# A Study of Harmonic Interrelationships and Sonority Types in Carl Ruggles' *Angels*

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> To Carl Ruggles, there are not different kinds of Beauty: there is only one kind, and that he prefers to call the "Sublime".[1]

For ninety-five years Carl Ruggles searched for the sublime: that which is noble, exalted, awe inspiring. Considering the fact that he left fewer than ten completed works, the "sublime" must be a most elusive creature -- at least for Ruggles. He revised his works constantly and destroyed many of his manuscripts late in his life. Angels, itself, has a complicated background. It was originally part of a symphonic work entitled Men and Angels which consisted of three movements: "Men", "Angels" and "Sun-Treader". At the time of its composition in 1921, only "Angels" had been completed, and it enjoyed several performances here and in Europe. Later, Ruggles discarded the Men and Angels project, incorporating the "Men" portion into the three-movement work Men and Mountains. "Sun-Treader" also went on to become an autonomous work, leaving Angels by itself. Originally published in 1925 for six trumpets (including bass trumpet), Ruggles revised Angels in 1938 and published it as a separate work in the April, 1943 edition of New Music, a quarterly of compositions in the ultra-modern idiom. A third published edition appeared in 1960 from American Music Edition.[2] The 1938 revision was written a minor third lower and was scored for four trumpets and three trombones, all muted, or for four violins and three celli. Ruggles, however, had stated that "you can't play

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[1]Charles Seeger, "Carl Ruggles" in Musical Quarterly 18 (October 1932), p. 580.

[2]M. J. Ziffrin, "Angels -- Two Views" in The Music Review 29 (August 1968), p. 185.

Angels on strings on account of the different speeds of vibrato; string players have too wide a vibrato; you can't hear the intervals."[3] The 1960 edition, therefore, was strictly for muted brass.

The two salient features of Ruggles' style, according to most sources, are non-repetition of tones, and dissonant counterpoint. The first of these consists of melodic constructions in which no pitch class (pc) is to be repeated until eight to ten different pitch classes (pc's) have sounded.[4] As Perle puts it, "Ruggles employs a fairly constant circulation of all the notes of the semi-tonal scale."[5] Perle does not mention, however, that repetition is often used at the beginning or conclusion of a phrase as a means of formal or cadential articulation.[6] This implies that harmonic structures also tend to sound as many different pc's as possible before repeating any.

Ruggles' counterpoint is often referred to as "dissonant" because of its predilection for minor seconds and major sevenths, or interval class (ic) 1.[7] (From here on, interval class designations will be employed when referring to intervals.) Thomson describes Ruggles' method as "non-differentiated, secundal counterpoint." By non-differentiated he means that all voices resemble one another in character and shape, and by secundal that the intervals present at nodal points are predominantly seconds and sevenths[8] (ic1 and ic2).

In examining Angels, the characteristic of dissonant counterpoint is clearly in evidence. Ic1 is present somewhere at all times throughout the work with the exception of the second half of measure 8 and measure 38, where a whole tone sonority (pc set [02468]) occurs. (A more extended discussion of sonority types in Angels will follow.) However, the principle of non-repetition of pc's is not applied melodically or harmonically. The second trumpet at

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[3]Eric Salzman, "Carl Ruggles: A Lifetime is Not Too Long to Search for the Sublime" in Hifi/Stereo Review 17 (September 1966), p. 58.

[4]Mellers, Perle, and Seeger all present this rule in one form or another.

[5]George Perle, "Atonality and the Twelve-note System in the United States" in Score 27 (July 1960), p. 56.

[6]Ibid.

[7]Harrison and Shiffrin both refer to "dissonant counterpoint" in Ruggles' music. Harrison defines it by saying that Ruggles' counterpoint is dominated by the minor second (or, minor ninth), and the major seventh. (Lou Harrison, "Carl Ruggles" in Score 12 (June 1955), p. 17.)

[8]Virgil Thomson, American Music Since 1910 (New York: Holt, Rinehart and Winston, 1972), p. 32.

the outset of the work repeats its second pitch ($B^b$) as its fifth pitch, leaving but two different pc's between. In the first trumpet, non-repetition of tones is somewhat more apparent, as it repeats its third pitch (C) as its eighth pitch, with four different pc's intervening. Harmonically speaking, fifteen pitches have been articulated in the five lower parts through measure four, sounding eight different pc's ($A^b$, $B^b$, B, C, D, $D^\#/E^b$, E, G) with seven repetitions. The rule of non-repetition of pc's, therefore, is not systematically applied in Angels. Ruggles states as much: "In Angels I discarded it [non-repetition of pc's]."[9]

The form of Angels has a distinct relation to harmonic progression and frequency of sonority types, thereby meriting some consideration. There exists a variety of descriptions concerning the form, as found in the following table:

Table 1: The Form of Angels

| Measures: | 1-8 | 9-16 | 17-19 | 20-30 | 31-40 | 41-47 |
|---|---|---|---|---|---|---|
| Harman: | A | | | | B | |
| Ostander: | I | II | III | IV | V | VI |
| (themes:) | A | B | trans. | C | A ext. | B ext. |
| Ziffrin: | A | B | | | A' | coda[10] |
| Option A: | A | | | B | A' | |
| Option B: | I | II | | III | IV | V |

(Mellers notes affinities in Angels to classical form and assigns it an ABA (Option A) formula.[11] Harrison also implies a tri-part structure by referring to its central section and recapitulation.[12])

The problem seems to hinge on where to begin the "B" section. Ostrander sidesteps this nicely by assigning each section a Roman numeral. He them labels the thematic material in each section A, B, or C with a transition in III and extensions of A and B in V and VI. For the purposes of this

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[9]John Kirkpatrick, "The Evolution of Carl Ruggles: A Chronicle Largely in His Own Words" in Perspectives of New Music 6 (Spring-Summer 1968), p. 153.

[10]Dave R. Harman, "The Musical Language of Carl Ruggles" in American Music Teacher 25 (December 1976), p. 27; Arthur E. Ostrander, "An Analysis of Five Works of Carl Ruggles", M.M. thesis (Indiana University, 1969), pp. 80-81; and Ziffrin, p. 186.

[11]Wilfrid Mellers, Music in a New Found Land (New York: Stonehill Pub., 1975), p. 67.

[12]Harrison, p. 23.

study, Option B will be employed concerning the interrelationships of the parts; i.e., IV is identical to I but with a two-measure extension, and V is an abbreviated version of the beginning of II. The end of II is also seen as a transition/preview of the beginning of III.

Perle states that "the governing concept [of Ruggles' music] is a pure and supple polyphony of long, expansive, constantly unfolding lines." Vertical and rhythmic elements as well as form and motivic relationships, while strictly controlled, are subservient to this concept.[13] In Angels, the integrity of the six parts is preserved, but the whole is certainly more than the sum of these parts. Virgil Thomson says it in this way:

> Angels . . . is quietly ecstatic from beginning to end, and the angels are not individualized. They are clearly a group, a choir perhaps. I do not even know whether they are singing; they may be merely standing close together and giving off light. . . . Whatever is happening, they are doing it or being it together, for the instruments all pause together, breathe together, start up again together, as in a hymn.[14]

It is fitting, then, that we examine the harmonic structure of this "hymn" to see how Ruggles works out the vertical aspect of his chromatic polyphony.

Sources differ regarding the tonality of this short work. Mellers admits to its having an $A^b$ "key-flavour"[sic][15] while to Harrison, Angels "is clearly and simply in $A^b$ major."[16] On the other hand, Ostrander states that "tonality in the traditional sense does not exist in the music of Carl Ruggles" and makes no exception for Angels.[17] It seems clear on close inspection, both visual and aural, that Angels bears a close affinity to $A^b$ major, but is obscured to a large extent by the dissonant counterpoint. Such a hypothesis implies that something of a traditional, or at least traceable, harmonic progression is present in the work.

Figure 1 is a complete piano reduction of Ruggles' Angels accompanied by a harmonic reduction directly underneath it. The author acknowledges his indebtedness to the Schenkerian method of reduction in his attempt to illustrate the harmonic areas and prolongations of this work, but claims all inconsistencies, incongruencies, and incoherencies as his own. No attempt is made to identify 3-lines or 5-lines

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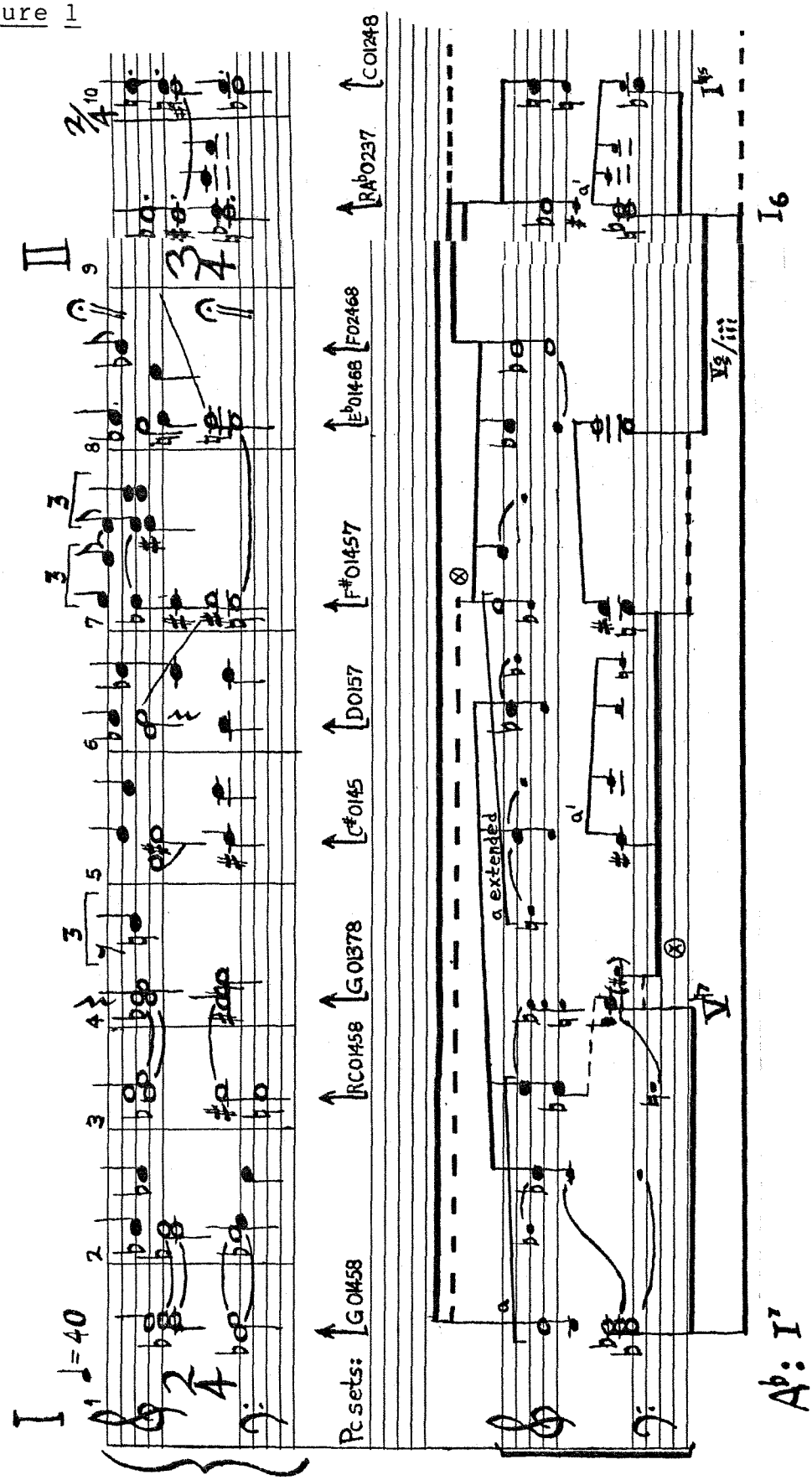
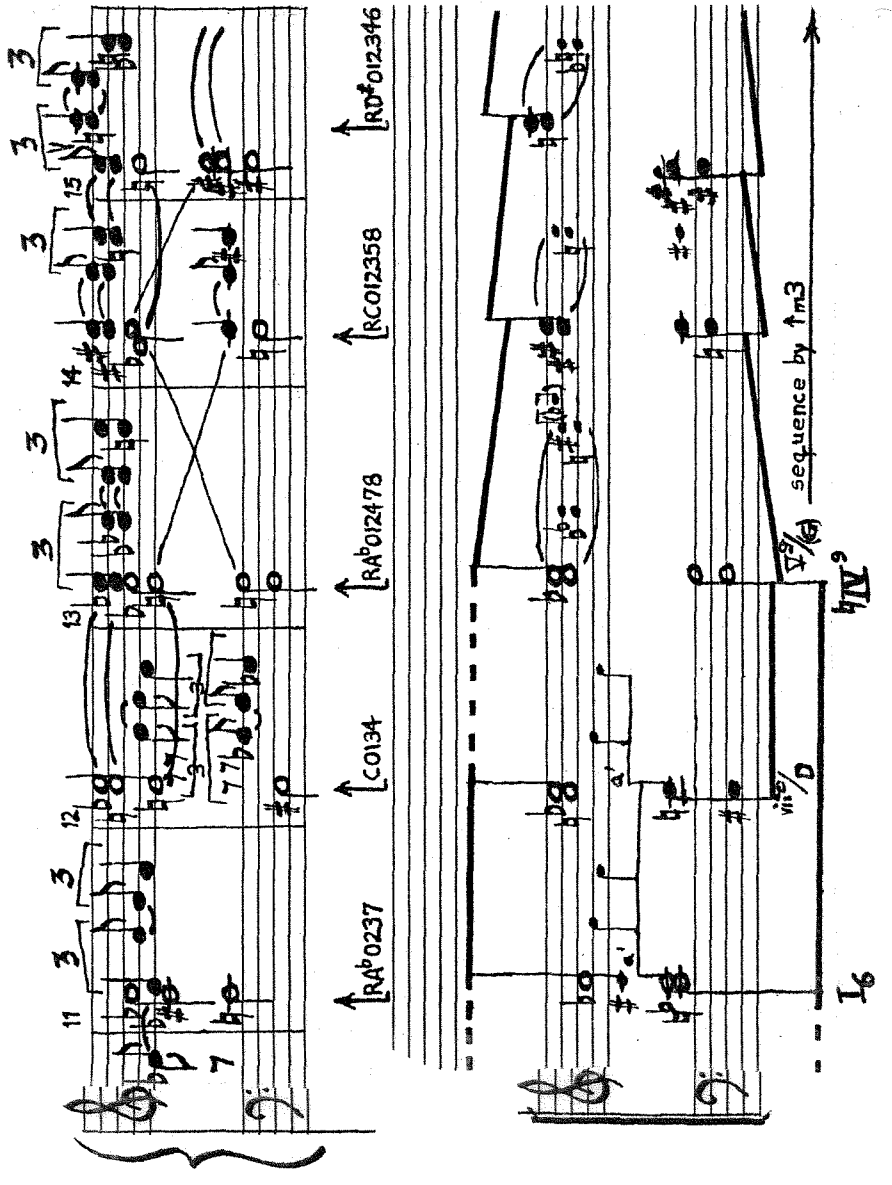
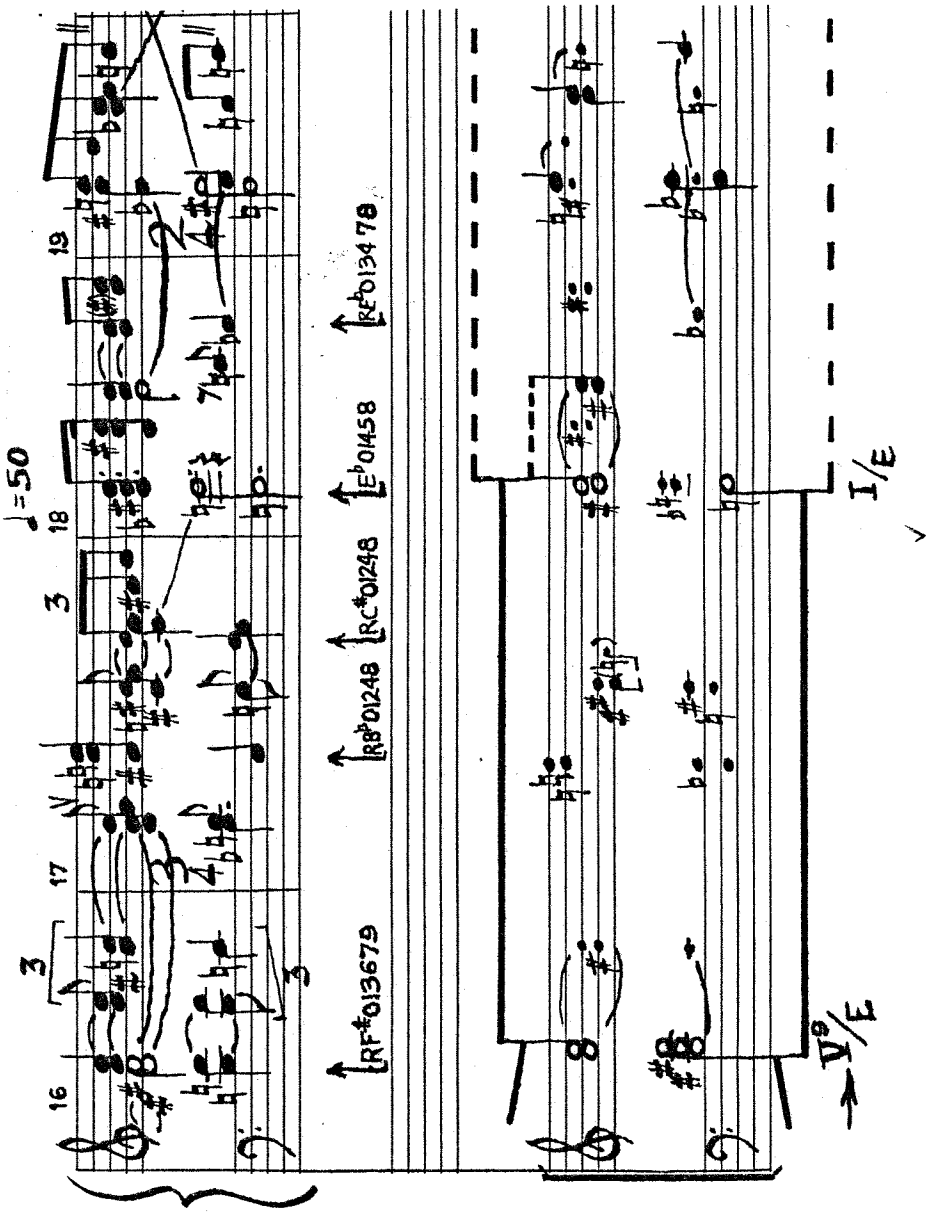
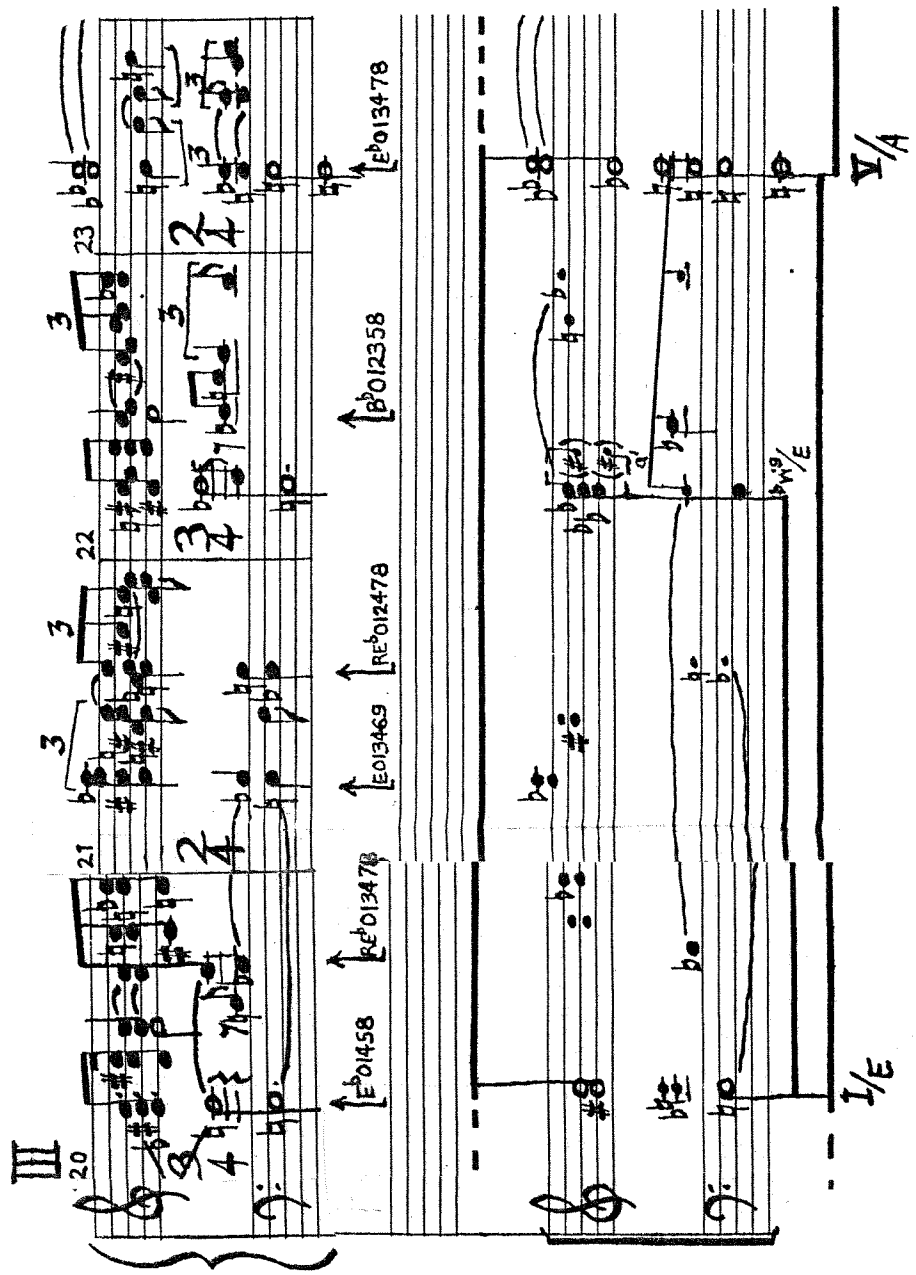
[13] Perle, p. 55.
[14] Thomson, p. 34.
[15] Mellers, p. 67.
[16] Harrison, p. 24.
[17] Ostrander, p. 47.

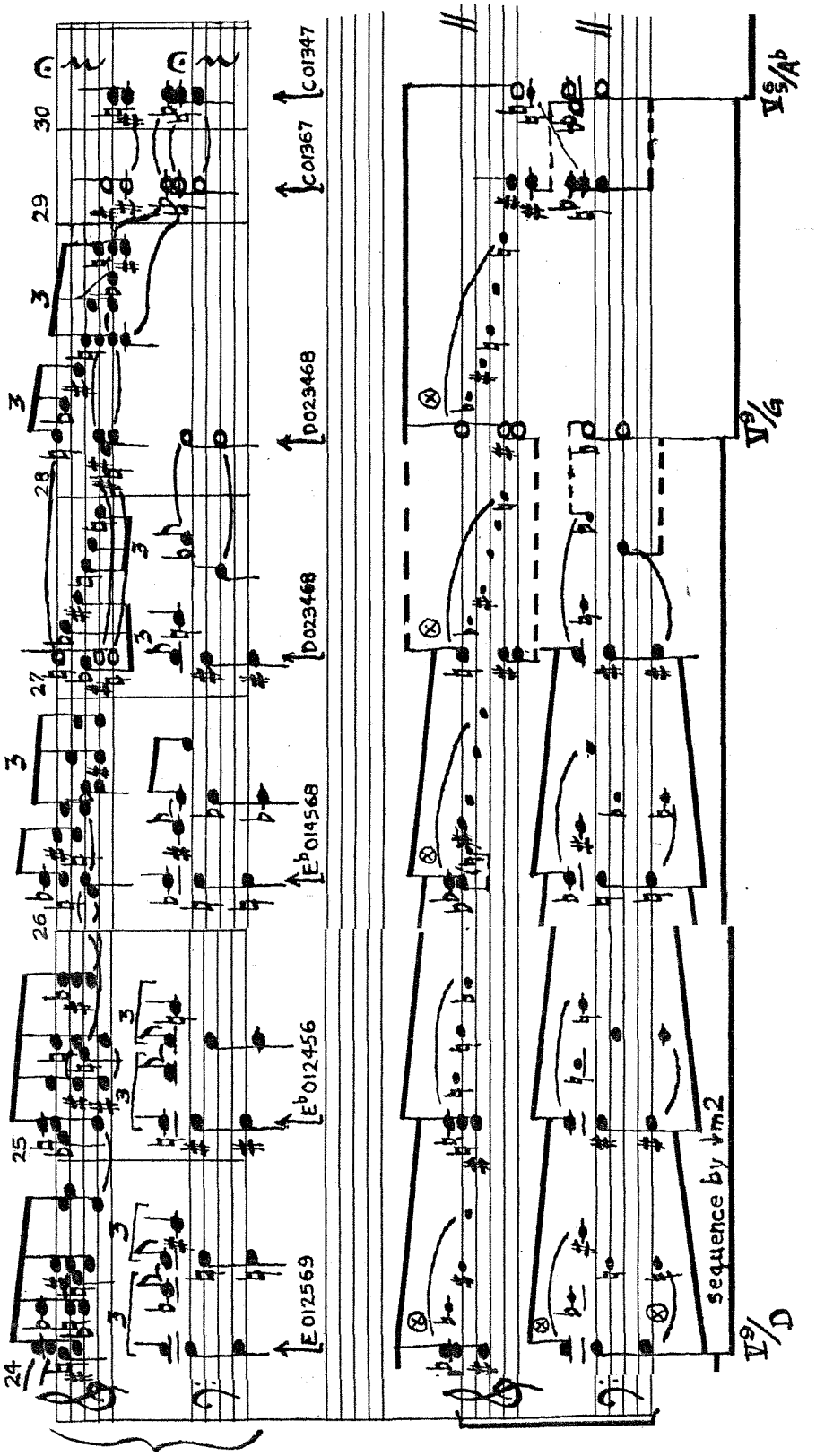
Figure 1

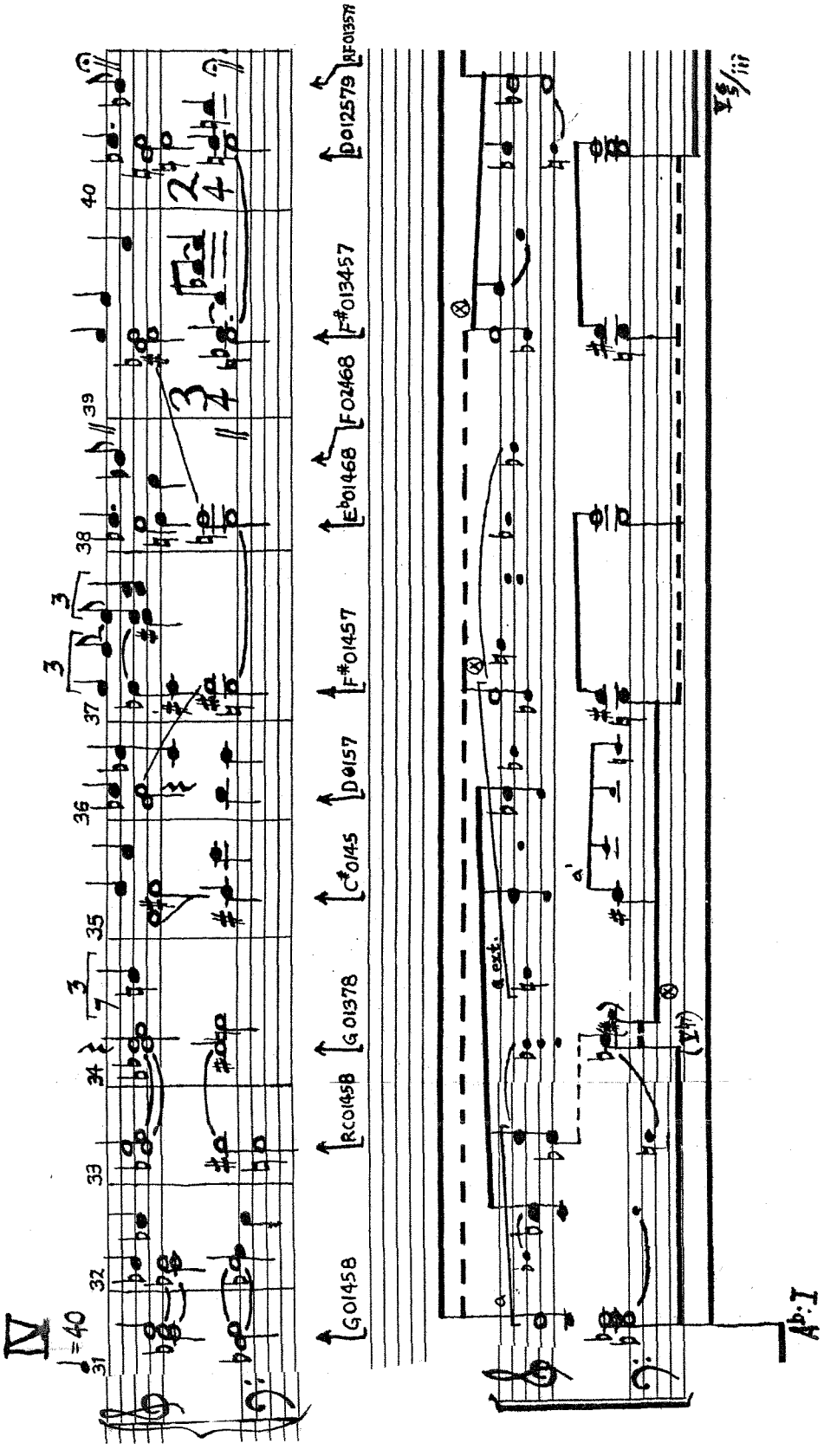

I
II
Pc sets:
RC0458
G0378
C#0145
D0157
F#0157
Eb0468
F0248
RAb0237
C0248
a extended
V7
V9/III
I6
I5
Ab: I'

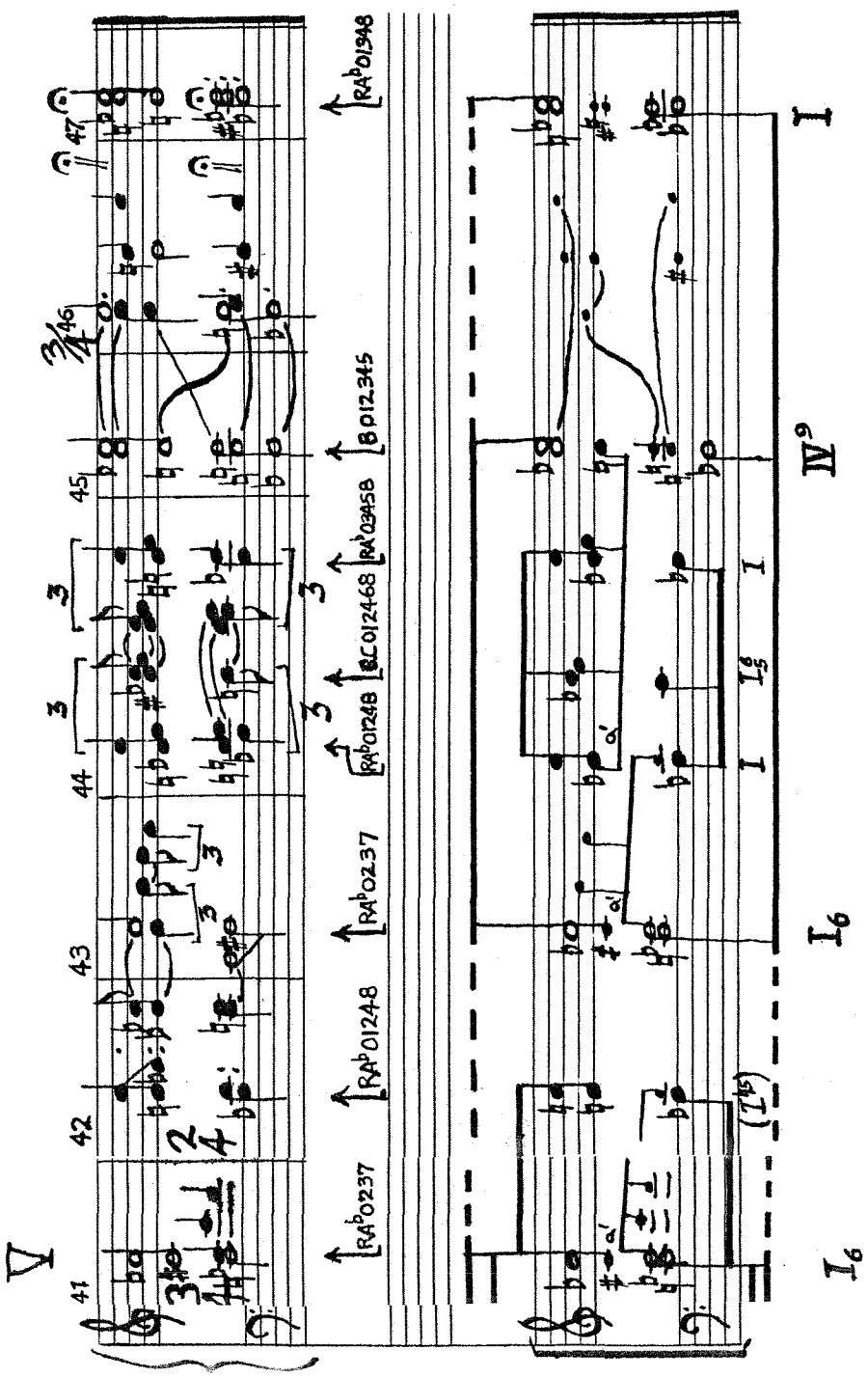

RA♭0237
C0134
RA♭012478
RC012358
RD♯012346
sequence by ↑m3
I6
IV♭9


♩=50
16
17
18
19
RF♯013679
RB♭01248
RC♯01248
RE♭01458
RF♭01347 8
V⁹/E
I/E


III
20
21
22
23
E♭01458
RE♭01347B
E013469
RE♭012478
B♭012358
E♭013478
V/A
I/E


24
25
26
27
28
29
30
E 012569
E♭ 012456
E♭ 014568
D 023468
D 023468
C 01367
C 01347
V9/C
sequence by ↓m2
V9/G
V6/A♭

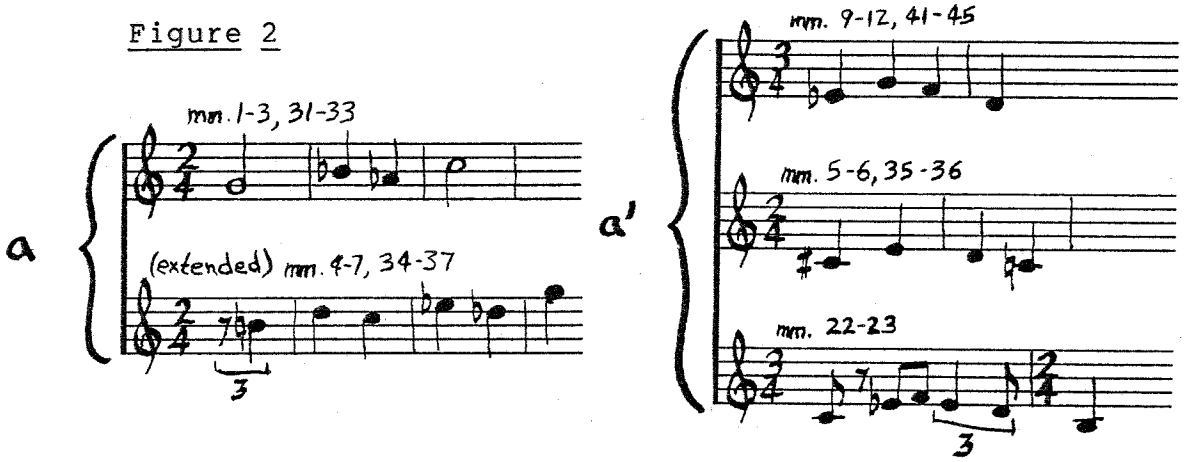

IV
♩=40
31
32
33
34
35
36
37
38
39
40
G01458
RC0145B
G01378
C#0145
D0157
F#01457
Eb01468
F02468
F#013457
D012579
RF01357
4 ext.
A♭: I


V
41
42
43
44
45
47
3/4
46
RA♭0237
RA♭01248
RA♭0237
RA♭01248
RA♭01348
B012345
RA♭03458
EC012468
RA♭01248
I6
I6
I
W9
I
I
I6/5
I

in the top voice, nor is any specific harmonic progression imposed upon the work. The Schenkerian method serves only as a model for the style of the reduction.

An explanation of some of the markings in Figure 1 is in order. In certain places a note of the original was enharmonically respelled to correspond to a particular harmonic function. An example may be found in measure 4 where D-D$^{\#}$-G-B$^{b}$ appears in the reduction and is labeled a V$^{\frac{4}{2}}_{7}$ in A$^{b}$ (albeit in third inversion). The actual D$^{\#}$ is given in parentheses beside it and connected to the E$^{b}$ with a dotted line. All enharmonic respellings are handled in the same fashion throughout the diagram. There is one important melodic feature, "a", and its partner "a'", which are marked in Figure 1 and are isolated in Figure 2 below.

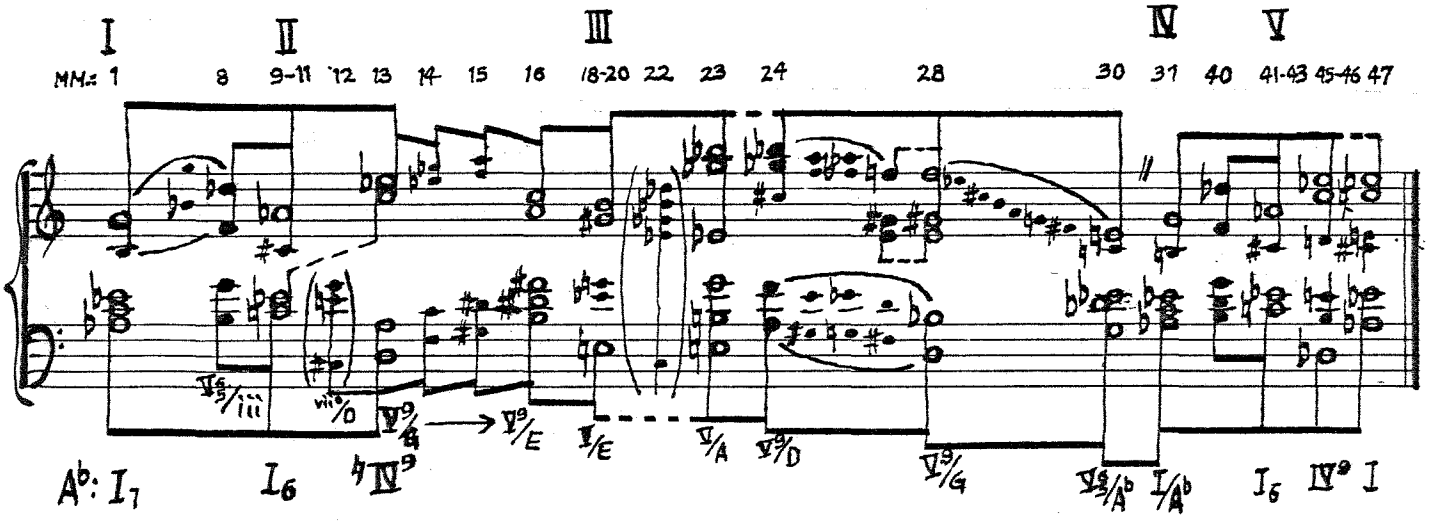
Figure 2




Although the three versions of "a'" are not identical, their very similar contours and register placement allow them to be grouped together under the label of "a'".

The motives marked ⓧ in Figure 1 indicate occurrences of whole-tone scale passages. The most notable of these is the sequence beginning in measure 24. The top voice and bottom three voices are all involved in a sequence descending by half-step to measure 27. Within each measure, however, each of these voices is involved in a descending whole-tone scale which finally culminates in the first, then second trumpet in measure 27. The scale is repeated by the first trumpet in measure 28. The bass (second and third trombone) descends in major thirds in measures 24-27 (the only third possible in a whole-tone scale). An interesting aspect is how Ruggles offsets, or complements, all this falling-major-seconds-and-thirds activity with a sequence that descends in minor seconds. In this way, he maintains as much non-repetition of pc's as possible. The basic harmonic structure is outlined in Figure 3.

Figure 3




Section I proceeds from the opening $I^7$ chords to a $V\frac{6}{5}$ of iii (or c minor) in measure 8. The only altered note in this chord is the $D^b$ that has been substituted for a D. This is done to continue the whole-tone descent from G in the top voice of measure 7. Instead of resolving to iii, this chord moves to $I^6$ -- a reasonable substitute for iii -- at the beginning of section II. The $I^6$ progresses to a $\flat IV^9$ in measure 13 by way of a $vii^o$ of D in measure 12. This $\flat IV^9$ is sequenced upward by minor thirds until measure 16 where it acts as a $V^9$ of E, resolving in measure 18. It will be remembered in the discussion on form that this is a preview/transition of section III which begins on exactly the same chord in measure 20. This E major/minor chord becomes clearly E minor in measure 23, yet its root acts as a dominant of the A major chord in measure 24. This A major chord, however, continues the circle of fifths progression that was begun in measure 16, or even measure 13 if one includes the sequence leading up to measure 16. The circle continues until measure 30 where the $V\frac{6}{5}$ of $A^b$ resolves to I at the beginning of section IV. Sections II and III, then, consist of one long circle of fifths proceeding from the $V^9$ of G in measure 13 to a $V^9$ of E in measure 16 by sequence and from there by root movement of a falling fifth (rising fourth). It is significant that Ruggles uses virtually the same sonority throughout--that of a $V^9$. The ninth above the root may vary as to being major or minor in quality, but it is present in all five of the chords at measures 13, 16, 23

($G^b$ becomes $F^\#$), 24, and 28. It is clear, therefore, that this sonority is to be carried throughout these sections to strengthen the cadence in measures 30-31. The sequence that proceeds from measure 24 also underscores the closing of section III in measure 30.

Section IV is identical to Section I, except that it extends the $V^6_5$ of iii an extra two measures. This extension emphasizes the progression to the $I^6$ in measure 41. It adds just the right amount of newness to avoid the redundancy of an outright repetition of section I. The $I^6$ moves to a $IV^9$ as it did in measure 13, but this time the root is $D^b$--not D. What appears to be a commonplace plagal cadence in measures 45-47 is all but obliterated by the fact that this $D^b$ chord is actually a tone cluster (B, C, $D^b$, D, $E^b$, E) spread out over two octaves and a step. This marks the only occurrence of that particular sonority (pc set: 012345) in the entire work. Ruggles reserves this most dissonant of chords, or at least the chord with inherently the most possible half-steps (interval vector: [543210]), for the final cadence, making the resolution to the $A^b$ major chord all the more intensely satisfying.

Priority in the harmonic reduction was given to the outer voices when labeling all chords, and inner voices were included according to how they fit into the outer framework. Part of the problem is related by Seeger, who quips that Ruggles, "having constructed a fine chord progression, . . . is prone to add an extra line or so."[18] Certainly if one is guided by the principles of creating a dissonant counterpoint, he will of necessity "add an extra line or so" to any chord progression that may serve as a background.

However, the counterpoint is far from haphazard, as a study of the sonority types will show. Table 2 lists 52 of the vertical sonorities in Angels by measure number according to pc set.[19] Table 3 lists the sonorities by name, giving the pc set, interval vector, frequency of occurrence, and location by measure number. As a general rule, the downbeat of each measure was included, with a few exceptions where it was deemed unnecessary due to inactivity in the parts or suspended voices. All pc sets are also marked on Figure 1. The letter in front of the pc set type is the note that is the root of the set. For example, in measure 1, the set is G01458, which means that the pc set begins on the

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[18]Seeger, p. 588.

[19]These pc sets, their interval vectors, and names are taken from Appendix 1 (pp. 179-81) of Allen Forte's The Structure of Atonal Music (New Haven, CN: The Yale University Press, 1973).

Table 2: Vertical Sonorities in Angels

| measure | Pc set | Vector | Name |
|---|---|---|---|
| 1 | (01458) | 202420 | 5-21 |
| 3 | (01458) | 202420 | 5-21 |
| 4 | (01378) | 211231 | 5-20 |
| 5 | (0145) | 201210 | 4-7 |
| 6 | (0157) | 110121 | 4-16 |
| 7 | (01457) | 212221 | 5-Z18 |
| 8 | (01468) | 121321 | 5-30 |
| | (02468) | 040402 | 5-33 |
| 9 | (0237) | 111120 | 4-14 |
| 10 | (01248) | 221311 | 5-13 |
| 11 | (0237) | 111120 | 4-14 |
| 12 | (0134) | 212100 | 4-3 |
| 13 | (012478) | 322332 | 6-Z17 |
| 14 | (012358) | 333231 | 6-Z40 |
| 15 | (013679) | 224223 | 6-30 |
| 16 | (013679) | 224223 | 6-30 |
| 17 | (01248) | 221311 | 5-13 |
| | (01248) | 221311 | 5-13 |
| 18 | (01458) | 202420 | 5-21 |
| | (013478) | 313431 | 6-Z19 |
| 20 | (01458) | 202420 | 5-21 |
| | (013478) | 313431 | 6-Z19 |
| 21 | (013469) | 225222 | 6-27 |
| | (012478) | 322332 | 6-Z17 |
| 22 | (012358) | 333231 | 6-Z40 |
| 23 | (013478 | 313431 | 6-Z19 |
| 24 | (012569) | 324222 | 6-Z44 |
| 25 | (012456) | 432321 | 6-Z4 |
| 26 | (014568) | 322431 | 6-16 |
| 27 | (023468) | 242412 | 6-21 |
| 28 | (023468) | 242412 | 6-21 |
| 29 | (01367) | 212122 | 5-19 |
| 30 | (01347) | 213211 | 5-16 |
| 31 | (01458) | 202420 | 5-21 |
| 33 | (01458) | 202420 | 5-21 |
| 34 | (01378) | 211231 | 5-20 |
| 35 | (0145) | 201210 | 4-7 |
| 36 | (0157) | 110121 | 4-16 |
| 37 | (01457) | 212221 | 5-Z18 |
| 38 | (01468) | 121321 | 5-30 |
| | (02468) | 040402 | 5-33 |
| 39 | (013457) | 333321 | 6-Z10 |
| 40 | (012579) | 232341 | 6-Z48 |
| | (013579) | 142422 | 6-34 |
| 41 | (0237) | 111120 | 4-14 |
| 42 | (01248) | 221311 | 5-13 |
| 43 | (0237) | 111120 | 4-14 |
| 44 | (01248) | 221311 | 5-13 |
| | (012468) | 241422 | 6-22 |
| | (03458) | 212320 | 5-Z37 |
| 45 | (012345) | 543210 | 6-1 |
| 47 | (01248) | 212320 | 5-Z17 |

Table 3: Frequency of PC Sets in Angels

| Name | PC Set | Vector | Frequency | Location (measures) |
|---|---|---|---|---|
| 4-3 | (0134) | 212100 | 1 time | 12 |
| 4-7 | (0145) | 201210 | 2 | 5, 35 |
| 4-14 | (0237) | 111120 | 4 | 9, 11, 41, 43 |
| 4-16 | (0157) | 110121 | 2 | 6, 36 |
| 5-13 | (01248) | 211311 | 5 | 10, 17 (twice), 42, 44 |
| 5-16 | (01347) | 213211 | 1 | 30 |
| 5-Z17 | (01348) | 212320 | 1 | 47 |
| 5-Z18 | (01457) | 212221 | 2 | 7, 37 |
| 5-19 | (01367) | 212122 | 1 | 29 |
| 5-20 | (01378) | 211231 | 2 | 4, 34 |
| 5-21 | (01458) | 202420 | 6 | 1, 3, 18, 20, 31, 33 |
| 5-30 | (01468) | 121321 | 2 | 8, 38 |
| 5-33 | (02468) | 040402 | 2 | 8, 38 |
| 5-Z37 | (03458) | 212320 | 1 | 44 |
| 6-1 | (012345) | 543210 | 1 | 45 |
| 6-2 | (012346) | 443211 | 1 | 15 |
| 6-Z4 | (012456) | 432321 | 1 | 25 |
| 6-Z10 | (012457) | 333321 | 1 | 39 |
| 6-Z17 | (012478) | 322332 | 2 | 13, 21 |
| 6-16 | (014568) | 322431 | 1 | 26 |
| 6-Z19 | (013478) | 313431 | 3 | 18, 20, 23 |
| 6-21 | (023468) | 242412 | 2 | 27, 28 |
| 6-22 | (012468) | 241422 | 1 | 44 |
| 6-27 | (013469) | 225222 | 1 | 21 |
| 6-30 | (013679) | 224223 | 1 | 16 |
| 6-34 | (013579) | 142442 | 1 | 40 |
| 6-Z40 | (012358) | 333231 | 2 | 14, 22 |
| 6-Z44 | (012569) | 324222 | 1 | 24 |
| 6-Z48 | (012579) | 232341 | 1 | 40 |

note G as follows:

| G | $A^b$ | B | C | $E^b$ |
|---|---|---|---|---|
| 0 | 1 | 4 | 5 | 8 |

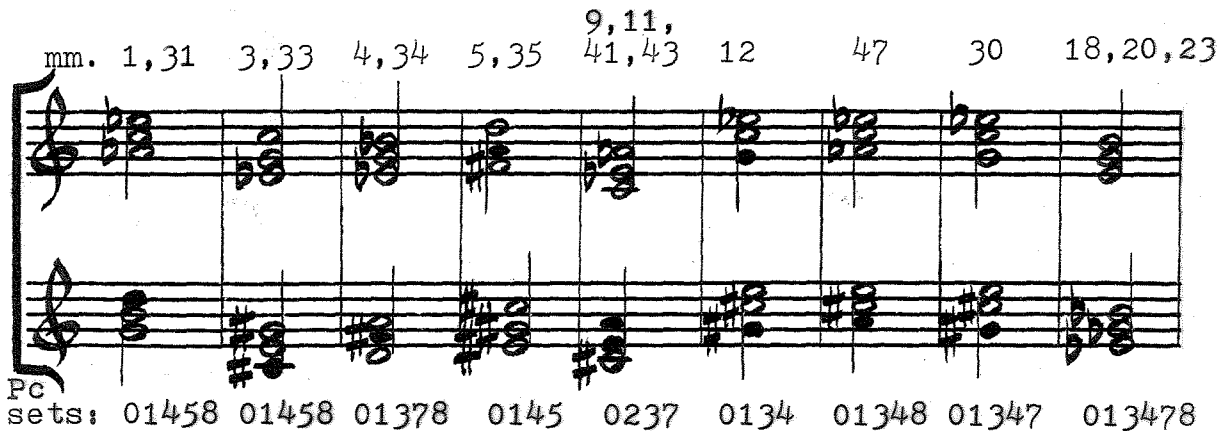
In the cases where the normal form is the retrograde inversion of the pitches, an R precedes the set. For example, in measure 3, the closest ordering of the pitches is C-$D^{\#}$-E-G-$A^b$, for which the set type is 03478. This, however, is not in normal form, whereas its retrograde inversion, 01458, is. Therefore, such a set is indicated as follows:

| RC01458 = | C | $D^{\#}$ | E | G | $A^b$ |
|---|---|---|---|---|---|
| | 8 | 5 | 4 | 1 | 0 |

Two sonority types prevail in Angels: 6-Z19 (013478) and 5-33 (02468). Of these two, the first is much more prevalent, often occurring, complete or in a subset, at structural points. Some occurrences of 6-Z19 are given in

Figure 4 below.

Figure 4




Of considerable interest is the bitonality inherent in this set. 6-Z19 can be arranged as two major triads (m. 18) or two minor triads (m. 23) a half-step apart. In Figure 4, all of the smaller subsets acquire this bitonal aspect if one note is added (in black). (The sets 4-3, 4-7, and 4-14 require the addition of two pitches, but are clearly subsets of 6-Z19 nonetheless.) It is as if Ruggles has combined two works that are a half-step apart, yet which are intricately and inseparably constructed so that one cannot exist without the other.

The other predominant sonority is the whole-tone cluster 5-33 (02468). It only occurs twice (mm. 8 and 38), but it is an important subset: sets 6-21 (023468, mm. 27 and 28), 6-22 (012468, m. 44), and 6-34 (013579, m. 40) all contain set 5-33 as a subset. It has already been shown that the use of the whole-tone scale is an important melodic feature of this work. Ruggles uses these whole-tone structures as a complement to the constant flow of half-steps that make up his contrapuntal style.

As was stated earlier, the half-step, or ic 1, is considered to be the predominant interval in Ruggles' counterpoint, and this is clearly the case in Angels. All of the sets utilized (with the exception of 5-33) contain ic 1. However, ic 3 and ic 4 are almost equally important due to the tertian possibilities of pc set 6-Z19. In fact, Ruggles accompanies the top voice throughout virtually the entire work with thirds and sixths below. (This is indicated where possible in the harmonic reduction of Figure 1.) This blending of the "old" (tertian sonorities) with the "new" (secundal constructions) gives Ruggles' music a stark freshness that few other contemporary composers have been able to achieve. Harrison states that Ruggles shares a musical gift

with Handel, the gift of texture. According to him, Ruggles' sonorities "do nothing but sound resonant and free, as all good chords should."[20] In Angels, these sonorities are strong and dissonant, yet clear and clean. The more one looks, the more remarkable the construction appears, the more evident Ruggles' painstaking, even excruciating care for details becomes. The work is so solid that it is virtually indestructible, and, as such, attempts, if not attains the sublime. Surely a lifetime is not too long to search for that one Beauty, even if it takes ninety-five years.

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[20]Harrison, p. 15.