In this paper I shall offer strategies for deciding what is structural in extended-tonal music and provide new theoretical qualifications that allow for a conservative evaluation of prolongational analyses. Straus (1987) provides several criteria for finding post-tonal prolongation, but these can simply be reduced down to one important consideration: Non-tertian music clouds the distinction between harmonic and melodic intervals. Because linear analysis depends upon this distinction, any expansion of the prolongational approach for non-tertian music must find alternative means for defining the ways in which transient tones elaborate upon structural chord tones to foster a sense of prolongation. The theoretical work that Straus criticizes (Salzer 1952, Travis 1959, 1966, 1970, Morgan 1976, et al.) fails to provide a method for discriminating structural tones from transient tones. More recently, Santa (1999) has provided associational models for hierarchical analysis of some post-tonal music. Further, Santa has devised systems for determining salience as a basis for the assertion of structural chords and melodic pitches in a hierarchical analysis. While a true prolongational perspective cannot be extended to address most post-tonal music, it may be possible to salvage a prolongational approach in a restricted body of post-tonal music that retains some features of tonality, such as harmonic function, parsimonious voice leading, or an underlying diatonic collection. Taking into consideration Straus’s theoretical proviso, we can build a model for prolongational analysis of non-tertian music by establishing how non-tertian chords may attain the status of structural harmonies. Provided an alternative means for deciding what chords are structural in non-tertian music, contrapuntal lines passing between any two structural chords can still aid in hearing a passage as a prolongation.

Perhaps the most important part of prolongational analysis is the determination of structural and transient verticalities. Even in tonal music, it can be difficult to render decisions about what is structural and what is not. For example, Wagner (1995, 166–168) cites a disagreement between Forte and Gilbert (1982, 115) and Laskowski (1984, 116) about what chords are structural in
the opening bars of the second movement Mozart’s Piano Sonata in D Major, K. 311, shown in Figure 1(a).\footnote{Wagner also presents Salzer’s (1952, Vol. 2, p. 50, Ex. 183) more ambiguous reading of the passage along with these two clearly contradictory analyses.} Forte’s and Gilbert’s reading appears in Figure 1(b), while Laskowski’s analysis is shown in Figure 1(c). While Wagner presents a third, more nuanced reading of the passage, the decision of what is structural in this and many other excerpts is not straightforward. While tonal music offers a well-defined harmonic syntax to guide the analyst, in music where this syntax breaks down such decisions become far more difficult and we must rely on subjectivities to a greater extent. Keeping this in mind, I will provide guidelines to help determine what is and is not structural.
These considerations are not intended to replace an analyst’s intuition and musical experience, but rather they are designed to help guide one’s attention to certain features of the music. Among the considerations for asserting chordal salience that we shall discuss are functional connections, motivic connections, and acoustical arguments for chordal salience.

Tables 1–3 provide lists of analytical procedures from which we will build our prolongational analysis of “Ondine” from Ravel’s *Gaspard de la Nuit*. The rubric in Table 1 gives a series of questions that should be addressed in any prolongational analysis of extended tonality. While the first question is perhaps the most straightforward, it also seems to suggest a rather narrow view of prolongation. In tonal analysis, the connection between two structural chords can indicate either prolongation (meaning the chords share the same function) or tonal motion (meaning the chords are connected by arpeggiation or passing motion). We will be using both of these types of slur connections in the Ravel work that we will be examining shortly. When tonal function is not clear, however, prolongation between two different chords is much more difficult to assert. The first question in our list therefore is intended not so much as a restriction to prolongation, but rather to ask the analyst to consider the issue of whether and how harmonic function is established in the music. It is, of course, in the interaction of the criteria listed in Table 1 that analytical decisions must be made. Other considerations may sometimes override the first consideration in our list.

### Table 1: Criteria for Judging a Single Prolongational Span

1. Does the passage begin and end on the same harmony? If not, what allows the beginning and terminating chords to be heard as having the same tonal function?

2. Are the beginning and ending chords at least as acoustically stable as the intervening chords? If not, how are they distinguished from the prolonging chords as being structural?

3. Does the passage exhibit contrapuntal fluency? Do passing and neighboring motions connect the prolonged chords, at least in the pitch-class counterpoint? If not, is there another means of connecting the prolonged chords, e.g. through chord patterning (ABCBA, ABCDABCDCA, etc.)?

4. Account for all “chromatic notes” that come from outside the main collection of the passage or work. They must be non-chord tones or part of a modulation or tonicization.

5. How do motives and themes contribute to or detract from the prolongations?

The second question in the list suggests that it is natural to read the more complex chords in a passage as prolonging the simpler ones. I can certainly imagine instances in tonal music where
the most convincing analysis shows the exact opposite situation: for example, a tonic chord in first
inversion appearing as a passing chord between a ii\textsuperscript{6}
chord and a vii\textsuperscript{6}
chord, or the consonant triads that result as passing chords in an omnibus progression. Regardless, let us now examine one
method for measuring the relative acoustical stability of various chords, keeping in mind that this
is only one of several considerations that may support a prolongational reading.

We can determine relative degrees of stability using a model based on the harmonic series.
Table 2 and Figure 2 may be used together to conceptualize chords as overtones above a single
fundamental. Because the second rule in Table 2 requires us to find the correct spelling of the chord
within the overtones as they are spelled in Figure 2, the guidelines given in Table 3 will help us
make decisions about the diatonic spelling of chords within chromatic progressions. These spelling
rules owe a great deal to Temperley’s “Line of Fifths”, though with some important modifications:
Rather than judging a diatonic spelling based on the distance from the center of a chord on the
line of fifths, my method measures tonal distance from the tonic and dominant scale degrees on the
line of fifths. Further, tonal distance is not to play a more important role in diatonic spelling than
the considerations of diatonic root motion and maintaining common tones between chords.

Given a harmonic-series representation of a chord as derived from the method in Table 2, the
prime limit of the chord’s constituent overtones provides a measure of the chord’s relative degree of
acoustical stability. To find the prime limit of the chord, take the integer values for all members of
the chord on the harmonic series, and generate a prime factorization of each. The largest number
in the prime factorizations of all of the chord members is the prime limit of that chord. The lower
the prime limit, the more stable the chord (regardless of cardinality). For example, holding all
other factors constant, this perspective deems a major triad—which has prime limit 5—as more
stable than a dominant-seventh chord—which has prime limit 7. Likewise, when used as chords,
the diatonic collection (16:18:20:21:24:27:30)—which has prime limit 7—is more acoustically stable
than the whole-tone collection (17:19:21:24:27:30)—which has prime limit 19. Interestingly, both
the diminished-seventh chord and the augmented triad are more unstable than the entire diatonic
collection according to this method of measuring stability. The overtone method also supports the
notion that projections of fourths and fifths are indeed highly acoustically stable, as these chords
all have prime limit 3. We can therefore use a chord’s prime limit as an integer value defining the
instability of any chord.

4
Table 2: Procedure for Determining a Chord’s Acoustical Stability

1. Using the method outlined in Table 3, determine the diatonic spelling of all members of the chord.

2. Use the harmonic series found in Figure 2 to find instances of any transposition of the chord.

3. The chord may not be respelled to fit a particular set of partials that are spelled differently in the figure, with the exception of the diminished fifth in dominant-function chords, which is represented by partials 5 and 7 (or 10 and 14).

4. Find the prime limit of each instance of the chord on the harmonic series. To do this, reduce the integer representing each chord member to its prime factors. The largest prime number among all prime factors of all chord members is the prime limit.

5. When there is more than one possible chord representation on the harmonic series, use the instance with the lowest prime limit.

Figure 2: Diatonic Spelling of the Harmonic Series

In Table 1, question 3 presents one of the most important considerations for asserting prolongation. Even when the harmonic syntax of common-practice tonality breaks down, the contrapuntal connections from chord to chord may still be used to support an argument for prolongation. While scholars such as Salzer and Travis perform linear analyses of even highly atonal music, they do not address the question of how one determines what is structural in post-tonal music. From this I conclude that it is the responsibility of the analyst to support one’s assertion of structural chords using all of the other criteria in the questionnaire before analyzing how the structural harmonies are connected linearly. Jones’s (2002) method for building a linear model of how a passage might be heard as a prolongation functions particularly well in addressing question 3. Linear analysis thus only provides the means of finding and understanding the contrapuntal fluency between the structural chords in the passage. Next, question 4 in our list of criteria allows the analyst the opportunity to reduce out any chromaticism that is inessential to the tonal design of the piece.
Table 3: Diatonic Spelling Rules

1. The scale degrees are to be spelled only as $\hat{1}$, $\flat\hat{2}$, $\natural\hat{2}$, $\hat{3}$, $\flat\hat{3}$, $\natural\hat{3}$, $\hat{4}$, $\#\hat{4}$, $\hat{5}$, $\flat\hat{6}$, $\natural\hat{6}$, $\flat\hat{7}$, and $\natural\hat{7}$. If this results in a non-tertian spelling of a chord, use the procedure given in Rule 4 to decide the spelling of all members of the chord.

2. All dominant-function chords and tonicizations, including secondary dominants, secondary diminished seventh chords, altered dominants, and modulations, take the scale of the tonicized key as reference.

3. Common tones are never enharmonically respelled unless they are the result of a functional reinterpretation of a held interval between two chords (e.g. $m3$ becomes $A2$, $m7$ becomes $A6$). This may result in progressions that wander diatonically (tonic becomes $\#VII$ or $\flat\flatII$).

4. If the chord is non-tertian and not a dominant or leading-tone chord, use the scale built on the nearest note in the triad (not the seventh) to $\hat{1}$ and $\hat{5}$ on the infinite line of fifths. In other words, find the triad member that is closest to $\hat{1}$ and $\hat{5}$ on the spiral of fifths, and spell it according to the normal diatonic scale; then spell the rest of the chord according to the intervals of the scale that is based on that note.

The final item in our list of prolongational considerations is perhaps the most complex and controversial of them all: concerning the interaction of motive and prolongation. There are two basic roles a motive or theme can play in the perception of prolongation. First, the return of a motive can distract from a sense of prolongation. This view can support the idea of the recapitulation in a binary form as an interruption rather than a simple progression from dominant back to tonic. The idea of motivic return as interruption also encourages the analyst to support claims for prolongation with tonal and harmonic structures rather than motivic returns. For this reason in the prolongational model outlined here, motivic significance, like acoustical stability, must form only part of any claim for prolongation.

Second, the return of a motive in special cases may form part of an argument for the termination of a prolongational span. In the absence of the return of a functionally or acoustically stable chord, the return of motivically significant material at the termination of a contrapuntally fluent passage may signal the end of a prolongational span. Once again, such an assertion of prolongation would be aided by the presence of other contributing factors. Because the factors that contribute to prolongation may interact in different and unique ways, the analyst must weigh the contributions of each factor and make an informed subjective decision.

Let us now proceed to the analysis of “Ondine” from Ravel’s *Gaspard de la Nuit*, which appears

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2For background on this issue see Burkhart (1978) and Cohn (1992).
in Figure 3. Figure 4 provides a middleground prolongational sketch of the piece. We can evaluate the prolongation asserted in Figure 4 using the set of criteria given in Table 1. For the most part, the sketch satisfies question 1 concerning whether the passage begins and ends on the same harmony. In the few cases where it does not, the passing chords either smooth the progression from one structural (open-notehead) chord to another, or they connect two chords that can be said to possess the same harmonic function. One such instance is the transitory progression in mm. 15–23. The return in mm. 15–16 to the harmony, melody, and texture from m. 1 marks the beginning of this elaborated tonal motion. The goal chord is the G\# dominant harmony in m. 23 that supports 4 of the Urlinie. Another passage that violates the desideratum of the first consideration in Table 1 can be found in mm. 63–67, a prolongation that connects a G\# chord with a B-minor chord. In this case, the two chords can be said to serve the same harmonic function. Figure 4 shows that they both take part in a dominant prolongation through bass arpeggiation from G\#, through B—which is inflected to B\#—, and finally returning to G\# in m. 81.

Now let us address the second consideration in our prolongational rubric, regarding acoustical stability. Many of the structural chords in my sketch are transpositions of the opening major triad with an added minor sixth. Assuming that the neighbor formations in the accompaniment pattern can allow us to reduce the added sixths out as non-chord tones,\(^3\) the structural harmonies are often more stable than the intervening chords. Table 4 uses our instability units from Table 2 to show the relative acoustical stabilities of each of the chords in the work’s initial prolongational span (mm. 1–15). The first and last chord, when reduced to their triadic forms, have instability level 5, but with the added minor sixths, the instability rises to 13. Interestingly, the added fourth that appears in the F\#-minor chord in m. 11 does not change the instability of that chord at all. Many of the later prolongational spans feature a clearer distinction between acoustically simple chords and more complex extended chords. From Table 4 we can see that, even if the prolonging chords in this passage are indeed more stable than the structural chords, at least the structural chords are acoustically distinguished from the intervening harmonies.

Furthermore, these added sixth chords are motivically significant. Following the many extravagant excursions, the music frequently returns to an added sixth chord presented in a texture similar to the opening. The most obvious of these returns to the opening texture and chord type can be

\[^3\]The fourth consideration in our list of prolongational criteria may aid in supporting this reading. Bhogal (2004) and others have asserted that this neighbor motion is the primary motive of the piece. My own analysis does not focus on this interesting observation, but may certainly be enriched by this point of view.
seen in mm. 31, 42, 81. Further, these particular excerpts also present a melody that is the same as or similar to the left-hand melody in m. 3, thus enhancing this thematic connection. These motivic connections have played a significant role in my reading of prolongation in this work. My sketch shows the first chord of each reprise of the opening texture and harmony as initiating a new prolongational span at some level of the structure. In addition to mm. 1, 31, 42, and 81, these returns to the opening texture are shown as initiating prolongational spans in m. 24, m. 46 (see especially m. 48), and m. 75, where the texture finally coalesces in m. 76. The last reminder of the opening texture and harmony is the final sonority of the piece in m. 90.

A second motive in the piece also appears at the beginning of many prolongational spans. This motive is harmonically marked by the use of tritone-related neighbor chords. For example, in m. 43 the progression $D^#_{9} A^9 D^#_{9}$ accompanies the main melody (from m. 3). This progression continues a gestural/rhythmic motive begun in m. 39 where an accompaniment pattern similar to the opening is interrupted by a quickly ascending and descending flourish that arpeggiates the neighbor chord. This gesture and chord progression are combined to accompany a new melody in mm. 46, 51, 58, etc. This new melody typically involves a stepwise scalar ascent followed by an upward leap to a descending appoggiatura. This appoggiatura often coincides with the flourish and the neighbor chord. In my sketch this motive initiates each new prolongational span within the linear intervallic pattern that stretches from m. 37 to m. 63 (i.e. mm. 42, 46, 51, 58, and 61). Thereafter it is liquidated in a much more active linear intervallic pattern from m. 63 to the climax of the piece in m. 67.

The prolongation of a B-minor chord in m. 67 inverts the stepwise-ascent motive. This inversion can be seen in the right-hand eighth notes that initiate each flurry of thirty-second notes. The appoggiatura is now gone from this melody, as the leap at the end of the stepwise line in m. 67 is now on a weak beat. To begin the dénouement, m. 67 repeats with the bass an octave higher and the melody an octave lower in m. 68. Through the rest of the piece, we continue to hear neighbor motions reminiscent of this motive, but the ascending stepwise melody never reappears.

I hope that my reading has resonated with your own intuitions about this piece, and that this example suggests that a tonal way of hearing can still be extended to this repertoire. Much of Ravel’s music still makes use of hierarchical harmonic structures, even when the harmonic vocabulary is non-functional or non-tertian. Because of the tonal vestiges in this music—even in the non-functional
passages—, many of the same principles that govern the perception of prolongation in functional harmony can also apply to Ravel’s extended-tonal music. It is my hope that this methodology may support the analysis of many other extended tonal repertoires as well, such as the neo-Romantic music of the late twentieth century as well as jazz and popular music.
Figure 3: Ravel, *Gaspard de la Nuit*, “Ondine”, score
Figure 4: Schenkerian Sketch of Ravel, *Gaspard de la Nuit*, “Ondine”
Table 4: Relative Acoustical Instability in the First Prolongational Span of Figure 4

<table>
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<tr>
<th>Chord</th>
<th>m. 1</th>
<th>m. 6</th>
<th>m. 9</th>
<th>m. 10.4</th>
<th>m. 11</th>
<th>m. 15</th>
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<td>Prime Limit</td>
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<td>A♯9</td>
<td>d♯add6</td>
<td>B7</td>
<td>f♯2</td>
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References


