Last Wave Reached

and

Register, Harmony, and Phrase Design in Webern’s Op. 24 and Op. 27

by

Timothy Robert Hambourger

Department of Music
Duke University

Date: ______________________

Approved:

______________________________
John Supko, Supervisor

______________________________
Scott Lindroth

______________________________
Philip Rupprecht

______________________________
Felix Woerner

Dissertation submitted in partial fulfillment of
the requirements for the degree of Doctor
of Philosophy in the Department of
Music in the Graduate School
of Duke University

2013
ABSTRACT

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Abstract

Last Wave Reached

_Last Wave Reached_ is a setting of poems by Kay Ryan, U.S. poet laureate, 2008–2010, for three female singers and large chamber ensemble. Ryan writes compact, intricate miniatures full of unexpected rhymes and alliterations, odd meters, playful word choices, and penetrating imagery. In this spirit, _Last Wave Reached_ unfolds as a series of distinct musical vignettes, each one evoking a single world of sound. The language is succinct, and instrumentation varies widely from movement to movement. Overall, the piece explores themes of repetition, return, finality and (im)permanence.

Register, Harmony, and Phrase Design in Webern’s Op. 24 and Op. 27

Many analyses of Webern’s mature music have considered pitch-class relations in depth, but few authors have explored Webern’s rich use of registral pitch space. Furthermore, little has been written about the design of individual Webernian phrases. In “Register, Harmony, and Phrase Design in Webern’s Op. 24 and Op. 27,” I make steps towards filling both gaps. In section 1, I focus on the first movement of the Op. 24 _Concerto_, show how Webern groups row forms by trichordal and hexachordal invariance, and demonstrate that invariant harmony interacts meaningfully with register to shape the global form of the movement. In section 2, I broaden my scope to demonstrate that register also plays a crucial role in shaping phrases and creating cadences throughout Opp. 24 and 27. In addition to _intrinsic_, pitch-based approaches, I show that we must consider _extrinsic_ factors like rhythm, tempo, and articulation to arrive at a full understanding of Webern’s phrasal technique.
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Acknowledgements

This dissertation would not have been possible without the generous support offered by my advisor John Supko. So many times a few words of advice from John was all it took to get me past the hurdles and creative blocks along my way. My dissertation committee, Scott Lindroth, Philip Rupprecht, and Felix Woerner added invaluable feedback. I also owe a great debt to Stephen Jaffe for scheduling the December 4, 2012 reading and March 3, 2013 premiere of Last Wave Reached, communicating with the Wet Ink ensemble, transporting instruments, and working through the many logistical tangles along our path. I have had the great fortune of working with an amazing group of talented and dedicated singers and instrumentalists for the premiere. It has been an incredible pleasure to hear the fruits of their hard work. Through it all Verena Moesenbichler-Bryant has conducted masterfully, demonstrating her deep knowledge of the score and easy ability managing rehearsals. I have always known that with her the piece was in very good hands. Finally, Kay Ryan has been extremely generous with her time and with her work. I hope my music might do justice to the joy and wisdom in her words.
Part I: Last Wave Reached
for three female singers and large chamber ensemble

Music by Tim Hambourger
Texts by Kay Ryan

Full Score
Instrumentation

Flute/Piccolo

Clarinet/Bass Clarinet

Alto Saxophone/Soprano Saxophone (player 1)

Tenor Saxophone (player 2)

Trumpet in C (or player may use a trumpet in D at their discretion)

Percussion (1 player)

Prepared Piano/Electric Piano

Soprano (doubling Triangle)

Mezzo-soprano

Alto

Violin/Viola (1 player)

Cello

Note on transpositions

The score is NOT in C. Clarinet and soprano saxophone sound a major second lower than written. Bass clarinet and tenor saxophone sound a major ninth lower than written. Alto saxophone sounds a major sixth lower than written. Piccolo sounds an octave higher than written. Glockenspiel and crotales sound two octaves higher than written. The trumpet sounds where written.
Note on amplification

Amplification is optional in *Last Wave Reached* and should be used at the performers’ discretion. If amplification is used, it is advisable to employ an engineer to adjust levels between movements. In the premiere, the following players were amplified slightly: all singers, violin/viola, cello, flute (movement 10 only), and prepared piano (movements 1, 5, 9, and 11 only). Amplified instruments were sent to a stereo output, with additional monitors for the conductor and the pianist.

Program note

I love Kay Ryan’s poems for their compact intricacy, for their quirky sense of rhythm and pacing, for the way her language rings with sparingly-sprinkled rhymes and hidden assonances and alliterations. With Ryan a few simple understated sentences somehow crystallize perfectly into a single vivid image, like stray thoughts that just need a small nucleus to condense into a meaningful whole. Many of her poems deal with a sense of repetition or return, of finding yourself again after a long time. In “Chop,” Ryan pits this idea of return against images of finality, singularity, and (im)permanence. Is “the last wave reached” final like an emperor’s guillotine is final? Or is it like the “last” of “last week”, merely the most recent instance in a series that has no foreseeable end? In the spirit of Ryan’s poetic miniatures, I have written *Last Wave Reached* as a series of musical miniatures, each one evoking a single world of sound, sometimes lyrical, sometimes dark, sometimes funny, but almost always strange.
Drum map

for any percussion staff with the cleff

Hi-hat (foot, closed)  Hi-hat (foot, open)  Kick drum  Floor tom  Snare  Suspended tom

Ride cymbal  Hi-hat (closed)  Hi-hat (open)  Crash cymbal

Complete percussion list

Drum set: (kick drum, snare drum, 1 floor tom, 1 suspended tom, hi-hat, ride cymbal, crash cymbal, 3 woodblocks or templeblocks)

crotales (2 octaves)
glockenspiel
additional kick drum
additional snare drum (optional, eases set changes)
additional hi-hat (optional, eases set changes)
2 additional crash cymbals (optional, eases set changes)
large tam-tam
5 melodic toms
vibraphone
1 additional woodblock
Guide to tenor saxophone multiphonics

No. 11. 'Last wave reached' calls for five distinct multiphonics, indicated as dyads with diamond noteheads. The performer should choose each multiphonic so that 1) it contains at least one pitch of the notated dyad (within a quarter-tone in either direction) and 2) it fits the timbral characteristics described below. None of the mutiphonics should be too harsh/dissonant, and all should be playable over a wide dynamic range. Although I sometimes call for these multiphonics to be of quite short duration, the preference should be for fingerings that produce the desired timbre over fingerings that speak easily - an indefinite, barely audible sound is perfectly acceptable for shorter note values.

<table>
<thead>
<tr>
<th>Multiphonic notation</th>
<th>Consonance/Dissonance</th>
<th>Other timbral characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>on a scale of 1 (completely consonant) to 10 (super dissonant)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>gentle, soft, whispry, breathy, tenuous</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>gentle, soft, but a little clearer</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>fairly clear at higher volumes, whispry when softer</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>clearer, sharper, more strident, but not too much</td>
<td></td>
</tr>
</tbody>
</table>
| x5                   | }
Guide to piano preparation

*Last Wave Reached* calls for three different kinds of piano preparations: 1) Some strings need to be muted by placing a small amount of adhesive putty at either end of the string (just under the hitch pins at the far end for higher strings, below the capo bar at the close end for lower strings). The product I used is DAP® BLUESTIK™ Reusable Adhesive Putty available at Home Depot (in the paint section), but other products may work as well. Be sure not to use so much putty that you flatten the pitch perceptibly. The resulting sound should be softer but should still resonate clearly and possess definite pitch. 2) I call for some strings to be muted at either the 2nd or a 4th partial node. As long as you mute precisely at the desired node, this produces a clear "multiphonic" tone consisting of the specified partial of the original fundamental plus a lower tone flatter than the original fundamental. This lower tone can be adjusted by altering the amount of putty placed on the string - the more putty, the lower the tone. The same putty used to mute the strings in number 1 can be used here, but to lower the original fundamental by more than a whole tone, I recommend using a denser product. The one I used is Firefly™ EZ Shape™ modeling clay available at Michaels arts and craft stores, but again other products may work equally well. The key is to find products that lower each string the desired amount without softening the tone too severely. 3) Finally, I call for some notes to be altered by simultaneously muting those notes near the hitch pins (as in number 1) and by inserting a penny or dime between the three strings for that note. Adjusting the positioning of the coin along the length of the strings alters the tuning of the resulting sound: placing the coin precisely at the second partial node produces a clear multiphonic with harmonic tone and lower tone similar to number 2. On the other hand, as you move the coin closer to the hitch pins, the harmonics produced become higher and less definite in pitch and the lower tone moves upward closer to the original fundamental. Below is a complete chart with all notes to be prepared. For clarity, I have used the same notation below as in the score and part, representing notes on two pairs of staves. The lower pair depicts the actual keys to be played/prepared; the top pair shows the resulting sounds.
1. Muting at ends of string with BLUESTIK™

2. Muting at 2nd or 4th partial node with BLUESTIK™ or EZ Shape®
Note on the electric piano

The electric piano part should be performed on an 88-key keyboard. For the premiere, a Korg M50 Music Workstation was used. All patches used were factory originals - no individual patches were edited. However, I did reorder the patches on the M50 so as to facilitate fast patch changes in performance. In the score and part, I have indicated patches with three identifiers:

1) A 4 digit code, such as 'E127,' that is specific to the way I ordered patches for the premiere.

2) A name, such as 'Direct E.Piano 2,' that corresponds to the factory original name and can be used to locate the same patch on another Korg M50.

3) A short description, such as '(or any electric pno or suitcase pno),' that should be used as a guide to finding an appropriate patch on a different brand of keyboard.
1. Almost Without Surface I

“Almost Without Surface” from *The Niagara River*, Grove Press, © 2005

Sometimes before
going to sleep a person
senses the give
behind the last given,

almost physically,
like the strain
of plush against
a skin.

The person imagines
a fig or peach,
perhaps a woman or
a deep constellation:
some fathomless
fruit.

[THE PORTION BELOW IS SET]

But we are each
that, while we live,
however much
we resist: almost

without surface, barely
contained,

but crazy
as clouds compounding
each other, refusing
to rain.

2. Paired Things

“Paired Things” from Flamingo Watching, Copper Beech Press, © 1994

Who, who had only seen wings,
could extrapolate the
skinny sticks of things
birds use for land,
the backward way they bend,
the silly way they stand?
And who, only studying
birdtracks in the sand,
could think those little forks
had decamped on the wind?
So many paired things seem odd.
Who ever would have dreamed
the broad winged raven of despair
would quit the air and go
bandy-legged upon the ground,
a common crow?

3. The Things of the World

"The Things of the World" from *Flamingo Watching*, Copper Beech Press, ©
1994

Wherever the eye lingers
it finds a hunger.
The things of the world
want us for dinner.
Inside each pebble or leaf
or puddle is a hook.
The appetites of the world
compete to catch a look.
What does this mean
and how does it work?

Why aren't rocks complete?

Why isn't green adequate to green? We aren't gods whose gaze could save, but that's how the things of the world behave.

4. Interlude (instrumental)

5. Almost Without Surface II.

See 1. Almost Without Surface I (above).

6. The Self is Not Portable

“The Self is Not Portable” from The Niagara River, Grove Press, © 2005

The self is not portable. It cannot be packed. It comes sneaking back to any place from which it’s been extracted,
for it is nothing alone.
It is not an entity.
The ratio of self
to home: one part
in seventy.

7. Blandeur

“Blandeur” from Say Uncle, Grove Press, © 2000

If it please God,
let less happen.
Even out Earth’s
rondure, flatten
Eiger, blanden
the Grand Canyon.
Make valleys
slightly higher,
widen fissures
to arable land,
remand your
terrible glaciers
and silence
their calving,
halving or doubling
all geographical features
toward the mean.
Unlean against our hearts.
Withdraw your grandeur
from these parts.

8. Swept Up Whole

"Swept Up Whole" from *Elephant Rocks*, Grove Press, © 1996

You aren't *swept up whole*,
however it feels. You're
atomized. The wind passes.
You recongeal. It's
a surprise.

9. Almost Without Surface III.
See 1. Almost Without Surface I (above).

10. Sharks’ Teeth

"Sharks' Teeth" from *The Niagara River*, Grove Press, © 2005

Everything contains some
silence. Noise gets
its zest from the
small shark's-tooth-shaped fragments of rest angled in it. An hour of city holds maybe a minute of these remnants of a time when silence reigned, compact and dangerous as a shark. Sometimes a bit of a tail or fin can still be sensed in parks.

11. Last Wave Reached

"Chop" from The Niagara River, Grove Press, © 2005

The bird walks down the beach along the glazed edge the last wave reached. His each step makes
a perfect stamp –
smallish, but as
sharp as an
emperor's chop.
Stride, stride,
goes the emperor
down his wide
mirrored promenade
the sea bows
to repolish.

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1. Almost Without Surface I

**With quiet intensity** $d = 48$

- **Flute**
- **Clarinet**
- **Trumpet**
- **Crotales (metal mallet)**
- **Percussion**
- **Piano**
- **Soprano**
- **Mezzo**
- **Alto**
- **Violin**

* harmonic gliss.

Harmon mute, stem out throughout
1. Almost Without Surface I

Fl.

Cl.

Tpt.

to Woodblock

Perc.

take up rubber mallet

Pno.

Sop.

Mezzo

But we are each that,

Alto

Vln.

loco
1. Almost Without Surface I

Almost Without Surface, barely contained, but crazily as clouds

while we live, however much we're split: without surface, barely contained, but craz-y as clouds

Almost Without Surface, barely contained, but craz-y as clouds,
on the frog

Woodblock (hard rubber mallet)

Crash cymbal and kick drum (drum stick)

take up metal mallet to Crotales
1. Almost Without Surface I

Crotale (metal mallet)
2. Paired Things

Small, quirky, and graceful $\beta = 52$

- Piccolo
- Clarinet
- Alto Sax.
- Soprano
- Mezzo
- Violin
- Cello
- Percussion
- Electric Piano
- Glockenspiel (metal mallet)
- Vibraphone (yarn mallets)

Very short, clear, owl-like, bell-like
Hoo hoo hoo hoo hoo hoo etc.

Metronome mark: $\beta = 52$
2. Paired Things

Faster, lilting
\( q = 64 \)

Who? Who, who had on-ly seen
2. Paired Things

Picc.

Cl.

A. Sx.

Perc.

E. Pno.

Sop.

Mezzo

Vln.

Vlc.

Lyrical, light

could extrapolate the skin

wings, sticks of things

birds use for

Ah ah ah

Hoo

Ah ah ah

<w>exclamation mark</w>
2. Paired Things

Tempo I \( \text{\(\text{\textit{j} = 52}\)} \)

Picc.

Cl.

A. Sx.

Perc.

E. Pno.

Sop.

Mezzo

Vln.

Vlc.

26 27 28 29 30 31 32 33

land,

the backward way they bend,

the silly way they stand?
2. Paired Things

Picc.  
Cl.  
A. Sx.  
Perc.  
E. Pno.  
Sop.  
Mezzo  
Vln.  
Vlc.
2. Paired Things

- Slightly faster \( \sigma = 56 \)

Picc.

Cl.

A. Sx.

Perc.

E. Pno.

Sop.

Mezzo

Vln.

Vlc.

44 45 46 47 48 49 50 51
2. Paired Things

could think those lit-tle forks
had camped in the wind?
2. Paired Things

\textbf{F} Same tempo \( \frac{4}{4} = 112 \)

- Picc.
- Cl.
- A. Sx.
- Perc.
- E. Pno.
- Sop.
- Mezzo
- Vln.
- Vlc.

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*Note: The image contains musical notation and instructions for each instrument.*
2. Paired Things
2. Paired Things
2. Paired Things
2. Paired Things

\[
2 + 2 + 3
\]

2. Paired Things
2. Paired Things
2. Paired Things
2. Paired Things
2. Paired Things

Much slower and heavier \( \dot{\kappa} = 84 \)

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Notation</th>
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<tbody>
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<td>![Piccolo Notation]</td>
</tr>
<tr>
<td>Cl.</td>
<td>![Clarinet Notation]</td>
</tr>
<tr>
<td>A. Sx.</td>
<td>![Alto Saxophone Notation]</td>
</tr>
<tr>
<td>Perc.</td>
<td>![Percussion Notation]</td>
</tr>
<tr>
<td>E. Pno.</td>
<td>![Piano Notation]</td>
</tr>
<tr>
<td>Sop.</td>
<td>![Soprano Notation]</td>
</tr>
<tr>
<td>Mezzo</td>
<td>![Mezzo Soprano Notation]</td>
</tr>
<tr>
<td>Vln.</td>
<td>![Violin Notation]</td>
</tr>
<tr>
<td>Vlc.</td>
<td>![Viola Notation]</td>
</tr>
</tbody>
</table>
2. Paired Things
2. Paired Things

Picc.

Cl.

A. Sx.

Perc.

E. Pno.

Sop.

Mezzo

Vln.

Vlc.

air and go

ban-dy-legged

up-on the ground,
2. Paired Things

Tempo I
\( \text{\textit{J}} \)
\( \text{\textit{d}} = 52 \)

```
* To conductor:
  Wait for percussionist to get set before cuing downbeat of bar 133. Mezzo leads tempo in bar 133. Place downbeat of bar 134 with mezzo.

** To mezzo:
  Wait for conductor's cue to start bar 133. Solo, out of time, with lots of ritard. Place downbeat of bar 134 with conductor.
```
2. Paired Things

---

Picc.

Cl.

A. Sx.

Perc.

E. Pno.

Sop.

Mezzo

Vln.

Vlc.
2. Paired Things

Picc.  
Cl.  
A. Sx.  
Perc.  
E. Pno.  
Sop.  
Mezzo  
Vln.  
Vlc.
2. Paired Things
3. The Things of the World

**L** Quiet but biting \( \lambda = 104 \)

- **Piccolo**
- **Bass Clarinet**
- **Alto Sax.**
- **Tenor Sax.**
- **Trumpet**
- **Electric Piano**
- **Soprano**
- **Mezzo**
- **Alto**

**Percussion**
- Drum set (drum sticks)

**E126 M50 Grand Piano** (or any grand pno)

- **With sharp, focused energy**

"Wherever the eye lingers it finds a hunger. The things of the world want us for dinner."
3. The Things of the World

Wherever the eye lingers it finds a hunger.
The things of the world want us for dinner.

Wherever the eye lingers it finds a hunger.
The things of the world want us for dinner.

Wherever the eye lingers it finds a hunger.
The things of the world want us for dinner.
3. The Things of the World

ever the eye-ling - ers it finds a hunger.

The things of the world want us for dinner.

Where ever the eye-ling - ers it finds a
3. The Things of the World

The things of the world want us for dinner. Wherever the eye is hung, it finds a hunger. The
3. The Things of the World

things of the world want us for dinner.

The things of the world want us for dinner.

The things of the world want us for dinner.
3. The Things of the World

Take written part as a suggestion.
Funky, playing around the accents.
3. The Things of the World

Inside each pebble or leaf or puddle is a hoo.

In - side each pebble or leaf or puddle is a hoo.

Inside each pebble or leaf or puddle is a hoo.
3. The Things of the World

The appetites of the world compete to catch a look.

What does this mean and how does it work?
3. The Things of the World
3. The Things of the World

P

Again take written part as a suggestion. Grooving, with lots of offbeat hits.

Why isn't green adequate to green n?
3. The Things of the World
3. The Things of the World
3. The Things of the World
3. The Things of the World

Slower, with rubato \( \dot{\frac{\text{\textsquare}}{\text{\textsquare}}} \text{=} c. 72 \)

Why aren't rocks complete?

Why isn't green adequate to green?
3. The Things of the World

We aren't gods whose gaze could save, but that's how the things of the world behave.

Wire brushes

Back to playing part as written.
4. Interlude

Slow shuffle ♩ = 96

Drum set (wire brushes)
very loose and relaxed

E126 M50 Grand Piano (or any grand piano)
4. Interlude
5. Almost Without Surface II

Ominous \( \bar{d} = c. \, 56 \)

- Bass Clarinet
- Alto Sax.
- Tenor Sax.
- Trumpet
- Prepared Piano
- Percussion
- Soprano
- Mezzo
- Alto
- Cello

3 Woodblocks (hard rubber mallet)

cup mute throughout

1 2 3 4 5 6 7
<p>But we are each that, while we live:</p>
5. Almost Without Surface II

B. CL.

A. Sx.

T. Sx.

Tpt.

Perc.

Pno.

Sop.

Mezzo

Alto

Vlc.

on the frog

con

(barely) contained, but crazy as clouds

al-most without surface,

bare-ly contained, but crazy as clouds

al-most without surface,

bare-ly contained, but crazy as clouds

al-most without surface, barely contained, but crazy as clouds

almost Without Surface II

(54)
5. Almost Without Surface II

B. Cl.

A. Sx.  pp

T. Sx.  

Tpt.

Perc.

Pno.

Sop.  refusing to rain.

Mezzo

Alto

Vlc.
6. The Self is Not Portable

Not in strict time.
Conductor cues each measure.

Lightly \( \frac{d}{= 90} \)
In time

Out of time
In time \( \frac{d}{= 90} \)

Out of time

E126 M50 Grand Piano (or any grand pno)
6. The Self is Not Portable

It comes sneak...ing back... to any place... from which it's been extracted...ed.
6. The Self is Not Portable

Out of time

In time $\dot{=} 90$

The ratio of
6. The Self is Not Portable
7. Blandeur

Straight-faced and proper, like a warped Anglican hymn \( \downarrow = 68 \)

- Clarinet
- Alto Sax.
- Tenor Sax.
- Trumpet
- Electric Piano
- Mezzo
- Alto

E125 Pipe Full Organ (or any church organ)
7. Blandeur

Cl.  
A. Sx.  
T. Sx.  
Tpt.  
E. Pno.  
Mezzo  
Alto  

out Earth's res-dure, flat ten  
Eiger, blande the Grand Can yon.  

Mezzo  
Alto  

valleys slightly higher, wi den fissures to ar-a-ble land,  
re mand yourterri-ble gla ci-ers and si-lence their cal-ving,
7. Blandeur

Cl.

A. Sx.

T. Sx.

Tpt.

E. Pno.

Mezzo

Alto

HALVING or dou-bling all ge-o-graphi-cal fea-tures toward the mean. Un-lean against our hearts. With-

HALVING or dou-bling all ge-o-graphi-cal fea-tures toward the mean. Un-lean against our hearts. With-

B1

Cl.

A. Sx.

T. Sx.

Tpt.

E. Pno.

Mezzo

Alto

draw your grandeur from these parts.
draw your grandeur from these parts.
Hit the given G, then noodle in G Lydian. Fade to nothing.

Hit the given C, then noodle in D Lydian. Fade to nothing.

Hit the given D, then noodle in G Lydian. Fade to nothing.

Hit the given F, then noodle in F Lydian. Fade to nothing.

Hit the given chord, then noodle in F Lydian. Fade to nothing.
8. Swept Up Whole

[Music notation diagram with parts for Flute, Percussion, Mezzo, Violin, and Cello, with indications of dynamic markings and tempo]
8. Swept Up Whole

Fl.

Perc.

Mezzo

Vln.

Vlc.

You aren't swept up whole, however it feels.

Fl.

Perc.

Mezzo

Vln.

Vlc.

Glockenspiel (metal mallets)

Narrow incisive sound

You aren't swept up whole,
8. Swept Up Whole

Fl.

Perc.

Mezzo

Vln.

Vlc.

33 34 35 36 37 38 39 40

==

Fl.

Perc.

Mezzo

Vln.

Vlc.

41 42 43 44 45 46 47 48 49 50
9. Almost Without Surface III

G1

Distant $\bar{\ JOIN \ V }$ = 72

Flute

Clarinet

Percussion

Prepared Piano

Soprano

Alto

Violin

Almost Without Surface III
9. Almost Without Surface III

Woodblock (hard rubber mallet)

-almost without surface, barely contained, but crazy as clouds...
9. Almost Without Surface III

approx. 5 - 10"

Not in time. Ad lib. no. of "waves."
Fade out ascending indefinitely.

approx. 5 - 10"

Not in time. Ad lib. no. of "waves."
Fade out ascending indefinitely.

Not in time. Ad lib. no. of "waves."
Fade out ascending indefinitely.

Not in time. Ad lib. no. of "waves."
Fade out ascending indefinitely.

Not in time. Ad lib. no. of "waves."
Fade out ascending indefinitely.

Not in time. Ad lib. no. of "waves."
Fade out ascending indefinitely.
10. Sharks' Teeth

A noisy mess $j = 112$

Piccolo

Bass Clarinet

Soprano Sax.

Tenor Sax.

Trumpet

Percussion

5 Melodic toms (drum sticks)

E124 M50 Grand Piano (or any grand piano)

Electric Piano

Soprano

Mezzo

Alto

Violin

Cello
10. Sharks' Teeth
10. Sharks' Teeth
10. Sharks' Teeth
10. Sharks' Teeth

Half tempo $d = 56$

Tempo I $d = 112$

Picc.

B. Cl.

S. Sx.

T. Sx.

Tpt.

Perc.

E. Pno.

Sop.

Mezzo

Alto

Vln.

Vlc.

Harmon mute, stems in

to tam-tam

Large tam-tam (soft mallet)

to crash cymbal

Crash cymbal (drum stick)

to vibraphone

take up yarn mallet

Vibraphone (yarn mallet)

to toms

take up drum sticks

Melodic toms (drum sticks)

pp

pp

p

$ff$

 senza sord.

take up yarn mallet
to vibraphone
to tam-tam

somatenoise

pizz.

con-tains some silence

($drum$ stick)}
10. Sharks' Teeth

10. Sharks' Teeth

Half tempo $\frac{1}{4} = 56$

Picc.

B. Cl.

S. Sx.

T. Sx.

Tpt.

Perc.

E. Pno.

Sop.

Mezzo

Alto

Vln.

Vlc.

Harmon mute, stem in

to tam-tam

Large tam-tam (soft mallet)

to vibraphone

Vibraphone (yarn mallet)

to toms

take up drum sticks

pp Whispered

small shark's-tooth-shaped fragments

Noise gets its zest from the small shark's-tooth-shaped fragments of rest angled

pp Whispered

shark's-tooth-shaped fragments

pizz.

arco
to toms

to crash cymbal

to tam-tam

Large tam-tam (soft mallet)

to vibraphone

Vibraphone (yarn mallet)

to toms

take up drum sticks

pp Whispered

small shark's-tooth-shaped fragments

Noise gets its zest from the small shark's-tooth-shaped fragments of rest angled

pp Whispered

shark's-tooth-shaped fragments

pizz.

arco
10. Sharks' Teeth

Tempo I $\frac{\dot{\ }}{\bullet} = 112$

Picc.

B. Cl.

S. Sx.

T. Sx.

Tpt.

Crash cymbal (drum stick)

Melodic toms (drum sticks)

Perc.

E. Pno.

Sop.

Mezzo

in it

Alto

Vln.

Vlc.

70 71 72 73 74 75 76 77
10. Sharks' Teeth
10. Sharks' Teeth

Picc.

B. Cl.

S. Sx.

T. Sx.

Tpt.

Perc.

E. Pno.

Sop.

Mezzo

Alto

Vln.

Vlc.
10. Sharks' Teeth
10. Sharks' Teeth
10. Sharks' Teeth
10. Sharks' Teeth
10. Sharks' Teeth
10. Sharks' Teeth

molto rit.

Half tempo $\frac{\dot{\cdot}}{\dot{\cdot}} = 56$

Picc.

B. Cl.

S. Sx.

T. Sx.

Tpt.

Perc.

E. Pno.

Sop.

Mezzo

Alto

Vln.

Vc.
10. Sharks' Teeth
10. Sharks' Teeth
11. Last Wave Reached

V1 Meditative, calm, warm $j = 54$

Tenor Sax.

Prepared Piano

Soprano

Viola

flautando light uneven tremolo
tremolo sim. sempre
11. Last Wave Reached
11. Last Wave Reached

T.Sx.:

mf pp       f     pp

Sop.:

p          mp          f     pp

Vla.:

mf pp       mf pp       f     pp

15  16  17  18  19  20

walks down the beach a -

ord. with more intensity
11. Last Wave Reached

T. Sax.

Sop.

Vla.

long

the glazed edge

21 22 23 24 25 26
11. Last Wave Reached
11. Last Wave Reached

Energetic and precise $\frac{d}{d} = 120$

(Notation notation)

his each step makes a perfect stamp
11. Last Wave Reached

Stopping suddenly \( \frac{d}{t} = 54 \)

- T. Sax.: Slap tongue
- Sop.: pizz.
- Vla.: arco senza vib.
Energetic again $\frac{d}{4} = 120$

Slap tongue

Slowing again $\frac{d}{4} = 54$

Slap tongue
11. Last Wave Reached

Opening mood $\frac{j}{\delta} = 54$

T. Sx.

Pno.

Sop.

Vla.
11. Last Wave Reached

T. Sx.

Pno.

Sop.

Vla.

79 80 81 82 83 84 85
11. Last Wave Reached
11. Last Wave Reached

Slowing again \( \dot{j} = \frac{5}{4} \)

N. B. senza vib.

111
11. Last Wave Reached

Opening mood $\delta = 54$

T. Sx.

Sop.

Vla.

G. P. ordin. vib.

depress silently
and hold till end
with sost. pedal

ord. vib.

$102$  $103$  $104$  $105$  $106$  $107$  $108$  $109$
11. Last Wave Reached
Part II: Register, Harmony, and Phrase Design in Webern’s Op. 24 and Op. 27
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Register, Harmony, and Phrase Design in Webern’s Op. 24 and Op. 27

To this day the reception of Webern’s music is still widely influenced by the generation of serialist composers, both European and American, who succeeded him. They are the ones whom we have most to thank for the standard description of his music: organized, symmetrical, crystalline.¹ “There is indeed only Debussy whom one can compare with Webern – in their common tendency to destroy all formal organisation pre-existing the work itself, in their common recourse to the beauty of sound for its own sake, in their common elliptical pulverization of the language…. Webern was obsessed with formal purity to the point of silence.”² Frequently, as in this quote from Boulez, this emphasis on formal purity says as much about the author’s own aesthetic goals as it does about the substance of Webern’s music.

The Op. 24 Concerto, especially its first movement, has often been the focus of this line of analysis. This is understandable: Webern himself acknowledged that the tone row for the piece developed out of an attempt to realize in music the symmetries contained in the Latin acrostic

² Boulez 1958, 40 – 41.
The outcome of Webern’s efforts can be seen in figure 1. He constructs his row out of four (014) trichords such that each successive trichord is related to the initial one via the same “classical” operations normally used to relate entire rows in twelve-tone music and theory. As a consequence, when the row is inverted, retrograded, and retrograde-inverted at the proper transposition levels, rows will result that contain the same four trichords as the original row, but in some permuted order. We can even arrange these rows in a square very much like the Latin acrostic above (see figure 1b).

Ironically, many of the same commentators who write so extensively about Webern’s row take comparatively little interest in his musical realization of that row. George Perle writes that, “The opening bars of the Concerto give us the earliest instance we have of music that is totally organized in terms of serial relations.” But of the entire piece he writes, “On the whole, however, there is a discrepancy, as with the Trio, between the powerful integrative potentialities of the row and the composer’s ability to

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4 In the figure, as throughout this essay, I follow George Perle in using a fixed Do system for naming rows. For instance P0 is the prime form beginning on pc 0, and likewise I0 the inverse form beginning on pc 0. Retrograded forms are named in relation to the corresponding prime or inverse forms, so that R0 and RI0 both end, rather than begin, on pc 0. See Perle 1971, 5 fn 4.
5 Or as Milton Babbitt would have it, “derived” from. See Babbitt 2003.
exploit these potentialities.”⁶ Likewise, Milton Babbitt deeply admires the symmetrical construction of the Op. 24 row – it clearly bears a close relation to his own use of trichords – but seems disappointed by the piece itself: “Webern does not exploit the combinatorial properties of this set; he does not create progression through secondary sets or aggregates, nor does he determine his transpositions in terms of such properties.”⁷

Since the time of these serialism-influenced analyses, many more recent scholars have begun to wrestle seriously with the substance of Webern’s music. Christopher Hasty, Andrew Mead, Christopher Wintle, and most of all Kathryn Bailey have all made major contributions in this vein.⁸ In Bailey’s work in particular one finds a tremendous urge to embrace the full gamut of Webern’s twelve-tone output in all of its multivalent formal and contrapuntal detail. The present article is in many ways an effort to synthesize and reinterpret aspects of her analyses.

The present essay arises out of two related underlying goals. The first is to argue strongly for the role of register as a key organizing principle in Webern’s mature style. The second is to wrestle with still unresolved questions concerning phrase design in Webern’s music. Basic questions still await full answers, questions such as “what musical processes drive phrases forward in Webern’s music?” and “what processes conspire to create moments of closure, dare we even say cadences, in Webern’s music?” These are not easy questions, and they will certainly not be put to rest anytime soon. My aim here is to explore two possible approaches, one intrinsic and one extrinsic, and to suggest that

⁷ Babbitt 2003, 47 fn 25.
any successful answer to the questions above will have to be flexible enough to embrace both approaches. In all, I hope to show that register and harmony interact meaningfully in Webern’s music and that both have a role to play in the structuring of phrases.

Consequently, two rather contrasting sections follow. The first is an analysis of the entirety of Op. 24/i focusing on the close relationship between harmony and register. We will see evidence not only that Webern's control of register in this work is conscious, but even more that register and harmony interact in meaningful ways with each other and with the phrase structure of the movement. We will see that, in this movement, important harmonic events and pronounced changes in register generally coincide with one another. All of this will provide strong evidence for register’s organizing role at a global level.

In the second section I will tackle the issue of phrase design more directly. Here, I will turn my attention to the local level of individual phrases. In addition to Op. 24, I will consider examples from the Op. 27 Variations for Piano. Key questions will include, “how can we describe the anatomy of a single Webernian phrase?” and “what role does register play in that description?” We will begin with intrinsic approaches that focus on pitch relations. Where these prove insufficient, we will consider possible extrinsic approaches that focus more on ‘surface’ features such as articulation, the placement of rests, and tempo indications like rit. or a tempo. Sometimes, the extrinsic and intrinsic will reinforce each other nicely. We will see other examples in which it seems almost as if tempo indications and the like have been imposed on a pitch domain that is indifferent to them. Row structure will play an ambivalent role here. Phrase boundaries often do align with the boundaries between rows, but they just as often do not. Parallel with the
row structure we will find an almost overwhelmingly rich world of microscopic pitch
details, and often these seem to be the true determinants of phrase structure.

In both sections symmetry will make a frequent appearance. While Webern’s
music was not apparently as symmetrical or as systematic as Perle and Babbitt may have
wished, symmetries, both horizontal and vertical, still abound.⁹ For horizontal symmetry,
one needs to look no further than Op. 27/i, a movement in which every row statement
constitutes a palindrome. Meanwhile, both outer movements of Op. 24 begin and end
with vertically symmetrical pitch constellations, and Op. 27/ii is vertically symmetrical in
its entirety about A4. We will see other more local examples. There will even be cases in
which symmetry seems to act as an organizing principle, at least over the course of
several measures. In this way, my use of vertical symmetry will recall in certain ways the
work of Jonathan Bernard on Bartók and Varèse.¹⁰ But whereas Bernard has
demonstrated the role of vertical symmetry as an organizing principle at the level of
entire movements, I am aware of no example in Webern’s music of vertical symmetry
playing such a global role (Op. 27/ii not withstanding).

Finally, in what follows I will rely heavily on the concept of a registral
constellation. I mean by this, more or less, an assignment of all twelve pitch classes to a
stable position in pitch space. In other words, a registral constellation is a fully voiced
twelve-note chord. For instance, in the first five bars of Op. 24/i, all twelve pitch classes

⁹ When I speak of vertical symmetry, I do not just mean sonorities that are symmetrical
as a collection of pitch-classes (such as the Op. 24 row). Many writers of all stripes have
noted these at great length already. I mean more specifically structures that are vertically
symmetrical in their registral placement in pitch space.
make two appearances, and in each case the second appearance is in the same registral position as the first. We can summarize this by saying that the first five bars of the movement occupy a single registral constellation (see figure 17 below). It will become clearer as we proceed just what functions registral constellations serve. In some ways, they act like another layer of harmony operating in parallel with a piece’s row structure.

In the analysis of Op. 24/i that follows I will take a parametric approach. I will show that row topography, harmony, and register each play an independent role in shaping the flow of the music. Yet these three parameters also conspire to create a single unified sense of motion over the course of the movement. In this approach I am indebted to Christopher Hasty: “Rather than regarding any domain as privileged, we may instead focus our attention on the result of the interaction of all domains, that is, on the more general issue of musical articulation or rhythm in the broadest sense of the term.”

First we must spend a little more time with Webern’s row. The row exhibits no inversional or retrogressive symmetry, and thus each of the 48 rows shown in the matrix in figure 2 is unique, with no repetitions of entire row forms. Nonetheless the row does exhibit a great deal of internal symmetry. As I said above, each of the row’s four discrete trichords belongs to set-class (014), and each of its discrete hexachords presents a

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11 The phrase is Kathryn Bailey’s. See Bailey 1991.
12 Bailey refers to this kind of independence as the “nonalignment of constituent elements.” She sees Op. 24 as the first of Webern’s works in which nonalignment plays a prominent role. Bailey 1991, 183.
complete hexatonic collection (014589). As a result many forms of the row bear a strong resemblance to one another in terms of pitch-class content at the trichordal and hexachordal levels.

Because Webern’s surface writing so strongly emphasizes trichordal units, the most audible row invariance relations are those concerning the division of the row into discrete trichords or discrete hexachords. Two rows are trichordally related if their four discrete trichords share the same pitch-class content (figure 3). Two trichordally related rows may present the same four trichords with the internal order of pitches within trichords unchanged but with the order of the trichords within the row altered in some fashion (figure 3a). Or the four trichords may appear in the same order, but with their internal pitch orders reversed (figure 3b). Figure 4 lists all of the various possibilities and shows in each case a convenient code describing the relation’s effect upon (in order) the row’s hexachords, trichords within hexachords, and individual notes within trichords. I have also provided formulas to show which pairs of row forms exhibit each relation.14

Two of these seven trichordal relations deserve special mention here. Figure 5a shows two +++ related rows, R₆ and I₁. These rows are identical apart from a reversal of their two discrete hexachords. The first hexachord of R₆ is identical to the second hexachord of I₁ and vice versa. This creates the possibility of eliding the two rows such that they share an entire hexachord, something that Webern exploits on multiple occasions.

14 It is important to emphasize that the seven trichordal invariance relations listed in figure 4 are specific to the Op. 24 row. A different row might admit more or fewer trichordal relations between its various forms. Many rows do not admit any beyond the trivial ---.
occasions, for instance in mm. 13 – 17 (figure 5b). Notice that in addition to eliding R₆ and I₁ in the winds and strings in the example Webern also elides two other ++ related rows, I₆ and R₁₁, in the piano. The result is not an exact palindrome of pitches but rather two palindromes of hexachords, stacked the one on top of the other. Notice that Webern repeats the first hexachord of each palindrome in register. This decision helps clarify the palindromes and strengthens the sense that the entire excerpt forms a single unit.

A second relation that deserves mention is ++-. Two ++- related rows have the same corresponding trichords; the only difference is the order of individual pitches within trichords. This is precisely the relation that so many commentators have pointed out between P₁₁ and RI₀ at the opening of the movement (see figure 3b above and figure 17 below). The same relation recurs between R₁₀ and I₁₁ just before the end of the movement in bars 63 – 67 (see figure 16 below). Another result is that two ++- related rows are indistinguishable if one verticalizes each of the rows’ four discrete trichords. So for instance it is impossible to decide whether the row in the piano in measures 20 – 21 is R₁ or I₂ (figure 6). This same ambiguity recurs a few more times in the piano part. It is most prominent in the final measure of the piece, where the entire ensemble joins in a verticalized statement of P₅/RI₆ (see figure 16 below).

As there are seven different trichordal invariance relations in total, each of Webern’s 48 different rows is trichordally related to seven others. Consequently we can divide the 48 rows into six families of eight rows each (seven variants plus the original), with all of the rows in each family trichordally related to one another. Figure 7 shows all six of these trichord areas. I have assigned each area a number based on one of the two P
forms that it contains. For instance trichord area 0 (henceforth TA₀) contains P₀, TA₁ contains P₁, etc.

These trichord areas are quite analogous to the harmonic “areas” that David Lewin posits in his work on Schoenberg.¹⁵ In both cases small families of rows are held together by similarities in internal segmental pitch class content. We will see whether Webern uses these trichord areas in a way reminiscent of tonality, as Lewin suggests in the case of Schoenberg. If we turn our attention back to figure 1b we can see that the four rows shown, together with their retrogrades, in fact form a trichord area (TA₅). The concept of trichord area is thus intimately bound up with the question of row symmetry, and given this it is reasonable to suppose that Webern may even have been aware of these trichord areas as harmonic units.

If each trichord area is like a large nuclear family of closely related rows, rows that are hexachordally related are like distant cousins, for these rows do not share common trichords but only common hexachords. That is, two rows are hexachordally related if their two discrete hexachords share the same pitch-class content.¹⁶ As with the trichordal invariance relation, two hexachordally related rows may present their hexachords in the same order or in reverse order (figure 8).

Recall that each discrete hexachord of Webern’s row presents a complete hexatonic (014589) collection. Because of the transpositional and inversional symmetries of that collection there are only four distinct hexatonic scales: HEX₀,₁ [0, 1, 4, 5, 8, 9],

¹⁵ For the clearest exposition see Lewin 1968, 1 – 15. Also see Lewin 1967a and Lewin 1967b.
¹⁶ This is of course just another way of saying that the rows are hexachordally invariant.
HEX$_{1,2}$ [1, 2, 5, 6, 9, 10], HEX$_{2,3}$ [2, 3, 6, 7, 10, 11], and HEX$_{3,4}$ [3, 4, 7, 8, 11, 0]. Note that these four pc collections fall into two pairs of complementary sets: HEX$_{0,1}$ complements HEX$_{2,3}$ and HEX$_{1,2}$ complements HEX$_{3,4}$. There are thus only two different hexachord areas for the Op. 24 row. Members of TA$_0$, TA$_2$, and TA$_4$ all juxtapose HEX$_{1,2}$ and HEX$_{3,4}$, whereas members of TA$_1$, TA$_3$, and TA$_5$ juxtapose HEX$_{0,1}$ and HEX$_{2,3}$. We can easily find the members of each hexachord area if we return to figure 7. The first, even hexachord area is on the left whereas the second, odd area is on the right. We can quickly determine the hexachord area of a given row form from its name/transposition number. For prime and retrograde forms an even transposition number indicates that the row form itself is even and an odd transposition number indicates that the row form is odd. For inverse and retrograde inverse forms this relationship is reversed. So for example P$_0$ and RI$_1$ are both even whereas R$_5$ and I$_2$ are both odd.

Figure 9a presents three different hexachordally related rows (one from each of the three odd trichord areas). Besides containing the same discrete hexachords, these rows also share a number of adjacent ic 1 dyads. In fact, each row contains five of the six dyads marked “Collection A” in figure 9b. Odd rows always contain dyads from collection A and even rows dyads from collection B. This is simply because of the hexatonic scales involved (figure 9c). We will see below that Webern often treats these ic 1 adjacencies motivically. This provides a strong audible connection between rows of the

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17 The terms even and odd refer merely to the index number for the included trichord areas. The even hexachord area includes all those trichord area with an even index number (TA$_0$, TA$_2$, and TA$_4$) and likewise for the odd hexachord area.
18 In each case the sixth dyad is present as well, but not as an adjacency. Compare for instance the seventh and twelfth pitches of P$_{11}$. 

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same hexachord area and an equally audible disconnect between rows from different hexachord areas.

Figure 10 depicts every row statement in the movement and labels each by its trichord and hexachord areas.\footnote{The number in the top right corner of each row box represents its trichord area. The shading of each box represents its hexachord area.} Overlapping “stair-step” boxes indicate elided rows (see for instance bars 13 – 17, which were discussed above). Even from a cursory glance at the figure we can see that Webern uses a clear row-topographical opposition to structure the movement: in bars 1 – 10, 24 – 25, 45 – 49, and 63 – 69, the piano and the rest of the ensemble either alternate complete row statements or work together to express a single complete statement of the row. These moments represent periods of topographical stability in as much as only one row unfolds at a time throughout the entire instrumental texture. The bars in between these represent moments of topographical instability as the ensemble presents multiple overlapping rows at once. In these sections the piano acts as an independent player separate from the rest of the ensemble. Tellingly, it is in these unstable concertante passages that Webern most frequently elides rows. In bar 26 for instance the piano begins a chain of elisions that stretches uninterrupted all the way into measure 45. This is accompanied by long (though broken) chains of elisions in the rest of the ensemble.

Figure 10 reveals several important properties of the movement. To begin with, Webern is clearly selective in his choice of trichord area. $TA_4$ is the most common with $TA_0$, $TA_1$, and $TA_5$ following close behind. $TA_3$ and $TA_2$ are in distant fifth and sixth
places.\textsuperscript{20} By favoring certain trichord areas, Webern in effect favors certain (014) trichords over others. This lends a uniformity and consistency to the movement above and beyond the consistency intrinsic in Webern’s single-minded reliance on (014) as the base harmony. Furthermore, we can see that in several instances an entire passage of music will be dominated overwhelmingly by just one or two trichord areas. In bars 1 – 17 it is TA$_5$, which appears six separate times. TA$_0$ and TA$_4$, the only other trichord areas present in the passage, combine for only five appearances. In bars 18 – 23 and 55 – 62 TA$_1$ dominates and TA$_3$ follows in second. On the other hand from measure 42 until measure 50 the only trichord areas to appear are TA$_0$ and TA$_4$. Again this lends a strong consistency and stability to these passages, which becomes quite audible in relation to passages that combine different trichord (and hexachord) areas more freely.

Stepping back, we can divide the movement loosely into three sections according to Webern’s reliance on specific hexachord areas. In bars 1 – 23 the emphasis falls overwhelmingly on odd rows, which outnumber even rows two to one. In bars 24 – 49 the emphasis falls even more overwhelmingly in the other direction. Here even rows outnumber odd almost three to one. Finally, from the entrance of TA$_5$ in measure 50 until the end of the movement odd rows again receive more attention, but even rows also make a strong showing, particularly during the uninterrupted stretch of TA$_4$ in bars 63 – 68.

Again, there may be some question as to whether all of these harmonic shifts are audible. Indeed, are the hexachord areas themselves audible harmonic units? Of course, 

\textsuperscript{20} The exact number of instances are: TA$_0$ – 11, TA$_1$ – 11, TA$_2$ – 3, TA$_3$ – 5, TA$_4$ – 13, and TA$_5$ – 11.
this depends largely on who exactly is listening and on how familiar the listener is with the movement. For most listeners, including myself, what will be more readily audible than the hexachord areas themselves is the formal contrast between moments of (relative) hexachord-area stability and moments of instability. Bars 1 – 5, 17 – 23, 24 – 29, 42 – 49, 55 – 62, and 63 – 68 all represent passages of hexachord-area stability. In these passages a single hexachord area dominates for a stretch of several measures with at most one or two row statements from the rival hexachord area. We can see that all of these passages of stability come either towards the beginning or towards the end of one of the large harmonic sections I outlined above. That is, Webern tends to mark his harmonic transitions by intensifying the harmonic cohesion on each side of the transition. This makes those transitions, from odd to even rows at bar 24 for instance, all the more audible. Understandably it is towards the middle of each large harmonic section that Webern allows his row choices to become more haphazard, cluttered, and ambiguous.

On the surface, Webern’s motivic treatment of ic 1 adjacencies provides a strong audible marker for shifts in hexachord area. Consider the shift at bar 24 from a predominance of odd rows to a predominance of even ones (figure 11a). Locally, R7 and P3 in bars 22 – 23 are both odd whereas RI3 in bars 23 – 25 is even. Figure 11b reduces these four bars to a number of prominent ic 1 dyads that populate the musical texture. Webern voices these dyads alternately as major sevenths or as minor ninths. The shift at the end of measure 25 from dyads belonging to collection A to those from collection B

21 Refer again to figure 9b.
is quite audible, especially when Webern holds the affected pitches in register across the harmonic boundary. This is true of A3, C4, D4, and C#5.22

Just the opposite happens in measures 40 – 45 of the piano (figure 12). This passage occupies the second half of a chain of four elided even row statements in the piano that stretches from measure 35 through measure 45.23 Webern strengthens the sense of harmonic continuity in the excerpt by foregrounding a sequence of ten ic 1 dyads that forms a near palindrome. As these are even rows all of the dyads come from collection B.24 Webern articulates each dyad as a grace-note pick-up figure, and he holds each dyad fixed in register throughout the passage. It is interesting that Webern creates a near palindrome in the audible musical surface where none exists in the underlying row design. The result is a subtle interplay of register, harmony, rhythm, and gesture. I have already discussed another similar use of registral repetition to reinforce harmonic continuity in the case of the hexachordal elisions of measures 13 – 17 (figure 5b).

At other times Webern singles out short dyadic motives in a way that seems more idiosyncratic or even whimsical. In bars 31 – 32 (figure 13a) the repetition of pc 3 and pc 11 in register creates a sense of musical continuity (and a short five-note palindrome) when in fact the harmony is shifting down a transposition level from P₁ to P₀.25 He repeats this same trick when the harmony shifts down a further transposition level to P₁₁, in measures 34 – 35 (figure 13b).

22 I have marked these registral relations in figure 11b.
23 The rows rise by two transposition levels each time: R₀, then R₈, R₁₀, and R₀.
24 Lower case letters in figure 15 correspond to those in figure 12b.
25 And thus also shifting from the odd hexachord area to the even.
The above examples all demonstrate Webern’s local use of registral repetitions to create musical continuities that may either reinforce or complicate prevailing harmonic continuities. But register also plays a more global role in the shaping of the movement. Figure 14 outlines the entire movement and shows the percentage of notes that are “fixed” in each bar. By a fixed note, I mean a note that appears in the same register as the most recent previous appearance of that pitch class anywhere in the instrumental texture. A note that has changed register since its last appearance is not fixed.\textsuperscript{26} Thus, as a first approximation, the higher the percentage of fixed notes in a given bar, the higher the registral stability. Four passages stand out from the figure: bars 1 – 5, 42 – 48, and 63 – 68 are all highly stable, with fixed-note percentages at or near 100% (and always above 70%). In contrast bars 19 – 23 represent the most extended passage of registral instability. Here the fixed-note percentage drops below 35% for five consecutive measures. In between these four passages the music is more or less mixed registrally, and fixed-note percentages fluctuate rapidly between numbers above and below 50%.

Figure 15 coordinates this registral information with my previous discussion of row topography and harmony. By and large, these three parameters are independent, in that they do not align precisely with one another. But it is clear nonetheless that they do reinforce each other and contribute in tandem to a unified discourse of stability and instability that organizes the entire movement.

\textsuperscript{26} By this definition the notes of the first row statement, in bars 1 – 3, are strictly-speaking neither fixed nor unfixed, since there can be no prior point of comparison for any of those pitch classes. I have chosen to consider these notes fixed, since I would argue that we hear the beginning of the movement as intrinsically stable until Webern gives us conflicting information to suggest otherwise.
And on occasion two of the three parameters will change in unison. The harmonic shift at measure 6 (from the odd RI₀ to the even RI₁₁) is accompanied by a clear increase in registral instability. This relationship is repeated at the end of the movement. Webern keeps the register fixed for three successive statements of TA₄ in measures 63 – 68, and then changes register suddenly for the final shift back to the odd TA₅. By coordinating registral and harmonic activity in these last seven measures, Webern is able to bring the movement to a strong close. Of course, rhythm and articulation also play a role. Following the rhythmic palindrome of mm. 63 – 67, Webern increases the level of rhythmic activity with three consecutive beats of sixteenth notes in mm. 67 – 68. There is then a dramatic pause before the delivery of the final three chords, all marked sff with staccato accents and all delivered at a sharply slower tempo (figure 16).

Row topography, harmony, and register are thus independent, yet reinforcing. Together they mark three passages as particularly stable: the beginning, mm. 1 – 5, the end, mm. 63 – 68, and also the passage in mm. 45 – 49. To these three we may add measures 24 – 25. Here topographical and harmonic stability align, but without the added

27 We will see Webern use a similar technique elsewhere. See my discussion of registral punctuations below.
28 How one interprets the final measure of the movement also has a bearing on the question of whether trichord areas operate in a way reminiscent of tonal key areas. The astute reader may have noticed from figure 10 that TA₅ is both the first and the last trichord area of the movement. For some, this could constitute evidence that TA₅ is the “tonic” or “home” trichord area of the movement. Those interested in this line of analysis may be encouraged to learn that TA₅ also ends Op. 24/iii. Despite this, I have my doubts about the tonal analogy here. For one, TA₅ occurs elsewhere in the interior of Op. 24/i without, I would argue, the importance normally associated with a return to the tonic. Furthermore, I would argue that in its local context the final measure of the movement sounds much more like a departure away from TA₄ than a return to TA₅. We will have space to consider this question again below.
support of registral stability. This segmentation of the movement fits nicely with Kathryn Bailey’s formal and thematic analysis. By and large passages that I have marked as unstable correspond with Bailey’s second theme, and stable passages correspond with the music that Bailey calls alternately the opening theme or the ritornello. So Bailey identifies mm. 45 – 49 as the recapitulation of the opening theme. For Bailey the final presentation of this theme begins precisely in m. 63. The moment of stability in mm. 24 – 25 also takes on significance in Bailey’s sonata-form analysis: she locates measure 26 as the beginning of the development, and treats measures 24 – 25 as an extended cadence to the movement’s exposition.

We have thus seen that an analysis based only on the three parameters of row topography, invariant harmony, and register arrives at much the same segmentation of Op. 24/i as an analysis based on melodic theme types, texture, and articulation. The fit, however, is not perfect. We have identified measures 1 – 5 as stable, but Bailey’s opening theme occupies measures 1 – 10. Likewise we have identified mm. 63 – 68 as stable, but Bailey naturally sees the final statement of theme 1 extending from m. 63 right to the end of the movement in m. 69. I agree with Bailey’s segmentation in both cases. I analyze mm. 1 – 10 and mm. 63 – 69 as phrases below. Measures 45 – 49 are also slightly problematic. In terms of row topography, these measures are a natural unit, but in terms of harmony we should begin the phrase not in m. 45 but with the statement of the even rows R₄ and R₀ two and half bars earlier. This is where register would have us begin the phrase as well: measures 45 – 48 continue the registral constellation of mm. 42 – 44

29 Bailey 1991, 179 – 89 and 349.
(beginning with the clarinet D5 in m. 42). But register would also have us end the phrase in m. 48, since by the downbeat of m. 49 Webern is starting to shift registers again.

To be more precise about the boundaries of our musical segments, or perhaps it is safe to begin calling them phrases now, we are going to have to adopt other analytical tools. Our technique so far suffers from a nagging imprecision: while we have said a great deal about when Webern chooses to shift from one registral constellation to another, we have said almost nothing about what registral constellations Webern prefers and even less about why he should choose to use one registral constellation in place of another. We will start to unpack these questions below. First, we must introduce some theory regarding phrases.

2

In Phrase Rhythm in Tonal Music, William Rothstein never presents a single concise definition of “phrase,” but he is quite explicit that for him a phrase must have a clear direction and goal: “If there is no tonal motion, there is no phrase.”30 Or, as he quotes Peter Westergaard: “A phrase,”

1. establishes one set of pitches and then
2. moves to a second set of pitches in such a way that
   a. we expect those pitches
   b. we have some sense of when they are about to occur, and
   c. once they have occurred we know the phrase has gotten where it’s going and that no further pitches are needed to complete that phrase.31

A passage that merely prolongs a single harmony may be a subset of a phrase, but for Rothstein and Westergaard it cannot count as a complete phrase unto itself. Another way to put this is that a phrase must lead to some kind of a cadence.

Rothstein is talking strictly about tonal music; nonetheless, his and Westergaard’s formulations are both useful for us here. Of course, to apply their ideas to Webern we have to decide what, in Webern’s post-tonal idiom, could possibly fulfill the role of "tonal motion" in Rothstein’s maxim. More simply, how does Webern create cadences? I would argue that there is no single answer to this question. Webern does not employ any one cadential technique to the exclusion of all others. Rather, his technique changes from context to context. This is not to say that one cannot extrapolate certain trends or tendencies from movement to movement and piece to piece, only that these trends seldom apply universally to all (or even the vast majority of) phrases. Regardless, even as cadential details change, I will take Rothstein’s lead and reserve the term “phrase” for those musical units that present a complete progression (whether harmonic, registral, row structural, or otherwise).

Consider for instance the first ten bars of Op. 24/i (figure 17). Bars 1 – 5 present a single twelve-tone chord that is symmetrical in pitch space around F5/F#5. In bars 6 – 8 this symmetry is unsettled by a new succession of pitch structures, each of which is vertically symmetrical in its own right. In bar 6 and the first two notes of bar 7, Webern contracts the tessitura inward to give us another symmetrical row statement. But beginning with the third note of m. 7 through the end of m. 8, it is hexachords, and not full row statements, that are symmetrical. The register expands outward in these bars, but
unevenly so: the highest note G6 of bar 8 is also the highest note of mm. 1–5, where as the lowest note D4 of m. 8 is one tone lower than the lowest note E4 of mm. 1–5. After this fragmentation a sense of order is restored when the registral space contracts inward again and the opening sonority returns in the piano in bars 9–10.

Does this mean bars 1–10 (excluding the trumpet entrance in the last eighth note of m. 10) do indeed constitute a phrase? I would argue yes. Webern clearly establishes an opening sonority in mm. 1–5. Bars 6–8 disrupt this sonority, and bars 9–10 restore it. Significantly, the piano part of mm. 9–10 presents an exact retrograde, by trichord, of the opening row statement of the movement, mm. 1–3. The final piano chord of m. 10 literally completes a return to the beginning of the movement.32

My analysis of this phrase deliberately recalls the beginning-continuing-end paradigm that informs, in various ways, the work of many recent theorists of classical and romantic form, among them William Caplin, Kofi Agawu, and Janet Schmalfeldt.33 Indeed, one can easily assign Caplinesque formal functions to the segments of the phrase. In Caplin’s terminology, mm. 1–5 carry presentation function. These measures introduce the basic idea (understood melodically and harmonically/registrally) of the phrase (mm. 1–3) and then repeat this basic idea (mm. 4–5). The repetition is key for Caplin since it helps to establish the basic idea in the listener’s ear. Bars 6–8 carry

32 In classifying mm. 1–10 as a single phrase, my analysis differs slightly from that of Kathryn Bailey, who discerns a phrase boundary between mm. 5 and 6. On my reading, mm. 1–5 would properly be considered a subphrase rather than a phrase since these measures contain no harmonic or registral motion whatsoever. Likewise, mm. 6–10 would fail to qualify as a complete phrase since the cadence in mm. 9–10 only makes sense as a return in relation to the music of mm. 1–5. See Bailey 1991, 179–89.
continuation function and clearly exemplify both of Caplin’s defining characteristics for this function: “fragmentation, a reduction in the size of the [melodic] units; and harmonic acceleration, an increase in the rate of harmonic [and, for us, registral] change.” Finally bars 9 – 10 exhibit cadential function. This is actually the biggest stretch of the three functions, since for Caplin cadential function depends crucially on the presence of a tonal cadence. Nonetheless, the sense of return described above would seem to suffice. It should be said that this phrase is uncommonly elegant and that most phrases in this repertoire could not be adapted to Rothstein’s and Caplin’s criteria quite so easily. We will consider various counterexamples shortly. Still, lest we think that the phrase above is entirely an outlier, we should examine another relatively straightforward example.

Measures 1 – 18 of Op. 27/i form the first of the movement’s three large-scale sections in an overall ABA’ form. These three sections are clearly separated from one another by long pauses. The end of each section is marked with a rit. and the beginning of each subsequent section with a tempo. The B section is also clearly distinguished from the A and A’ sections by a sharp increase in rhythmic activity and dynamic range.

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34 Caplin 1998, 10.  
35 Caplin introduces presentation, continuation, and cadential functions in his discussion of sentence structure. As he proceeds, each new formal type receives its own characteristic set of formal functions. Nonetheless, these sentential functions are in many ways the most basic. They will mostly suffice for us here. See Caplin 1998, 9 – 12.
This A section, mm. 1–18, forms as a single large phrase composed of four constituent subphrases (figure 18). Each of these subphrases consists of a single palindrome, and each one occupies a complete statement of two rows, with the elision of at most a single note between row statements. The first subphrase, mm. 1–7, is the only one of the four in which all pitches remain fixed in register for the duration of the subphrase. Henceforth I will call any such palindrome registrally stable and any palindrome in which any pitches change register as they retrogress registrally unstable.

From its outset, the second subphrase, mm. 8–10, occupies a different registral constellation from the first. Indeed, not one of the pitches sounding in m. 8 was heard in mm. 1–7. Further, during the second subphrase one pitch, G#4, changes register to G#3 in the retrogression. There is thus a perceptible increase in the rate of registral change as the music progresses from the first to the second subphrase.

This trend accelerates dramatically in the third subphrase, mm. 11–15, in which only four pitches retrogress in the same register in which they progress. This creates a small registrally stable palindrome in the midst of a larger registrally unstable one. In terms of pitch-class content, this subphrase is identical to the first. And yet in terms of

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36 Once again, my analysis emphasizes larger units than that of Kathryn Bailey. She identifies each of these four segments as a complete phrase. This analysis accords well with musical intuition, since each of the segments is set off by rests, and with row structure. Nonetheless, in the spirit of Rothstein I prefer to reserve the term phrase for the entire passage, mm. 1–18, since it is only in the full passage that a complete registral progression is stated. Bailey is further compelled to identify each of my subphrases as a phrase since on her reading mm. 1–7 constitute the first theme of the movement and mm. 8–10 the second theme. Without necessarily contradicting her analysis, my reading emphasizes the harmonic unity of the entire passage. See Bailey 1991, 189–94.
While not vertically symmetrical, the first subphrase is staid and registrally contained. The third subphrase, on the other hand, executes a dramatic downward sweep from B5 in m. 11 to G2 in m. 14. This alone should offer a lesson in the importance of register as an independent parameter.

The fourth subphrase, mm. 15 – 18, is nearly identical, note for note, to the second. Unlike the third subphrase, which only repeats subphrase one in pitch class content, the fourth subphrase repeats subphrase two in register. The only alterations are a slight rhythmic compression in m. 16 and the indication of a ritardando and diminuendo in mm. 17 – 18. After the registral instability of subphrase three, these measures represent a return to relative registral calm.

There is thus a progression from registral stability to registral instability and back again over the course of the entire passage. This motion parallels the overall contour of the phrase. Subphrase 1 sits the lowest of the four, spanning 31 semitones from A2 to E5. Subphrase 2 moves upward and spans 33 semitones from C3 up to A5. Subphrase 3 is the clear climax of the entire phrase. It spans a full 40 semitones, and the B5 and G2 that frame the beginning and end of the subphrase are respectively the highest and lowest pitches of the entire phrase. Subphrase 4 contracts the registral space inward again.

The passage thus executes an expanding-then-contracting registral shape, and the registral constellations of the individual subphrases change according to an abcb plan. I would argue that these shapes together constitute a strong enough musical progression to qualify the entire passage as a phrase.

Their rhythms are also quite different; see below.
There is also a rhythmic sense of acceleration and deceleration over the course of the phrase, though the peak of rhythmic activity does not align with the registral peak in m. 11. Subphrase 1 consists of four statements of an underlying rhythmic ostinato lasting five sixteenth notes (figure 19a). In this ostinato the two hands each make two attacks in a legato gesture, and the two hands never attack simultaneously. The result is a stately succession of gestures that closely matches the registral constraint of these measures. In subphrase 2 the rhythmic intensity increases. There is once again a rhythmic ostinato, but this time it lasts only three sixteenths (figure 19b). Whereas the ostinato in subphrase 1 begins with a sixteenth note of rest, there is an attack on every sixteenth note of subphrase 2. Further, in each repetition of the ostinato there is one simultaneous attack by both hands. Subphrase 3 uses the same ostinato as subphrase 2. It shifts the ostinato relative to the barline and presents four, rather than three, statements, but otherwise the two subphrases are rhythmically identical.

At the beginning of the fourth subphrase, in mm. 15 – 17, the rhythmic activity increases again (figure 19c). Now successive statements of the ostinato overlap by a sixteenth note so that the rhythm repeats every two sixteenths. Measure 16 consists of three successive simultaneous attacks by both hands. Instead of a stately succession of gestures we hear a three- or four-note chord on every sixteenth note. Then, in m. 17, things suddenly decelerate. The second sixteenth of m. 17 is silent, the first moment of rest in the middle of a subphrase since subphrase one. The remainder of mm. 17 – 18 present one isolated statement of the ostinato with another rest following. Furthermore, there is a rit... marking over all of mm. 17 – 18 before a tempo marking in m. 19 to start
the B section. Measure 16 is thus the rhythmic climax of the entire phrase. The
deceleration in mm. 17 – 18 mitigates, but hardly balances, the long acceleration that has
come before. This is actually a very typical rhythmic profile for Webern. Many phrases
execute a long acceleration before ending with a pause and a short decelerating gesture.
In this case, I would argue that even though this rhythmic profile does not align perfectly
with the registral profile described above, the two still reinforce each other and mutually
contribute to the sense that by m. 18 a cadence has been completed.

As above, we can easily assign Caplinesque formal functions to the segments of
this phrase. The most straightforward function is continuation. We have already seen that
mm. 8 – 17 execute an increase in the rate of registral change, an increase in the rate of
rhythmic activity, and a shortening of the melodic units involved. All match Caplin’s
definition of continuation function perfectly. Naturally mm. 1 – 7 should carry
presentation function. These measures provide the registral starting point for the phrase to
come and introduce the basic melodic and rhythmic ideas that will dominate that phrase.
Furthermore, mm. 4 – 7 (beginning with the third sixteenth of m. 4) offer an exact repeat
of mm. 1 – 4 (ending with the first sixteenth of m. 4), so long as we tolerate repeats in
retrograde. This repetition is important registrally; mm. 1 – 4 contain every pitch class,
but it is only after m. 7, when we have heard each of these pitches repeated in register,
that we can say we have heard a stable registral constellation. Of course, this stability is
immediately undermined in m. 8.

This leaves cadential function for mm. 17 – 18 (beginning properly with the third
sixteenth of m. 17). In one way, this is natural since we have already seen that these
measures execute the deceleration that brings the phrase to a close. But is there a way to understand the cadential function of mm. 17 – 18 in terms of pitch content? After all, all of mm. 15 – 18 represent a return to registral stability after the instability of mm. 11 – 15. What distinguishes mm. 17 – 18?

I have two thoughts about this: first, mm. 17 – 18 echo m. 10 exactly. Mm. 15 – 17 do echo mm. 8 – 9, but with the difference that the C3 of m. 8 and the D4-G#4-C#5 chord of m. 9 have been condensed into a single chord in the second sixteenth note of m. 16. This gives subphrase 2 and subphrase 4 different shapes. Subphrase 2 is balanced. Measure 9 does not necessarily sound like an exact palindrome, both because G# changes registers and because, as Bailey puts it, “notes… are handled in such a way that the coincidence of parts is not the same going into and out of the centre” of the palindrome.38 But measure 10 does sound like an exact retrograde of m. 8. This balance is missing in subphrase 4. The subphrase is front heavy, and measures 17 – 18 may recall m. 10 more than they do mm. 15 – 16. All of this means that mm. 17 – 18 create a stronger sense of return than mm. 15 – 17 do. Another way to think of this is to ask how the entire phrase would sound if one were to end at the C# of m. 17, without the concluding three attacks. I would suggest incomplete.

My second thought has to do with vertical symmetry. This phrase and mm. 1 – 10 of Op. 24/i differ markedly in their treatment of vertical symmetry. The Op. 24 example proceeds from and to a vertically symmetrical registral constellation. In the Op. 27 example, not one row statement occupies a vertically symmetrical registral constellation.

And yet, the music of mm. 8, 10, and 17–18 is vertically symmetrical, even if these bars state only a hexachord and not a complete row. If we accept that vertical symmetries can act as harmonic goals in Webern’s music, then it seems plausible to conclude that the vertical symmetry of mm. 17–18 (again excluding the C#5 on the downbeat of m. 17) contributes to those measures’ cadential function. This symmetry is absent from mm. 15–17 precisely because of the same change in chord construction described above.\(^\text{39}\)

We have now seen two phrases in which a progression to and from registral stability seems to be a main driving force. These phrases end more or less where they begin. The Op. 27 example is more complex in this regard than the example from Op. 24, but even here there is a strong sense of return. It may not be a coincidence that both of these phrases stand at the beginnings of their respective works. We will see presently that not all of Webern’s phrases follow such a balanced arc; strangely, it will be phrases from the ends of movements that make this clear.

We have already observed how, at the end of Op. 24/i, Webern holds all pitches fixed in register and harmony throughout mm. 63–68 before shifting suddenly to a new registral constellation and harmony in the final bar of the movement, m. 69 (figure 20).\(^\text{40}\)

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\(^{39}\) Of course, as an exact echo of m. 10, mm. 17–18 are also an exact retrograde of m. 8. This suggests the possibility of a different analysis of these eighteen measures that posits not one but two phrases, the first occupying mm. 1–7 and the second occupying mm. 8–18. I find this reading a plausible alternative to the one I have advanced above. Ultimately, which reading one prefers may depend on which registral processes one finds more convincing: progressions from stability to instability and back again, or progressions to and from vertically symmetrical pitch constellations specifically.

\(^{40}\) Both of the relevant registral constellations are vertically symmetrical. The two are also related motivically. Webern voices the constellation of m. 69 as two symmetrical hexachords 8-3-5-3-8. These hexachords extend sonorities 8-3-5-3 and 3-5-3-8 that are
Measure 69 also sits significantly lower than mm. 63 – 68: the entire measure spans a full 33 semitones, from G3 to E6; the final chord alone spans 27 semitones, from G3 up to Bb5. This is the archetype of what we will call *registral punctuation*: a prolonged passage of pronounced registral stability is followed suddenly by a short burst of registral instability, usually but not always describing a downward shift in register, marking the end of a piece or movement. We will see more examples shortly.

Now, there is every reason to consider measures 63 – 69 a complete phrase. As already noted, these measures strongly recall the opening of the movement. They stand apart registraally, texturally, timbrally, and harmonically from the preceding measures. And Webern marks m. 63 *wieder etwas lebhaft*, ending a *poco string* section that began in m. 57.

Still, in light of the theory of phrase that we have only just begun to flesh out, these measures are problematic. In the previous two examples, we more or less equated “cadence” with “return to the starting harmony registral constellation.” This seems defensible in light of the analogy with tonality. But in our new example Webern departs from his starting harmony without ever returning. If we are to accept the cadential function of m. 69, as it seems we must, then we must accept that sometimes a cadence in Webern is not a return to the starting harmony but just the opposite, a sudden and final departure.41

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41 There is one other possibility in this case. As we saw above, it is possible to analyze TA5 as the “tonic” harmony of the movement. So maybe it is mm. 63 – 68 that are the
The other formal functions also become problematic in this phrase. If we temporarily ignore harmony and register and focus instead only on rhythm and melodic segmentation, then there is no difficulty. Measures 63 – 64 restate the opening melodic and rhythmic theme of the movement in retrograde; measures 65 – 67 (only up to the downbeat of m. 67) repeat this material, this time in its original orientation. We can thus easily assign mm. 63 – 67 presentation function. Measures 67 – 68 (excluding the downbeat of m. 67) obviously introduce shorter melodic fragments; these measures carry continuation function. Finally, m. 69 with its heavily accented chords carries cadential function. But with harmony and register reintroduced this analysis loses much of its credibility. Measures 67 – 68, which we assigned continuation function, offer no new harmonic/registral material whatsoever. In light of this it seems more reasonable to assign all of mm. 63 – 68 presentation function. But then we are left with a phrase with no continuation function. Or maybe m. 69 performs a hybrid of continuation and cadential function. Such hybrids are at home in Caplin’s work; still, is this a valid use for them? Perhaps the most practical solution, especially in light of the other examples to follow, is to introduce a new registral punctuation function as a subspecies of cadential function.

On this reading, mm. 63 – 68 would all express some version of presentation function. departure and m. 69 that is the final return. I am skeptical of this analysis for three reasons: 1) it presupposes that we somehow “remember” T₅ as a quasi-tonic harmony and hear it as such when it finally returns. I find this doubtful. 2) It postulates a phrase that starts in media res. The analogy would be of a final phrase in a tonal work starting on the dominant. This is not impossible, but it does seem to suggest that one might not be analyzing the phrase correctly. 3) Perhaps most damningly, the analysis fails to explain the other examples of the same registral punctuation technique discussed below.
and m. 69 would perform registral punctuation function. This may seem ad hoc, but it
does do justice to the frequency of the technique.

Figure 21 provides a registral reduction of the sixth and final variation of Op. 27/iii. In m. 56 four new pitches help to distinguish the beginning of Variation 6 from
the preceding Variation 5. The most notable is the low Eb2, which not only begins the
variation but is the lowest note heard since the C#2 of m. 14. Most of the variation, mm.
56 – 63, is structured as four successive row statements arranged in palindromic pairs,
first P3 and R3, then I4 and RI4. Both palindromes are of the registraIy stable variety, but
they do not occupy the same registral constellations as one another. In mm. 56 – 59 the
total sounding ambitus spans 45 semitones, from Eb2 up to C6. In mm. 60 – 61, Webern
introduces four new pitches, and the overall ambitus of mm. 60 – 63 (up to the downbeat
of m. 63) is lower than that of mm. 56 – 59, spanning only 34 semitones from C2 up to
Bb4. The C2 of m. 61 is the lowest note of the entire piece so far. Beginning with the last
chord of m. 62, Webern elides another statement of R3, and we return to the registral
constellation of mm. 56 – 59. Up to this point, we have thus had a very balanced
progression away from and back towards the registral constellation of mm. 56 – 59.

The registral punctuation begins in m. 65. In mm. 65 – 66 Webern suddenly
introduces nine new pitches, and the ambitus shifts downward dramatically. Tellingly, the
low B1 that sounds in the last chord is the lowest pitch of the entire piece. In all, mm. 65

42 I am following Bailey’s naming convention here. Since the first section of the
movement, mm. 1 – 12, in no way acts as the harmonic or melodic basis for any of the
“variations” that follow, Bailey chooses to call this section not the theme but rather the
first variation. The next section becomes the second variation, etc. This contradicts the
– 66 span 34 semitones, from B1 up to A4. The downward movement of mm. 65 – 66 can be seen as both a continuation and an acceleration/intensification of the downward movement we have already seen from m. 56 to m. 61. As in the Op. 24 example, harmony also plays a key role here. The first five row statements of the variation, mm. 56 – 64, present rows that are all hexachordally invariant from one another. The final row, I3, mm. 64 – 66, does not share this invariance. This shift is quite analogous to the harmonic shift in the last bar of Op. 24/i. As with the Op. 24 example, in this case the harmonic shift aligns perfectly with the shift in register.

Op. 27/i provides another, subtler example (figure 22). We have already considered mm. 1 – 18 in detail. The closing A’ section of the movement, mm. 37 – 54, repeats the rhythm of mm. 1 – 18 nearly exactly. Yet this section does not repeat mm. 1 – 18 in pitch or pitch class content. Like mm. 1 – 18, mm. 37 – 54 consist of four subphrases, each a palindrome. But unlike mm. 1 – 18, in mm. 37 – 54 each subphrase states a unique pair of rows, and each occupies its own unique registral constellation.

43 In fact, the constellation of mm. 64 – 66 is almost an exact transposition down one semitone of the constellation of mm. 60 – 62. The only discrepancy is the Eb2 of m. 64, which arise from the elision of R3 and I3.

44 Using hexachordal invariance as a guide, one can group all transformations of the Op. 27 row into six hexachord areas. Within each hexachord area, all rows are hexachordally invariant. These areas function much as trichord and hexachord areas do in Op. 24. In the language of hexachord areas, mm. 56 – 64 all occupy one hexachord area and mm. 65 – 66 shift to another. An analysis of Op. 27 by hexachord areas reveals several interesting interrelations between harmony and register, much as in Op. 24. There is no space for a full exploration of these ideas here.

45 The hands swap roles, and the closing section has a stronger final chord than the opening section.
This results in the two sections having very different registral outlines. Things start out similarly. Like mm. 1 – 10, mm. 37 – 46 present a registrally stable palindrome in a restrained registral constellation. These measures span 25 semitones from F3 up to F#5. Next, measures 44 – 46, like measures 8 – 10 and measures 15 – 18, are stable except for the shifting of one pitch class. In this case, C moves from C5 to C4 in m. 45. These measures span 21 semitones from G#3 up to F5. Starting with the third subphrase of mm. 37 – 54, however, things start to change. Like mm. 11 – 15, this subphrase is the most registrally active of the entire closing section. Unlike mm. 11 – 15, its overall registral contour is not from high to low but from the middle register outwards. This subphrase achieves both its lowest pitch, A2, and its highest pitch, C#6, in the same measure, m. 50. This C#6 ties for the highest pitch yet heard in the movement; this is its first appearance since m. 34. The final subphrase, mm. 51 – 54, like measures 8 – 10, measures 15 – 18, and measures 44 – 46, is again registrally stable except for the shifting of F from F5 to F4 in measure 52. But unlike the fourth subphrase of mm. 1 – 18, this subphrase does not return to the middle register of the instrument but stays in the sopranino register achieved at the end of m. 50. It spans 21 semitones from F#4 up to Eb6. This Eb6, heard in measures 52 and 54, is the highest pitch of the movement.

Thus, while mm. 1 – 18 reach their high point at roughly the halfway mark before descending back to center, mm. 37 – 54 reach their high point just three bars from the end of the movement. Considered as a unit unto themselves, mm. 51 – 54 are fairly stable registrally; again, only one pitch class changes register over the course of these bars. But considered in relation to the preceding subphrases, these measures are extremely
unstable. They represent an unprepared move into the highest register of the movement with no compensating return down. Thus I would analyze the entirety of mm. 50 – 54 as a registral punctuation (beginning with the third sixteenth of m. 50). This punctuation differs from those considered above in that 1) the final punctuation event occupies four and a half bars and contains ten distinct attacks, making it the longest example yet, 2) the preceding measures, while stable in relation to the closing punctuation, are still fairly active registraly, and 3) this is an ascending rather than a descending example.

We find ourselves in a strange position. We can say with some confidence that sometimes, especially at the beginnings of movements, Webern creates goal-directed harmonic motion by introducing a stable registral constellation, increasing the rate of registral and rhythmic change dramatically, and then moving back towards registral stability. We can say with equal confidence that at other times, especially at the ends of movements, Webern creates goal-directed harmonic motion using precisely the opposite means. Namely, he introduces a stable or gradually shifting registral constellation and then jumps suddenly to a contrasting constellation in a strong final gesture. How can the second technique make semiotic sense in the presence of the first? One features departure and return, the other a seemingly incomplete progression of departure alone. The fact that the registral punctuation technique seems to mark endings in particular only makes it more of a puzzle, since endings are where one would most expect to find strong cadences. To make all of this messier still, Webern does not mark all of his endings with registral punctuation. A single prominent example will suffice here.
The final section of Op. 24/iii, mm. 56 – 70, occupies a single vertically symmetrical registral constellation spanning 25 semitones.46 Significantly, this constellation is an exact transposition, down 17 semitones, of the constellation that occupies mm. 63 – 68 of Op. 24/i (figure 23). No punctuating harmonic or registral shift ends the section, nor is there any developed sense of departure and return. The fifteen bars prolong a single harmony. Webern does not even alter the grouping of pitches over the course of the passage; the entire section reiterates just four chords, each a voicing of a (014) trichord (figure 24).

Webern constructs the entire passage as one long palindrome of trichords. Adopting the labels of figure 24, the ordering is

\[ d\ c\ b\ a\ d\ c\ d\ a\ b\ a\ d\ c\ d\ a\ b\ a\ d\ c\ d\ a\ b\ c\ d \] (figure 25).

It is important to emphasize that this is a palindrome of trichords, not of pitches. For instance the viola line F# – G – Eb of mm. 61 – 62 returns in the violin in mm. 67 – 68 in the same order, not retrograded as in a true palindrome of pitches. This large-scale palindrome also contains several instances of the shorter palindromes d c d and a b a, each one lasting approximately one to two bars. These palindromes cut across instrumental groupings. Kathryn Bailey has also pointed out the palindromes

\[ \]


150
badc dab, c dab dac, and badc dab in mm. 58 – 60, 63 – 65, and 68 – 70 respectively. These palindromes preserve instrumentation; each consists of a central trichord in the non-piano group flanked on each side by three piano chords.

With the same four chords repeating in a complex pattern of nested palindromes, the overall impression of the passage is very much one of harmonic stasis. And yet Webern does provide a kind of textural punctuation to end the piece. In mm. 56 – 68, Webern partitions the piano and the non-piano group by material type: the piano presents only block chords whereas the non-piano group presents only overlapping three note lines. But in m. 69 we get a block chord in the winds, followed by another in m. 70. These chords are the first time since m. 27 that more than two non-piano instruments have sounded simultaneously. Marked sff, they provide a strong conclusion to the piece.

I would argue that these chords play a function very much like that of registral punctuation above, namely, articulating the close of the movement. Indeed, the final bars of Op. 24/i and of Op. 24/iii are almost identical texturally. The only difference between the two is that m. 69 of Op. 24/i represents a registral and harmonic shift relative to the preceding measures while m. 70 of Op. 24/iii does not. Maybe this difference is not actually as significant as it might seem.

We have mainly been pursuing intrinsic, pitch-oriented approaches to phrase analysis. But the Op. 24/iii example strongly suggests that sometimes in Webern’s music textural cues can give rise to phrase structure in the absence of any sort of harmonic motion whatsoever. We have seen something similar at least twice already. In our

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analysis of Op. 27/i, mm. 1 – 18, our decision about where precisely to locate cadential function had more to do with the placement of rests and tempo markings than with pitch relations. And in our analysis of the final phrase of Op. 24/i, we offered two readings, one based primarily on pitch and register and one based primarily on rhythmic information. These readings probably have about equal relevance to the passage. I do not want to throw away our pitch-based analyses; they clearly show that registral progressions are one tool in Webern’s cadential arsenal. But without various forms of extrinsic analysis, certain phrases, such as mm. 56 – 70 of Op. 24/iii, will remain inexplicable to us.

Does this mean that there is no hope for anything like a theory of Webernian phrase design? If one requires such a theory to possess a single all-encompassing definition of cadence based exclusively on pitch structure, then probably yes. But this is probably an unrealistic standard to begin with. There is no one tonal cadence, but rather a proliferation of types – perfect authentic, imperfect authentic, half, deceptive, etc. Identification of these types depends not just on pitch structure but on rhythm, harmonic rhythm, melodic fragmentation, and a host of other contextual cues. Caplin’s and Rothstein’s theories are full of detailed descriptions of specific phrase types, classifications of exceptions, and analysis that is highly context- and style-dependent.

Viewing the problem in this light, we are actually well on our way. We have identified three coherent paradigms for Webernian phrases: there is the balanced departure-and-return paradigm, the imbalanced registral punctuation paradigm, and the lacking-in-harmonic-motion/extrinsically-driven paradigm. We are now in a position to go looking for other phrases matching these paradigms. We can also ask new questions
like “does the departure-and-return paradigm only happen at movement openings?” and “does registral punctuation ever mark the ends of units other than whole movements?” And of course, we can still propose new paradigms where these three prove insufficient.

We are also equipped with a number of extrinsic features than often mark Webern’s phrase endings. To risk stating the obvious, many of Webern’s phrases end with ritardandos. This is true of the opening and closing phrases of Op. 24/i and Op. 27/i and the closing phrase of Op. 27/iii. We have seen that many of Webern’s phrases end with a falling contour. This is true of all of the phrases we have analyzed with the partial exception of the closing phrase of Op. 27/i.48 We have seen that many of Webern’s phrases end with punctuating chords. This is true of the opening and closing phrases of Op. 24/i, the closing phrase of Op. 24/iii, and to a lesser extent the closing phrases of Op. 27/i and Op. 27/iii. Last but not least we have seen that many of Webern’s phrases end with a pause preceding a short final gesture. This is true of all of the phrases we have analyzed with the partial exception of the closing phrase of Op. 27/iii.49 These extrinsic features can be enormously helpful in identifying phrase boundaries even when other harmonic determiners of phrase structure are present. And, as we have seen in Op. 24/iii, when harmonic determiners are absent these extrinsic features are crucial.

It is thus essential that we consider extrinsic and intrinsic approaches to phrase structure side by side. Only by considering the two together can we begin to capture the

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48 This phrase does end with a falling contour in its final measure, but the final four and a half measures of the phrase represent a pronounced rise relative to the preceding measures.

49 This phrase does end with a pause before its final chord, but the pause is only a quarter note long, and pauses of equal length occur regularly throughout the phrase.
full range of Webern’s phrasal technique. Registral analysis is vital to this undertaking. At the level of individual phrases, registral constellations shape the progression towards cadence and often provide the strongest audible marker that a cadence has in fact occurred. At a global level, register and harmony are coordinated with row topography, thematic material, and texture to articulate the phrase structures of entire movements. Indeed, no study of harmony in Webern’s mature style is complete without a study of register. It is only by understanding the way both parameters interact with one another and with extrinsic factors like articulation, tempo, and timing that we can understand how Webern builds phrases and, out of them, movements.
Figure 1. The Op. 24 row

(a. The row)

\[
\begin{array}{cccc}
P & RI & R & I \\
\includegraphics[width=\textwidth]{P_row}
\end{array}
\]

(b. In a square)

\[
\begin{array}{cccc}
P_{11} & & & \\
\includegraphics[width=\textwidth]{P11_square}
\end{array}
\]

\[
\begin{array}{cccc}
R_{5} & & & \\
\includegraphics[width=\textwidth]{R5_square}
\end{array}
\]

\[
\begin{array}{cccc}
RI_{6} & & & \\
\includegraphics[width=\textwidth]{RI6_square}
\end{array}
\]

\[
\begin{array}{cccc}
I_{0} & & & \\
\includegraphics[width=\textwidth]{I0_square}
\end{array}
\]
Prime forms are read left to right, retrograde forms right to left, inverse forms top to bottom, and retrograde inverse forms bottom to top.

Figure 2. The Op. 24 matrix

Figure 3. Some trichordally related rows
- + +  reverses hexachords, preserves order within each hexachord
P_n <-> R_{n-5}
I_n <-> R_{n+5}

+ - +  maintains hexachords, reverses trichords within each hexachord
preserves order within each hexachord
P_n <-> R_{n+6}
I_n <-> R_{I_{n+6}}

+ + -  preserves hexachords and trichords, reverses order within each trichord
P_n <-> R_{I_{n+1}}
I_n <-> R_{n-1}

- + +  reverses trichord order, preserves order within trichords
P_n <-> I_{n+1}
R_n <-> R_{I_{n+1}}

- + -  reverses hexachords, maintains trichords within hexachords
reverses order within trichords
P_n <-> P_{n+6}
R_n <-> R_{n+6}
I_n <-> I_{n+6}
RI_n <-> RI_{n+6}

+ - -  maintains hexachords, reverses order within hexachords
P_n <-> I_{n-5}
R_n <-> RI_{n-5}

- - -  reverses everything
P_n <-> R_n
I_n <-> RI_n

“Codes” on the left represent each relation’s effect upon a row’s discrete hexachords, discrete trichords within hexachords, and notes within trichords, in that order. So for instance the relation -++ reverses a row’s discrete hexachords (the first minus), preserves the order of trichords within hexachords (the plus in the middle), and reverses the order of notes within trichords (the final minus). The formulae on the right include a variable n that represents any possible row form index number (0 – 11). Addition and substraction are performed mod 12. So for instance P_0 is -++ related to RI_7 and +++ related to R_6. The relation --- is trivial in that it merely relates a given row form to its retrograde, but I have included it for the sake of completeness.

Figure 4. Trichordal invariance relations
a. Two \( \cdash \) related rows

\[
\begin{array}{c}
\text{H} \\
\text{h} \\
\text{h} \\
\text{H}
\end{array}
\]

\[ \text{R}_6 \]

\[ \text{I}_1 \]

b. *Concerto* Op. 24/i, mm. 13 – 17

Figure 5. The \( \cdash \) relation

Figure 6. *Concerto* Op. 24/i, piano, mm. 20 – 21
Figure 7. The six trichord areas

Figure 8. Some hexachordally related rows
Figure 9. Common ic1 adjacencies in hexachordally related rows

Collection A

Collection B

<table>
<thead>
<tr>
<th>Collection A</th>
<th>Collection B</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEX_{0,1}</td>
<td>HEX_{2,3}</td>
</tr>
<tr>
<td>HEX_{1,2}</td>
<td>HEX_{3,4}</td>
</tr>
</tbody>
</table>

Figure 9. Common ic1 adjacencies in hexachordally related rows
Figure 10. Op. 24/i, row statements by trichord and hexachord areas
a. *Concerto* Op. 24/i, mm. 22 – 25

![Diagram of odd-to-even transition](image)

b. *Concerto* Op. 24/i, mm. 22 – 25, reduction

![Diagram of odd-to-even transition, reduction](image)

Figure 11. Odd-to-even transition, *Concerto* Op. 24/i, mm. 22 – 25
Figure 12. Ic1 dyads in the piano, Op. 24/i, mm. 40 – 45

a. Op. 24/i, clarinet and violin, mm. 31 – 32
b. Op. 24/i, clarinet and trombone, mm. 34 – 35

Figure 13. Other registral repetitions
Figure 14. Op. 24/i, fixed-note percentages by measure
Figure 15. Coordination of row topography, harmony, and register in Op. 24/i
wieder etwas
lebhaft ($\doteq ca. 80$) $R_{10}$

Figure 16. *Concerto Op. 24/i, mm. 63 – 69*
Figure 17. *Concerto* Op. 24/i, mm. 1–10

*a. mm. 1–10*

Etwas lebhaft \( \hat{\jmath} = \text{ca. } 80 \) \( P_{11} \)

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*b. Registral constellations*

<table>
<thead>
<tr>
<th>mm. 1–5</th>
<th>mm. 6–7</th>
<th>mm. 7–8</th>
<th>m. 8</th>
<th>mm. 9–10</th>
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</thead>
<tbody>
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<td>( \delta \omega )</td>
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<td>3</td>
<td>3</td>
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</tbody>
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*c. Reduction, showing spanned register*

*Open noteheads = stable harmony/point of return; closed noteheads = active/forward-moving harmony*
Figure 18. Variations for Piano Op. 27/i, mm. 1 – 19
Figure 19. Acceleration of rhythmic ostinatos, Op. 27/i, mm. 1 – 18

a. mm. 1 – 7
b. mm. 8 – 15
c. mm. 15 – 17

Figure 20. *Concerto* Op. 24/i, mm. 63 – 69, registral constellations

a. Registral constellations

b. Reduction, showing spanned register

* Open noteheads = stable harmony/point of return; closed noteheads = active/forward-moving harmony

c. Embedded motivic sonorities

Figure 20. *Concerto* Op. 24/i, mm. 63 – 69, registral constellations
Figure 21. Variations for Piano Op. 27/iii, mm. 56 – 66

*a. mm. 56 – 66

b. Registral constellations

c. Reduction, showing spanned register

* Open noteheads = stable harmony/point of return; closed noteheads = active/forward-moving harmony
Figure 22. Variations for Piano Op. 27/i, mm. 37 – 54
Figure 23. Comparison of registral constellations

Figure 24. (014) voicings in Op. 24/iii, mm. 56 – 70
Figure 25. *Concerto* Op. 24/iii, mm. 56 – 70
References

Part I:


Part II:


Biography

Tim Hambourger earned his PhD in composition at Duke University in 2013. He received his bachelor's in music from Princeton University in 2007. He has written acoustic and electro-acoustic works for chamber ensemble, for solo piano (his primary instrument), and for solo voice and choir. His dissertation, *Last WaveReached*, is an extended setting of poems by Kay Ryan, U.S. poet laureate 2008 – 2010, for three female singers and large chamber ensemble. It was premiered with Jacqueline Horner-Kwiatek, the Wet Ink Ensemble, and friends in March 2013. The work continues Tim’s interests in the voice and traditional vocal styles and in place-based, real-world environmental sound. Other works in this vein include *Maples by the West Street Cemetery*, which Tim composed for Yale’s Norfolk New Music Festival in summer 2011, and *Crossing a Bridge Slowly*, which was premiered by So Percussion in 2010. Tim’s 2009 *I am Untranslatable*, a setting of fragments from Whitman’s ‘Song of Myself,’ received Duke’s William Klenz Prize for Composition.