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An analytic overview of the music of Carl Ruggles

Orkiszewski, Paul Thomas, M.M.

Rice University, 1988
RICE UNIVERSITY

AN ANALYTIC OVERVIEW OF THE MUSIC OF CARL RUGGLES

by

PAUL THOMAS ORKISZEWSKI

A THESIS SUBMITTED IN
PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
MASTER OF MUSIC

APPROVED, THESIS COMMITTEE

George Burt, Associate Professor of Music,
Director

Honey Mcconni
Honey Mcconni, Assistant Professor of Music

Ellsworth Milburn, Professor of Music

Houston, Texas
April, 1968
An Analytic Overview of the Music of Carl Ruggles

by

Paul Thomas Orkiszewski

Abstract

During his career, Carl Ruggles was considered to be at the forefront of American contemporary music. His techniques of non-repetition of tones in melodic lines and the saturation of the vertical and horizontal domains with half-steps created a version of atonality which shares a philosophical basis with Schoenberg, but differs sharply in practice. Within a progressive vocabulary, Ruggles' music shows a foundation in tradition. He made much use of traditional sixteenth century guidelines for the construction and interconnection of individual lines, and his method of motivic development and variation are based in the music of the nineteenth century. Like Schoenberg, he applied the fundamental concepts of the past to his own atonal vocabulary and musical ideal.
Acknowledgements

I am grateful to Dwight Andrews and George Burt for their ideas, criticisms and support in the writing of this paper.

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List of Works

All available Ruugles scores are either published or distributed by Theodore Presser Company.

Publishing dates are for current editions.

Songs, voice and piano, c. 1900, two sketches housed in Library of Congress, unpublished.

The Sunken Bell, opera, text by Charles Meltzer, 1912–1923, sketches survive, unpublished.

Mood, violin and piano, c. 1918, unpublished.


Vox Clamans in Deserto, voice and chamber orchestra, 1923 (Bryn Mawr: Theodore Presser Co.).


I - Introduction

The first half of this century proved an exciting and seminal period for American art music. For the first time, American composers broke their artistic dependency on European styles and trends and expressed themselves with confidence in the validity of the cultural attitudes and ideas of the New World. Composers as different as Charles Ives, Scott Joplin, Wallingford Riegger, Ruth Crawford Seeger, Harry Partch, Henry Cowell and others each created a personal musical world. Their individual styles were based in European tradition but brought to fruition with a uniquely American perspective. Although the music of Schoenberg and the serial techniques which evolved out of it may be said to have had a more direct technical impact on contemporary music, we owe the diversity of style and aesthetic found in present American music to the spirit of iconoclasm and freedom of this earlier group of composers.

This paper is an analysis of the music of Carl Ruggles: neither the most well known, nor the most prolific composer of the time. Ruggles completed only nine published works in his compositional career, and only one of these, Suntrreeder, has so far stood the test of time and the concert hall. He was not a musical experimenter in the mold of Ives, Cowell or Varèse; his pieces call for standard classic/romantic ensembles and eschew special effects and newly created instruments. Ruggles composed with great effort and subjected each of his works to great scrutiny and revision¹ so much so that Charles Seeger considered the constant reworking was "wearing away the patina of a passage"². He completed his first published work when he was forty-two years old and kept with the basic ideas of the style of that first composition until he stopped composing thirty years later. This continuity of compositional style is one of the most interesting aspects of Ruggles. If one calls to mind the great composers of this century, distinct breaks can be
found in their styles, - the late Romantic sound of early Bartok compared to the works after his musicological fieldwork, or the early Streitinsky ballets compared to his neo-classicism in turn compared to his personalized version of serialism - but Ruggles pursued one vocabulary, one style and his compositions are the continuing refinement of one musical ideal. On first hearing, Ruggles' sound is remarkably similar to that of pre-twelve-tone Schoenberg, Berg and Webern, and these similarities show up in analyses of harmonic types and contrapuntal techniques. Ruggles, however, rejected the twelve-tone method as "a dog chasing its own tail" preferring his own atonal style. The atonal styles of the earlier part of this century have recently become the subject of increasing academic activity, most notably by Allen Forte and Stephen Gilbert.

As a composer who maintained a unique species of atonality throughout his career, Ruggles is of interest to the analyst in search of possibilities not found in other atonal literature. So far, although there are a few analytic studies on his music, Carl Ruggles has largely been ignored by all but a handful of theorists and musicologists. This paper grows out of my interests in American music during the period 1900-1950 of which Ruggles is an important figure and in Ruggles compositional style which although not obviously revolutionary contains unique and valuable experiments with atonal vocabulary and technique.

This study focuses on Ruggles' last completed major work, Organum for Orchestra which is in many ways a summation of Ruggles' compositional style and which will be used as a key to understanding his other works. The analysis concentrates on three central aspects of his music: 1. canonic writing and variation techniques, including discussions of rhythm and formal shapes; 2. linear construction; and 3. the harmonic vocabulary emphasizing certain pitch class sets which arise out of Ruggles' contrapuntal technique. The analytical procedures will be those most appropriate to the subject at hand. The first analysis is on Ruggles' techniques of counterpoint, imitation and variation, and is based on a formal/descriptive analysis. The discussion of linear
design relies on statistical information presented in graphs and tables and a combination of twelve-tone and atonal set theory. The final analysis makes use of atonal set theory as presented in Allen Forte's *The Structure of Atonal Music*. Throughout the paper other Ruggles compositions will be used to clarify points and draw conclusions as to the development of his style through the course of his career. A brief biographical sketch and a comprehensive bibliography are also included in the thesis. I have attempted to make as complete and up-to-date a bibliography as possible and included books, articles and other sources of both academic and popular intents. The academic writing on Ruggles is spare. Besides the analytical work of Forte and Gilbert, there are several dissertations and articles, most of which take a musicological perspective. Additional sources include reviews, listings in biographical collections, and articles in the general press. Ruggles appears often in discussions and papers of his friends and contemporaries, and his estate included a number of boxes of letters and other papers which were organized by John Kirkpatrick and are now housed in the Yale University Library.

NOTES:


II - Biography

Ruggles, even at an early age, was prone to embellishing the details of his life, leaving out unhappy details, and unabashedly changing parts of his history. The modified story became his personal version of the truth which he reproduced to all enquirers, so much so that even his closest friends were unclear or misled about many aspects of his life. This makes a biographical sketch difficult, as most printed biographies were written by friends or based on personal interviews. Recent work by Marilyn Ziffrin has helped to correct this problem. In "Interesting Lies and Curious Truths About Carl Ruggles"¹, Ziffrin clarifies many of the details of Ruggles' biography with information gathered from government and press documents contemporaneous to Ruggles.

Charles (Carl) Sprague Ruggles was born March 11, 1876 in Marion, Massachussetts. His grandfather, Charles Henry Ruggles, had worked on riverboats in the midwest. Charles Henry married Violetta Johnston and later moved to Peoria, Illinois where he became a hotel manager and had two children: Nathaniel, Carl's father, and Sophia. In 1859, the family moved to farmland in Marion which Charles Henry had inherited from his father in 1857. Nathaniel married Maria Josephina Hodge but continued to live with his father while having three children: Mary, born 1870, Carl and Edward Milton, born 1879. Carl's grandfather died in 1889 and his mother in 1890, at which time the family moved first to Lexington and then to Waverly, Massachussetts. Nathaniel remarried, frittered away a sizable inheritance at the racetrack and on a horse farm and was forced to declare bankruptcy and live with his youngest son Edward and his family.

When he was six years old, Carl constructed a cigar-box violin and became proficient enough to prompt a local lighthouse worker to give him a small violin with which he reproduced
hornpipes and jigs sung by his mother. He obtained a reputation as a local prodigy and may have played for or with the wife of future president Grover Cleveland in 1887, although he claimed to have played for the president himself. He received music lessons from New Bedford bandmaster, George Hill, and Ziffre refers to a favorable *Bolmert Bulletin* review from 1892 of a concert given April 14 by Carl on violin and zither accompanied on guitar by his sister Mary. In his later teens, Ruggles continued to study violin with Felix Winternitz of the New England Conservatory, who arranged an audition with Fritz Kreisler. Kreisler in turn recommended Carl move to Prague to study composition under Dvořák, but financial arrangements fell through upon the death of his patron, William Beal. Ruggles frequently attended Boston Symphony concerts and played in chamber ensembles with members of the orchestra. He began to study theory with Josef Claus, another Conservatory instructor, who recommended that he take private composition lessons with John Knowles Paine, then in residence at Harvard. Both Claus and Paine emphasized training in traditional harmony and a solid foundation in counterpoint. Around the turn of the century, influenced by the large numbers of Germans in Boston musical life and a love for German music, Ruggles began to go by the name Carl.

Ruggles' first compositions were songs championed by Alfred De Voto, pianist for the Boston Symphony Orchestra; Carl later destroyed most of these pieces, although two survived and are housed in the Library of Congress. Around 1900, Carl was supporting himself as a music critic for a Cambridge newspaper and an engraver for F.H. Gilson, a local publishing house. In 1903, he enrolled as a special student at Harvard for an English class taught by Barrett Wendell. Carl attended a performance by contralto Charlotte Harriet Snell accompanied by De Voto in 1906, and the concert's sponsors contracted him to give a lecture series on contemporary music in which he held up Wagner as the creator of modern music and praised Debussy as the most talented composer of the day.¹
First Carl and then Charlotte Snell moved to Winona, Minnesota in 1907 to take positions at the Mar d'Mar School of Music; the two married on April 27, 1908. In Winona Ruggles founded a YMCA orchestra which would later become the Winona Symphony Orchestra, specializing in performances of operas in concert form. The symphony was successful and the Ruggles became central musical figures in Winona. In 1912, Carl began work on The Sunken Bell, an opera based on Hauptmann's Die versunkene Glocke with a libretto by Charles Meltzer, a music and theatre critic based in New York who had a reputation for translations of plays and librettos. The two were confident they could obtain a contract from the Metropolitan Opera Company through Meltzer's influence in New York. Ruggles abandoned his post conducting the symphony to concentrate on the opera, although he continued to be involved in the orchestra's administration. In 1917, he moved to New York to complete The Sunken Bell, and the Winona Symphony dissolved in his absence. The opera was never contracted by the Metropolitan Opera Company, and Ruggles gave up the project completely in 1923 after eleven years of work.

He applied for a job later in 1917 as music critic for the New York Call, the American Socialist Society newspaper, but was passed up for a more experienced reviewer. The next year, he gained a position as orchestra director with the Rand School of Social Science, an institution opened in 1905 and supported by funds from the American Socialist Society and an endowment from Carrie D. Rand. By the 1920–21 school year, Ruggles had begun a music program offering two orchestras, chorus and composition, and Charlotte, who had come to New York earlier in 1920, joined the school as choral director. The program never attracted sufficient enrollment, however, and by the end of the academic year Carl's position was terminated. From this time on, Ruggles was supported mostly by a string of private donors and wealthy friends.

Beginning in 1919, Ruggles began to compose and publish in his mature style. Teys for voice and piano was composed on the occasion of his son Micael's fourth birthday, May 25, 1919. It
is the first work with which Ruggles was satisfied and had published; he was forty-two years old at the time. While in New York Ruggles met Edgard Varèse and became involved with the International Composers' Guild which provided a forum for his works. With new encouragement, Carl began to compose more quickly. The guild presented a movement of *Man and Angels* for orchestra in 1922; the piece was later destroyed and its component parts used as the basis for *Angels* for six trumpets and later for brass septet (1938) and as a movement of *Man and Mountains* for orchestra (1924, revised 1936, revised 1941). In 1923, he completed a set of three songs, *Vox Clemans in Deserto* for voice and chamber ensemble based on texts by Browning, Meltzer and Whitman which, according to program notes of a Guild concert of the work, was to have used four more texts including one by Ruggles, but these never appeared. Carl and Charlotte moved to Arlington, Vermont in 1924 where they settled in an abandoned schoolhouse. *Portals* for thirteen strings appeared the following year (revised 1929, 1941 and 1953), and this was the last composition before Ruggles' recognized masterpiece *Sun-treader*, for orchestra, which he had begun in 1926 and completed in 1931. Ruggles became composer in residence at the University of Coral Gables, Florida where he gave lectures on modern music as well as private lessons; he held this position from 1936 through 1944. He composed little during his tenure, producing only *Evocations; Four Chants for Plane* which he composed from 1935–1943. The Ruggleses returned to Vermont in 1944 where Carl finished work on *Organum* for orchestra, completed in 1947. Although he continued to revise older works, *Organum* was to be Ruggles' last major composition except for a short textless hymn tune, *Exaltation*, written in 1958 as a memorial for Charlotte who died October 2, 1957.

Throughout his life, Ruggles pursued an interest in visual art as well as music. He had training as an engraver, and he was known for the beauty of his manuscripts and calligraphy. He often sent hand-drawn greeting cards to friends, the earliest reference to one of these dating from
1922. In the fall of 1928, while on vacation in Jamaica, he borrowed his host’s watercolors and produced a series of landscapes which are his earliest efforts in painting. Ruggles’ artistic emphasis began to shift from music to art in the 1930s as he created fewer musical works and more paintings, such that by the 1950s he was more a practicing painter than a composer. At first he exhibited regionally in Vermont, where he came to the attention of the art world both for the novelty of a composer as painter and the undeniable expressiveness and quality of his work. From these regional exhibits he advanced to more prestigious shows making numerous sales to private and institutional collectors and gaining a national reputation as an artist.

With burgeoning recognition as a painter, Ruggles’ compositions began to be discovered by a greater audience than was previously the case, and he began to achieve respect and awards for his music. He received a citation in 1953 from the National Association of Composers and Conductors for his contribution to American music and, on the recommendation of Ives, he was elected to membership in the National Institute for Arts and Letters the following year. He was awarded an honorary doctor of music degree in 1960 from the University of Vermont and the Creative Arts award from Brandeis University in 1964. A number of Ruggles festivals occurred in the last few years of his life, including exhibitions at Goddard College, 1962, the Southern Vermont Art Center, 1964 and 1966, Mount Anthony Union High School, 1968, and the Dorset Public Library, 1971. Bowdoin College staged the most elaborate tribute to Ruggles with a Carl Ruggles festival in 1966. The festival included an exhibition of paintings and performances of most of his music including the American premier of Sun-treader. He died October 24, 1971.

Ruggles’ musical aesthetic rests on a search for what he termed the “sublime.” For Ruggles there was only one kind of beauty, the sublime or the “real thing; the artist can either achieve this goal or become a “phony,” untrue to the inner vision. This is one possible explanation for Ruggles’ very small output. He revised works as much as twenty-five years after their initial
appearance in an effort to reach his artistic summit. Both his music and paintings are highly charged, expressive works of constant motion and bold lines and color. Musical and brushed lines move forcefully but never directly, always arching and swirling in a reflection of nature in which "there are no straight lines." He was strongly influenced philosophically by the New England transcendentalists and Romantic English poets. His texts for Vox Clements... include poems by Browning and Whitman, and the title Sun-treader is Browning's epigraph for Shelley. He shared the reverence for nature of these writers and philosophers, considering the natural world to be the prime source of inspiration for the artist. The title Men & Mountains is from a Blake couplet which expresses this view:

"Great things are done when Men and Mountains meet;

This is not done by Jostling in the Street."11

NOTES:


2. Ibid., p. 15.

3. Ibid. p. 9, quoting the Belmont Bulletin, April 23, 1892.


5. Ibid. p. 154, in reference to program notes of an International Composers' Guild Concert of January 13, 1924.


8. Ibid., p. 579.


10. Ibid., p. 55.

III - Analysis 1: Structural Techniques and Shapes

A. Counterpoint and Development

The following pages are a stylistic analysis of the music of Carl Ruggles made through a discussion of his last major orchestral work Organum, which can be viewed as both the continuation and summation of his previous works. Organum, like Evocations, does not share the almost exaggeratedly bold gestures and turgid expressionism of previous works, sounding by comparison more cerebral and open, but is still readily identifiable as the work of Ruggles in its concentration on two or three contrapuntal lines, vertical stereotypes that result from the interaction of these lines, rhythmic fluidity, motivic elaboration and overall design. These identifying characteristics of Ruggles’ music will be treated within the framework of an analysis of Organum. The analyses will draw heavily on examples and observations of all his music which will be used to clarify and expand the topic at hand.

Organum was composed between 1944 and 1947 and premiered by Leopold Stokowski and the New York Philharmonic Orchestra on November 24, 1949 to favorable critical and public response. Ruggles relates in a letter to Charles Ives that the title was suggested by Edgard Varèse:

"Varèse said 'The use of 5ths and 4ths is very remarkable because
that was done hundreds of years ago - let's call it Organum.'"

Varèse here refers to the surprising introduction, most notably in the last few measures, of parallel P4ths and P5ths moving in contrary motion to open fifth chords in another voice. In another letter Ruggles describes one of the technical aspects of the piece he wished to explore:

"For the past two months I've been experimenting with an Invention
for Orchestra (Organum). It's the rhythmic physiognomy of the
second part that intrigues me; perhaps I'm stumbling on something new."
The "rhythmic physiognomy" is part of Ruggles' contrapuntal technique which involves imitation of pitch class sequence but not of rhythm.

Organum divides into six sections. After four measures introducing the motive, the first section presents a two voice canon with exact pitch imitation but rhythmic variation in the comes. After a brief internal cadence, a chordal texture is introduced which leads to a large cadence in measure 33. Section III is a pitch retrograde of the canon of measures 5-20 (or 20-5), the last six notes of which are used as a point of departure for a new three part canon beginning in measure 50 and culminating in the large held chord of measures 62-62A. Section V is an exact repetition of measures 1-10 and is followed by two sets of open fifth chords moving in contrary motion to the final sonority.

\[
\begin{array}{cccccc}
I & II & III & IV & V & VI \\
\text{mm. 1-20} & \text{mm. 21-33} & \text{mm. 34-49} & \text{mm. 50-62A} & \text{mm. 63-72} & \text{mm. 73-78} \\
2\text{ part canon} & \text{chordal motion} & \text{Retrograde} & \text{3 part canon} & \text{exact repetition} & \text{chordal close} \\
\text{to cadence} & \text{original canon's} & \text{leading into} & \text{of mm. 1-10} & \text{similar to II} & \\
\text{pitch sequence} & \text{chordal motion} & \text{voice(s)} & \text{w/ accompanimental} & \text{to cadence} & \\
\end{array}
\]

Considering the pitch unity between sections one and three, Organum can be defined as a rondo with sections I, III and V being the rondo theme, II and IV the first and second departures and VI a coda. The pitch similarity between I and III, however, is analytically but not aurally perceptible to the casual listener. Ruggles however reinforces the unity of the sections by orchestral referencing, i.e. both sections begin with a lightly scored introduction of one line quickly followed by an increase in the density of the texture and a rising dynamic level. Ruggles
separates pairs of sections through cadences in measures 33 and 62. Each of these pairings begins with a version of the original canon followed by new material which leads to a homophonic close to each section group. The overall shape then is tripartite: either A A’ A or, if the listener does not make the connections between I and III, A B A. Ternary is a favorite large shape for Ruggles which he uses in Men & Mountains (outer movements), Angels, Portals, Sun-treader, and Evocations, although only in Angels and Sun-treader does he favor exact repetitions between outer sections.

Ruggles uses a canonic technique in Orgenum that, to the analyst, seems a cross between traditional canonic writing and twelve-tone procedures. The foundation of this technique can be observed in the first four measures (ex. 1):

**Example 1: Orgenum, mm. 1–4.**

These measures introduce the first four pitch classes of the canon: g⁰–a–c⁰–b⁰. Important is the rhythmic difference between the repetitions of these four pitches. In contrast to the large dimension exact repetitions, Ruggles, on the small scale, makes rhythmic modifications and shifts between repetitions or between principal and canonic voices. These shifts tend to be subtle. The g⁰–a of measure one, for example, is aurally quite similar to the same pitch sequence in measure three, but the diminution between measures one and two is instantly recognizable given the tempo.

The ensuing canon (ex. 2) emphasizes the importance of the pitch class succession over the rhythmic shape.
Example 2: Organum, mm. 5–10.

The canon proper does not begin until measure seven when the lower voice moves off the g♯. The pitch classes are the same, and inversions are held to a minimum, thereby maintaining the same basic shape in both lines, but the rhythmic succession is different between dux and comes. These differences are not so great as to make the two lines completely independent of each other given the pitch identity of the lines. If the dux of mm. 5–7 is compared to the pitch segment in the comes mm. 7–9, the underlying similarities between voices becomes apparent. The g♯–a of both segments are placed in rhythmically weak positions within the beat, whereas the c♯–b♯'s are stronger rhythmically, although the original falling on the beat makes more impact than the canonic falling on the last two sixteenths. The next segment, f♯–f–b–d–e, is the same in both voices except for the dotted rhythm in the dux compared to two eighths in the comes. In the remainder of the canon, mm. 1–23, Ruggles continues to manipulate the rhythmic identity between voices, constantly making small rhythmic and metric shifts which propel the music forward by creating tension between the lines.

The three part canon of measures 50–62 begins in a way similar to the opening (ex. 3).
Example 3: Organum, mm. 50-52.

The first two voices begin together and later become canon. In contrast to the first canon the rhythmic differences are at first held to a minimum with the only differences being the e-e\# half note – quarter triplet figure in the dux, m. 51, compared to two eighths in the following voice, m. 52, and the dotted rhythm of e-b compared to two eighths the next beat. This relative strictness is broken with the entrance of the third voice in measure 53 (ex. 4).

Example 4: Organum, mm. 53-55.

The third voice begins the canon on the tenth pitch (e-b-e\#-etc.) in the sequence and begins by following the rhythm of the second voice of m. 52, but quickly takes on its own propelling character. At the same time the second voice becomes more independent from the original voice especially with the introduction of octave displacements in m. 55 compared to 54 and the emphasis on triple rather than duple rhythmic cells. The third voice is even more independent in its alternation of fast motion through the pitch sequence followed by sustained notes which allow the other voices to catch back up to the roughly half measure separation between voices. As in the
canon of measures 1–23, the same basic shape of the principal voice is kept but each voice is allowed to pursue its own version of the one idea such that the canon becomes a form of what may be termed "overlapping variation".

Exact duplication of interval and rhythmic sequence in the repetition or sequence of a motive is used only at important junctures in the music as in measures 46–51 (ex. 5).

Example 5: Organum, mm. 46–51.

In this case the chord (marked 'x') in measure 47 is repeated in measure 49, and the e♭-f♭-b♭-c♭ sequence (marked 'y') taken from the end of measure 46 acquires a new rhythm pattern, eightths instead of triplet eighths and is repeated three times. This occurs at the point in the music which bridges the end of the retrograde section and the three part canon. The pitch sequence is the last four notes of the retrograde, which are of course the first four pitch classes of the piece, and the beginning of the new canon. This section is pivotal to the piece in its union of all parts of the piece, and Ruggles heightens its importance by choosing this as one of the few moments in the piece for small scale repetition. All the same, he is not willing to be too obvious. It should be noted that the repeated harmony is scored first as a tutti for all but the flutes and piccolo and then only for winds with the flutes, providing orchestration variation in the absence of motivic variation.

Throughout all his music, Ruggles carefully avoids exact motivic repetition, preferring to allow the lines to continually grow and take on new identities. He uses variation in rhythm,
interval and shape as developmental techniques propelling the music forward. Each section of a Ruggles piece is a working out of a single idea. The lines grow out of each other forming a seamless whole, as occurs in the previous selection and in the following example from Sun-treader (ex. 6).

Example 6: Sun-treader, mm. 14–19.

In this passage, the flutes and clarinets repeat the oboe and english horn material up a P5. The original instruments then begin a new version of the motive. The intervallic sequence in each voice of measure 18 corresponds to those of 16 and 14, but there is a new rhythmic identity which emphasizes the lower member of the ascending minor second. The lines then take new directions in measure 19. The pitch sequence of measure 18, along with a close rhythmic variant, then becomes the predominant line of a new section in measure 20. The shifts from one form of the motive to the next are subtle and logical, but given enough time in this process the idea takes on a number of very different faces. In other words, two adjacent presentations of a motivic idea may be quite similar, but versions taken out of temporal sequence may be quite different. The repetition between mm. 14–15 and mm. 16–17 is offset by rescoring and a new line in the trumpet and occurs at a link between the opening gesture and a new canonic section.

Techniques of variation and development are extremely important in Ruggles' music, and it is easy to go through any of his scores charting the thematic metamorphoses of a particular piece. What is new to his style in Organum and Sun-treader, however, is the combination of these
techniques with an imitative polyphonic texture. Although counterpoint is a strong element in his music, it usually takes the form of an over-riding motivic development accompanied by independent subordinate lines which support the current form of the idea but do not participate in its progress. One section from Angals (example 7), although not truly polyphonic, does point to this future technique.

Example 7: Angals, mm. 24–26.

The passage occurs just before an internal cadence which precedes a recapitulation of opening material. All of the parts except the fourth trumpet sequence a single sonority downwards by half step. The first trumpet and first trombone make their descent through whole tone scale segments, and the other participating voices sequence M3rds, an interval derived from the whole tone scale, using slower rhythmic values. Each voice uses an independent rhythmic cell. The result is a wash of overlapping sound punctuated by the unifying chord. The main idea is the descent of the one sonority, but each part effects that idea in its own way. Previous to this passage the piece has been polyphonic with the voices trading off and developing a three note motive consisting of a leap up followed by a step down. The alignment of voices in measure 23 is an important point in the piece, being the first use of simultaneous attack by all the voices. The heterophonic sequence under
discussion sets up a cadence and the exact repetition of the opening section. As in the previous examples, Ruggles uses a change in texture, polyphony to heterophony, and small scale repetition, sequence, at a critical point of arrival and departure in the music. Important to note again is the independence of the voices within an otherwise static section.

For the most part, Ruggles music, although polyphonic, is not imitative. His first experiments with imitative polyphony occur in Sun-treader which contains several canonic sections, including a short segment beginning in m. 52 (ex. 8).

Example 8: Sun-treader, mm. 52-59.

The example begins as a double canon; each canon is in three parts. Subject One is in the oboes and violin, and Subject Two, of an accompanimental rather than truly independent function, is in the bassoon, 2nd violin and ‘cello. The voices are imitated at the measure, each entrance a step higher than the last. After these statements the voices lose their independent identity in a homophonic drive towards a cadence in measure 67. Measures 52-57 provide the material for measures 124 -133. The descending tail becomes a rising figure of two sixteenths and an eighth which then leads
to a retrograde version of the head in measures 130–133. The original canonic section returns with new orchestration in measures 139–148 which is an almost verbatim reproduction of measures 52–61. These sections are unusual for Ruggles' music up to that time in their use of canonic writing and the lack of variation between presentations of a theme.

Another segment (ex. 9) from Sun-treader points more directly to Ruggles' imitative technique in Organum.

Example 9

This example occurs directly after the passage discussed as example 6. The predominant line is the a–b♯–g♯–f♯–e♯–etc. sequence which is imitated half way through bar 21 and again in 22. In this case Ruggles uses exact pitch class duplication which lasts in the participating voices throughout the section. The rhythm, however, alters between points of entry. Like similar passages in Organum, each voice shares a pitch sequence and an overall shape but presents the line in its own way. These four measures combine Ruggles' established use of polyphonic counterpoint and continual development with his new experiments in imitative writing observed in other sections of Sun-treader to produce overlapping, contrapuntal variation which is the basis for much of Organum.
Another process brought to Organum from Sun-treasure is retrograde, referred to in the discussion of example 8 (pp. 20–21). As stated above, measures 34–49 of Organum include a retrograde of the original canon pitch sequence presented in measures 5–23. The original canon runs from measures five through nineteen at which point the canon begins to lose definition in a break for cadence which occurs in measure 23. Mirroring the disappearance of the canon, the first three measures of the retrograde section (beginning m. 34) bear fragmentary resemblance to measures 19–23. The retrograde proper begins in measure 37 and corresponds to measure 18 (ex. 10).

**Example 10: Organum, original canon line (mm. 17–18) vs. retrograde (mm. 37–38).**

These measures share the same pitch sequence and are similar in style but follow independent rhythmic paths making the reference between the section analytically dramatic but aurally imperceptible. Ruggles does, however, maintain the integrity of most of the intervals: if the line originally went up a minor second, the retrograde line goes down a minor second rather than up a major seventh. There are some exceptions to this which seem to occur for reasons of voice leading and range considerations. The retrograde can be traced back from measures 18–15, but Ruggles does not use the material in measures 13–14 jumping directly from the $f^\#$ in measure 15 to the $e^\flat$ in measure 12 (ex. 11) because the pitch sequence of measure 15 duplicates 13–14.
Example 11: Organum, original canon (mm. 12-15) vs. retrograde (mmn. 40-42).

Also at this point Ruggles alters one of the pitches in the succession. What was c♯-g-f-e♭ in measure 12 becomes g♯(e♭)-e-g-c between measures 41 and 42. The change from f to e is the only point in which the retrograde voice does not have an antecedent, although there seems to be no important reason for the change considering its placement in the measure and the surrounding harmony.

Sun-treader introduced canonic writing and retrograde to Ruggles' style. In a revision of Men & Mountains in 1942, he added a retrograde section to the last movement, consisting of a retrograde of the first seven measures in the closing section before a sustained chord. This retrograde is both of pitch and rhythm. Evocations also contains several canonic passages which, like those in Sun-treader, lose their identity after a few measures.

Ruggles uses imitation and retrograde to provide coherence in his music. Both are standard contrapuntal techniques he would have acquired while studying harmony and counterpoint with Josef Claus and Paine. Thematic development and metamorphoses are the basis for German Romantic music with which he was familiar as a performer in Boston and later as a conductor. Ruggles was interested in building on rather than destroying the past. He had a great love for Bach and Handel and believed that all great music should share in the "sublime" essence of the music of these composers. His polyphonic style is clearly related to Renaissance and Baroque practices.
which emphasize free or imitative polyphony punctuated by homophonic sections around cadences. Ruggles hailed Wagner as the creator of modern music\(^5\), and that composer's style of continuous development and variation greatly influenced his conception of musical rhetoric. Ruggles transformed and combined these traditional techniques with a new vocabulary to create a highly personalized musical language.

**B. Rhythm**

Rhythm in Ruggles' music is characterized by mixed meter, emphasis on duple and triple divisions of the beat, although less familiar divisions occur irregularly, odd subdivisions of macrobeats such as four or five beats or subdivisions in the space of three, and syncopations arising from ties and accents, written and implied, within the subdivisions of a beat. The changes in meter reflect the length of phrase or gesture at any one point in time, i.e. the length of the measure will expand or contract to fit the shape of the line. Emphasis on a strong beat or a strong division of a beat is used sparingly to add greater emphasis to structural moments of confluence between parts, or to provide a rigid line to contrast against more free rhythmic gestures. Measures 53–57 of *Organum* (ex. 12) illustrates most of these devices.

**Example 12: Organum, mm. 52–57.**

Most individual rhythmic cells are a direct result of considerations of counterpoint and development. Ruggles uses rhythmic placement to maintain the independence of polyphonic lines.
This practice has been used by polyphonic composers since the middle ages to allow the horizontal motion of each voice to be defined against the vertical texture. The rhythmic differences between the voices of the three-part canon (ex. 13) in *Organum*, for example, can be explained in terms of voice independence.

**Example 13: Organum, mm. 50–55.**

In the first three measures, except for beat 2 of measure 51, the two voices line up on the beats. The subdivisions between the beats of each voice allow for differentiation. The triple divisions of the upper voice in measure 51 align with the duples of the lower voice to allow each new pitch between beats to be heard distinctly. The dotted cells in measure 52 allow the lower voice to move freely, coloring the held note before its successor much like traditional suspension figures. The third voice participates in this rhythmic give and take, allowing for the progression of the other voices during its held notes and drawing interest to itself in faster moving passages.

A similar passage occurs in a canon sequence from *Evacuations, IV* (ex. 14).
Example 14, Evocations, IV, mm. 15-17.

As in the previous example the voices make room for each other to avoid too homophonic a sound. Through the use of ties and triple against duple subdivisions, no new action in one voice is obstructed by a simultaneous attack in the other.

Ruggles' interest in development explains the rhythmic variants which appear in different presentations of a motive within a piece. Compare for example the versions of the three note motive from Angels (ex. 15).

Example 15: Angels, different versions of motive.

The motive consists of a leap of a third followed by a descending second. Each version is readily identifiable by shape and rhythmic placement, but no two are exactly the same. Although there is interval and pitch repetition, there are no rhythmic duplications. Ruggles' concentration on
developmental music shows in the constant modification of motives so that a musical idea is fully explored through the course of a piece.

C. Summation

Most notably in his frequent adaptation of ternary forms, Ruggles uses large scale repetitions to create structural coherence. Within these large repeated areas, however, there is little exact repetition on the phrase and cellular levels. Interval, pitch and especially rhythm are constantly modified in the course of working out a motive or canon. The majority of Ruggles' music is in free or imitative two or three part counterpoint, interrupted by homophonic areas around cadences. The contrapuntal emphasis helps to define the rhythmic identity of musical units in that the voices are kept independent by taking on distinct rhythmic identities. Organum is unusual in the Ruggles opus for its synthesis of imitative counterpoint explored in Sun-treader and Evocations and developmental processes found throughout his music resulting in a technique best described as simultaneous development.

NOTES:


4. Ibid.
5. Eric Salzman, *Carl Ruggles; A lifetime is not too long to search for the sublime in HI Fi/ Stereo Review*, vol. XVII, Sep. 1966, pp. 53-63.

IV - Analysis 2: Linear Design

A. Large Scale Gesture and Shape

One of Ruggles' central concerns was the shape and control of linear content. In a letter to Cowell discussing his then current work on Sun-treader, he comments on his increasing ease in handling lines:

"More and more I'm gaining that complete command of line which, to me, is the basis of all music."¹

In Ruggles' music each line, whether canoncic or independent, can stand on its own as a complete melody. The voices are constructed to act both independently and with reference to the other voices. This creates a collection of solo melodies each pursuing a shared idea or goal.

Ruggles' melodies are arcs of sound with strategically placed high and low points. These arcs interlock, creating a large scale arch shape consisting of a series of smaller arched sections. The first section of Organum (mm. 1-23) displays this approach to design (Graph 1). The introductory two measures are placed in the low orchestral register followed by a variant with doubling at the octave. The ascending principal line of the canon reaches an apex in measure 8 followed by a descent and another peak area in measures 15-16. The line then falls to a median point for cadence at measure 21.
Graph 1 (Example 1): Organum, principal canonic voice, mm. 1–20.

The graph shows two arch areas—1) measures 1–11, and 2) measures 12–20. Each component arch rises to a high point or a prolonged high point (as in measures 14–15) and falls to a median point to either begin a new arch or cadence. The entire section follows an arched curve of its own but includes an interruption in the original descent (m. 12) forming two high point areas (mm. 8–10 and mm. 14–15).

*The following series of graphs plots the movement of lines in terms of pitch versus time (measure). They are used for their clear visual representation of the shapes discussed.*
This opening section is followed by a homophonic passage which cadences in measure 33 and leads to a restatement of the pitch classes of the canon theme in retrograde. The retrograde voice (Graph 2) follows a very similar path to the opening.

**Graph 2 (Example 2): Organum, retrograde voice, mm. 34–47.**

In this case the high point of the line is reached in the second arch. The over-riding arched shape, the rise from a low register to one distinct high, then falling to a cadence on a median pitch level compare to similar traits in the previous graph. The similarities are due in part to the retrograde relationship between the two sections: if an arched shape is viewed backwards the shape remains the same. The retrogression, however, is only precise in terms of pitch, class not register, and the melodic contour could have taken on a completely different aspect through the use of inversion.
Therefore, it is Ruggles' preference in linear design, not a decision of contrapuntal technique, that brings about the similarities of the two graphs.

The emphasis on a rising line which reaches an apex then resolves to a median point is a noticeable element in most Ruggles works. Graph 3 charting the progression of the principal line of the opening section of Sun-treader shows a rising line to two high point areas (mm 4-6 and 8-10), with the summit being reached in the second of the peaks, followed by a descent completing an arch shape.

**Graph 3 (Example 3): Sun-treader, highest principal voice, mm. 1-13**

![Graph of Sun-treader](image)

Similar principles of shape, i.e. an over-riding arch shape consisting of a series of arches with one distinct high and low point, can be found in the following graphs of the opening sections of Portals (Graph 4) and Lilies, Men & Mountains, II (Graph 5).
Graph 4 (Example 4): Portals, highest principal voice, mm. 1–19.

Graph 5 (Example 5): Men & Mountains, II, Lilies, highest principal voice, mm. 1–19.
Two early vocal pieces, *Toys* and *Vox Clemans in Deserto*, display different parameters of linear shape. The chart of the voice line of the third movement of *Vox Clemans*... (Graph 6) can be grouped into three sections each of which have distinct though repeated low and high points. Section 1, mm. 6–17, is bounded by d♯ and e♭; section 2, mm. 19–23, by e♯ and f♯, and section 3, mm. 26–33, by d and f. In each case the low point is repeated at least once producing a low point area rather than one distinct occurrence. The movement between extremes is far more abrupt than in later works which emphasize gradual motion towards strategically placed high and low points. The pointillistic treatment of register results in a static line which lacks the sense of propulsion and drama infused in Ruggles' later style.

**Graph 6 (Example 6): Vox Clemans..., III, *A Clear Midnight*, complete vocal line.**
Like *Vox Clamans*, *Toys* (Graph 7) lacks the propulsive urgency of later works. The line is relatively static until the upward motion to the high point on the last note. In any segment of the line (mm. 1–5, 7–9, 10–11, 12–15) there are distinct low and high points, but these are placed pointillistically, lessening the dramatic effect of the motion towards linear goals of low and high.

**Graph 7 (Example 7): Toys, complete vocal line.**

As in *Vox Clamans*, the line is more a static bend of sound rather than a progressive arch. The frequent use of wide leaps between extremes of register make high and low points expected, thereby lessening their dramatic effect. Such a style is especially suited to miniatures in which the music is distilled and presented in a dense compact form. *Toys* and the movements of *Vox Clamans* are all short pieces under forty measures whereas later pieces are usually well over
forty measures with *Sun-treader* being the most expensive. The change in length may be explained by a change in linear practice. Pointillistic lines do not need the time to make their statement whereas a slowly building, arched line requires time to build a dramatic climax and subsequently release tension.

Both his early and later styles reveal Ruggles’ concern with balance. A pointillistic line moves freely between extremes which removes the dramatic emphasis of high and low points by taking them out of a standard, progressive context. Highs are answered or balanced by lows creating a sense of vertical equilibrium. The arched lines in Ruggles’ later music employ horizontal balance. An arch is a mirroring of two curves meeting at a focal point. Musical lines following an arch directs the listener’s attention to the motion and apex of the line but maintain balance by returning the audience to a median state.

The graphs for both *Vox Clamans* and *Toys* show that the songs end on the highest or second highest points in the line. The reason for this is partially textual. *Toys* ends on the word “sky”, and the rising line depicts the ascent of a balloon to the sky, and the selection from *Vox Clamans* ends on “stars”: thus height on the page represents physical height. Another reason is Ruggles’ typical cadential formula for the conclusion of a place or movement. Usually, Ruggles favors an overall arch form consisting of arched sections which build to and then fall away from a unique summit. Closing sections begin by continuing a slow descent but then turn back up shortly before the end. Graph 8 presents a paradigm for this overall shape.

**Graph 8 (Example 8): Linear Paradigm**
The lines tend to finish on a dense closing sonority voiced over a wide register. The wide spacing removes the level of dissonance between chord members. If the closing sonority of *Organum* (Ex. 9) were voiced only as a block chord within the octave (Ex. 10), the semitone relations and other dissonances in the middle register would be more apparent. The consonant doublings above and below relieve the tension of the middle register creating a comparatively consonant final sonority.

**Example 9: Organum, final chord.**

![Example 9: Organum, final chord.]

**Example 10: Organum, final chord within 8ve.**

![Example 10: Organum, final chord within 8ve.]

The closing sonority is sustained through note values or fermatae and either fades or crescendos depending on the piece. A sharp, staccato ending is unusual. Through voicing and emphasis the closing sonority has the same sense of release and closure as a tonic chord in tonal music.

Ruggles does not mirror the ascending motion of the upper or principal lines with descending motion in the bass voice(s). Lower voices tend to follow the same arched shape of the upper voices such that the range of the orchestration or voicing throughout a piece is somewhat constant. At high points Ruggles does open up the texture to balance the upper extreme. On the whole each line follows its own version of a large arched shape just as on the measure to measure level the voices often present independent versions of a particular motivic idea. Although high and low points of the bass voice may not necessarily line up with those of an upper voice, they each follow similar contours allowing changes in height of the lines but not substantial change in the registral area between voices. Graph 9 charts the motion of the upper voice in measures 34–47 of
**Orgenum** (the retrograde section) against the motion of the 'cello.

**Graph 9 (Example 11): Orgenum, retrograde voice and 'cello line, mm. 34-47.**

In the graph the upper voice is effectively tracked by the 'cello which remains between one and two octaves below at most times. The 'cello moves slower and in wider intervals than the retrograde line but maintains the two arch areas of the upper voice divided by measures 42 and 43. The exception to the tracking motion occurs at the two high points. Around the first high point in measure 39, the 'cello suddenly leaps down to provide balance for the upper extreme. Similarly, in measure 45 the upper voice reaches c\textsuperscript{#3} and the cello moves down to e creating the largest span between voices at a critical point in the music. Hence Ruggles observes his principals of linear shape but makes exceptions to reinforce important junctures.

The graph of the principal upper voice of **Orgenum** (Graph 8) on page 40 serves as a
summation of the preceding discussion. From a low point, the line proceeds through a series of melodic parabolas to a high point in measure 45 which is the climax of the retrograde section just before the link to the three part canonic section, mm. 50–62. The low points are the G♯s of the opening section and its return. The main cadential measures, m. 33 and m. 62, lie high on the graph but beneath the high points of previous and following arches. The closing section, mm. 73–78, begins by continuing the descent of the previous section but then turns precipitously to end on a relatively high pitch. These characteristics of Ruggles’ linear style, show a preoccupation with balance. The high point is centrally located and bordered by a series of three ascending arches to the left and two descending to the right. The secondary high points, the c♯♯s in measures 7 and 70, are in equilibrium: the first is seven measures into the piece and the second 8 measures from the end. In this and other works after Toys and Vox Clemans in Deserto Ruggles combines symmetrical, well-proportioned shapes with emphatic gestures and satisfying cadences to produce well-crafted music with direct emotional appeal.
Graph 10 (Example 12): Organum, highest principal voice - complete.
B. Small Scale Motion

The note to note succession of a line reveals the same sense of balance observed in large scale linear sections and entire pieces. Whether the overall motion is ascending or descending, a line moves jaggedly towards its goal. Each note or group of notes in one direction is balanced by motion in the opposite direction. The ascending line at the beginning of the retrograde section of Organum (Ex. 3) moves in a series of small arches consisting mostly of one or two notes up then one or two down. Each small arch rises higher than the last until the line reaches its peak in measure 40. After this point the line falls by sequencing one note up then one down until a low point in measure 42 (Ex. 4).

Example 13: Organum, mm. 34–42, retrograde voice.

This procedure is observed throughout Organum. Each segment in one direction usually consists of only one to three intervals before making a turn in the opposite direction. The following table for the upper line of Organum shows how many intervals occur in one direction before the line turns in the other.
Table 1 (Example 14): *Organum*, principal upper line.

<table>
<thead>
<tr>
<th>Intervals before direction change</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>131</td>
<td>36</td>
<td>27</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Percentage</td>
<td>64.8%</td>
<td>17.8%</td>
<td>13.4%</td>
<td>2%</td>
<td>2%</td>
</tr>
</tbody>
</table>

The segments consisting of five or more intervals occur at dramatically important points in the music. Two are cadential: one in mm. 57–60 and the other in mm. 74–78. The first (Ex. 15) is the end of the middle section (retrograde and three part canon) just before the recapitulation of the opening material. The second closes the piece (Ex. 16). Both are representative of Ruggles' cadential pattern discussed on pp. 35–36.

Example 15: *Organum*, mm. 57–61, upper voice.

![Example 15](image)

Example 16: *Organum*, mm. 75–78, upper voice.

![Example 16](image)

The other two segments of five or more intervals in the same direction occur on either side of the last high point before the end of the opening canonically section (Ex. 17).
Example 17: Organum, mm. 27-31.

Each of these anomalous cells lie at musical turning points, and Ruggles uses the change in linear design to reinforce their importance.

The following series of tables show the frequency of numbers of intervals in the same direction for the graphs of other pieces used in the discussion of large shapes, pp. 28-39. The tables show Ruggles’ consistent use throughout his career of the procedure of balancing short groups in one direction by similarly sized cells in the opposite direction in the course of a line.

Table 2 (Example 18): Toys, vocal line (see Graph 7, p. 34).

<table>
<thead>
<tr>
<th>Intervals before direction change</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>15</td>
<td>9</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Percentage</td>
<td>55.5%</td>
<td>33.3%</td>
<td>7.5%</td>
<td>0</td>
<td>3.7%</td>
</tr>
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</table>

Table 3 (Example 19): Vox Clamans..., III, vocal line (see Graph 6, p. 33).

<table>
<thead>
<tr>
<th>Intervals before direction change</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
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<td>10</td>
<td>2</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Percentage</td>
<td>27%</td>
<td>46%</td>
<td>9%</td>
<td>16%</td>
<td>0</td>
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</tbody>
</table>
Table 4 (Example 20): Portals, upper line, mm. 1-19 (see Graph 4, p. 32).

<table>
<thead>
<tr>
<th>Intervals before direction change</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>Frequency</td>
<td>23</td>
<td>13</td>
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</tr>
<tr>
<td>Percentage</td>
<td>50%</td>
<td>28.2%</td>
<td>19.6%</td>
<td>2.2%</td>
<td>0</td>
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</table>

Table 5 (Example 21): Men & Mountains, III, Lites, upper line, mm. 1-19 (see graph 5, p. 32).

<table>
<thead>
<tr>
<th>Intervals before direction change</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>Frequency</td>
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<td>1</td>
</tr>
<tr>
<td>Percentage</td>
<td>50%</td>
<td>44%</td>
<td>4%</td>
<td>0</td>
<td>2%</td>
</tr>
</tbody>
</table>

Table 6 (Example 22): Sun-treader, upper line, mm. 1-16 (see Graph 3, p. 31).

<table>
<thead>
<tr>
<th>Intervals before direction change</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>12</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Percentage</td>
<td>48%</td>
<td>24%</td>
<td>8%</td>
<td>12%</td>
<td>8%</td>
</tr>
</tbody>
</table>

In each case the smaller intervallic cells consisting of two or three notes (one or two intervals) make up over 70% of similarly directed linear segments. In all but Vox Clamans..., the motion changes after one interval a strong plurality of the time (40% or greater). Longer strings of intervals usually occur in fast moving sections around structural high and low point, often in close proximity to each other around a high point. As in Organum the shorter segments consisting of one or two intervals in one direction are the norm, and longer segments are used to emphasize structural points within the line.
Ruggles' large and small linear gestures show a preoccupation with balance. Although extremes of register are used, these points are reached and left gradually. Lines, whether ascending or descending, consist of a series of small segments in one direction followed by motion in the other. The same process of balancing one direction with its opposite creates arch shaped phrases which are juxtaposed to form sectional arched lines which in turn are fitted together to make arch shapes for each line of the entire piece. The techniques and the shapes that arise from their use are strikingly similar to the traditional linear controls of sixteenth century counterpoint. Although range and interval restrictions do not apply, other principles of voice leading are observed. The maintenance of a well-balanced arched line, strict control of high and low points, limiting motion in one direction to a few notes or at most six to eight apply equally to the traditional linear guidelines of counterpoint and Ruggles' contrapuntal lines. Significantly, these traits become more apparent as Ruggles progressed in his career. His earlier music is somewhat pointillistic thereby avoiding a sense of horizontal balance in favor of vertical or registral balance. His later works show deliberate concern for balancing horizontal segments. Perhaps his growing adherence to traditional linear constraints is the "complete command of line" which he felt he was approaching in Sun-treader.

C. Intervallic Content

In a melodic line, Ruggles freely uses any interval within the octave. Compound intervals other than the m9 are rare, but do occur, especially between phrases. Octave leaps are almost nonexistent as they put too much emphasis on a single pitch. Intervals up to and including the tritone are used more frequently than larger intervals. The predominant melodic interval is the m2. Table 7 lists the frequency and percentage of use of intervals in the principal upper line of Organum.
Table 7 (Example 23): Organum, principal upper line.

<table>
<thead>
<tr>
<th>Interval</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>101 34 43 24 23 39 10 17 8 2 12 0 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>32 10.8 13.6 7.6 7.3 12.3 3.2 5.4 2.5 .6 3.8 0 .9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As the percentages show, Ruggles uses half steps a significant plurality of the time. The consistent use of half steps does not result in a preponderance of chromatic scale segments. Although chromatic scale segments do occur, they are neither long nor frequent. Instead, the m2’s usually appear as breaks between larger intervals. A leap in one direction is often answered by a half step in the opposite direction. The canon in mm. 11-14 (Ex. 24) makes an ascent from c\textsuperscript{vii} to d\textsuperscript{III} through a series of leaps up each followed by a half step or a step in the opposite direction.

Example 24, Organum, canon theme, mm. 12-14.

Half steps also bridge two or more leaps in the same direction as in mm. 28-29 (Ex. 25) or begin or finish series of leaps in the same direction, mm. 57-58 (Ex. 26).

Example 25, Organum, upper line, mm. 27-31.
Example 26, *Organum*, upper line, mm. 57–60.

In each case the m2 is used as connective tissue either bonding lines together or providing a momentary reverse to the overall direction of a line.

The m2 and the tritone are used frequently in melodic lines. Both intervals have highly charged tonal functions. The upper note of an ascending minor second, for example, may be an implied tonic to tonally trained ears. The tritone is a dissonant member in tonality with strict voice-leading controls. The saturation of these intervals in the musical fabric results in too much tonal information as leading tones are resolved to a series of tonally unrelated pitch classes, and tritones are resolved 'improperly'. The dominance of these intervals coupled with the avoidance of a tonal center creates an atonal vocabulary and sound.

The following tables for *Evocations*, I (Table 8) and the upper line of *Sun-treader* (Table 9) reveal a similar emphasis on the m2 and the tritone as melodic intervals. The frequent use of m3's in *Organum* is a trait specific to that piece.

*Consonant* and *dissonant* are used with their traditional meanings in terms of linear structure. All stepwise motion is a consonant linear (not vertical) interval as are the m3, M3, P4, P5, m6, M6 and P8. Dissonant linear intervals are the tritone, 7ths and 9ths and compounds of these intervals.
Table 8 (Example 27): Evocations, I, principal line, complete.

<table>
<thead>
<tr>
<th>Interval</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>19</td>
<td>12</td>
<td>8</td>
<td>2</td>
<td>10</td>
<td>12</td>
<td>11</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Percentage</td>
<td>22.1</td>
<td>14</td>
<td>9.3</td>
<td>2.3</td>
<td>11.6</td>
<td>13.9</td>
<td>12.8</td>
<td>3.5</td>
<td>1.2</td>
<td>1.2</td>
<td>3.5</td>
<td>2.3</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Table 9 (Example 28): Sun-treader, upper line, mm. 1-31.

<table>
<thead>
<tr>
<th>Interval</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>43</td>
<td>7</td>
<td>9</td>
<td>2</td>
<td>11</td>
<td>16</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>0</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Percentage</td>
<td>35.8</td>
<td>5.8</td>
<td>7.5</td>
<td>1.7</td>
<td>9.2</td>
<td>13.3</td>
<td>3.3</td>
<td>2.5</td>
<td>0</td>
<td>0</td>
<td>9.16</td>
<td>0</td>
<td>5.8</td>
<td>5.8</td>
</tr>
</tbody>
</table>

Both charts show a concentration on the tritone and m2, previous to Organum. Unlike Organum, however, the P4 and its inversion the P5 are used regularly whereas thirds appear infrequently. The P4/P5 is an important interval in tonal music as it defines the relationship between tonic and dominant. A leap of a P4 or P5 implies movement between tonic and dominant. The frequent use of these intervals on a variety of tonally unrelated pitch classes confuses a tonal listener by playing on expectations of that interval.

Larger intervals in these three pieces are avoided. The exceptions are the M7 and m9 which are the only significantly recurring large intervals. These intervals are the inversion and compound respectively of the m2, and they avoid tonal implication through size and relative dissonance. The relationship of these intervals with the half-step reinforces the use of the m2 as the connective and unifying interval of a line.

Portals (Table 10) lacks the unified emphasis on certain intervals which are found in later works. The m2 is still the predominant interval and M7’s and m9’s the most important large
interval, but the tritone is avoided in favor of greater use of thirds.

Table 10 (Example 29): Portals, upper line, mm. 1-19.

<table>
<thead>
<tr>
<th>Interval</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>&gt;14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>23</td>
<td>12</td>
<td>9</td>
<td>12</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Percentage</td>
<td>28.8</td>
<td>15</td>
<td>11.3</td>
<td>15</td>
<td>2.5</td>
<td>3.8</td>
<td>3.8</td>
<td>7.5</td>
<td>3.8</td>
<td>1.2</td>
<td>1.2</td>
<td>0</td>
<td>3.8</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Interval use in *Men & Mountains, II, Lilies* (Table 11), *Vox Clamans...* (Table 12) and *Toys* (Table 13) follows different patterns than later works. The emphasized intervals are thirds and M2's. The tritone and perfect intervals are used but not in the significant way of later works. The charts suggest an evolution of melodic style first from M2 to m2 predominance in the works up to Portals and then a shift from thirds to P4's and P5's as the principal consonant intervals for *Sun-treader* and *Evocations* along with the emergence of the tritone as a dominant interval. *Organum* retains the emphasis on m2's and tritones but reintroduces thirds as the main consonant intervals, although the use of P4/P5 is significant, especially as a harmonic interval.

Table 11 (Example 30): Men & Mountains, II, *Lilies*, upper line, mm. 1-19.

<table>
<thead>
<tr>
<th>Interval</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
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<tbody>
<tr>
<td>Frequency</td>
<td>5</td>
<td>16</td>
<td>19</td>
<td>15</td>
<td>9</td>
<td>9</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Percentage</td>
<td>6.2</td>
<td>19.8</td>
<td>23.5</td>
<td>18.5</td>
<td>11.1</td>
<td>11.1</td>
<td>4.9</td>
<td>3.7</td>
<td>0</td>
<td>0</td>
<td>1.2</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Table 12 (Example 31): Vox Clamans..., III, A Clear Midnight, vocal line.

<table>
<thead>
<tr>
<th>Interval</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12...</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>6</td>
<td>11</td>
<td>10</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Percentage</td>
<td>13</td>
<td>23.9</td>
<td>21.7</td>
<td>10.9</td>
<td>8.7</td>
<td>6.5</td>
<td>8.7</td>
<td>0</td>
<td>4.4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2.2</td>
</tr>
</tbody>
</table>

Table 13 (Example 32): Toys, vocal line.

<table>
<thead>
<tr>
<th>Interval</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>6</td>
<td>8</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Percentage</td>
<td>14.7</td>
<td>19.5</td>
<td>12.2</td>
<td>7.3</td>
<td>2.4</td>
<td>7.3</td>
<td>2.4</td>
<td>2.4</td>
<td>7.3</td>
<td>9.8</td>
<td>7.3</td>
<td>0</td>
<td>7.3</td>
</tr>
</tbody>
</table>

Stepwise motion dominates the interval content in all but Lilacs (Table 11) which emphasizes thirds. Half and whole steps combined make up 35-45% of intervals in the selected examples and tables. Skips, perhaps surprisingly, are often consonant. Toys includes 34% consonant skips and 32% dissonant skips, and Sun-treader breaks down to 24.2% consonant and 28.3% dissonant, but this relative parity between types of leaps is outside Ruggles' usual practice. All other selections maintain between 40-65% consonant leaps versus only 6-20% dissonant leaps. Although a group of notes may make a chromatic collection or some other atonal construction, adjacencies are made through mostly consonant intervals. The relationship to traditional linear controls is again apparent. Sixteenth century counterpoint is predominantly conjunct and leaps are consonant and balanced by stepwise motion after a skip or skip group. The same is largely true of Ruggles’ lines, although Ruggles ignores the rule for opposite stepwise motion around skips in favor of larger balancing motions which can include skips in the opposite direction around leaps and greater and freer use of skip groups. The concentration of consonance or stepwise motion between adjacencies obeys the rules of species counterpoint although the resultant
sound is not traditional. Atonality is achieved within these guidelines by creating non-tonal collections within the line and ignoring tonal expectations. Thus a sequence consisting of a M3 up, M2 down, m2 down and a M2 down may consist of a series of allowable intervals but the outcome is an atonal chromatic collection. Even though Ruggles' output is mostly instrumental, the abundance of consonant intervals, stepwise motion and controlled use of large and dissonant intervals makes all of his lines, but for the range, "singable". This along with the restrictions on too much motion in any one direction reinforces the connection between the mostly vocal counterpoint of the Renaissance.

According to conventional rules and aesthetics, Ruggles' contrapuntal lines are well-shaped, goal-oriented melodies exhibiting moderation and balance in shape and interval choice. This does not explain the dramatic, expressionistic drive of these lines. Although the rules are traditional, the resultant sound is not. Within constraints of line Ruggles exaggerates gestures. A line will continue past a reasonable turning point, then finally turn steeply. The graph of such a gesture may look moderate and sedate, but the listener is taken on a roller coaster ride through register and dynamic which makes a strong, modern statement despite the traditional basis of the music.

D. Pitch Content

Ruggles' method of pitch selection in the unfolding of a line is the most well-known, documented and discussed aspect of his music. In the first serious article on Ruggles appearing in the October 1932 Musical Quarterly, Charles Seeger describes this method:

"The determining feature or principle of the melodic line is that of non-repetition of tone (either the same tone or any octave of it) until the tenth progression."²

In other words, Ruggles rarely repeats a pitch class within a line before a sizeable number of
other pitch classes have intervened. The number of pitches between repetitions varies, but 8–10 pitches is the most usual amount. Smaller and larger collections up to the complete chromatic scale also occur. This procedure has been referred to by all subsequent writers on Ruggles. Steven Gilbert has labelled the process Ruggles’ "Twelve-Tone System"\(^3\), but there are too many exceptions and personalized choices to call it a "System" which implies the more rigorous controls of serialist techniques.

The pitch class succession of the canon theme from \textit{Organum} (Ex. 33) demonstrates the above approach to construction and pitch selection.

\textbf{Example 33: Organum, canon theme, mm 5–15.}

This sequence can be segmented into the following 6 sets (Ex. 34).

\textbf{Example 34: Organum, canon theme–segmented.}

Set A: 8,9,1,0,6,5,11,2,4,10

Set B: 8,3,9,7,1,0,6,5,4,11

Set C: 3,8,7,9,10,1,2,5,0,6,4,11

Set D: 9,2,1,7,5,8,6,10

Set E: 9,0,11,2,1,4,3,8,7,6

Set F: 11,2,1,4,3,8,7,6
These sets are not derived from one base set as in twelve-tone serialism, but they are related. Set F consists of the last 8 pitches of Set E and is a cadential repetition. Set A and B begin on the same pitch. The [8, 9, 1, 0, 6, 11] sequence of Set A also occurs in Set B with interruptions by new pitches between [8–9], [9–1] and [5–11](Ex. 35).

Example 35: Organum, mm. 5–9.

Set A: 8 – 9 – 1–0–6–5 – 11
Set B: 8–3–9–7–1–0–6–5–4–11

Set C relates to Set B through re-ordering. The subset [8, 3, 9, 7] in B becomes [3, 8, 7, 9] in C and [0, 6, 5, 4, 11] becomes [5, 0, 6, 4, 11]. Pitch class 1 which bridges the two four note subsets in B is surrounded by the new pitches 10 and 2 and the whole segment forms a 12 note set. Set D is a new unrelated set which provides the framework for Set E. The sequence [9, 2, 1, 7] at the beginning of D around which E inserts new notes in a similar process as occurred between A and B. Sets A–E contain the subset [1, 6, 8, 9], but this cell is not used in a readily identifiable form as to unite all sets. The sets are related to motivic development. One set creates the parameters for the next by providing a sequential framework or invariant subsets as the foundation of the next set.

The process continues in the sequence in measures 16–23 (Ex. 36) which can be parsed as in example 37.
Example 36: Organum, mm. 16–23.

Example 37: Organum, mm. 16–23, segmented.

Set G: 6,5,1,2,11,9,10
Set H: 6,7,8,3,4,5,11,0,9,10
Set I: 6,7,3,8,2,5,4,11
Set J: 0,1,10,9,7,8 (x3)
Set K: 6,5,11

Sets G and H begin on the same pitch and share the subset [11,9,10]. The subset [7,8,3] of H is a version of the prime form 3–4 as is [6,5,1] of G. The subset [6,7,8,3] in set H is re-ordered as [6,7,3,8] in I. Pitch class 2 is new to I but [5,4,11] are shared by both sets. Set J is a new set based on the semitone relations found between segments in the previous sets. Set J is repeated three times as a cadential formula. The final three pitches are another form of 3–4.

Both sections examined are complete phrases which follow similar techniques of relating one set to the next. The beginning or end of a set coincides with a beginning or end of a phrase. Ruggles treats each phrase as a possibility for development. The first set becomes the basis for a subsequent set which engenders the next and so on. When repetition of an entire set occurs there is rhythmic or inversional variation as discussed in Analysis One.

The succession of sets is similar in both examples (35 & 37). Both begin with a set that
provides the pitch source for a number of the following sets. At some point the series breaks and a set or subset is repeated until a cadence point. Repetition of sets at cadences is found throughout. The cadential area between the retrograde section (mm. 34-48) and the three part canon (mm. 50-56) repeats the set \([5,6,0,1,9,8]\) a total of four times in measures 48-51: first as the end of the retrograde section, second as cadential material, third as the leader of a canon and last in the canonic voice. In this and other cases the repetition provides stability for areas of arrival and departure.

The following pitch sequence from the leading voice of the triple canon (Ex. 38) use longer pitch collections.

**Example 38: Organum, mm. 50-62.**

\[
\begin{align*}
5 &- 6 - 2 - 1 - 9 - 8 - 3 - 7 - 0 - 4 - 11 - 10 - 2 - 1 - 5 - 6 - 7 - 8 - 9 - 4 - 10 - 11 - 0 - 3 - 1 - 6 - 5 - 2 - 8 - 7 - 10 - 4 - 3 - 9 - 0 - 11 - 5 - 6 - 1 - 7 - 2 - 3 - 10 - 4 - 9 - 0 - 5 - 8 - 11
\end{align*}
\]

In this example, a pitch from within a section (underlined) of non-repetition becomes the beginning (in boldface) of a new set forming the following segments (Ex. 39).

**Example 39: Organum, mm. 50-62- segmented.**

\[
\begin{align*}
\text{Set L: } & [5,6,0,1,9,8,3,7] & \quad & \text{Set M: } [0,4,11,10,2,1,5,6,8,9] \\
\text{Set N: } & [4,10,11,0,3,1,6,5,2,8] & \quad & \text{Set O: } [10,4,3,9,0,11,5,6,1,7,2] \\
\text{Set P: } & [3,10,4,9,0,5,8,11]
\end{align*}
\]

As in previous set successions, one set is the basis for the next. Sets L and M share a \([5-6]\) sequence and M reorders the 9-8 sequence of L. The first four pitches of M are a reordering of the first four of M and the subset \([2,1,5,6]\) in M is reordered as \([1,6,5,2]\) in N. [4-10] and
of \( N \) becomes \([10-4] \) and \([0-11] \). \([1,6,5,2] \) appears reordered in \( O \) with the introduction of \([7] \). The first seven pitches of \( O \) make up the collection of \( P \) with addition of \([8] \).

As in his rhythmic and canonic manipulations Ruggles alters and builds on previous collections. A set idea is developed such that the similarities between adjacent sets are clear, but sets viewed out of sequence have fewer obvious connections. Thus \( M \) and \( N \) have clear pitch and sequence overlap, but the relationship between \( M \) and \( P \) is more subtle. Between each set, the relationships discussed are made through ordering not intervallic construction. A subset within one set becomes the basis for the next through the use of the same pitch classes either reordered or presented with new intervening members. Also unifying the sets is the saturation of IC1 (Interval Class 1 = half step) within each string of non-repetition. Each set contains half step related pitches as adjacencies such as \([5-6], [0-1] \) and \([9-8] \) as in \( L \), whereas others modify this construction by interlocking half step related pitches (e.g. \([6-1-7-2] \) in \( O \)) or bounding an IC1 by a half step on either side (e.g. \([1-6-5-2] \) in \( N \)).

Non-repetition in a line is a staple of Ruggles' style and can be found to some extent in all works. The process became more refined as his career developed. In Toys, Vox Clamans and Angels pitch repetitions occur after five or six notes. Beginning with Men & Mountains the average rises to eight to ten notes and that remains the norm for the rest of his pieces. The interconnection of sets does not become significant in his music until Sun-treader and Evocations, both of which use the same technique of 'set development' found in Organum. Chart 2 shows a different method of set interaction found in the principal voice of a canonic section from Sun-treader.
Chart 1 (Example 40): Sun-treader, mm. 20-31

Set Q: [9,10,7,6,8,5,3,4,2,1,0,11]

Set R: [10,9,8,7,6,3,2,1,0,11]

Set S: [9,6,7,4,3,5,2,1,0,11]

Set T: [8,9,10,6,7,5,4,0,11,2,1]

Set U: [8,9,3,10,4,5,0,11,2,1]

In this case each set bears some similarity to all other sets. Set Q is a complete 12 note set and subsequent sets are variants of its construction. Q can be subdivided into three chromatic sections: subset a-[6,7,8,9,10], subset b-[3,4,5] and subset c-[11,0,1,2]. In all but U, members of a come before any members of b. Any member of b comes before any member of c in all sets. After Q each subsequent set puts different emphasis on particular subsets. R contains all of a but only one member of b. Sets S and U contain all of b and only three members of a with nine being invariant between the two sets. Q may be seen as the source set for the entire passage. The pitch content for each section within a set is defined by the original ordering. The result is a form of 'set variation'. Instead of building from the previous set to produce a continually changing set identity as in 'set development', 'set variation' consists of a series of sets, each presenting a unique version of one basic idea (in this case set Q). Also important in this example is the use of IC1 between adjacencies and interlocking four note sets found in example 39.
Another example of 'set variation' can be found in the second movement of *Evocations* (Ex. 41).

**Chart 2 (Example 41): Evocations, II, set development mm. 1–8.**

Set V: \([2,3,9,4,10,11,0,7,8,6,5]\)

Set W: \([2,3,9,4,11,10,1,7,8,0,5,6]\)

Set X: \([9,3,2,4,10,11,1,0,7,6,8,5]\)

This example is unusual for Ruggles in its use of adjacent twelve note sets. Each set divides into three invariant subsets: \(\mathfrak{d}=[2,3,9], \mathfrak{e}=[10,11,1,4] \text{ and } \mathfrak{f}=[5,6,7,8,0]\). All members of \(\mathfrak{d}\) occur before members of \(\mathfrak{e}\) which precede \(\mathfrak{f}\). \([3], [4], \text{ and } [1]\) hold invariable positions within each row. The subsets are related intervalically. Subset \(\mathfrak{d}\) consists of a m2 \([2–3]\), a tritone \([3–9]\) and a P5 \([2–9]\) which can be reduced to the prime form \([0,1,6]\). The other subsets contain the same construction: \([10,11,4]\) in \(\mathfrak{e}\) and \([5,6,0]\) each of which contain a m2, a P4/5 and a tritone.

In his article on Ruggles' twelve tone system, Stephen Gilbert analyzes all of the *Evocations* and finds this trichord (set 3–5 in Forte's set theory terminology) to be the unifying pitch collection for the entire piece just as \([0,1,5]\) was found to be a unifying collection in example 37.

*Sun-treader, Evocations* and *Organum* make extensive use of sophisticated techniques of set development and variation, but the small scale binding force among all of Ruggles' music is
intervallic unity. Each piece has its own identity and unifying forces, but the trichords 3–5 and 3–1 (the perfect fourth tritone construction and chromatic segments) show up with surprising regularity in all of his lines. In *Organum*, for example, 3–5 in some order or inversion occurs eight times in the first twelve measures (Ex. 42).

Example 42: *Organum*, principal upper voice, mm. 1–12.

The different representatives of the set overlap and are not presented as a direct motivic idea, but the intervallic construction remains the same and provides background unity to the line through the emphasis of the intervals contained in the set.

The recurrence of 3–5 and chromatic sets are to be expected in *Organum*, *Evocations* and *Sun-treader* all of which make extensive use of the IC1, IC6 and IC5, but the sets are used often in earlier works in which thirds predominate and IC1's share importance with IC2's. The following maps of the vocal line from the first two movements of *Vox Clamans In Deserto* show a unifying recurrence of chromatic sets of three or more members, marked "x", and 3–5 (Ex. 43).
Example 43: Vox Clamens, I-II, vocal line pitch sequence.

Mvt. I:

\[ \begin{array}{c}
\hline\hline
\hline
\hline
\hline
\end{array} \]

4-3-0-11-5-7-3-1-0-10-11-2-9-8-5-4-3-6-7-8-9-6-2-5-1-8-3-2-5-6-7-10

\[ \begin{array}{c}
\hline\hline
\hline
\hline
\hline
\end{array} \]

Mvt. II

\[ \begin{array}{c}
\hline\hline
\hline
\hline
\hline
\end{array} \]

10-11-7-4-5-6-1-2-3-1-8-9-4-10-5-6-9-0-6-5-2-7-3-0-5-10-11-6-4-7-3-9

\[ \begin{array}{c}
\hline\hline
\hline
\hline
\hline
\end{array} \]

The emphasis on these sets is surprising considering movement by M2 and thirds takes place at 62% of all adjacencies.

Ruggles' pitch selection for lines is based on the intervallic content of certain pitch aggregates, most notably [0,1,6] and chromatic sets. These intervallic cells are used within a framework of non-repetition of pitches until a reasonable amount of notes have intervened, usually eight to ten. The use of sets emphasizing IC1 and IC6 and non-repetition of pitch classes are Ruggles' efforts at his own brand of atonality. Through non-repetition and a saturation of tonally dissonant intervals, Ruggles does not direct the line toward a tonal center. Tonal centers
are created through a sense of tension in dissonance compared to resolve in consonance. If the overall fabric is dissonance resolving to another dissonance or to a non-functional consonance, a tonal framework cannot be imposed by a listener. Centers can also be created by simply referring to a pitch often enough that the listener perceives that pitch as a unifying element.

Ruggles' use of non-repetition is also based on his linear aesthetic. According to Charles Seeger, Ruggles did not consciously pursue this technique in any systemized way. He felt that a repeated tone destroyed the freedom of an atonal line by adding too much weight to one pitch. When analyzing a line he considered inadequate, Ruggles usually pointed out places where "false repetition" destroyed the effectiveness of the line. He considered this a historical principal and would describe good and bad lines in tonal music according to poorly placed repetitions within a tonal context.

Despite his desire to avoid tonality, Ruggles never embraced the 12-tone techniques of Schoenberg and later composers. Apparently he felt the continual presentation of all twelve pitches was at the same time too repetitious, too chaotic and too limiting a technique for aural perception. He tried to use the same ideals of linear design he admired in Bach and Handel within a new musical vocabulary. The absence of a pitch generating system may explain the brevity of his compositions (the longest, Sun-treader, being 20 minutes) and the peculiarity of his output (nine published works). He attempted to create new music with a modern vocabulary which stayed within the guidelines of traditional forms and principals of linear design. He relied only on training and musical instincts in this endeavor, and perhaps the lack of either tonal or 12-tone pitch generation made output difficult as he continually refined each line of music to meet his ideal.

E. Summary of Linear Design Principles

1. Shape: Arched shapes balancing upward and downward motion around unique high points.
On the note to note level, a line moves on average only three or four pitches in one direction before moving in the opposite direction. These segments connect to form arched shapes which, in turn, interconnect with other arches. These follow an overall ascending gesture to a unique high point followed by connecting arches moving slowly down. Cadential points at the end of pieces make an exception to the balance of direction. Towards the end of a piece the highest voice rises quickly to cadence on a relatively high pitch.

2. Interval: Ruggles evolved from an earlier style emphasizing intervals somewhat equally with a preponderance of thirds to a later predominate use of 1C1, 1C6 and 1C5. Intervals within a sixth occur most often but wider leaps are frequent, especially inversions (M7’s) and compounds (m9) of m2’s.

3. Pitch: Pitch classes are not repeated until a sufficient number, eight to ten on average, have intervened. Lines often consist of transpositions and inversions of small sets emphasizing particular intervals which provide a background unity to the line. In all his music the set [0, 1, 6] and chromatic collections occur frequently, often providing the framework for an entire piece.

Notes:


4. Ibid.

6. Ibid., p. 585.
V - Analysis 3: Vertical Structures

A. Introduction

Most vertical sonorities in Ruggles' music result from the interaction of independent or canonic lines. The different voices in Angels (Ex. 1), for example, are all independent lines presenting their own version and development of a three note motive consisting of a leap up and a step down. The harmonies are a product of the union of these lines.

Example 1: Angels, mm. 1-8.

The vertical sonorities in this and other examples are not transpositions or inversions of the same or a few structural harmonies as is often the case in the music of Schoenberg. If four of the five note chords in the above example are compared by interval vector, no significant relationships are discovered (Ex. 2).
Example 2: Angels, mm. 1–8, comparison of interval vectors.

\[
\begin{array}{c}
\text{Set:} & 5-25 & 5-21 & 5-20 & 5-30 \\
\text{Interval Vector} & <1,2,3,1,2,17,<2,0,2,4,2,0,<2,1,1,2,3,1,#12,1,3,2,1> \\
\end{array}
\]

This makes a standard application of Forte set theory unfruitful. Set theory depends on relationships of horizontal and vertical structures which help to unify a piece. Ruggles' music does not operate under those conditions. The above sonorities are related through specific interval nct larger pitch collections. A cursory examination of these structures show each contain IC1. It is the emphasis on IC1 which provides unity to the harmonic domain. This idea will be developed after further discussion of the contrapuntal construction of verticalities.

In the triple canon (mm. 50–62) from Organum simultaneities derive from the entrance of the canonic voices (Ex. 3).

Example 3: Organum, 50–53.
Vertical structures also arise from the retention of a pitch within a line through subsequent pitches as in measures 9–10 of Organum (Ex. 4)

Example 4: Organum, mm. 9–10.

In the example the two upper voices converge on the $e^b$ which is held while the top voice continues. When bass reaches a $c^\flat$, the instruments on the lower part become divisi for the subsequent $c$ and then return to a unison for the $f^\#$. This method of sounding and holding pitches within a line is Ruggles' preferred method of forming thick sonorities of more than three or four different pitch classes as in measures 15–16 (Ex. 5).

Example 5: Organum, mm. 15–16.
On the last beat of fifteen, the high e♭ held over from the previous beat is tied across to the sonority on the downbeat of sixteen. Similarly, the a and e♭ in the middle and the c in the bass are introduced and held through to the same sonority. The result is chord of six pitches, three of which had been previously sounded. The large sonority in measure 62 before the return of the opening material is constructed in the same fashion (Ex. 6). In the example, the bass motion has both melodic and harmonic function.

Example 6: Organum, mm. 61–62.

Subsidiary lines based on a principal voice are often introduced for short periods of time to complement a principal line with a series of consecutive m2's. This process often takes the form of voice exchange sequences (Exs. 7 & 8).

Example 7: Organum, m. 22.

Example 8: Organum, m. 39.

In both examples a descending chromatic line moves against a jagged line forming a series of M7's and m9's. This process may be a refinement of an earlier practice found in Vox Clamans... and
other early works in which a line is more directly tracked at the m2 or its compound or inversion.

In mm. 9–10 of, _Vox Clamans, I, Parting at Morning_, the clarinet moves in parallel motion and in voice exchange sequences to form a series of M7's and m9's.

**Example 9: Vox Clamans in Deserto, I, Parting at Morning, mm. 9–10.**

Vertical sonorities also occur simply as block chords (Ex. 10).

**Example 10: Organum, mm. 76–78.**

B. **Vertical Structures in Organum**

*Organum* contains 417 vertical combinations formed through the techniques discussed above. Each combination falls into one of 59 sets. The sets contain two to six members. Table 1 (Ex. 11) shows the frequency and percentage of total structures each sets size contains.
Table 1 (Example 11): *Organum*, amount of use and frequency of various sized sets.

<table>
<thead>
<tr>
<th>Members in Set</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>110</td>
<td>188</td>
<td>96</td>
<td>15</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Percentage</td>
<td>26.4%</td>
<td>45.1%</td>
<td>23.0%</td>
<td>3.6%</td>
<td>1.7%</td>
<td>.2%</td>
</tr>
</tbody>
</table>

Two note sets occur at the beginning of sections as individual voices enter. Three note sets are the standard size set for measures between structural points in the music, i.e. cadences, high points, linking material. Four and five note sets are found towards the end of sections as the texture begins to thicken towards cadences, and six note sets are found only at cadential areas. The one seven note set is found at the large held chord in measures 62–62A.

The density of the texture mirrors the rise and fall of the individual lines. In the opening twenty measures, for example, the line is first accompanied by the opening g♯ held through subsequent pitches. When the comes voice of the canon enters (m. 7), a new accompanimental voice consisting of held pitches from one of the lines and unrelated pitches thickens the texture to trichords. At the first high point area (refer to Graph 1, p. 30) of the canon dux (mm. 8–10), four note vertical sets appear. The line falls to a median point (m. 12) which is accompanied by a thinning of the texture back to diads. By the second high point area (mm. 15–17), the texture contains five and six note verticals. As the principal line falls away from this area, the texture returns to trichords. The passage in measures 34–47 (refer to Graph 2, p. 31) is similarly constructed. The principal constructions are trichords with larger sets generally occurring around high points in the highest voice (mm. 39–40 and 44–46). In this way the dramatic effect of high points is strengthened through a thicker texture.

All two note sets possible are used. The following table (Table 2) shows frequency of
interval types and the percentage of use compared to all two note sets. Intervals are remed to the smallest possible inversion, i.e. P5's are counted as P4's (1C5), m6's as M3's (1C4) and so on.

Table 2 (Example 12): Organum, two note sets.

<table>
<thead>
<tr>
<th>Interval</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>19</td>
<td>9</td>
<td>22</td>
<td>28</td>
<td>20</td>
<td>12</td>
</tr>
<tr>
<td>Percentage</td>
<td>17.3%</td>
<td>8.2%</td>
<td>20%</td>
<td>25.4%</td>
<td>18.2%</td>
<td>10.9%</td>
</tr>
</tbody>
</table>

Consonant intervals (including the P4) occur at over 60% of all two note verticalities. As in the horizontal intervals between adjacencies, the majority of individual diads are consonant. In this case atonality is achieved not through an emphasis on dissonant intervals but through tonally unrelated pitches within each line and between the lines. Measures 50-52 illustrate this.

Example 13: Organum, mm. 50-52.

In this passage small scale tonal inferences are possible. Measure 50 may be viewed as being in the key of F♯ major with a leading tone to dominant. The e-g♯-d♯ could conceivably be part of some "A" tonality with an inflected dominant. But such conclusions are tenuous at best and ultimately futile. Although the lines meet at only seven points of harmonic dissonance and some diatonic material can be found, there are no pitch centers, and the lines cannot be lined up to agree
with any extension of the tonal system. This passage is atonal through the avoidance of pitch emphasis, but consonant within that framework.

Trichords are the most frequent harmonic structure. Table 3 lists the possible constructions, frequency and percentage of use of all trichords. These are listed in their prime form or smallest possible formation and transposed to base 0 as presented in Allen Forte's set theory. The set name is assigned according to the complexity of the set. A chromatic cluster (0,1,2) is the simplest construction therefore it is labelled 3 (for the number of members in the set) − 1 (as the most direct construction for this size set).

Table 3 (Example 14): Organum, trichords.

<table>
<thead>
<tr>
<th>Set Name</th>
<th>3-1</th>
<th>3-2</th>
<th>3-3</th>
<th>3-4</th>
<th>3-5</th>
<th>3-6</th>
<th>3-7</th>
<th>3-8</th>
<th>3-9</th>
<th>3-10</th>
<th>3-11</th>
<th>3-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC Content</td>
<td>012</td>
<td>013</td>
<td>014</td>
<td>015</td>
<td>016</td>
<td>024</td>
<td>025</td>
<td>026</td>
<td>027</td>
<td>036</td>
<td>037</td>
<td>048</td>
</tr>
<tr>
<td>Frequency</td>
<td>10</td>
<td>13</td>
<td>24</td>
<td>28</td>
<td>22</td>
<td>7</td>
<td>18</td>
<td>20</td>
<td>10</td>
<td>16</td>
<td>18</td>
<td>2</td>
</tr>
<tr>
<td>Percentage</td>
<td>5.3</td>
<td>6.9</td>
<td>12.7</td>
<td>14.9</td>
<td>11.7</td>
<td>3.7</td>
<td>9.6</td>
<td>10.6</td>
<td>5.3</td>
<td>8.5</td>
<td>9.6</td>
<td>1.1</td>
</tr>
</tbody>
</table>

The three note sets 3-3, 3-4 and 3-5 recur throughout. They are related through the semitone which colours 51.5% of all trichords. These sets can appear as isolated events within the texture or as streams of sets the majority of which feature the half step. Measures 41–42 consist of trichords with all but one containing a m2 (Example 15).

Example 15: Organum, mm. 41–42
In contrast other sections are relatively free of the harsh dissonance of the m2. Measures 53-54 feature a mix of the dissonant trichords containing half steps and more consonant chords based on thirds or whole steps (Example 16).

**Example 16: Organum, mm. 53-54.**

![Musical notation](image)

Although any particular sonority can and does occur at any point within the texture, verticals are often grouped around similarly structured sets. Sets based on thirds often occur near other sets emphasizing thirds; sets including halfsteps or tritones with other like sets. This results in small scale homogeneity of sound and movement between relatively dissonant areas making greater use of tritones and m2's and relatively consonant areas emphasizing thirds and perfect intervals. Despite these groupings there seems to be no intentional build up and release of dissonance along the lines of traditional tonal constructions. For example, the harmonies in measures 34-47 (the retrograde section) begin dissonant with a 3-5, proceed to consonant constructions including major and minor triads by mm. 37-38, during the rise of the principal line to a high point. Four note sets accompany the high point (m. 38-39), followed by the string of dissonant structures examined in example 14. The texture is consonant as the line rises to a second high point in measure 44, and the section ends with a six note sonority in measure 47. A traditional tonal pattern may have emphasized greater dissonance before the cadential resolution and begun consonantly. Clearly the relative consonance and dissonance of areas is not treated
traditionally. It appears that these areas provide small scale unity through similarity of structure and do not imply motion between dissonance (tension) and release (consonance). The effect of tension and release are effected by the adding of lines at structural areas and subtraction of voices during areas of relative stability.

Twenty-six of twenty-nine possible four note sets are used in Organum. Only seven of these are used consistently. Table 4 lists the frequency of these sets which make up 56% of the 96 occurrences of four note structures.

**Table 4 (Example 17): Organum, most used tetrachords.**

<table>
<thead>
<tr>
<th>Set Name</th>
<th>4-13</th>
<th>4z29</th>
<th>4z15</th>
<th>4-18</th>
<th>4-19</th>
<th>4-8</th>
<th>4-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC Content</td>
<td>0136</td>
<td>0137</td>
<td>0146</td>
<td>0147</td>
<td>0148</td>
<td>0156</td>
<td>0157</td>
</tr>
<tr>
<td>Frequency</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>14</td>
<td>8</td>
</tr>
</tbody>
</table>

These sets are all related directly or through inversion to the three principal trichords from Table 3: 3-3, 3-4, 3-5 and the triadic sets 3-10 and 3-11 as seen in example 18.

**Example 18: Organum, three and four note set relationships.**

<table>
<thead>
<tr>
<th>Set:</th>
<th>0136</th>
<th>0137</th>
<th>0146</th>
<th>0147</th>
<th>0148</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsets:</td>
<td>016 036</td>
<td>016 037</td>
<td>014 016</td>
<td>014 016</td>
<td>014 015</td>
</tr>
<tr>
<td></td>
<td>701 801</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Set:</th>
<th>0156</th>
<th>0157</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsets:</td>
<td>015 016 016</td>
<td>015 016</td>
</tr>
<tr>
<td></td>
<td>550 701</td>
<td></td>
</tr>
</tbody>
</table>

Five and six note collections occur less frequently. Of these larger sets, only 5-6 and
6–30 appear more than twice. Both sets break down to the predominant trichord subsets from table three (Example 19).

Example 19: Subsets of larger collections.

Set: 5–6: 01256 6–30: 013679

Subsets: 3–3 3–4 3–5 3–3 3–5
         125 015 016
         126 560
         367 016
         901 670
         701  

C. Tertian Structures

As well as the previously named principal trichords, Ruggles makes extensive use of traditional sonorities of stacked thirds. These are the trichords 3–10, 3–11 and 3–12 better known as the diminished, major/minor and augmented triads. Measure 53, for example results in a surprising number of triadic structures presented both vertically and horizontally (Ex. 20).

Example 20: Organum, m. 53, triads.

It is unusual however for such structures to be presented as block chords. More often triads are the result of held notes from previous sonorities coming in contact with new pitches from another sonority. The B♭7 chord in the example results from the new notes B♭ and A♭ combining with the E♭ held over from the previous two sonorities. Similarly the D major triad arises from
the new notes A and F# coming into contact with the previous D. Both sonorities come and go quickly. They are not presented in a single attack and are in no way emphasized. Triadic structures rarely occur in long series, and never imply a larger tonal structure. Although they are a consistently used structure within his music, triads become simply an equal member of a set of sonorities within an atonal vocabulary.

Vestigally tonal constructions that do occur with emphasis are collections of four or more notes which can be reduced stacked thirds above a specific root, i.e. seventh, ninth, eleventh and thirteenth chords. Such constructions are most often found as held chords at cadence points. There are three held chords in \textit{Organum}, two of which separate the three sections and one final sonority. Each of these chords (Exs. 21–23) can be reduced to stacked thirds above a root.

\textbf{Example 21: Organum, m. 33.}

\textbf{Example 22: Organum, m. 62.}

\textbf{Example 23: Organum, m. 78.}
Interestingly, the lowest pitches of the first chords are both C and the final chord is rooted on G which implies a traditional tonic/dominant relationship. The relationship is extremely tenuous, however, given the overall atonal language and the ambiguous nature of such 'tall' chords, but the connection is there, and it is doubtful Ruggles was unaware of its existence. Their use at resting points in the music is likely due to the sense of finality and repose of tertian based chords acquired by listeners through years of tonal listening. It would be unfounded to assume that Ruggles is secretly a tonal composer on the basis of the important positioning of these sonorities. Examples 21 and 22 are of special interest for the inclusion of two forms of the same pitch name. Example 21 can be named a C11 chord in traditional or jazz harmony which includes both a major and a minor third. In example 21 the "root" chord is Am with major and minor forms of both the ninth and the seventh. The inclusion of semitone related pitches in harmonies is perhaps the most characteristic trait of Ruggles' vertical practice.

D. Interval Class 1 in Vertical Structures

Non-functional triadic structures are of secondary importance to Ruggles' harmonic structure. The harmonic basis for Organum is provided by the three trichords 3-3, 3-4 and 3-5. The unifying element between these sets is ICI. Through the extensive use of these sets and larger sets made up of combinations of these trichords, ICI colors 315 or 75% of the total vertical combinations. Sometimes this interval is formed through strings of voice exchanges as in examples six, seven and eight, but for the most part ICI arises simply from the interaction of the lines. The spelling of the interval is unimportant. ICI can occur as a cross relation or as some version of a m2 depending on what spelling for a particular note makes the most sense within the line and for the instrument. The placement of the interval, however, is handled with care. It is unusual for ICI to occur directly as a m2. Most occurrences are presented as a M7 or m9 or
compounds of those intervals as seen in example 24.

Example 24: Organum, mm. 26–29.

One reason for such voicing may be Ruggles' concern with the individuation of each line. The minor second as a repeated vertical interval becomes a series of clusters and the independent motion of each line becomes harder to distinguish. If for example all voices in example 19 were presented within the octave (Example 25), the result would be a series of tight chords making the motion of the lines impossible to hear.

Example 25: Organum, mm. 26–29 voiced in one octave.

Both the frequent use of clusters found in the music of Cowell, Ives and Bartok, and Ruggles' use of widely spaced pitches related by half step serve to avoid a sense pitch center. The constant reiteration of chromatically constructed verticalities removes any possibility of the listener discerning a single pitch center, but provides a new source of musical unity: the interval class.
The high frequency of IC1 provides a constant frame of reference to the music and the same homogeneity of sound as music based on triadic harmony. The use of IC1 as a harmonic basis is the most consistent feature of all Ruggles' music. The harmonies found in the piano part to Toys, Ruggles' first published piece, is constructed in the same way as those of Organum, his last published work. Measures 3–6 of Toys (Ex. 26) consistently employ IC1 in the form of M7's d/A8's and m9's with some direct clusters. The texture itself is more dense than in Organum and other later works, but the process of positioning a note in one voice against a half step related pitch in another remains the same.

**Example 26: Toys**, piano, mm. 3–6.

![Example 26: Toys](image)

Other examples of the above technique abound. It is no exaggeration to say that any measure in any piece by Ruggles will exhibit this harmonic practice to some extent. As discussed in Chapter IV, IC1 also dominates the horizontal domain as the principal interval between adjacencies and as a structural component of the linear sets 3–1 and 3–5 which permeate the horizontal texture. The constant reference to this interval provides a unifying intervallic structure. The interval is also the basis of Ruggles' atonal style which avoids pitch centers through non-repetition of tone and the abrogation of tonal possibilities of individual notes by chromatically related pitches in another voice.
E. Summary

Although block chords do occur, vertical sonorities are most often formed by the interaction of two or more contrapuntal lines or the suspension of notes within a pitch sequence through subsequent pitches. Trichords make up a majority of the verticals formed in these ways. Sonorities based on traditional triadic structures occur frequently they are not used in such a way as to suggest a tonal framework, but are used freely as simply another sonority among equals. The most important aspect of Ruggles harmonic language is the saturation of IC1 which occurs in over 70% of the sonorities of Organum. This interval is usually spread between voices in different registers, but the effect is the same as a cluster: the cancellation of tonal possibilities.
VI - Summary and Historical Perspective

A. Summary of Style Characteristics

The mature style of Carl Ruggles can be defined as atonal counterpoint in two to four parts. The counterpoint can be either free or imitative. Imitative sections bear strong similarities to traditional structures. The entrances of voices are staggered gradually thickening the texture. At some point the canon is broken and the texture becomes more homophonic until a cadential point is reached. Often one or more independent voice is added in support of the canonic voices.

Stepwise motion prevails, and leaps tend to be consonant according to standard determinations of consonance and dissonance. Motion in one direction is usually restricted to three or four notes in succession with longer strings used at structurally dramatic points within the line. The note-to-note rhythmic shape of a line is constructed with reference to the surrounding texture. New pitches of one line usually occur as other voices are momentarily stationary. The control of simultaneous attacks maintains the independence of each line by allowing every voice to be heard distinctly. Despite the independence of lines, the similarities in construction and shape between voices produces a homogenous texture and sound.

The shape of a line can be described as a series of interlocking arches. These arches usually begin as ascending lines which reach a summit then turn downward to a median point which can begin a new phrase or turn back up for cadence. Arched shapes are exhibited at all levels. Small numbers of notes in one direction are answered with a few notes in the opposite direction. These small arches connect in an overall upward direction which connects with a similarly constructed descending line. The larger arch created by this action connects to another arch which mirrors the small scale construction. A line of an entire piece is itself a large scale arch with unique high and low points made up of a series of interlocking arches. All of the above traits recall the
contrapuntal and linear constraints of sixteenth century counterpoint which feature predominantly stepwise motion within a well-balanced line, rhythmic independence of voices for linear distinction and frequent use of imitation within a polyphonic though homogenous texture.

Traditional musical constructions are also evidenced in Ruggles' choice of forms and the working out of his lines. Generally in his later works Ruggles employs simple ternary forms, with close to literal repetition between the outer sections. The sections are usually delineated by large cadential sonorities followed by a distinct change in texture and dynamic. The end of a "B" section is usually the dramatic climax within a work. Although direct repetition occurs between large section, small scale repetition of motives or phrases is rare. Instead, an idea is used as the basis for a subsequent gesture which in turn is used as a source of the next. The relationships from one form of the idea to the next may be in terms of pitch, interval and/or rhythm, but references are usually altered. If the relationship between one phrase or cell to the next is through pitch, then there will be some variance between the two pitch sets; if through rhythmic progressions the similarities may be relative, such as a long note followed by two shorter notes may be the basis for relating two ideas but the actual rhythmic values may not be equivalent. The continual application of this process results in sections of music consisting of the working out of a motive. The first presentation of that motive may look very different from the ultimate version, but there is a smooth and logical progression connecting the extremes.

The use of classical forms and developmental processes are based on nineteenth century practices. Continual variation and development is the backbone of German Romantic music and is especially important in the styles of Beethoven and Wagner for whom Ruggles held great admiration. Ruggles created a new technique in his last three works through the simultaneous application of sixteenth century imitative counterpoint and developmental procedure. The principal line of a canon is imitated by pitch but the rhythmic shape of the comes is altered to
produce or more independent line. Each line is the working out of one motive and follows the same pitch sequence which together form overlapping versions of one idea, a process which may be described as "overlapping variation".

Another progressive feature of the music is the extreme rhythmic fluidity. Ruggles makes extensive use of mixed meters, syncopation, ties and irregular subdivisions of the beat or group of beats as in four equal notes in three beats. Repeated, pulsating rhythms are rare. This results in a free rhapsodic sound which depends on the shape and energy of the lines rather than pulse to propel the music.

All of the above techniques are used in a purely atonal framework. Ruggles avoided pitch centers through a process of non-repetition. Within the course of a line, a pitch class is usually not repeated until a sizable number, usually eight to ten, have intervened. This method was never systemized and is subject to other considerations in the music. Non-repetition for Ruggles was a historical principle underlying the formation of all great lines and an avenue towards atonality. A pitch cannot gain dominance if it is used more or less as often as any other.

Another factor contributing to atonality are horizontal note collections. IC₁ saturates the horizontal texture often occurring as much as 40% of all interval use in a piece. Although long chromatic scales are infrequent small groups of notes often form an unordered chromatic set. Another common interval especially, in later works is IC₆. Both are highly charged intervals with specific information and resolutions in the tonal system which are used freely thereby cancelling their tonal expectations. The abundance IC₁'s in particular adds unity to the framework of the line. It is interval not tonal hierarchy which provides the structural basis for the listener.

All combinations of up to six or seven notes are possible as vertical structures, but the usual size for a harmony is the trichord. Triadic based harmonies are used often but not in a way which implies tonality. As in the horizontal domain, IC₁ dominates occurring in the majority of all
verticals. This interval usually takes the form of a M7 or m9 to maintain the clarity of the lines. The effect of this interval is to further diffuse the possibility of the listener constructing a tonal scheme. IC1 achieves structural importance as the unifying thread in the succession of notes in a line and its interaction with other lines producing secundal harmony.

Although audiences and critics tended to react to Ruggles as if he had completely broken from all previous conceptions of music, his musical roots are remarkably conservative. It is as if he studied counterpoint and never forgot any of the rules. His methods of working out musical passages are highly reminiscent of the techniques used and refined in the music of Beethoven and Wagner. It is only his consistent use of 'dissonant' counterpoint which makes a clean break from the past.

Some of the traits listed above have been observed and discussed by other authors. Steven Gilbert has treated the subject vertical and horizontal trichords in a number of articles (see bibliography). Ruggles' method of non-repetition of pitch within a line has come up in all analytical papers of his music. This thesis is singular in drawing together these ideas and placing them in the context of Ruggles' linear and contrapuntal techniques.

B. Historical Perspective

Ruggles was an active member in that part of American musical life which centered around composers such as Ives, Cowell, Varèse, Ruth and Charles Seeger and others involved in the International Composers Guild and the New Music editions, but his music has little in common with these other composers. He was from the same time and heritage as Ives and had a similar transcendentalist based philosophic paradigm, but his music reveals none of the "Yankee" spirit found in Ives and to a lesser extent Cowell. He did not experiment in new sound resources or make major contributions to new music theory or pitch producing systems.

Although he originated from a different musical world, Ruggles' sound bears the most
resemblance to that of the Second Viennese composers: Schoenberg, Berg and Webern. These composers also made great use of traditional contrapuntal methods, motivic development and atonal harmony. Although they often wrote for unusual combinations of instruments they did not experiment in new sound production. Like Ruggles they emphasized IC1 and IC6 both for their atonal effect and as unifying forces of the music. There are differences, however, Schoenberg made use of the technique of presenting structures both vertically and horizontally often simultaneously. Although certain PC sets do occur in both domains, most notably 3−1 and 3−5, the similarities are more hidden providing a unity of sound rather than direct pitch or larger constructional references. Most importantly Ruggles remained with his own brand of atonality after Schoenberg introduced and disseminated twelve-tone procedures. The twelve-tone system freed Schoenberg from the problems of pitch generation outside of tonality, and he began to compose larger works after he adopted the system compared to the shorter works from his freely atonal period. Ruggles, too, may have had problems with putting down notes if the size of his opus is any indication, but he preferred his own style and was more successful at producing large, freely atonal works in one continual movement than Schoenberg. The similarities between Ruggles and the Second Viennese composers indicate a common musical heritage. Ruggles developed in Boston musical life which was dominated by German musicians and a German musical aesthetic. It is only natural that some of the traits of late German Romanticism (m motivic development, exploration of extremes of dynamic, register and gesture) and German music teaching emphasizing counterpoint should influence his style, just as Schoenberg considered his music a direct and logical result of the nineteenth century.

Ruggles contributed at one work, Sun-treader, which has become a part of twentieth century standard orchestral repertoire, and Evocations has also received some attention from pianists, but to a large extent he has become a secondary figure in American music. Most of the
existing body of work on Ruggles was researched in the 1960's and 70's, probably as a result of interest flowing over from Charles Ives who was "discovered" around the same time. His music, however, may deserve more attention. Ruggles offers a body of work which explores contrapuntal, linear and atonal possibilities not present in other major composers. This makes him of interest to performers, composers and theorists interested in unexplored atonal literature.
VII - A Ruggles Bibliography

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