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Paper 3 (Hybrid)
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Hexatonic collection centricity in Jay Alan Yim's "Rain Palace"

The primary source of the musical materials in Jay Alan Yim's "Rain Palace" is the group of hexachords known as the hexatonic collection. This collection, which can also be described as set class (014589), has a high degree of symmetry and therefore contains only four distinct members. These four pitch-class sets, when written as scales or in normal form, have the interval class pattern 1-3-1-3-1, alternating semitones and minor thirds. Straus identifies the four sets as follows, by the lowest pitch-class semitone unique to each.[1] See Figure 1 for these four hexachords as pitch-class sets.

Figure 1: The four distinct sets of the hexatonic collection, set class (014589)

$HEX_{0,1}$	[014589]
$HEX_{1,2}$	[12569T]
$HEX_{2,3}$	[2367TE]
$HEX_{3,4}$	[3478E0]

[1] Joseph N. Straus, *Introduction to Post-Tonal Theory,* 3rd ed. (Upper Saddle River, New Jersey: Pearson Prentice Hall, 2005), 149.

This group of four pitch-class sets comprises two complementary pairs: $HEX_{0,1}$ is the complement of $HEX_{2,3}$, and $HEX_{1,2}$ of $HEX_{3,4}$. Yim emphasizes the self-complementary nature of this set class throughout the piece, often presenting the hexachords in their complementary pairs. The pairs of complementary hexachords complete the aggregate of all twelve pitch classes, making the piece rich with chromatic saturation. However, Yim does not appear to be using serial procedures, so I have found it most useful to analyze the hexachords as unordered collections. The sonorities are most frequently heard with all six (or twelve) pitch classes converging in dense blocks of sound, though the hexachords may also be arpeggiated or used melodically.

Possible subsets of the hexatonic collection include major and minor triads, augmented triads, and trichords belonging to set class (015). Yim seems particularly interested in the (015) trichords, which appear frequently in melodies (creating a recurring motif of melodic perfect fourths and fifths) as well as in the hexachord voicings in some sections. He does not exploit the tonal possibilities as much as could be imagined (for example, a composer might use polytonal writing employing the dual major/minor keys implied by the hexachord, or have sections that are clearly in each of those keys), although he does hint at tonality from time to time. (Section D contains an example that will be discussed below.)

I hear the shape of this piece as a large wave, with a series of smaller waves within it. This watery metaphor may be reinforced by the title and some of the expressive directions (for example, letter C is to be "Pulsed, but fluid," M is "Like a gentle shower," and R "Like peals of thunder"), but it is also suggested by the purely aural experience of the piece. The changing meters give a sense of fluidity and unmeasured time, and the

music seems to expand and contract in intensity, departing from and then returning to a similar place, over and over again.

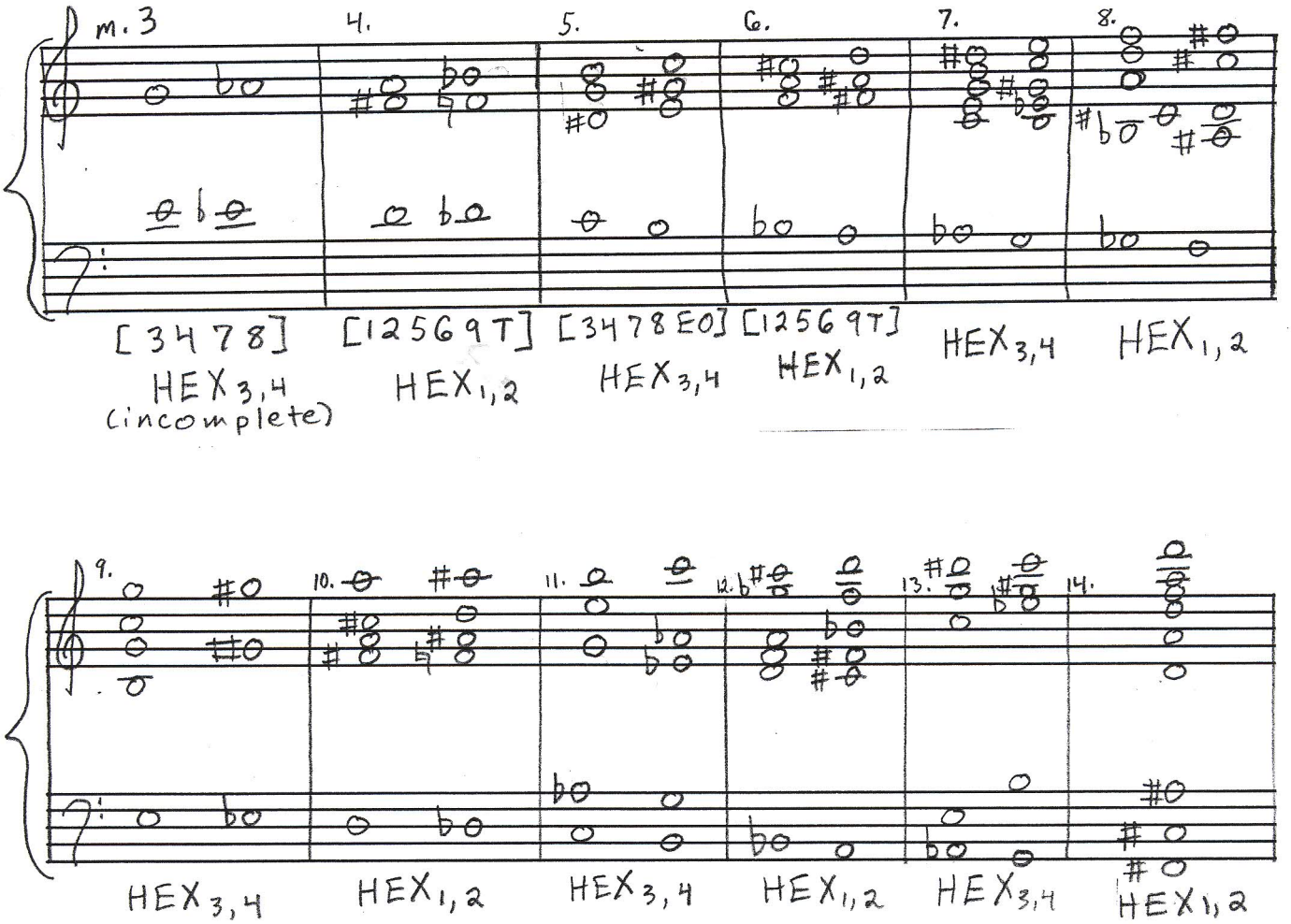
The hexatonic collection does not account for all of the pitch materials used in the piece; along with texture, timbre, orchestration and rhythm, different pitch materials help to distinguish the various "waves." While the music does not return to the hexatonic sonority at every single letter change, it does consistently return there, and often at climactic or cadential-sounding moments. The form doesn't so much "progress" from point A to point B as flow out and then back in, on both small and large levels, ending at a place only slightly different from where it began.[2] A comparison of the piece's beginning and ending sections, and a few examples from the middle of this "away and return" structure, will help to illustrate the overall shape.

If the piece is one giant wave with smaller ones inside of it, then the big arc flows from the beginning all the way to the end in a large-scale departure and return (or almost return). The music both begins and ends with a single note: the first sound heard is pitch-class E#, and the last is G#. The largest trajectory, then, runs from E#-G#, a relationship of interval class 3, which could perhaps be heard as part of $HEX_{0,1}$.

More illuminating, however, is a comparison of the hexachord use in these two sections. Above the initial E#, which continues as a drone in the double basses, the orchestra expands to alternate the complementary pair $HEX_{3,4}$ and $HEX_{1,2}$, one per measure until a big "cadence" at letter A (m. 14) on $HEX_{1,2}$. See Example 1 for the harmonies used in this section.

[2] This could also be described as a kind of spiral form, but in this case the wave seems a more apt metaphor.

Example 1: Hexatonic sonorities by measure, mm. 3-14 (Drone pitches omitted)

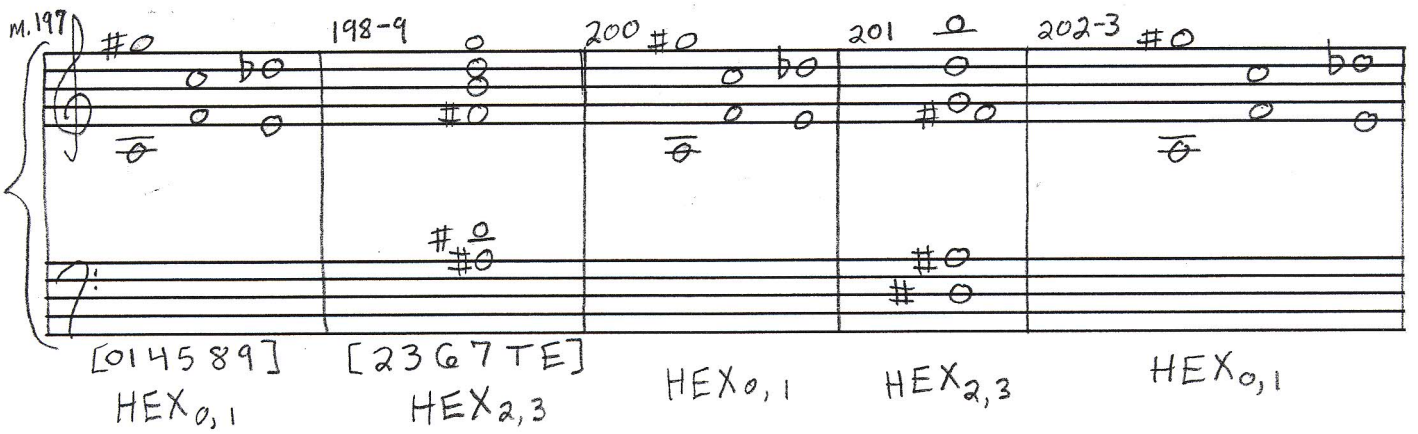


This harmonic pattern occurs within "Slowly unfolding" horizontal lines that increase gradually in volume, pitch space and intensity. Frequent meter changes give a floating, unpredictable sense of time. The most easily audible aspects of this section are the expanding chromatic lines, which reach out in both directions, the violins and trumpets ascending while the bassoons, cellos and trombones descend. (Example 1 above

shows the movement of these outer voices.) From the single starting point a great space opens up. The harmonies might be read as almost incidental to the horizontal lines here, but the alternation of the two complementary hexatonic sonorities is too clear to be coincidental, and is also reinforced by the use of these collections throughout the piece.

For example, in the final section starting at letter T (m. 197) Yim uses the other complementary hexatonic pair, $HEX_{0,1}$ and $HEX_{2,3}$. These sonorities also alternate, though with a little more overlap, and they are also played against a drone note, this time in the solo oboe and English horn (the G#[5] which will emerge as the final pitch). See Example 2 for a reduction of the harmonies in section T.

Example 2: Hexatonic sonorities by measure, mm. 197-203 (Drone pitch omitted)



This structure forms a beautiful parallel to the opening section, but with distinct contrasts as well. Besides using the "opposite" hexachord pair, the texture, voicing and

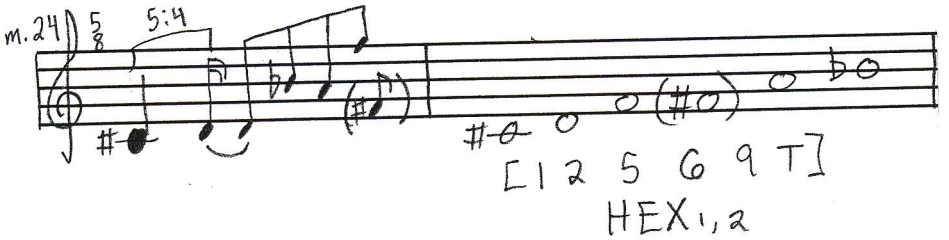
affect of the sonorities is very different. See Example 3 (at end) to view this section in full score.

While the opening builds in intensity, density and dynamic, the end (marked "Serenely ecstatic") is quiet and remote, ebbing away. The dynamic is soft throughout this section, and the texture transparent, even though the full orchestra is used. The hexachords alternate between a voicing of two (015) trichords in eighth notes (for $HEX_{0,1}$) and a soft sustained chord (for $HEX_{2,3}$); they are distinguished from each other by rhythm, which is not the case in the opening section. Also, where the beginning widens gradually from a single point to a large span, the end retains basically the same wide pitch space from m. 197 through m. 203. Then it narrows in as the two hexachords combine to form a twelve-note chord in m. 204, and contracts still further as out of that chord the $G\#^5$ emerges as the final tone, a solitary pitch.[3] Rather than a simple reversal of the opening procedure, the end is a complementary echo, employing both subtle and gross degrees of variation.

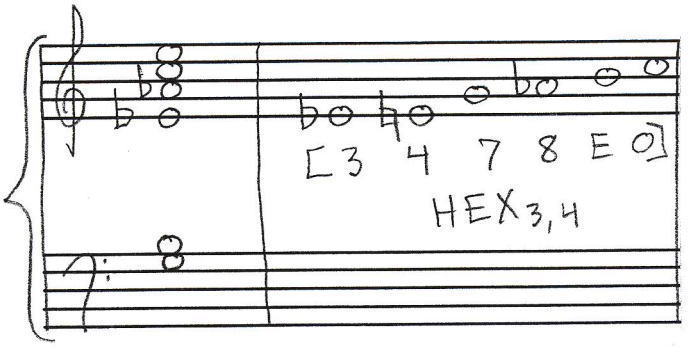
In between these points, there is much ebb and flow. Section B is an example wherein the music starts hexatonically and then moves away to other materials. The solo English horn melody, from mm. 19-25, uses pitch materials from $HEX_{1,2}$, with accompanying chords in the winds that form complementary $HEX_{3,4}$. See Examples 4a and 4b.

[3] The first E# in m. 1 is heard mostly in a single octave as well, $E\#^4$, with the exception of the double bass harmonic, which sounds at $E\#^5$.

Example 4a: Solo English horn melody, m. 24: $HEX_{1,2}$ materials

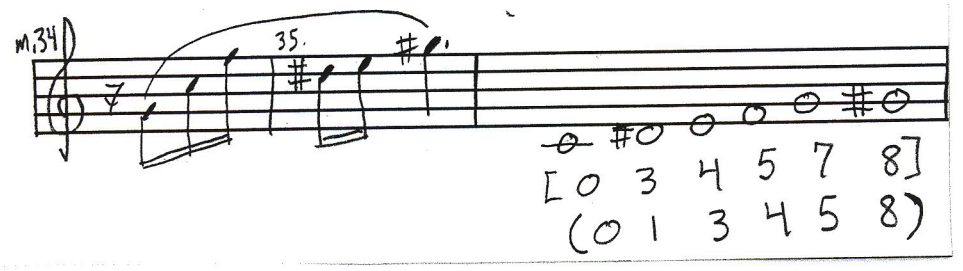


Example 4b: Pitches of wind chords, mm. 21-7: $HEX_{3,4}$ materials



Note that the "missing" F# from $HEX_{1,2}$ (shown in parentheses in Example 4a) is present in both the percussion and the bass drone, completing the hexachord. Section B begins with the same complementary pair of hexachords that was used in the introduction and in section A. However, with the solo oboe's entrance in m. 26 the melody moves away from the hexatonic collection, and it ends in mm. 34-5 with a rising motive that will recur several times later in the piece. See Example 5.

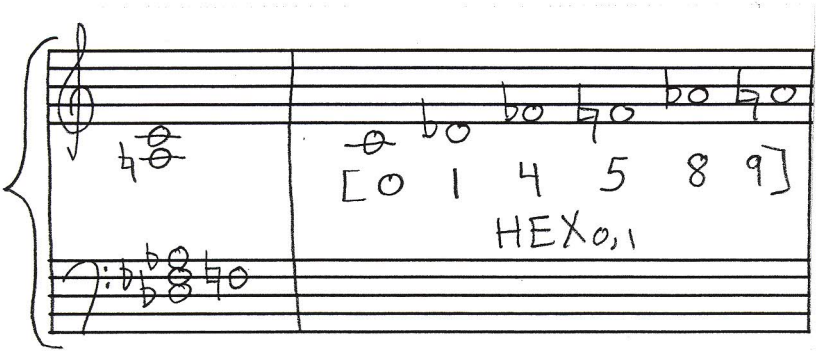
Example 5: Solo oboe and eng. horn, (013458) motive, mm. 34-5



This gesture uses a different type of hexachord, pitch-class set [034578] from set class (013458), another self-complementary hexachord class that will prove to be important at other points in the piece.

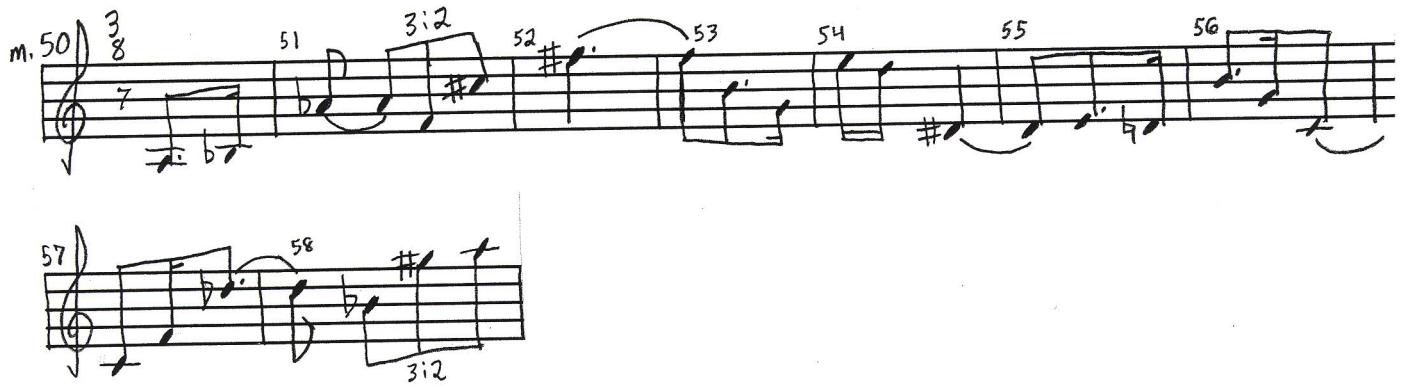
Then, at the beginning of section C (m. 39), the music returns to a hexatonic sonority, this time introducing one of the pitch-class sets not yet heard, $HEX_{0,1}$. See Example 6.

Example 6: Pitch material used at m. 39: $HEX_{0,1}$

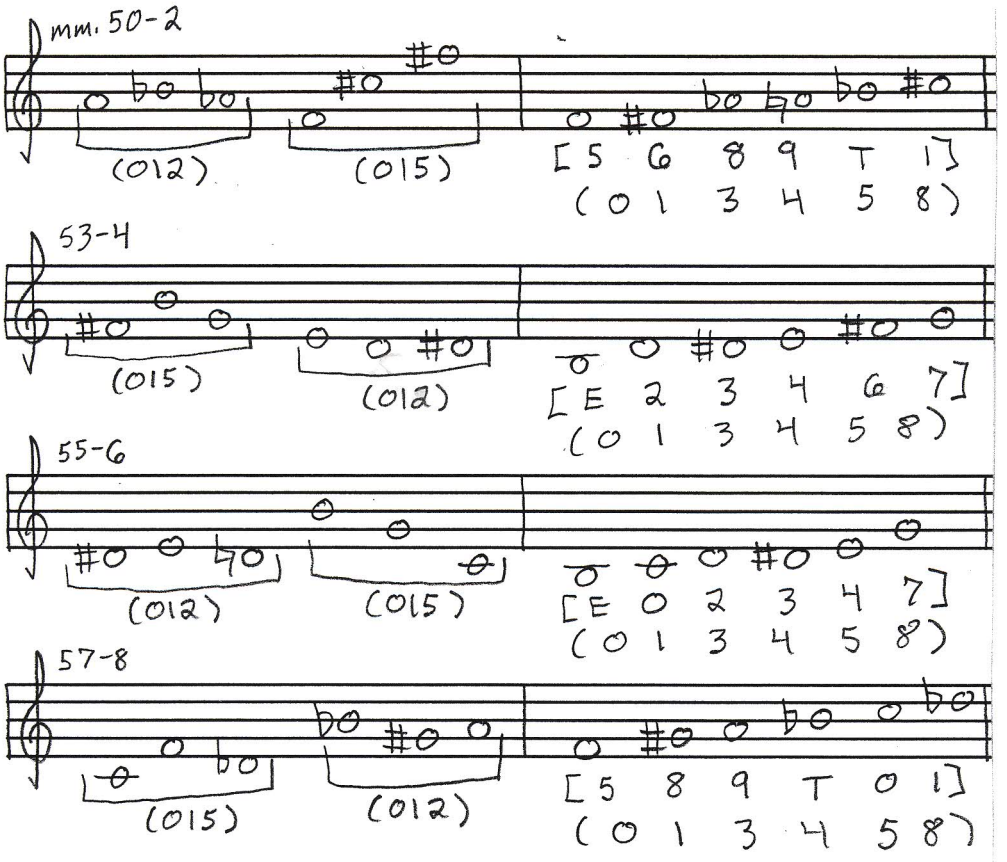


Sections D and E are another example of an "away" area, with a clear return to the hexatonic world at the beginning of section F (m. 76). The pitch material of the melody in section D (first heard played by the strings in mm. 50-8) is arranged into pairs of trichords in set classes (012) and (015). These trichords combine to form hexachords belonging to set class (013458), the same set class used in the "away" material in the section B melody. See Example 7a for this melody from section D, and Example 7b for the pitch-class sets it uses.

Example 7a: Violin melody, mm. 50-8



Example 7b: Violin melody as trichord and hexachord sets



The hexachords shown in the above example can also be divided into two complementary pairs: [5689T1] is the complement of [E02347], and [589T01] of [E23467]. This pitch material is repeated, with some changes of rhythm and octave, several times in this section. When the winds join the melody at m. 65, the D drone is reinforced by D minor chords in the percussion, harp and piano, possibly suggesting a kind of D-minor tonality here. (The D minor triad could also be read as a subset of