labeled "C min.". Intervals: m2, M3, m2, M2 (red), m2, M3, m2, M2 (red).
- Measure 11:** Treble clef has a D Major triad (D, F#, A) circled in green, labeled "D Maj.". Bass clef has a C minor triad (C, E, G) circled in green, labeled "C min.". Intervals: m2, M3, m2, M2 (red), m2, M3, m2, M2 (red).
- Measure 12:** Treble clef has a D Major triad (D, F#, A) circled in green, labeled "D Maj.". Bass clef has a C minor triad (C, E, G) circled in green, labeled "C min.". Intervals: m2, M3, m2, M2 (red), m2, M3, m2, M2 (red).

Annotations:

- Intervals:** m2 (minor 2nd), M3 (major 3rd), P4 (perfect 4th), d5 (diminished 5th), M2 (major 2nd), m3 (minor 3rd).
- Chords:** D Maj., C min., Ab min., F min., A Maj., G Maj.
- Dynamics:** *pp* (pianissimo).
- Other:** *Shift from Hor. To Vert. controls.

[illegible]

VI. Rotational Serialism – “Polka” (III-2) from Symphony on G (1947-48)

Lou Harrison began composing *Symphony on G* in 1947 while a patient of the psychoanalytic clinic at Presbyterian Hospital in New York City. His nine-month hospitalization was pivotal to his compositional style, and thereafter, although he continued to compose using serial techniques throughout his career, a large part of his compositional output would become more modal.⁷⁶ This emphasis on modality and a more melodic approach to orchestration was due in part to his budding interests in various types of Asian music and fascination with ancient Greek history, modes, and tuning systems. His turning toward a more sophisticated melodic lyricism using both diatonic and pentatonic modes was sharply at odds with the academic styles being used at the time.⁷⁷ I believe this change in Harrison’s harmonic language guided these serial compositions in a favorable way; these compositions seem to display a more distinguishable sense of lyricism when compared to the more academic approach of other serial composers.

The *Symphony on G* is based entirely on a twelve-tone row, including the third movement, which is divided into four dance movements (Waltz, Polka, Song, and Rondeau) in place of the traditional single scherzo movement. These sub-movements, which form a “mini-suite” within the work, contrast boldly in style and are structured on traditional dance forms. Harrison became very fond of this multi-movement substitution, and used it in his third and fourth symphonies as well. The second sub-movement “Polka” (III-2) from the “mini-suite” contained within Harrison’s *Symphony on G*, deviates furthest from Schoenberg’s twelve-tone procedure:

While the twelve-tone system was developed to *avoid* a sense of tonal center, here Harrison used it to create precisely the opposite effect: the movement bears more affinity to Shostakovich, whose polka from the *Age of Gold* served as its model, than to Schoenberg. As always, Harrison forced himself to play by the rules; but

⁷⁶ Lou Harrison: *Symphony on G*. New York: Peer International Corporation, 1975.

“Used by Permission of Peer International Corporation.”

⁷⁷ L.E. Miller and F. Lieberman: *Lou Harrison - American Composers* (U. of Ill. Press, 2006), 21.

one of the challenges of the compositional game was to create contrasting effects with a single set of controls.⁷⁸

Two things initially attracted me to this sub-movement within the symphony. The first was the instrumentation: the Polka, which is scored for clarinet, two trumpets, two trombones, tack piano (a prepared piano with thumbtacks inserted into each felt hammer), and strings, contrasts greatly to the full orchestration used in the first and movement. The tack piano was a favorite of Harrison, who used it freely in many of his compositions. The second point of attraction was the fact that it does not sound serial; it actually sounds very tonal. Furthermore, I was intrigued to discover how Harrison created the melodic and harmonic material in this movement through rotational manipulation of row forms in what can essentially be described as serial based interval control.

In Heidi Von Gunden's *The Music of Lou Harrison*, Harrison's rotational treatment of row forms is discussed. Von Gunden identifies the non-combinatorial row form used for all the movements in Symphony on G as < G, Ab, C, B, Bb, F, F#, D, C#, A, E, Eb >. ⁷⁹ When asked how he selected original rows for the basis of a composition, Harrison replied, "I either hum or do it at the piano – go through it until it seems....as reasonable as you can get it because the plain fact is that the last three and sometimes four tones, more often than not, don't want to be there."⁸⁰

The hexachords contained within non-combinatorial row forms maintain an intervallic consistency with its derived row forms. This is due to the fact that the inversions of the two hexachords of the non-combinatorial row do not generate specific pitch classes of any other hexachords contained within row forms derived from the original row. It is interesting to consider that Harrison chose a non-combinatorial row form for his original row because of this intervallic consistency. In fact, when examining the pitch class intervals contained within this original (P₇) row form, we find that it consists of three

⁷⁸ L.E. Miller and F. Lieberman: *Lou Harrison - American Composers* (U. of Ill. Press, 2006), 87.

⁷⁹ H. Von Gunden: *The Music of Lou Harrison* (Metuchen, NJ, 1995), 78.

⁸⁰ Ibid 78

intervals (m2, M3, and P4). This intervallic consistency within the original row form is essential to the melodic and harmonic material within the composition, and it is with this example (fig. 6) that we see Harrison's use of interval control within a serial composition. It should also be noted that these three intervals are the same horizontal interval controls utilized in the *Saraband*.

Fig. 6

Using this row form as my starting point, I was able to discover the eighteen row forms used, as well as to identify formal, harmonic, set, and hexachord relationships that serve to unify the movement. These relationships reflect the influence of the original row form, and exemplify Harrison's ability as a composer to create a musical language with harmonic and tonal references from a procedure that would typically produce a very different result. The tone row matrix in the following figure illustrates the prime, inversion, retrograde, and retrograde inversion of the row forms derived from the prime (P₇) row form.

Fig. 7 - Tone Row Matrix for Lou Harrison's Symphony on G

	I ₇	I ₈	I ₀	I ₁₁	I ₁₀	I ₅	I ₆	I ₂	I ₁	I ₉	I ₄	I ₃	
P ₇	G	A ^b	C	B	B ^b	F	F [#]	D	C [#]	A	E	E ^b	R ₇
P ₆	F [#]	G	B	B ^b	A	E	F	C [#]	C	A ^b	E ^b	D	R ₆
P ₂	D	E ^b	G	F [#]	F	C	C [#]	A	A ^b	E	B	B ^b	R ₂
P ₃	E ^b	E	A ^b	G	F [#]	C [#]	D	B ^b	A	F	C	B	R ₃
P ₄	E	F	A	A ^b	G	D	E ^b	B	B ^b	F [#]	C [#]	C	R ₄
P ₉	A	B ^b	D	C [#]	C	G	A ^b	E	E ^b	B	F [#]	F	R ₉
P ₈	A ^b	A	C [#]	C	B	F [#]	G	E ^b	D	B ^b	F	E	R ₈
P ₀	C	C [#]	F	E	E ^b	B ^b	B	G	F [#]	D	A	A ^b	R ₀
P ₁	C [#]	D	F [#]	F	E	B	C	A ^b	G	E ^b	B ^b	A	R ₁
P ₅	F	F [#]	B ^b	A	A ^b	E ^b	E	C	B	G	D	C [#]	R ₅
P ₁₀	B ^b	B	E ^b	D	C [#]	A ^b	A	F	E	C	G	F [#]	R ₁₀
P ₁₁	B	C	E	E ^b	D	A	B ^b	F [#]	F	C [#]	A ^b	G	R ₁₁
	RI ₇	RI ₈	RI ₀	RI ₁₁	RI ₁₀	RI ₅	RI ₆	RI ₂	RI ₁	RI ₉	RI ₄	RI ₃	

After composing the row form matrix from the original row form (P₇), I analyzed the melody in the clarinet and trumpet voices to determine where Harrison initiated and completed the various row forms in terms of pitch class usage.⁸¹ Harrison created harmonic unity by repeating row form segments to create chord structures that provide a semi-tonal implication. In an attempt to identify the row forms used, I notated all melodic pitch classes using integers from 1-11. By numbering the pitch classes I could determine when all twelve pitch classes had been used in the melodic line. Additionally, I notated the respective pitch class names for the melodic line, to better identify harmonic implications. Locating the specific row forms used required referencing every pitch class within the matrix to find the embedded starting pitch class with its corresponding adjacent pitch classes.

Fig. 8 - Rotational row forms used in Polka meas. 1-4.

The image displays a musical score for the first four measures of a piece titled 'Polka' (tempo 120-126). The score is written for three staves: Clarinet 1 (Cl. 1), Trumpet 2 (Trbs. 2), and Piano 2 (Piano 2). The key signature is one flat (B-flat major/D minor) and the time signature is 4/4. Above the Clarinet staff, a box identifies 'Row I₈ < Ab, G, Eb, E, F, Bb, A, C#, D, F#, B, C >' with a circled 'A' and a box containing the number '5'. Above the Trumpet staff, a box identifies 'Row P₆ < F#, G, B, Bb, A, E, F, C#, C, Ab, Eb, D >' with a circled 'D'. The Piano staff features two circled chordal segments: a blue circle labeled 'Db Maj⁷' and an orange circle labeled '[037] (Maj)'. Arrows point from these circles to the corresponding row form boxes. The Piano part also includes markings for 'con sord.' and 'mp'.

In the first repeated phrase Harrison uses two row forms simultaneously; the melody (clarinet voice) using row form I₈ < Ab, G, Eb, E, F, Bb, A, C#, D, F#, B, C >, and the accompaniment voices (tack piano and strings) using row form P₆ < F#, G, B, Bb, A, E,

⁸¹ Not all theorists base their matrix transpositions on “C” being equal to zero. Traditionally, P0 (P zero) was defined as the first row form used in the piece.

F, C#, C, Ab, Eb, **D** > of the tone row matrix. When looking at the subsequent phrases in the melody, this layering of row forms becomes the standard method of composing. One row form is used primarily for melodic content while the other is used for harmonic content. Also of considerable interest is the fact that in the trio section of the “Polka” Harrison uses up to three row forms simultaneously. Below is the row form analysis for the entire movement - (**BOLD** – denotes starting pitch in row form):

“A” Section – (Measures 1 – 16 (17))

A. Solo Clarinet: Meas. 1-4 /row I₈ < Ab, G, Eb, E, F, Bb, **A**, C#, D, F#, B, C >

B. Accompaniment Voice: Meas. 1-4/row P₆ < F#, G, B, Bb, A, E, F, C#, C, Ab, Eb, **D** >

(Both row forms repeated in meas. 4 through meas. 8)

C. Solo Clarinet: Meas. 9 – 16 (17) /row I₀ < C, B, G, Ab, A, D, C#, F, F#, Bb, **Eb**, E >

D. Accompaniment Voice: Meas. 9 – 16 (17) /row P₀ < C, **C#**, F, E, Eb, Bb, B, G, F#, D, A, Ab > (Anacrusis in meas. 16 (A, C#) begins repeat of row I₈)

“B” Section - (Measures 18 – 33)

E. Solo Clarinet: Meas. 18 – 1st beat of meas. 25. /row I₄ < E, Eb, **B**, C, C#, F#, F, A, Bb, D, G, Ab >

F. Accompaniment Voice: Meas. 19 – 1st beat of meas. 25. /row I₄ < E, Eb, B, C, C#, F#, F, **A**, Bb, D, G, Ab >

G. Solo Clarinet: Beat 2 of meas. 25 – 28 /row $R_4 < C, C\#, F\#, Bb, B, Eb, \underline{D}, G, Ab, A, F, E >$

H. Accompaniment Voice: Meas. 26-29. /row $P_5 < F, \underline{E}, C, C\#, D, G, F\#, Bb, B, Eb, Ab, A >$

I. Solo Clarinet: Meas. 29 to beat 1 meas. 31 /row $I_7 < G, F\#, D, Eb, \underline{E}, A, Ab, C, C\#, F, Bb, B >$

J. Solo Clarinet: Upbeat of 1 Meas. 31 – 33. /row $I_9 < A, Ab, \underline{E}, F, F\#, B, Bb, D, Eb, G, C, C\# >$

My analysis of the trio section yielded some very interesting results. The melodic line is provided by the trumpet voices, and utilizes two row form transpositions simultaneously. When examining this divisi part linearly, the top line of each melodic dyad uses one row form (P^3), while the bottom line utilizes another row form transposition (P^7), thus providing a melodic harmonization of the melody at the interval of a major third throughout most of the section.⁸²

These two “harmonized” row forms are presented against the third row form in the accompaniment voices. In the trio, some deviation from the use of all twelve pitch classes in the four row forms chosen for the accompaniment voice can be found. In each case there is one pitch class intentionally omitted from the row form, probably to preserve harmonic continuity. In two of the four cases the missing pitch class can be “borrowed” from an adjacent row form in the melodic line. There is also one pitch class in the row form presented out of order, and is introduced after the two subsequent pitch classes in the row form are presented.

⁸² This harmonization of course differs from a standard diatonic harmonization in that the quality of the third does not change.

Fig. 9 – Harmonization of melody in thirds using two row form transpositions simultaneously.

***2 Rows**

Top Voice $P_7 < G, Ab, C, B, Bb, F, F\#, D, C\#, A, \underline{E}, Eb >$

Bottom Voice $P_3 < Eb, E, Ab, G, F\#, C\#, D, Bb, A, F, \underline{C}, B >$

TRIO

Tpts. 1

Piano 2

TRIO $P_{11} < B, C, E, Eb, D, A, Bb, F\#, F, C\#, Ab, \underline{G} >$ (missing $F\#$: borrow from P_3 ?)

“Trio” (Measures 36 – 66)

K. Trumpets: Meas. 36 – 43

Top Voice / row form $P_7 < G, Ab, C, B, Bb, F, F\#, D, C\#, A, \underline{E}, Eb >$

Bottom Voice / row $P_3 < Eb, E, Ab, G, F\#, C\#, D, Bb, A, F, \underline{C}, B >$

L. Accompaniment Voice: Meas. 36 – 42 /row $P_{11} < B, C, E, Eb, D, A, Bb, F\#, F, C\#, Ab, \underline{G} >$ (row form missing $F\#$, could be borrowed from P_3 in meas. 48)

M. Trumpets: Meas. 44 – 51

Top Voice /row $RI_{11} < Eb, D, A, F, E, C, C\#, \underline{Ab}, G, F\#, Bb, B >$

Bottom Voice /row $RI_7 < B, Bb, F, C\#, C, Ab, A, \underline{E}, Eb, D, F\#, G >$

N. Accompaniment Voice: Meas. 44 – 50 /row $P_{11} < B, C, E, Eb, D, A, Bb, F\#, F, C\#, Ab, \underline{G} >$ (row form missing $F\#$, no borrowing possible from adjacent row form)

O. Trumpets: Meas. 52 – 59 voices share row form row $P_7 < \underline{G}, Ab, C, B, Bb, F, F\#, D, C\#, A, E, Eb >$ (ONLY NON-ROTATIONAL USE OF THE ROW FORM)

P. Accompaniment Voice: Meas. 52-59 /row $R_9 < A, Bb, D, C\#, C, G, Ab, E, Eb, B, F\#, \underline{F} >$ (row form missing E , could be borrowed from P_7 in meas56)

L. Trumpets: Meas. 60 – 66

Top voice / row $RI_5 < A, Ab, Eb, B, Bb, F\#, G, \underline{D}, C\#, C, E, F >$

Bottom voice / row $RI_1 < F, E, B, G, F\#, D, Eb, \underline{Bb}, A, Ab, C, C\# >$

M. Accompaniment Voice: Meas. 61-66 /row $P_2 < D, Eb, G, F\#, F, C, C\#, A, Ab, E, B, \underline{Bb} >$ (row form missing Ab , and $C\#$ presented out of sequence)

Harrison uses a total of eighteen different forms of the row within the movement, with some of them used repeatedly. The most notable of these row form repetitions is in the trio section where Harrison repeats the use of the P_7 and P_{11} row forms, which helps to create melodic and harmonic continuity. The row forms used are as follows: ($P_0, P_2, P_3, P_5, P_6, P_7, P_{11}, I_0, I_4, I_7, I_8, I_9, R_4, R_9, RI_1, RI_5, RI_7, RI_{11}$).

Harrison's abundant use of different row forms within a relatively short composition demonstrates his broad use of the tone row matrix, and his rotational treatment of the row forms is unique in that it created serial music with semi-tonal/harmonic implications. He achieved these tonal elements by choosing to begin row forms on specific pitch classes and rotate them so that he could maintain intervallic consistency with other transposed row forms that were being used simultaneously. This is quite different from Igor

Stravinsky's approach to serial rotation. Stravinsky's approach to rotation was to create a "rotational array" by dividing four non-transposed row forms into hexachords, and then independently rotating them to begin on different pitch classes within the row. Creating a rotational array from these non-transposed hexachords was Stravinsky's way of generating derivative row forms.⁸³

Formal Implications:

The Polka's three main sections are each thirty-two measures in length, with both the A and B sections consisting of a sixteen measure repeated phrase. After the C-section (Trio) has concluded, there is a Da Capo followed by a short coda. When played in its entirety, the movement displays a sense of formal symmetry given that the trio section is framed on both sides by the iteration of the A and B material. The overall movement can thus be described as containing five periods of thirty-two measures each, followed by a two-measure coda.

Fig. 10

⁸³ Claudio Spies, "Some Notes on Stravinsky's Requiem Settings," *Perspectives of New Music* 5.2 (1967): 98-123.

As a musical style, the Polka has formal ties to the European quick march, and is similar to that of traditional military march-form, except that it has no introduction and no break strain. Also, the recapitulation of the A section is uncommon:

Many earlier and European marches recapitulate back to the beginning of the march. These marches typically did not use the military march form, but rather a shorter form or the regimental march form. In other words, after either the final trio, or 'c' section, the march would start over again. Once it has done that, repeats are ignored, and ends after the second strain. Codas are rare, but sometimes used as well. The tradition of recapitulating marches ended at the start of the march music era. For example, John Philip Sousa abandoned this technique with all of his marches, except for "*Semper Fidelis*." In fact, Victor Herbert was one of the last American composers that still used recapitulation during the march music era. Examples of these marches include: "*Under the Double Eagle*" by Wagner and "*The Serenade*" by Victor Herbert.⁸⁴

In addition to some of the formal similarities that the Polka shares with the European march, the compound ternary form of this Polka movement fits rather well into the standard minuet/trio function within a multi-movement suite.

Harmonic Relationships:

I think the most fascinating feature of the "Polka" is that it straddles the boundary between the tonal and atonal worlds through his division of melodic and harmonic material. The melody is undeniably chromatic, but the harmonic language contains many tonal characteristics and demonstrates a few somewhat conventional relationships in regard to the vertical sonorities.

To identify these vertical sonorities and define chordal relationships, I have chosen to use pop-chord symbols in my analysis. This may be a somewhat unconventional nomenclature to use in conjunction with a pitch class set analysis, but I believe it

⁸⁴ V.R. Greene: *A Passion for Polka: Old-Time Ethnic Music in America* (diss., U. of California, Berkeley, 1992), 56.

effectively serves to illustrate relationships without implying harmonic function. In fact, the combination of these two types of nomenclature is complimentary and enables a more complete analysis by allowing for both pitch class set relationships and chordal relationships to be compared simultaneously.

Harrison consciously chose row forms for the harmonic accompaniment in which the starting pitch-class allows for the first tetrachord in the sequence to spell one of three chordal structures when played simultaneously. These chords are the [0158] – Maj7, [0137] Maj (add#4), and the [0237] min6. This is supported by the fact that one of these sonorities represented vertically at the initiation of each accompaniment row form. In the “A” section of the composition we find that the first nine measures rely heavily on the GMaj7 chord alternating with an Ab minor chord (bii). Moving to a D(add#4) chord (in meas. 13 – 16) implies a I – V relationship with the original GMaj7 chord. This harmonically rounds out the section.

The “B” section, which begins harmonically with the parallel minor (G minor to the GMaj7), is juxtaposed with the EMaj7 and becomes the new harmonic focus. There is also an apparent I-V relationship with the BMaj7 chord on the upbeat of two in measure 27.

One might summarize the general harmonic implications of both periods A and B as:

Fig. 11

Interestingly enough, the trio follows standard procedure as with a traditional polka or march in that it modulates harmonically to a sub-dominant tonality. The first vertical sonority of the trio in this case is a CMaj7 chord.

Aside from this initial relationship between GMaj7 in the “A” section and CMaj7 in the trio, the harmonic relationship of the vertical sonorities following the CMaj7 chord becomes less predictable and consistent as the harmonized melody moves through a series of three different row forms presented simultaneously.

In measures 36 – 43 (which is consistent with the melodic phrase), harmonically the composition moves from a CMaj7 chord to a Bbmin7 chord to a Gmin7(b5) chord. Likewise in measures 45 – 51 there is a repetition of these three chords. During the third phrase of the trio (meas. 52-59), the BbMaj7 chord moves to BMaj6 and Fmin7(b5) respectively. The fourth phrase (meas. 61 – 66) begins with an EbMaj7 chord and shifts harmonically to a diminished 7th chord {C#, Bb, E, G}, which ends abruptly before the Da Capo.

In looking at the sequence of major, minor, and diminished chords in the trio section we find:

CMaj7 – Meas. 36

Bbmin7/Gmin7(b5) – Meas. 40

Bbmin7/Gmin7 – Meas. 42

CMaj7 – Meas. 44

Bbmin7/Gmin7(b5) – Meas. 48

BbMaj7 – Meas. 52

BMaj6/Fmin7(b5) – Meas. 56

EbMaj7 – Meas. 61

Bbdim7 – Meas. 65 & 66

It is my impression that the chords in the last part of the trio are used more for tone color than harmonic function. The obvious initial impression is that there is still a tonal center due to the tertian chordal relationship between tones of the vertical sonorities. In comparison to the rest of the movement this is the most harmonically active and least tonal sounding section.

The “Vertical Aggregate”:

There are three instances in the score where Harrison presents all twelve chromatic pitches in one measure using three vertical sonorities. These vertical aggregates occur in measures 43, 51, and 60 of the trio section, and are voiced between two measures in the Coda. (m. 34 -35) The first two occurrences of the one-measure aggregate are voiced in the piano and strings, while the third occurrence is rhythmically in unison among piano, strings, and the trumpets. I believe that there are no specific row forms used in these measures, and that the chords used serve no specific harmonic function. Instead, Harrison uses these measures of intense chromaticism to “erase” the tonal center in the previous phrase from the listener’s ear, and create a sense of tension and release. Every occurrence of the vertical aggregate is immediately followed by the [0158]/Maj7 chord providing some harmonic stability following the intensely chromatic preceding measure. It could also be argued that these vertical aggregates act as a means of transitioning between two harmonically unrelated chords, with the exception of measure 51 – 52, in which the Gmin7 moves to its relative major (BbMaj7).

Further examination of the intervallic relationship of three tetrachord groupings within the vertical aggregate yield yet another relationship between the chords in these three measures. In both measures 43 and 51 the pitches can be grouped into tetrachords by focusing on the vertical chords notated in the piano or string voices that occur in eighth-note rhythm beginning on the up-beat of one. These tetrachords are: {F# G A C#} or [0137], {C E F G#} or [0148], and {D# D B A#} or [0145]. The tetrachords in meas. 43 and 51 are directly related to the tetrachords in measure 60 in that they share the same

pitch class and are transpositionally equivalent at T_2 . This relationship is illustrated in the following figure:

Fig. 12

The figure shows a musical score snippet with two measures, m. 43, 51 and m. 60. The notes are grouped into vertical aggregates, each with a pitch class set and a bracketed number. The aggregates are:

- Measure 43, 51: {F#GAC#} [0137], {CEFG#} [0148], {D#DBA#} [0145]
- Measure 60: {G#ABD#} [0137], {F#GA#D} [0148], {EE#B#C#} [0145]

Arrows labeled T_2 indicate transpositional relationships between the aggregates. Specifically, there are arcs from the first aggregate of m. 43, 51 to the first aggregate of m. 60, and from the second aggregate of m. 43, 51 to the second aggregate of m. 60.

Another point of significance is that measure 51 contains the second of three vertical aggregates found in the trio, and is incidentally positioned precisely at the mathematical midpoint of the trio. The trio is exactly 30 bars long (meas. 36 – meas. 66), and when 15 (half the value of the trio's length) is added to 36 (1st measure of the trio) we arrive precisely at measure 51.

The vertical aggregates in these three specific occurrences also serve as means of creating structural contrast from the rest of the movement in that all the chromatic pitch classes are vertically presented in a very compact manner, as opposed to how they are typically presented melodically as a rotating row-form. Harmonically the vertical aggregate serves as a means of unifying the [0137], [0145], and [0148] with the significant [0158] set class which is found throughout the movement. The tetrachords in Fig. 12 share the subset [037] with the [0158] set class with exception of the [0145] tetrachord, which shares the [015] subset.

Set Relationships:

The analysis of the intervallic relationships of the vertical (and sometimes linear) accompaniment sonorities in a composition can help to illustrate the “big picture” in

regard to the overall tonal relationship.

The unifying pitch class set in the piece is the [0158] set, which represents the Maj7 chord. Harrison displayed an affinity for the major seventh chord sound when choosing the various rows that constitute the accompaniment and provide the vertical harmony for the composition. It also becomes apparent when considering many of the sets other than the [0158], that the pitch class sets have only a half step or whole step difference with one pitch class in the collection. This can be seen very clearly throughout the composition.

In both the first two sections (A and B), the [0158] and [0156] sets are in close proximity to one another. These two pitch class collections are different by one pitch class, which is altered by a whole step. Similarly, the [0237] and [0158] sets are closely related, with one pitch class altered by a whole step.

The three sets previously mentioned occur in close succession in measures 19 – 25:

[0158] EMaj7, Down beat of 2 meas. 19

[0237] Gmin2, Up beat of 1 meas. 21

[0158] EMaj7, Down beat of 2 meas. 21

[0156] No triadic tonal implication - P5th's separated by a half step, meas. 23 and 24-25

Furthermore, Harrison's use of trichord subsets helps to create additional relationships between the tetrachords in the composition. Examples of this can be found in measures 1-2 and 5-6 (upbeat chords in piano) when looking at the pitch collection {G B F#} or [015] and {B D F#} or [037]. Both of these trichord pitch class sets are subsets to the [0158] or M7 chord. Also the [015] trichord in measure 9 (up beat of 1/string voices), and the [0125] tetrachord (beat 2/string voices), are in close proximity.

The [015] acts as a unifying subset of the three tetrachords [0158], [0156], and [0125] found in the first musical phrase of the composition. In addition, the [037] trichord found

in meas. 4 is a shared subset that unifies the [0158] Maj7 chord and the [0137] tetrachord. The [0137] Dadd#4 acts as the dominant chord to the GMaj7 tonality established at the opening of the piece.

The same [037] trichord helps to establish relationships between closely related tetrachords of the [0158] set. For instance, in meas. 40-42 of the trio section there is a repetitive syncopated accompaniment figure alternating between the Bbmin7 [0358] chord and a Gmin7(b5) [0258] chord. These three measures resolve back to the [0158] set in measure 44 via the vertical aggregate in measure 43, even though a Gmin7 [0358] is retained in the linear collection of pitches in the cello and bass voices. The [037] trichord, found again in meas. 43 (right hand piano part, up-beat of one), is a subset of the three tetrachords [0158], [0258], [0358].

Hexachord Relationships:

Since Harrison chose to use the row forms from the matrix in a rotational fashion, one might consider the fact that the specific pitch class used to initiate a row form, and subsequently the first hexachord formed from that starting pitch, could be used to unify pitch and melodic content within the movement much like the row forms chosen to create harmonic relationships. After analyzing the combinatoriality of these “melodic” hexachords used within the movement, some relationships emerge. While this analysis is not exhaustive, I have found that Harrison used twelve melodic row forms in the Polka movement. When comparing the initiating hexachord of these rows, many of them share the same hexachord set class with other hexachords used. Knowing this relationship helps one understand Harrison’s practice of row rotation as a kind of large-scale interval control.

Figure eleven shows the relationship between the first and last hexachord derived from the rows used in A and B respectively. These two hexachords, [012358] and [012457] share the same interval class vector, so they are Z-related. This relationship could be viewed as a link between A and B in creating a loose sense of hexachord resolution. The

6-Z40 and 6-Z11 hexachord relationship is found again in the trio section of the movement. The top voice of the trumpet line in measures 44-51 uses a row form that begins with the 6-Z40 hexachord, and the 6-Z11 hexachord begins the only non-rotational row form in the movement in measures 52-59.

Fig. 13 – Melodic Hexachord use in Polka

Another significant point of formal unification is created by the use of the all-combinatorial hexachord [014589] 6-20. This particular hexachord can be found in each section (A,B,C) of the movement. Specifically the 6-20 hexachord has inherently three transposition levels in which it maps onto itself with P-combinatoriality, R-combinatoriality, I-combinatoriality, and RI combinatoriality.

Further investigation of the Trio section of the movement reveals a few transpositional relationships between the hexachords used to initiate the melodic row.

Fig. 14

Although there is not a consistent transpositional connection between all of the hexachords in the trio section, Harrison could have used the transposition above (Fig. 14) between these hexachords to select where to begin his rotation of a given row form. It should be noted that in terms of melodic content these related ordered sets also serve a harmonic function in that they are presented in the melody simultaneously a major third apart. This accounts for the T_8 relationship between both hexachords in measures 44-51 and 60-66 respectively. The complement of T_8 in the mod 12 system is T_4 . Four semi-tones is of course the distance between two pitches a major third apart.

With any thorough analysis it is important to not lose sight of the “big picture.” It can be easy to over-emphasize subtle relationships that, at first, seem to help unify a work and illustrate a compositional thought process. Although these relationships can be interesting and valid, the most important ones are usually the most obvious after widening ones perspective. The relationships between the row forms and hexachords used within the Polka point to a more important underlying interval control. The various row forms that

are used to provide both melodic and harmonic material were constructed using only three intervals: the minor second, major third, and the perfect fourth. These interval controls are the key to the Polka, and unify the melodic and harmonic aspects of the composition.

Analysis: J. Koontz

**Lou Harrison: "Polka" Mvt. III(2) from *Symphony on G*
(1948-1961)**

2

Polka ♩ = 120-126 **Row I₈**, < Ab,G,Eb,E,F,Bb,A,C#,D,F#,B,C

Cl. 1

Trbs. 1

con sord.

non cresc.

Db Maj⁷

Row P₆, < F#,G,B,Bb,A,E,F,C#,C,Ab,Eb,D>

[0158]

P₆

Piano 2

f

Db Maj⁷

[037] (Maj)

Vns. 1

pizz.

mf

Vns. 2

pizz.

mf

Va.

pizz.

mf

Vc.

pizz.

mf

[015] [037] (Min.)

[016]

Cb.

mf

[0158] MAJ⁷

*G Maj⁷ {GBDF#} ("Tonic" I)

I_8 < Ab, G, Eb, E, F, Bb, A, C#, D, F#, B, C > Row Elision I_0 < C, B, G, Ab, A, D, C#, F#, Bb, Eb, E >

P_6 P_0 < C, C#, F, E, Eb, Bb, B, G, F#, D, A, Ab >

Cl. 1. Trbs. 1. 2. Vns. 1. 2. Va. Vc. Cb.

[0158] [037] [015] [016] [015] [0125] I_8 I_0

15 1. 2.

[0137] D(add#4) "Dominant" (V) [016]

I₄ < E, Eb, **B**, C, C#, F#, F, A, Bb, D, G, Ab >

20

Piano 2

I₄ from A

1 Vns. 2 Vns.

[0237] (Min⁶)

[0158] (Maj⁷)

Va.

Ve.

Cb.

[0156]

R₄ < C, C#, F#, Bb, B, Eb, **D**, G, Ab, A, F, E >

25

Cl. 1

Piano 2

I₇

P₅ < F, E, C, C#, D, G, F#, Bb, B, Eb, Ab, A >

[014]

[0156]

[01247]

[0158] (BMaj⁷)

I₇ < G, F#, D, Eb, E, A, Ab, C, C#, F, Bb, B > **I₉** < A, Ab, E, F, F#, B, Bb, D, Eb, G, C, C# > CODA (last time only)

30 (Fine) 35

Cl. 1

Tpts. 1, 2

Piano 2

Vns.

Va.

Vc.

Cb.

[0146]

[037]

[0158] (GM⁷) "Tonic"

"Vertical Aggregate"

30 35

*2 Rows Top Voice P₇ < G, Ab, C, B, Bb, F, F#, D, C#, A, E, Eb > Bottom Voice P₃ < Eb, E, Ab, G, F#, C#, D, Bb, A, F, C, B >

TRIO

40

Tpts. 1, 2

Piano 2

[037]

F#

[014]

TRIO P₁₁ < B, C, E, Eb, D, A, Bb, F#, F, C#, Ab, G > (missing F#: borrow from P₃?)

40

Vns. 1, 2

Va.

Vc.

Cb.

sempref

sempref

sempref arco

sempref arco

sempref

[0158] CMaj⁷ "Sub-Dominant"

[016]

[0358] Bbmin⁷ [0258] Gmin7(b5) [037] Supersets

P₇ & P₃ cont.

Top RI₁₁ < Eb, D, A, F, E, C, C#, Ab, G, F#, Bb, B >
Bottom RI₇ < B, Bb, F, C#, C, Ab, A, E, Eb, D, F#, G >

P₁₁ < B, C, E, Eb, D, A, Bb, F#, F, C#, Ab, G > (missing F#)

P₇ < G, Ab, C, B, Bb, F#, D, C#, A, E, Eb > (Combined, Non-Rotational)

R₉ < A, Bb, D, C#, C, G, Ab, E, Eb, B, F#, F > missing E : borrow from P₇?

[0358] Bbmin⁷ **[0358] Gmin⁷** **[0158] CMaj⁷** **[016]** **[0358] Gmin⁷** **[037] Supersets** **[0358] Bbmin⁷** **[0258] Gmin⁷b⁵** **[0158] BbMaj⁷**

"Vertical Aggregate"

P₇

Tpts. 1, 2

Piano 2

R₉

55

Vns. 1, 2

Va.

Vc.

Cb.

[0158] [016] [0358] [0369]
BMaj6 Fmin7(b5)

I₈

60 Top: RI₅ < A, Ab, Eb, B, Bb, F#, G, D, C#, C, E, F >
Bottom: RI₁ < F, E, B, G, F#, D, Eb, Bb, A, Ab, C, C# >

65

Piano 2

“Vertical Aggregate”

P₂ < D, Eb, G, F#, F, C, C#, A, Ab, E, B, Bb >
(missing Ab, C# presented out of sequence)

65

Vns. 1, 2

Va.

Vc.

Cb.

pizz. arco

[0158] EbMaj7 [016] [0369] Dim7 C#Bb.E.G

VII. Conclusion

I have found the subject of this research project interesting, and the results of the analyses of the two selected compositions to be enlightening. Harrison's use of controls has been addressed in many of the published interviews, articles, books, and film documentaries discussing his compositional methods, however, specifically "how" he used these controls is a question that requires continued research. It has been suggested by some scholars that he used these systems rather strictly, adhering to his own rules with self-imposed discipline. I believe that Harrison was not concerned with how strictly he enforced the rules at all, but used them as an organizing system, a means to an end, or to a beginning. In some compositions he used the controls rather loosely, while in others, he followed them very strictly. Harrison made decisions during the compositional method to stay either rigid or flexible for the benefit of his music. Sometimes the music governed the control.

It is a fact that composers have worked within a framework of their choosing for as long as music has been composed, and controls come in many guises – style, form, key developmental strategies, etc. The use of compositional controls is not a new concept, but one that Harrison embraced with open arms. He used them to create his own musical identity. Regardless of how strictly or loosely he used these controls, the process is one of self-discipline. Harrison challenged himself to create musical compositions that are unique in both sound and expression by using a range of controls that he invented, adapted, and combined.

Although he focused on the use of controls more in his early years of composition, Harrison's first compositional control, interval control, is one that he would continue to use throughout his career from time to time, even as late as the *Gran Duo* (1988). As a control of his invention, I am sure that Harrison felt a certain ownership, and comfort with the melodic and harmonic language that is a result of this method of composition. Although there are multiple possibilities within the limitations of the control set selected, the instrumentation used, the rhythmic treatment, etc., the music created with this method

avoids total serialization, and in many ways finds a way to reconcile serialism with melodicism. Overall, these limiting controls provide an underlying unity to the work, but a recognition or understanding of these controls is not essential to the listener's enjoyment of his expressive and creative compositions.

Selected Bibliography

Copland, Aaron. "Scores and Records." *Modern Music* 16.1 (1938): 125.

Cowell, Henry. "The Process of Musical Creation." *The American Journal of Psychology* 37.2 (1926): 233-236.

_____. "The Nature of Melody." *The Musical Quarterly* 85.4 (2001): 595.

_____. *Essential Cowell: Selected Writings on Music*. New York: McPherson and Company Publishing, 2002.

Fierz, Stephen D. "Lou Harrison and Harry Partch: A Brief Comparison." *Percussive Notes* 35.2 (1997): 74.

Goehr, Alexander. "The Theoretical Writings of Arnold Schoenberg." *Proceedings of the Royal Musical Association* Vol.100 (1973 - 1974): 85-96.

Greene, V.R. "A Passion for Polka: Old-Time Ethnic Music in America." (Ph.D. diss., University of California, Berkeley, 1992), 56.

Harrison, Lou. "Homage to Schoenberg: His Late Works," *Modern Music* 21.3 (Mar.-Apr. 1944): 136.

_____. *Lou Harrison's Music Primer*. New York: C.F. Peters Corporation, 1971.

_____. "Saraband." *The New Music Quarterly* 11.4 (1938): 8.

_____. "Music – Ruggles, Ives, Varèse." *View*, Nov. (1945): 11.

_____. *Symphony on G*. New York: Peer International Corporation, 1975.
"Used by Permission of Peer International Corporation."

Hicks, Michael. "John Cage's Studies with Schoenberg." *American Music* 8.2 (1990): 25-140.

- Keezer, Ronald. "A Study of Selected Percussion Ensemble Music of the 20th Century." *Percussionist* 8.1 (October, December 1970): 11-23; 38-44.
- Kostelanetz, Richard, and Lou Harrison. "A Conversation, in Eleven-Minus-One Parts, with Lou Harrison About Music/Theater." *The Musical Quarterly* 76.3 (1992): 383-409.
- MacLean Hyde, Martha. "The Telltale Sketches: Harmonic Structure in Schoenberg's Twelve-Tone Method." *The Musical Quarterly* 66.4 (1980): 560-580.
- Miller, Leta E. "The Art of Noise: John Cage, Lou Harrison, and the West Coast Percussion Ensemble." *Perspectives in American Music 1900 – 1950* (2000): 215-263.
- _____. "Lou Harrison and the Aesthetics of Revision, Alteration, and Self-Borrowing." *Twentieth-Century Music* 2.1 (2005): 79-107.
- Miller, Leta E., and Frederic Lieberman. *Lou Harrison: Composing a World*. New York: Oxford University Press Inc., 1998.
- _____. *Lou Harrison*. Champaign: University of Illinois Press, 2006.
- Partch, Harry. *Genesis of a Music*. Madison: University of Wisconsin Press, 1949. 2d ed., New York: Da Capo Press, 1974.
- Rahn, John. *Basic Atonal Theory*. New York: Schirmer, 1980.
- Randel, Don Michael. "Saraband," *The Harvard Dictionary of Music* 4th ed. (Cambridge, Massachusetts: Belknap Press of Harvard University Press, 2003), pp. 754-755.
- Rao, Nancy Yunhwa. "American Compositional Theory in the 1930s: Scale and Exoticism in "The Nature of Melody" by Henry Cowell." *The Musical Quarterly* 8.4 (2001): 595-640.
- Rubsamen, Walter H. "Schoenberg in America" *The Musical Quarterly* 37.4 (1951): 469-489.
- Spies, Claudio. "Some Notes on Stravinsky's Requiem Settings," *Perspectives of New Music* 5.2 (1967): 98-123.
- Straus, Joseph N. *Introduction to Post –Tonal Theory*. New Jersey: Prentice Hall, 3rd ed., 2005.

Strauss, Noel. "Symphony by Ives in World Premiere," *New York Times*, April 6, 1946.

Swed, Mark. "Lou Harrison," Woodland CA.: *SCHWANN*
OPUS Winter 96/97: 8a-18a.

Taylor, Noel H. "The Schoenberg Concept." *Music & Letters* 20.2 (1939): 183-188.

Vanlandingham, Larry. "The Percussion Ensemble: 1930-1945." (Part III) *Percussionist*
10.1 (1972): 11-25.

Von Gunden, H. *The Music of Lou Harrison*. Metuchen, NJ, 1995.