Figure 2: Form chart of movement away from and returning to hexatonic collection

Section	Hexatonic/ Return or Away	Musical Materials
Intro	Hexatonic	E# begins; then $HEX_{3,4}$ and $HEX_{1,2}$ (complements) alternating
A	Hexatonic	$HEX_{1,2}$ (primary) and $HEX_{3,4}$
B	moves Away	$HEX_{3,4}$ chords; melody starts with $HEX_{1,2,}$ ends with (013458)
C	Return/Away/Return	$HEX_{0,1}$ alternates with non/altered HEX; Returns to $HEX_{0,1}$
D	Away	Melody uses (012) and (015), forming hexachords of sc(013458); d-minor chords (subset of $HEX_{1,2?}$); (013458) leads into E
E	Away	Continues (013458), using complements [034578] and [69TE12]; (012)/(015) in melody
F	Return	$HEX_{2,3}$ in chords and (015) voicings; melody mostly $HEX_{0,1}$
G	Away/Return	Alternates arpeggiated hexachords: [T01256], sc(014568), and [T13567], sc(012469). (Could also be seen as 2 pentachords related by T7, both sc(02347) +4th/5th) Melody uses (015)s, moves into $HEX_{0,1}$
H	Return/Away/Return	Starts with $HEX_{3,4}$ then moves away; (0157) chords; melody uses [3568T0], sc(023579); accomp. returns to $HEX_{0,1}$
I	Away	Tetrachords in sc(0135), (0136), (0145)
J	Big Return	$HEX_{2,3}$ and $HEX_{0,1}$ (complements) alternating
K	Away	Melodic hexachords: [25789T], sc(012358); [034578] and [69TE12] (complements), sc(013458); (like letter D/E)
L	Away	Like G, T7-related pentachords in sc(02347) + 5th/4th; then adds $HEX_{1,2}$. Ends with [679T123], sc(0125689)
M	Return	$HEX_{1,2}$ as (015) groups, complement $HEX_{3,4}$ as chords
N	Away	sc(013578)
O	Away	Strings like L and G, hexa/pentachords; pc aggregate in 1st meas.
P	Return	Like C; $HEX_{0,1}$ alternates with different chord.
Q	Away	Melody uses sc(012347) + (01356) and (012358) + (02357)
R	Big Return	All four HEXes: $HEX_{2,3}$ and $HEX_{0,1}$ (complements), then $HEX_{3,4}$ and $HEX_{1,2}$ (complements), $HEX_{2,3}$ and $HEX_{0,1}$ again
S	Away	Melody echoes earlier themes; ends with (012) and (015) leading into T
T	Return	$HEX_{0,1}$ as (015)s and $HEX_{2,3}$ as chords, alternating. (Opposite comp. pair from Intro.) Final 12-note chord, G# ends alone.

$HEX_{1,2}$.) This is especially clear in m. 70, right before the ob/eh and brass repeat the ending (013458) motive from section B (see Example 5 above).[4]

The beginning of section E (m. 72) continues the use of set class (013458) with a different complementary pair, placed at opposite ends of the orchestral spectrum: [69TE12] in the cellos and [034578] in the flutes.[5] See Example 8 (at end) for the score.

After these two "away" sections (D and E), there is a clear return to hexatonic material at letter F (m. 76), where the fourth (014589) hexachord, $HEX_{2,3}$, is introduced (voiced in both string chords and pairs of (015) trichords in the pf/perc/hp) while the ob/eh melody is based on its complement, $HEX_{0,1}$. See Example 9 (at end) for the distribution of these hexachords throughout the orchestra.

The music continues to move in a similar way, with significant hexatonic "returns" at letters H, J, M, P, R and finally T. There are usually one or two letter sections of "away" materials in between, though shifts may also occur within a section. Not all of the "away" material employs the (013458) hexachords; it demonstrates considerable variety, including other hexachords, tetrachords, and trichords (although the trichords are often members of set classes (012), (015) and (027), emphasizing melodic fourths and fifths). See Figure 2 for a summary of these musical materials and the large-scale form.

A closer examination of section R, mm. 179-87, provides the opportunity for a more detailed look at some of these materials. This section, marked "Like peals of thunder," forms a climactic wave (or the peak of the large-scale wave) in which materials used structurally throughout the piece are first compressed and then exploded outwards,

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[4] A relationship might be posited between this motive, which ends on a sustained G#, and the ending pitch of the piece. The oboe/eh melody often emphasizes G# as an ending or arrival point.
[5] These two pitch-class sets return in section K as well, in the ob/eh melody in mm. 121-3, further indicating the composer's interest in self-complementary hexachord set classes.

after which the storm drops off abruptly into near silence at letter S. This is a stunning moment, as if the music falls off the edge of a cliff and the listener is left looking after it, toes at the edge, spinning with vertigo in the stillness. The music achieves this effect by building up dense patterns that break off before reaching completion. It is both a summary and a shift, moving towards the quiet ebb of the ending.

This section is extremely dense, loud and active, using all the instruments of the orchestra, though without the soloists until the final measure of the section (m. 187). It shows an emphatic return to the hexatonic material, after a fairly distant departure in the previous section (Q), and demonstrates many different layers and implications of these hexachords within a very compressed amount of time.[6] For the first time here, Yim employs all four of the (014589) hexachords in quick succession. See Figure 3 for a chart of the hexachord(s) used in each measure.

Figure 3: Hexatonic sonorities by measure, mm. 179-87

m. 179	m. 180	m. 181	m. 182	m. 183	m. 184	m. 185	m. 186	m. 187
$HEX_{2,3}$	$HEX_{0,1}$	$HEX_{3,4}$	$HEX_{1,2}$	$HEX_{0,1}$	$HEX_{2,3}$	$HEX_{1,2}$	$HEX_{0,1}$ and $HEX_{2,3}$	$HEX_{0,1}$ and $HEX_{2,3}$

As this table shows, the pattern changes in m. 186: instead of $HEX_{3,4}$ again, which would have completed the series of complementary pairs twice, the music departs into

[6] The only pitch in this section that does not fit cleanly into the hexatonic analysis is the harp's A-natural in m. 179. This is curious, especially since the corresponding harp gesture in m. 185 does not contain an analogous "extra" note, although it does appear to have an E# followed by an F-natural. It's possible that one of these measures contains an error in the score.

$HEX_{0,1}$ and $HEX_{2,3}$ (the two that will be the focus of the closing section at T). Not only the hexachord pattern but many other elements change at m. 186 (where the "explosion" happens), so it is most useful to divide section R into two smaller subsections, the first comprising mm. 179-85 and the second mm. 186-7.

In this first subsection, the hexachords follow the pattern described above, with one per measure. Several different rhythms and textures are combined to form this great wall of sound: sustained bass notes, fast arpeggiations in the strings, slower chords in the piano (changing subdivision with each measure), and perhaps most noticeably big, wave-like crescendi on wind and brass chords. See Example 10 (at end) for the full score of this section with hexachord analysis.

These crescendi are like small waves within the larger one, slightly offset, starting after the other instruments (except for the first in m. 179) and overlapping into the following measure so that the edges of the hexachords touch each other briefly.

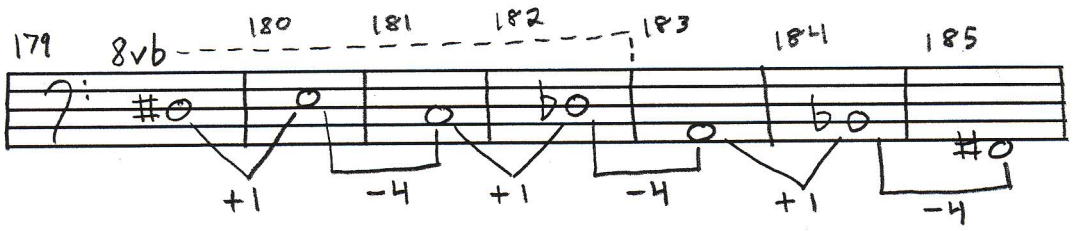
The piano's chords in this section also merit some attention, as they demonstrate different ways of arranging the hexatonic collection into subsets. From mm. 179-85, each measure of the piano part has two triads, one major and one minor, which combine to make up that measure's hexachord. See Example 10.

These triad pairings are not very audible within the huge envelope of sound, and it could be argued that perhaps they are only written that way for the pianist's ease of reading and execution. However, when the same hexachords return a few measures later, Yim divides them into different triads. (See Example 10.) The first time $HEX_{2,3}$ appears, in m. 179, it is written as G major/Eb minor; the second, in m. 184, it is written as Eb major/B minor. Likewise, $HEX_{0,1}$ appears first as Db major/A minor (m. 180) and then as

F major/C# minor (m. 183). This exploration of the different triad subsets of the hexatonic collection is one of several layers within the music.

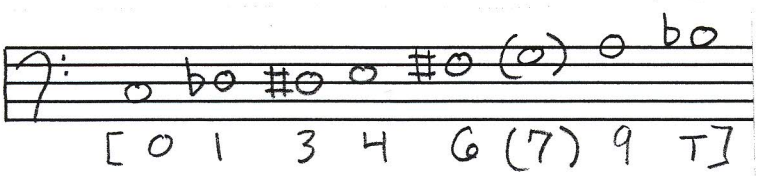
Another layer is the voice-leading of the bass notes and the wind/brass chords. In this section, the bass note changes each measure and is always part of the current hexachord, rather than being a drone throughout. Example 11 shows the bass pitches in mm. 179-85.

Example 11: Double bass pitches, mm. 179-85



As this example shows, the bass intervals follow a regular pattern, the equivalent of a semitone up followed by a major third down (or interval classes 1 and 4). In addition, if this collection of pitch-classes is viewed as an unordered set it forms an almost-complete octatonic collection, missing only one pitch class (7 or G). See Example 12 for this set arranged as an octatonic collection.

Example 12: Bass pitches (mm. 179-85) as octatonic collection: $OCT_{0,1}$



Similarly, each of the wind and brass instruments also forms a nearly complete octatonic collection. (Fl 2/Tpt 2 and Cl 1/Hrn 2 follow the same interval pattern as the bass, while the other instruments play descending octatonic scales.) Between all of these instruments, all three of the distinct octatonic collections are present: $OCT_{0,1}$, $OCT_{1,2}$, and $OCT_{2,3}$.[7] Each collection is missing one pitch to complete it within the individual line, although the composite makes up the entire scale. See Figure 4 for the division of these scales among the instruments. (See also Example 10 for the context within the full score.)

Figure 4: Octatonic collections used in mm.179-85

Fl 1/Tpt 1	Fl 2/Tpt 2	Cl 1/Hn 2	Cl 2/Hn 1	Bsn 1/ Trb 1	Bsn 2/ Trb 2/ Bass
$OCT_{1,2}$	$OCT_{1,2}$	$OCT_{2,3}$	$OCT_{2,3}$	$OCT_{0,1}$	$OCT_{0,1}$
Missing E	Missing B	Missing Eb	Missing Ab	Missing C	Missing G

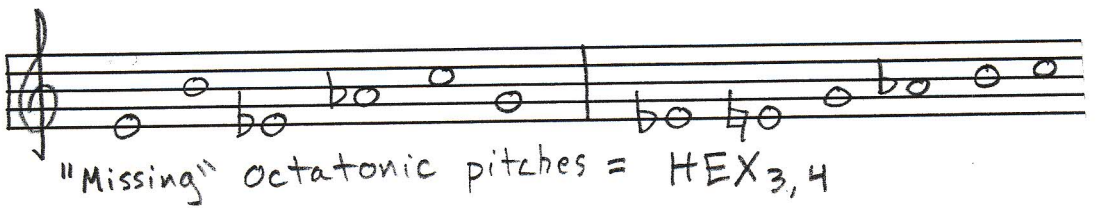
How do these various elements in the first part of section R interact? All of the different layers – the piano triads and the octatonic voice-leading – exist within the container of the hexatonic collection harmonies. The vertical sonorities are more central to the structure than the triads or the horizontal lines. This remains clear even though, paradoxically, the linear octatonic collections also in a more literal sense "contain" the hexatonic chords, appearing at the top and bottom of the score in the flute and bass. (This is a similar structure to that in the opening section, discussed above, where the hexatonic chords both contain and are contained by the chromatic voice-leading.)

[7] Straus, 144. Straus designates the three distinct octatonic collections in this way, the same method used to identify the hexatonic collections.

This first part of section R involves compression and summary, with a new element added in the octatonic voice-leading. It sets up a pattern that includes the hexachord progression, bass movement and octatonic scales. However, these patterns are denied completion: the second part, mm. 186-7, is the "explosion" or expansion, where the patterns are broken off.

Example 13 shows the hypothetical pitch-class content of m. 186 if Yim had chosen to continue the established pattern.

Example 13: Hypothetical pitch-class content of m. 186



As this example shows, the "missing" pitches that would complete the octatonic lines also combine to form $HEX_{3,4}$, the hexachord that would complete the harmonic pattern. (Refer also to Figures 3 and 4 above.)

Instead of reaching this neat conclusion, the pattern breaks off abruptly. In mm. 186-7 the strings, winds and brass all play $HEX_{0,1}$, while the piano and percussion shift between $HEX_{0,1}$ and its complement, $HEX_{2,3}$.[8] The texture changes dramatically, opening

[8] This is harmonically similar to section A, in which the pno and perc alternate $HEX_{3,4}$ and $HEX_{1,2}$ against a sustained $HEX_{1,2}$ chord in the other instruments.

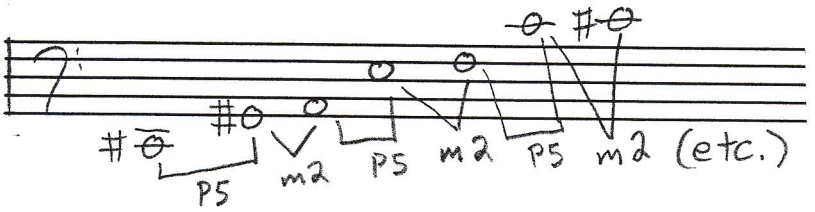
and scattering, then building up from low to high register in each measure. See Example 14 for the score of these two measures (with hexachord analysis).

As part of this scattering of texture, the piano chord voicings change here: instead of continuing with M/m triads, in m. 186 it plays groups of (015) trichord pairs, a way of grouping the hexachords that Yim has used at various other points. (See letters M and T for examples.) In m. 187 the piano returns to the triads (exchanging them between the two hands), but the broken (015) trichords in m. 186 do stand out audibly, as part of the general disruption that occurs there. (See Example 14.)

In another disruption of the established pattern, the bass note moves from F# in m. 185 to C# in m. 186-7, a relationship of a perfect fifth (or fourth) instead of the half-step movement to G that would have completed the octatonic collection for the bass.

The arrangement of the pitches of $HEX_{0,1}$ in the strings and winds also emphasizes perfect fifths, alternating with half-steps and climbing up through a wide expanse of pitch space in m. 186, only to descend and then climb even higher in m. 187. See Example 15 for a reduction of this hexachord spacing.

Example 15: Hexachord interval spacing, mm. 186-7



This is admittedly a very orderly explosion as far as pitch and interval content are concerned, but the breaking off of patterns and scattering of voices through pitch space and rhythm produces an intensely dramatic effect. The music sounds more chaotic and complicated in these two measures, even within the tight pitch structure.

The bass moves back to F# at the beginning of section S (m. 188). This fifth relation, the motion from F#-C#-F#, calls to mind an echo of a dominant/tonic relationship: could the F# be considered a kind of pitch center, at least momentarily? Perhaps, though it is a subtle one, not readily audible, with so many other pitches swirling around it. The abovementioned emphasis on fifths in the other voices might serve to reinforce this idea or, conversely, to muddy it, since various pairs of pitches are used in fifth relationships. Either way, both the rising fifth patterns and the piano's (015) trichords are more examples of ways to arrange the pitches of the hexatonic collection. The music still surges within that envelope, driving inexorably forward to…almost nothing.

At letter S we experience the second big moment of pattern-breaking, even more acute than the first at m. 186. That first break, while it changed texture and harmonic pattern, kept many of the same materials and, more importantly, the momentum of the music going even as it expanded out and changed direction. Here, the storm disappears suddenly into an eerie F# drone played by the strings, mostly as harmonics. (See Example 14.) Then the solo oboe and English horn enter with a last haunting, reaching melody that echoes motives from earlier in the piece. This melody is a movement "away" – it is non-hexatonic, beginning with a hexachord from set class (013458) and ending with a series

of (012) and (015) trichords that lead into the return of $HEX_{0,1}$, which is voiced as (015) pairs in the harp and percussion at letter T. (See Example 3 for this transition.)

The "explosion" in section R flung the music off into some faraway place, and in section S (marked "As from far beyond") it drifts slowly back towards the hexatonic gravity. Might a set class, rather than a specific pitch-class set, be considered a kind of "tonic" or center? In this piece at least, that seems to be the case: if the music is "centered" anywhere, it is in this hexachord class, rather than in a single pitch or pitch-class set. The hexatonic collection is the ground from which the music departs and to which it returns, on both large and small scales throughout the piece. In a way, this is an abstract center, but the fact that set class (014589) has only four distinct members makes it more feasible and concrete. (It's harder to imagine describing a piece as centered in set class (037), which could include all major and minor triads, although it might be possible.)

If the emphatic return in section R is heard as the climax, the final great crest of the wave, then what follows in the last two sections is a kind of coda that echoes all the previous departures and returns. The waves recede once more, to a site that is still recognizable but not quite their original place; it's as if the tide is coming in, ending up at a point a little higher than where it began.