Contrapuntal Techniques in Schoenberg's Fourth String Quartet

Nolan Stolz (nolan@nolanstolz.com)

Abstract:

In the first movement of his fourth string quartet, Schoenberg divides the 12-tone row into four three-note cells. These cells are treated contrapuntally in canon (including interval and double canon), by partition, and as subordinate accompanimental chords. Two of the cells are symmetrical, and the other two have similar major-seventh sonorities. This analysis labels the cells with chord names rather than with Forte's pitch-class set names or other traditional post-tonal analytical notation.

Analysis

In his fourth quartet, Schoenberg divides the first violin melody[1] (the piece's tone row) into four three-note cells, or trichords: (D-C♯-A), (B♭-F-E♭), (E-C-A♭), and (G-F♯-B). Since these four chords have distinct sonorities that reappear throughout the piece, they are labeled with chord names rather as pitch-class sets with Forte names or as cells with regard to their appearance in the row (i.e., (1,2,3), (4,5,6), etc.). The first trichord is a D-major-seventh chord with a missing third (labeled "Dma^7(no^3)." The second trichord is labeled "B♭sus^4," a pseudo-symmetrical chord formed from two stacked perfect fourths.[2] The third trichord, which is symmetrical, is an augmented triad, labeled "E+." [3] The final trichord of the row is G-major-seventh, but with the fifth omitted, labeled Gma^7.[4]
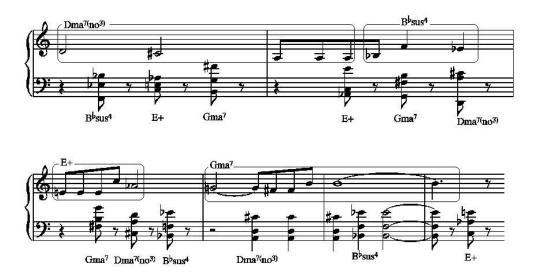
Ex. 1 First Violin Melody, mm. 1-4; Vertical Stacking of the Cells as Trichords

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[1] My introduction to 12-tone music came when I was 19 years old. In my sophomore year in college, I took a 20th century ear-training course. On the first day of class, the professor asked us to transcribe, by ear alone, the violin melody from the opening of Schoenberg's fourth string quartet. We, the students, were surprised and unaccustomed to dictating a melody that did not contain repeated pitches. That exercise instantly put early 20th century music into perspective and left a lasting impression on me.

[2] The label "sus^4" is derived from tonal music, where the "4" would be an E♭ suspension, with an expected D resolution. The chord is only symmetrical considering the B♭ as the point of axis (i.e., a perfect fourth up (or a perfect fifth down) to E♭ and a perfect fourth down (or a perfect fifth up) to F).

[3] Schoenberg spells the trichord with an A♭. Since the lowest note is E, I named it "E Augmented," or "E+."

[4] Since the fifth is most common note to omitted from a major-seventh chord, it is unnecessary to label "omit 5" in the chord name.

Notice the first notes of each trichord are in third relationship: (D-B♭), (E-G), and (G-B♭). The one exception is (B♭-E), a tritone relationship. The two pairs of descending minor seconds (D-C♯ in m.1) and (A♭-G from m.3-4) are also in tritone relationship.
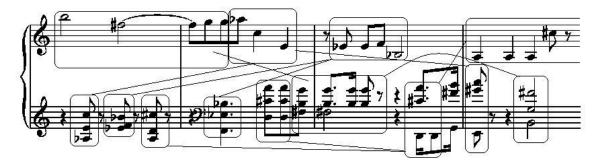
While one trichord is presented melodically in the Violin I part, the other strings play the three other trichords (example 2) harmonically. Schoenberg achieves the goal of containing no unisons within second-species counterpoint by using four different trichords.

Ex. 2 Row as Melody and Chordal Accompaniment, mm. 1-6

Each trichord of the melody is a part of two simultaneous rows. The accompaniment uses three chords per row presentation, and they do not appear randomly. The chords also follow the order of the row. The movement begins with $Dma^7(no^3)$ in the melody (P2), therefore the trichords are presented as $B♭sus^4$, E+, and then Gma^7. The second measure, P2T4, has the $B♭sus^4$ in the melody, with the other strings on E+, Gma^7, and finally $Dma^7(no^3)$. The next measure, P2T7, has the E+ in the melody with Gma^7, $Dma^7(no^3)$, and then $B♭sus^4$ below. In the final two measures of the phrase, P2T10, the Gma^7 in the melody is accompanied by $Dma^7(no^3)$, $B♭sus^4$ and E+.

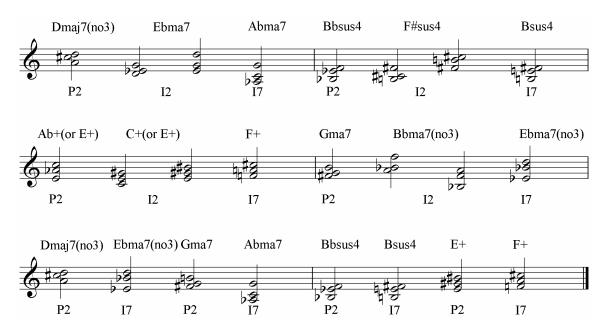**Ex. 3 Simultaneous Rows: Trichords Circled, mm. 10-13**

The same technique occurs in mm. 10-13. The melody is in retrograde form, non-transposed (R2). Therefore, in m. 10 when the melody has the Gma^7, the chords also appear in retrograde form: E+, $B♭sus^4$, $Dma^7(no^3)$. Next, melody has the E+, and the

supporting chords are B♭sus^4, Dma^7(no^3), and Gma^7 (R2T4). The twelfth measure (R2T7) has the B♭sus^4 in the melody, and the chords are Dma^7(no^3), Gma^7, and E+, the latter coming on on the downbeat of the thirteenth measure. The last row presentation of this phrase (R2T10) has the Dma^7(no^3) in the melody followed by the chords Gma^7, E+, and B♭sus^4, the latter two not shown in the example.

Schoenberg avoids the octave in the vertical counterpoint by having the trichord of the melody a part of two rows: the horizontal row is heard over five measures, and the vertical rows are approximately one measure in length. Even in the case of the m.12, when the chords are relating to the melody of m. 11 and the melody has already begun its third trichord, the Gma^7 does not conflict with the B♭sus^4 above it.
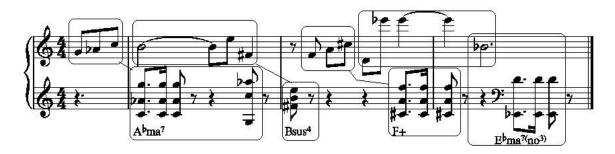
Chords are repeated often because there are five presentations of the row form per phrase. The effect is a non-rhythmic imitative counterpoint between the melody and the accompaniment, and within the accompaniment itself. The lines drawn in example 3 illustrate the repetition of these particular chords.

Another row form presentation (I7: G-A♭-C-B-E-F♯-F-A-C♯-D-E♭-B♭) appears between these two phrases. What is striking about the inversion of the original melody (I2) is that it creates the same chord types at a transposition a major third below. The Dma^7(no^3) chord (D-C♯-A) becomes (D-E♭-G), the E♭ma^7 trichord which happens to a major third below the final trichord of P2: Gma^7 (G-F♯-B). Therefore, the Gma^7 at the end of P2 becomes (A,B♭,F), which is a B♭ma^7(no^3), a major third below the Dma^7(no^3) trichord. Since an augmented triad is symmetrical, the E+ trichord inverted stays the same. The B♭sus^4 chord appears as an F♯sus^4 chord, again four semi-tones, or a major third, below. I7, being five semitones above the prime form, creates chords that are a half-step above the ones in P2. Example 4 illustrates the transformation of P2 to I2, the reordering of I2, the transposition from I2 to I7, and the comparison of the chords of P2 to those of I7.

Ex. 4 Inversional and Transpositional Relationships of Trichords

In the second phrase, the chords appear in succession only once. This is because the chords are imitating the melody. In a canon-like manner, the chords appear approximately two to four beats after it appears in the melody. So, while the Violin II melody is on its second trichord, the Bsus^4, the chord played by Violin I, the viola and cello remains on the A♭ma^7 chord. Again, Schoenberg achieves the goal of unison-less counterpoint by separating them in time. For the final trichord, the melody and accompaniment share the B♭. The B♭ was presumably omitted from the Violin I part to avoid doubling of the pitch. Example 5 shows the second phrase: I7 melody with I7 accompaniment.

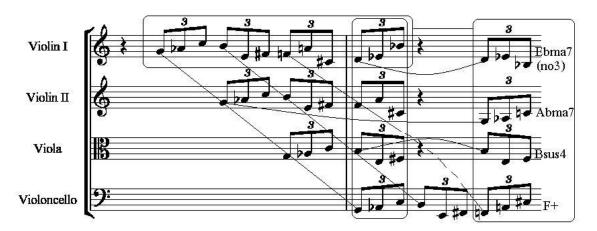**Ex.5 Imitation of Melody in the Harmony, mm. 7-9**

As mentioned earlier, multiple presentations of the row form in the first and third phrases cause the chords to repeat often. This, of course, holds true to individual pitches as well. Schoenberg, to maintain interest, inverts the pitches registrationally and orchestrationally by assigning them to different instruments. The horizontal melody played by a particular instrument rarely includes a repeated pitch, because it has been given to another instrument. In example 2, for the three times that the Gma^7 appears as a vertical chord, the cello plays first the B, then the G, and then the F♯. The viola has G, then F♯, and then B and the second violin has the remaining F♯, B, and G. The pitch material is varied, thus new, shorter rows are created (see example 6). The rows are shorter because of repeated notes, but the phrase is still 12 pitches in length. Notice the cello has but one repeated note: the B♭. The viola has two: A and F. The second violin has three repeated notes: E,C♯, and E♭/D♯.

Ex. 6 Generated Tone Rows in the First Phrase, mm. 1-6

A different contrapuntal technique occurs in mm. 21-24. Schoenberg retains the trichordal structure, but treats them horizontally as three-note cells. When I7 returns at m.

21, it is played by Violin I as a series of triplets. Each cell occurs once per one beat, as in the first phrase, but is arpeggiated. Violin II enters in canon one beat later but presents the first three cells only. The viola enters in canon one beat after Violin II, and presents only the first two cells. Essentially, all three voices stop together before beat two of m. 22. The cello enters in canon one beat after the viola, on the downbeat of m. 22, and presents the first three cells, like Violin II did. So, on the third beat, when the cello has its third cell (the F+ trichord), the other instruments join in with the remaining three cells. Violin I plays the fourth cell (E♭ma^7(no^3)), and the viola plays the second cell (Bsus^4). Notice in example 7 these two instruments played those cells on beat "1," thus it is a repetition. The Violin II begins with the A♭ma^7 cell, the remaining trichord. Lastly, the first violin ends with its lowest B♭, whose octave displacement gives the phrase a sense of conclusiveness. To reinforce that effect, the cello displaces the C♯ up an octave at the very same moment. The distance between the outer voices would have been nearly three octaves, but the voicing of the final chord was altered to span less then an octave.

Ex. 7 Trichords as Horizontal Three-Note Cells, mm. 21-22
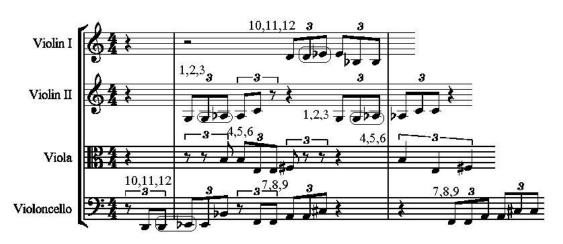

The rest on beat "2" of m. 22 forces the rows to be incomplete. However, since all four three-note cells are stacked vertically, Schoenberg completes the rows on beats "1" and "3" as well as a complete horizontal I7 in Violin I.

Since the rhythm is consistent throughout the four beats, the canon is always in note-to-note, or first species, counterpoint. The intervals created between the violins are M3, M3, TT, TT, P4, P4, m3, TT and M6.[5] The intervals between the viola and the Violin I are m7, m9, m9, m3, M7, and M3. Because of the canon, of course, the intervals between the viola and Violin II are the same for that of the Violin II to Violin I, without considering the viola is an octave below. The cello's intervals with the ensemble are M3, P5, m7; M3, P5, m9; TT, m7, m9. The resultant harmonies are not the same as the chords of the three-note cells, and they have a dissonant quality.

Schoenberg utilizes the reappearance of the minor second in the first and second pitches of I7 (G-Ab) and the tenth and eleventh pitches (D-E♭) to create the effect of an interval canon. He uses I7T10 for mm. 23 and 24. The first 3-note cell (D-E♭-B♭) is heard in the cello beginning on the second triplet of beat 4 of m. 22. The second three-note cell

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[5] To continue this paper's style of naming pitch class sets without using a numerical system, some interval classes are respelled enharmonically for the simplest intervallic name.

(G-A♭-C) is heard in Violin II on the downbeat of m. 23, exactly two eighth-note triplets (or one quarter-note triplet) later. The third cell also enters after the same duration, as does the fourth cell. I7T10 is repeated again, this time beginning in the 1st violin. This time, the second cell enters one beat later in Violin II. The viola enters one beat later with the third cell, but plays it in augmentation, as quarter-note triplets. The cello enters in fashion one beat later with the final cell. The pattern also causes the second violin and viola to repeat their cell.
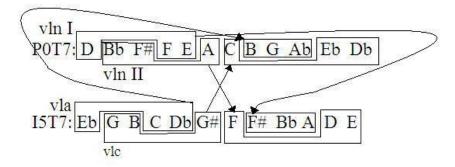
Ex. 8 mm. 23-24

A complex double-canon occurs in mm. 100-101. It is an interval canon, but the intervals are inverted upon imitation. The viola imitates Violin I (D-F-E-F♯-B♭-A) one beat later in inversion, transposed up a semitone (E♭-C-D♭-B-G-A♭). There also is imitation between the Violin II and the cello: (B♭-F♯-A-F-D-E) inverted and transposed down a minor third becomes (G-B-G♯-C-E♭-D♭). What makes these two measures so complex is that even though thematically Violin I is paired with the viola and Violin II is paired with the cello, it is not at all the case for the row forms. In fact, the violins are paired together; they have the second hexachord from P0 (D-B♭-F♯-F-E-A) followed by the first hexachord from I5 (F-F♯-B♭-A-D-E). The viola and cello have the complement to those hexachords; they have the second hexachord from I5 (E♭-G-B-C-C♯-G♯) followed by the first hexachord of P0 (C-B-G-A♭-E♭-D♭).
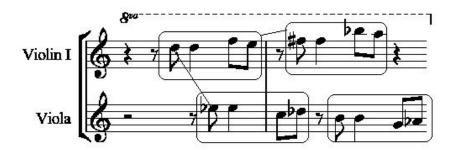
In order to create a double canon, Schoenberg partitions each hexachord in the same manner. He gives the first, fourth, and fifth pitches of the hexachord to the Violin I and to the viola according to their corresponding row forms. The Violin II and the cello receive the second, third, and sixth pitches. For the second pair of hexachords, the Violin I and the viola take the inner pitches, the second, third, and fourth. The Violin II and the cello take the outer pitches, the first and sixth.

Ex. 9 Partitioning of Four Hexachords from Two Row Forms to Four Instruments. mm. 100-101

Since the two row forms are prime and inversion, the canons to be interval canons in inversion. The transposition Schoenberg chose, 0 for prime and 5 for the inversion, makes the canon imitate at different pitch levels. The first canon, between the violin and viola starts a major seventh apart. Notice the sequence for the second half of the phrase; the violin goes up by major third, and the viola sequences down by major third. The sequence isn't exact; the discrepancy occurs between the fourth and fifth pitches. The interval is a major third rather than minor, but the effect of being a sequence is still there.
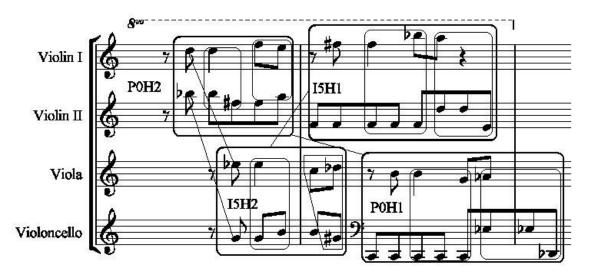
Ex. 10 Interval Canon Using Two Row Forms. mm. 100-101

The canon between Violin II and the cello is very much the same. The second voice also enters one beat later, in inversion, but a minor tenth below. Schoenberg makes use of registration well when then Violin II descends a major tenth to F, and the cello descends over two-and-a-half octaves to its low C, which happens to be an open string, making the leap very manageable.

Ex. 11 Interval Canon from Two Different Row Forms, mm. 100-101
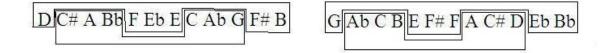
Ex. 12 Double Canon, mm. 100-101

When the two canons are combined, the two row forms are completed. Because of the partitions, the trichords are not easily heard, which is why they are not labeled in these examples. What is clearly audible, on the other hand, is the intervallic imitation in inversion at various transposition levels; each canon with its answer enters one beat later.
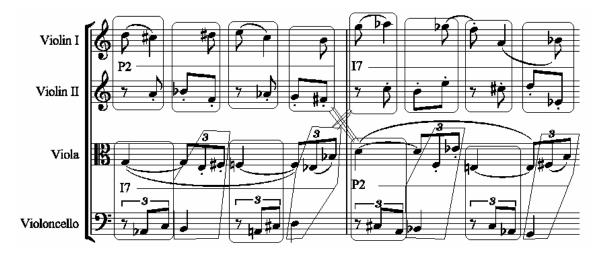
Another style of counterpoint occurs in mm. 25-28, when Schoenberg partitions the row. The triplet pulse is retained, but it is divided between two instruments. In m. 25, the Violin II takes the first, fifth and sixth pitches from each hexachord of the prime row form. The viola takes the middle: the second, third and fourth pitches. Violin II plays D-F-E♭-E-F♯-B, and the D and the E are stressed by falling on the strong beats (i.e., "1" and "3") and are held longer. This partition is not arbitrary, because those are the same pitches stressed on the down beats of measures 1 and 3. Measure 25 is P2, and m. 26 is I7 with the same partition scheme.

Ex. 13 Partitioning: Three-Note Cells Circled, mm. 25-26.

Ex. 14 Partitioning Scheme, mm. 25-26. (Upper Boxes Violin II, Lower Boxes Viola)
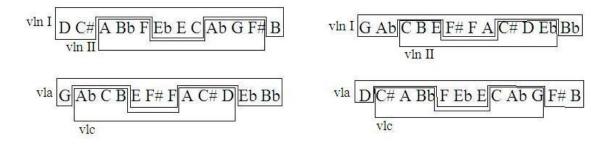
Ex. 15 Partitioning: Three-Note Cells Circled, mm. 27-28.

In m. 27, the triplet figure is divided between the viola and cello, and the pitch material is I7, but an octave lower. In m. 28, P2 appears again in the same manner as m. 25, but also an octave lower in the viola cello. During the low strings' I7, the violins partition P2, and during the low strings P2, the violins partition I7. Once again, Schoenberg avoids the unison with alternating the row forms. The violins, on the other hand, partition the first, second and sixth pitches of each hexachord to Violin I and the third, fourth and fifth pitches to the Violin II. The rhythm is in eighth-notes, so pitches overlap, and therefore the texture of the counterpoint is slightly different from the lower strings.
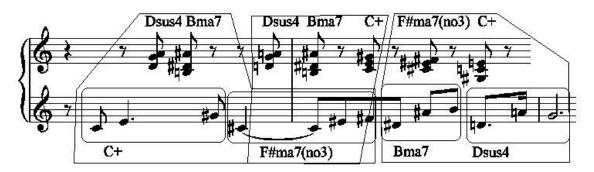
Ex. 16 Partitioning in mm. 27-28

At mm. 55 and 56, looking at the texture alone, the partitioning technique seems similar to the one shown in example 9. Rather than a violin having long tones with viola inserting other pitches, this time it is solo cello with the other strings punctuating chords. Given the construction of the chords, it is in fact closer relation to Schoenberg used in the beginning of the piece. He uses the R6T4 row form, derived from the order of pitches in the cello part. R6T4's first three note cell, which is found in the cello melody, is C-E-G# (C+). The other strings play a Dsus^4 chord, which is the next three-note cell. The next three note cell should be F♯ma^7(no^3), but it is delayed until beat 4 in the cello. Instead, the strings skip ahead to the last three-note cell of R6T4 (which is also the beginning of R6), the Bma^7 chord. Before this row form is finished in the cello, R6T10 begins. In fact, the F♯ma^7(no^3) in the cello serves to exist in both row forms. The next chord is also out of order, rather going to the beginning of R6, the strings repeat the Dsus^4 chord. The strings

finish the row by playing the Bma[7] and the C+. The cello begins the next row form: RI10T10. Since the cello is continuing the R6T4, it keeps the R6T4 order of pitches. The RI10T10 is derived from the order of appearance of the trichords, not the order of the pitches. Next, the strings answer with the F♯ma[7](no[3]) and C+ trichords, and the cello finishes the row form with a Dsus[4]. The rotations are so complicated that it is difficult to discern which row forms are being presented, since the three-note cells reappear throughout the matrix. Since the cello has the melody, I consider its form to be the primary version.

Ex. 17 Four Presentations of the Row: Cello Melody (Horizontal) and Three Vertical (Entire Quartet) with Three-Note Cells Shared with Other Rows, mm. 55-56

Conclusion

It seems Schoenberg uses a particular technique for a short phrase, say two to five measures, and then he switches to another technique. He rarely continues a single contrapuntal technique for an extended period of time, and therefore he employs many. Schoenberg uses different partitioning of the row to create new melodies. In the case of this row, it is necessary to do so, because the constant division of the row into the same four trichords can be limiting. He uses partitioned row forms to create third- and fifth-species counterpoint, as well as canons. He also uses canon to create first-species counterpoint. Schoenberg uses trichords that are symmetrically invertible, so that an inversion form of the row creates the same chord-types, only reordered. Without considering Schoenberg's contrapuntal techniques, the row itself has such a distinct rhythmic, melodic and harmonic structure that the melody alone is truly memorable.[6]

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[6] For a modern interpretation of this tone-row that exploits its trichordal qualities, listen to *Variations on a Schoenberg Row* by *Nolan Stolz Rock Orchestra* on Tributary Music (forthcoming). Available for preview at www.nolanstolz.com and www.myspace.com/nsro. Also, *Pictures of an Exhibitionist* for solo guitar (2004) by Nolan Stolz, © 2008 Stolen Notes.