INTÉGRAL

Contents

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Editor's Note

We are excited to present another volume of *Intégral*! Our recent move to an online platform has encouraged submissions from a breadth of theoretical and musical backgrounds. Volume 35 is proof of such breadth—including four articles and two reviews, each with unique musical selections and theoretical methods.

Diego Cubero explores harmonic distortions in "Blurred Harmonies in Robert Schumann and Johannes Brahms," likening the "blurring" technique of these composers to the aesthetics of Romantic painting. Cubero details Schumann's and Brahms's methods of rhythmic dislocation that lead to the overlap and blend of chords, complicating prototypical harmonic progressions and formal boundaries.

In "Multi-Centric Complexes in Pop-Rock Music," Matthew Ferrandino discusses listening strategies available for tonally underdetermined songs and passages in pop-rock repertoires. In these examples, Ferrandino shows how competing instrumental layers can afford their own pitch centers, and investigates ways in which we subjectively situate ourselves within various interpretations by adopting different listening "positions."

Anabel Maler, in "Listening to Phrase Structure in Post-Tonal Music," integrates literature on formal function with listener-centric, cognitive theories of *affordances*. With selective analyses of Varèse's *Density 21.5*, Dallapiccola's *Dialoghi*, and Webern's *Three Little Pieces*, she contends that post-tonal phrase is an active, ongoing, and relational experience.[1]

In their article "Rhyme, Metrical Tension, and Formal Ambiguity in Kendrick Lamar's Flow," Benjamin Wadsworth and Simon Needle introduce a system of rhyme-based tension and relaxation. They demonstrate their system by describing and interrogating formal functionality in Kendrick Lamar's oeuvre—ranging from *Overly Dedicated* (2010) to *Damn* (2017).

The reviews in this volume include Emily Hudson's review of Victoria Malawey's *A Blaze of Light in Every Word: Analyzing the Popular Singing Voice*, and Stephen Hudson's review of Mads Walther-Hansen's *Making Sense of Recording: How Cognitive Processing of Recorded Sound Works*.

As always, we send our deep appreciation to our editorial board and staff, without whom this volume wouldn't be possible, and to you for your readership, submission, and support.

Matt Chiu and Derek J. Myler
Co-Editors

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[1] We would like to specifically thank David Falterman for engraving many of the figures for this article.

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Blurred Harmonies in Robert Schumann and Johannes Brahms

by Diego Cubero

Abstract. This article argues that Robert Schumann and Johannes Brahms gave their music a blurry, Romantic quality by distorting well-known harmonic progressions. After identifying the basic progression that underpins the music, the analyses discuss the rhythmic dislocations that cause chords to overlap and merge together. The essay bridges a gap between an important aspect of the Romantic aesthetic and our theoretical understanding of Schumann's and Brahms's harmonic vocabulary.

Keywords and phrases: Schema; harmony; romantic aesthetics; rhythm; painting; distance.

Introduction

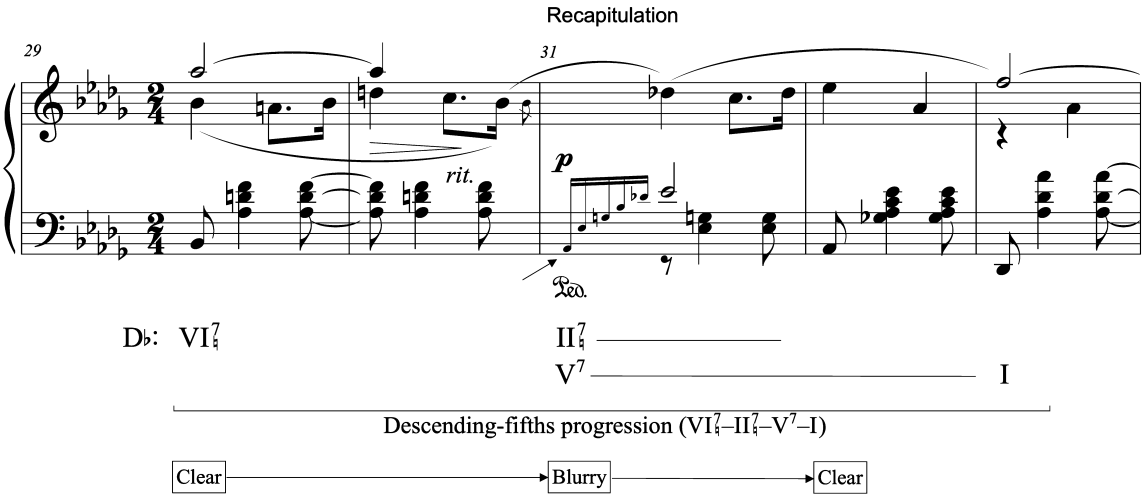
Example 1 shows the return of the opening theme in Robert Schumann's "Warum?" op. 12, no. 3. The passage features a descending circle-of-fifths progression from a B♭ dominant seventh chord (VI^7) to a D♭ major triad (I). But the E♭ dominant seventh chord (II^7) within this progression does not emerge as a discrete verticality. A rhythmic dislocation in the bass causes the E♭ dominant seventh to appear above the root of the following A♭ dominant seventh (V^7). As the two chords overlap, their notes blend together to form an extended tertian sonority. Schumann depresses the pedal as the two chords overlap, resulting in a rich, smooth blend of the two harmonies. The descending-fifths progression becomes blurry precisely when the opening theme comes back, causing what is typically a point of harmonic and formal clarity to appear out of focus.

Passages like this are characteristic of the music of Robert Schumann and Johannes Brahms. In every case, a rhythmic dislocation causes the chords to spread completely over one another and form illusory tertian sonorities, making the underlying progression sound blurry. The underlying progression is always a stock progression, typically a descending-fifths sequence. The chords generally overlap and blur together at the beginning and end of phrases, and frequently at the point of recapitulation.

This article examines Schumann's and Brahms's practice of blurring chords together. It does so first from a historical, then from a structural, and finally from a semantic perspective. The musical examples are roughly organized in order from those in which the harmonic blurring is more localized to those in which it is more widespread, culminating with an extensive analysis of the second movement from Brahms's Clarinet Sonata in F minor, op. 120, no. 1. The findings suggest that by blurring the harmonies in their music Schumann and Brahms romanticized the basic harmonic schemas they inherited from past traditions and imbued them with the quality of something experienced from afar rather than in its immediacy.

1. Historical Context

This section draws a connection between Jean Paul's definition of the Romantic as boundless beauty, the blurry backgrounds of landscape paintings, and the view that Schumann's and Brahms's works share a misty, Romantic quality. I note that there are rhythmic dislocations in their works that prevent harmonies from emerging clearly and



Example 1. Schumann, "Warum?" op. 12, no. 3, mm. 29–33.

Warum. Performer: Vladimir Ashkenazy, piano.

Audio Example 1. (click to play audio).

propose that the frequency of these passages in their piano works may help explain why the misty quality of their music was often associated with their playing style.

Jean Paul's definition of the Romantic as boundless beauty appears in a well-known passage from his *Vorschule der Ästhetik* ([1804] 1973) that contrasts the clear contours of the Classical with the blurry outlines of the Romantic. Jean Paul observes that "a statue with its sharp and precise contours excludes everything Romantic; painting approximates it in groups of human figures and reaches it in landscapes without men, like those of Claude Lorrain" (60). Similarly, he argues that with its walls and clear-cut hedges "a Dutch garden seems the very opposite of Romanticism, but an English garden which extends into an undefined landscape can surround us playfully with a Romantic region, that is, with the background of an imagination left free to wander in the beautiful" (60). "The Romantic," Jean Paul concludes, "is the beautiful without boundaries [*Begrenzung*], or beautiful infinity, just as there is sublime infinity" (61).[1] In so defining the Romantic, Jean Paul problematized the most basic distinction in eighteenth-century aesthetics.[2] Whereas Kant ([1790] 1951, 81) distinguished the beautiful from the sublime by arguing that the former "concerns the form of the object which consists in having [definite] boundaries [*Begrenzung*]" while the latter "is to be found in the formless object in so far as in it or by its occasion boundlessness is represented," Jean Paul blurred the boundary between these two categories, illustrating the very idea he sought to define. If Romanticism is about blurring boundaries, boundless beauty is both definition and instantiation of the Romantic.

For Jean Paul few things were as Romantic as landscape paintings. As he put it, "Painting, like poetry, is much closer than sculpture to romantic infinity and in landscapes often blurs into it completely" (Jean Paul [1804] 1973, 57). The painting reproduced in Example 2 shows why Jean Paul cited the landscapes of Claude Lorrain as examples of Romanticism. In this painting, as in many of Lorrain's pieces, nature engulfs a classical-style building, opening its closed shape into an infinite horizon where land, water, and sky merge together.[3]

The blurry backgrounds of Lorrain's landscapes exerted a powerful influence on the artists of the Romantic generation, most notably Caspar David Friedrich. As Linda Siegel (1980, 14) notes, "The revolutionary landscapes and seaport scenes of Lorrain contain many artistic principles which form an important part of Friedrich's style: melting distances where water and sky merge as one, the portrayal of a dreamlike world beyond, seascapes in which morning light dissolves into mist."

[1] Whereas Margaret Hale translates the word "Begrenzung" as "limits," I translated it as "boundaries" in order to match J. H. Bernard's translation of this same word in the passage from Kant quoted later in this paragraph.

[2] Berthold Hoeckner (2002, 55) makes a similar point. Kant's distinction between the beautiful and the sublime was largely based on Edmund Burke's well-known definitions of these categories.

[3] The landscapes of Claude Lorrain employ what Leonardo da Vinci described as "aerial perspective." Da Vinci ([1651] 1835, 96) notes, "Whenever a figure is placed at a considerable distance you lose first the distinctness of the small parts, while the larger parts are left to the last, losing all distinctness of detail and outline."

Example 2. Claude Lorrain, Pastoral Landscape, *1638 (Minneapolis Institute of Arts).*

Example 3. Caspar David Friedrich, Winter Landscape with Church, *1811 (British Museum).*

The "melting distances" that Siegel describes can be seen in Friedrich's winter landscape reproduced in Example 3. As is typical of Friedrich's paintings, in this piece the clearly delineated foreground dissolves into the misty background: the pine trees and the cross map into the spires of the blurry, Gothic cathedral, and the rock is figuratively transformed into its foundation by evoking the well-known passage in the Bible where Jesus tells Peter, "Upon this rock,

I will build my church" (Matthew 16:18).[4] In the distance everything becomes blurry; in distance everything becomes Romantic.[5]

Listeners found this same blurry, Romantic quality in the music of Schumann and Brahms, two composers who were familiar with Jean Paul's writings and his view of Romanticism as boundless beauty.[6] Among the first to write about the blurriness of the Schumannian style was Franz Brendel. In his first issue as the editor of the *Neue Zeitschrift für Musik*, Brendel paid homage to his predecessor, likening his music to landscape paintings:

> Schumann's compositions can often be compared with landscape paintings in which the foreground gains prominence in sharply delineated clear contours while the background becomes blurred and vanishes in a limitless perspective; they may be compared to fog-covered landscapes from which only now and then an object emerges glowing in the sunlight. Thus, the compositions contain certain clear primary sections and others that do not protrude but rather serve merely as backgrounds. Some passages are like points made prominent by the rays of the sun, while others vanish in blurry contours. To this inner peculiarity corresponds the exterior one that Schumann is fond of playing with the constantly depressed pedal, so that the harmonies do not emerge with particular clarity. (Brendel [1845] 1994, 322–323. Translation modified by Hoeckner 2002).

Shortly after Schumann's essay "Neue Bahnen" announced Brahms to the world, Hoplit published an article on the young composer in the *Neue Zeitschrift* at Brendel's request. Hoplit (1855, 162–3; my translation) observed that Brahms is of a "Schumannian nature," for he, too, "has the longing for the boundless and misty, which characterizes the Romantics in such a unique way." Nearly a century later, Karl Geiringer (1947, 337) recognized this longing for the boundless and misty as a central characteristic of Brahms's entire output: "The young man adored Jean Paul Richter and Novalis … and wrote melodies which were incomparably tender, sweet and pensive. Later on, these traits became less obvious; always, however, Brahms loved the vague twilight moods and unreal, ghostly backgrounds."

Listeners often associated the misty quality of Schumann's and Brahms's music with the composers' playing style. As quoted above, for Brendel the blurriness of Schumann's music resonated with his tendency to play with an open pedal so as to prevent the harmonies from emerging clearly. Oswald Lorenz similarly noted Schumann's "almost uninterrupted, yet discreet use of pedal such that no disruptive sound of a heterogeneous harmony arose" (Jansen 1883, 72). As for Brahms, Heinrich Schenker ([1912] 1992, 14) reported that people still spoke of his "blurry type of playing," and Reimar Riefling ([1957] 1962, 6) claimed that the Viennese public could have attested to the composer's "blurred pedaling."

The works of Schumann and Brahms offer some evidence of this type of pedaling. In the ending of *Papillons*, op. 2, Schumann depresses the pedal continuously for twenty-seven measures, causing the oscillating tonic and dominant harmonies to blur together over a long-sustained bass note. Likewise, in the penultimate piece from Schumann's *Davidsbündlertänze*, the sustained bass and widely spaced texture force the music to "swim in pedal … blurring tonic and dominant harmony together in a single mist" (Rosen 1995, 27). Here, as in *Papillons*, the overall effect "easily compares to Brendel's image of landscapes with blurred harmonic backgrounds" (Hoeckner 2002, 82). Brahms's blurry style of playing is in evidence in the opening of his B-Minor Intermezzo, op. 119, no. 1, for here every note is held as if with an open pedal so as "to blur the various harmonies in each bar" (Beller-McKenna 2004, 6).

But Schumann's and Brahms's tendency to blur chords together went well beyond an idiosyncratic use of the pedal.[7] An examination of their works reveals numerous passages like that from Schumann's "Warum?" discussed above (Example 1), where the harmonies overlap and merge together as a result of a rhythmic dislocation, causing the underlying progression to sound blurry. Given that these passages typically involve the piano and often call for the pianist to depress the pedal as one chord overlaps the next, one can assume that these passages are in part what led many writers to describe Schumann's and Brahms's playing as blurry and to associate the blurriness of the harmonies with the sound of the open pedal. The use of the pedal in these passages helps create a rich, hazy blend of the overlapping chords, but it is often a rhythmic dislocation, and

[4] The transfiguration of the foreground into the background is an important, though seldom discussed, aspect of Friedrich's style. For an additional example of this technique, see Friedrich's 1821 painting *Moonrise by the Sea*. The seascape transfigures the two anchors on the rocky shore into the two boats that float in the distant waters.

[5] As Novalis (2002, 51–52) wrote, "In the distance everything becomes poesy-poem. *Actio in distans*. Distant mountains, distant human beings, distant events, etc., all become romantic."

[6] Robert Schumann quoted Jean Paul's definition of the Romantic as boundless beauty in three occasions, once in his *Mottosammlung* and twice as an epigraph for the *Neue Zeitschrift für Musik* (2/25, 1835 and 14/51, 1841). Brahms must have been familiar with Jean Paul's definition, for he read and carefully annotated the complete works of Jean Paul, which he received as a gift from Clara Schumann in the Christmas of 1854. Brahms (2003) quotes Jean Paul more than any other author but does not quote the passage in question.

[7] Franz Brendel's comparison of Schumann's music to landscape paintings supports this idea. As quoted above, after noting that some passages in Schumann "vanish in blurry contours," Brendel notes, "*To this inner peculiarity corresponds the exterior one* that Schumann is fond of playing with the constantly depressed pedal" (Brendel [1845] 1994, 323; emphasis mine). In other words, the use of raised dampers is only the external manifestation of something that is internal to Schumann's music.

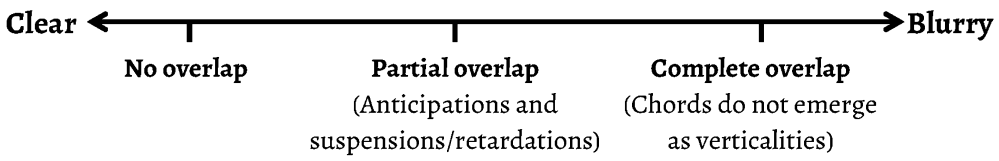
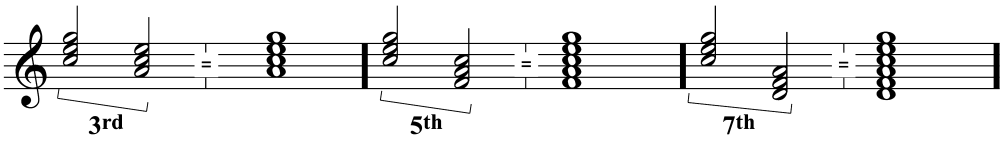


Figure 1. Degree of overlap between harmonies affects how clear the harmonies appear.



*Triads may be incomplete or they may be extended to seventh chords

Figure 2. Overlapping harmonies can blend seamlessly into illusory tertian sonorities.

not a continuously depressed pedal, that causes the chords to overlap in the first place.

Despite the various references to the blurriness of Schumann's and Brahms's music, the composers' use of rhythmic dislocations to blur chords together has received little analytical attention. One of the few discussions of this phenomenon is that offered by Ryan McClelland (2012) in his analysis of a sequential passage near the end of the first movement of Brahms's E♭-Major Sonata for Clarinet and Piano, op. 120, no. 2. McClelland identifies the descending-fifths sequence that underpins the passage and then shows how a rhythmic displacement in the outer parts "blurs the harmonic changes and creates illusory tertian sonorities" (McClelland 2012, 179). The analysis is detailed and convincing, but the discussion of the "harmonic blurring" of the passage is necessarily *ad hoc*, for the focus of the study is on sequences rather than on blurring (179).

The following sections offer a broader and more systematic examination of Schumann's and Brahms's use of rhythmic dislocations to blur the harmonies in their music. After developing a theoretical framework through which to conceptualize the idea that chords can blur together as they overlap, I will analyze various passages where the harmonies emerge in varying degrees of clarity by first identifying the underlying progressions and then discussing the rhythmic dislocations that cause the chords to overlap and merge together (this is the same analytical methodology used by McClelland to discuss the sequential passage from the Clarinet Sonata). The underlying progression is always a common harmonic schema and often a descending-fifths progression. The harmonic blurring tends to occur at the beginning and end of phrases, and frequently at the recapitulation.

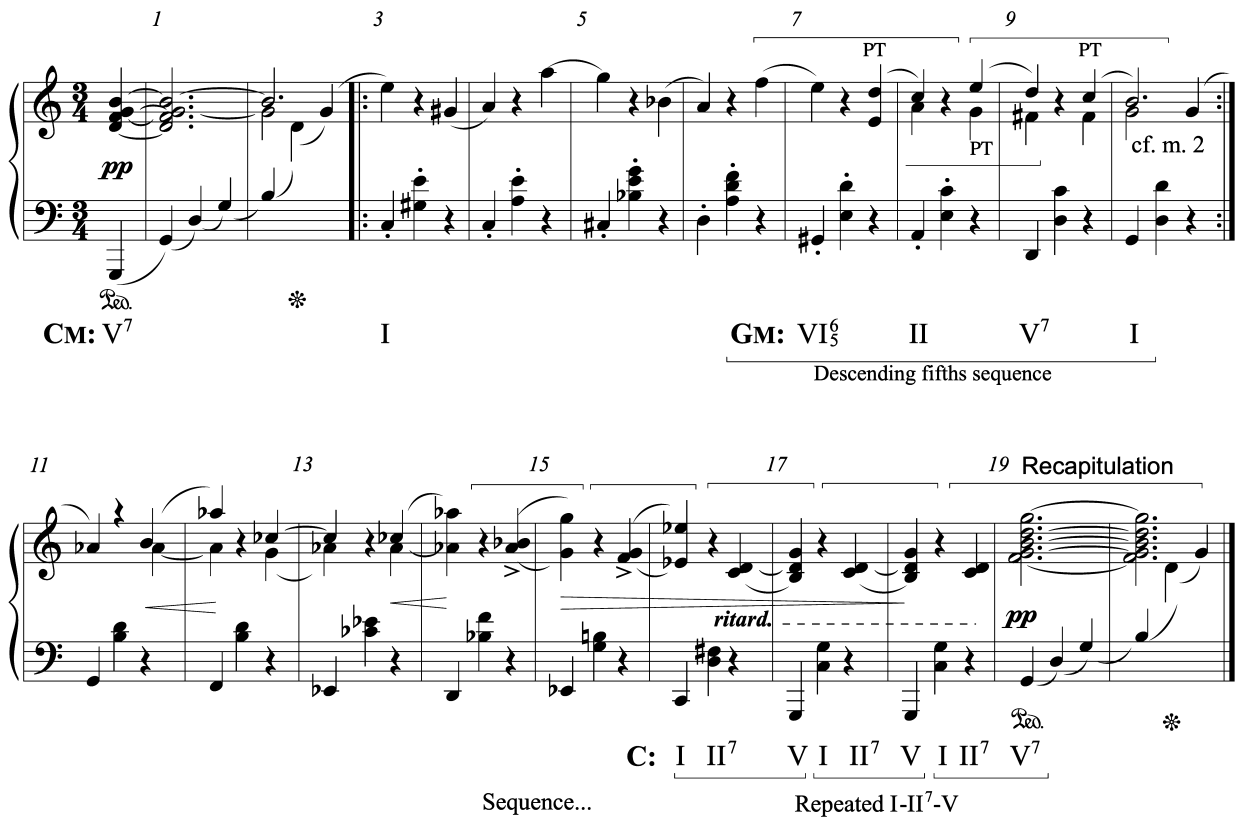
2. Harmonic Blurring

In Schumann's and Brahms's music some chords emerge distinctly while others blur together, distorting common progressions. How clear or blurry the chords appear depends largely on two factors, one rhythmic and the other harmonic. As shown in Figure 1, when it comes to rhythm the main question is to what degree the chords overlap. Some chords do not overlap at all, each setting itself sharply apart from the next. By extending the notes of a chord through part of the duration of another, anticipations and suspensions/retardations start to soften the chord boundaries while still allowing the chords to emerge as discrete verticalities.[8] Further along, chords start to spread completely over one another, each precluding the other from emerging as a clear verticality. As shown in Figure 2, in these cases, the chords typically appear a third, fifth, or seventh apart, one over the next, so that, when they overlap, their notes merge into a stable, albeit illusory, tertian sonority.[9] This is an important factor, for otherwise the overlap would create a sharp conflict rather than a seamless blend of the two harmonies.

We can start fleshing out the basic outline given in Figure 2 by examining the varying degrees of clarity with which the harmonies emerge in the "hazy, broken waltz"

[8] In the case of retardations and anticipations, meter typically allows listeners to infer the boundary between the chords, because, in tonal music, chords generally change at metrically strong points. On the relationship of harmonic rhythm and meter, see Lester (1986, 26) and Mirka (2009, 51).

[9] Most commonly, Schumann and Brahms spread a seventh chord above a chord a fifth below, resulting in an illusory eleventh chord. Examples of overlaps that produce ninth chords and seventh chords are also common. Of these three possibilities, eleventh chords represent the richest and haziest of the sonorities produced. Thirteenth chords are rare.



(a) Hypothetical prototype without rhythmic displacements.

Example 4. Schumann, Davidsbündlertänze, *no. 18, mm. 1–20.*

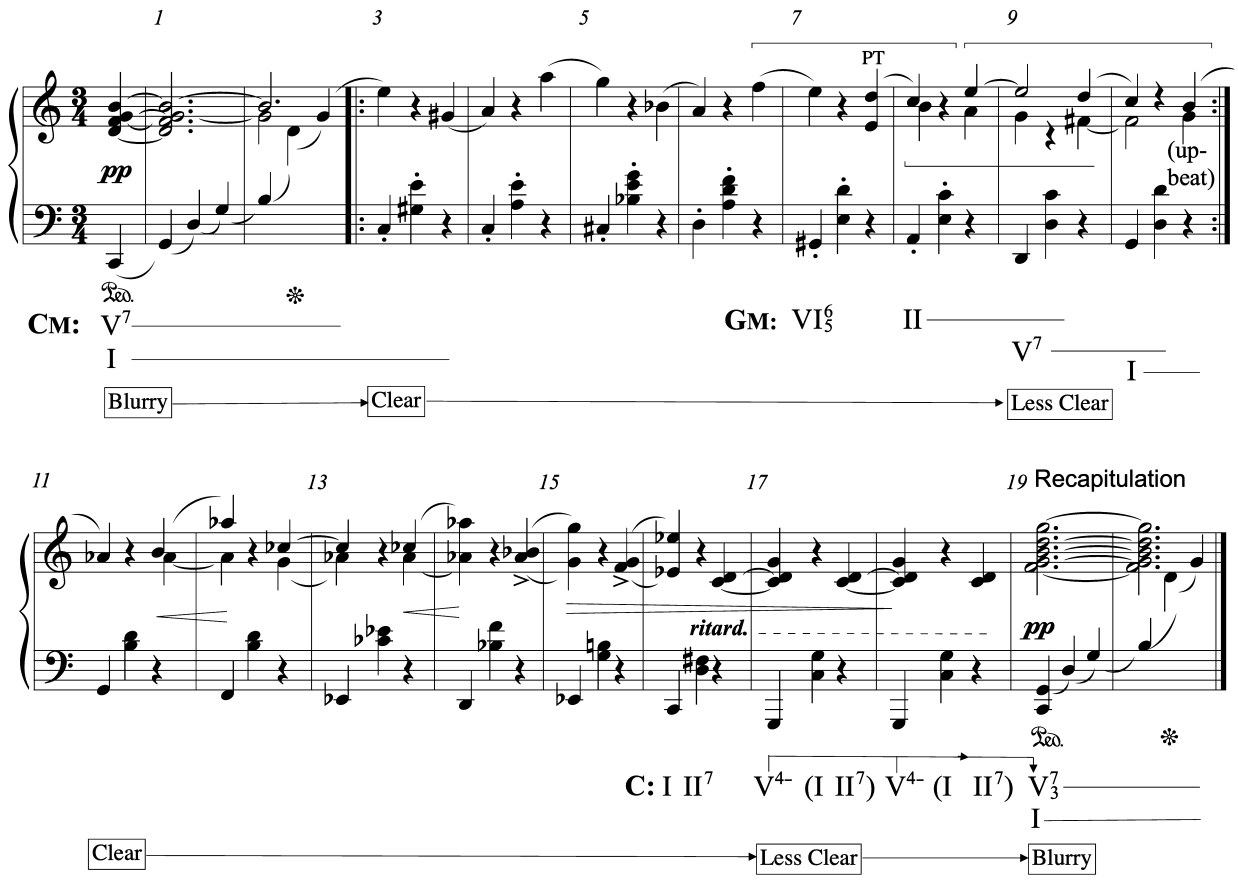
(Robert Hatten 2014, [24]) that ends Schumann's *Davidsbündlertänze*. Example 4 shows a hypothetical version of the waltz above the actual music. The hypothetical version clarifies the underlying progression. The annotations in the actual music highlight the rhythmic dislocations that cause some of the chords to blur together.

As shown in Example 4.a, the waltz begins with a V^7–I anacrusis. But the V^7 never emerges as a separate verticality. As Example 4.b illustrates, the V^7 blends with the root of the following tonic triad in the form of an eleventh chord.[10] Here, as in the passage from "Warum?" discussed above, Schumann depresses the pedal as the two harmonies overlap, resulting in a rich, hazy blend of the two harmonies.

After "the haze of the bichordal introduction" (Hatten 2014, [22]), the harmonies emerge in sharply delineated contours (there are no suspensions or anticipations), only to start overlapping once again during the descending-fifths sequence that ends the first phrase.[11] Example 4.a clearly depicts the sequential repetition of mm. 6–8 down a step in mm. 8–10. But as shown in Example 4.b, the sequential repetition in mm. 8–10 becomes distorted as the melody starts lagging behind the accompaniment, causing the notes of one chord to spread through part of the duration of the next. The melodic parallelism renders these overlaps more blurry than a typical set of suspensions: the A in m. 8 and the D in m. 9 appear where one would expect to hear, by comparison to m. 7, passing tones rather than chord tones, and the C in m. 10 appears where one would expect to find, by comparison to m. 8, a chord tone

[10] The notes of the G dominant seventh chord must not be dismissed simply as embellishments of the tonic chord. The G dominant chord connects, via a chromaticized 5–6 exchange, the B-minor triad at the end of the preceding piece to the C-major tonic triad that emerges as a verticality in m. 3 of the waltz.

[11] This sequence is organized as a Fonte schema. As Gjerdingen (2007, 61–72) explains, the Fonte is a common eighteenth-century schema first discussed by Joseph Riepel (1755). This schema is a four-chord, descending-fifths sequence that alternates dominant seventh chords and triads. The schema is divided in two halves. The first half consists of a dominant-to-tonic progression in the minor mode with the melody descending from $\hat{4}$ to $\hat{3}$, and often elaborated as $\hat{6}$–$\hat{5}$–$\hat{4}$–$\hat{3}$. The second half does the same a step lower and in the major mode.



(b) Actual music.

Example 4. (Continued).

Davidsbündlertänze. Performer: Maurizio Pollini, piano.

Audio Example 4. (click to play audio).

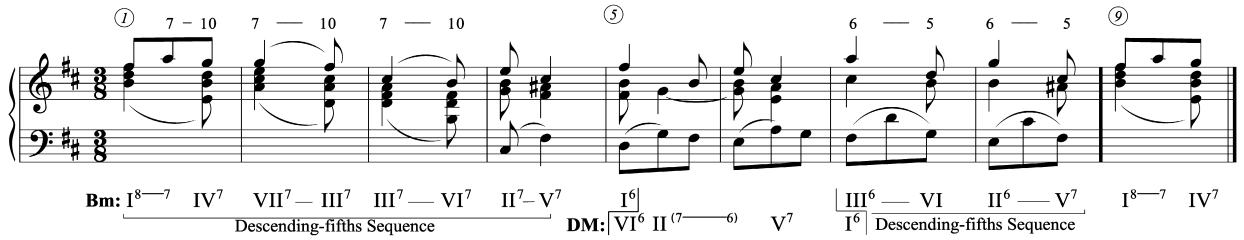
rather than a suspension.[12] The rest that separates the C from the B in m. 10 underscores the ambiguous nature of the C. The melodic parallelism in mm. 6–10 thus prevents the harmonies in mm. 9–10 from emerging convincingly.[13]

Overall, as the annotations at the bottom of Example 4.b illustrate, the opening theme follows a trajectory from blurriness to clarity to lesser clarity.

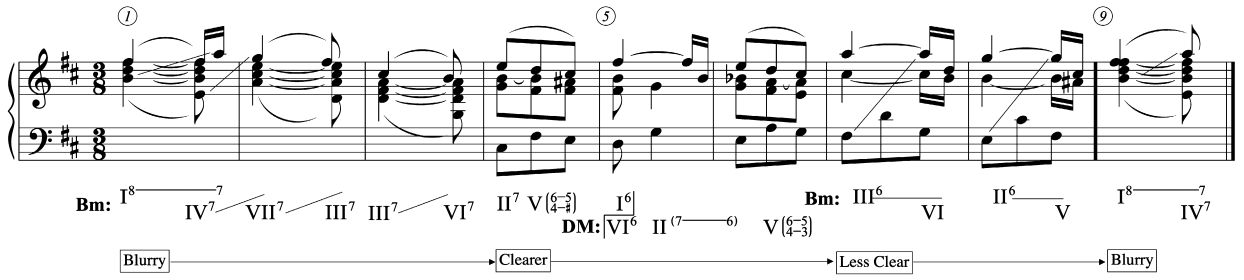
The harmonies of the waltz blur together once again at the boundary between the digression and the recapitulation. As the brackets above the staff in Example 4.a illustrate, the digression ends with a descending sequence of dominant-to-tonic progressions. But as shown in Example 4.b, the V at the end of this sequence (m. 17) does not emerge as a separate verticality. The V arrives in m. 17 with a dissonant C in an inner voice. The C is set up as a 4–3 suspension. But instead of resolving the C to a B, Schumann repeats the I–II^7–V motion heard in mm. 17–18 twice more in mm. 18–19. The V in m. 18, like that in m. 17, has a suspended C that does not resolve. When the missing B of the V chord finally materializes in m. 19, the V blends with the root of the following tonic triad to form the eleventh chord of the opening anacrusis. The way in which Schumann problematizes the resolution of the C to the B over the V chords in mm. 17–19 recalls the end of the previous phrase (m. 10), where the C appeared above the V and the

[12] Lerdahl and Jackendoff (1983) note that listeners are inclined to hear parallel passages in parallel ways. One of their preference rules states, "Prefer a prolongational reduction in which parallel passages receive parallel analyses" (Lerdahl and Jackendoff 1983, 226). The claim of the above analysis is that, given the parallelism in mm. 6–10, listeners may be inclined to hear the A and D in mm. 8 and 9 as if they were passing tones, and the C in m. 10 as if it was a chord tone. The conflict prevents the harmonies from emerging as clearly as they would if no such conflict existed.

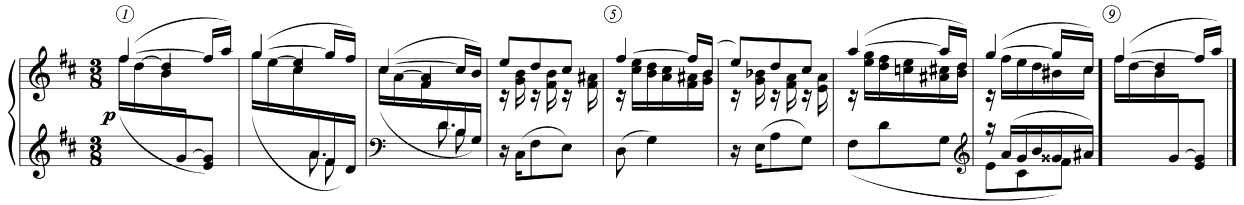
[13] One can appreciate the slight obfuscation of this descending-fifths progression (Fonte) by comparing it to the clearer descending-fifths sequence (Fonte) that appears in mm. 22–26, when the opening phrase is repeated.



(a) Chordal reduction without rhythmic displacements.



(b) Chordal reduction with rhythmic displacements.



(c) Actual music.

Example 5. Brahms, Intermezzo in B Minor, op. 119, no. 1, opening phrase.

resolution of the C to the B was problematized by the intervening rest and conflicting contextual clues.

For our first example of blurry harmonies in Brahms let us turn to the opening phrase of his B-Minor Intermezzo, op. 119, no. 1. Countless authors have drawn attention to the blurriness of the descending-fifths sequence in mm. 1–3, citing the long, sustained chains of downward thirds as the source of the effect.[14] What has been overlooked is the role that the rhythmic displacements between the melody and the accompaniment play in how clear the harmonies appear at the beginning and at the end of the phrase.

As shown in Example 5.a, mm. 1–5 feature a descending-fifths sequence with a 7–10 outer-voice

Intermezzo in B Minor.
Performer: Murray Perahia, piano.

Audio Example 5. (click to play audio).

pattern. But, as shown in Example 5.b, the chords in this sequence do not emerge clearly. The first pair of chords of the sequence (m. 1) merge together completely: the root, third, and fifth of the tonic triad spread over the following E seventh chord, each note being held as with the pedal. And, as the diagonal lines on the staff show, the A in the melody, which transforms the opening triad into a seventh chord, arrives above the E seventh chord in the left hand, and resolves to a G, which belongs conceptually to the E seventh chord but appears instead as part of the downward arpeggiation of the A dominant seventh chord in m. 2. The rhythmic displacement between the melody and the accompaniment shown by the diagonal lines in mm. 1–2 has led to different parsings of the descending-fifths sequence: some analyses extend the E seventh chord (IV) through the beginning of m. 2 while others place the A dominant seventh chord on the downbeat of this same

[14] Analyzes of the opening of Brahms's B-Minor Intermezzo, op. 119, no. 1 can be found in Salzer 1962, Newbould 1977, Cadwallader 1983, Diergarten 2003, Beller-McKenna 2004, Brower 2008, and Rings 2012. Beller-McKenna (2004) and Brower (2008) refer to the blurriness produced by the sustained chains of descending thirds. Brower (2008, 89) writes, "The unbroken succession of diatonic thirds and the sustaining of every note to the end of the bar serves to blur triadic boundaries."

measure.[15] In my own reading, the overlapping roman numerals below the staff show the harmonies in mm. 1–2 spreading one over the next and blending together as a result of the aforementioned rhythmic displacement.

In mm. 2–3, the melody and the bass move closer into alignment. The sustained chains of descending thirds cause the root, third, and fifth of the first chord of the measure to continue to spread over the notes of the second chord, but, in the melody, the seventh of the first chord now arrives and resolves on time, allowing the 7–10 pattern, along with its underpinning sequence, to emerge more clearly. The descending-fifths progression becomes even clearer in m. 4, for here the C♯-minor seventh chord overlaps the F♯ dominant seventh chord only partially through a pair of suspensions.

The harmonic progression becomes blurry again by the end of the phrase. Example 5.a illustrates the descending-fifths sequence and 6–5 outer-voice pattern that underpins mm. 7–8. But, as shown in Example 5.b, in the actual music the A and the G in the melody are held for too long, spreading the first chord of each measure into the second and distorting the basic 6–5 pattern. Overall, as the annotations at the bottom of Example 5.b illustrate, the opening phrase of the Intermezzo follows a trajectory from blurriness to greater clarity to lesser clarity, the same basic trajectory found in the opening phrase of Schumann's waltz discussed above.

All of the examples discussed so far involve V–I progressions and descending fifth sequences (this includes the passage from Brahms's E♭-Major Clarinet Sonata analyzed by McClelland and the passages from Schumann's *Papillons* and *Davidsbündlertänze* discussed in the previous section). Blurry V–I progressions and descending-fifths sequences are especially common on account of the ease with which each chord can merge with the next. But Schumann's and Brahms's practice of allowing chords to overlap and blend together went beyond these two progressions. The following analysis of the statement and recapitulation of the opening theme of Brahms's Intermezzo in A Major, op. 118, no. 2, illustrates just how varied the overlaps can be in this repertory.

Example 6 analyzes the opening period. Example 6.a provides a chordal reduction of the theme without any rhythmic displacements; 6.b adds the rhythmic displacements that distort this progression; and 6.c reproduces the actual music. The chords in the antecedent phrase all appear as distinct verticalities. The only exception is the A-major chord in the upbeat to m. 2. As Example 6.b illustrates, the re-articulation of the opening tonic chord in the upbeat to m. 2 overlaps with the preceding IV^6_4 chord, resulting in an illusory D-major seventh chord. Following this overlap, a set of anticipations softens the chord boundaries (see Example 6.c), but each chord emerges as a clear verticality.

The chords in the consequent phrase emerge less clearly. As the brackets below Example 6.a illustrate, the second half of the consequent repeats the progression heard in the second half of the antecedent, but in the key of E major.[16] The harmonic progression in question consists of two common schemas: a *passo indietro* ($IV–V^4_2–I^6$) followed by a cadential progression (II–V in the antecedent, $II^6–V^7–I$ in the consequent). In the antecedent the chords emerge clearly; in the consequent they do not. As Example 6.b illustrates, in the upbeat to m. 7 the melody re-articulates the C♯ of the upbeat A-major chords (now the A-major chord functions as IV in the key of E major) above the following B dominant seventh chord (V^4_2 in E). In m. 7, the D♯ of the V^4_2 spreads over the following I^6 to form an illusory III^7, and then the E of the of the I^6 blends with the following II^6 to form a II^6_5. These overlaps distort the *passo indietro* that was so clearly heard at the corresponding point in the antecedent phrase, while also allowing the music to reach the PAC in m. 8 in a timely manner (rather than a beat late, as is the case in Example 6.a) by compressing four harmonies into three verticalities.

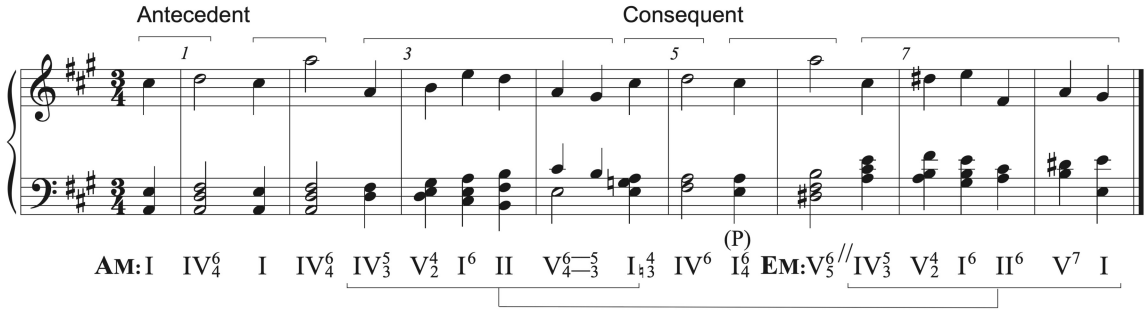
To be sure, the melody in the second part of the consequent phrase could be understood as consisting of a set of retardations that resolve in the last sixteenth-note of every beat. But as shown in Example 6.c, the melodic and harmonic parallelism between the two phrases colors the notes that appear on the beat as chord tones rather than as retardations, and the sixteenth notes as anticipations rather than as chord tones, thus precluding the harmonies from emerging convincingly.

The harmonies overlap and blur together at various other moments in the Intermezzo.[17] Most notable among these is the retransition that leads us from the F♯-minor middle section back to the recapitulation of the opening

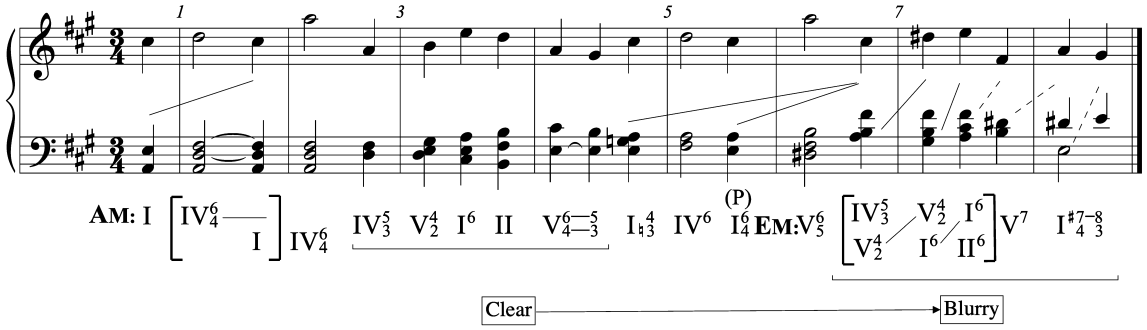
[15] Newbould (1977), Cadwallader (1983), and Brower (2008) extend the E seventh chord through the downbeat of m. 2. Salzer (1962), Diergarten (2003), and Beller-McKenna (2004) place the A seventh chord on the downbeat of m. 2.

[16] The consequent's harmonic progression is interrupted on a V^6_5 in m. 6. Following the interruption on the V^6_5, the music re-articulates the A-major chord with the C♯ on the melody heard at the start of the phrase. The A-major chord progresses once more to a B dominant seventh (now in 4/2 position), and the B dominant finally resolves to an E-major triad in first inversion, as part of a *passo indietro*. The apparent motion from the V^6_5 to the IV in m. 6 must not be understood as a retrogression, as the V^6_5 does not progress to the IV. The interruption of the progression on the V^6_5 in m. 6 is an example of what Samarotto (2005), after Schenker, calls a "free form of interruption."

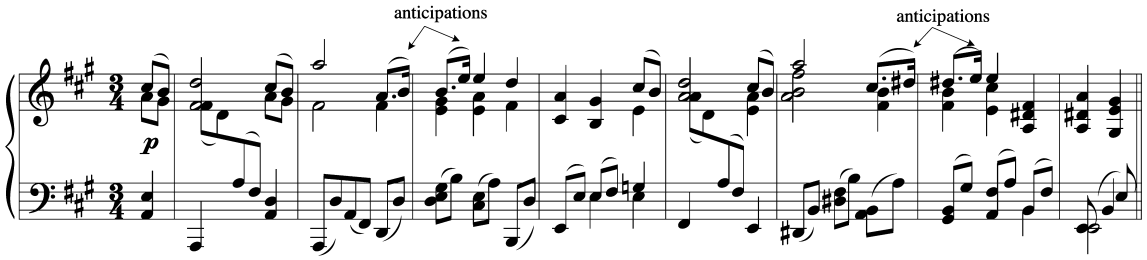
[17] See, for example, mm. 20, 24, and 46.



(a) Chordal reduction without rhythmic displacements.



(b) Chordal reduction with rhythmic displacements.



(c) Actual music.

Example 6. Brahms, Intermezzo in A Major, op. 118, no. 2, opening period.

theme. Example 7.a shows the basic harmonic progression that underpins this passage. The progression consists of an outer-voice descent in parallel sixths from a IV^6 through a I$^6_4$ (passing) to a II$^6_5$ (chromaticized) that leads to a V^7 and then to a I. A set of 7–6 suspensions embellish the parallel sixths. This progression, with its characteristic outer-voice motion in sixths, is a common Baroque cadential schema.[18]

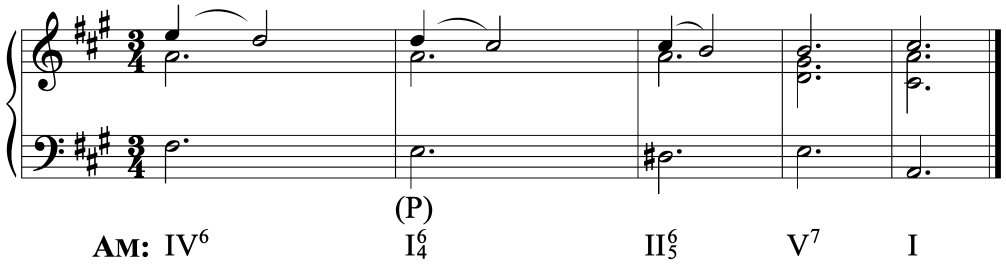
Intermezzo in A Major. Performer: Emanuel Ax, piano.

Audio Example 6. (click to play audio).

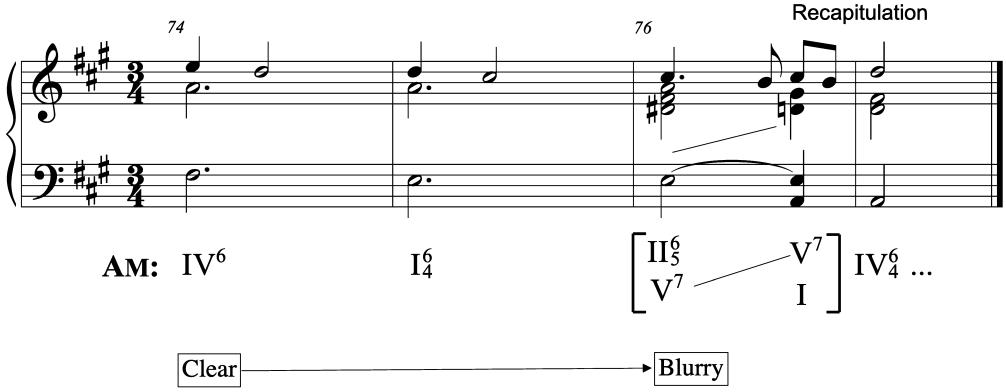
The use of this schema in a work of the late nineteenth century is noteworthy, but more remarkable still is the way in which it is stylized. As Example 7.b illustrates, the chromaticized II$^6_5$, the V, and the I do not emerge as discrete verticalities. The II$^6_5$ arrives over the root of the following V, and, in turn, the V spreads over the recapitulatory I. As these harmonies overlap, their notes blend together into a set of extended tertian sonorities, making the underlying progression sound blurry.

The preceding examples illustrate how rhythmic displacements can cause chords to overlap and blend together, making the underlying progression sound blurry.

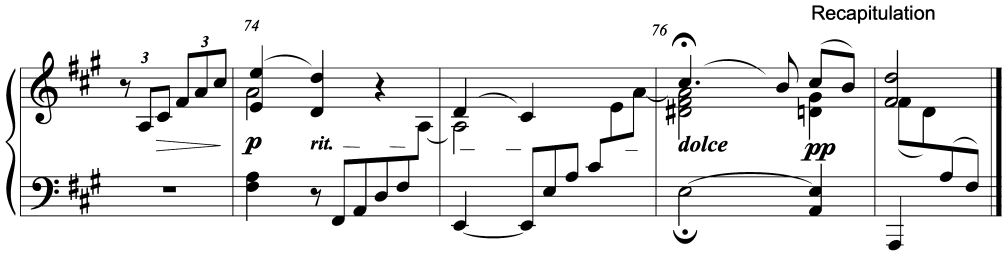
[18] Aldwell and Schachter (2011, 353) show an instance of this progression in J. S. Bach's chorale "Jesu, Meine Freude," noting that "a passing $^6_4$ between IV^6 and II$^6_5$ (less often a II^6) is very frequent; the outer voice motion is usually in 6ths." Bach's chorales offer dozens of examples of this cadential progression. Measures 9–10 of Bach's chorale no. 80, "O Haupt voll Blut und Wunden," feature the same exact progression shown in Example 7.a: same key, same harmonies, same voicing in the outer parts. The use of this harmonic schema in Baroque chorales resonates with Brahms's use of a chorale topic in the middle section of this Intermezzo.



(a) Model progression.



(b) Chordal reduction of actual music with rhythmic displacements.



(c) Actual music.

Example 7. Brahms, Intermezzo in A Major, op. 118, no. 2, retransition (mm. 74–77).

As shown, these rhythmic displacements distort common progressions (most typically V–I progressions and descending-fifths sequences), and they generally occur at the beginning and end of phrases, including the recapitulation point (see Examples 1, 4, and 7). By affecting phrase boundaries, the overlaps make what are typically moments of formal and harmonic clarity appear out of focus.[19]

Intermezzo in A Major. Performer: Emanuel Ax, piano.

Audio Example 7. (click to play audio).

The examples above help substantiate the connection drawn by Brendel between Schumann's music and the blurry backgrounds of Romantic landscapes, and they give evidence to Hoplit's claim that Brahms's music exhibits a Schumannian tendency toward the boundless and misty. The following section expands on the connection between this music and Romantic landscape paintings by arguing that blurry harmonies help convey a sense of distance in this repertory.

[19] Alexander Stefaniak (2016, 91–110) has argued that Schumann blurs the structure of his works by employing a "nontransparent style of virtuosity" that subverts the melody and obfuscates phrase boundaries. Peter H. Smith (1994) has shown how Brahms overlaps the end of the development with the start of the recapitulation in several sonata-form movements, thus "blurring the recapitulatory articulation." Smith (2005) expands the concept of formal overlap to include other sections. The findings of this article complement the idea that Schumann and Brahms blurred phrase boundaries and the recapitulatory articulation.

3. Blurriness and Distance

The following passage from Adam Müller's essay on Romantic landscape paintings beautifully describes the correlation between blurriness and distance typical of this medium:

> That which immediately surrounds a person—his cottage, the trees in his garden—all this appears in stark contrast concrete, defined and clear beside the formless, flowing ether; now his eye lifts up, so that it can command a greater distance, and the contours of earthly things become softer, the colors gentler: air and earth seem to run together; and they trade places with lovely intimacy: in the clouds the earth appears to step into the face of heaven, and in the seas and rivers heaven into the face of the earth—and in the farthest vastness the borders trail away, the colors fade into each other, what belongs to heaven, to earth, can no longer be told. Thus, regarded from the stark cliffs of the present, appears a person's distant, earliest childhood: heaven and earth in near relationship, but the memory of that day monochrome as if weatherworn; so too must the future decline of old age appear to him, for distance depicts equally the beginning and the end: not a collision of the elements, but a gentle marriage. (Müller 1808, 72)[20]

After noting that the more distant something is, the blurrier it will appear, Müller temporalizes the landscape, comparing the trailing away of borders in the distance to the effects of erosion.[21] For Müller, then, seeing an object fading into the background of a landscape painting is like seeing it fade into the past, seeing it become a ruin. Blurriness is the defining quality of that which lies spatially and temporally removed.

The music of Schumann and Brahms exhibits a similar connection between blurriness and distance as that found in paintings. Hoeckner (2002, 82–86) has briefly explored this connection in the penultimate of Schumann's *Davidsbündlertänze*. In this piece, Schumann brings back the melody from the second dance of the set and marks it "As if from a distance." Referring to Brendel's aforementioned comparison between music and landscape paintings, Hoeckner (2002) argues that Schumann creates the effect of distance by letting the harmonies blur together through a continuously depressed pedal.

This section examines the connection between blurriness and distance in three examples where the harmonies blur together as a result of rhythmic dislocations. The examples are organized in order from that in which the harmonic blurring is more localized to that in which it is more widespread. In each case, the chords overlap and merge together as the melody slows down and dies out toward the end of a section. This creates a type of ending where the music seems to fade away in blurry contours, like an object fading in the background of a landscape painting, or a ruin fading away across time.

The first example comes from Schumann's C-Major *Fantasy*, op. 17. As is well known, Schumann composed this work to help finance a monument for Beethoven, initially entitling the first movement "Ruins." This title resonates with the reference to the last song from Beethoven's *An die ferne Geliebte* ("To the Distant Beloved"), which appears at the end of the movement like a ruin amidst a vanishing canvas—everything points to it and dissolves with it.[22]

Example 8 shows the quoted melodies in their original form (a) and as the Romantic ruins they become (b).[23] In Schumann's *Fantasy* the quoted melodies appear at first with each chord clearly delineated, much as they do in Beethoven's song.[24] But, as the melody slows down in m. 295, the harmonies begin to spread over one another. In m. 297, the high E spreads a note of the six-four chord into the time span of the V^7 chord that follows. The E moves down to a D at the end of measure 297 but the parallelism between the various echoes of the quote makes this D sound anticipatory. When the E finally resolves to the D of m. 298, the V^7 blends with the root of the following tonic triad to form an illusory eleventh chord. And before the D in the melody can resolve to a C, the quote breaks off, leaving the V^7 and the I blending in the background. Schumann depresses the pedal as the chords overlap and blur together, enhancing the haziness of the passage. By the end of the movement, Beethoven's song becomes the ruin that the movement's subtitle alludes to.[25] The clear harmonic outlines of the quoted melody appear now faded, as if weatherworn.

Brahms's song "Abendständchen," op. 42, no. 1, gives further evidence of the connection between blurry harmonies and distance in this repertory. In this strophic

[20] As Alice Kuzniar (1989, 75) notes, when Müller described the blurriness of the landscape, he implicitly referring to Caspar David Friedrich's paintings.

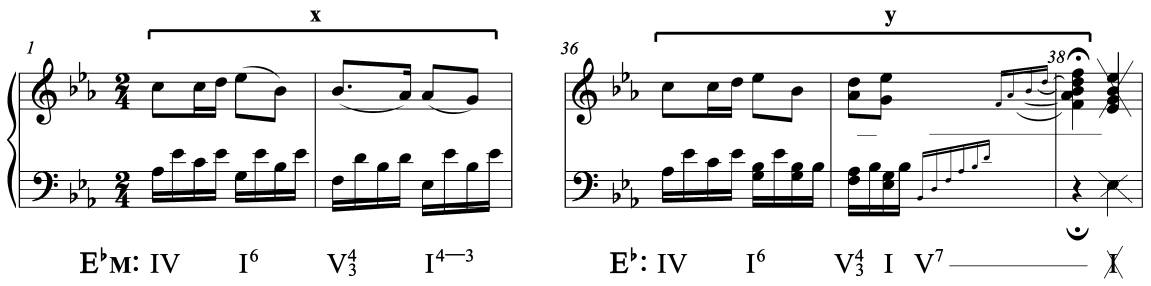
[21] It was common for Romantic artists to temporalize space. On the Romantic fusion of space and time, see Kuzniar (1989) and Hoeckner (2002, 80).

[22] As John Daverio (1987, 157) shows, the various themes of this movement prefigure the quotation from Beethoven. The movement, then, dissolves Schumann's music into Beethoven's, the present into the past, foreground into background.

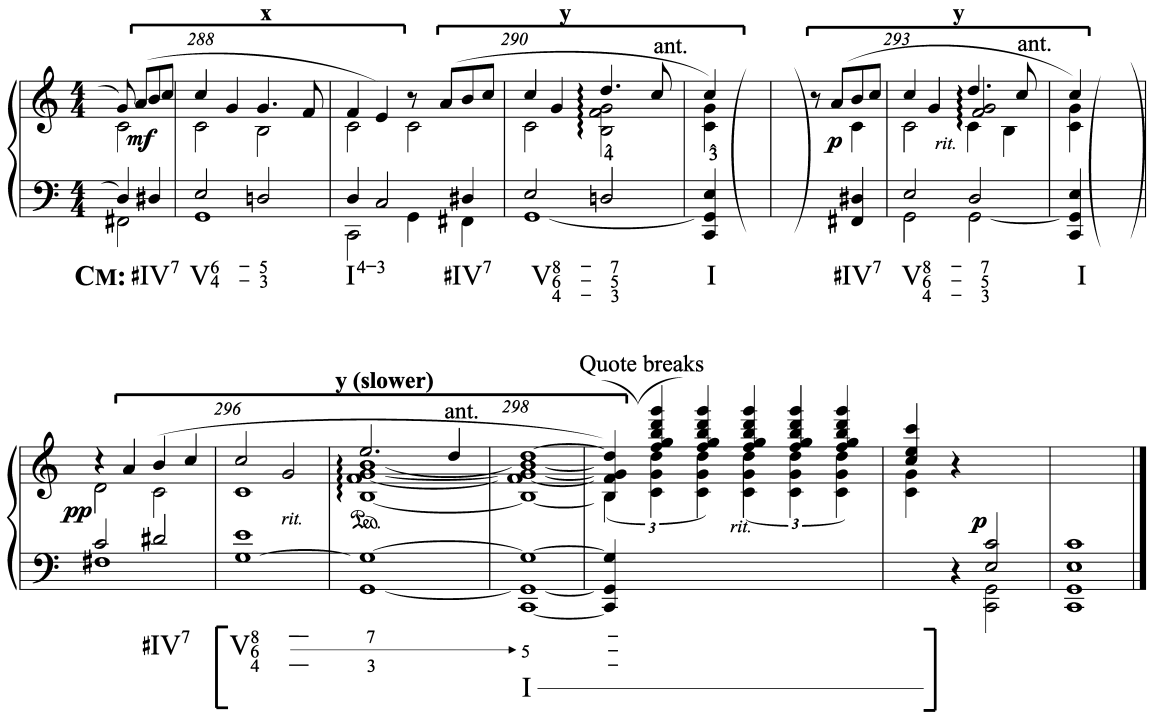
[23] Several scholars have noted the connection between the passages marked *x* in Example 8, but the connection between the passages marked *y* has gone unnoticed. The arpeggiation of the V chord up to scale-degree 2 makes the connection between Beethoven's original and Schumann's quotation particularly clear.

[24] Beethoven's song begins with a Prinner, a stock Galant progression that fell sharply into disuse in the Romantic period. As Gjerdingen (2007, 45–60) explains, the prototypical form of this schema features a $\hat{6}$–$\hat{5}$–$\hat{4}$–$\hat{3}$ melodic descent above a $\hat{4}$–$\hat{3}$–$\hat{2}$–$\hat{1}$ bass descent, resulting in four distinct harmonies: IV, I^6, V^4_3 (or VII^6) and I. Schumann uses the same basic set of sonorities to harmonize Beethoven's melody but with some alterations: the IV becomes a $\sharp IV^7$ (spelled enharmonically), the I^6 becomes a I^6_4 (cadential), and the V^4_3 becomes a V^7.

[25] Here and elsewhere, I use the word "ruin" in its positive, Romantic sense rather than in a pejorative, colloquial way.



(a) Quoted melodies from Beethoven.



(b) Schumann's quotation of Beethoven (the intervening material is omitted).

Example 8. Quotation of Beethoven's "An die ferne Geliebte," op. 98, no. 6, in Schumann's Fantasy, *op. 17, mvt. 1.*

An die ferne Geliebte. Performer: Dietrich Fischer-Dieskau, voice. Jörg Demus, piano.

Audio Example 8a. (click to play audio).

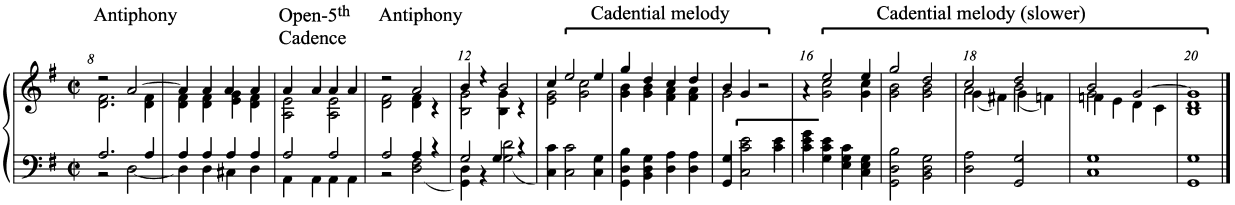
Fantasy. Performer: Wilhelm Kempff, piano.

Audio Example 8b. (click to play audio).

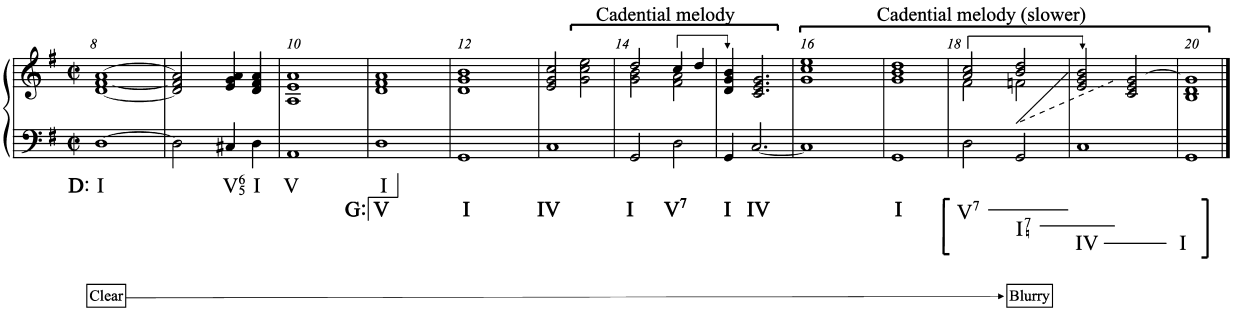
setting of Clemens Brentano's poem, the flute's evening serenade appears to come from a time of quasi-canonic antiphony and open-fifth cadences. Like the sounds of the flute dying in the distant horizon, the style of late-Renaissance polyphony heard so vividly at the beginning of each strophe ends up fading in indistinct harmonic contours.

Example 9 provides a chordal reduction and the actual music (reduced score) of the phrase that ends the first strophe and, later, the song as whole. As shown, the voices begin the phrase by clearly articulating each chord, first antiphonally and then homophonically. Tenors and basses evade the cadence in m. 15 by repeating the cadential melody (marked with brackets in the example). The upper voices join in antiphonally and in imitation a measure later. As it echoes in the upper voices, the melody slows down and starts lagging behind the other parts, distorting a V–$I^{7}_{\flat 5}$–IV–I progression, an old cadential schema described by Lori Burns (1995, 88) as a "a mixolydian plagal progression."[26]

[26] As Burns's (1995) label suggests, the origins of this progression can be traced back to modal music. Burns (1995) notates this pro-



(a) Chordal reduction with rhythmic displacements.



(b) Reduced score of actual music
Text: "Golden, come down the sounds/Silent, silent, let us listen!".

Example 9. Brahms, "Abendständchen," op. 42, no. 1, mm. 8–20.

Abendständchen. Performer: Monteverdi Choir conducted by John Eliot Gardiner.

Audio Example 9. (click to play audio).

The diagonal lines in the example highlight the rhythmic dislocation of the mixolydian plagal progression. As shown, in m. 18 the melody spreads the V^7 over the root of the $I^7_\natural$ chord in the bass. As expected, the melody resolves the seventh of the V chord to the third of the tonic triad on the downbeat of m. 19, but the resolution of the C to the B (shown by the arrow in Example 9.b) appears above a IV chord. The tonic and the subdominant chords in m. 19 merge together to form a IV^7 sonority, but the B is not treated as the seventh of an actual IV^7 chord, for it leaps down to a G instead of resolving by step to an A. The sonorities in mm. 18–19 may be better understood as a chain of overlapping harmonies: V^7 over $I^7_\natural$ in m. 18, and $I^7_\natural$ over IV in m. 19. As the chords overlap, the passage heard back in mm. 14–15 fades in blurred contours. By the end of the phase, the antiphony and the old mixolydian plagal progression dissolve in the distance, like the sounds of the flute in the evening serenade.

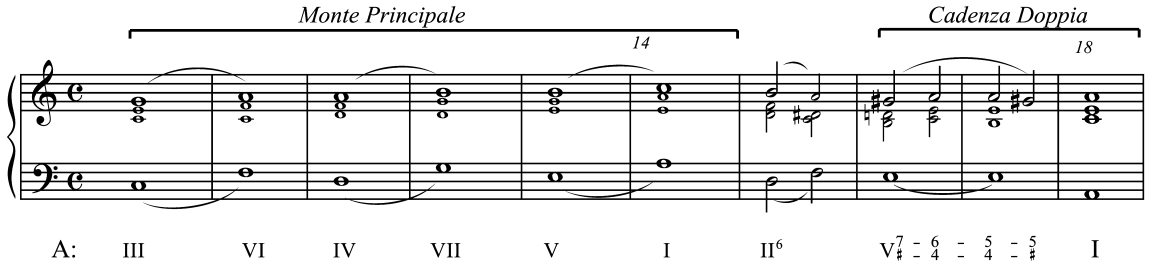
A similar treatment of the *stile antico* can be found in Schumann's strophic song "Auf einer Burg," op. 39, no. 7. The first stanza refers to a distant past. The song begins by describing an old knight asleep at his watch, but it is not until the last phrase of the first section that we find out just how old the knight is: he has been asleep for hundreds of years, his hair and beard have grown into one, his heart has turned to stone. It is here that the Renaissance-style polyphony heard so clearly at the beginning of the section starts to fade in blurry contours, the chords merging together like the hair and beard of the centuries-old knight.

Example 10 details the process of erosion that softens the harmonic outlines of this phrase.[27] As shown in Example 10.a, the phrase begins with an old form of the Monte schema that Gjerdingen (2007, 98) refers to as a *Monte Principale*,[28] and ends with a *cadenza doppia*, a cadential schema

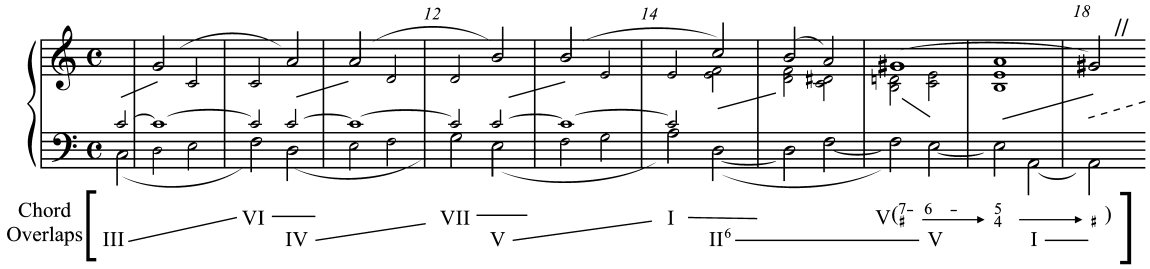
gression as V–V^7/IV–IV–I. I have notated the V^7/IV as $I^7_\natural$ in order to keep the chord labels consistent throughout the article. This closing formula is closely related to the schema that Robert Gjerdingen (2007, 181–82) calls the Quiescenza.

[27] Even though one may question the value of labeling the sonorities of the sequence in m. 9ff with roman numerals, I have done so in order to show how these sonorities overlap in the music.

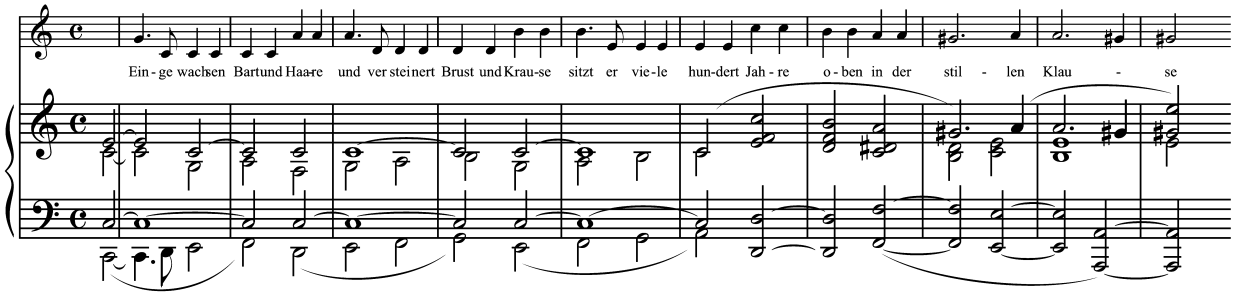
[28] As Gjerdingen (2007, 98) notes, a Monte Principale is an old type of Monte that proceeds diatonically with all the chords in $^5_3$ position, rather than alternating first-inversion and root-position triads. The main difference between a typical Monte and a 5–6 sequence is one of grouping: while in a 5–6 sequence the chords are grouped in 5–6 pairs, in a Monte they are grouped in 6–5 pairs. Just as in a 5–6 sequence the second chord of each 5–6 pair can appear in root position, so, too, in a Monte the first chord of each 6–5 pair can appear in root position, creating a Monte Principale. The Monte Principale is distinct enough from a 5–6 sequence with all its chords in root position that Aldwell and Schachter (2011, 319) label this sequence as one that ascends "by step with voice-leading 5/3 chords" rather than as a variant of the 5–6 sequence.



(a) Chordal reduction without rhythmic displacements.



(b) More elaborate chordal reduction with rhythmic displacements.



(c) Actual music.
Text: "Beard and hair have grown into one/chest and ruff have turned to stone/he [the knight] sits for many hundreds of years/up in his silent den".

Example 10. Schumann, "Auf einer Burg," op. 39, no. 7, mm. 9–18.

that was "old even in the eighteenth century" (169).[29] The progression may be old, but at this stage, with its clearly defined harmonic boundaries, it hides any signs of old age, like a carefully preserved antique.

Auf einer Burg. Performer: Dietrich Fischer-Dieskau, voice. Alfred Brendel, piano.

Audio Example 10. (click to play audio).

Example 10.b shows a rhythmic reduction of the phrase in the blurry, weathered state found in the song. As indicated by the diagonal lines, the chords overlap one another largely as a result of a rhythmic displacement where the bass is offset from the melody by half a measure. In the *Monte Principale*, the metric displacement of the outer parts and the sustained C in the inner voices obscure ever so slightly the identity of the chords. As the phrase continues, the harmonic structure becomes blurrier. In the second half of m. 14, the displacement between the outer parts causes

[29] Salzer and Schachter (1969, 187–189) offer a similar reduction of this passage. While they read an ascending 5–6 sequence beginning in m. 10, I read a *Monte Principale* starting a measure earlier. The *Monte Principale* fits better the internal organization of the poetry than the 5–6 sequence. In mm. 9–14 the melodic line is divided into three two-measure units, the first starting with the G in m. 9 and ending with the A in m. 10 ("Eingewachsen Bart und Haare"), the second starting with the A in m. 11 and ending with the B in m. 12 ("Und versteinert Brust und Krause"), and the last starting with the B in m. 13 and ending with the C in m. 14 ("Sitzt er viele hundert Jahre"). The G-to-A, A-to-B, and B-to-C melodic units in mm. 9–14 help articulate the CM-to-FM, Dm-to-GM, and Em-to-Am chord-pairs of the *Monte Principale* shown in Example 9, while contradicting the FM-to-Dm and GM-to-Em chord-pairs of the 5–6 sequence shown by Salzer and Schachter. Hearing this passage as a *Monte Principale* rather than as a 5–6 sequence is an important part of hearing this phrase as evocative of the past.

the A-minor chord at the end of the *Monte* and the D-minor chord projected by the bass to merge together into an extended tertian sonority.[30] Two measures later, the II chord in the bass merges with the V that begins the *cadenza doppia* to form a $\text{VII}^{\circ 4}_{2}$.

The melody slows down in m. 16, distorting the *cadenza doppia* still further.[31] As its name suggests, the *cadenza doppia* can be understood as a pair of V–I progressions, with the first of the two tonic chords typically appearing over a dominant pedal as a six-four sonority (see Example 10.a). But, as shown in Example 10.b, none of these chords emerge with their usual clarity. The G♯ of the V chord spreads in the melody over the C of the tonic six-four chord and resolves to A just as the C of the six-four chord returns to the B of the V chord. The A in the melody resolves down to a G♯ as a 4–3 suspension would, but instead of appearing as part of a distinct V chord, the G♯ spreads over the root-position tonic triad, blending dominant and tonic harmonies into an illusory seventh chord. Whereas the bass cadences in m. 17, the final tonic chord never materializes in the melody, fading in the distance and turning this section into a fragment. Like the stone statue of the centuries-old knight, the *stile antico* along with its archaic harmonic schemas appear to us as ruins from the past, old and weathered.

Past melodies, antique styles, and old schemas all evoke the past, but it is the blurriness of the harmonies that imbues the preceding examples with a sense of pastness—with the quality of something being experienced from afar rather than in its immediacy. If, as Adam Müller observed, the trailing away of boundaries in distant objects is comparable to the softening of an object's boundaries caused by erosion, then the old melodies, styles, and harmonic schemas in the examples discussed above may be compared to ruins.

4. Brahms's Sonata for Clarinet and Piano in F Minor, op. 120, no. 1, mvt. 2

In the slow movement of Brahms's F-Minor Sonata for Clarinet and Piano, it is no longer the *stile antico* of Renaissance polyphony but the basic harmonic language of the Galant style that appears in blurry contours, like a faded memory of a bygone time. To be sure, we have encountered examples of blurry Galant schemas in other pieces, but the opposition in this movement between the Galant schemas of the outer periods and the whole-tone sequences of the middle period heightens the correlation of Galant progressions with the past.[32] Brahms's stylization of the harmonies in this movement supports this correlation, for while the Galant schemas that underpin the outer periods fade in blurry contours, the more modern progressions of the middle period emerge crisp and distinct.

Example 11 shows the decay of the mid-late eighteenth-century harmonic structure that underpins the movement's opening period (A section). Example 11.a reconstructs the basic harmonic progression of each phrase based on the stock progressions they employ, 11.b highlights the process of erosion affecting this structure, and 11.c reproduces the actual music.

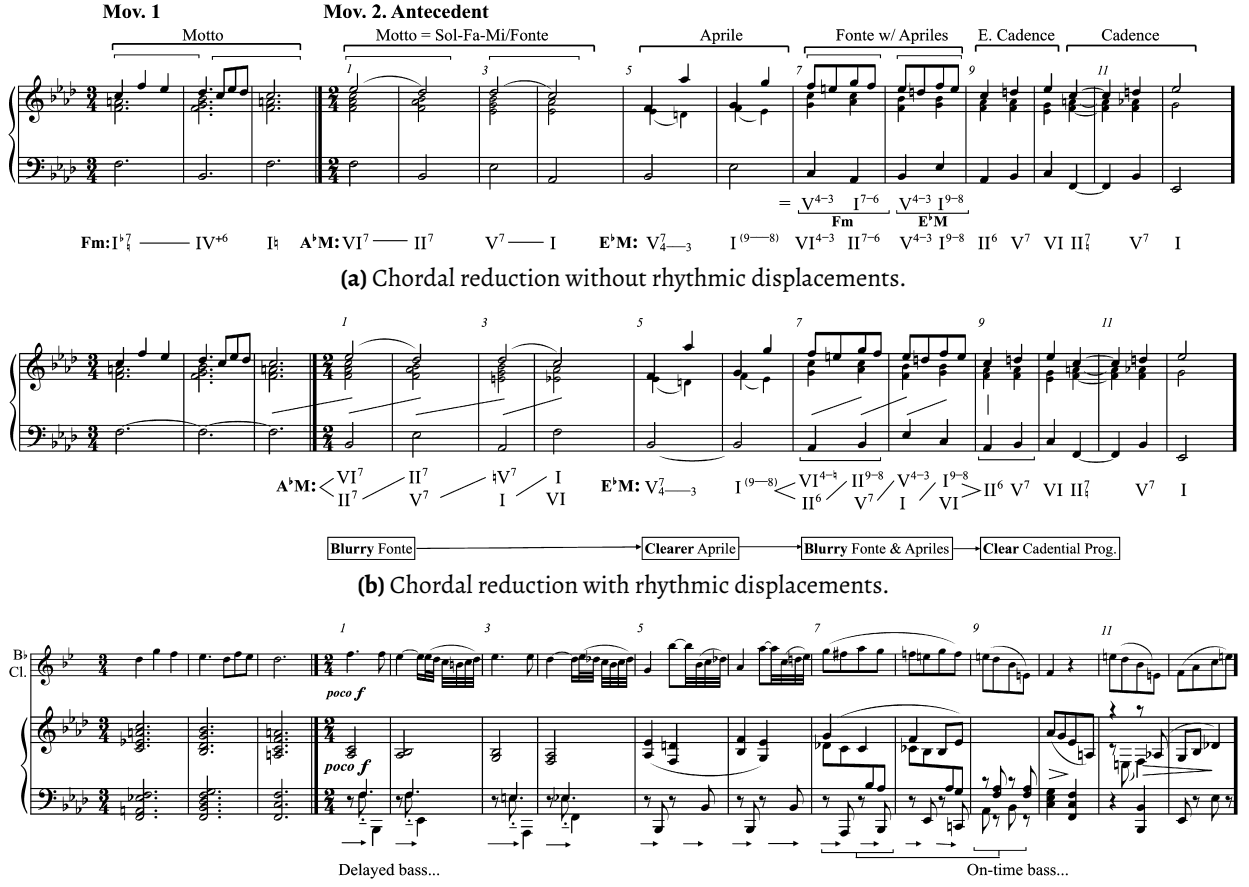
As the brackets above Example 11.a indicate, the antecedent phrase begins by echoing the final statement of the motto heard throughout the first movement: the repeated four-note basic idea of the motto (C–F–E♭–D♭, C–E♭–D♭–C) decays to a repeated two-note idea ([C–F]–E♭–D♭, [C–E♭]–D♭–C).[33] The resulting $\hat{5}$-to-$\hat{4}$ and $\hat{4}$-to-$\hat{3}$ melodic descent is characteristic of two common Galant schemas, the Sol-Fa-Mi and the Fonte. The Sol-Fa-Mi typically features a $\text{I}–\text{II}^7–\text{V}^7–\text{I}$ progression and it served as a common opening gambit for slow movements during the second half of the eighteenth century; the Fonte features a sequential $\text{VI}^7–\text{II}–\text{V}^7–\text{I}$ circle-of-fifths progression and was among the most widely used of Galant schemas (harmonically speaking, the main difference between the two schemas is the first chord: I for the Sol-Fa-Mi, VI^7 for the Fonte). While the appearance of this melodic descent at the beginning of a slow movement is clearly in dialogue with the Galant use of the Sol-Fa-Mi, the melodic

[30] Similarly, David Lewin (2006, 175) sees "two structural harmonies compressed into the climactic chord of m. 14."

[31] The slowdown of the melody is evident when one notes the fact that lines 1–3 of the second quatrain each occupy two measures of music, while line 4 occupies four measures. In m. 16 the pacing of the text's declamation slows down from four syllables per measure to two syllables per measure. In m. 17, the declamation slows down further, to one syllable per measure.

[32] The idea of markedness based on oppositions has been adapted from linguistics to music primarily by Robert Hatten (1994, 34–42). The opposition between traditional and more modern harmonic progressions in this piece is a privative type of opposition. As Hatten explains, in a privative opposition, "the unmarked term can be used either when A is not relevant or when A is expressively excluded." For instance, as Hatten notes, the unmarked term "cow" can be used either when the sex of the animal is not relevant or, when it is used in opposition with the marked term "bull", to refer specifically to the female animal. Similarly, traditional harmonic schemas can be used either when the distinction between old/new is not relevant or, when set in opposition with much more modern progressions, to refer to an old musical tradition.

[33] All pitch references are to concert pitch. Klorman (2014, 144) draws a similar melodic connection between the end of the first movement and the beginning of the second. But the connection that he draws is a bit different from the one I hear, for he links the E♭, D♭, and C at the beginning of the second movement to the E♭, D♭, and C that appear consecutively at the end of the last statement of the motto in the first movement. The connection I draw takes into account the subdivision of both melodies into two parts and it is essential for hearing the harmonic parallelism I shall discuss between the two statements of the motto.



(a) Chordal reduction without rhythmic displacements.

(b) Chordal reduction with rhythmic displacements.

(c) Actual music.

Example 11. Brahms, Sonata for Clarinet and Piano in F Minor, op. 120, no. 1, mvt. 2, opening period.

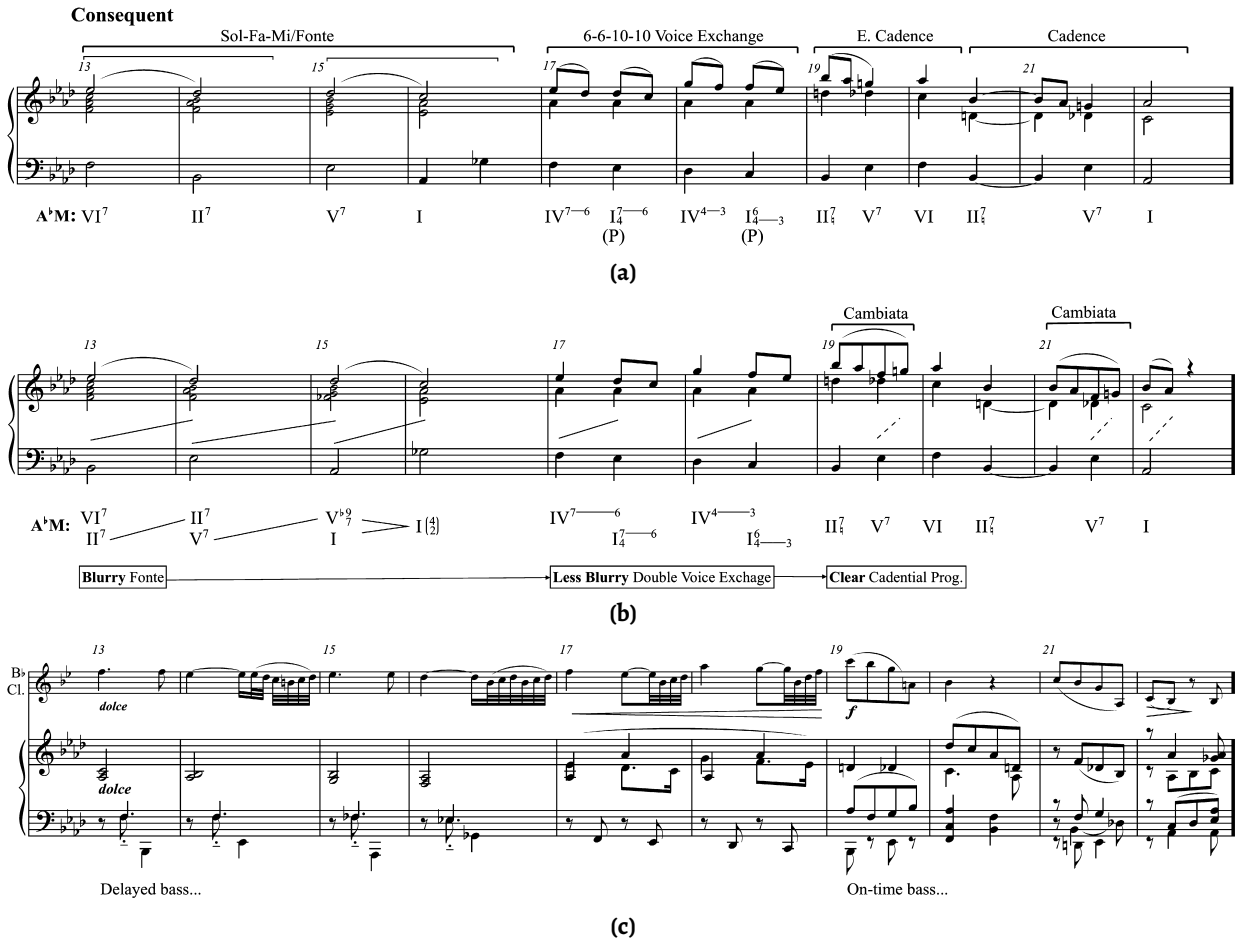
parallelism between the end of the first movement and the beginning of the second movement invites us to hear the melodic descent harmonized more like a Fonte: the F minor and B♭-minor seventh chords in mm. 1–2 echo the F dominant seventh chord and B♭ minor triad with the added sixth that harmonize the first part of the motto at the end of the first movement.[34]

Following the opening Sol-Fa-Mi/Fonte, an inner voice articulates the characteristic î-to-$\hat{7}$ and $\hat{2}$-to-î (in E♭ major) melody of the Aprile schema, a variant of the Meyer schema.[35] Whereas in a typical Aprile an opening tonic-to-dominant progression (harmonizing the î-to-$\hat{7}$ melody) is answered by a dominant-to-tonic progression (harmonizing the $\hat{2}$-to-î melody), in Example 11.a the first chord of each pair is elided, turning the first note of each of the descending two-note pairs into a suspension.

In mm. 7–8, two more Apriles are joined together to form a Fonte. If the Fonte in mm. 1–4 is not the most common form of this schema, that in mm. 7–8 is a prototypical exemplar: the first half of the schema tonicizes a minor chord (F minor), and the second half tonicizes a major chord a step lower (E♭ major), with the Apriles embellishing a set of local $\hat{7}$–î ascents in the melody (a common alternative to the descending steps found in mm. 1–4). After the Fonte, the cadential progression is evaded and completed, bringing the antecedent phrase to a close.

[34] A typical Fonte begins with a dominant seventh chord rather than with a minor seventh chord. Accordingly, if mm. 1–4 were a typical Fonte, the progression would start with an F dominant seventh chord tonicizing the following B♭ chord. Although the progression begins with an F minor seventh chord rather than with an F dominant seventh, the missing A♮ does appear in the melody in m. 2, where it locally tonicizes the B♭ (see the clarinet part in Example 11.c). The progression in mm. 1–4 could be simply described as a descending-fifths sequence. I still choose to label the progression as a Fonte given the global descent in the melody, which is characteristic of the Fonte, and the aforementioned surface tonicization of the B♭ chord in m. 2.

[35] For a discussion of the Aprile schema and its relationship to the Meyer, see Gjerdingen (2007, 111–128). For a history of the Meyer schema, see Gjerdingen (1988, 99–269).



Example 11. (Continued).

The consequent starts with the same basic Sol-Fa-Mi/Fonte schema found in the antecedent phrase (continue to refer to Example 11.a). This time the Sol-Fa-Mi/Fonte schema is answered by a 6–6–10–10 double voice-exchange, a schema widely used in the second half of the eighteenth century.[36] The 6–6–10–10 schema is embellished with suspensions, which recall those of the Apriles found in the corresponding place in the antecedent phrase. After the 6–6–10–10 schema, the phrase comes to an end with the same basic cadential progression found in the antecedent phrase.

Sonata for Clarinet and Piano in F Minor.
Performer: Jon Manasse, clarinet. Jon Nakamatsu, piano.

Audio Example 11. (click to play audio).

In Brahms's Sonata, the Galant schemas identified above appear blurry, their harmonic outlines lost, as if by a process of erosion. Example 11.b reveals the rhythmic displacements that cause the chords to spread over one

[36] Although voice-exchanges can occur at deep levels of the structure, the 6–6–10–10 exchange, like other Galant schemas, typically occurs near the surface of the music. While the 6–6–10–10 has been recognized as a common voice-leading paradigm, its prevalence in the mid-late eighteenth-century has gone largely unnoticed. A footnote is not the place to try offer a history of a schema, so it will suffice to say that the 6–6–10–10 schema occurs with great frequency in the music of Mozart and Haydn. For a few examples of the 6–6–10–10 schema, I invite the reader to consult the following passages: Mozart's Piano Sonata in D Major, K. 311, mvt. 2, m. 3; Mozart's Piano Sonata in C Major, K. 330, mvt. 3, mm. 5–6, Haydn's Piano Sonata in D Major, Hob. XVI/37, mvt. 1, m. 3; Haydn's Symphony G Major, no. 100, mvt. 1, mm. 36–37. In these passages, as in that from Brahms's Clarinet Sonata discussed above, the 6–6–10–10 schema arises from a $\hat{6}$–$\hat{5}$–$\hat{4}$–$\hat{3}$ bass descent coupled with a $\hat{4}$–$\hat{3}$–$\hat{6}$–$\hat{5}$ motion in the melody that results in a sequence of four distinct sonorities: $\frac{6}{3}$, $\frac{6}{4}$, $\frac{5}{3}$, and $\frac{6}{3}$ (the first and third chords are metrically strong while the second and the fourth chords are metrically weak). The 6–6–10–10 may be thought of as a variant of the Prinner, with the $\hat{6}$–$\hat{5}$–$\hat{4}$–$\hat{3}$ melody of the Prinner in the bass, and the $\hat{4}$–$\hat{3}$–$\hat{2}$–$\hat{1}$ bass of the Prinner varied to $\hat{4}$–$\hat{3}$–$\hat{6}$–$\hat{5}$ in the melody. Like the Prinner, the 6–6–10–10 served as a riposte to an opening schema.

another and merge together. As the diagonal lines illustrate, in mm. 1–4 the bass moves one measure ahead of the melody (the F in the bass is essentially displaced back to the end of the first movement).[37] The dislocation between the melody and the bass causes the chords of the opening Sol-Fa-Mi/Fonte to merge into a series of tertian sonorities: the VI^7 spreads over the II^7 in m. 1, the II^7 over the V^7 in m. 2, the V^7 is chromaticized over the I in m. 3, and the I spreads over a newly added VI chord.[38]

Following the blurry Sol-Fa-Mi/Fonte, the Aprile in mm. 5–6 appears in clearer contours, allowing the chords that were blurry in mm. 1–4 to emerge more distinctly. In m. 5, as in m. 1, an E♭ spreads over a B♭ in the bass, but this time the E♭ resolves as a suspension over the B♭, allowing the B♭ seventh chord (now a dominant seventh rather than a minor seventh chord) to emerge more clearly. Similarly, in m. 6, the B♭ chord overlaps the E♭ chord, but now the E♭ harmony emerges more clearly (albeit in second inversion), following the resolution of the F down to an E♭. In keeping with this parallelism, in m. 7 as in m. 3, an E♮ appears over an A♭ in the bass, tonicizing the following F-minor triad. The F-minor triad, however, is lost amidst the following Fonte-with-Apriles.

In mm. 7–8, as in mm. 1–4, the bass and the melody are out of sync, causing the chords of the Fonte to fade over one another. As the chords in mm. 7–8 fade together, the clear Aprile schema of mm. 5–6 blurs away. Following the blurry Fonte-with-Apriles, the F-minor triad and the B♭ seventh chord that were blurry in m. 7 emerge distinctly above the A♭ and the B♭ in the bass in m. 9, marking the beginning of a clear cadential progression.

The harmonies in the consequent phrase follow a similar trajectory from blurriness to clarity as those in the antecedent (continue to refer to Example 11.b). The consequent begins with the same blurry Sol-Fa-Mi/Fonte schema found in the antecedent phrase.[39] The 6–6–10–10 progression that follows also appears blurry. In m. 17, the E♭ in the melody spreads above the F in the bass as part of what seems like a typical 7–6 suspension, but the E♭ resolves an eighth note too late, causing the D♭ in the melody to arrive in the time span of the E♭ in the bass, as part of the next 7–6 suspension. Similarly, in m. 18, the G in the melody resolves an eighth note too late, causing the F to materialize over the time span of the C in the bass, as part of a 4–3 suspension. As a result, the first chord of each pair overlaps the second. While in the opening progression only one of the four chords emerged distinctly, in the 6–6–10–10 schema two of the four chords appear in clear outlines, creating a trajectory from blurriness to greater clarity that culminates in m. 19 with the clear articulation of the B♭ dominant seventh chord. Following the clear arrival of the B♭ dominant seventh chord, the harmonies emerge more distinctly than before with no overlaps between them save for the F of the B♭ dominant seventh chord, which comes in over the E♭ dominant seventh chord in m. 19 and 21 as part of a slightly distorted *nota-cambiata* figure, and for the B♭ of the E♭ dominant seventh chord, which resolves as a 9–8 suspension over the concluding tonic harmony.[40]

In the actual music the chord overlaps shown statically in Example 11.b occur gradually, for the bass notes come in late, halfway through the timespan they occupy. As shown in Example 11.c, in mm. 1–4 each bass note appears as the culmination of a downward gesture where the pianist holds each note as if with an open pedal. Each of the downward gestures begins with the chord in the upper voices and ends mid-measure with the bass articulating the next harmony. From this perspective, the syncopated bass notes move ahead of the melody, but they are not anticipatory as Edward Klorman (2014, 129) has argued.[41] Instead of pointing forward to a point of clarity as anticipations do, the syncopated bass notes point back to where they

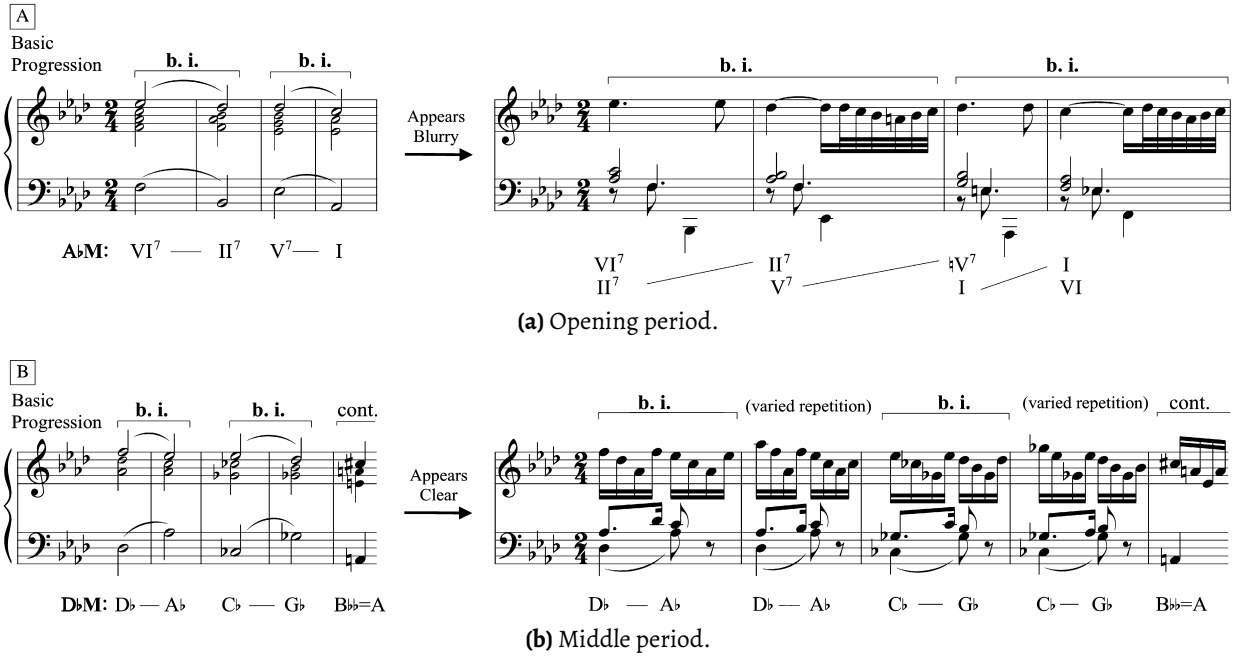
[37] The displacement of the F in the bass to the end of the previous movement is audible if the second movement is played attacca. As Klorman (2014, 144) notes, the motivic parallelism between the end of the first movement and the beginning of the second invites an attacca performance.

[38] Given these overlaps, the E♮ in m. 3 has a double meaning: it functions as an E♮ (♯$\hat{5}$) insofar as it resolves indirectly to the F in the bass in m. 4, but it, itself, slides down to an E♭, functioning in this sense more like an F♭ ($\hat{\flat 6}$) and thereby turning the progression into what Riepel referred to as a "hermaphrodite" Fonte. As Gjerdingen (2007) explains, Riepel viewed the minor-mode part of the schema as feminine, and the major-mode part as masculine. Riepel observed that many composers included $\hat{\flat 6}$ in the second half of the schema, infusing the major mode part of the schema (masculine) with elements of the minor-mode (feminine). Hence his term "Hermaphrodite Fonte."

[39] In the consequent, the E♮ of m. 3 is respelled as an F♭, making the connection between the opening progression and the "hermaphrodite" variant of the Fonte that much stronger.

[40] A *nota-cambiata* is an old contrapuntal figure starting with a stepwise descent from a consonant note to a dissonant one, continuing with a downward leap of a third to a consonant note, and ending with a stepwise ascent. When it occurs in an upper voice, the *nota-cambiata* typically forms the following intervals above a held note: 8va–7th–5th–6th. In mm. 19 and 21 of Brahms's Sonata, the B♭–A♭–F–G motion in the melody would have been a prototypical *nota-cambiata* figure had the bass remained on the B♭ for the entire measure. The leap to the E♭ distorts the *cambiata* figure by turning the third note of the figure (F) into a dissonance (an appoggiatura).

[41] Klorman (2014) contrasts his reading with one proposed by Samarotto (2003), which interprets the bass notes as chord tones and the upper voices as suspensions. My reading is partially in agreement with those proposed by Klorman and Samarotto: I share Klorman's view that the notes of the melody function as chords tones rather than suspensions, and Samarotto's idea that the notes in the bass function as chord tones rather than as anticipations. Unlike them, I do not insist on drawing a clear boundary between the chords.



(a) Opening period.

(b) Middle period.

Example 12. Comparison of the presentation portion of the phrases in the opening and middle periods (sections A and B respectively) of Brahms's op. 120, no. 1, mvt. 2.

Comparison. Performer: Jon Manasse, clarinet. Jon Nakamatsu, piano.

Audio Example 12. (click to play audio).

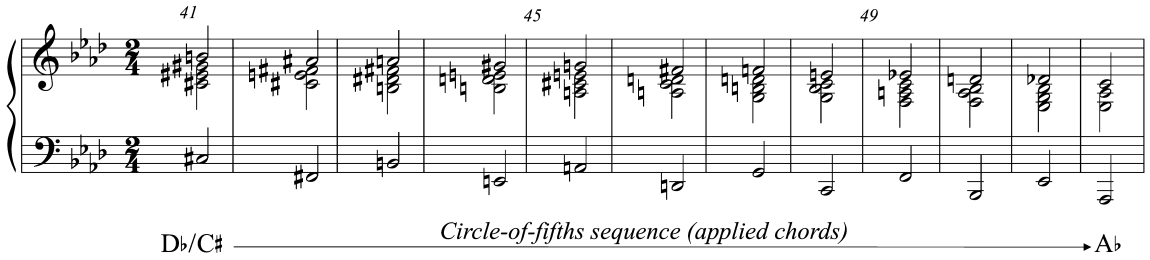
came.[42] Frank Samarotto (2003) has offered a similar reading of the bass line, but whereas he understands the upper voices in mm. 1–4 as suspensions, I hear them as arriving on time, as Klorman does, given that in both a Sol-Fa-Mi schema and a Fonte schema each of the descending steps typically proceeds from an odd to an even measure, just as is the case here. The bass continues to appear late up until m. 9 where the A♭ and B♭ come in on the beat. The parallelism between the bass line in mm. 7 and 9 confirms that the bass notes in mm. 1–8 appear halfway through their timespans.

Similarly, in the consequent phrase the bass notes come in midway through the timespan they occupy up until the beginning of the cadential progression, where the bass is once again shifted back to appear on the beat. Instead of pointing forward to a point of clarity as anticipations do, the syncopated bass notes point back, befogging what once seemed clear. The result is one where the harmonic boundaries blur as the music unfolds. Hearing the opening theme in this way is to hear the eighteenth-century structure that underpins the music in the process of the becoming a weathered ruin.

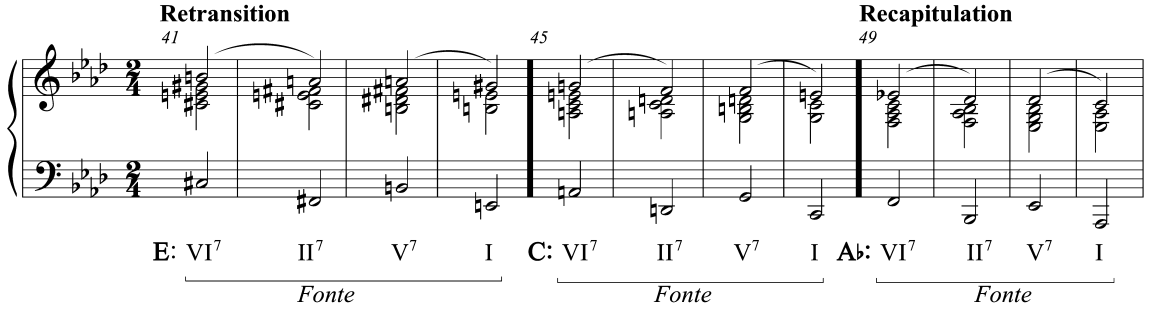
If the opening period portrays several Galant schemas fading, like remnants of a bygone past, the contrasting middle period (mm. 23–41) reveals the music from the opening in a new light, transforming the blurry Sol-Fa-Mi/Fonte of the opening period into a whole-tone sequence that by comparison sounds novel and "luminescent."[43] The transformation of the music from the opening section is apparent when one compares the presentation portions of the two loose-knit sentences that make up the first period (mm. 1–4 and 13–16) with the presentation portion of the two tight-knit sentences that form the middle period (mm. 23–26 and 31–34). As the brackets in Example 12 illustrate, both periods begin by repeating the same basic descending, two-note melodic figure: E♭ to D♭ and D♭ to C in the opening period, F to E♭ and E♭ to D♭ in the middle period. In both cases the melody is treated sequentially, but whereas the sequence in the opening section proceeds diatonically from model to copy (VI^7–II continues down to V^7–I), that in the

[42] Apart from the downward gestures in each measure, two additional factors support hearing the syncopated bass notes as delayed chord tones rather than an as anticipations: the harmonic parallelism between mm. 1–3 and mm. 5–7, and the bass parallelism between mm. 7 and 8. These two passages will be discussed presently.

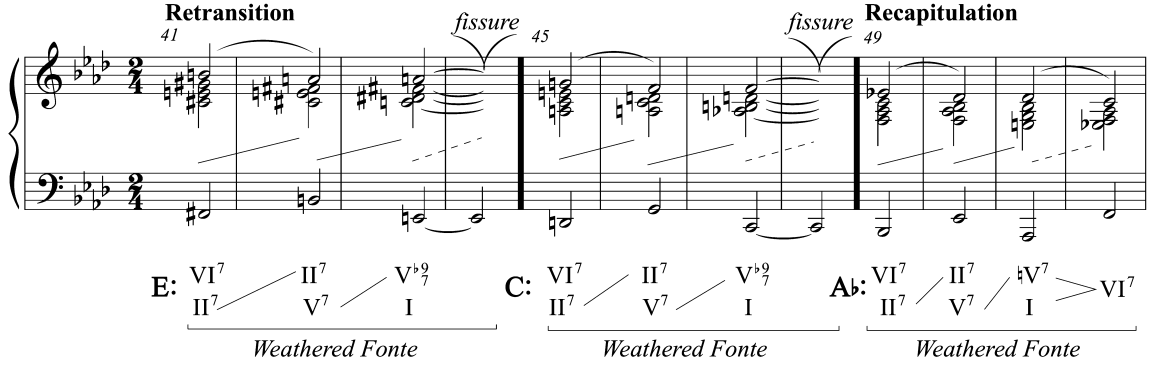
[43] Even though Samarotto (2003) does not deal with issues of harmonic clarity/blurriness, his description of the middle section as "luminescent" seems to aptly capture the musical quality of the middle section as compared to the hazy quality of the opening.



(a) Model descending-fifths sequence.



(b) Descending-fifths sequence with embedded Fontes.



(c) Chordal reduction of the actual music with rhythmic displacements.

Example 13. Brahms, Sonata for Clarinet and Piano, op. 120, no. 1, mvt. 2, mm. 41–52.

Sonata for Clarinet and Piano.
Performer: Jon Manasse, clarinet. Jon Nakamatsu, piano.

Audio Example 13. (click to play audio).

middle section proceeds chromatically in whole tones from model to copy (D♭M–A♭M continues down to C♭M–G♭M and then partially to B♭♭M/AM). While the traditional sequence of the opening period appears with the blurriness of something seen from a great distance, the comparatively more modern-sounding sequential progression in the middle section emerges with the clarity of that seen up close. The mapping of the clearly delineated sequence of the middle period onto the blurry descending-fifths sequence of the opening period is comparable to the mapping of the clearly delineated pines and cross onto the spire of the blurry, Gothic cathedral in Friedrich's painting discussed above.

Whereas the opening and middle sections juxtapose two different perspectives of the same basic thematic idea, the retransition (mm. 41ff) superposes these two perspectives by depicting the more novel harmonic aspects of the music distinctly and the more traditional ones blurrily. What is clearly heard in the retransition is the descending cycle of major thirds: the beginning of the primary theme is repeated every four measures a major third lower, outlining in the melody a whole-tone scale across mm 41–51. What is less clearly heard is the traditional descending circle-of-fifths sequence with its embedded Fontes that underpins this cycle.

Example 13.a shows the circle-of-fifths sequence that connects the tonic chord of the middle section (D♭/C♯) back

to the tonic chord of the opening section (A♭). From this archetypal progression, Example 13.b reconstructs a rhythmically normalized version of the actual music. The progression is subdivided into three statements of the opening motto a major third apart (which give rise to the major-thirds cycle), each statement outlining a Sol-Fa-Mi/Fonte progression. The first two statements correspond to the retransition, the last to the recapitulation.

Finally, Example 13.c shows how the rhythmic displacement between the bass and the melody blur the descending-fifths sequence that binds together the three statements of the theme. In mm. 41–44, as in mm. 1–4, a VI^7 chord dissolves above a II^7, a II^7 above a V^7, and the V^7 above the I (the addition of the lowered ninth to the V^7 making the Fonte a hermaphrodite type). In keeping with the one-measure displacement between the melody and the bass, one would expect the tonic chord to materialize in the upper voices in m. 44, completing a statement of the opening motto in the key of E major. Instead, the melody dissolves over a long dominant chord without ever arriving on the expected E-major tonic harmony, thereby turning the already weathered Fonte into a fragment. Another fragmented Fonte follows a third lower in mm. 45–48, now with the C-major triad missing in the upper voices. The distorted descending-fifths progression then continues in m. 49 through the recapitulation of the opening period, with the A♭-tonic chord that concludes that last Fonte lost over an F in the bass. The trajectory from the middle section, which sounds clear and new, through the retransition, which combines the clarity of the new with the blurriness of the old, culminates with recapitulation of the blurry and old opening section.

The analysis of this movement as a blurry, distant depiction of a mid-late eighteenth-century harmonic structure resonates with Brahms's view of himself as the last member of a dying musical tradition and with the idea that his late works, in particular, are tinged with elements of reminiscence or nostalgia.[44] While other composers looked toward the dawn of a new age, in this Sonata Brahms portrayed himself with his back turned, as a *Rückenfigur*, gazing at the last remnants of the common-practice style fading away in his own works.[45] And yet, by drawing a clear connection between the blurriness of the outer sections and the clarity of the more modern sounding middle section, Brahms invites us to see the old in the new and the new in the old.

Conclusion

This article has proposed that some chords in Schumann's and Brahms's music overlap and blur together, distorting well-known harmonic progressions. As shown, how clear or blurry the progression depends largely on the degree to which its chords overlap: the harmonies may not overlap at all, they may do so only partially through anticipations or suspensions/retardations, or they may overlap completely. (In some cases, the degree to which one chord spreads over the other can be ambiguous, as contextual clues can problematize the distinction between chord tones and non-chord tones.) When the harmonies spread completely over one another and merge together in the form of illusory tertian sonorities, the underlying progression sounds blurry.

As summarized in Table 1, in the eight pieces analyzed above, rhythmic displacements distort common harmonic schemas (descending-fifths sequences being the most common among these). These overlaps generally affect the beginning and ending of phrases, and especially recapitulations, making what are traditionally points of harmonic clarity sound out of focus. The overlaps generally involve the piano, and they often call for the use of the pedal or simulate the sound of the open pedal. This is significant, for it connects with the view that the blurriness of Schumann's and Brahms's music is associated with the composers' playing style and their use of the pedal.

By examining the ways in which Schumann and Brahms distort old stock progressions, the examples also draw a connection between the blurry depiction of the temporally distant in this music and the blurry depiction of the spatially distant in Romantic landscape paintings. In drawing a connection between the blurriness of this music and that of landscape paintings, the goal, however, was not to suggest that the former is imitating the latter, but rather that these two artforms are complementary expressions of the same aesthetic—one which was seen as quintessentially Romantic.

In arguing that Schumann and Brahms gave their music its blurry quality by allowing the harmonies to overlap

[44] According to Specht (1928, 382), Brahms often spoke about the "end of music" late in his life. For more recent discussions of Brahms's belatedness, see Morgan (1999) and Notley (2007). In his article "Brahms and Reminiscence: A Special Use of Classic Conventions," Mahrt (1992) argues that Brahms's works engage with and qualify the past by distorting classical conventions, and that such distortions are in part what give his music its reminiscent quality. Similarly, Beller-McKenna (2004) argues that Brahms's late works convey "their melancholy … and general tone of reminiscence" by de-familiarizing familiar or conventional ideas. Beller-McKenna cites the distortion of the descending-fifths sequence in Brahms B-Minor Intermezzo, op. 119, no. 1, as an example of this procedure.

[45] A *Rückenfigur* is a person seen from behind typically contemplating the horizon. The *Rückenfigur* is commonly associated with the paintings of Caspar David Friedrich.

Table 1. Summary of examples

Work	Blurred Progressions	Placement of Blurred Harmonies	Use of Pedal	Associations with Distance
Schumann, "Warum?" op. 12, no. 3.	Descending-fifths	Recapitulation	Pedal is depressed as chords overlap	
Schumann, *Davidsbündlertänze*, no. 18	V^7–I, Descending-fifths (Fonte),	Beginning and end of the first phrase, recapitulation	Pedal is depressed as chords overlap	Follows a piece marked "*Come da lontano*"
Brahms, B-Minor Intermezzo, op. 119, no. 1	Descending-fifths	Beginning and end of the first phrase	Sustained notes simulate the sound of an open pedal	The phrase is discussed by Beller-McKenna as an example of reminiscence
Brahms, A-Major Intermezzo, op. 118, no. 2	*Passo indietro*, IV^6–I^6_4–II♯–V^7–I	Near the end of the opening period, recapitulation		
Schumann, *Fantasy*, op. 17, mvt. 1	V^7–I progression	End of the piece	Pedal is depressed as chords overlap	Quote "To the Distantly Beloved," and subtitle "Ruins"
Brahms, "Abendständchen," op. 42, no. 1	Mixolydian plagal progression (a variant of the Quiescenza)	End of each stanza		*Stile antico*, poetry, and use of old harmonic schema
Schumann, "Auf einer Burg," op. 39, no. 7	Monte principale, cadenza doppia	Each of each stanza		*Stile antico*, poetry, and use of old harmonic schema
Brahms, Sonata for Clarinet and Piano in F Minor, op. 120, no. 1, mvt. 2	Sol-Fa-Mi/Fonte, Fonte with Apriles, 6–6–10–10	Blurred harmonies are widespread, but their use is particularly evident at the beginning of the two phrases of the opening period, and at the recapitulation	Sustained notes simulate the sound of an open pedal	Opposition between blurry Galant schemas and clear whole-tone sequences

and merge together, this article has bridged a gap between an important aspect of the Romantic aesthetic and our theoretical understanding of Schumann's and Brahms's harmonic language. If, as Jean Paul wrote, the "Romantic is the beautiful without boundaries," to recognize the way in which the chords in the above examples blur together is to hear the harmonic language of these pieces as being Romantic. If the largely diatonic stock progressions played in intimate chamber settings is in part what imparts the examples discussed above their beauty, the way in which their chords merge gracefully into one another imbues this beauty with a sense of boundlessness, creating moments of boundless beauty.

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Multi-Centric Complexes in Pop-Rock Music

by Matthew Ferrandino

Abstract. In this article, I explore the availability of multiple pitch centers in pop-rock songs that emerge from the application of what John Covach has called "positional listening." I demonstrate how different methods of listening and analysis have a drastic effect on our interpretation of a song's pitch center. Adapting Robert Bailey's term "double-tonic complex," I refer to songs that exhibit multivalent centers as "multi-centric complexes." Through several examples I demonstrate how different instruments—such as lead vocals, guitar, keyboards, or bass—can present their own, sometimes competing, centers. I use a variety of listening strategies and analytical methods in order to demonstrate and justify multiple centric interpretations that emerge when a listener compares a single instrument's projected center with others in pop-rock songs. Allowing for a "thick" interpretation of a pop-rock song's pitch center not only celebrates pop-rock's oft-cited tonal complexity, but also the overlooked complexity of the listening subject. Who is listening? How? And why?

Keywords and phrases: Popular music; rock music; centricity; tonality; perception.

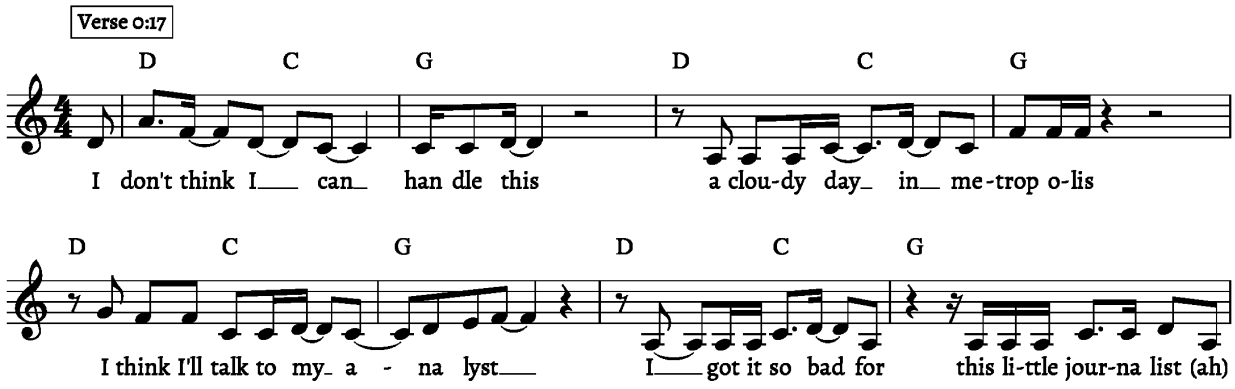
Introduction

When listening to pop-rock music, a listener can employ several different strategies in order to identify a centric pitch class that represents their perception of the music. For example, one can attend in time to dominant-tonic relationships established through functional harmony and root movement of fifths.[1] Similarly, centric orientation can be based on an overall diatonic collection's intervallic content using a method Richmond Browne (1981) calls *position finding*.[2] A different approach entails recognizing a pitch's salience, as distinguished by factors such as repetition, metric position, and formal position: what Charles Smith (1986) calls *presentational tonality*.[3] Certain strategies may be more appropriate for a particular style or genre over another but they are *not* mutually exclusive, and over the course of the listening experience one may shift their process of identifying a centric pitch class, either consciously or unconsciously. A listener can therefore hypothetically perceive different centers de-

[1] Brad Osborn offers a concise description of functional centers in pop-rock: "[a] center is established by what sounds like some dominant-functioning chord relative to some tonic […] the root of which lies a perfect fifth below the dominant-functioning chord" (2017b, 61).

[2] Richmond Browne's *position finding* relies on the rarity of interval class occurrences to determine a center. In the case of a diatonic scale, set-class 7–35, with an interval vector of ⟨254361⟩, ic 6, the tritone, and ic 1, the minor seconds, act as cues for deducing a diatonic center (Browne 1981, 5). Browne's strategy does not account for modal centers; Daniel Harrison elaborates further on this methodology. In this respect, see Harrison (1994, 73–76).

[3] Smith explains *presentational tonality*, in opposition to *functional tonality*, as cases where the center is established through "brute-force reiteration, registral prominence, and motivic fixing, as with anything that can be more systematically described" (1986, 129).



Example 1. Vocal Center versus Guitar Center in Spin Doctors' "Jimmy Olsen's Blues"*, Verse,* Pocket Full of Kryptonite *(1991).*

pending on which strategy they employ and when they employ it. Even different listeners employing the same strategy may identify different centers either due to ambiguity presented in the musical track or as a result of different musical experiences. By considering and employing these different strategies to certain musical tracks one can attend to an in-time, or diachronic, shift in center (e.g., tonicization or modulation) or one could become aware of multiple centers, available simultaneously.[4]

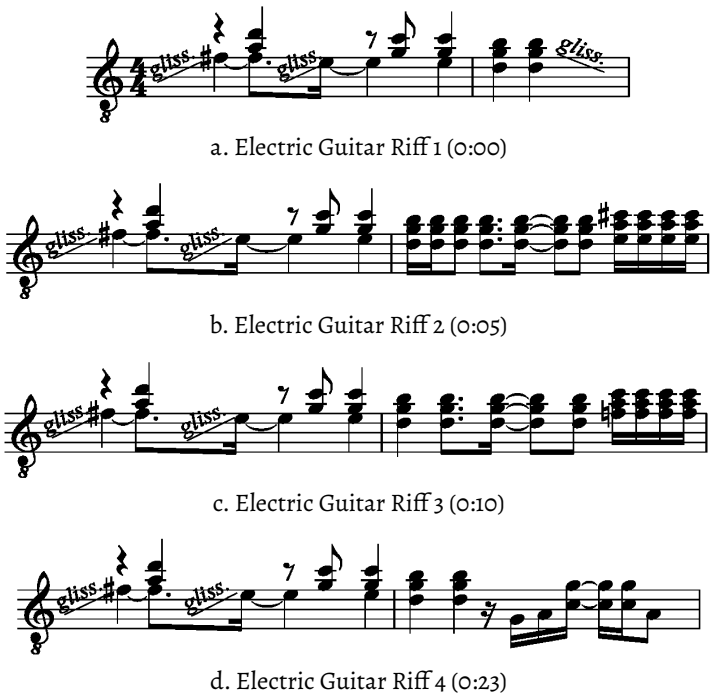
The Spin Doctors' track "Jimmy Olsen's Blues" (Example 1) presents an interesting test case for the initial consideration of multiple, simultaneous pitch centers. The harmonic progression of D–C–G(–G), in the electric guitar is repeated throughout the track. This progression is an example of what Christopher Doll (2017) calls an *ambiguous three-chord schema*, meaning that we can interpret this as either a G-centered progression: V–IV–I, or a D-centered progression: I–♭VII–IV, depending on context.[5] Nevertheless, this schema is realized as a four-chord rotation that repeats every two measures with half-note harmonic rhythm. If we apply a position-finding strategy for deducing centricity we are most likely to hear the D chord as dominant and the G as tonic center; this is further reinforced by the full-measure harmonic rhythm on the tonic G chord. Example 2a–d illustrates the opening guitar riff and four different turnarounds that guitarist Erik Schenkman uses at the end of each progression. A listener who is cued in to a D center during this opening riff may latch on to the brief A-major sonority in Example 2b as the dominant, but this is somewhat thwarted in the subsequent turnarounds in Examples 2c and 2d that contain C naturals. The turnarounds in Example 2a–d serve primarily as embellishments on the basic four-chord rotation, leading from the final G-major sonority back to the initial D-major sonority. Despite the second-inversion voicings of the G-major chord, it can be heard as the arrival point of the registral descent in the progression. The roots of the guitar chords are more clearly established with the entrance of the electric bass at 0:08.

If we focus instead on Chris Barron's vocal melody, we may be more inclined to hear a D center. This D-centric hearing is supported by phrase beginnings and endings, which outline a D-minor triad, and the relative weak positioning of melodic pitches G or C, the other roots in the harmonic progression and therefore the two other most likely centers. Furthermore, the range of the melody emphasizes the perfect fourth/fifth relation between A_3/A_4 and D_4. D can therefore be heard as center using Daniel Harrison's (2016) concept of *overtonality*, in which a center is established "by two pitch-classes related by perfect fifth or its compound; the lower of the two is the foremost over the entire hierarchy."[6] We are thus presented with conflict-

[4] In Temperley's (2018) discussion of scales and key finding in rock, he offers four factors that contribute to key-finding in rock: "1. Prefer a key whose supermode includes all pitches of the passage . . . 2. Prefer a key whose major scale includes all the pitches of the passage . . . 3. Prefer a tonal interpretation in which the tonic harmony is hypermetrically strong . . . 4. Prefer a tonal interpretation such that emphasized notes of the melody are notes of the tonic triad" (17–40). Temperley admits that this process of preference may generate conflicting candidates for the tonal center and offers two examples in which this is the case: Fleetwood Mac's "Dreams" and U2's "Beautiful Day."

[5] Doll offers a detailed comparison of two tracks that utilize the same three-chord schema, at the same transposition as "Jimmy Olsen's Blues": Warren Zevon's "Werewolves of London" and Lynyrd Skynyrd's "Sweet Home Alabama." While "Werewolves of London" presents a clear G center, "Sweet Home Alabama" presents melodic material in the guitar and vocals that Doll ultimately interprets as primarily a D center moving to a G center during the guitar solo (Doll 2017, 221–229 and 249). Nicole Biamonte favors the I–♭VII–IV hearing of this schema (as does Stephenson 2002, 110) in "Sweet Home Alabama" as an *open double plagal* progression (2010, 99–101).

[6] Harrison's concept is similar to Browne's *position finding*, but uses the overtone series to determine a pitch center rather than the interval vector of the diatonic set (Harrison 2016, 16–18).



a. Electric Guitar Riff 1 (0:00)

b. Electric Guitar Riff 2 (0:05)

c. Electric Guitar Riff 3 (0:10)

d. Electric Guitar Riff 4 (0:23)

Example 2. Guitar Turnarounds in "Jimmy Olsen's Blues".

Jimmy Olsen's Blues

Audio Example 1–2. (click to play audio).

ing claims to centricity: a G center, suggested by the guitar's harmonic progression, simultaneously discernible with a D center, by the vocal melody's emphasis on D and suggested by the guitar's and bass's hypermetric emphasis of D at the start of the progression. Depending on what strategy we employ at a given time, we can perceive two relatively equal pitch centers for the same musical passage. This feature of simultaneous centers in the context of pop-rock music represents the focus of this study.

In the case of pop-rock music—which utilizes the lexicon of traditional harmony without the necessity of function—the problem of identifying pitch centers and tonics has generated a number of theoretical models that attempt to justify a mono-centric reading. Mark Spicer (2017) applies concepts of absent, fragile, and emergent tonics in cases where a functional tonic does not occur at expected cadential or hypermetrical moments.[7] Brett Clement (2013) argues for the notion of modal tonalities in cases where the apparent pitch center does not align with the diatonic collection used to generate harmony. To clarify both Spicer's and Clement's methods it is helpful to consider a simple two-chord shuttle between major chords whose roots are a major second apart—as appears, for example, in Fleetwood Mac's "Dreams," which shuttles between F major and G major for the entirety of the track. Using Spicer's absent tonic, we can perceive two possible tonal centers implied by the two chords' potential function: a C-major tonic with the shuttle as IV–V, or an A-minor tonic with the shuttle as VI–VII. In either interpretation, the G-major sonority functions as a dominant chord. Clement's modal approach also considers G major as a tonicizing chord, but with F major as tonic, the shuttle as I–II.[8] Given the occurrence of B natural in the overall pitch collection, Clement labels this as an example of F-Lydian tonality. Taking a different approach, Drew Nobile (2017) offers a syntactical redefinition of function where familiar labels such as "Dominant" or "Tonic" are ascribed to a sonority's formal position rather than its diatonic context.[9]

[7] Spicer's methodology outlines a tonic-finding procedure that illuminates interesting centric possibilities but at the cost of dismissing salient features at the surface level.

[8] Clement argues that, in a Lydian interpretation, "I and II represent the strongest tonic and tonicizing chords, respectively" (2013, 106).

[9] The terms "Tonic" (T), "Predominant" (PD), and "Dominant" (D) are assigned to a chord's structural placement rather than to relative scale degrees and roots. Nobile (2017) offers several examples where the roles of PD and D are taken by chords other than ii, IV, and V.

The present commentary incorporates these different analytical methodologies as a means of supporting multiple available pitch centers that may be suggested by different listening and interpretative strategies. I explore concurrent pitch centers that occur in pop-rock music by reimagining Guy Capuzzo's (2009) *sectional centricity*, a theory that accounts for multiple non-hierarchical pitch centers within a song.[10] While Capuzzo's method accounts for different pitch centers in different sections, I shall instead look at pieces where multiple pitch centers are available to the listener simultaneously within a section. I refer to these instances as *multi-centric complexes*.[11]

The present methodology also incorporates a performance perspective and encourages us to consider *positional listening* in the pursuit of pitch centricity by considering how various performers on a given recording (i.e., bassist, guitarist, and vocalist) might perceive different pitch centers.[12] John Covach defines positional listening as "the purposeful suppression of some element(s) in the texture to create increased focus on other element(s) … [but] *the entire texture is available at all times*: the listener chooses what to focus on" (2016, emphasis in original). As contrast, Covach uses the term "ideal listening position" to describe "a kind of balanced, objective or even distanced view of the complete texture … [that] might be considered the default perspective from which music is discussed among listeners and scholars" (2020, 56). As will be shown, multi-centric complexes emerge from positional analysis, whereas monotonic hearings of tracks may represent the ideal listening position. I also refrain from describing multi-centric complexes as examples of "centric ambiguity," as used by Doll (2017) and Richards (2017), since the descriptor comes from an ideal listening position, and downplays the nuance of positional analysis.

The current study focuses on perception from an analytical lens rather than through quantitative case studies. Nevertheless, a more quantitative study into the examples presented here could further enlighten the complexities of centric identification in pop-rock music from a variety of perspectives. William Forde Thompson's and Shulamit Mor's research has "suggest[ed] that listeners can perceive more than one tonal organization or key at the same time, and that each key may be weighted to its perceived importance in the music" (1992, 70). One way in which a center's "perceived importance" may be distinguished is through positional analysis, especially in the case of multi-centric complexes. However, I am not arguing that listeners should be able to hear simultaneous centers in these cases. Instead, I propose that listeners strive for what Mitchell Ohriner calls "adaptive listening," in which a listener actively switches between different modes of hearing, be it rhythms or grooves, positional listening, or pitch centers (2020, 96).[13]

While my approach is similar to the melodic-harmonic divorce as explored by Allan F. Moore (1995), David Temperley (2007), and more recently Drew Nobile (2015), the difference between multi-centric complex and melodic-harmonic divorce is one of degree.[14] Melodic-harmonic divorce considers localized instances of dissonant prolongations between melody and harmony, whereas multi-centric complexes involve an extensive multiplicity of perceptible pitch centers. It is also useful to clarify the distinction between competing vocal (melodic) and guitar (harmonic) centers and melodic-harmonic divorce. Melodic-harmonic divorce accounts for prolongational dissonances between a structural melody and its supporting foreground harmony. In terms of voice leading, this means that pitch classes can "act as structural tones even if they are dissonant with foreground harmonies" (Nobile 2015, 189). Examples of different melodic and harmonic centers, on the other hand, are not concerned with *dissonance* between strata, but *difference* between their apparent pitch centers. Melodic-harmonic divorce and harmonic-bass divorce rely on a hierarchical arrangement of voice leading whereas multi-centric complexes do not.[15]

Two recent articles by Brett Clement and Trevor de Clercq take two different approaches to reconsidering har-

[10] A clear example of sectional tonality is Dexys Midnight Runners' "Come On Eileen" in which the verse in C major shifts abruptly to D major for the chorus. Each section maintains its centricity, "result[ing in] a patchwork tonality of sorts" (Capuzzo 2009, 157–158).

[11] This term is adapted from Robert Bailey's *double-tonic complex*, in which chromatic third-related keys "are linked together in such a way that either triad can serve as the local representative of the tonic complex" (Bailey 1985, 122). Nobile (2020) applied Bailey's *double-tonic complex* to rock music in his "Double-Tonic Complexes in Rock Music."

[12] Graeme M. Boone's article on the Grateful Dead song "Dark Star" is appended with a brief paraphrasing of several band members' claim for centricity in the song. Notably, lead guitarist and singer Jerry Garcia hears the song in E Mixolydian, while rhythm guitarist Bob Weir and bassist Phil Lesh concretely hear the song's center as A (1997, 205). The harmonic progression for the majority of "Dark Star" consists of a repeated two-chord shuttle, A–G.

[13] Ohriner (2020) contrasts adaptive listening with "persistent listening," wherein a listener stays fixed on a single mode of hearing throughout a track (96).

[14] The term *melodic-harmonic divorce* was coined by Moore (1995). Moore's concept is further explored by Temperley (2007) and further qualified into types by Nobile (2015).

[15] Ben Duinker (2020) posits that in some songs the "melodic and harmonic layers each operate to *their own* tonal logic" (emphasis in original), and that "entertaining the possibility that a song's textural layers are not inextricably bound to a unified tonal system…can broaden our perspective on pitch relationships in songs featuring ambiguous or inconclusive tonalities in one or more textural layers."

Table 1. Common Instrumental Roles in Pop-Rock music.

Stratum	Common Instruments in Pop-Rock
Melodic	Voice Lead Guitar (Electric & Acoustic) Synthesizer/Keyboard Piano (Right Hand)
Harmonic	Guitar (Electric & Acoustic) Synthesizer/Keyboards Vocal Harmonies Piano
Bass	Electric Bass Upright (Double) Bass Synth Bass Piano (Left Hand)

mony in pop-rock music. Clement (2019) considers the issue of tonicization and how a tonal center can be established through harmonic motion. However, Clement's focus is on triads other than the tonic that establish a sense of resolution at both primary and secondary levels—akin to the role of the V chord and secondary dominants in common-practice progressions, but with different factors in pop-rock music.[16] De Clercq (2019) instead builds off of Nobile's (2017) taxonomy for melodic-harmonic divorce by considering structural dissonances between the harmony and bass, what he calls "the harmonic-bass divorce." For de Clercq, these moments of divorce represent some degree of autonomy and independence between musical strata, specifically melody, harmony, and bass. Table 1 offers some common instrumental realizations of these strata.[17] If this independence between musical layers can occur at local levels, can they also act at a more global one? Is it then possible for musical strata, and specific instruments, to make available different, independent, centers to a listener? [18]

In defining multi-centric complexes it is necessary to clarify the distinction between pitch center and tonic.[19] I define "pitch center" as a referential pitch class that is emphasized through repetition, hypermetric/metric emphasis, formal position, agogic accent, dynamics, or registral extreme.[20] By contrast, I use the term "tonic" to refer to a referential pitch class that is established through functional harmony (i.e., "common-practice") and represents either a major or minor diatonic collection.[21] Pitch centers can be found in three constituent strata of music: melody, harmony, and bass, and in pop-rock music these strata can be distinguished by an instrument's timbre and the mix of the track (Table 1).[22] Since my approach to multi-centric complexes is similar to that of divorced musical strata, Table 2 offers a contextual comparison of the two methods. While the "divorce" approach identifies the independence of a particular stratum, a "multi-centric" approach emphasizes a particular stratum's compliance with the two strata that conflict. For example, in the context of a melodic-harmonic conflict, the "divorce" approach highlights the melodic stratum's independence whereas the "multi-centric" approach accentuates the bass's accommodation of pitch centers in both the melodic and harmonic strata. In the following discussion, however, I will frame my analyses and interpretations by specific instrumentation rather than abstract musical strata. We will consider first an example in which the lead vocals (melodic stratum) and the acoustic guitar (harmonic stratum) suggest two independent centers.

1. Multiple Centricity in Pop-Rock

1.1 Vocal Center versus Guitar Center

Some multi-centric complexes occur when a recognizable pitch center in the melody is different from a pitch center suggested by the guitar's harmony. We have already encountered an example of a split between vocal center and guitar center in "Jimmy Olsen's Blues," where the electric

[16] Like Temperley (2018), Clement (2019) offers a set of preference factors for rating a triad's tonicizing quality in relation to some tonic (see Clement 2019, 5).

[17] The strata here account for three of the four textures of rock described by Moore (1992). Missing here is the explicit beat stratum most commonly provided by drum kit, drum machine, or a sampler.

[18] Dmitri Tymoczko remarks that "many pieces . . . naturally segregate themselves into independent auditory streams, each of which, if heard in isolation, would suggest different tonal regions" (2002, 84). While Tymoczko is concerned primarily with the music of Stravinsky, the notion of separating different "auditory streams" is equally applicable to rock music and is particularly useful in distinguishing textural strata.

[19] This distinction between center and tonic is based in part on Stanley V. Kleppinger's (2011), in which *center* is established through "perceptual prominence." However, for the purpose of this study I consider Kleppinger's distinction between *tonal* and *tonality* to be arguably redundant in the case of rock music. Therefore, my use of *tonic* aligns with Kleppinger's definition of *tonality*.

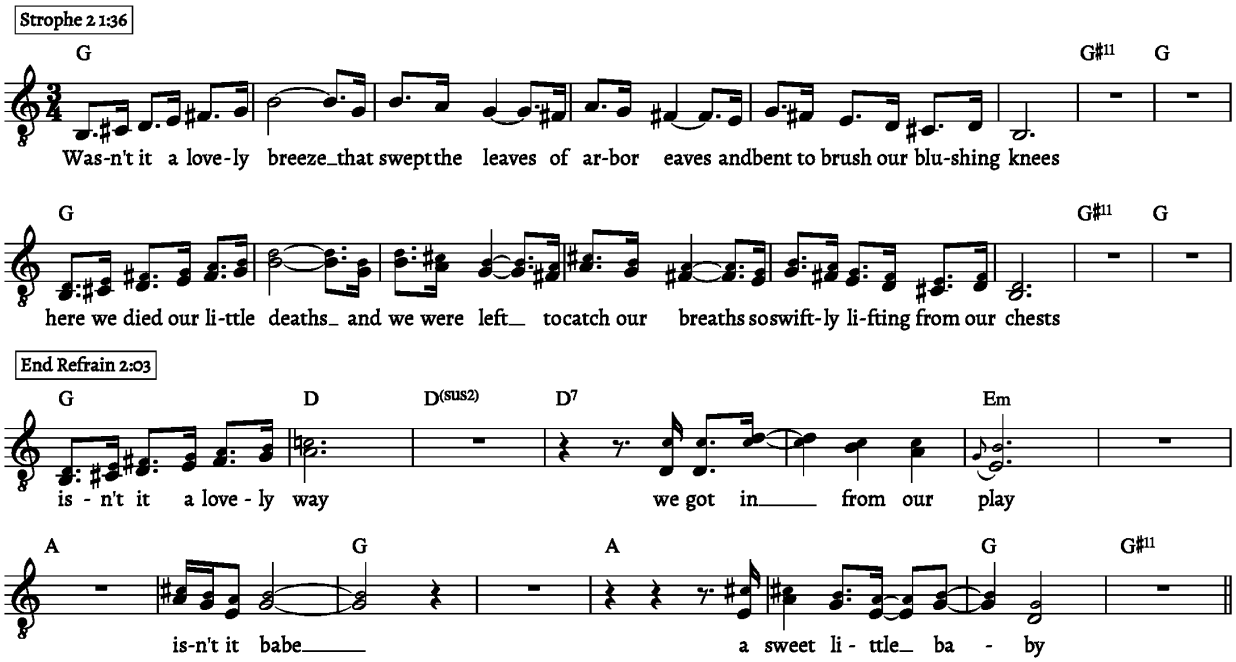
[20] Doll offers thirteen parameters for centric-finding information, including: Schema, Meter, Phrasing, Repetition, Texture, Scale, Duration, Pedal, Arpeggiation, Penultima (pre-tonic chord), Loudness, Parallel, and Expression (2017, 222). Richards (2017) adopts these parameters in his discussion of *axis progressions* that include the progression Am–F–C–G, all of its rotations, and all of its transpositions.

[21] While there is much debate about the efficacy and appropriateness of applying "common-practice" expectations in the listening to and analysis of rock—see Temperley (2018, 17), Covach (1997, 10–22), Everett (2009, 190–91), and Stephenson (2002, 29–34)—I include it here as a possible mode of hearing and analysis.

[22] Moore's (1992) *soundbox* is a visual representation of the mix of a track with an instrument's physical position within the box correlating to its sonic position. See also Moore (2012, 29–44).

Table 2. Comparison Between Divorced Stratum and Multi-Centric Complex.

Divorced Stratum versus Multi-Centric Complex (MCC)	
Melodic-Harmonic *(e.g., Nobile 2017)*	Divorce: Melody presents a structural dissonance over the underlying harmony. MCC: Harmony suggests a different pitch center than Melody, Bass fits both.
Bass-Melodic *(e.g., de Clercq 2019)*	Divorce: de Clercq argues that this can be explained through M-H or H-B divorces. MCC: Melody suggests a different pitch center than Bass, Harmony fits both.
Harmonic-Bass *(e.g., de Clercq 2019)*	Divorce: Bass presents instances of independence from the underlying harmony. MCC: Bass suggests a different pitch center than Harmony, Melody fits both.



Example 3. Vocal Center versus Guitar Center in The Decemberists' "Isn't it a Lovely Night," *Second Strophe,* Hazards of Love *(2009).*

guitar's harmonic progression D–C–G–(G) suggests a G-major tonal center, while the melody suggests a D pitch center. This type of split may also occur when a specific harmonic progression suggests a functional tonic different from the melodic pitch center as either a fragile, weakly supported tonic, or as an absent, implied, but not realized tonic.

The Decemberists' "Isn't it a Lovely Night" is a clear example of competing vocal and guitar centers. The song presents a definite harmonic emphasis on G major with Lydian C♯ inflections in the acoustic guitar, while the vocal melody and harmony rely on a D-major collection moving in parallel thirds (Example 3).[23]

For the majority of the track the bass layer is heard as G drones in the guitar and accordion. An upright bass enters the texture in the third strophe (2:31) with the opening melodic ascent B_2–$C♯_3$–D_3–E_3–$F♯_3$–G_3, and then supports the G drone with an alteration of $\hat{1}$ and $\hat{5}$.[24]

Isn't it a Lovely Night

Audio Example 3. (click to play audio).

The transcription of the second strophe of the track highlights where the vocal harmony—which sounds an octave higher than notated—enters the texture. The vocal harmony in the end refrain anticipates the guitar's D dominant-seventh sonority by two measures with a held C♮. Harmonically, this D sonority can be interpreted as a

[23] The G center in "Isn't it a Lovely Night" can be considered as an example of what Harrison calls *dronality*, that is, a center emphasized through a repetitive drone pitch (Harrison 2016, 19–20).

[24] I am using the terms *strophe* and *end refrain* rather than *verse* and *chorus* because I hear the second sixteen measures as dependent on the first. This is an example in which either label would be appropriate (de Clercq 2017).

functional dominant to the preceding G-major emphasis. However, it can also be interpreted as a fragile tonic with the G–A motion in the last system in the transcription of the example suggesting, but not realizing, a IV–V cadential progression. This second perceivable hearing is supported by the D-major collection presented in both the vocal melody and its parallel harmony and therefore interprets the strophe as a prolongation of the subdominant. In a third interpretation, from a modal listening perspective, one could hear G as the center and the track as a whole in G Lydian with the A-major chord as a Lydian dominant: II–I. But what does a multi-centric approach to the piece contribute to our interpretation of the track? Why not settle on a modal hearing? To address these questions, let us consider the context of the album on which "Isn't It a Lovely Night" appears.

Hazards of Love is an example of what David Nicholls (2004) calls *virtual opera*: a hybridization of pop-rock formal structures (e.g., verse-chorus forms) and an album-length narrative plot that involves interaction between multiple characters who may, or may not, be represented by different recorded personae. Furthermore, "the ideal performance takes place in the minds, and between the ears, of individual listeners . . . with each unit [track] being able to focus on a specific event, tableau or situation" (Nicholls 2004, 105).[25] Pitch centers—and drones in particular—play an important role in the context of *The Hazards of Love*. Many of the tracks utilize a drop-D tuning on the guitar, and accordingly present a salient D center through dronality. However, there are three exceptional tracks where the emphasis in the guitar shifts to a G center: "Isn't it a Lovely Night" (track 7), "The Rake's Song" (track 10), and "Hazards of Love 4 (The Drowned)" (track 17). The lyrical content of these three tracks is plainly intertwined, either focusing on a previous event, as in the case of tracks 7 and 17, or introducing an event that otherwise lies outside the narrative trajectory, as occurs in track 10. By contrast, "Isn't it a Lovely Night" presents an explicit recollection of track 2, "The Hazards of Love 1 (The Prettiest Whistles Won't Wrestle the Thistles Undone)," in which the two romantic protagonists—Margaret (sung by Becky Stark) and William (sung by Colin Meloy)—copulate and conceive a child. Track 2 is centered on D in both melody and harmony. A multi-centric reading of "Isn't it a Lovely Night" complement this recollection: the G in the accompaniment suggesting a reminiscence, as in tracks 10 and 17, and the D, sung by the characters Margaret and William, directing the retrospective to track 2. Applying a positional analysis to "Isn't It a Lovely Night" supports the expressive trajectory of the album, something that would be lost in a mono-centric or modal interpretation of the track.

[25] An early example of virtual opera is The Who's *Tommy* (1969), whose plot was in part conveyed through the original LP's album art and sleeve notes as contributing aspects of the narrative.

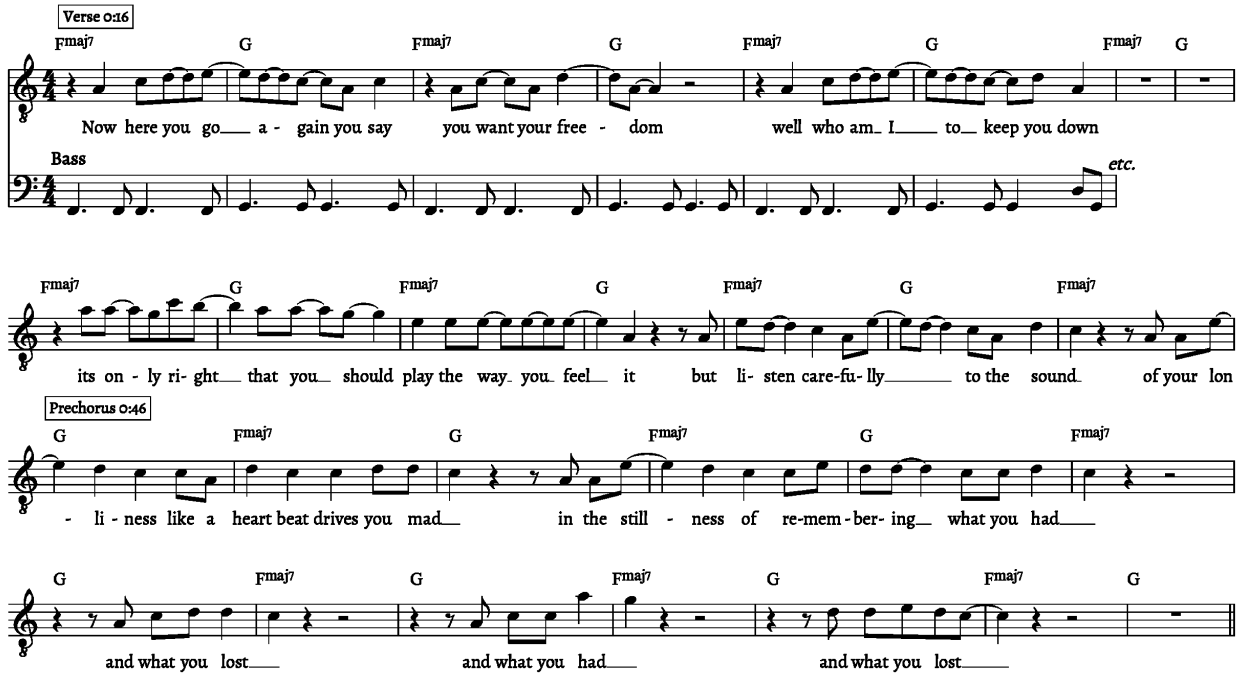
1.2 Vocal Center versus Bass Center

In the foregoing examples ("Jimmy Olsen's Blues" and "Isn't it a Lovely Night") the bass supported both the guitar's harmonic projection of G as center and the vocal melody's projection of a D center. In other cases of multi-centric complexes, the harmonic stratum can support both a vocal center and a bass center that differ from one another. The notion of harmony as a multivalent stratum against which the bass projects a clear center departs from pop-rock's stylistic norm wherein bass lines typically coincide with the root progression of the harmony, as noted in de Clercq (2019, 272). This type of split can be realized in at least two ways: 1) the harmonic content is underdetermined either through minimal or absent chordal progressions, or 2) the harmonic content is overdetermined (obscured) either through the use of extended tertiary chords (obscuring root identification) or through *wandering* harmonies, where modal mixture and chromatic alterations obscure chordal roots.[26] In Fleetwood Mac's "Dreams," the harmonic stratum is underdetermined both in terms of pitch content, a two-chord shuttle in the keyboards, and the mixing of the track. By comparison, Michael Jackson's "Rock With You" projects an overdetermined harmonic content through the use of extended tertiary chords in the guitar and keyboards. Both examples will be discussed in turn.

"Dreams" consists of a repeated F–G shuttle in the bass, supported by F^{maj7} and G major harmonies in the Fender Rhodes, contrasted with a mostly pentatonic collection in the melody (Example 4).[27] The shuttle continues for the entirety of the track with the Rhodes mixed

[26] Two examples of wandering harmony are Glen Campbell's "Wichita Lineman" (1968) and Elvis Costello's "Boy With a Problem" (1982). Both tracks consistently modulate without settling on a clear pitch center or tonic.

[27] Clement cites two possible centers, F and G, as the roots of the harmonic shuttle, ultimately settling on F and interpreting the progression as "Lydian I–II" (2013, 111). On the other hand, Ken Stephenson argues that the initial F center, as Lydian tonic, is "highly unusual," thus once the melody enters "the notes most likely to be identified as the tonic are A and C" (2002, 41). Stephenson ultimately settles on a C major hearing of the track, arguing that the IV–V progression is "more common" than VI–VII (2002, 42). Doll argues that the F-major–G-major loop "does not project either of its roots as strong possible centers," and offers A and C as potential centers, though "A is certainly the stronger candidate" (2017, 247). Temperley instead opts to hear F and C as simultaneously available throughout the track (2004, 264). Duinker (2020) argues that different layers exhibit different degrees of tonal ambiguity and tonal inconclusiveness. Furthermore, identifying a single unifying center is less interesting than the multiple perspectives and theories used to justify them.



Example 4. Vocal Center versus Bass Center in Fleetwood Mac's "Dreams," *Verse,* Rumours *(1977).*

Dreams

Audio Example 4. (click to play audio).

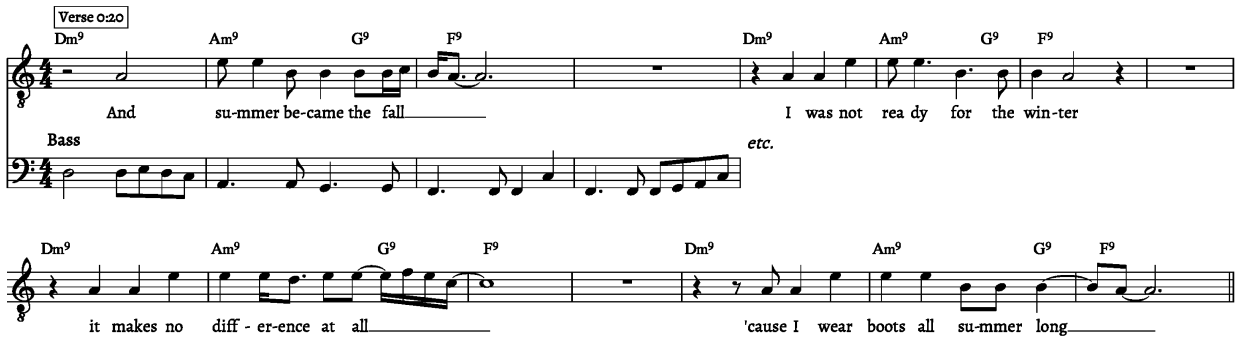
slightly right and behind the bass.[28] The electric guitar, panned mid-left, moves from melodic participation in the verse to arpeggiations in the prechorus, and is replaced by strummed acoustic guitar chords in the chorus.[29] While the harmony, like the bass, supports an F center through constant hypermetric emphasis as an example of presentational tonality, it is underdetermined from a functional perspective. We can hear the shuttle as an incomplete progression, or absent tonic, either as a IV–V shuttle that never resolves to C major, or as a VI–VII shuttle that never resolves to A minor. Therefore, the harmonic stratum does not clearly identify any one of the three possible centers—F, C, and A—but instead makes them simultaneously available for the listener to pick up on.

An F center is the most salient and available center to hear from the position of the bass player (John McVie). On the other hand, the melody, sung by Stevie Nicks, makes both A and C centers recognizable. I invite the reader to sing or play through both the bass line and the melody independent of the harmonic context to make the centers available through positional listening clear. The phrases of the verse clearly outline a perfect fifth from A_3–E_4, supporting an A center through overtonality (as in the vocal D center in "Jimmy Olsen's Blues"). Additionally, the treatment of the non-pentatonic pitch B_4 acts as part of a $\hat{3}$–$\hat{2}$–$\hat{1}$ descent ("it's only *right*") rather than a leading tone to C. However, the subtle change in the melodic line in the prechorus surely makes the C center more salient—nearly all of the phrases end on C, whereas the verse phrases ended on A. This availability of diatonic centers, also noted in "Isn't it a Lovely Night," is a common occurrence in pop-rock music, both melodically and harmonically, though usually as a sectional phenomenon rather than made apparent as a simultaneity.[30] Since the underdetermined harmony can be

[28] One exceptional A-minor chord, with A_2 in the bass, occurs after the first chorus (1:52). However, this moment does little to confirm an overall centricity of A and, as Doll puts it, "our dream-state is not so easily broken" (2017, 247).

[29] I label the section at 0:46 of "Dreams" as a prechorus due to the repeated lyrical content and the shift from syncopated melodic rhythms to downbeat ones. This is a subtle example of Jason Summach's description of prechorus, which is characterized by "momentum-building device[s] … [such as] changes in groove, lyric phrasing, and the length of formal units, as well as dynamic level, register, instrumentation, timbre, harmonic progression, and harmonic rhythm" (2011).

[30] A clear example of an emergent relative major tonic is Counting Crows' "Mr. Jones" (1993), which hypermetrically emphasizes A minor in the verse and then functionally moves to C major in the chorus. Doll (2011) refers to this type of tonal shift as a *breakout chorus*. Also worth noting is Fastball's "The Way" (1998), which employs



Example 5. Vocal Center versus Bass Center in Stevie Nicks's "Nightbird," *Verse,* Wild Heart *(1983a).*

Nightbird

Audio Example 5. (click to play audio).

interpreted to fit either center, "Dreams" is an example of melodic-bass split, the melody suggesting both A or C centers and the bass an F center.

It is worth considering another track by Stevie Nicks that utilizes a similar, but slightly more complex, separation of vocal and bass centers. Like "Dreams," "Nightbird" presents the same complex of discernible centers in the verse: A and C in the melody and F in the bass, (Example 5). The F center is less apparent in this example, but is strengthened by the phrase endings and the bass's major pentatonic descent from $\hat{6}$ down to $\hat{1}$ in F that unfolds over the course of the progression. Again, singing or playing through the bass and melody individually will clarify the available centers. Harmonically, the verse makes available the same F center as the bass, but also projects an A center through the embellished Aeolian progression iv–i–VII–VI.[31] For its part, the melody traces a diatonic A-minor collection, and, like "Dreams," the pitch class B is presented as part of a $\hat{2}$–$\hat{1}$ linear motion in A minor rather than $\hat{7}$–$\hat{1}$ in C major. Unlike "Dreams" however, the chorus of "Nightbird" moves to a more convincing C-major tonality. Each stratum—vocal melody, harmony, and bass—converges on a C center; therefore, only the verse of "Nightbird" presents a multi-centric complex.[32]

In Michael Jackson's "Rock With You" (Example 6) the bass repeats $\hat{1}$ and $\hat{5}$ in E♭ for the majority of the verse and chorus, except in the prechorus which ascends from $\hat{1}$ to $\hat{4}$. Furthermore, the bass's E♭ consistently lands on hypermetrically accented downbeats in both the verse and the chorus. If we adapt to the bassist's perspective, the repeated metric emphasis on E♭ alternating with B♭ remains a consistent indication of an E♭ center, regardless of the harmonic and melodic content.[33]

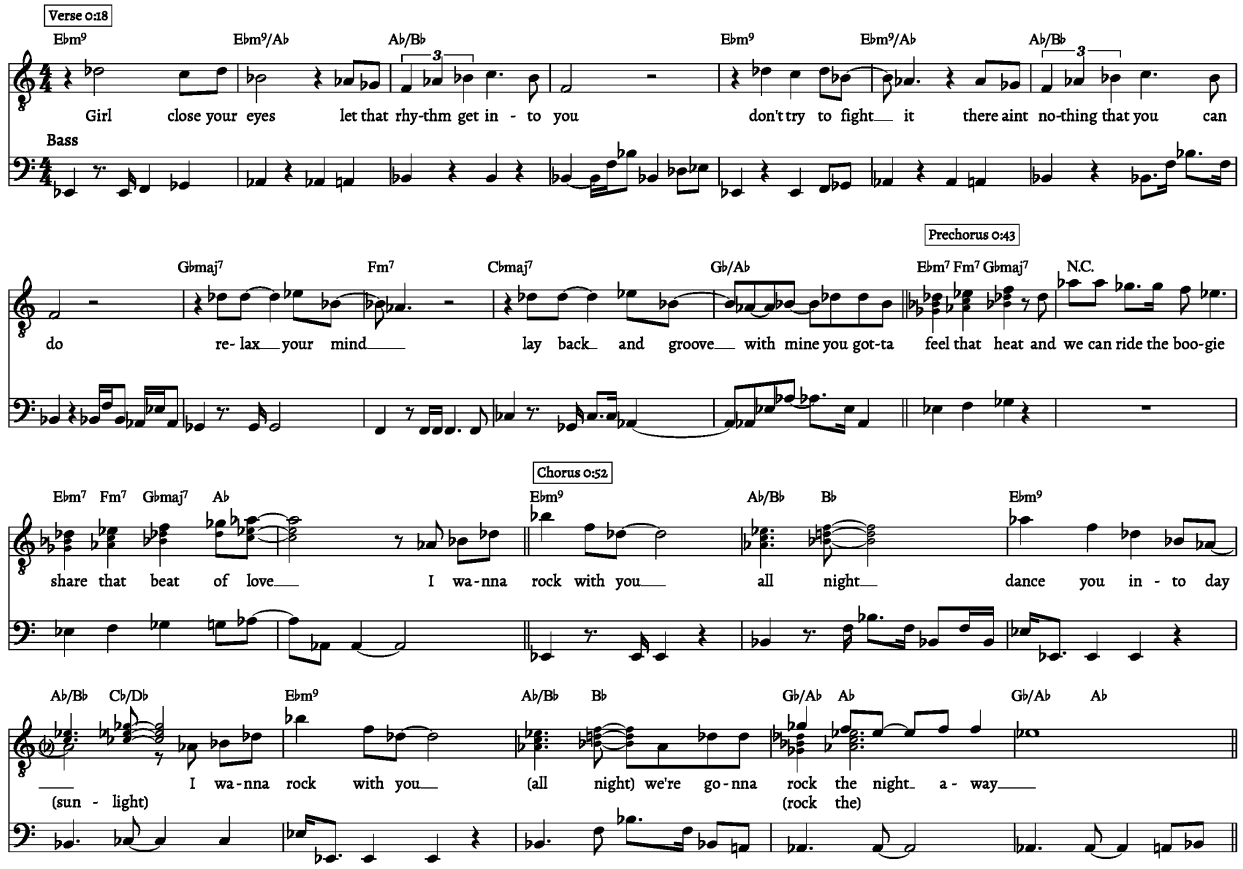
Jackson's vocals present a conflicting center through a D♭-major/B♭-minor diatonic melody. The verse outlines both B♭-minor and D♭-major triads through agogic accents and phrase endings and beginnings: B♭ minor over the lyrics "girl" (D♭), "eyes" (B♭), and "you" (F); and D♭ major over the lyrics "don't" (D♭), "it" (A♭), and "do" (F). The chorus reiterates these arpeggios in different inversions, but retains D♭ and B♭ as salient diatonic centers, ending on an interruption: $\hat{2}$ over V in D♭ major. However, the prechorus makes D♭ more discernible given the $\hat{5}$–$\hat{4}$–$\hat{3}$–$\hat{2}$–$\hat{1}$ descent in

sectional tonality moving from a functionally established F♯-minor verse to an A-major tonality in the chorus. However, the relative major is not always the strongest candidate, as in Cake's "Daria" (1996), which establishes a functional E-minor tonality in the verse, yet presents a comparatively weaker emphasis of G major in the chorus.

[31] Nicole Biamonte uses "Aeolian progression" to describe a basic schema of i–(VII)–VI–(VII)–i as T–D–SD–D–T, and further delineates them into functional types (Biamonte 2010, 101–104). In "Nightbird," the D minor (iv) is an embellishment of the basic Aeolian progression. Nicks uses a variation of the Aeolian progression for several other tracks as well, including "Edge of Seventeen" (1981) and "Stand Back" (1983b). These tracks do not present multi-centric complexes, although both reverse the progression hypermetrically to VI–VII–i, making $\hat{6}$ an available center through hypermetric emphasis, but one which is not supported by other criteria. A fragment of the Aeolian progression also occurs in "Dreams" (1977) as VI–VII.

[32] Another common schema that often exhibits distinct vocal and bass centers is IV–V–iii–IV, in which the iii could also be realized as I^6. The bass's double neighbor figure around IV allows for an available center as the root of the starting chord, despite the absent or fragile tonic implied by the progression. Two examples of this are New Order's "Bizarre Love Triangle" (1986), realized as E♭–F–Dm–E♭, with bass emphasis on E♭ and melodic emphasis on B♭; and Star's "Fixed" (2010), realized as A♭–B♭–Gm–A♭, with bass emphasis on A♭ and melodic emphasis on E♭.

[33] Spicer confirms the available E♭ center from the bassist's perspective, recalling how the bassist for his cover band taught "the rest of us the chords. The first thing he said was that the song was in E♭" (Spicer, 2017). It is also worth noting that Spicer refers to his role as keyboardist in the band informing his own hearing of D♭ as an absent tonic.



*Example 6. Vocal Center versus Bass Center in Michael Jackson's "*Rock With You,*" Verse/Prechorus/Chorus,* Off the Wall *(1979).*

Rock With You

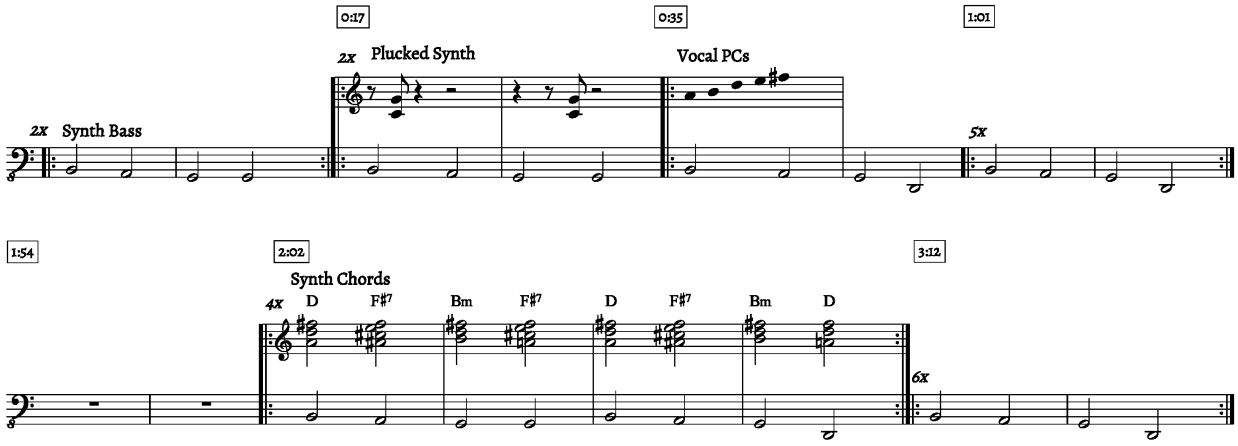
Audio Example 6. (click to play audio).

D♭ major over the lyrics "we can ride the boogie." Depending on which center-finding strategies are employed, both a D♭ and an E♭ are possible centers and both are supported harmonically. As in previous examples, it is helpful to sing or play the bass line and melody independently in order to get a sense of the different available centers.

If a functional approach to the harmony is employed, D♭ major is likely to be heard as an absent tonic. This hearing is further supported by interpreting the A♭-major end-phrase sonorities as the dominant to an implied, but not realized, D♭-major tonality. To this end, Spicer (2017) argues that the *soul dominant*, "a close position IV chord over $\hat{5}$ in the bass," that occurs at the end of the verse (the G♭/A♭ over the lyrics "groove with mine you gotta"), functions as a paradigmatic substitution for V.[34] Therefore, the focus on functional harmony makes the D♭ of the melody available as a salient center, with each section goal-directed toward a tonic resolution on D♭ major that never arrives.

What does a multi-centric reading offer over a functional or absent-tonic interpretation of "Rock With You?" In one sense, it addresses one of Covach's questions regarding positional analysis: "If multiple positions are possible, how do these perspectives interact with one another and with the [ideal listening position]" (2020, 58)? If the ideal listening position is represented in a functional hearing of the harmony and melody, it would suggest a strong pull toward D♭ major, and a slightly lesser pull toward B♭ minor. A multi-centric reading includes the projection of E♭ in the bass, adding a more nuanced level of interaction between positional perspectives and the ideal listening position. We could also make the link between multiple available centers and certain dualisms in the lyrics such as the "girl" and the recorded persona, or dancing from "night" into "day." We could even go a step further and make the case that adapting back and forth between available centers is analogous to dancing, as referenced throughout the lyrics.

[34] Spicer states, "the soul dominant is a loaded sonority whose harmonic function as dominant is usually very clear" (Spicer 2017).



Example 7. Bass Center versus Synthesizer Center in XXYYXX's "Alone," XXYYXX *(2012).*

1.3 Bass Center versus Synthesizer (Harmonic) Center

Different centers in the bass and harmony, while theoretically sound, present a practical problem in pop-rock because the majority of bass lines, in my experience, tend to follow either a song's chord progression or its melodic riff. In general, the bassist accompanies the song following a simple or embellished root progression established in the harmonic stratum. Even in riff-based music the bass and melodic strata tend to coordinate around a pitch center in the absence of an explicit harmonic layer. Since some multi-centric complexes are realized when the salient pitch center presented in the bass is at odds with the harmonic center—as either presentational center or functional tonal center—it is fruitful to consider tracks that utilize layering as a compositional technique. In the most general sense, the technique of layering is concerned more with a resultant composite texture rather than a defined harmonic goal.[35]

A clear example of this is XXYYXX's "Alone" (Example 7). The bass line alternates between B_1–A_1–G_1 and B_1–A_1–G_1–D_1 for the entirety of the track. A G center is agogically accented at the opening and reinforced with the lower D_1 through overtonality. It should be noted however, that hearing the above fundamentals as the bass line is dependent on one's listening environment and bass response in speakers or headphones. When the plucked synth enters at 0:17 on a C_4–G_4 fifth, the higher G_4 reemphasizes the bass's G center. In this case, hearing the registral extremes of G_1 and G_4 is more salient than an overtonal hearing of C_4 as center. Vocals enter at 0:35 and are shown as a reduced collection of pitch classes in Example 7. In sum, the processed vocals are differentiated by panning, register, and timbre, the total collection of which represents a D-major pentatonic collection. This reading is somewhat misleading, however, as individual lines of the track can be interpreted in different ways. For instance, the lower male voice centers more or less on F♯ while the higher male voice and female voice repeat A. The female vocal's A is salient as an unresolved $\hat{2}$ to the bass's emphasized G. However, the lower male vocal's F♯ emphasis is hard to hear as functioning as $\hat{7}$ for several reasons, the first of which being that it never resolves up by step. Instead, the repeated F♯ ends each iteration with a minor pentatonic descent to B, which, to my ear, makes the F♯ function more as a tertian extension than as a frustrated leading tone. The lower male voice's F♯ center is given some context as $\hat{5}$ beginning at 2:02, when the synth's chord progression enters in B minor. Therefore, the melodic stratum, realized in the vocals and staccato plucked synth, works with both a G center and a B-minor tonic presented in the bass and harmony respectively.

Alone. Part 1

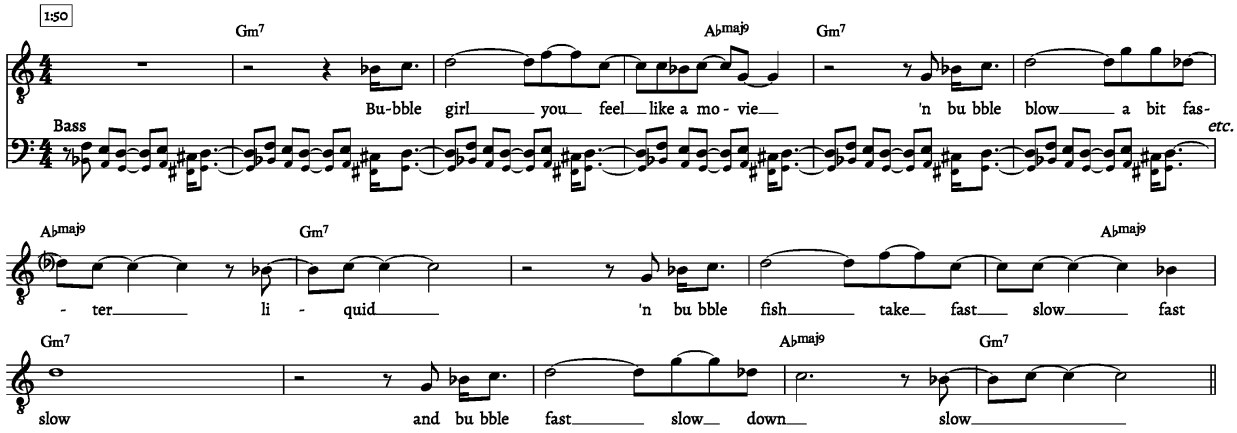
Audio Example 7a. (click to play audio).

Alone. Part 2

Audio Example 7b. (click to play audio).

A different realization of a multi-centric complex occurs in Underworld's "Cups." Mark Butler refers to this track as an instance of metrical dissonance wherein the ini-

[35] Adam Krims has dubbed this forcing together of disjunct musical layers the *hip-hop sublime*: "a product of dense combinations of musical layers . . . [wherein] no pitch combinations may form conventionally representational relationships with the others" (2000, 73). While Krims is concerned primarily with the micro-intervals that result from combining manipulated samples, recordings, and live sounds, it is also possible that multi-centric complexes could emerge from this layering process.



*Example 8. Bass Center versus Synthesizer Center in Underworld's "*Cups,*"* Beaucoup Fish *(1999).*

Cups

Audio Example 8. (click to play audio).

tial perceptible downbeat of the bass riff is shifted forward by an eighth note with the entrance of the drums (2001, Butler's Example 2).[36] In this example the bass riff itself presents a sort of internal split: as in "Alone," depending on the listening environment and bass response of a listener's speakers we can either focus on D as the center, or on the lower amplitude G_1 as center (indicated by the smaller note heads in Example 8).[37] Since the overtone D_2 is higher in amplitude than the G_1, it is more appropriate to focus on D as the center projected by the bass stratum of this track as this is the pitch a listener is most likely to hear as the bass. The harmonic stratum repeats an alternation between Gm^7 and $A♭^{maj9}$ sonorities, agogically emphasizing the G-minor sonority. The melody can be interpreted as either D- or G-centered, with hypermetric and agogic accents on D_4 but an overall trajectory of G minor within each phrase. Like "Alone," hearing a bass-harmonic split in "Cups" is partly dependent on both listening equipment and environment. If we do perceive the lower G_1 as emphasized by the bass, there does not seem to be a multi-centric complex in this track. Nevertheless, the mixing of the overtone D_2 makes a D center available and in contrast with the harmonically projected G center.

2. And Then There Were Three: A Potential "Melodic-Harmonic-Bass Divorce"

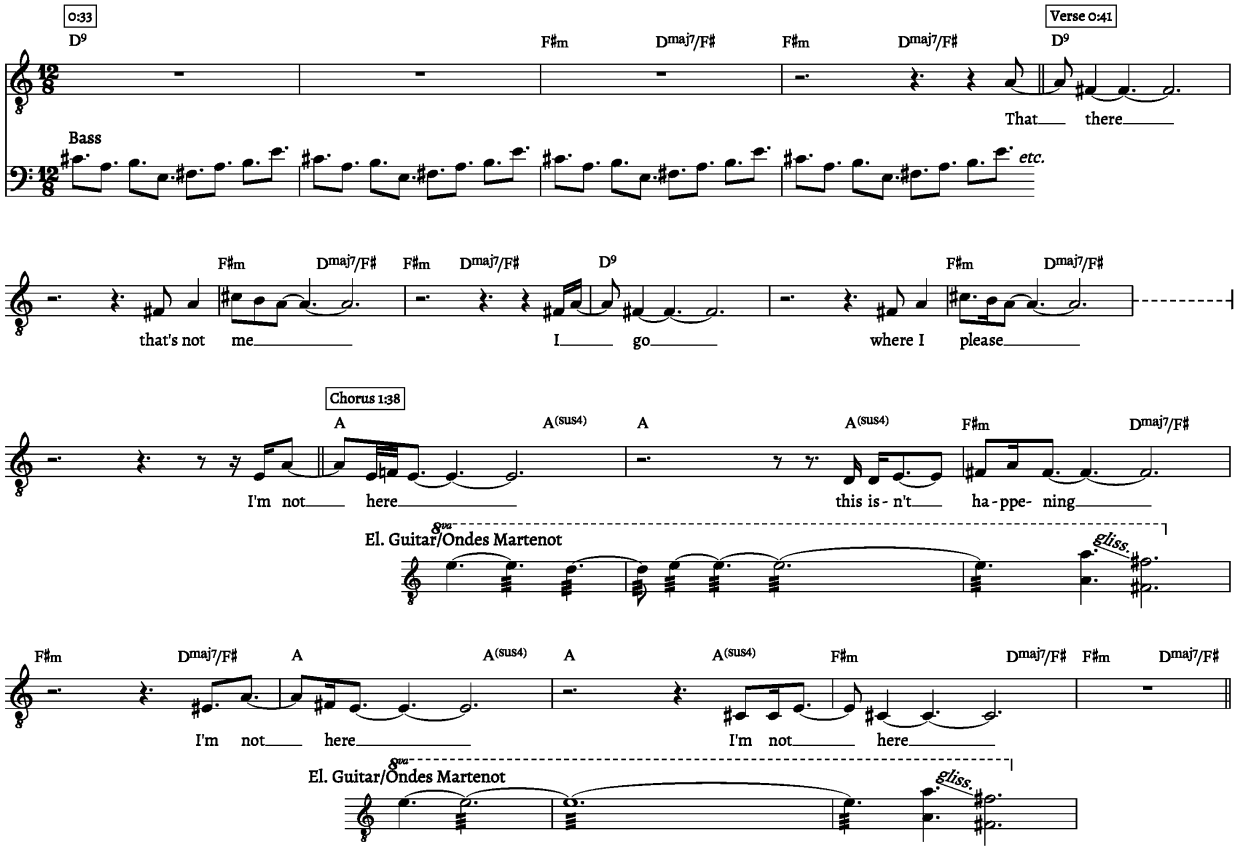
Radiohead's "How to Disappear Completely" serves as a potential extreme instance of a multi-centric complex in which vocals, guitar, and bass each suggest independent and competing centers.[38] Both Marianne Tatom Letts (2010) and Brad Osborn (2017a) have remarked on the ambiguity of this track, particularly in respect of the bassist's metric and harmonic independence throughout. Letts hears the track as a variation of sectional centricity, claiming that it "sounds mainly in F-sharp minor, with competing passages that center on D and A" (2010, 222).[39] For Osborn, the track is an example of an "absent tonic that emerges tentatively, and is finally confirmed in the final section of the song (literally at the last minute)" (2017a, 147). Letts focuses on an F♯-minor tonic hearing of the piece, allowing for D- and A-sectional centricities, while Osborn dismisses the ambiguous D and F♯ projections, favoring instead an emergent A major based on a functional hearing of the track. By contrast, I propose that all three centers remain simultaneously available throughout the track with

[36] Butler (2001) transcribes the bass layer beginning at D.

[37] In both Examples 7 and 8 there is some perceptible ambiguity in terms of the actual pitch of the bass's low frequencies (ranging from ~30–100 Hz). The transcriptions of both tracks are therefore based on a spectrograph reading for consistency and should be taken as an optimal point of reference, not accounting for listening environment or variations in perceived pitches.

[38] De Clercq (2019) describes a "melodic-harmonic-bass divorce" as an instance in which "all three layers . . . act independently from one another" (272). He points out that this is a rare occurrence in rock music.

[39] Letts elsewhere argues that "'How to Disappear Completely' shifts between D and F-sharp," not considering A and hearing D and F♯ as centric axes (Letts 2005, 50). This demonstrates not only the multivalence of available centers within the track, but also the importance of a listener's individual employment of center-identifying strategies as a means of attending available centers, which may change either within a single audition or perhaps between listenings.



Example 9. Three independent centers in Radiohead's "How to Disappear Completely," *Verse/Chorus,* Kid A *(2000).*

How to Disappear Completely

Audio Example 9. (click to play audio).

each instrument projecting its own center and supporting another instrument's center at any given time.

Example 9 shows the first iteration of the verse and first chorus while also demonstrating the relative independence of the bass, vocals, and guitar. The bass plays a repeated riff in a pentatonic collection centered on A that continues for the duration of the verse and chorus. The fifth-relation of this riff frames the A center through overtonality, with the E_4 and E_3 suggesting a hierarchical emphasis on A_3. Although A_3 is hypermetrically weak, it is supported harmonically by the progression I–ii^7–V in A major, implied by the arpeggiations in the bass riff: ($C♯_4$–A_3)–(B_3–[E_3]–$F♯_3$–A_3)–(B_3–E_4). Furthermore, the only linear triad arpeggiation outlines A major (E_4–$C♯_4$–A_3), which occurs before and through the downbeat of each measure. Another viable hearing centers on F♯, with the bass playing in an F♯-minor pentatonic collection, metrically emphasizing the $C♯_4$–$F♯_3$ on beats one and three of the riff and outlining a harmonic progression of III–VII–I–VII in F♯ minor.

Thom Yorke's melody projects an F♯ center through repeated F♯-minor triad arpeggiations. The verse prolongs $F♯_3$ through an unfolded third ("That there, that's not me"), which is echoed in the chorus by the recurring ondes Martenot and octave guitar slides: $\hat{3}$–$\hat{1}$ in F♯ minor. The chorus opens with a lower neighbor to $\hat{1}$ and ends on $\hat{5}$, $C♯_3$.

The D center is arguably the easiest to focus in on at the start of the track since it is emphasized hypermetrically in the acoustic guitar. Moreover, D is added to each subsequent harmony of the verse and chorus: for instance, the F♯-minor triad gets embellished with a D, which I have labeled as a D-major seventh chord over F♯ on the lead sheet transcription. In the chorus, the D–F♯ shuttle shifts to an A–F♯ variant, which can be globally interpreted as a move to the dominant, ultimately setting up the return to D major in the verse. An alternative hearing, suggested by Osborn, places the emphasis on A major. For him, "The *irrefutable proof* for an overarching A-major tonal center does not arrive until the E-major harmony at 4:54, which undergirds Yorke's wordless melismas as he lands squarely on the $G♯_4$ leading tone for the song's first cadence" (2017a, 148, em-

phasis added). This cadence, which is also the final one of the song, resolves to an F♯-minor sonority in the acoustic guitar for the remainder of the track. Osborn's hearing thus employs a functional perspective, relying on an implied dominant-tonic root motion in order to identify a pitch center.

Regardless of which method of center-finding we employ or which stratum we choose to focus on, "How to Disappear Completely" exemplifies the multi-centric complex through three different perceptible pitch centers: D, F♯, and A. There are several considerations that prevent us from settling comfortably on any one pitch center. First is the autonomy of musical strata—electric bass as bass stratum; acoustic guitar as harmonic; and vocals, ondes Martenot, and electric guitar as melodic—which makes available different centers as the track progresses. Second is the high register drone pitch that shifts vaguely between A♯ and B♮ throughout the track. The A♯/B♭ pitch class does not occur in any other instrumental part and is anomalous to each of the D-, A-, and F♯-centric collections. Finally, there is the possibility of tonal doubt associated with the deceptive progression (E–F♯m) at the end of the track. We can hear this as a functional progression as Osborn does, still implying A major, as a modal progression in F♯m (VII–i), or, given the slow harmonic rhythm, we may not ascribe any center-identifying role to the sonority.

The availability of centers and our freedom, as listeners, to switch between them throughout the track creates a nuanced complement to the lyrics of "How to Disappear Completely." Letts considers the notion of a "vanishing subject" presented in the recorded persona throughout *Kid A*: "The first half of *Kid A* can be understood . . . as a fracturing of the musical structure that builds to a crisis point at which the singer [subject] is purged from the texture; the album then attempts to build a new structure, which the subject either fails to negotiate successfully or intentionally abandons" (2010, 21). In Letts's reading, the lyrics in "How to Disappear Completely"—the fourth track on *Kid A*—contribute to the subject's sense of paranoia ("I'm not here, this isn't happening"), as they become subsumed into the texture of the track's musical structure. However, the lyrics may also be contextually understood, rather than intertextually, and thus interpreted in the context of the multi-centric complex. If we consider the verse lyrics "That there, that's not me / I go, where I please," there is a natural connection between the recorded persona's identity and the accessibility of the detectable pitch centers. In other words, the "that there" refers to the available centers, suggesting that the one we focus on is negated by the claim "that's not me." Heard in this way, the lyrics project an inherent subject/object binary between "that" and "me," which parallels the notion of appreciable centers as a form of identity.[40] However, the binary is further complicated by the presence of the listener as an external witness. While we attempt to identify and isolate the subject from a set of objects (where subject and object can be considered as the available pitch centers), the subject itself, in the form of the recorded persona, evades a definitive description through the lyrics. The constant proclamations of negation and ephemerality of the subject— "I walk through walls, I go where I please," and "in a little while I'll be gone, the moment's already passed"—prevent us from categorically identifying the subject, much in the way the musical material prevents us from identifying a clear pitch center.

3. Centricity Reconsidered

I first came across these examples of multi-centric complexes while I was learning these songs—first as a guitarist, then as a vocalist, and then transcribing them. Indeed, the act of transcribing pop-rock tracks requires positional listening, focusing on one performer or instrument at a time. "Isn't It a Lovely Night" exemplifies a case of multiple available centers (see Example 3). The chords in the acoustic guitar quite clearly emphasize G major: it starts on the drone tonic, moves to the dominant at the end refrain, resolves deceptively to E minor, and finally returns to G major. Even the incongruous A-major sonority (G: II) has precedence in other pop-rock tracks.[41] However, when I was transcribing the melody, also with guitar in hand, it seemed to suggest a completely different center and collection. It was not until I had considered the guitar and vocals separately—both through performance and through notation—that I was able to return to the track and switch my attention between the different centers. I then wondered how often this phenomenon occurs in pop-rock music and began an ongoing process of listening and transcribing tracks, several of which have been considered in this article.

[40] Osborn points out a similar interaction between the recorded persona's identity and the ambiguity of center. However, Osborn's interpretation is in favor of an A-major hearing, noting that the initial melodic A_3–$F♯_3$ ("that there") acts initially as a *sol–mi* gesture in D major, but the persona "dismisses this identification, singing 'that's not me,' melismatically intoning his true identity, 'me—' on $C♯_4$–B_3–A_3. He is, in a sense, pointing out the opening D-major tonic only to express his true identity as something 'other,' namely a clear *mi–re–do* in A major" (2017a, 148).

[41] The verse section of David Bowie's "Five Years," also in G major, repeats a I–vi–II–IV progression. Similarly, the opening progression of the Beatles's "She Loves You" presents a vi–II–IV–I progression in G major. A more ambiguous example, Grizzly Bear's "I Live With You," opens with a repeated I–II shuttle, discussed in Heetderks (2015).

The nine tracks I have considered in detail share some fundamental properties worth mentioning. First, the most common type of multi-centric complex involves simultaneous available pitch centers related by perfect fifth, as we saw in "Jimmy Olsen's Blues," "Isn't It a Lovely Night," "Cups," and "How to Disappear Completely" (guitar and bass). Next most common are those related by major third: "Dreams," "Nightbird" and "How to Disappear Completely" (guitar and melody), and least common are those related by major second as in "Rock With You." With the exception of the bass (A) and melody (F♯) in "How to Disappear Completely," none of these examples fit into Bailey's notion of the double-tonic complex, which focuses on minor third relations or relative major/minor pitch centers.[42] Second, the relation between pitch-class collections and available centers can be described as diatonic collections whose centers represent closely related keys. In other words, the melodic two-sharp collection in "Isn't It a Lovely Night" fits into reading the D center as a tonal center, and is a closely related key to the G center's key of one sharp. Similarly, the E♭-minor tonic and D♭-major tonic in "Rock With You" share a discrepancy of one flat between their key signatures. "How to Disappear Completely" also shares this feature; both F♯-minor and A major being three-sharp keys, with the D major in the guitar as a two-sharp signature. Multi-centric complexes and the methodologies employed provides the tools to account for cases that exhibit "the unfolding and deployment of the two [or more available] centers responsible for . . . the combined tonal structure that these two [or more available] centers create," a scenario that Harrison describes as "under-theorized" (1997, 394).[43]

Central to this article is the role performance plays both as a way of recognizing and hearing different available pitch centers. John Covach's work on positional listening provides further insight into how a performer's perspective can have an impact on the listener; he writes, "it is quite common for guitarists to listen to a particular track with particular attention on the guitar part; the same might apply to drummers, keyboard players, bassists, and perhaps most especially singers" (2016). The methodology presented here may lead to further study in how pop-rock performers effectively embody strata of melody, harmony, or bass, and how they may therefore emphasize (intentionally or not) different centers within or throughout a track. For example, in "Jimmy Olsen's Blues" the guitar solo is clearly in G major, suggesting that the Spin Doctors' guitarist, Erik Schenkmen, is hearing the song in G rather than centered on D.[44] In addition, I have sought to show how we as listeners are able to attend to the different available centers through positional listening, a mode of engagement that may lend hermeneutic value to the act of interpretation. By acknowledging that pop-rock music does not always present a clear hierarchical structure of monotonality, a more dynamic musical grammar may be felt to emerge, one that recognizes multiple listening practices in the act of analysis.

[42] Bailey (1985) defines the double tonic complex as "the pairing of two tonalities a minor 3rd apart" (121).

[43] In this passage, Harrison is referring to the notion of "bitonality," particularly in the music of Darius Milhaud. I have to this point refrained from employing either *polytonality* or *bitonality* as descriptors for examples of multi-centric complexes because of the ambiguity surrounding their precise definitions. In both terms the suffix "-tonality" causes the most dispute as discussed by Benjamin Boretz (1972) and Peter van den Toorn (1975). However, by framing the concept of multi-centric complexes as pitch centers with the possibility of, but not necessity of, tonal significance, we bypass the issue of conflicting pitch-class collections and are able to focus instead on collections with multiple available centers.

[44] A similar situation occurs in "Sweet Home Alabama," where the guitar solo is centered on G, despite the vocal emphasis on D (Doll 2017, 222–229).

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Listening to Phrase Structure and Formal Function in Post-Tonal Music*

by Anabel Maler

Abstract. This article adapts Classical notions of formal function for the purpose of proposing a listener-centered theory of phrase formation in post-tonal repertoires. It contends that formal function is an emergent property of music through which a listener actively shapes musical organization in time. The result of this approach is a view of musical form in which the listener and composer mutually construct the significant formal units of a musical work through their interactions, a perspective particularly well adapted to the challenges presented by post-tonal music. In order to show how phrase structure in post-tonal music emerges through these formal affordances, the article analyzes in detail several passages from Edgard Varèse's *Density 21.5*, Luigi Dallapiccola's *Dialoghi*, and Anton Webern's *Three Little Pieces* Op. 11, No. 1. The theory of phrase presented here encourages an understanding of phrase as fundamentally relational and constantly mutable.

Keywords and phrases: Form; post-tonal; formal function; phrase; listener-centered.

Introduction

The concept of phrase looms large in theories of form and formal function. But despite its prevalence, "phrase" is an alarmingly slippery concept, reluctant to be tied to any particular length or content. This is especially true in the context of post-tonal music analysis, where the concept of phrase is frequently invoked but left underdefined. The meaning of phrase becomes especially attenuated when it meets with a non-tonal system of composition.

To illustrate, imagine that you are listening attentively, perhaps for the first time, to Webern's *Three Little Pieces for Cello and Piano* Op. 11, No. 1, the opening measures of which are given in Example 1. First, the cello sounds a low F♯2: it swells softly out of the silence then backs away again before being interrupted by a delicate arpeggiated chord in the piano. A beat of silence and then, in m. 2, the piano states the first melodic fragment of the piece, ending with an inquisitive ascending diminished fifth and followed immediately by its answer: a dramatic falling gesture of just over two octaves in the cello. A shorter silence spanning only an eighth note follows, after which the piano enters (m. 3) with a gesture that echoes the one heard at the work's opening, although now the roles of the piano and cello are reversed: the

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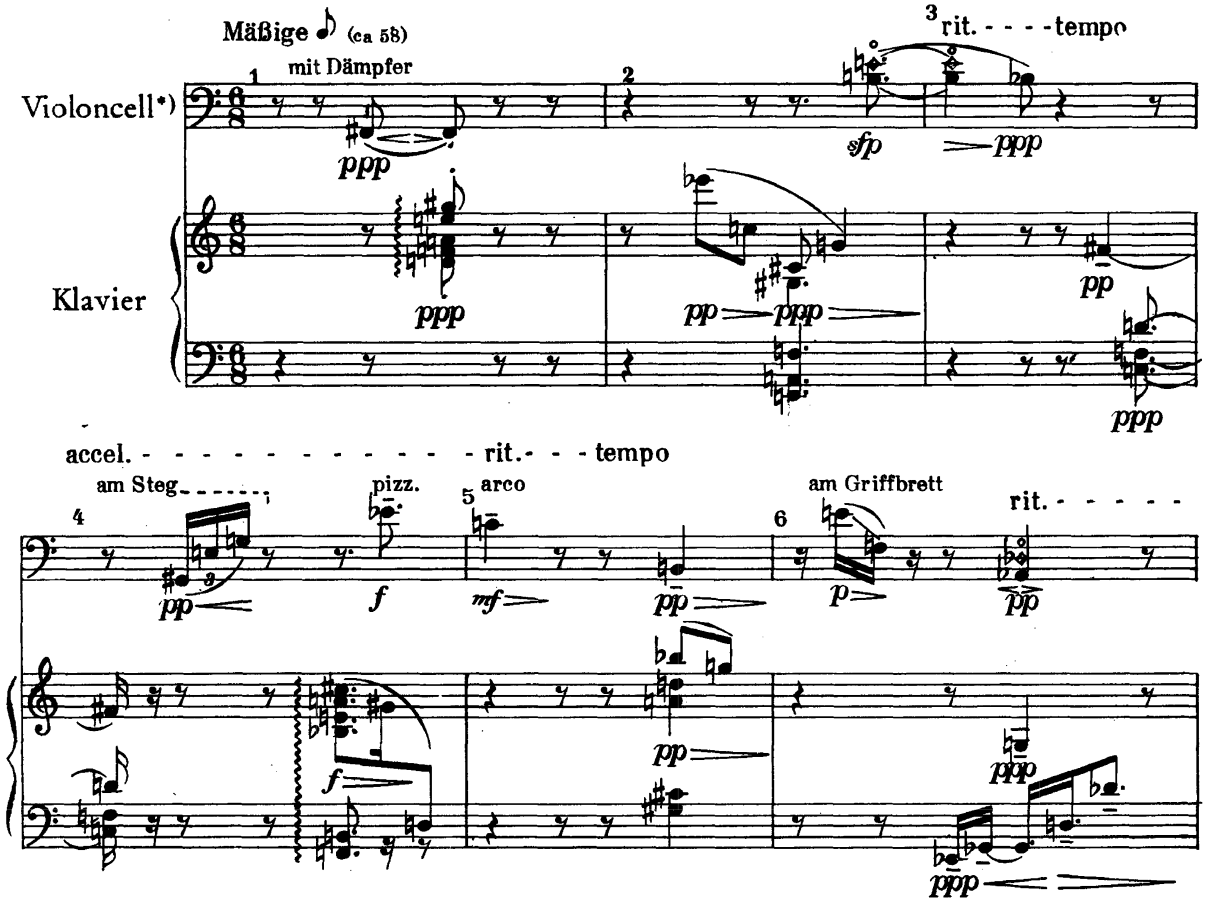


Example 1. Webern, Op. 11, no. 1, mm. 1–6.

piano's first note is a held F♯4 in the right hand supported by a three-note sonority in the left hand, which are together interrupted by the cello's sudden upward flight in m. 4, emphasized with a crescendo and the nasal timbre of *am Steg*. Yet another short silence precedes the piano's entrance with an arpeggiated chord in the latter half of m. 4, leading into a melody whose contour resembles the one heard in m. 2. Over this melody, the cello plays a falling gesture reminiscent of that heard in mm. 2–3, but now overlapping with the piano. A slightly longer silence, and the piano takes up the cello's descending gesture, suggesting, perhaps, a sense of closure by means of return, before both instruments dissolve into a brief silence.

I think it would be constructive to speak of these measures as comprising two phrases: in other words, as musical utterances that contain a coherent progression of events from beginning, to middle, to end, and that are articulated with something that separates each unit from those that may precede or follow it. This definition aligns with those provided by Hasty (1981; 1984) and Howland (2010; 2015), who define the post-tonal phrase as a coherent grouping of elements that is articulated from other groupings. But how does each of the three objects presented in the first phrase of Example 1 *function* in relation to the others? How would a listener make sense of these functions and relationships, in time, as they listen? Our current understanding of post-tonal phrase structure does not explain how each phrase comes to function in relation to the next, allowing the listener to form expectations and to retrospectively reinterpret the material they have already heard.

Building upon the perception-based and parametric approaches to post-tonal form proposed by Hasty (1981; 1984; 1988), Tenney (1988), and Howland (2010; 2015), as well as theories of formal function proposed by William Caplin, Janet Schmalfeldt, and Matthew Arndt, I take a form-functional approach to the post-tonal phrase that assumes that a wide variety of musical features—including rhythmic and melodic contour, pitch content, timbre, and texture—shape listeners' categorization of musical objects and their formation of prospective and retrospective interpretations. In order to reformulate the idea of formal function for post-tonal repertoires, I conceive of formal func-

tionality as a musical instantiation of what cognitive scientist Donald Norman has called *affordances* in his work on material design (2013). For Norman, affordances reflect the potential uses or actions latent in materials, and affordances are perceived not only based on physical attributes, but by the perceiver's past experiences. Importantly, affordances are inherently *relational*—that is, they are determined in equal measure by the properties of the object and the abilities of the interacting subject. Affordances also rely on *signifiers*, which signal what actions are possible—these may be compared to what I have called salient parameters (Maler 2020). In a recent monograph, Caroline Levine applies this terminology to literary forms in order to demonstrate that "each shape or pattern, social or literary, lays claim to a limited range of potentialities" (2015, 6). So too does a formal pattern in music lay claim to a specific range of potentialities when it meets with a listener and all their beliefs and past experiences, and from that interaction we may come to determine its formal function.

In this article, I contend that formal function is an emergent property of music through which a listener actively shapes musical organization in time. The result of this approach is a view of musical form in which the listener and composer mutually construct formal units of a musical work through their interactions, a perspective particularly well adapted to the challenges presented by post-tonal music. In order to show how phrase structure in post-tonal music emerges through these formal affordances, I analyze in detail several passages from Edgard Varèse's *Density 21.5* and Luigi Dallapiccola's *Dialoghi*. In adapting theories of formal function to the analysis of post-tonal form, this article contributes to the growing literature on post-tonal form and on formal function more broadly.[1]

1. Formal Function

The concept of formal function as it is presently understood has developed principally for the study of European music of the late eighteenth and early nineteenth centuries, a repertoire that has shaped the majority of music theory's discourse. The idea that formal units play specific roles in articulating the structure of a piece of music is strongly tied to ideas about musical form that emerged through the teaching of composition in the early nineteenth century, and that was codified in the writings of Arnold Schoenberg (1967) and Erwin Ratz (1951), and more recently in those of William Caplin (1998; 2005; 2009). Caplin defines formal functionality as a concept in which "a listener is able to discern the formal disposition of events within a work by means of specific musical criteria, largely based on harmonic-tonal relations but also involving processes of grouping structure, melodic directionality and texture" (2005, 115). In an essay on the nature of formal functions, Caplin further distinguishes between formal functions and types (2009). He defines formal function as the "unique temporal character" of any given musical time span, while the notion of formal type refers to idiomatic phrase, theme, or movement types that comprise multiple functions, such as the sentence, period, small ternary, sonata, or concerto (33). In reference to Classical music, Caplin defines the form of a musical work as consisting of, at the least, a hierarchical arrangement of perceptible and discrete time spans, where each chunk of music has a formal function—a role that the group plays within the formal organization of the music (1998, 9). One of the most important characteristics of Caplin's theory of formal functions is its implicit assertion that musical chunks or spans are fundamentally relational in nature—that is, a musical beginning, or middle, or end has no meaning outside of its relationship to the other two functions.

A given musical group may express more than one function or several groups may express a single function, and groups may be retrospectively reinterpreted as expressing a different function than initially suspected. Some of the foundational formal functions identified by Caplin include the basic idea, contrasting idea, presentation, continuation, antecedent, consequent, and framing functions such as introductions or post-cadential functions. Each of these is then defined in such a way that it can be correlated with other formal functions. In Caplin's theory, then, the basic idea functions as a fundamental building block, usually comprising more than one motive in a single gesture. The presentation function emerges as the result of repeating a basic idea, through which the basic idea emerges as a distinct, demarcated unit. The presentation, Caplin argues, creates a "strongly ongoing quality" that generates demand for a phrase with continuation function. He identifies two characteristics of the function of continuation: "*fragmentation*, a reduction in the size of the units; and *harmonic acceleration*, an increase in the rate of harmonic change" (1998, 10). A contrasting idea presents opposing ideas, rather than offering a repetition of the basic idea. The presence of these two opposing forces, which brings about an intermediary cadence, forms an antecedent phrase, which prompts repetition in the form of a consequent.

Each formal function that Caplin identifies is shaped by one or more formal processes. These processes include fragmentation (reduction in the size of constituent units),

[1] Some relevant contributions to the literature on formal function and post-tonal form include Arndt (2018), Boss et al. (2016), Caplin (1998), Caplin et al. (2009), Caplin (2018), Deliège (1989), Hasty (1981; 1984), Howland (2010; 2015), Richards (2010), Schmalfeldt (2011), Tenney (1988).

harmonic acceleration (increase in the rate of harmonic change), extension and expansion (lengthening of units, extension by addition and expansion by an internal process), compression, and liquidation (gradual elimination of characteristic features).[2]

In his recent exploration of the relationship between form, function, and musical content, Matthew Arndt makes an important distinction between components, parts, and functions, arguing that "function" pertains to what the parts of a form are *doing* (2018). Building on Schoenberg's theory of form, Arndt identifies eight structural functions, which overlap with Caplin's formal functions and processes: establishment, confrontation, connection, dissolution, delimitation, elaboration, preparation, and stabilization. Establishment, or "*putting something significant into place*," is often tied to a sense of beginning, and tends to be associated with tight-knit, stable, concise parts of music, while confrontation, or "*encountering something different*," provides contrast and tends to involve the unconventional or unstable (212–213). Connection involves joining members by providing links that "mediate between previously contrasting parts;" these links might take the form of transitions or small bridges. Dissolution involves "*letting go of characteristics*," either by harmonic destabilization or through liquidation, which may include "reduction (omission), equalization of rhythmic values and/or intervals, leveling off of contour, and using nondescript figures such as scales" (213). Delimitation serves to articulate parts from one another, while elaboration is "*leading motives or Gestalten through new situations*" and often has the effect of intensifying the material (214). Preparation, or "*getting ready for a following member*," is closely related to Caplin's idea of introductory function. Finally, the function of stabilization involves "*making a harmony firm*" (214).

Crucially, the formal function of a musical event or phrase may change over time as the listener reevaluates and reinterprets the musical material and context. Janet Schmalfeldt explores this nonlinear conception of musical form through her principle of "becoming:" "the special case whereby the formal function initially suggested by a musical idea, phrase, or section, invites retrospective reinterpretation within the larger formal context" (2011, 9). This approach opens the possibility that the relationship between form and time is not linear, which challenges the idea that formal units must be both temporally discrete and adjacent in order to form larger units.

One of my fundamental assumptions is that formal listening and understanding did not abruptly change or cease to exist in the early twentieth century. Indeed, in his discussion of the origins of his musical style, Anton Webern made it clear that he and the other members of the Second Viennese School based their compositions on prototypical Classical formal structures (Webern 1975). The *Formenlehre* tradition is intimately tied to music of the high Viennese classical style; that said, I suggest that listeners did not stop trying to make sense of musical form in terms of its organization into functional groups after a certain date, or in response to the opinions of any particular composer or critic in the early twentieth century. Accordingly, attentive listening to function, in the sense of musical affordance, is not tied exclusively to specific formal types. In fact, attending to these affordances in post-tonal works can have, I propose, a positive impact on our understanding of their formal organization.

In the course of analyzing post-tonal works, I therefore make use of terms that may be familiar from Classical formal theory. When I do so, it is not to point out some surface similarity between the formal group being presented and its counterpart in a Classical formal type, but to make an observation about the way that musical group is functioning in relation to surrounding musical materials—as Arndt puts it, what the music is *doing* (2018, 224). The core idea, then, is that the musical concepts implied by functional labels such as "basic idea" or "contrasting idea" remain relevant in post-tonal contexts.

2. The Post-Tonal Phrase

In the context of post-tonal form, Christopher Hasty defines the phrase as a perceptual necessity, within which "groupings of elements cohere to create a sense of wholeness or completeness," and which is segregated from unrelated elements by means of closure (1984, 171). Patricia Howland's concept of the "integrated parametric structure" (IPS) is based on Hasty's definition of the post-tonal phrase as well as James Tenney's post-tonal "sequence" (2015). Howland defines the phrase-like IPS as "a succession of elements in which the whole exhibits coherence and articulation" (71). Following from these definitions, the post-tonal phrase, as it were, seems to possess the following necessary features: it contains more than one item, it coheres together, and it is articulated from other groupings.

To speak of the post-tonal phrase, one must possess an underlying understanding of post-tonal compositional structures as: a) adhering to guiding principles of logic and coherence; b) possessing forms of punctuation akin to cadences in tonal music; and c) tied to the resources of a listener's working memory. To employ the term "phrase" to describe a phenomenon in a post-tonal composition is therefore to acknowledge an underlying perceptual framework that has historically been investigated in the context of tonal compositional techniques. Like phrases in tonal

[2] See Heneghan (2019) for a detailed discussion of Schoenberg's concept of liquidation.

music, phrases in post-tonal music need a coherent progression from beginning, to middle, to end—articulated with something that functions to cadence, or close. The question remains, how do listeners make sense of these units and their relationships to one another?

To summarize the perspectives of Hasty and Howland, a phrase in post-tonal music is a unit that contains more than one musical idea. Its constituent ideas must form a coherent whole, to which the listener is guided by musical parameters that gain particular salience within the context of the composition. The perception of salient parameters informs the formation of categories by establishing which attributes determine category membership; those categories then provide a structure for the processes of listener *prospection* and *retrospection*, which I clarify later.

Howland's theory of the IPS explains how phrases can cohere even without structural closure in the form of a return, which Hasty sees as fundamental to coherence and closure in post-tonal phrases (Hasty 1984, 176, 178–179, 186). Instead, Howland argues that the audible grouping of parameters is in fact capable of "creating the degree of interrelatedness necessary to achieve coherence" (74). While some IPSs, like those based on tension/release, departure/return, and symmetry, are articulated through return, others are articulated through salience or replacement.

Many post-tonal works indicate phrase closure through processes of intensification and tension followed by resolution and release. Indeed, Barash (2002) has identified processes of intensification and resolution produced by multiple parameters—duration, silence, contour, centricity, activity level, motivic and phrase repetition, tempo, dynamics, texture and color, and articulation—as central to the concept of cadence in post-tonal repertoires.[3] According to this understanding of closure in terms of tension and release, elsewhere, I define the cadence as "a conventional musical object that is recognized through norms involving motivic dissolution, repetition, pitch convergence or divergence, registral aspects, textural elements including density and contrast, rhythm, timbre, orchestration processes involving tension and abatement, and phrase structure" (Maler 2020). A full exploration of the concept of closure in post-tonal music goes beyond the scope of this article, but I will use these basic definitions to inform my analysis of closure at the phrase level in the analyses that follow.

The concept of formal functions such as establishment and confrontation draws on our shared cognitive strategy of attending to similarity and dissimilarity in making sense of music. James Tenney's thesis *Meta + Hodos* presents an early exploration of this topic through the lens of gestalt psychology, arguing that differences create separation between elements, while similarities produce cohesion (Tenney 1988). Alexandra Lamont and Nicola Dibben provide an overview of two main models in cognitive psychology for understanding similarity and categorization (2001).[4] The first, prototype theory, is based on perceptual equivalence, or the relationship between the object and an abstract prototype. The second, theory-based classification, emphasizes the role of background knowledge and conceptual models in categorization. Drawing on the latter model for categorization, Lawrence Zbikowski has developed a robust theory of how these conceptual models are applied in different musical contexts (2002). Dora Hanninen's work also emphasizes the importance of "difference and disjunction" in sonic organization in both small segments and larger units, arguing that "greater differences in attribute values create greater disjunctions and stronger boundaries" (2012, 7).

The process of object categorization involves a listener's active formation of categories from the collection of perceptual objects put forth by the composer. These objects cohere into categories that, according to Zbikowski, reflect "the attributes shared by those [objects]" (2002, 49). Hanninen identifies object categorization as part of her "contextual domain," which recognizes "repetition, association, and categorization in music" (2012, 7). Hanninen emphasizes importance of context in the contextual domain, arguing that musical objects are "permeable, suffused by and interacting with their contexts" (2012, 7). The process of object categorization as it relates to form might arise, for example, when an analyst identifies a musical object as separate from other objects and serving as a "cadential" marker. In the case of both Brian Fennelly's and Christopher Hasty's analyses of Webern's Op. 22, the analysts make use of the salient parameter of rhythm in order to categorize some musical object as "cadential," in contrast to surrounding units (Fennelly 1966; Hasty 1988). Hasty notes that, in addition to the salient parameter of rhythm, the repetition of the material at section boundaries marks this unit as belonging to a "cadential" category. At the same time, he notes that the figure also acts to begin a section through a process

[3] Following Paul Hindemith's and Ernst Krenek's classification of chords on a scale of more-or-less dissonant, Daniel Harrison proceeds from a similar understanding of "resolution" involving a "more-to-less" chord change (Harrison 2016, 4). Bryden (2001) explores a similar definition of closure in terms of lines of increasing and decreasing intensity in five chamber works.

[4] Other recent students that have engaged with the concepts of repetition include Emilios Cambouropoulos's study of similarity, which emphasizes the importance of context (2009), Irène Deliège's work on similarity relations in listening experience (2007), and Elizabeth Margulis's work on musical repetition (2012; 2014).

of elision; this observation draws upon my final factor for phrase analysis, prospection and retrospection.

The notion of phrase is intrinsically both prospective and retrospective, in that it requires the listener to predict its continuation and to retroactively group its units together. The phrase thus necessarily takes place within the *present*. Briefly summarized, the present—as conceptualized by Husserl's 1901 model of time consciousness—is experienced as a continuously temporally unfolding span whose horizons are bookended by "retention" (referring to the ever-more distorted view we have of past events as the now moves inexorably forward), and "protention" (referring to our view of the immediate future).[5] Akin to Husserl's concepts of protention and retention, the musical phrase emerges through a process of listener prospection and retrospection. Based on the presence of salient parameters, musical context, and culturally engrained patterns, the element of prospection refers to the listener's judgment of the presence of an emerging phrase in the present moment. The process of retrospection involves the deciphering of what has just occurred based on expectations met or denied. The processes of prospection and retrospection have to do with how listeners form expectations and react to events in musical time, a topic first explored in detail by Leonard Meyer (1956), who revealed how musical structures create perceptual expectations that can be manipulated by composers in order to communicate emotions. Importantly, Meyer argues that a musical style must "become part of the habit responses of composers, performers, and practiced listeners" in order to "be regarded as a complex system of probabilities," out of which arise the expectations upon which meaning is based (1957, 414). A number of scholars have elaborated upon and tested Meyer's theories of expectation and meaning, including several studies that reveal how musical expectations influence the perception of music (Cuddy and Lunney 1995; Krumhansl 1995; Schellenberg 1996; Schmuckler 1989).[6]

My development of these concepts in relation to post-tonal music—all of which contribute to formal function—emerges from a recent move towards basing analytical discussions within an understanding of cognitive processes shared among human listeners. Using the concept of formal function developed by Caplin, extended by Arndt, and bolstered by the important work on post-tonal phrase structure by Hasty, Howland, and others, I propose in this article a way of analyzing post-tonal phrases through the lens of formal function. In the following sections, I analyze some passages from Varèse's *Density 21.5* and Dallapiccola's *Dialoghi*, with a focus on how a listener might make sense of the formal functions or affordances of musical materials, thus engendering musical expectations at the phrase level. Of course, the specific interpretations of formal functions reflect only my own hearing of these works—another listener-analyst might develop their own, conflicting interpretation of the very same passages. The purpose of these analyses is not to provide the only, or indeed the definitive, phrase-structural accounts of these works; instead, I hope to suggest one potential reading of these passages based on the concepts of phrase-level function outlined by Caplin and Arndt, revealing that form-functional concepts are applicable to repertoire far outside of the Classical period.

3. Varèse, *Density 21.5*, mm. 1–17

There is a long and rich history of analyzing Varèse's *Density 21.5* (composed for solo flute in 1936, revised 1946), and analysts have approached the work using a variety of theoretical frameworks and perspectives. Jean-Jacques Nattiez's semiological analysis of *Density 21.5* appeared in full, translated from the original French by Anna Berry, in the first volume of *Music Analysis* in 1982. Most of the publication is devoted to the analysis of the work's "neutral" level, while the end of the article briefly addresses the "poietic" and "esthesic" levels.[7] Nattiez partitions the work into units, from the smallest to the largest, dividing the work into 83 distinct units on the smallest level and into 3 parts on the largest. At a few places in his discussion, Nattiez suggests the idea of formal function. This first occurs early in the analysis in the discussion of the work's first few measures, where Nattiez introduces his concept of "deception." Nattiez does not seem to use the word as it is typically employed with respect to the "deceptive cadence," or "*cadence rompue*" in Rameau's terminology.[8] Instead, by "deception," Nattiez means that the events at the beginning of m. 2 function to delay the passage of F♯ to G (Nattiez and Barry 1982, 251).

[5] I take this helpful summary from Alfred Gell's essay, "The Network of Standard Stoppages," originally written circa 1985 (Gell 2013, 102–107).

[6] The subject of expectation also forms the basis of David Huron's "ITPRA" (Imagination-Tension-Prediction-Reaction-Appraisal) theory of expectation (Huron 2006, 16). Huron's work reveals how common musical devices make use of these basic psychological responses, arguing that expectation "appears to shape many aspects of musical organization," including patterns of repetition and form, motivic structure, and genre and style (357).

[7] The neutral level is defined by Nattiez as "a descriptive level containing the most exhaustive inventory possible of all types of configurations conceivably recognizable in a score," the poietic level deals with the "process of production by which the work unfolds," and the esthesic level with the "processes of perception" to which the work gives rise (Nattiez and Barry 1982, 244–245).

[8] As Bernard (1986) states, "Nattiez is not entitled to speak of any kind of operative deception in Varèse's music, which is not part of a common practice with expected norms" (223).

Nattiez's most explicit mention of function comes at the end of his analysis of the work's second part, in which he identifies "three segmental types," which have "three functions:"

> the permutation is stagnant, delaying the appearance of a new note which is generally a semitone higher; or oblique paradigms allow the piece to progress; or rapid flights lead to a climax. Between them, these types set up a dialectic: the permutation acts as a brake on development—in relation to the oblique paradigms and the flights it favours a period of rest rather than moments of tension. Varèse restores, on another level, what the tonal system is no longer able to offer, by alternation of distinct functional types (Nattiez and Barry 1982, 283).

Nattiez's "functions" in the context of *Density 21.5* provide a glimpse into the potential advantages of approaching a piece like *Density* from the perspective of formal function, despite the absence of tonal idioms. In the following analysis of the first seventeen measures of *Density*, I draw more explicitly on the concept of formal function in order to analyze the work's opening phrase structure in detail.

The first fifteen measures of *Density* are provided in Example 2. I would like to propose that in the first fourteen measures of the work, a sentential structure slowly emerges for the listener as they interact with the piece. In the analysis that follows, I reveal how the work's first five measures act as a presentation, fulfilling Arndt's *establishment* function, while mm. 6–12 employ the functions of *confrontation* and *dissolution* to create a sense of a continuation, followed finally by the *delimitation* function in mm. 13–14, which creates a sense of closure.

The opening of *Density 21.5*, shown in Example 3, features a three-note cell that groups together interval classes (ICs) 1 and 2, straining upwards from the lowest register of the flute (*a*). This first cell, and its continuation in the form of a dynamic swell on the sustained F♯4 (*b*), create a unit, the first half of a thought that finds completion in mm. 2–3. A third cell (*c*), enters in m. 2, alternating quickly between C♯4 and F♯4. At the end of m. 2, Varèse returns to cell *b*, this time sustaining the note G4; the return of cell *b*'s characteristic rhythm at this moment, with the same dynamic marking as in m. 1, retrospectively establishes the events of mm. 1–3 as one cohesive basic idea with two constituent parts, shown by the arrow with a dashed line connecting the second sustained note (*b*) with its predecessor in m. 1. The basic idea, which represents Arndt's establishment function, achieves provisional articulation (delimitation) through the repetition of *b*, followed by the introduction of silence in the form of a rest lasting one quarter note in m. 3. Having established this unit as a basic idea, the listener may expect, based on the affordances associated with this particular formal function, that the basic idea will be followed either by similar material, suggesting a repetition of the idea, or by contrasting material (confrontation). In either case, I wonder if the listener will share my sense, upon reaching the pause in m. 3, that the function of establishment or opening is still in operation at this moment, and that the following material will prolong that function.

Imagine instead that the sustained G4 had *not* entered after motive *c*, and thus had not retrospectively prompted the listener to consider, at least provisionally, the presence of a single basic idea in mm. 1–3, one that contains three distinct motives *a*, *b*, and *c*. Example 4 conceives of a possible alternate ending for the first phrase, in which motive *a* is repeated (in an inverted form) after motive *c*.[9] This recomposition of the first measures prompts an entirely different understanding of the formal functions at play, in which the repetition of motives *a* and *c* in a compressed and partially inverted form in mm. 2–3, immediately after their initial presentation in mm. 1–2, suggests that the listener reinterpret the first two measures as a basic idea that is immediately shortened and repeated (forming what Caplin might call a presentation phrase). Now the basic unit of the work is much shorter, since the first three measures no longer suggest a single, incomplete idea, but a complete opening presentation phrase containing two units. The listener may now have a different expectation for the material that follows: they may strongly predict that contrasting material will enter, material that moves the piece along and draws it further away from the familiar intervallic, rhythmic, and motivic space established in the first three measures. For the moment, however, let us return to Varèse's original composition, and the material that follows the unaltered mm. 1–3.

In Varèse's original composition, the quarter-note rest in m. 3 is immediately followed by the entrance of motive *a*, which begins a varied repetition of the basic idea, shown in Example 5. This varied repetition confirms the cohesiveness of the basic idea in mm. 1–3 by submitting the individual elements to the formal process of expansion. Motive *a* is subject to a linear expansion through its continued melodic ascent to G, and its contour returns in an inverted, expanded form at the end of m. 4. A repetition of the expanded motive *c* closes the variation on the basic idea as a whole.[10] The varied repetition of the basic idea in mm. 3–5 results in a formal function of presentation over mm. 1–5,

[9] All recompositions are the author's.

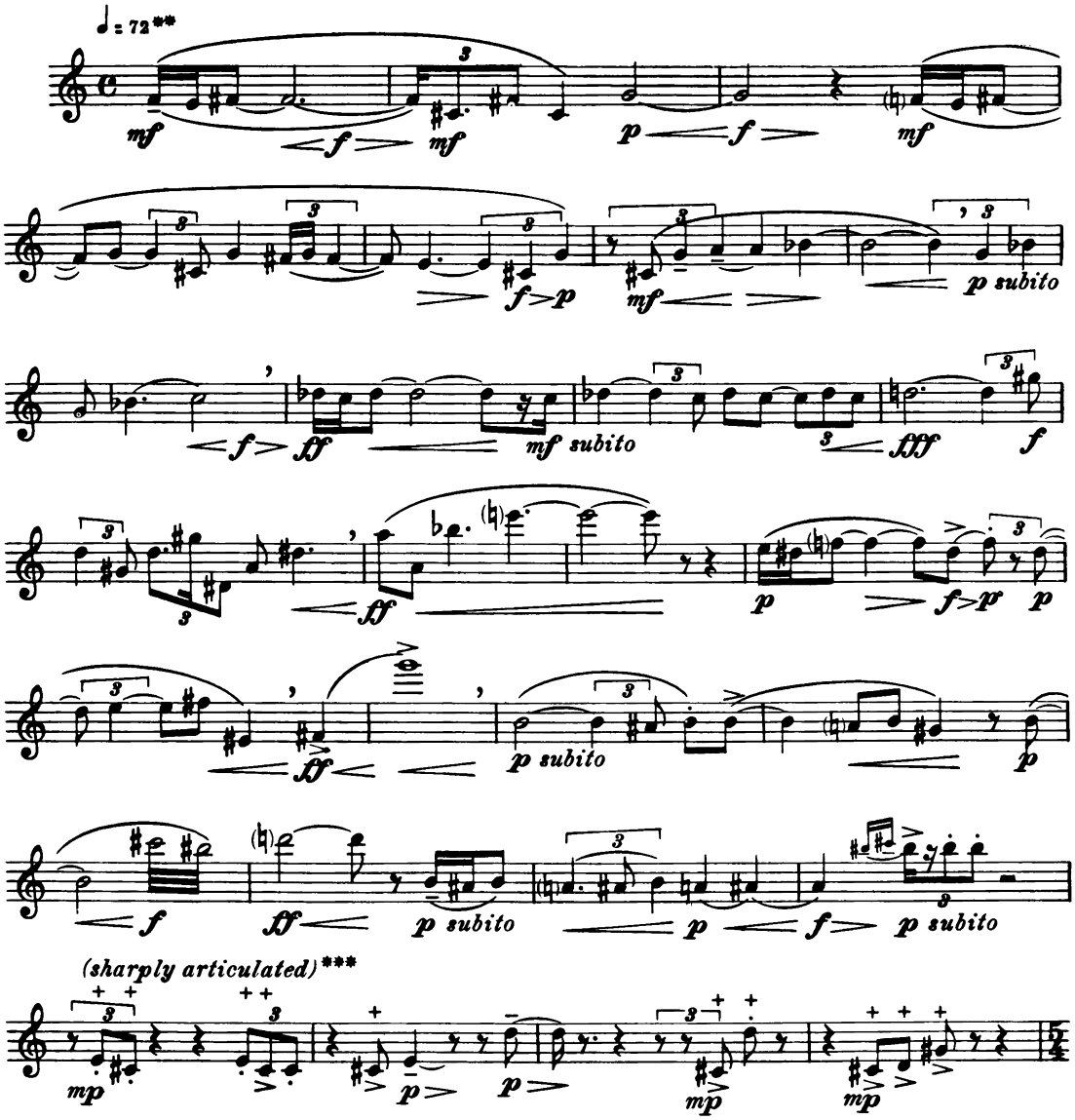
[10] George Perle (1990) notes that the first five measures of the piece outline the C♯ to G tritone, which is in turn divided by E♮. Perle argues that this division exists from the work's opening, in which the first note, F, is nothing more than an upper neighbor to the structural note E; this C♯-E-G diminished triad is confirmed in m. 5, and subsequently expanded to a fully diminished seventh chord with the addition of B♭ in m. 6. While my own interpretation does not view the initial F as incidental, I agree that the introduction of IC3, bridging the gap between motive *a* and the tritone of motive *c* in m. 5, is crucial.

2

DENSITY 21.5*

Flute Solo

EDGARD VARÈSE

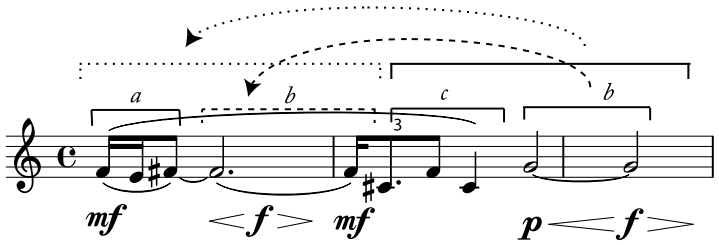


* Written in January, 1936, at the request of Georges Barrère for the inauguration of his platinum flute. Revised April, 1946. 21.5 is the density of platinum.

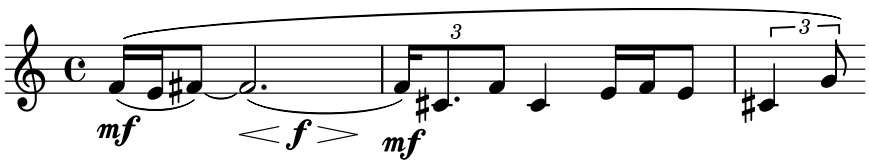
** Always strictly in time—follow metronomic indications.

*** Notes marked + to be played softly, hitting the keys at the same time to produce a percussive effect.

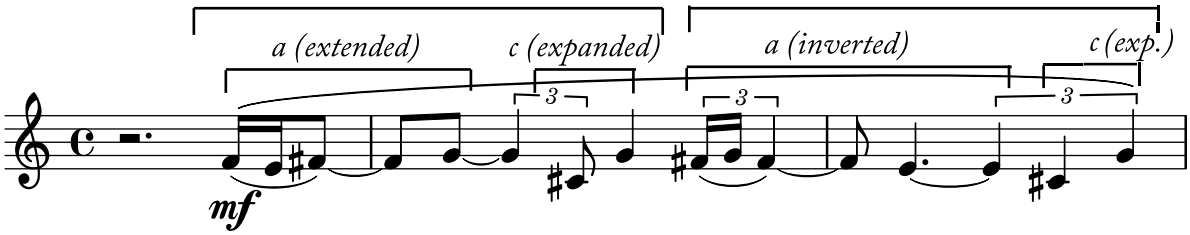
Example 2. Varèse, Density 21.5, *mm. 1–16.*



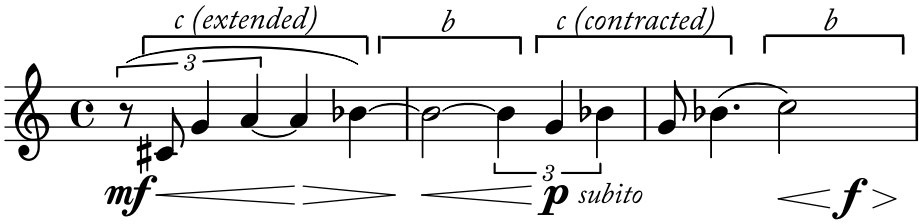
Example 3. Varèse, Density 21.5, *mm. 1–3.*



Example 4. Recomposition of Varèse, Density 21.5, *mm. 1–3.*



Example 5. Varèse, Density 21.5, *mm. 3–5.*

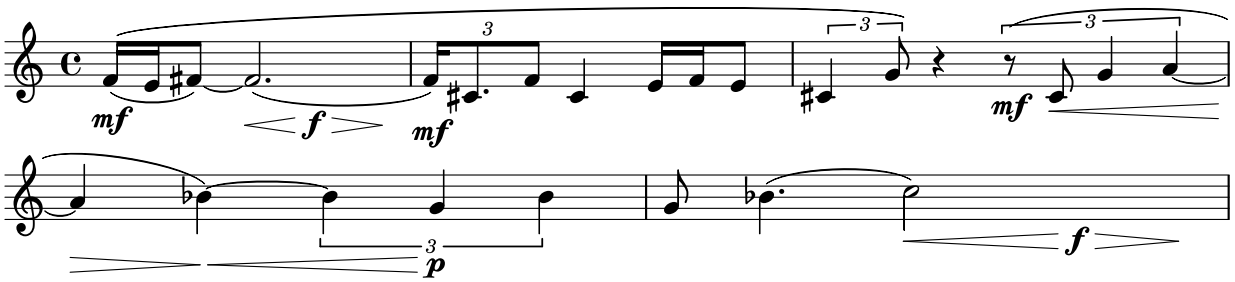


Example 6. Varèse, Density 21.5, *mm. 6–8.*

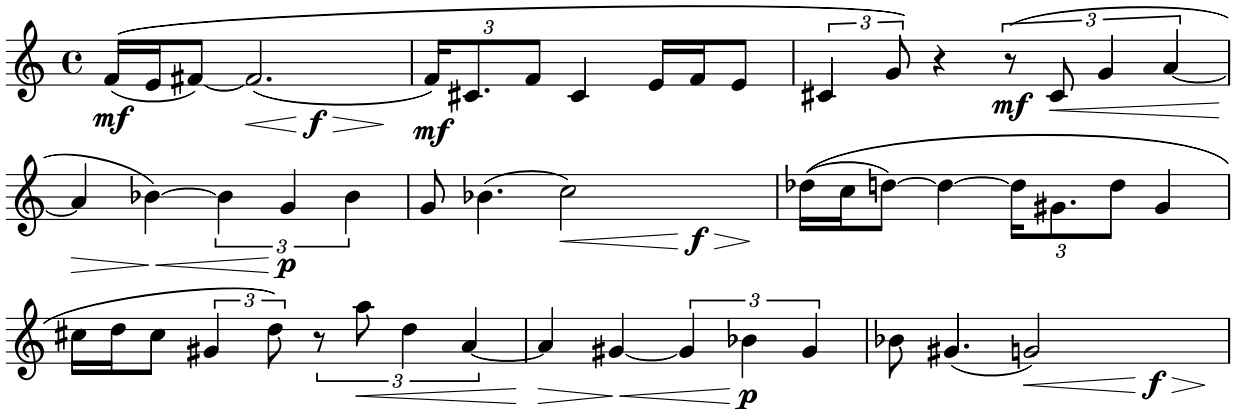
which may lead the listener to expect a continuation to follow.

In m. 6, the closing gesture of m. 5 is recast as a beginning (Example 6). The material that follows draws on motivic elements from the basic idea (a rising stepwise line), recontextualized within the octatonic scale. While the repetition of the basic idea hinted at the octatonic scale as a background collection in the descending portion (second half of m. 4–5), the music of m. 6 onward confirms it. The phrase also revisits and emphasizes IC 3 (introduced briefly between motives in m. 5) in the form of an oscillation between B♭ and G in mm. 7–8: this oscillation recalls the contour and character of motive *c* from the opening basic idea and completes the outline of the fully diminished seventh chord: C♯–E–G–B♭. The original motive *c* was expanded from IC 5 to IC 6 in the basic idea's repetition; the contraction to IC 3 in mm. 7–8 and its elaboration through repetition lend mm. 6–8 a feeling of urgency.

The unit from mm. 6–8 achieves conditional delimitation through the repetition of motive *b*, which was already associated with internal divisions when it ended the basic idea, retrospectively allowing us to understand the basic idea as internally divided by motive *b* into two smaller units. Motive *b* now also divides this phrase into two



Example 7. Recomposition of Varèse, Density 21.5, *mm. 1–5.*



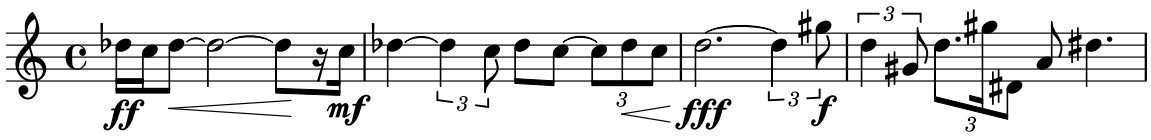
Example 8. Recomposition of Varèse, Density 21.5, *mm. 1–9.*

smaller units: first an internal division in m. 7, with the dynamic arch-shape reversed (decrescendo-crescendo), followed by a more conclusive iteration at the end of m. 8, with the original dynamic marking of motive *b* restored.

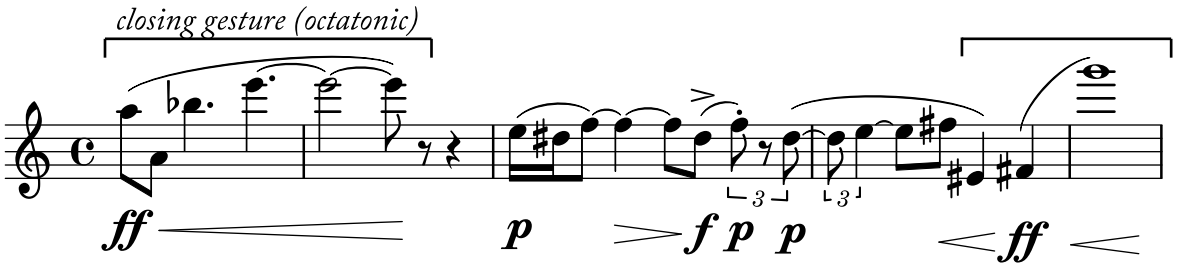
We might briefly revisit my hypothetical recomposition of the first measures, in which the first three measures (a basic idea and its foreshortened repetition) are now promptly followed by material from the original mm. 6–8, fulfilling the listener's expectation that the complete presentation of ideas in mm. 1–3 will be followed by material that develops these ideas in a continuational manner. The fully recomposed mm. 1–5 is shown in Example 7, comprising a much shorter presentation of materials than is found in the original. One notable feature of the recomposition is that I have kept mm. 3–5 nearly identical to the original mm. 6–8, only shortening the note value of the intermediary statement of motive *b* on B♭4. Despite the fact that this change is minor, when combined with the elimination in the first phrase of the concluding motive *b* (replaced with the repetition of motives *a* and *c*) it significantly reduces the sense of closure when motive *b* returns at the end of m. 5. With such a short first phrase and a weak sense of closure, a listener might now predict that the entire first five measures form one larger unit, which may be merely the first half of a full phrase. In a recomposed version of mm. 1–9, mm. 1–5 as a whole would thus act as an antecedent phrase. Example 8 shows a possible consequent phrase that could follow mm. 1–5.

The material in the original mm. 6–12 spins out and elaborates the three motives *a*, *b*, and *c* in varying configurations, pushing ever higher in register through each varied repetition. In my view, this section takes on the function of a continuation phrase for the listener due to its use of elaboration techniques like fragmentation and repetition, speeding up of the surface rhythm, as well as elements of dissolution (liquidation) such as using nondescript figures, all of which increase the sense of tension or urgency in anticipation of closure. This continuation spans three units that decrease in length: the first from mm. 6–8, which emphasizes the octatonic collection and contracts motive *c*, the second from mm. 9–11, and the third from the end of m. 11 through m. 12 (the section from mm. 9–12 is shown in Example 9).

As shown in Example 10, mm. 13–14 combine several features previously associated with closure (a long held note, dynamic swell, and emphasis on IC 6) with the octatonic collection, providing a summary of the preceding material in a single, concise gesture, while also continuing



Example 9. Varèse, Density 21.5, *mm. 9–12.*



Example 10. Varèse, Density 21.5, *mm. 13–17.*

the spatial expansion brought about by mm. 11–12. The next measures repeat and confirm this closure, using only ICs 1 and 2 and recalling both the motivic material and phrase structure of the opening basic idea. By repeating the functions of summary and closure—alluded to by Nattiez in his use of the phrase "rounding off and summing up" in reference to these measures (Nattiez and Barry 1982, 265)—and by echoing the contour of the material in mm. 13–14, Varèse confirms in mm. 15–17 that a point of structural articulation has been reached, and encourages the listener to anticipate the establishment of new or contrasting material.

In the preceding analysis, the form of the first, quasi-sentential phrase of *Density 21.5* emerges as a series of negotiations between composer and listener. The composer's choice of pitch collection influences the listener's perception of similarity and contrast, but the listener's understanding of function and grouping impact how the work coheres. The analysis reveals a process by which musical elements interact—combine, coexist, push against one another, accumulate, disintegrate, and negate—to produce larger phrases. The following analysis of Dallapiccola's *Dialoghi* shows how these phrases may further interact to form larger formal structures.

4. Dallapiccola, Dialoghi (1959–1960), first movement

In Dallapiccola's *Dialoghi* for cello and orchestra, the composer inextricably ties phrase structure to a particular serial technique: cross-partitioning. Gaining an understanding of the particular configurations of cross-partitions in this work is inherently valuable from the perspective of twelve-tone analysis, but an approach that views those cross-partitions through the lens of formal function is important to develop an understanding of the work's most striking features: its clarity of phrasing, the melodious quality of the cello line, and the unique framework of interactions between the cello and orchestra. Analyzing the phrase structure of *Dialoghi*'s first movement alongside and through its twelve-tone innovations can provide insights into the composer's choice of this particular style of cross-partitioning, as well as its effects on a listener. Moreover, a clear and detailed analysis of phrase structure appears essential for understanding the dramatic arc of the first movement, which is firmly tied to the work's first phrase: three measures of cross-partitions in the orchestra, cohering into one, arch-shaped unit. As I show through my analysis, the structure and sequence of musical events on the level of the phrase contribute to a larger-scale formal process of loosening in the first movement's A section, summarized in the formal graph of Figure 1.

Dialoghi is based on the twelve-tone row ⟨0, 1, T, 2, 6, 4; 5, 3, 7, E, 8, 9⟩.[11] The row is inversionally combinatorial and, as Brian Alegant observes, RI-symmetrical—that is, its P_0 and I_9 forms are retrogrades of each other:

P_0: ⟨0, 1, T, 2, 6, 4; 5, 3, 7, E, 8, 9⟩
I_9: ⟨9, 8, E, 7, 3, 5; 4, 6, 2, T, 1, 0⟩[12]

Dallapiccola often obscures the row form in *Dialoghi* through the technique of cross-partitioning, which has been discussed thoroughly by Brian Alegant (2001). In a

[11] Where 0 = C.

[12] It is also worth noting that the hexachords of the row in *Dialoghi* are *near* whole-tone collections, misplacing a single pitch class. The nature of these collections informs the compositional decisions Dallapiccola makes.

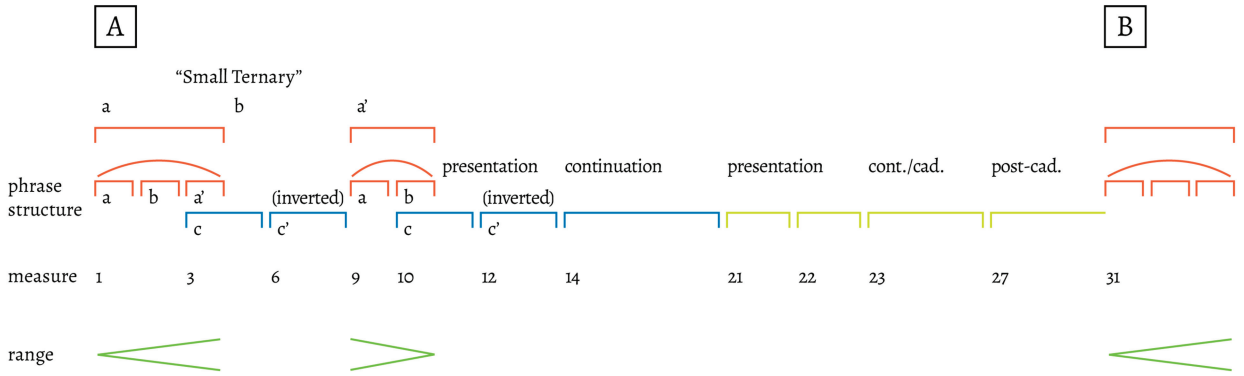


Figure 1. Graph showing the phrase structure of Dialoghi*'s A section.*

cross-partition, a twelve-tone row is partitioned in order to create vertical harmonies. A twelve-tone row may be divided into equal partitions of 2 groups of 6, 6 groups of 2, 3 groups of 4, or 4 groups of 3. Analysts often represent cross-partitions through a table that sets out the subsets, resulting in a "two-dimensional configuration of pitch classes whose columns are realized as chords, and whose rows are differentiated from one another by registral, timbral or other means" (Alegant 2001, 1). The pitches in the resulting vertical combinations may be reordered in order to maintain the vertical harmony while altering the horizontal melodies.

Figure 2a shows the first cross-partition of *Dialoghi*, D_E, which is based on the unordered hexachords of R_2: ⟨E, T, 1, 9, 5, 7; 6, 8, 4, 0, 3, 2⟩. Where the uppercase "D" represents the name of the piece, *Dialoghi*, the subscript "E" in D_E represents the lowest pitch class of the first chord. The first column of the cross-partition is the first collection played in the piece, and is sounded *pianissimo* by the violins and cellos. The second column represents the second sonority, played by the same instruments. Each column contains one unordered hexachord of the row form R_2. One thing we can note about this first cross-partition is that the pitches A, F, D♭, and B all move by perfect fourth or fifth (IC 5). The other two pitches, B♭ and G, move by major third (IC 4). Example 11 reproduces the chords in their sounding registers.

Figure 2b reveals what Alegant terms a "slot-machine" transformation of D_E in which new intervals are introduced: the semitone, the minor third, and the tritone. This new ordering of the cross-partition, D_5, appears in the second measure, both timbrally and registrally contrasting with the first measure (Example 12). The contrast in instrumentation between measures 1 and 2 cues the listener to identify timbre as a salient parameter in the work: m. 1 is played entirely by string instruments, while m. 2 sees the entrance of the piccolo, clarinet, and bass clarinet, in addition to the violas and bass. In m. 1 the voicing of the cross-partition is also constrained to a span of three octaves, while m. 2 expands the range to four and a half octaves. Finally, there are important differences in the voice leading of mm. 1–2. Measure 1 sees each of the three top voices leap upwards by a perfect fourth, perfect fifth, and minor sixth, working down from the first violins. Each of the lower three voices descends, by perfect fifth, diminished fourth, and perfect fourth, working upwards from the cellos. In m. 2, each of the three top voices descends, by augmented fourth, minor third, and major third (piccolo, clarinet, viola), while each of the three lower voices ascends respectively, by minor second, minor second, and minor third (bass, bass clarinet, viola).

The first and second measures thus establish contrasts in register (which expands significantly in m. 2 from a more centralized collection in m. 1), timbre (which changes from violins and cellos in m. 1 to low strings and woodwinds in m. 2), and intervallic content (from ascents to descents and vice versa, with an emphasis on perfect fourths and fifths in m. 1, compared to semitones and the marked descending tritone in the piccolo in m. 2). These extreme contrasts in register, timbre, and intervallic content are thus marked for the listener as salient parameters.

In m. 3, Dallapiccola restates the row a third time as D_9 (Example 13 shows a reduction of mm. 1–3). D_9 introduces the final missing IC: 2 (Figure 3). For the first time, this cross-partition exhibits split and fuse voice leading, in which a single voice splits into two pitches or two pitches fuse into one.[13] In terms of the three salient parameters

[13] Ways of modeling these "split/fuse" operations in parsimonious voice-leading have been discussed at length by Shaugn O'Donnell (1997), Clifton Callender in the context of Scriabin's music (1998), and Brandon Derfler (2010). The splitting and fusing here is emphasized by the voicings in the strings at this moment in the score. In identifying split/fuse relationships, I have preserved Dallapiccola's original voicings in the score, which emphasize these voice-leading relationships.

a) The first cross-partition (m. 1) in Dallapiccola's *Dialoghi*, $\mathbf{D}_e$

9	2	← 2–5 [05]
t	6	← 2–4 [04]
5	0	← 2–5 [05]
1	8	← 2–5 [05]
7	3	← 2–5 [05]
e	4	← 2–5 [05]
↑	↑	
6–21b [024568]	6–21 [023468]	

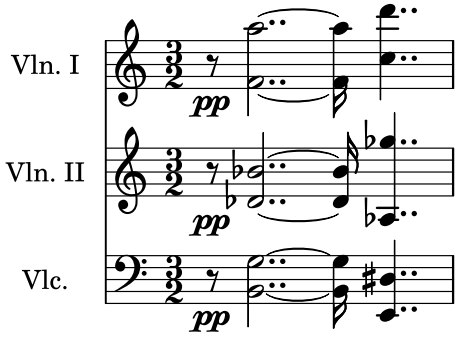
b) The second cross-partition (m.2), $\mathbf{D}_5$

t	4	← 2–6 [06]
7	3	← 2–4 [04]
e	8	← 2–3 [03]
9	0	← 2–3 [03]
1	2	← 2–1 [01]
5	6	← 2–1 [01]
↑	↑	
6–21B [024568]	6–21 [023468]	

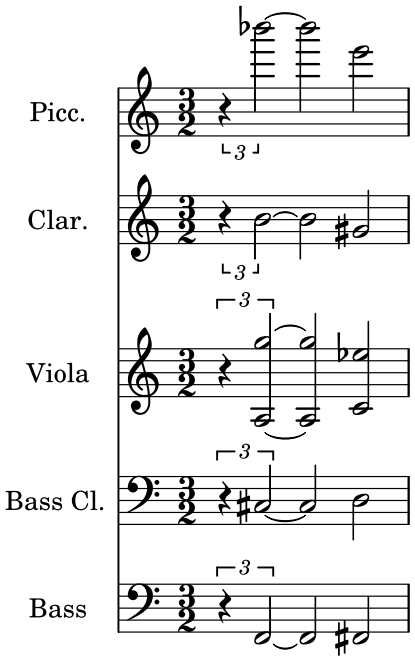
Figure 2. The first two cross-partitions of Dialoghi, *with each row representing one voice, ordered by register.*

introduced so far (register, timbre, intervallic content), D_9 presents a return to the material of m. 1 by returning to a timbre of predominately stringed instruments (now including harp and celesta), with a prominent ascending chromatic stepwise motion in the highest register and a descending perfect fourth in the bass. The register, however, has expanded yet again, to six octaves. The first three measures, therefore, create one phrase characterized by departure and return (A B A).

Measure 3 also sees the entrance of the solo cello, *poco sforzando*, *tremolo*, and *sul ponticello*, on a B3 (Example 14). This change in the salient parameter of timbre encourages the retrospective process of grouping together the first three measures and their three constituent cross-partitions into one phrase, whose dominant process of departure and return forms an arch shape. In m. 4, the orchestra drops out as the cello plays the first four notes of its melody: B C A C♯. After stalling on C♯ for a measure, the cello reaches up to F♮, a tritone away from its opening pitch. These are the first five notes of P_E (B C A C♯ F), which the cello answers with the first five notes of I_E (B A♯ C♯ A♮ F). As Alegant notes, "the notes of the I_E pentachord are inverted



Example 11. Dallapiccola, Dialoghi, *m. 1.*



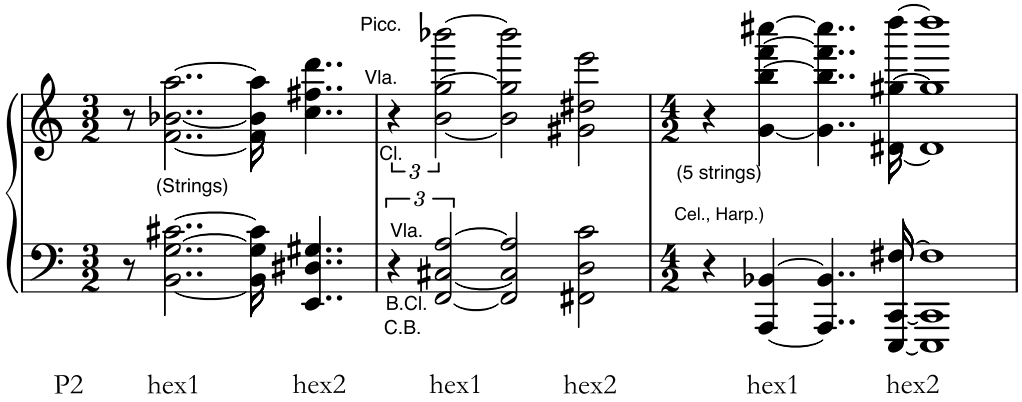
Example 12. Dallapiccola, Dialoghi, *m. 2.*

in pitch space from B4; the rhythms of the I_E pentachord are halved" (2010, 74). The audible inversion of the cello's melody suggests that mm. 3–8 form a two-part, symmetrical phrase. In addition to the solo cello, Example 14 shows the orchestra accompaniment in m. 5 playing I_2: the first hexachord is played by the vibraphone and harp, followed by the strings, and finally the harp, celesta, horn, and flute. In m. 5, the orchestra enters again with P_8.

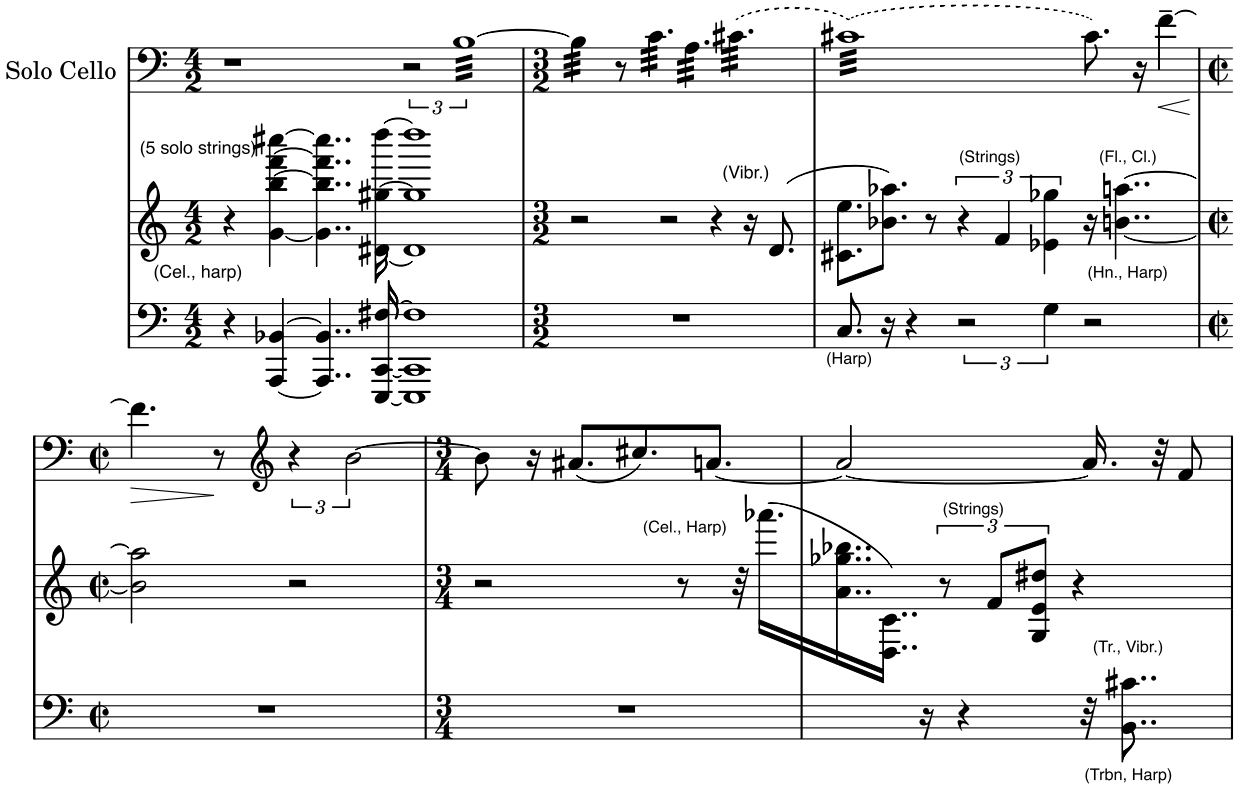
In mm. 9–10, the hexachordal pairs of mm. 1–3 reenter, this time in retrograde and with all three statements compressed into two measures (row form P_2). Example 15 presents the three cross-partitions as they appear in the score, while Figure 4 shows the cross-partitions, RD_9, RD_5, and RD_E. I have labeled these according to the final note in the bass since they are retrograde forms of the opening cross-partitions, and thus exactly reproduce the first three measures in retrograde. By placing the three cross-partitions in direct juxtaposition and slurring across hexachords, Dallapiccola draws attention to the melodic features of the three hexachordal pairs as a single unit. This strategy also emphasizes the quasi-cadential effect of hexachordal pair in RD_E, which emphasizes leaps by perfect fourth and fifth.

In his analysis of *Dialoghi*, Dana Richardson refers to the hexachordal pairs in mm. 1–3 and those of mm. 9–10 as "tonal pillars," which he sees as setting out a "tonic row" (2001, 157). Indeed, the reentrance of this tonic row in the form of three "tonic pillars" after the initial melody played by the solo cello does call to mind a cadential progression signaling the end of a phrase. At this moment, the return to the original timbral, textural, and registral sphere of the opening—as well as the pitch convergence in m. 10—may contribute to our sense of closure when the hexachordal pairs enter. For Hasty in particular, the notion of return is central to structural closure in post-tonal music (Hasty 1981; 1984).[14] Importantly, the return of the hexachordal pairs in retrograde validates for the listener a process of departure and return over the course of mm. 1–10, based on the voice leading and timbre of the cross-partitions. Figure 5 compares the six cross-partitions in mm. 1–3 and

[14] There have been several attempts to define cadential content in post-tonal repertoires in recent years, including the work of Hasty (1981; 1984), Ashforth (1978), Barash (2002), Eng (2012), Maler (2018). These authors identify motivic dissolution, repetition, pitch convergence or divergence, registral aspects, textural elements including density and contrast, rhythm, timbre, orchestration processes involving tension and abatement, and phrase structure as important elements that contribute to defining post-tonal cadential closure.



Example 13. Dallapiccola, Dialoghi, *reduction of mm. 1–3. Each chord change represents a change in hexachord within the row P_2.*



Example 14. Dallapiccola, Dialoghi, *mm. 3–8.*

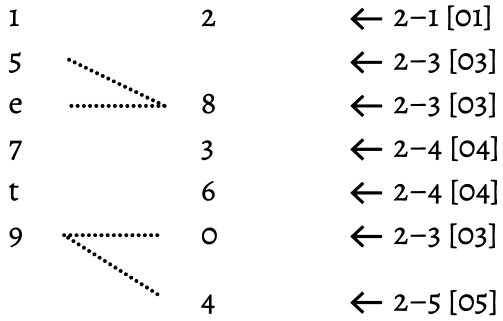
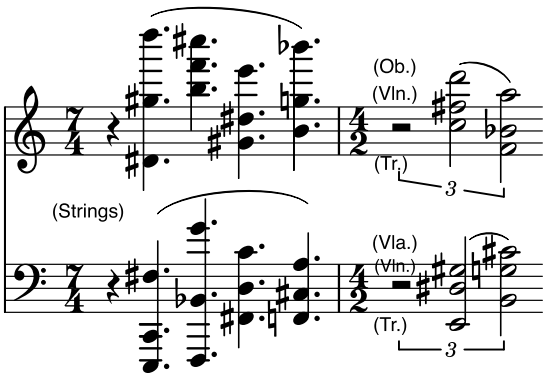


Figure 3. Dallapiccola, Dialoghi, *m.3: the third cross-partition, D_9.*



Example 15. Dallapiccola, Dialoghi, *mm. 9–10: orchestra.*

9–10. Note how Dallapiccola splits and merges voices to create new voice-leading patterns in the first two cross-partitions of mm. 9–10, but maintains the voice-leading integrity of RD_E, the retrograde of the first cross-partition of the piece. The fact that the upper and lower voices remain unchanged from mm. 1–3 to mm. 9–10 encourages the listener to make the connection between these two sections, particularly since these voices are separated in register from the inner voices.

The cello reenters in m. 10 with a new thematic statement (Example 16), retrospectively confirming that the three statements of P_2 in mm. 9–10 acted to close a large, arch-shaped theme comprising the three phrases in mm. 1–10 with internal A, B, and A' sections, akin to what Caplin calls a small ternary form (1998, 71). The cello's new melody continues the row forms it abandoned in its initial melodic statement of mm. 3–8, picking up at the sixth note of P_E. While that melody was highly constrained in terms of its

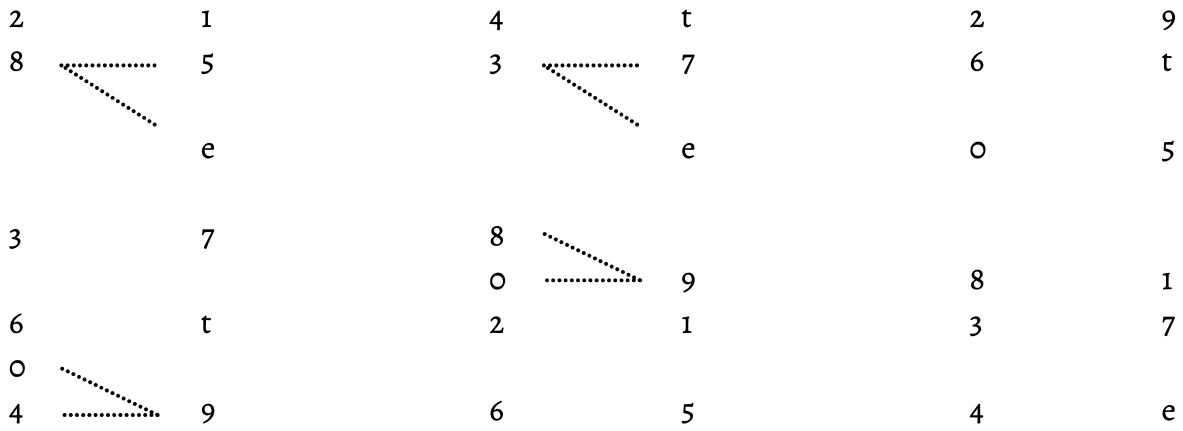


Figure 4. Dallapiccola, Dialoghi, *mm. 9–10: cross-partitions RD_9, RD_5, and RD_E.*

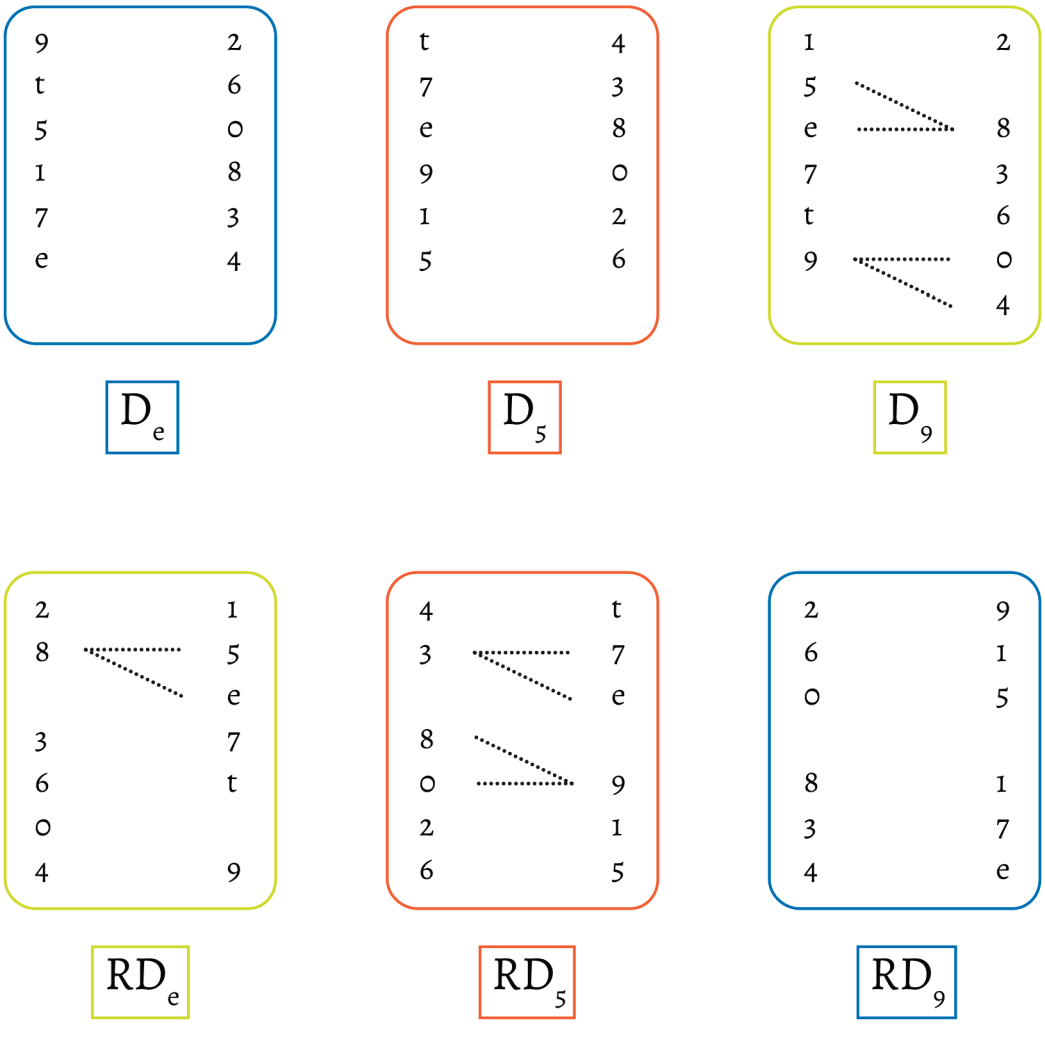
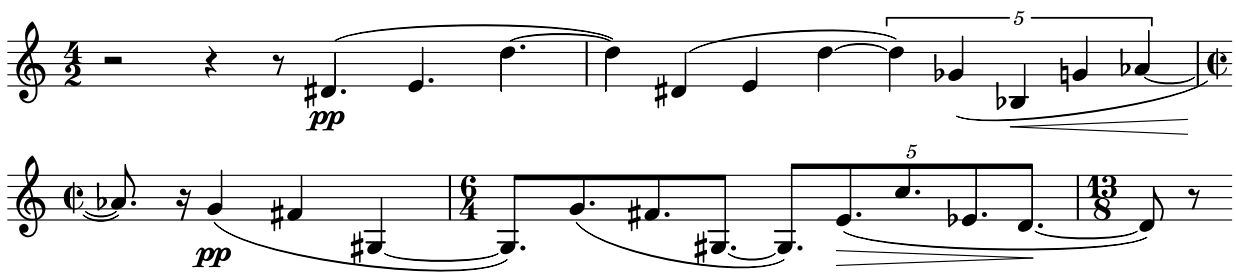


Figure 5. Comparison of cross-partitions in mm. 1–3 and 9–10.



Example 16. Dallapiccola, Dialoghi, *mm. 10–13: solo cello.*

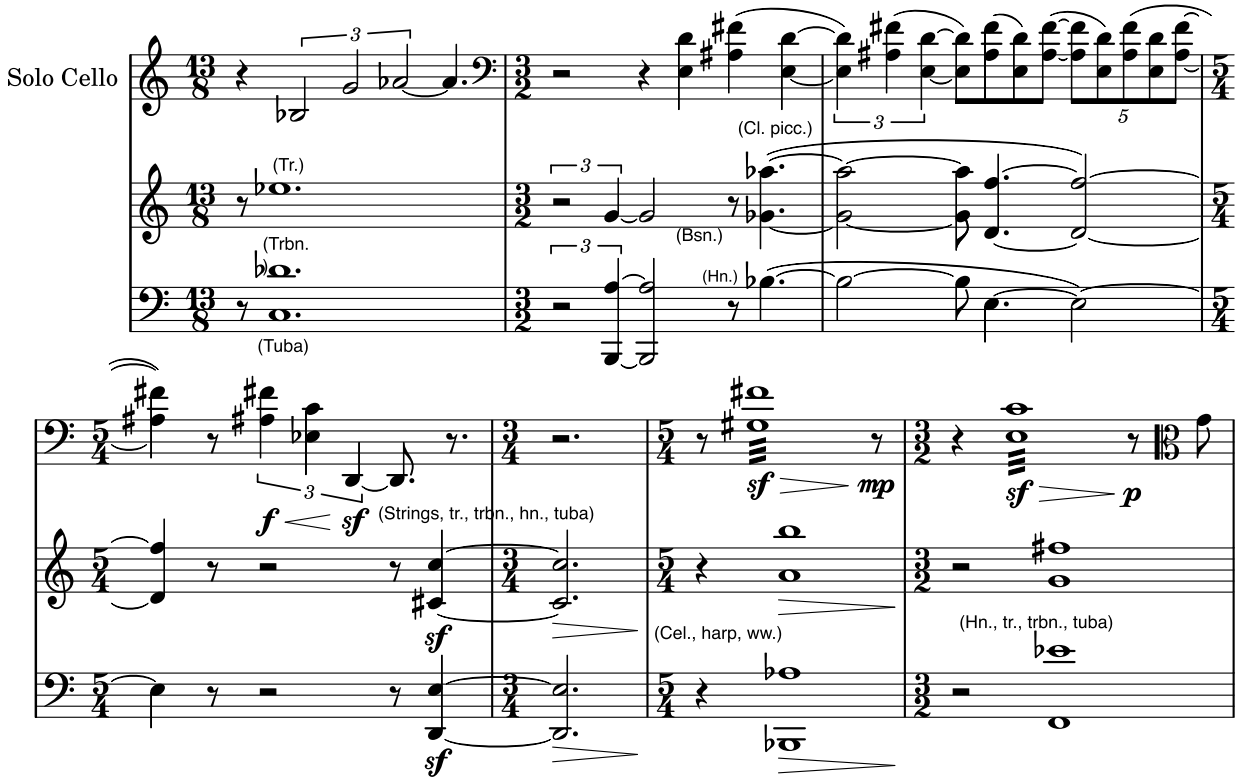
range—circling obsessively first around B3 and then, in the inverted repetition of the first five-note idea, around B4—the theme that enters in m. 10 features a three-note ascending line with the pitch intervals +1, +10. That idea is repeated in a slightly contracted form in the next measure, the dotted quarter notes becoming quarter notes. In m. 11, the cello's melody sweeps downwards and then upwards again; this melodic idea is condensed rhythmically even further into a quintuplet and brings P_E to a close. The cello inverts the preceding melody around F4. This clear inversion of the melody that was just heard, rhythmically identical to the first idea except with each note value shortened slightly, gives the impression of a basic idea being repeated in varied form, creating a presentation in mm. 10–13.

Here is where our close attention to the function and phrase structure of the cross-partitions begins to pay off in our understanding of the phrase more generally in *Dialoghi*. We can now return to Figure 1, which reveals how mm. 1–10 form a tightly-knit first theme, marked off by the repetition of the three "tonic" pillars—these are marked in orange in Figure 1. The theme is tightly knit by virtue of its symmetrical grouping structures in each of its constituent phrases, its strong cadential closure through the return of the initial cross-partitions in retrograde, and its motivic uniformity, although it is not necessarily a conventional theme according to Caplin's definition (1998, 84–85). The formal process at work in the entire A section is one of loosening: as the following phrase-level analysis of m. 10 onwards demonstrates, the phrases following the first tightly-knit theme become more loosely-knit and expansive, paving the way for the long, free cello solo of the B section. This process begins with the presentation in mm. 10–13, which suggests the possibility of a continuation.

The impression that mm. 10–13 initiates a sentence phrase is confirmed in mm. 14–16 (Example 17). In m. 14, the cello states an elongated variation on the rising motive in m. 10, in a near-retrograde inversion (+1, +10 becomes +9, +1), using the pitches of R_E. The cello is accompanied by a 4×3 cross-partition of R_4, first in the brass, and in mm. 15–16 answered by the winds (Figure 6). The percussion instruments also enter *en masse* at this moment. The cello then begins to alternate between two dyads, {E, D} and {A♯, F♯}, increasing in speed and liquidating the preceding theme's motivic material. This continuation also looks forward to new cross-partitions by providing the first 4×3 partition in the piece (based on a previously-unheard row form). At the end of the continuation, the cello erupts with a descending triplet (based on row form P_2), marked forte with a crescendo to a *sforzando*; a marked difference from the previous overwhelmingly piano and pianissimo dynamic level. As if in answer, the brass and strings enter with a four-note chord played *sforzando*, setting off a 3×4 cross-partition based on I_2 (Figure 7). Despite the fact that both of these events—the descending triplet in the cello and the four-note chord in the orchestra—begin new row forms, the build-up of tension from the repeated dyads and the new pitch material during the preceding continuation, followed by the sudden, paired outbursts by the cello and orchestra, lead me to group these events together into a single phrase.

In m. 19, the second two tetrachords of the D_2 cross-partition combine with the second trichord of P_2 in the solo cello, so that the cello and orchestra align for the first time in order to herald the start of a new section, beginning in m. 21, which brings a new idea and a new way of disguising its row forms (RI_T and I_T) by distributing the first hexachord of each row across two simultaneous melodic streams in the winds. The first hexachord of I_T is inverted in pitch space around the axis of symmetry between F and F♯4 (Example 18).

This new structuring of the salient parameter of pitch materials creates the impression of a new internal section, which begins with a mirrored melody that is immediately repeated. From that repeated idea emerges a series of fragments from row R_5, based on the same principle of mirroring. This is followed in m. 26 by a rare and notable moment of homophony in the strings, where Dallapiccola creates a 4×3 cross-partition in which three melodic lines stem from a single pitch, C5 (Figure 8). The initial repetition of a new idea in mm. 21–22 creates a miniature presentation, followed by fragmentation in mm. 23–25 (Example 19). The



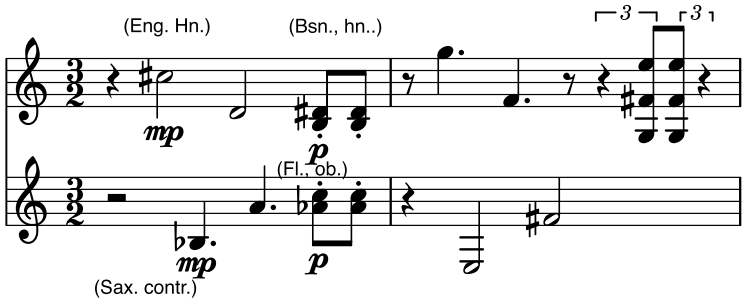
Example 17. Dallapiccola, Dialoghi, *mm. 14–20.*

3	7	8	5	← 4–11 [0135]
1	9	6	2	← 4–20 [0158]
0	e	t	4	← 4–5 [0126]
↑	↑	↑	↑	
3–2 [013]	3–6 [024]	3–6 [024]	3–2 [023]	

Figure 6. Dallapiccola, Dialoghi, *mm. 14–16: 4×3 cross-partition D_0.*

0	e	6	← 3–5 [016]
1	9	7	← 3–8 [026]
4	8	3	← 3–4 [015]
2	t	5	← 3–11 [037]
↑	↑	↑	
4–2 [0124]	4–1 [0123]	4–2b [0234]	

Figure 7. Dallapiccola, Dialoghi, *mm. 18–20: 3×4 cross-partition D_2.*



Example 18. Dallapiccola, Dialoghi, *mm.21–22: orchestra.*

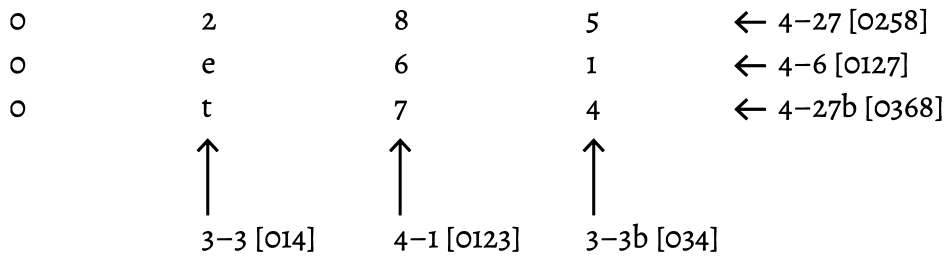


Figure 8. Dallapiccola, Dialoghi, *m. 26: partial cross-partition* D_0.

textural contrast in m. 26, with the homophonic entrance of the 4×3 cross-partition, acts to close this sentential phrase in mm. 21–26.

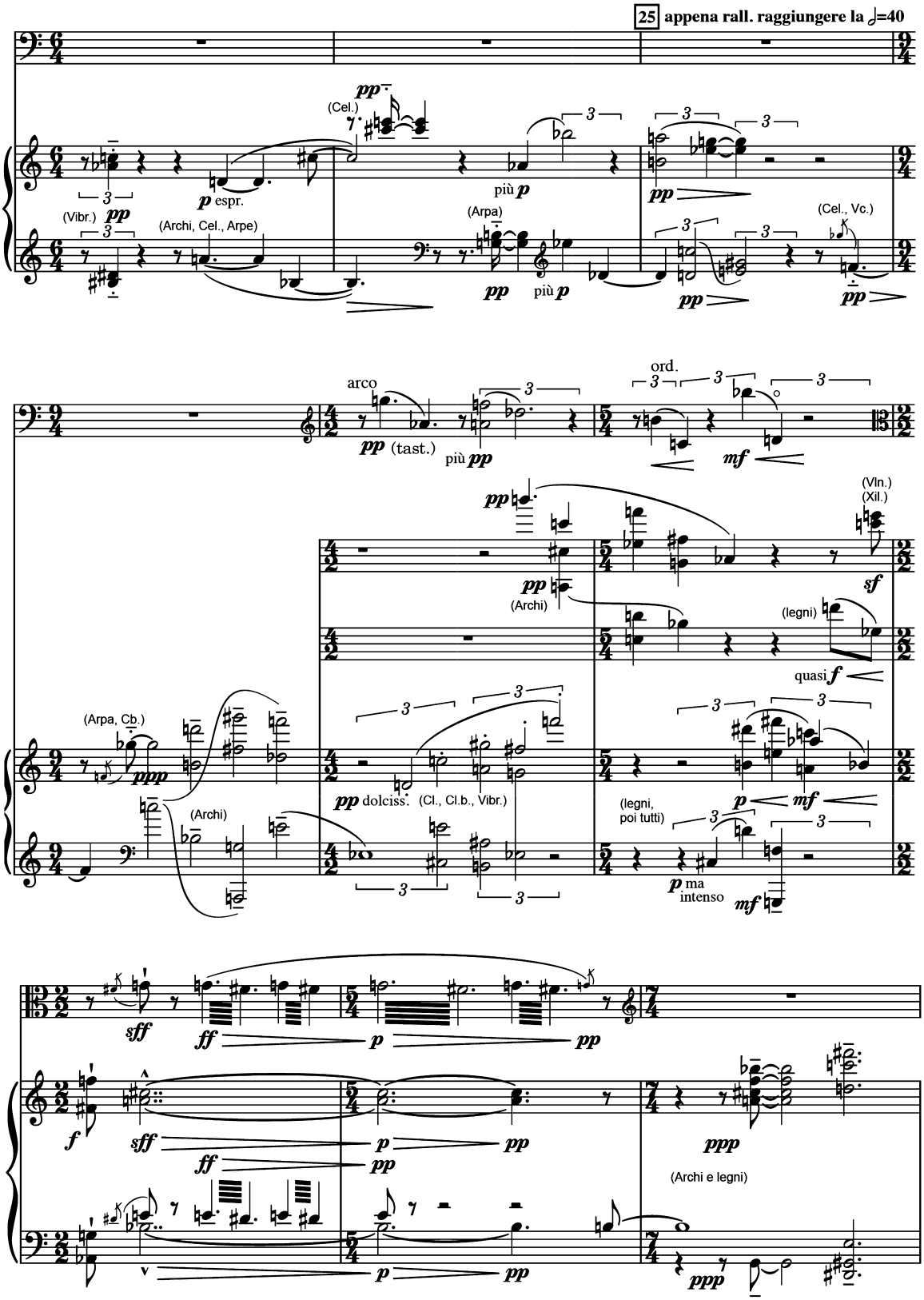
After the cadential idea of m. 26, the cello enters in m. 27 with melodic fragments based on RI_4, pausing before each disjointed two-note fragment before becoming stuck on D♯4 and E4 in mm. 29–30, trilling between them in a manner reminiscent of the liquidation in mm. 15–16 (which, of course, led to the cadential gesture in mm. 17–18). This time, the trill fades to nothing, clearing the way for the return of the three cross-partitions based on the original row (R_2) and heralding the start of the movement's B section, framed once again by cross-partitions in the orchestra (Figure 9). Over the course of the A section, the sentential phrases become less tightly-knit, leading to the post-cadential liquidation of mm. 27–31, which eliminates characteristic elements of the initial theme and makes room for the B section.

The preceding analysis reveals that the composer's compositional scaffolding (i.e. the use of a cross-partitioned twelve-tone row) may interact in productive and provocative ways with the parameters a listener may perceive as salient. The three main salient parameters at work in the first movement of Dallapiccola's *Dialoghi* are pitch material, timbre, and register, and the establishment of these parameters as salient from the beginning of the work shapes how we understand the relationships between musical events throughout the movement.

Conclusion

I began with an excerpt from the opening of Webern's *Three Little Pieces* Op. 11, No. 1, and I would now like to suggest an interpretation of its opening in terms of phrase structure. Based on perception of salient parameters and categorization of these parameters into distinct units, I suggest that when we hear the first idea return in its altered, expanded form at the end of m. 3, we might *retrospectively* interpret the first three measures and their three constituent ideas as cohering into one unit, much like the "basic idea" of a presentation phrase (an interpretation diagrammed in Example 20). One might then understand the gesture beginning in the second half of m. 4 in the piano and taken over by the cello as a variation on the second element (*y*), with the piano and cello combining in order to enrich the original melody of m. 2 (as shown in Example 21). Measure 5 then recalls the cello's falling gesture in mm. 2–3. In other words, mm. 1–3 present a cohesive basic idea with three elements, each of which is subject to a varied reprise from the end of m. 3 through m. 5—loosely, a repetition of the basic idea—suggesting that mm. 1–5 are a "presentation" phrase. This series of experiences and recollections may then encourage a listener to anticipate elements of a continuational nature to follow.

Immediately after the conclusion of the presentation phrase in m. 5, the cello repeats its falling gesture of interval 11, this time played close to the fingerboard and in sixteenth notes, rather than the quarter or eighth notes



Example 19. Dallapiccola, Dialoghi, *mm. 23–31.*

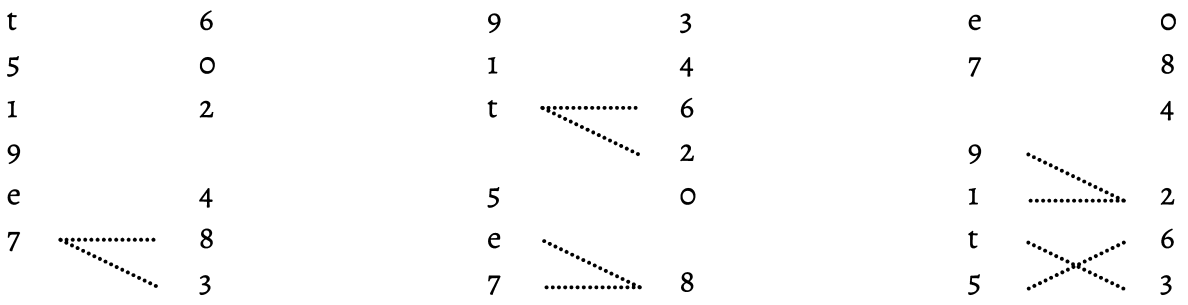
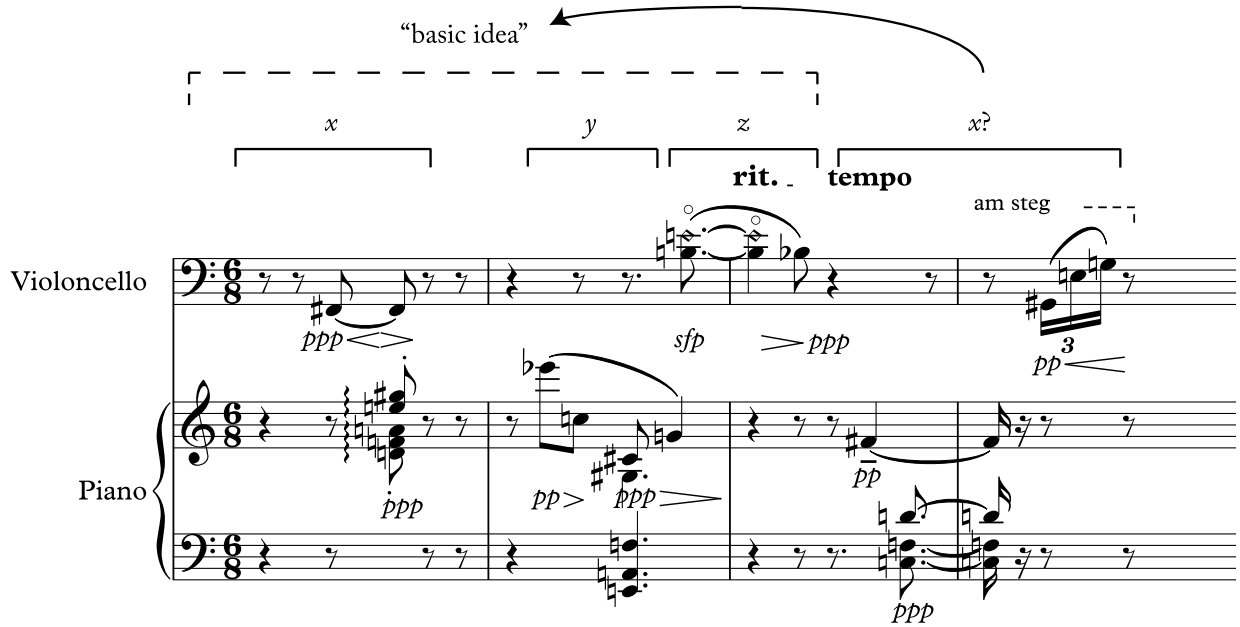
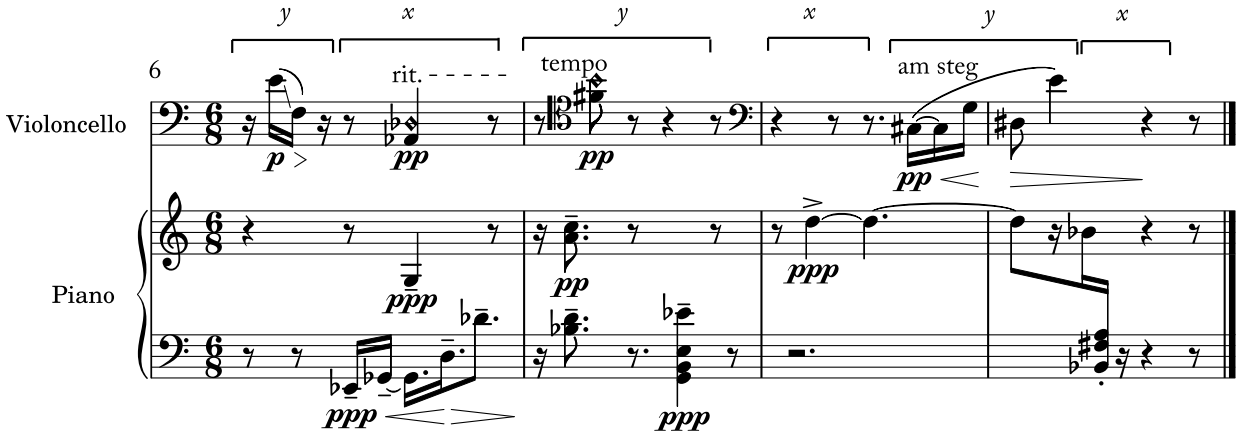


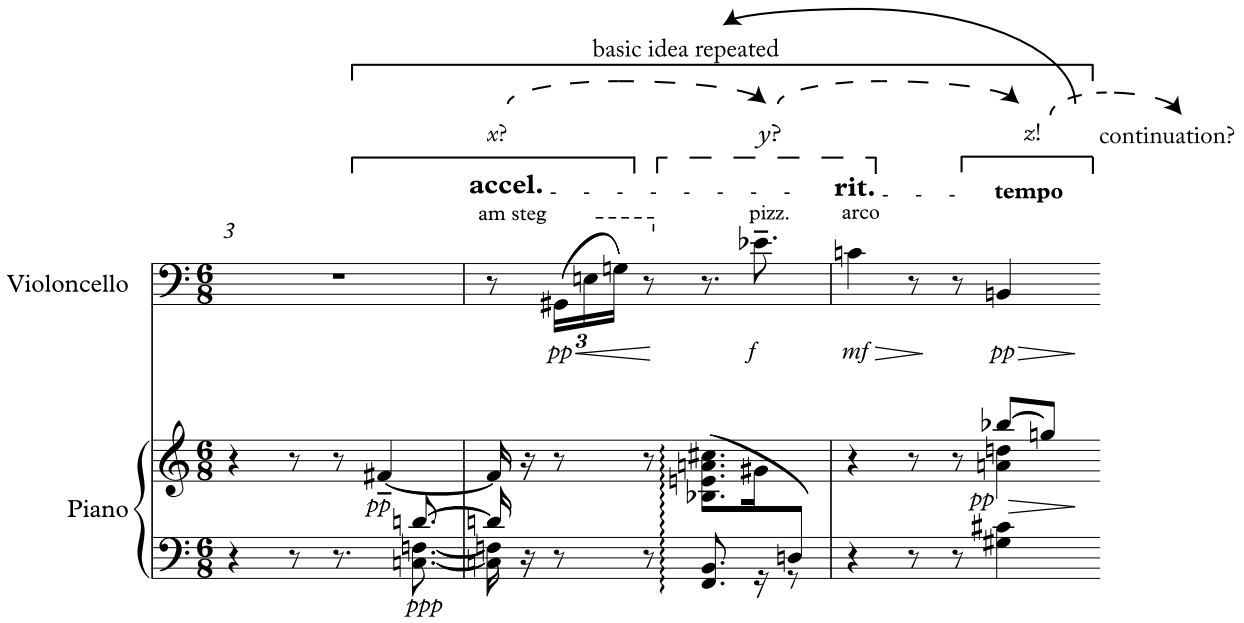
Figure 9. Dallapiccola, Dialoghi, *mm. 31–34: cross-partitions.*



Example 20. Webern, Op. 11, no. 1, mm. 1–4: the reiteration of motive x in mm. 3–4 confirms the cohesion of mm. 1–3 as a basic idea with three internal motives.



Example 21. Webern, Op. 11, no. 1, mm. 3–5: the entrance of a chunk resembling motive x in mm. 3–4 leads to a possible anticipation of motives y and z; upon realization, this provides retrospective confirmation that mm. 3–5 are a varied repetition of the basic idea.



Example 22. Webern, Op. 11, no. 1, mm. 6–9: the concluding two phrases summarize preceding events.

of previous iterations (Example 22). Next, the piano plays an ascending melody that begins with intervals 3 and 8, which appeared in the opposite order in the cello's rapid ascending line at the beginning of m. 4. The ascending gesture concludes with an ascending interval 11, mirroring the cello's descending motive at the beginning of m. 6. The piano's ascending melody, which is marked ritardando, thus acts as a fragment of the idea that opened both the basic idea and its repetition. Instead of a held note or chord followed by a rapid ascent, the ascent in m. 6 is elongated and occurs simultaneously with the held notes in the cello and the right hand of the piano. After a brief silence, m. 7 similarly elongates the descending gesture that first appeared in the cello in mm. 2–3. Measures 6–7 thus manipulate and fragment in various ways the ideas presented in the work's first five measures.

After another silence, we hear the sudden onset of a held note in the piano, perhaps referencing the work's first idea, before the cello enters with a melody, the contour of which features multiple changes in direction—this recalls the piano melody of m. 2. This version of the melody includes several crucial intervals from the movement: the diminished fifth that punctuated the second unit of the first phrase now starts this unit, and an ascending interval 13 (inverting the descending interval 13 that closed the first unit) ends it. Immediately following this melody there is a staccato descending gesture in the piano, with a double-octave between the highest and lowest notes. The descent in the piano completes the mirroring process between the opening three-measure phrase and this last two-measure unit, where each part of the first phrase is performed by the other instrument, the units overlapping to form a summary of preceding events.

The idea that a phrase in a post-tonal composition may possess a changeable function in relation to surrounding musical events asks us to consider a phrase as a topography or constellation of moments, events, or features that have the potential to cohere into a unit, or to disintegrate, separate, fragment, or form connections with other moments or other constellations. The theory of post-tonal phrase presented here urges us to think of phrases as (a) fundamentally relational, since musical events accrue function, and therefore meaning, only in relation to other events and contexts, and (b) constantly mutable, since the listener will reevaluate the meaning of these events in response to how the events unfold over the course of the piece. The elements that make up a post-tonal phrase are porous and admitting of shifts in meaning and function. The manner in which chunks of music relate to each other early in the piece affects not only how phrase formation is perceived throughout, but also the ways in which listeners interpret the changing functions within phrases and of phrases. Through this process, the phrase—being the most immediately accessible and graspable type of musical structure—can become an essential marker for larger-scale formal processes at work. The ways in which pieces teach us to listen to the form-functional relationships that make up phrases will necessarily inform and organize how we hear relationships that are more distant from one another in time. The exploration of listener expectations at

the phrase level is a crucial first step in understanding how these relationships are made manifest to listeners. Further work is needed to explore the implications of this theory for larger sections of music, and for music that does not hew as closely to the Western musical traditions of the eighteenth and nineteenth centuries.

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Rhyme, Metrical Tension, and Formal Ambiguity in Kendrick Lamar's Flow*

by Benjamin K. Wadsworth and Simon Needle

Abstract. The flow of Kendrick Lamar veers between old-school, metrically rigid and new-school, prose-like rhymes. Through manipulating rhymes within $\frac{4}{4}$ time, Lamar increases and decreases affective tension, suggests formal ambiguity, and highlights changes in point of view and literary topic. Although rhyme manipulations have been discussed by Kyle Adams (2009), Mitch Ohriner (2019a), and others as sources of formal contrasts, their effects on affective tension, relaxation, and formal functionality have been unspecified. In this essay, we propose a more comprehensive model of rhyme-based tension and relaxation, then apply it to questions of formal norms and ambiguities in Lamar's songs. Analyses of songs across Lamar's output demonstrate how changing degrees of metrical tension suggest comprehensible formal subsections within verses. Our methodology codifies previously unnamed formal categories, highlights formal similarities with pop-rock repertoires, reflects the aims of Lamar's conscious rap aesthetic, and illuminates Lamar's lyrics.

Keywords and phrases: Kendrick Lamar; hip-hop; flow; rhyme; tension; formal role; formal ambiguity; narrative.

Intro: Tension and Formal Ambiguity in Kendrick Lamar's Flow

Kendrick Lamar Duckworth is arguably the preeminent hip-hop artist of his generation and has cultivated a diverse and loyal fanbase (Coscarelli 2019). A native of Compton, California, with influences ranging from Tupac Shakur to Nas (Braboy 2019), Lamar is famous for four ground-breaking concept albums: *Section.80* (2011); *Good Kid, MAAD City* (2012); *To Pimp a Butterfly* (2015); and *DAMN.* (2017). In 2018, Lamar was the first musician outside of classical and jazz traditions to receive a Pulitzer Prize in Music.

Lamar's rapping is emotionally, culturally, and philosophically complex (Wang 2017). It is aligned with the "conscious rap" genre, which advocates for social change, educates its audience about social and political problems, and encourages personal growth.[1] Despite Lamar rapping "I don't give a f*** about politics in rap…," Lamar's songs do

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[1] Recent accounts of conscious rap include Adaso (2018) and JayQuan (2019). According to Lamarre (2017), Lamar admits (with some reluctance) to working within the "conscious rap" genre: in an interview with *Forbes*, Lamar says, "We all are conscious, whether you're doing gangsta rap, whether you're doing so called conscious rap, whether you doing whatever genre you may in because you have a post, you alive and you're telling your true feelings…these are your true thoughts and you're conscious of them, and you're aware of them" (Greenburg 2017).

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
18	Look-	in' a-	round	and	**all**	I	see	is a	big	crowd,	that's	pro-	duct	of	me	And they
19	**prob-**	ab-	ly	**re-**	la-	tives	**re-**	la-	vent	for	a	**re-**	bels	**dream**		**Yep,**
20		her	Pres-	i-	dent	is	black			She	black		too,	pur- ple	lab-	el

Example 1. Tense and relaxed rhymes in "A.D.H.D." (2011), mm. 18–20 (0:54–1:04).

not shy from political controversies (Kornhaber 2017; Woolf 2018) and have been used for activism: for instance, the single "Alright" (2015) has become an anthem of the Black Lives Matter movement. Lamar's music, however, never calls for militant action. And finally, Lamar's verses often address situations of inner-city, daily life while encouraging Black communities to celebrate their culture and heritage.

Lamar's technical mastery of flow (delivery) is multifaceted. Accordingly, this essay proposes three techniques that are salient in Lamar's flow: (1) the manipulation of rhymes, which subtly controls tension and relaxation (a listener's affective response to changes in rhyme pacing);[2] (2) the adjustment of such tension and relaxation techniques to suggest formal categories and ambiguities; and (3) the correlation of formal categories with the lyrics' points of view and literary topics.[3] Of these techniques, Lamar's control of affective tension through rhyme pacing has been noted by Martin Connor (2015). In general, we propose that a more rapid pacing of a rhyme is more tense (implying a faster level of a metrical hierarchy), whereas a slower one is more relaxed (implying a slower level). Lamar's rhyme manipulations result in different situations: some songs feature flexible, "new school" rhymes that evoke the 1990s, while others place rhymes in a rigid, "old school" style recalling the 1980s.[4] Thus, a single Lamar song may contain moments of extreme tension, relaxation, and their intermediate states.

Example 1 demonstrates how Lamar's subtle control of rhyme manipulates our intuitions of affective tension.[5] In this 3-measure excerpt from "A.D.H.D." (2011), slower, faster, then intermediate pacings of rhymes suggest a brief peak in tension. Like our other examples, this example depicts Lamar's flow within a lyric chart having 16 quantized beat classes (BC). Lyric charts are preferable to staff transcriptions for Lamar's songs since his rapping assumes norms of 16th notes and $\frac{4}{4}$ time.[6] Following Mitch Ohriner's practice (2019a, xxxvii–xxxviii), BC are ordered from 0 to 15, allowing us to calculate tension levels quickly and accurately.[7] Beats are expected on BC 0, 4, 8, and 12, all of which are congruent under modulo 4 arithmetic.[8] Members of the same rhyme are displayed using the same color; accented syllables are shown in bold or highlighted as yellow.

The peak of tension in Example 1 uses two rhyming techniques that foreshadow our coming methodology (Section 1). The first technique takes place in m. 19, which contains more rapidly paced rhymes than m. 18 does. The pacing of the "re-" rhymes in m. 19 involves quicker onset intervals of 3, then 5 positions, versus the slower interval of 8 positions in m. 18 ("see" and "me")—we call this phenomenon a difference in rhyme periodicity. The second technique involves the placement of rhymes: in m. 18 and 20, rhymes oc-

[2] Affective tension and relaxation vary upon an emotional dimension between low and high arousal. In the psychological literature on emotion, our notion of affective tension approximates the arousal dimension (vertical axis) in Russell's (1980) circumplex model, the other being the valence or pleasure dimension (horizontal axis). High arousal corresponds to emotions such as fear, surprise, and excitement, low arousal to boredom, sleepiness, and calmness. Recent overviews of psychological research on emotion in music include Eerola and Vuoskoski (2013), Juslin (2019), and Warrenburg (2020).

[3] For instance, a subsection of a verse with regular, stable rhymes (which we define later as a *rhyming block*) often maps onto a third-person point of view in the lyrics.

[4] Krims (2000, 49) distinguishes between "sung" (old-school) and "speech-effusive" (new school) flow styles.

[5] As white males, we acknowledge the delicacy of our position in reprinting and discussing speech within the Black community. We have therefore transcribed Lamar's language as is into our lyric charts but have shaded out sensitive or explicit terms in our text.

[6] Ohriner (2019a, 48–51) concludes that the 16th-note duration is the most common in a rap flow, thereby supporting the 16-position metrical space.

[7] Quantization is necessary if we want a detailed description of an artist's flow. Although some scholars avoid explicit quantizations in certain circumstances (e.g., Mattesich 2019, [7–8]), the resulting analyses lack detail on rhymes, metrical locations, and other raw data. Others (e.g., Connor 2015) pursue more finely grained rhythmic reductions that utilize many divisions of the beat, such as triplet sixteenths. Lamar, however, tends to use triplets only at moments of high tension, suggesting as a norm the 16-position space.

[8] By contrast, Adams (2009) uses the notation "1, 1x, 1y, 1z, 2, 2x, 2y, 2z,..." Although this approach clarifies the beats of the measure, we prefer integers from 0 to 15 for analytical data since we can quickly calculate beat-class distances (e.g., beat class 3 to 11 is 11 − 3 or 8 beat classes distant) and the tension level of a particular beat class (e.g., BC 2 is at an eighth-note level).

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0															Got	me
1	**breath-**	ing	with	**drag-**	ons	I'll	**crack**	the	**egg**	in	your	**bas-**	-ket	you	**bas-**	tard
2	I'm	**Mar-**	-ilyn	**Man-**	son	with	**mad-**	- ness,	Now	**just**	i-	**mag-**	-ine	the	**mag-**	-ic
3	I	**light**	to	**ass-**	-es,	Don't	**ask**	for	your	**fav-**	or-	-ite	**rap-**	-per		

Example 2. Initial chorus in "Rigamortis" (2011), mm. 0–3 (0:37–0:45).

Stage 1→	Stage 2→	Stage 3→	Stage 4→	Stage 5 (GOAL)
Rhyme Manipulation	Tension/Relaxation	Formal Roles	Formal Ambiguity	Formal Mentalities
Rhyme Placement Rhyme Periodicity Rhyme Prevalence	Relaxation slow manipulation	Relaxed: Chorus, Verse (Onset), Rhyming Block, Parenthetical Chorus	Formal blends Weak unit differentiation Unit overlap Ambiguity of level	Point of view Literary topics (boasts, disses, problem of song)
	Tension fast manipulation	Tense, Hybrid, Non-Flow: Excursion, Crisis, Intro		

Figure 1. Methodology linking rhyme manipulation with formal mentalities.

cur on the "ands" of beats 2, 4, and 3, a more stable metrical placement, whereas two of m. 19's "re-" rhymes are on the 16th-note BC 3 and 11, a more rapid and unstable metrical level. We call this technique rhyme placement.

Example 2 similarly demonstrates how Lamar's manipulation of tension and relaxation suggests formal ambiguities (Section 2). To a listener, the chorus from Lamar's "Rigamortis" (2011) is indicated definitively by its three occurrences in the song. However, this brief, 3-measure chorus has irregular and rapid rhyme locations that contradict our expectations for a memorable, repetitious chorus.[9] Therefore, this excerpt blends situational aspects of a chorus with internal aspects of a new formal category we call *excursion* (for now, a subsection type with a high level of affective tension and little internal repetition). Furthermore, Example 2's excursion aspect maps onto an imaginary perspective: references to fantasy subjects such as dragons and magic pose Lamar as an otherworldly rapper. This mapping of formal categories onto lyrics (and vice versa) may result in changes of viewpoint (Section 3).

Examples 1 and 2 offer informal support to our claims that Lamar's manipulation of rhymes controls affective tension, suggests formal categories and ambiguities, and maps formal categories onto lyrics. To date, however, the precise linkages between these concepts remain unexplored. Figure 1 demonstrates our methodology, which subdivides the link between rhymes and formal ambiguity into five discrete stages: from stage 1 to 2, rhyme manipulation lowers and raises metrical tension through fast and slow rhyme pacing (to be defined shortly); from 2 to 3, affective tension and relaxation (resulting from rhyme pacing) interact with other parameters to suggest normative formal categories (hereafter called roles following de Clercq 2012; 2017);[10] from 3 to 4, the formal roles are occasionally manipulated to produce formal ambiguities; and in 5, the formal roles and ambiguities map onto lyrics to suggest formal mentalities, each of which associates a formal role with a point of view or literary topic. These five stages comprise our theoretical and analytical pathway into Lamar's distinctive flow style.

This essay, following Figure 1, asks three theoretical questions: (1) how do rhyme manipulations suggest states of tension and relaxation; (2) do Lamar's songs contain formal roles analogous to their counterparts in pop and rock genres; and (3) which mechanisms underlie formal ambiguity in Lamar's songs? For these questions, we examine a corpus of 80 songs from Lamar's 2010 mixtape and four studio albums.[11] We then demonstrate the benefit of

[9] Criteria of chorus function in pop and rock genres are discussed by de Clercq 2012 (114) and explored later in the current essay regarding Lamar's practice.

[10] As seen later, this essay considers formal roles to be relaxed, tense, hybrid, or outside a flow. With respect to form, relaxed and tense roles in Lamar are analogous to loose-knit and tight-knit themes in classical music (Caplin 1998, 84), and tense roles to metrically dissonant formal functions in rock (Biamonte 2014, Example 9).

[11] This corpus starts with the *Overly Dedicated* mixtape (2010) since it shows Lamar's first command of point of view and voices (Reeves 2017). Lamar's four solo albums are all concept albums whose reception has increased, successively, in acclaim. Lamar's compila-

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Metrical State
1		ah	ah				Fuck		that				eight		doo-	bies	8
2	to	the	face				Fuck		that				twelve		bot-	tles	(2) + 8
3	in	the	case		nig-	ga,	fuck		that		Two		pills		and	a	(2) + 8
4	half		wait		nig-	ga	fuck		that		Got	a	high		tol-	er-	(2) + 8
5	ance		when	your	age		don't	ex-	ist		Man,	I	swear	my	nig-	ga	(0) + 8
6	trip-	pin'	off	that	shit	a-	gain		Pick	him	up	then I	set	him	in		(0) + 4 + (8) + 12
7	Cold		wat-	er,	then	I	or-	der	some-	one - to	bring	him	Vi-	co-	din		(2) + (6) + 12
8	Hope	to	take	the	pain	a-	way	from - the	feel-	ing	that	he	feel	to-	day	You	(4 + 8) + 12
9	know	when - you	part	of	sec-	tion	eigh-	ty - you	feel	like	no	one	can	re-	late	'Cause	(4 + 8) + 12

Example 3. Rhymes and metrical locations in "A.D.H.D." (2011), mm. 1–9 (0:13–0:41).

our analytical toolkit in full-length analyses of "R.O.T.C. (Interlude)" from Lamar's 2010 mixtape *Overly Dedicated* and "King Kunta" from his 2015 album *To Pimp a Butterfly*.

1. Rhyme and its Metrical Implications

Our methodology depends upon a careful definition of rhyme and consideration of its impact upon musical meter. Phonologically, rhyme is any correlation between at least two strings of semantic units (Brogan and Cushman 2012); in this essay, we call each string of semantic units a rhyme segment and the totality of all correlated segments a rhyme chain. Although rhymes that preserve the same rhyme class (Ohriner 2019, 15) are straightforward in analysis,[12] we allow inexact, slant rhymes ("crate" and "braid"), multi-syllabic rhymes ("set him in" and "Vicodin"), alliterations ("burning" and "bright"), and other, less familiar types.[13] For instance, the rhyme "f*** that" in mm. 1–4 of Example 3 is an identical rhyme; BC 2 in mm. 2–4 creates an assonant effect through "face, "case," and "wait"; and "tolerance" and "don't exist" (mm. 4–5) preserve the same number of syllables and use similar middle vowels ("er-" and "ex-").

How might rhymes imply metrical structures? A rhyme segment can be reduced to a focal BC at its most prominent accent's location, and rhyme segments tend to be metrically parallel (Lerdahl and Jackendoff [1983] 1996, 75). In Lamar's songs, these accents may be phenomenal (e.g., louder or longer events), metrical (occurring on beats), or structural (at the ends of grammatical units).[14] In Example 3, for instance, "toler**ance**" and "don't ex**ist**" (mm. 4–5) have accents at BCs 0 and 8 (in bold). These accents are metrical since they occur on beats 1 and 3, phenomenal since Lamar's delivery descends to them in pitch height, and grammatical because "-ist" ends a sentence.

Note, however, that different metrical structures can be implied by the rhymes and backing track. The focal BCs in rhyme segments are often separated by periodic intervals—a property of meter. As more segments align, they create a rhyme chain. A longer, more regular rhyme chain will more easily convey a meter, while shorter chains may be heard as surface syncopations to the $\frac{4}{4}$ beat track. Therefore, the affective tension in Lamar's flow is also metrical tension.

To enable a large-scale analysis of tension, we analyze accents (as rhymes) hierarchically by distinguishing between primary and secondary rhymes. In its right-most column, Example 3 shows metrical locations of rhymes: primary rhymes are unenclosed whereas secondary ones are within parentheses. Primary rhymes are more prevalent,

tion album *Untitled Unmastered* (2016) has been excluded since its songs were demos recorded in the process of producing *Butterfly* (2015); Lamar's 14 songs from *Black Panther* (2018) have also been excluded since they arose in response to the film's story line. More details of our corpus may be found at our website (https://sites.google.com/view/wadsworthneedlerapanalysis/home), which surveys formal analyses on the crowd-sourced website Genius.com, both in a large-scale distribution of all formal roles (Part A) and a more granular distribution of roles within each song (Part B).

[12] A rhyme class preserves the middle vowel and final consonant of words such as "part" and "heart."

[13] For a similarly expansive view of rhyme, see Komaniecki (2019, Chapter 3). Even more rhyme types are discussed by Brogan and Cushman (2012, 1185) and are applied in the coming analyses: assonance (only the medial verb is retained); reverse rhyme (initial consonant and medial vowel); frame rhyme (initial and final consonants); and identical rhyme (all three retained).

[14] Phenomenal accents are defined in classical music by Lerdahl and Jackendoff ([1983] 1996) as arising from "attack-points of pitch events, local stresses such as sforzandi, sudden changes in dynamics or timbre, long notes, leaps to relatively high or low notes, harmonic changes, and so forth" (17).

a) Derivative vs. generative (Mattesich 2019)

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
18	Look	in- a-	round	and	**all**	I	see (OFF)	is- a	big	crowd	that's	pro-	duct	of	me (OFF)	And they
19	**prob-**	ab-	ly (OFF)	**re- (OFF)**	la-	tives	**re- (OFF)**	la-	vent	for	a	**re- (OFF)**	bels	dream (OFF)		**Yep**
20		Her	**Pres-**	i-	dent	is	**black (OFF)**			She	**black (OFF)**		too	pur- ple	lab-	el

b) Inter-rhyme intervals (Ohriner 2019a)

"ee" rhyme class: see→IRI 7→me→IRI 4→ly→IRI 11→dream
"re-" rhyme: relatives→IRI 3→relevant→IRI 5→rebels
"black" rhyme: black→IRI 4→black

c) Rhyme Regularity (Komaniecki 2019)

BC 12 rhymes: 0%
BC 6 rhymes: 100%

Example 4. a–c. Previous approaches to rhyme manipulation.

regular, and strongly accented, whereas secondary ones are more intermittent and less strongly accented.[15] So even though m. 6 contains two rhyme chains, one at BCs 0 and 8, the other at BCs 4 and 12, we hear BCs 4 and 12 as aligning with an implied backbeat and more prevalent within mm. 6–9 than BCs 0 and 8.

2. A Closer Look at Metrical Tension in Lamar

Before examining the link between rhyme and tension, our choice of the terms "metrical tension" and "relaxation" over the better-known "metrical consonance and dissonance" (Krebs 1999; Biamonte 2014) requires comment. Following Connor (2015), tension and relaxation are more visceral concepts that are readily understood by fans of the genre. And second, "consonance" and "dissonance" invoke a Eurocentric tradition that we aim to avoid.

Previous approaches to rhyme manipulation have characterized formal similarities and contrasts but have not linked rhyme manipulations with degrees of metrical tension. We therefore critique these previous approaches' explanations of tension, then extend them to predict affective tension across Lamar's output. The three approaches, each demonstrated in Example 4a–c, include Mattesich's (2019, [2]) derivative versus generative model, Ohriner's (2019a) inter-rhyme intervals (IRIs), and Komaniecki's (2019) rhyme regularity. None of these approaches explains the subtle peak of tension in m. 19 of Example 4 (previously discussed in Example 1). In Mattesich's work, a derivative flow relies on the metrical backing track, and aligns rhymed syllables with the beats, whereas a generative flow is one independent of the beat.[16] In Example 4a, however, Mattesich's approach does not distinguish tension levels since all rhymes are off-beat (denoted OFF). Next, Example 4b shows inter-rhyme intervals (IRIs) between all corresponding rhymed syllables, following Ohriner (2019a, 19).[17] Example 4b separates out the three different rhymes and describes the IRIs for each, but does not draw conclusions as to tension levels. And lastly, Komaniecki's rhyme regularity (Komaniecki 2019, 75) calculates the likelihood that a contextually determined BC, typically BC 12, will have some end-rhyme (Example 4c). However, in Example 4c no rhymes occur on BC 12, thereby resulting in a 0% regularity; but if we change the metrical reference point to BC 6, we get a 100% regularity. Regardless, Komaniecki's measure requires the analyst's intervention and does not explain the peak of tension in m. 19. In summary, none of these approaches explain Example 4's peak of tension. In search of a more comprehensive model of rhyme-based metrical tension, we lay out three new measurements.

[15] Hierarchical analytical methods can promote exclusionary sociological agendas (e.g., Schenker's late theory of structural levels); the primary/secondary rhyme distinction is intended here to facilitate long-range readings of metrical tension in Lamar's songs.

[16] See also Adams (2009, [8]), Ohriner (2019a, 19–23), and Komaniecki (2019, 75–83). Ohriner (2019b, [3.1]) has speculated whether the onbeat/offbeat distinction is analogous to "consonant versus dissonant" rapping.

[17] Adams (2009, [8]) and Ohriner (2019a, 16–18) also note the technique of increasing or decreasing the number of syllables per measure, and Komaniecki (2019, 75–83) focuses this on rhymed syllables. This is addressed in our second technique, rhyme periodicity.

Beats	"one"				"two"				"three"				"four"			
whole	.															
half	.								.							
quarter	.				.				.				.			
8th	.		.		.		.		.		.		.		.	
16th	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Beat Classes	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Figure 2. Lerdahl and Jackendoff's Attack-Point Hierarchy as a Model of Metrical Tension.

Beats	"one"				"two"				"three"				"four"			
whole													.			
half					.								.			
quarters	.				.				.				.			
8ths	.		.		.		.		.		.		.		.	
16ths	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Beat Classes	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Figure 3. Attack-point model adapted to Lamar's songs.

2.1 Technique 1: Rhyme Placement

In our threefold tension model, each measurement of rhyme manipulation—*rhyme placement*, *rhyme periodicity*, and *rhyme prevalence*—captures a change in pace. Faster pacing correlates with intuitions such as increasing tension, complexity, expressivity, amusement, surprise, and happiness: studies in music perception show that faster note values and tempi are rated as more tense than the reverse (Fernández-Sotos, Fernández-Caballero, and Latorre 2016). Likewise, syncopations are rated as more tense than on-beats, although this has not been shown to the point of statistical significance (Keller and Schubert 2011).[18]

If faster pacing is the basic mechanism behind increasing tension, how might BC position influence tension? In contrast with Mattesich's (2019) limited onbeat/offbeat focus, we adapt Lerdahl and Jackendoff's attack-point model of meter ([1983] 1996, 18) into a more exhaustive model of affective tension. Consider the assumptions of Lerdahl and Jackendoff's model, as seen in Figure 2. This model views all metrical events as attack points, not as durations; it ranks some BCs as stronger accents (the higher stacks) and others as weaker (the lower stacks), and it assumes that beats on a level are evenly spaced (97).

Lerdahl and Jackendoff's framework in Figure 2 may be interpreted as a model of metrical tension for classical music by associating each BC with a metrical and tension level. Events on BCs linked to faster levels (toward the bottom) are more tense, while those linked to slower levels (toward the top) are more relaxed. Thus, BC 0 (whole note/red) is least tense since its topmost level is the slowest; BC 8 (half note/orange) is next-most tense; then BC 4 and 12 (quarters, yellow), BC 2, 6, 10, and 14 (eighths), and BC 1, 3, 5, 7, etc. up to 15 (sixteenths) are increasingly tense. Scanning Figure 2 from high to low, note that each more rapid level is more complex as the density of events per formal unit increases.

Because, following hip-hop conventions, rhymes most often occur around beat four, to adapt Lerdahl and Jackendoff's attack-point model to Lamar's manipulation of rhymes, we shift the most relaxed BC to 12 (Figure 3).[19] As a result, since beats are evenly spaced the metrical hierarchy has BC 12 (red) as most relaxed, followed by BC 4 (or-

[18] Fernández-Sotos, Fernández-Caballero, and Latorre (2016) found significant increases in tension when tempo increased from 90 to 150 bpm, and when note values accelerated from quarters to sixteenths. Keller and Schubert (2011) found that unsyncopated melodies followed by syncopated melodies yielded significant increases in happiness, but insignificant increases in tension; they surmised that this unexpected result might be due to the limited degree of syncopation used in their melodies (the eighth note being the fastest value).

[19] BC 11 and 14, which approximate BC 12, have reportedly high frequency values (about 14% and 8%, respectively) in Condit-Schulz (2016, 139).

ange), then 0 and 8 (yellow), etc. This preference for a referential BC 12 is supported by various lines of evidence: first, phrases often end late in the measure around beat 4, giving it a cadential quality (Adams 2009, [4]); second, rhymed syllables occur more frequently on later beats of the measure, increasing from beat 1 to 2, 2 to 3, and 3 to 4 in a roughly linear fashion (Condit-Schulz 2016, 139);[20] and third, the most relaxed BCs (12 then 4) are supported by the expected backbeat (or acoustic snare drum) of the "boom-bap" bass.[21] Despite aligning with the expected kick drum of the beat track, we consider BC 0 and 8 as less relaxed since emcees tend to establish their lyrics in opposition to such beats, a situation comparable to rock fans clapping (or jazz fans snapping fingers) on beats 2 and 4.[22] We thus distinguish five different metrical levels, thereby increasing the resolution of Mattesich's (2019) two-state approach.[23] Returning to Example 1, we may now explain the peak of tension in "A.D.H.D." (mm. 18–20): the music moves from eighth-note BCs (e.g., 6 and 14) to 16th-note ones (3 and 11), and then back to eighth-note ones (6 and 10), demonstrating a contour of relaxation–tension–relaxation.

2.2 Technique 2: Periodicity of Rhymes

Our second measurement of tension correlates faster periodicities of rhyme segments with tension and slower ones with relaxation. Increasing tension in this regard also increases complexity since more rapid rhymes imply their increased density. We describe each level of tension as a duration in musical notation, with benchmark values of whole, half, quarter, and eighth notes being ordered from relaxed to tense—this is also true for irregular durations.[24] We can now enable Ohriner's IRIs to specify levels of tension. Reinforcing our previous remarks on Example 1 (mm. 18–20 from "A.D.H.D."), this measurement shows an increase in tension: half-note periodicities (m. 18); irregular periodicities including 3/dotted eighth and 5/quarter-plus-16th (m. 19); and then a quarter-note periodicity (m. 20).

2.3 Technique 3: Prevalence of Rhymes

Our third and final measurement of tension, prevalence, counts the number of rhyme segments in a rhyme chain and tracks their periodicities. This measurement enables us to distinguish between formal sections that imbue a particular BC with a focal quality, thereby resulting in metrical entrainment, versus those that flit between different BCs and do not result in metrical entrainment. This measurement is expressed either as a quantity (e.g., "4") times a single, recurring periodicity (e.g., "8 BC") or as a quantity (again "4") times a series of periodicities (e.g., "8, 3, 5"); we interpret the former as focal and relaxed, the latter as irregular, non-focal, and tense. In Example 1 the rhyme "ee" in mm. 18–19 is labeled "4" since it occurs four times; the periodicities between adjacent segments are 8, 4, and 11 BC. Thus, this rhyme chain's prevalence would be "4 x (8, 4, 11)," a non-focal, tense result. Rhyme prevalence predicts two things: (1) as the number of rhyme segments increases, complexity (thus tension) decreases; and (2) as the number of differing periodicities in a chain increases, complexity (thus tension) increases. Whereas Komaniecki's rhyme regularity (2019, 75) calculates the percentage of a particular BC containing a rhyme (usually BC 12), our prevalence method enables the analysis of more situations. In Example 3, rhyme prevalence shows relaxation in mm. 1–4 with "f*** that," since its calculation is "4 x (16)," showing multiple occurrences of the rhyme with a singular periodicity, whereas Komaniecki's calculation (assuming BC 12 as contextually stable) yields a 0% result.

Our three measurements of metrical tension enable the analysis of tension and relaxation on any formal level in Lamar's songs. We can then correlate measurements of metrical tension in the flow with techniques such as syllable density, vocal articulation, lyrics, and supporting vocals, thereby allowing us to define normative formal roles and ambiguous formal blends. Accordingly, we next investigate normative formal roles such as verses and choruses in Lamar's songs, drawing on de Clercq's (2012) research on formal prototypes.

3. Normative Formal Roles in Lamar's Songs

In Lamar's songs, formal roles can be explained advantageously as modifications of formal roles in pop and rock.[25] These modifications are necessitated by the ter-

[20] Note that Condit-Schulz's sample of rap lyrics is derived from verses (not choruses), resulting in findings that align with our formal function of a *rhyming block* (a normative subsection of a verse, to be defined shortly).

[21] Adams (2020, [1.7–1.17]), however, views a phrase as activated by disrupted listener expectations and requiring directed motion.

[22] In fact, during "R.O.T.C. (Interlude)" (2011), Lamar's lyrics link beat 4 with BC 12: "I'm not just rhyming on the beat…" (Example 7b, m. 7).

[23] Two caveats: first, if a regular pattern of rhymes and accents does not fit the attack-point model, the analyst should consider patterns of unequally spaced accents or beats following Ohriner's (2019a, 72–75) model of vocal groove; and second, if an attack approximates a beat—e.g., a persistent BC 3 that sounds like an offbeat BC 4 or beat 2—then one should consider the possibility (based on context) that it approximates an onbeat event.

[24] We have not found 16th-note rhyme periodicities in Lamar's songs.

[25] How much formal terminology from pop and rock genres is appropriate in Lamar's songs? While this question is outside our cen-

minological overlap between hip-hop and pop-rock traditions, seen in their shared labels of verse and chorus.[26] Among recent studies of form in rock music (Summach 2012, de Clercq 2012, Ensign 2015), we draw upon de Clercq's theory of formal roles for its ability to explain mechanisms behind formal ambiguity. A role (de Clercq 2012, 34) is a formal category (e.g., chorus, verse, bridge) organized around a most typical member, or prototype: just as some members of a category are more representative of said category than others, so too are certain formal features more typical of some formal roles than others. For example, just as a robin is more representative of the "bird" category than a penguin, musical "bridges" are more likely to introduce new chord progressions than "verses." We define a normative role as a pattern of behaviors that occur across a range of examples, recall a role in pop-rock music, and contrast with other roles. Take the chorus: it occurs frequently in Lamar's music, has been analyzed previously in pop-rock songs, and contrasts with roles such as verses and intros. An ambiguous formal situation, as modeled by a blend (hybrid), instead combines behaviors of opposing formal roles (e.g., verse and chorus) and occurs within a narrower range of examples.

To define a formal role in Lamar's music as a modification of a pop-rock analogue, we align the criteria of the two analogous roles to highlight Lamar's distinctive practices, show how Lamar's modifications are informed by the genres of hip hop and conscious rap, and demonstrate Lamar's modified role in multiple songs. Since rhyme manipulations are salient in Lamar's flow, we classify his roles into categories based on their states of tension and relaxation.[27] These categories are relaxed, tense, hybrid (i.e., tense and relaxed simultaneously), and non-flow (unmeasured or instrumental). Figure 4 summarizes our normative (recurring) roles, noting each role's name, degree of tension or relaxation, expected formal location, expected formal level, contrasting roles, and distinctive aspects. Since hip-hop artists discuss their songs as containing verses and choruses (Edwards 2009, 185–197), our section-level roles include choruses and verses (but not other pop-rock roles such as a bridge); to these, we have added the intro role given its presence in many of Lamar's songs (59 out of 80, or 74%);[28] and we have added roles at section and subsection levels that reflect fluctuations in tension and relaxation in Lamar's verses. In Figure 4, from top to bottom there are two well-known, relaxed roles of chorus and verse (the latter focused on a verse's onset), two new subsection-level roles called *rhyming block* and *parenthetical chorus*, a tense role on both levels called *excursion*, a hybrid role called *crisis*, and the well-known section-level role of *intro*.

In Lamar's practice, section and subsection levels are more ambiguous than in pop and rock, thereby resulting in ambiguous roles (as shown shortly). Sections may differ widely in length, with 16 or more measures in a verse but 4 to 8 measures in a chorus (Edwards 2009, 188–193); subsections tend to last between 2 and 8 measures and often overlap to prevent the breakup of a verse into sections. Rhyming blocks and parenthetical choruses closely resemble section-level verses and choruses, thereby telescoping the formal patterns of verse-chorus and chorus-verse songs within verses.[29]

To suggest variety and engage the listener, the technique of *stretching* breaks down a verse (particularly a long one) into a succession of subsection-level formal roles. It is particularly appropriate to story-telling rap, in which verses may comprise most, if not all, of a song (Edwards 2009, 194–195). Within a verse, the most normative role is the rhyming block, which is its baseline expectation; after this, other normative roles include excursion, crisis, and parenthetical chorus. As shown in Figure 5, instances of stretching include two temporal arrangements: (paradigm 1) a symmetrical scheme of rhyming block–excursion–rhyming block; or (paradigm 2) a goal-directed scheme of rhyming block–excursion–crisis. At any point, a parenthetical chorus may be inserted for additional variety. For instance, in the bottom three rows of Figure 5, verse 1 from "A.D.H.D." flexibly adheres to either of these paradigms. It contains two rhyming blocks in mm. 6–9 and 12–17 that are separated by a parenthetical chorus in mm. 10–11; an excursion occurs in mm. 18–21 and ends the verse; no final rhyming block or crisis is present.

We turn next to the seven normative roles, their derivation from pop-rock analogues, Lamar's adaptations of them within hip-hop and conscious rap genres, and

tral purview, we speculate that their forms exist on a continuum from *authentic* to *commercial* extremes. The authentic extreme highlights storytelling and an emcee's lyrical prowess: it is dominated by verses, choruses, intros, and outros. The commercial extreme instead approximates contemporary pop and rock practice, containing not just verses, choruses, intros and outros, but also more repetitious and memorable roles such as bridges, prechoruses, hooks, and refrains. For instance, we found that Lamar's 14 singles had 11 songs with choruses and 3 without, showing a commercial preference.

[26] Instances of writers on hip hop invoking formal functions from pop and rock traditions include the website Genius.com (as evidence of fan response), Edwards (2009, 185–197), Berry (2018, 3), and Komaniecki (2019, 1).

[27] For concerns of brevity, we do not address the reverse question, explored in Adams (2008): how does the beat track inspire a rapper's flow?

[28] While the outro role is also frequent in Lamar's songs (59/80, or 74%), for brevity we do not address it in this essay.

[29] For instance, a *verse/excursion* blend (to be described shortly) has a verse role on the section level and an excursion role borrowed from the subsection level.

Name	Expected Tension Degree	Expected Location	Expected Level	Contrasting Roles	Distinctive Aspects
Relaxed Roles					
Chorus	Relaxed + offset	Multiple locations	Section	Verse, Excursion, Intro	sung section repeated later in song; internally repetitious; aligns relaxed rhymes with beat track
Verse Onset	Relaxed	Multiple locations	Section	Chorus, Excursion, Crisis	one-off, rapped section having little internal repetition; has relaxed rhymes contrary to the beat track; tells 3rd-person story with measure-long sentences
Rhyming Block	Relaxed	Beginning, end of verse	Subsection	Parenthetical Chorus, Excursion, Crisis	rhymes with a common BC focus (BC 12, 4 and 12, 8, etc.); otherwise, identical to verse onset
Parenthetical Chorus	Relaxed + offset	Between other subsections of verse or at end of verse before chorus	Subsection	Rhyming Block, Excursion, Crisis	one-off, repetitious, short chorus-like subsection, often couplet length
Tense Roles					
Excursion	Tense	Middle–2/3rds through verse or song	Subsection or Section	Rhyming Block, Verse Onset, Chorus	little internal repetition; one-off unit; tense, less regular rhyme placement and periodicities; lower prevalence than in rhyming block; improvisatory feel; quickly changing topics in lyrics; 3rd-person story
Hybrid Roles					
Crisis	Relaxed and tense	End of verse or song	Subsection or Section	Rhyming Block, Excursion, Verse Onset	relaxed rhyme placement contrary to beat track; increase in density of rhymes or syllables; memorable names; violent situation
Non-Flow Roles					
Intro	N/A	Beginning of song	Section	Main section roles	either 1) relatively short section with instrumental samples; 2) unmeasured, introductory speech (e.g., skit); or 3) isolated bursts of measured or unmeasured lyrics with samples

Figure 4. Recurring roles in Lamar's songs.

typical examples. These roles include chorus, verse onset, rhyming block, parenthetical chorus, excursion, crisis, and intro.

3.1 Chorus

As shown in Example 5a, although a pop-rock chorus tends to have a focal quality, as suggested by memorable lyrics, dense textures, and a sense of arrival, Lamar repurposes the role as a provocative diss, critique, or boast having variable loudness. Lamar's disses, critiques, and boasts show influences from both the hip-hop genre, which focuses on personal rivalries, and the conscious rap genre, which seeks to critique listeners' unexamined biases. As seen in the right column (bold), Lamar typically aligns rhymes with the beat track (favoring BCs 0 and 8), evenly spaces them, uses highly prevalent rhymes, uses first- and second-person points of view, and sings more often than raps.[30] Otherwise, Lamar follows chorus conventions from pop-rock music such as background vocals, repetition later in a song, a shorter length compared to a verse, and high internal repetition. Lamar's choruses may or may not include hooks.[31] In Lamar's rhyme placement, the offset BCs 0 and 8 are most common, whether in isolation or embedded within other equally spaced schemes (e.g., BCs 0, 4, 8, and 12); BCs 4 and 12 on their own are less common but still occur. "A.D.H.D.'s" chorus is prototypical (Example 5b). As shown in Example 5b's lyric chart, the primary rhymes in "A.D.H.D.'s" chorus are on "that" in BC 8 (red), thereby aligning with the beat track. The rhyme periodicity is a whole note with one disruption on BC 2 (secondary

[30] Following de Clercq (2012; 2017), we do not assign different hierarchical weights to each aspect of a role, a task calling instead for a computational approach.

[31] We found that only 43.8% of Lamar's songs from the studio albums and *Overly Dedicated* include their titles in the chorus.

	Beginning			Middle	End
Paradigm (1)	Rhyming block			Excursion	Rhyming block
Paradigm (2)	Rhyming block			Excursion	Crisis
"A.D.H.D." Verse 1	Rhyming block	Parenthetical chorus	Rhyming block	Excursion	
Measures	6–9 (0:15–0:30)	10–11 (0:30–0:36)	12–17 (0:36–0:54)	18–21 (0:54–1:00)	
Narrative	Friend's drug addiction	Loneliness behind addiction	Other addictions (e.g., technology)	Meets woman with ADHD	

Figure 5. Instances of role successions in Lamar's verses.

Pop-Rock Chorus Role (de Clercq 2012, 114)	Lamar's Chorus Role
• Highest focal quality • Contrasts with verse • Musical material basically same upon repetition • Sense of arrival • Shorter than verse • Loudest, thickest texture • High internal repetition • General message • Memorable, includes title • Short melodic units • Emphasizes ^1 in melody, tonal closure, Tonic, Ionian mode	• **Rhymes tend to align with beat track (favoring BC 0 and 8 over 4 and 12)** • **Evenly spaced rhymes favored** • **High rhyme prevalence** • **Diss, critique, or boast** • **First- and second-person point of view** • **Variable loudness** • **Sung (1st default) or rapped (2nd default)** • Background vocals • Repeats later in song • Shorter than a verse • High internal repetition

Example 5a. Characteristic features of the chorus role.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Metrical State
1		ah	ah				Fuck		that				eight		doo-	bies	8
2	to	the	face				fuck		that				twelve		bot-	tles	(2) + 8
3	in	the	case		nig-	ga	fuck		that		Two		pills		and	a	(2) + 8
4	half		wait		nig-	ga	fuck		that		Got	a	high		tol-	er-	(2) + 8
5	ance		when	your	age		don't	ex-	ist		Man,	I	swear	my	nig-	ga	(0) + 8

Example 5b. Prototypical chorus in "A.D.H.D." (2011), mm. 1–5 (0:13–0:28).

rhyme, orange). The rhyme prevalence is a relaxed, focal 4 x (16). Lyrics criticize drug culture and take a second-person point of view. This iteration of the chorus in "A.D.H.D." is rapped at a low intensity relative to the rest of the song; likewise, its beat track is dynamically softer than in later sections (percussion only entering at 0:59). And lastly, its musical material appears three times in the song.[32, 33]

3.2 VERSE ONSET

As shown at the top of Example 6a, the onsets of Lamar's verses typically are rapped. Different rhymes are more unevenly spaced than in a chorus, highly prevalent and regular in periodicity within each rhyme chain, and usually not aligned with the beat track, thus favoring BCs 4 and 12. The verse role is the narrative center in Lamar's songs, just as other hip-hop artists have confirmed in interviews (Edwards 2009, 193). Otherwise, Lamar's verses align with pop-rock norms: they take the perspective of a background, third-person story and have longer, more speech-like sentences than choruses.[34] As shown in Example 6b's lyric chart, many aspects of Lamar's verse role are present.

[32] Notice the last 6 BCs are shown in a neutral gray color since they are external to the chorus role, a practice we continue in this essay.
[33] Other prototypical instances of the chorus role in Lamar's songs include "F*** Your Ethnicity" (*Section.80*) and "Swimming Pools (Drank)" (*Good Kid*). The former example (0:55–1:03) has equally spaced rhymes as well as primary rhymes on BC 4 and 12; the latter (0:52–1:17) has equally spaced rhymes plus primary rhymes on BC 8.

[34] Lamar's verses can have focal aspects: we found 16.3% of his songs from studio albums and the *Overly Dedicated* mixtape had song titles in a verse.

Verse Role (de Clercq 2012, 114–115)	Lamar's Verse Onset Role
• Low focal quality • Main section role • Unmemorable • Musical material repeats • 8–16 bars long • First vocal material • Develops a story	• **Rhymes do not usually align with beat track (BC 4 and 12 favored)** • **More unevenly spaced rhymes than in chorus** • **High rhyme prevalence, regular periodicities** • **Rapped** • Measure-long sentences • Lack of internal repetition • Third-person point of view, story • Main section role • Longer than chorus

Example 6a. Characteristic features of the verse onset role.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Metrical State
5	**ence**		when	your	**age**		don't	ex-	**ist**		Man	I	**swear**	my	nig-	ga	(0) + 8
6	**trip-**	pin'	off	that	**shit**	a-	gain		**Pick**	him	up	then I	**set**	him	in		(0) + 4 + (8) + 12
7	**Cold**		**wat-**	er	**then**	I	**or-**	der	**some-**	one - to	bring	him	**Vi-**	co-	din		(2) + (6) + 12
8	**Hope**	to	take	the	**pain**	a-	way	from - the	**feel-**	ing	that	he	**feel**	to-	day	you	(4 + 8) + 12
9	**know**	when - you	part	of	**sec-**	tion	eigh-	ty - you	**feel**	like	no	one	**can**	re-	late	cause	(4 + 8) + 12

Example 6b. Prototypical verse onset in "A.D.H.D." (2011), mm. 5–9 (0:27–0:38).

First, in contrast with the chorus (Example 5), rhyme periodicity decreases from a whole to a half note. Second, primary rhymes are on the relaxed BCs 4 and 12 (the latter more common); secondary rhymes are on BCs 0, 2, 6, and 8. Third, the unevenly-spaced rhymes suggest a variety of pulses with blue-shaded values at 3 x (8, 16) (half, whole) and pink-shaded ones at 6 x (4, 4, 8, 4, 4) (quarter, half). Fourth, sentences in the lyrics are measure-long in mm. 7–9. And finally, Lamar relates (primarily in third person) a story of a drug-abusing friend or relative.[35]

3.3 Rhyming Block

Within a verse, we call a subsection unified by a common rhyme a rhyming block (Example 7a). A prototypical rhyming block has primary rhymes on BC 12, or BCs 4 and 12; other BC rhymes (e.g., 8, 10) occur, but less frequently. Like a verse onset, the more local rhyming block has rhymes that do not align with the beat track, high rhyme prevalence, a third-person point of view and story, a rapped delivery, a typical length of 4–8 measures, measure-long sentences with non-repeated lyrics, and unevenly spaced rhymes. Due to its relaxed state and salient position beginning and ending a verse, a rhyming block is a verse's default expectation.[36] Example 7b, from "R.O.T.C. (Interlude)" (2010), shows a rhyming block in mm. 4–10 toward the beginning of the song's only verse. This rhyming block has many typical features: primary rhymes unified by their placement at BC 12, a variety of unevenly spaced rhymes (e.g., the blue ones on BC 0), measure-long sentences, an extraordinarily high rhyme prevalence (7 x (16) between primary rhymes on BC 12), lyrics that do not repeat, a subsection-level length of seven measures, and a third-person focus on an impressively long list of drugs.[37]

3.4 Parenthetical Chorus

Example 8a demonstrates the role of a parenthetical chorus, a brief, chorus-like passage that adds variety to a verse. Although this role's internal features tend to be chorus-like, its context and brevity dissuade listeners from

[35] Similar, prototypical instances of verse onsets include "F*** Your Ethnicity" (*Section.80*) and "Swimming Pools (Drank)" (*Good Kid*). The former (1:03–2:15) has primary rhymes on BC 4 and 12; the latter (0:25–0:51) has a slightly more unusual rhyme placement on BC 10, 4, and 12. Both situations do not align primary rhymes with their beat tracks.

[36] Example 6b was also an instance of a rhyming block, although there we focused on its differences with the preceding chorus.

[37] Another typical rhyming block is from "Swimming Pools (Drank)" from *Good Kid*. The role (at 0:25–0:38) is suggested in a four-measure-long unit by primary rhymes centered around BC 10 (not 12!), non-repeated lyrics, a third-person story, measure-long sentences, unevenly spaced rhymes, and high rhyme prevalence.

Verse Role (de Clercq 2012, 114–115)	Lamar's Rhyming Block Role
• Low focal quality • Main section role • Unmemorable • Musical material repeats • 8–16 bars long • First vocal material • Develops a story	• **Area of common rhyme placement (e.g., BC 4 and 12)** • **Rhymes do not usually align with beat track** • **High rhyme prevalence (focal rhyme)** • **3rd -person point of view, story** • **Rapped** • **Often 4–8 measures in length** • **Measure-long sentences with non-repeated lyrics** • **Unevenly spaced rhymes**

Example 7a. Characteristic features of the rhyming block role.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Metrical State
0												Some	**times**	I	wa-	na	
1	say		fuck		**rap-**	pin		I	**need**		mon-	ey	**now**			Like	(2) + 4 + 12
2	should	I	start		**trap-**	pin'		If	what	I	write		**down**		don 't	col-	(2) + 4 + 12
3	**lect**	this	ver-	y	**mo-**	men t	then	I'm	**on**	it	no		**ques-**	tio n	in	the	4 + 8 + 12
4	**streets**			my	**nig-**	gas	is	well	con-	**nec t-**	ted	let's	see		Do	I	(0) + (9) + 12
5	**cop**	a	poun d	of	**kush**	Pro-	meth-	a-	**zine**	or	push	some	E?		Ox-	y-	12
6	**con-**	tin	have	me	**lay-**	in'	on	soft	**cot-**	ton	when	I	sleep?		This	is	(0) + (8) + 12
7	deep	as	the	ab-	**byss**	I'm	not	just	**rhym-**	in'	on	the	beat	I	be	in	(0) + 12
8	spots		chop-	pin	the	rock s		like	**Flint-**		stone		feet		This	is	(0) + (2) + (5) + 12
9	me			**Frust-**	tra-	ted		**bat-**	ti-	in'	my	own	E-	vil s	Fin-	na'	(0) + (7) + 12
10	**sad-**	dle	up	that	**work**	a-	cross	O-	hi-	o	in	a	Ge-	o		Or	(0) + 8 + 12

Example 7b. "R.O.T.C. (Interlude)" (2010), mm. 4–10 (0:28–0:44).

inferring a section-level chorus, and its primary rhymes may also be on BCs 4 and 12, thereby lessening its contrast with surrounding verse material. This role has a rich analogue in de Clercq's pop-rock "incipient chorus" (2012, 215): a short, chorus-like phrase subordinate to an overall verse. Parenthetical choruses have robust support across the hip-hop genre: first, Edwards (2009, 191) mentions the possibility of "hidden hooks," and second, they occur in verses of emcees other than Lamar.[38] In Example 8b, the parenthetical chorus in mm. 10–11 is sandwiched between two rhyming blocks in mm. 6–9 and 12–17, of which mm. 6–9 and 12–15 are shown. In contrast with the song's two rhyming blocks, this parenthetical chorus (mm. 10–11) is more repetitious with rhymes between BCs 0, 4, 8, and ≈12.[39] It also has more general lyrics (e.g., "you, are, you are"), a second-person point of view, a sung delivery, and background vocals. It is the length of a single couplet to not suggest a new, full-fledged chorus. And lastly, its primary rhymes are on BCs 0 and 8, a placement that is not required for this role but adds to our sense of chorus quality. This parenthetical chorus injects some needed variety into what could have been a lengthy, overly static rhyming block. While surrounding rhyming blocks depict uncritically a story of someone using drugs, mm. 10–11 instead make a point expected in the conscious rap genre—drug use is not without reason, and, according to Lamar, underlying drug use is a lonely, disempowered individual.[40]

[38] Two examples mentioned to us by Mitch Ohriner include "Get By" by Talib Kweli, Verse 1, 0:22–0:26, in which "Just to get by…" is pitched, and "Cadallactica" by Big K.R.I.T., in Verse 1, 0:55–0:58, in which "Cadillac-lac-lac, … too early for the hook" acknowledges in the lyrics themselves a brief chorus-like moment.

[39] In mm. 10–11, we hear the secondary rhymes on BCs 3 and 11 as approximating 4 and 12 since we sense metrical accents on BCs 0 and 8 and infer beats on BCs 4 and 12.

[40] Other typical instances of parenthetical choruses in Lamar are from "Night of the Living Junkies" (2:33–2:41, *Overly Dedicated*) and "P&P 1.5" (3:33–3:41, *Overly Dedicated*). Both instances have primary rhymes on BC 12. As well, the former foreshadows the coming chorus due to its quasi-sung delivery and position immediately before that chorus; this role can thus resemble a prechorus from pop-rock traditions.

Pop-Rock "Incipient Chorus" (de Clercq 2012, 215)	Lamar's Parenthetical Chorus Role
• Brief chorus-like passage • Occurs within longer verse • One phrase long • Throwback to incipient verse-chorus form	• **Repetitious** • **Equally spaced, highly prevalent rhymes** • **Short in length (e.g., couplet)** • **Inserted before, between, or after subsections in longer verse** • **Sung** • **Texturally emphasized** • **Memorable names**

Example 8a. Characteristic features of the parenthetical chorus role.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Metrical State
6	**trip-**	pin'	off	that	**shit**	a-	gain		**Pick**	him	up	then - I	**set**	him	in		(0) + 4 + (8) + 12
7	[**Cold**		wat-	er	**then**	I	or-	der	**some-**	one – to	bring	him	**Vi-**	Co-	din		(2) + (6) + 12
8	**Hope**	to	take	the	**pain**	a-	way	From - the	**feel-**	ing	that	he	**feel**	to-	Day	You	4 + 12
9	**know**	when - you	part	of	**sec-**	tion	**eigh-**	ty	**you** - feel	like	no	one	**can**	re-	late	cause	4 + 12
10	**you**	are		**you**	are			a	**lo-**	ner		**lo-**	ner		Mar-	i-	0 + (≈4) + 8 + (≈12)
11	**juan** -	a		en-	**dor-**	phins	make	you	**strong-**	er		**strong** -	er	I'm	in	the	0 + 8 + (≈12)
12	**house**		par-	ty	**trip-**	in'	off	My	**gen-**	er-	a-	tion	**sip-**	pin'	**cough**		4 + 12
13	**sy-**	rup	like	its	**wat-**	er	ne - ver	no	**pan-**	cakes	in	the	**kitch-**	en	Man	no	(4) + 12
14	**won** - der	our	lives	is	**caught**	up	in	the	**dai-**	ly	su-	per-	**sti-**	tion	That	the	(4) + 12
15	**world**	is	bout	to	**end**	who	gives	a	**fuck**	we	nev - er	do	**list-**	en	Un -	less - it	12

Example 8b. "A.D.H.D." (2011), mm. 6–15 (0:41–0:46).

3.5 Excursion

Example 9a demonstrates the tense role that we call an excursion.[41] As shown at the top right of the example, an excursion is a tense, bridge-like role at the subsection or section level; it typically occurs halfway to 2/3rds through a verse or song. Its improvisatory flavor results from irregular rhyme placement and periodicities, low prevalence, and quickly changing topics in the lyrics.[42] A pop-rock bridge is its closest analogue since it also occurs halfway to 2/3rds through a song, contrasts with other sections, and is tonally unstable. In Example 9b, a typical excursion at the subsection level occurs in mm. 10–15 from "R.O.T.C. (Interlude)" (2010). This excerpt has tense rhymes on BCs 0, 4, 6, 8, 10, and 15 instead of BC 12 (except m. 10). Rhyme periodicities vary and prevalence is very low: m. 11's ".zip" and "zip" (green) have a periodicity of a quarter and a prevalence of 2 x (4) while "Kilo" and "needle" (mm. 12–13, yellow) have a whole-note periodicity and a prevalence of 2 x (16). Quick jumps in thought abound: Lamar alights upon travel, selling drugs, the music industry, and basketball in only six measures.[43]

[41] As reported by Edwards (2009, 181), Big Daddy Kane notes that freestyling, a potential precursor to our excursion role, was once a style of rapping where an emcee would come up with ideas on the spot.

[42] Komaniecki (2019, 95) discusses similar "non-binary rhyme schemes" evocative of freestyle, improvised rap. Biamonte (2014, [7.9]) defines a "dissonant bridge" having the formal function of a bridge and tense techniques such as departure from the tonic, tonally open endings, increased harmonic dissonance and chromaticism, metrical dissonance, wider or higher register, sequences, and textural disruptions.

[43] Another prototypical instance of an excursion in Lamar's songs is from "Night of the Living Junkies" (*Overly Dedicated*). In this instance (2:10–2:33), a six-measure excursion on the subsection level leads to a couplet-length parenthetical chorus ("Lights will flash, cars will crash… "), which foreshadows (as a prechorus) a coming chorus.

Bridge Role (de Clercq 2012, 115)	Lamar's Excursion Role
• Halfway to 2/3rds through song • Most contrasting role • Follows 2nd verse or 2nd chorus • Leads to return of main material • Lacks harmonic or tonal closure • Harmonically distant, unstable • Textural contrast	• **Tense, irregular rhyme placement, periodicities** • **Lack of repetition** • **Less prevalent rhymes** • **Quickly changing topics in lyrics** • **3rd-person story** • Occurs halfway to 2/3rds through verse or song

Example 9a. Characteristic features of the excursion role.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Metrical State
10	**sad-**	dle	up	that	**work**	a-	cross	O-	hi-	o	in	a	Ge-	o		Or	(0) + 8 + 12
11	**should**	I	sell	my	mu-	sic	**.zip**	to	buy	your	**zip**	and	**hope**	one	day	it	6 + 10
12	**flour-**	ish	to	a	**Ki-**	lo			**Track**		record	of a	hust-	ler	**Rath-**	er	(4) + 8 + 14
13	**rec-**	ords	on	the	**need-**	le	mak-	in'	**Mus-**	ic			**Clock-**	in	**fast**		(0) + (4) + 8
14	**bank**		like	a	**shot**	from	Pat-	rick	**Ew-**	ing		My	**nig-**	ga	what	you	8
15	**do-**	in'	on	these	**cor-**	ners	**whip-**	ping?			I	**thought**	you	had	a	**show**	0 + 6 + 15

Example 9b. "R.O.T.C. (Interlude)" (2010), mm. 10–15 (0:39–0:53).

3.6 Crisis

As shown in Example 10a, Lamar's crisis role is an intensification, typically late in a verse or song, that imprints in listeners' minds the effects of violence in the Black community. This intensification is suggested by an increase in rhyme or syllable density in opposition to relaxed rhyme placement. The closest pop-rock analogues are lengthy, climactic plateaus at the ends of songs (e.g., in "Hey Jude" by the Beatles), though Lamar's crises can occur on the subsection level.[44] A crisis's mixture of tension and relaxation suggests catharsis, the powerful releasing and purging of strong emotions. Tension is created by an acceleration in rhymes, whereas relaxation is by rhyme placement at odds with the beat track—most typically on BCs 4 and 12. Lamar includes recognizable names to promote memorability. The crisis role shows the influence of the conscious rap genre on Lamar's songs: just as this genre seeks to build listeners' awareness of violence, a crisis attempts to imprint these issues on listeners' minds.

Example 10b demonstrates a typical crisis with mm. 42–51 from "Rigamortis" (2011). This excerpt is a crisis since it includes both tense and relaxed aspects, an increase in syllable density culminating in m. 51 ("and y'all luck just ran out, you'll see"), and lyrics that threaten to kill all other rappers (albeit nonviolently and musically). Words such as "Kendrick" and "catastrophe" increase the memorability and sense of impending doom, respectively. In addition to the increasing number of 32nd notes, which increase syllable density and rising tension, increasing textural density and Lamar's rising pitch height offer added support (m. 46 on). Rhyme placement is relaxed, with primary rhymes on BCs 4 and 12 and secondary rhymes approximating BC 0 and 8.[45] At the climactic moment (m. 51, BCs 5–12), Lamar spits words intensely to sustain the long breath and maintain a loud dynamic level.[46]

[44] Intensifications to climaxes have been noted in pop-rock forms by Osborn (2013), who defines the concept of a terminal climax, or a climactic plateau at the end of a song that presents new material, and by Spicer (2004), who defines a cumulative form as working toward a climax of recapitulated material.

[45] Lamar's delivery emphasizes rhymes on BC 4 and 12 by consistently delivering them at a higher pitch than the other BCs.

[46] Other typical instances of crises in Lamar's output occur in "M.a.a.D. City" (*Good Kid*) and in "DNA." (*DAMN.*). In the former (0:58–2:08), which occurs on the subsection level, an increase in rhyme density starts with "But ever since that day, I was lookin' at him different" and ends with "AK's, AR's, 'Ayy, y'all duck'…;" in the latter (2:02–3:05), which occurs on the section level, increased syllable density across the entire song is suggested by a move from duple to triplet sixteenths. Both crises include relaxed rhyme placement, memorable names, and violent situations.

(1) Terminal Climax in Pop-Rock Form (Osborn 2013) • Climactic plateau at end of song, new material (2) Climactic Recapitulation in Cumulative Form (Spicer 2004) • Climactic plateau at end of song, old material	Lamar's Crisis Role • **Relaxed rhyme placement not aligned with beat track** • **Increase in density of rhymes or syllables** • **Memorable names** • **Violent situation** • Late in verse or song

Example 10a. Characteristic features of the crisis role.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Metrical State
42	is	un-	der	my	**feet,**	and	I	come	in	**peace**	to	com-	**pete**	I	don't	**run**	(1) + 4 + (7) + (11) + 12 + (15)
43	if	you	rath-	er	**leap,**	my	stat-	**ist-**	ics	go	up	in	**weeks**	And I	go	**vis-**	4 + (≈8) + 12
44	it	the	near-	est	**creek,**	and I	get	**bus-**	y	on	many	M-	**C**	Really	ball-	**ist-**	(≈0) + 4 + 12
45	ic,	any	body	can	**see**	Any	as-	**sist-**	ance,	every-	body	de-	**ceased**	Some	per-	**sist-**	(≈0) + 4 + (≈8) + 12
46	ence,	recog-	nize	I	**be**	Really	too	**vic-**	ious,	the	perman-	nent	**beast**	And the	demo-	**li-**	(≈0) + 4 + (≈8) + 12
47	tion	breaking	up	the	**street**	Better	par-	**ti-**	tion,	better	dot	your	**T**	And I	gon'	**men-**	(≈0) + 4 + (≈8) + 12
48	tion	how the	far	you	**see**	Putting	my	**dick**	in the	rap	in-	dust-	**ry**	Every-	body	**bitch-**	(≈0) + 4 + (≈8) + 12
49	ing,	getting	mad	at	**me**	Recog-	nize	**Ken-**	drick	in the	batt-	er-	**y**	And I'm	**charged**	up,	(≈0) + 4 + 8 + 12
50	and the	cat-	ast-	ro-	**phe**	Is	charged	up,	and the	aud-	a-	ci-	**ty**	Of	y'all	fucks	4 + 12
51	**never**	could	hass-	le	**me**	And	y'all	**luck**	just	**ran**	out,	you'll	**see**				4 + 12

Example 10b. "Rigamortis" (2011), mm. 42–51 (2:28–2:54).

3.7 Intro

We identify three prototypical intros in Lamar's songs (Example 11a). Some of Lamar's intros follow pop-rock practice and are instrumental (Case 1). Others (Case 2) feature unmeasured speech with an absent beat track or combine a beat track with isolated bursts of measured or unmeasured lyrics (Case 3). In Cases 2 and 3, speech is introductory and dramatizes a song's setting. As shown in Example 11b, Lamar's "R.O.T.C. (Interlude)" (2010) has an intro resembling Case 3 since instrumental samples at 0:10 support an unmeasured declaration of the time at night ("This is me thinking at 4:43 am, June 6"). These introductory lyrics dramatize the song's setting: Lamar's self-talk results from the fatigue and despair of nighttime, whereas during the daytime he has greater confidence. Similar intros in Lamar can be found that affirm these three categories.[47]

We have thus defined seven normative formal roles in Lamar's songs as modifications of pop-rock analogues. With the formal roles in Lamar's songs defined, we next examine how formal ambiguity arises in them.

4. Formal Ambiguity in Lamar's Songs

We examine the problem of formal ambiguity in Lamar by building again on de Clercq's prototype-based approach (2017). In this recent study of formal ambiguity in rock music, de Clercq proposes three ambiguity-creating strategies: successive formal roles may be telescoped, thereby making blends (i.e., hybrids); roles may be weakly differentiated, thereby lessening formal contrasts; and finally, a formal grouping may function on more than one level.[48]

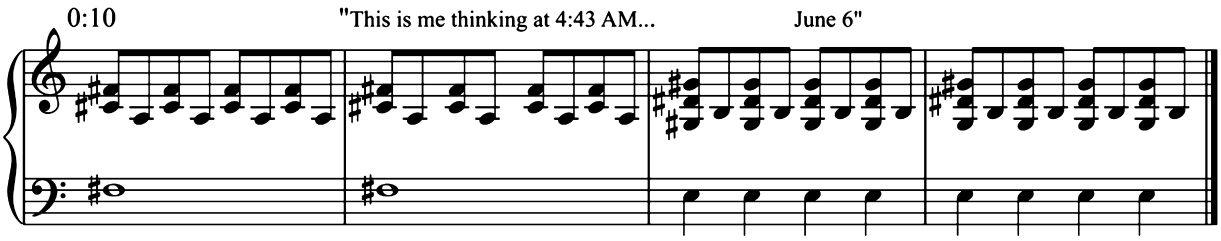
Does Lamar also use blended roles, weakly differentiated sections, and passages that function on multiple levels? These questions, such as the use of role blending in creating formal ambiguity, have not been sufficiently addressed in Lamar's songs. Bungert (2019) notes how Lamar's "King Kunta" (2015) has formal sections that face both forward and backward. Bungert explains the song's formal ambiguity as a rivalry between offset verse-chorus and chorus-verse cycles. In Figure 6, the verse-chorus view

[47] Additional examples include the intro to "Blow My High (Members Only)" from *Section.80* (0:0–0:19), a section that contains instrumental samples (Case 1); "HiiiPoWeR" from *Section.80* (0:0–0:10) features unmeasured speech (Case 2); and "Barbed Wire" from *Overly Dedicated* (0:0–0:20) is instrumental with short bursts of lyrics (Case 3).

[48] de Clercq (2017, [3.4]) shows weak section differentiation and ambiguity of level in the first verse from "I Still Haven't Found What I'm Lookin' For" by U2. De Clercq argues that the 24-measure verse can be heard as ending with an 8-measure refrain, or as a 16-measure verse plus an 8-measure chorus (ambiguity of level). Weak section differentiation in this situation results from a similar tessitura throughout the passage.

Pop-Rock Intro Role (de Clercq 2012, 116)	Lamar's Intro Role
• Instrumental • Subsidiary • Contains material from main section roles • Contains link material • Fades in	• Case 1: instrumental samples without rapped speech (fade-in) • **Case 2: unmeasured, introductory speech with absent beat track, e.g., skit** • **Hybrid Case 3: sparse introductory speech (measured or unmeasured) against instrumental samples**

Example 11a. Characteristic features of the intro role.



Example 11b. "R.O.T.C. (Interlude)" (2010), (0:10–0:18).

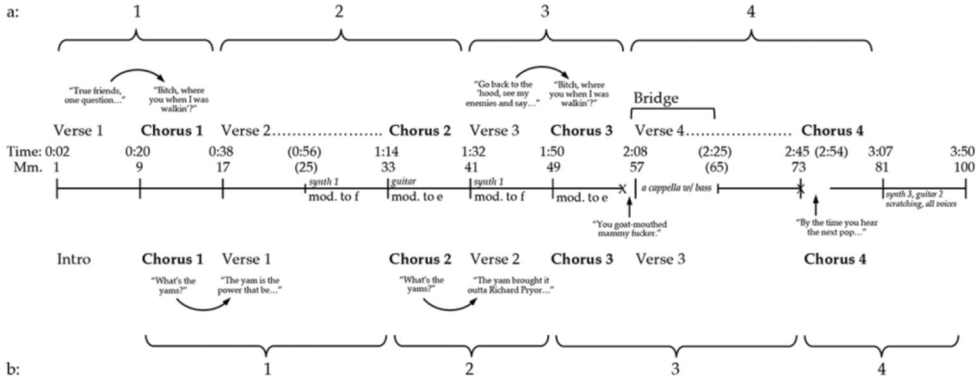


Figure 6. Bungert's analysis of form in "King Kunta."

(layer a) asserts a verse in m. 1, a chorus in m. 9, and then three more verse-chorus cycles; the chorus-verse view (layer b) instead asserts an intro in mm. 1–8 followed by three chorus-verse cycles and a final chorus. However, the verse-chorus view in layer a is contradicted by mm. 1–8's introductory character and sparse lyrics (e.g., "I'm mad (he mad)"), while the chorus-verse view (layer b) is richly supported by mm. 9–16's repetitious lyrics occurring four times in the song. An ambiguity assumes an irreducible duality of states. The verse-chorus and chorus-verse views, however, are not equally compelling and thus do not suggest one.[49] Instead, as we will argue, the forward- and backward-facing qualities of "King Kunta" can be explained through formalizing the parameters involved in ambiguous roles.

In comparison with pop and rock genres, in which harmony, melody, and voice leading are primary in creating formal ambiguity, in Lamar's music rhyme manipulation and lyrics are primary. Working within these salient parameters, Lamar broadens the scope of de Clercq's mechanisms: formal blends may be independent of telescoping; and formal telescoping and weak section differentiation (hereafter called *weak unit differentiation*) are extended to the subsection level. In the remainder of this section, we note examples of formal blends in Lamar's songs and show how they result from the expressive needs of each song. In our final section, we will show how all the techniques dis-

[49] Bungert's note 6 admits: "It could be argued that the 'verse-chorus paradigm' is more applicable to pop/rock than to hip hop." Although a few of Lamar's songs begin with a verse (e.g., "Ab-Soul's Outro" from *Section.80*), it is an overreach to import from pop-rock traditions the expectation of a verse as preceding a chorus.

Name	Tension in Rhymes	Location in Verse	Criteria	Examples
Parenthetical Chorus/Intro	Relaxed	Beginning	1st-person lyrics, has diss, boast, or critique, is repetitious, has evenly spaced rhymes versus introductory lyrics	"R.O.T.C.," mm. 0–4, 0:17–0:29 ("Sometimes I wanna say f*** rapping…")
Rhyming Block/Excursion	Relaxed	Beginning	Rhymes on BC 4 and 12 versus quickly changing topics in lyrics	"Rigamortis," mm. 6–17, 0:27–0:59 ("And this is rigamortis and it's gorgeous…") mm. 36–39, 1:45–1:53 ("and made him Casper, I captured the likes…")
Rhyming Block/Crisis	Relaxed	End	Rhymes on BC 12 versus lyrics suggesting violence	"R.O.T.C.," mm. 35–40, 1:42–1:57 ("You'll know I always had a passion…")

Figure 7. Instances of subsection-level blends in Lamar's songs.

cussed—control of tension, formal roles, and formal ambiguity—explain comprehensible forms and correlate with lyrics in two of Lamar's songs, "R.O.T.C. (Interlude)" (2010) and "King Kunta" (2015).

On the subsection level in verses, so far we have found three instances of blends in Lamar's songs. Each type problematizes low tension in rhymes, demonstrates the salience of lyrics as formal criteria, and serves the expressive needs of each song. Following de Clercq (2012, 214), we format each blend as two terms joined by a slash, although we reverse this order and lead with a primary (or situational context) label, followed by a secondary (or content) label. The three instances of blends are shown in Figure 7: a parenthetical chorus/intro blend in "R.O.T.C. (Interlude)" (2010) combines chorus-like aspects such as evenly spaced rhymes with introductory lyrics; a rhyming block/excursion blend in "Rigamortis" (2011) combines primary rhymes on BC 4 and 12 at the beginning of a verse with quickly changing literary topics; and the rhyming block/crisis blend from "R.O.T.C." has relaxed rhyme placement against lyrics that imply impending violence. The blends are also motivated by narrative strategies: the rhyming block/excursion blend in "Rigamortis" aligns with the song's message that Lamar is an otherworldly rapper who will "kill" all competitors.

On the section level, we have found a variety of formal blends in Lamar's songs that show the centrality of lyrics within formal roles. Figure 8 shows instances of blends having situational contexts of verse, chorus, or intro. In the verse-based blends, a verse/excursion in "King Kunta" combines verse-like rhyme placement on BCs 4 and 12 with excursion aspects in the lyrics. A verse/chorus in "ELEMENT." has verse context combined with chorus features such as rhymes aligned with the beat track (BCs 0 and 8), critical lyrics, and a first-person point of view. In the chorus-based blends, we have already seen how a chorus/excursion in "Rigamortis" (see also Example 2) combines a chorus context and repeated lyrics with an excursion's tense rhymes and quickly changing imagery. In this category, an intriguing chorus/verse in "Backseat Freestyle" has a chorus context, first-person point of view, and a threat (or boast) combined with a verse's rhyme placement on BCs 4 and 12, long sentences, and a lack of repetition. In the final category, intro-based blends, an intro/chorus in "Alright" continues the trend toward salient lyrics since introductory, sparse lyrics are counterbalanced by frequent repetitions, a chorus feature.

As demonstrated above, the exact choice of blended roles and their ordering in time is shaped by the expressive needs of each individual song. We will accordingly trace tension, formal roles, and formal ambiguities in two Lamar songs: his early song "R.O.T.C. (Interlude)," which is dominated by one long rapped verse divided into subsections, and the well-known "King Kunta," which is saturated on the section level with chorus-based blends.

4.1 "R.O.T.C. (Interlude)": A Case of Formal Stretching

In this section, we examine Lamar's song "R.O.T.C. (Interlude)" from *Overly Dedicated* (2010), demonstrating our entire analytical methodology. This song, produced by Jairus "J-Mo" Mozee, exemplifies stretching since its flow is limited to a single, long rapped verse, thereby indicating authenticity and showcasing Lamar's lyrical abilities.[50]

[50] The larger mixtape marks Lamar's emergence as a thinking rapper with songs that change perspectives and tones (Reeves 2017).

Name	Tension in Rhymes	Location in Song	Criteria	Example
Verse Primary				
Verse/Excursion	Relaxed	Verse	Rhymes on BC 4 and 12 versus quick jumps in thought in lyrics	"King Kunta," mm. 56–72, 2:07–2:26 ("I was gonna kill a couple…")
Verse/Chorus	Relaxed	Verse	Verse context versus rhymes aligned with the beat track on BC 0 and 8, critical lyrics, and 1st-person view	"ELEMENT.," from *Damn*, Verse 1, 0:20–1:00 ("I'm willing to die for this shit…")
Chorus Primary				
Chorus/Excursion	Tense	Chorus	Chorus context and repeated lyrics versus tense rhymes, wordplay, quickly changing imagery in lyrics	"Rigamortis," mm. 1–3, 0:13–0:21 ("Got me breathing with dragons…")
Chorus/Verse	Relaxed	Chorus	Chorus context, 1st-person view, and threat/boast versus rhymes on BC ≈4 and 12, long sentences, lack of repetition	"Backseat Freestyle," from *Good Kid, M.A.A.D. City*, 0:15–0:40 ("All my life I want money and power…")
Intro Primary				
Intro/Chorus	Relaxed	Intro	Intro context, introductory and sparse lyrics versus rhymes on BC 8 and 0, repetitive lyrics	"Alright," from *To Pimp a Butterfly*, Intro, 0:02–0:19 ("All my life I has to fight…")

Figure 8. Instances of section-level blends in Lamar's songs.

This song is one of only two in the corpus with one verse and one chorus, and one of seven with one verse. Within its single verse, formal ambiguity arises from weak unit differentiation, brief formal overlaps, and formal blends.

The verse explores a late-night, internal debate on whether the protagonist (presumably Lamar) should drop a stalled rapping career and take up selling drugs instead. The song's title repurposes the expected meaning of "R.O.T.C." (Reserve Officers' Training Corps) as "Right On Time Conscience," hinting at the protagonist's ultimate decision to focus on their rapping career. The chorus is sung by BJ the Chicago Kid, covering Billy Caldwell in "Open Your Eyes" (1980), a love song in which the protagonist decides to "take my chances" and "be by your side." The chorus and verse highlight parallel life choices: rapping versus selling drugs parallels going out versus breaking up.[51]

Figure 9 demonstrates our entire analytical toolkit on the verse of "R.O.T.C.": (from left to right) lyrics, primary rhyme manipulations, tension levels, formal roles, situational form, and formal mentalities.[52] From top to bottom, our method reveals a comprehensible chorus-verse form embedded within the verse, as suggested by the succession of roles. Therefore, as seen in the "situational form" column, the unshaded subsections embed, in this order, a chorus C^1 (mm. 0–3), a verse V^1 (mm. 5–9), a second chorus C^2 (mm. 15–16), a second verse V^2 (mm. 17–22), and a third verse V^3 (mm. 35–40). This thereby suggests two complete chorus-verse cycles (mm. 0–9, 15–40). The "formal roles" column shows three formal overlaps (m. 4, 10, and 34, shaded gray), two excursions (mm. 11–14, 27–33), and a crisis (mm. 22–27). The verse is loosely consistent with Lamar's norms of subsection ordering since two excursions occur in its middle and the crisis occurs just after the midpoint (m. 22 out of 40).

In addition to showing a comprehensible chorus-verse form, Figure 9 shows an overall tension contour bounded by relaxation and working toward two peaks of high tension in the middle, thereby creating variety and interest. We may distinguish a spectrum for four degrees of tension/relaxation based on measurement inclusion: 1) high tension results from tension in all three rhyme manipulations, 2) moderate tension is from tension in two out of

[51] This sample is famous in the hip-hop community for being used in Common's "The Light" (2000).

[52] In this and Figure 10, we omit consideration of secondary rhymes to aid comprehension of large-scale fluctuations in tension.

	Stages 1, 2→				*Stages 3, 4→*		*Stage 5 (GOAL)*
Lyrics	***Primary Rhyme Placement***	***Primary Rhyme Periodicities***	***Primary Rhyme Prevalence***	***Tension Levels***	***Formal Roles***	***Situational Form***	***Formal Mentalities***
"Sometimes I wanna say…": disses rapping, weighs dealing (0–3)	BC 4 + 12, then ≈0 + 4 + 8 + 12	wholes to quarters	"rappin," "now:" 2 x (16); "moment:" 3 x (4); "question:" 2 x (12)	Moderate relaxation	Parenthetical chorus/Intro	C^1	1st person view, rapping/dealing dilemma
"In the streets my N***** is well connected…": considers question (4)	BC 12	whole note	"streets," "see:" 2 x (12)		Overlap		
"Do I cop a pound…"; describes temptation of drugs (5–9)	BC 12	whole note	"ee:" 9 x (12, 16, 4)	High relaxation	Rhyming block	V^2	3rd-person view, temptations
"Finna' saddle…"; describes travel (10)	BC 8 + 12	quarter note	"sad-:" 2 x (9), "hi:" 2 x (4)		Overlap		
"Or should I…"; fantasy of being successful rapper (11–14)	Various BCs: 0, 4, 6, 8, 10, 14: BC 8 primary by end	mix of whole, half, dotted quarter, quarter, eighth	Various 2 x, 3x (2, 4, 6, 8, 16)	High tension	Excursion		Fantasy
"My N**** what you…" (15–16)	BC 0 at beginning; BC 14 at end	≈whole note	"doin':" 2 x (8), "show:" 2 x (15)	Moderate relaxation to… moderate tension	Parenthetical chorus	C^2	1st, 2nd person views, rapping/dealing dilemma
"easy money sounds tempting…"; 3rd-person focus on cars (17–22 BC 9)	BC 6, then BC 4 + 8 + ≈12, then 6	≈whole note	"tempting:" 2 x (16), "Rovers…up:" 3 x (16, ≈8), "solution:" 2 x (16)	Moderate relaxation	Rhyming block	V^3	3rd-person view, temptations
"Curve servin' though I…"; imagines robbing a gas station (22–27 BC 7)	Starts BC 0 and ≈8, then 0 + ≈4 + 8 + 12 (m. 26)	≈whole notes, then quarters	"elevens:" 2 x (4), "Hop:" 9 x (≈16, 8, 3, 5, 4, 3, 4)	Moderate relaxation to… high tension	Crisis		Fantasy
"Watch the plans…"; imagines rise as drug dealer (27 BC 8–33)	BC 0 + 2 + 4 + 8 + 10 + 12	dotted whole, whole, dotted half + eighth, dotted half, half + 16th, half, dotted quarter	"plans:" 5 x (irregular), various 2 x (e.g., "Sherm" or ≈8, "F***" or 20)	High tension	Excursion		Fantasy
"and pick up a sack…"; Drops the mic and picks up a gun (34)	BC 8 + 12	quarter note	"toolie:" 3 x (20, 4)		Overlap		
"You'll know I always…"; Tells listener is in hard spot, decides to not start dealing (35–40)	BC 12	wholes	"writin':" 5 x (16)	High relaxation	Rhyming Block/Crisis	V^4	1st, 2nd-person views, rapping/dealing dilemma

Figure 9. Formal overview of "R.O.T.C. (Interlude)" (2010), mm. 0–40 (0:19–1:57).

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Metrical State
0												Some	**times**	I	wa-	na	
1	say		fuck		**rap-**	pin		I	**need**		mon-	ey	**now**			Like	(2) + 4 + 12
2	should	I	start		**trap-**	in'		If	what	I	write		**down**		do n't	**col-**	(2) + 4 + 12
3	**lect**	this	ver-	y	**mo-**	men t	then	I'm	**on**	it	no		**ques-**	tion	in	the	≈0 + 4 + 8 + 12
4	**streets**			my	**nig-**	gas	is	well	con-	**nect-**	ted	let's	see		Do	I	(0) + (9) + 12
5	**cop**	a	pound	of	**kush**	Pro-	meth-	a-	**zine**	or	push	some	E?		Ox-	y-	12

Example 12. Formal juncture in "R.O.T.C. (Interlude)" (2010), mm. 0–5 (0:17–0:32).

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Metrical State
30	er				**Sher m**				con-	tra-	**ban d**		They	**yearn**	**fo r**	the	4 + 10 + 13
31	**butt**		**nak-**	ed			**Fuck**	a	verse		**vers-**	es	get		**let**	off	6 + 10
32		in	**thir-**	ty	**min-**	utes	six		**sec-**	onds	I	dis-	**perse**		to	the	12
33	**world**	of	un-		**ru-**	ly			wher e	I	**put**	the	mic	**down**		and	4
34	**pick**		up	a	**sack**		and	a	**tool-**	ie	if	you	**knew**	me		You' ll	8 + 12
35	**know**	I	**al-**	ways	had	a	**pass-**	ion	for	**rid-**	dle	whe n	**writ-**	in'		but	(9) + 12
36	**late-**	ly	I've	been	**think-**	in'	bout	**tak-**	in'	**chanc-**	es	to	**bright-**	en		my	(9) + 12
37	**fut-**	ure	fi-	**nanc-**	ia-	ly		so	**pleas e**	don't	be	**ma d**	at	me		I	≈4 + ≈12
38	**got-**	ta	**do**		what	I	**got-**	ta	**do**		no		**shit**		so	I	(0) + (6) + 12
39	**tell**	my	nig-	ga	**front**	me	let	me	**put**	it	on	the	**strip**			the y	12
40	**give**	it	back		**when**	I think	a-	bou t	the	**con-**		se-	**quence**				12

Example 13. Rhyming block/crisis blend in "R.O.T.C. (Interlude)" (2010), mm. 30–40 (1:30–1:57).

three, 3) moderate relaxation is from tension in one out of three, and 4) high relaxation is from relaxation in all three. In Figure 9, the tension column matches these four states to a color gradient, with orange showing high tension, yellow moderate tension, green moderate relaxation, and blue high relaxation. Given this color scheme, in this verse we have eight subsections analyzed as: 1) moderate relaxation for the rapping/selling dilemma; 2) high relaxation for different drugs (5–9); 3) high tension for his fantasies of being a successful rapper; 4) moderate relaxation to moderate tension for a return to the rapping/selling question; 5) moderate relaxation for his envy of successful dealers; 6) moderate relaxation to high tension for his fantasy of robbing a store at gunpoint; 7) high tension for his fantasy of becoming a successful dealer; and 8) high relaxation for his decision to sell, then step away to continue rapping.

Example 12 shows an instance of a parenthetical chorus/intro blend and rhyming block. It also shows a formal overlap, weak subsection differentiation, and the centrality of lyrics within formal roles. The m. 4 formal overlap ("in the streets… ") results from the combination of a primary rhyme on BC 12, which matches the primary rhyme in mm. 5–9, with introductory lyrics that set up the question: which drugs should he sell? Weak section differentiation arises from the presence of rhymes on BC 12 in the parenthetical chorus/intro blend (mm. 0–3), the overlap (m. 4), and the rhyming block (mm. 5–9).

The second blend of rhyming block/crisis (Example 13, below the second dashed line) demonstrates two trends: first, Lamar's verses tend to end with rhyming block and crisis roles, with both suggested here; and second, lyrics tend to be the most salient parameter in invoking formal roles, since here only the lyrics suggest the crisis role. The context of this blend is a subtle move from an excursion (mm. 27–33) to a brief subsection overlap (inside the dashed lines in m. 34), which has the rhyme placement of BC 8 from the excursion and BC 12 of the coming blend. In the blend itself (mm. 35–40), the primary rhyming block aspect re-

sults from focal rhyme placement on BC 12, a periodicity of a whole note, and a high rhyme prevalence of 5 x (16). Due to the rhyme manipulations, we hear a powerful whole-note pulse on the beat 4s of the blend, thereby signaling the verse's end. Against the relaxation in the rhymes, the secondary aspect (crisis) is suggested by the lyrics: "so please don't be mad at me/ I gotta do what I gotta do no shit/so I tell my n**** front me let me put it on the strip." But after seemingly making the decision to sell, he steps back: "they give it back when I think about the consequence… shit." His close call with selling drugs implies the violence of the crisis role. However, the relaxation in rhymes suggests catharsis of his frustrations: he accepts missing out on money and power and instead persists as a struggling rapper.

Returning to Figure 9, "R.O.T.C." has complex formal mentalities: three situational roles—parenthetical chorus, rhyming block, and excursion—have distinctive points of view or literary topics. Parenthetical choruses tend to take first- and second-person points of view: they explore the song's central rapping/selling dilemma. Rhyming blocks focus on third-person topics such as drugs, cars, and wealth—all temptations to Lamar. And lastly, the excursion role correlates with Lamar's fantasies, whether of being a successful rapper ("expand to the Hoover dam") or drug dealer ("hope one day it flourish to a kilo"). The one exception is the rhyming block/crisis blend in which Lamar confronts the rapping/selling dilemma (mm. 35–40); it instead adopts first- and second-person points of view as the protagonist decides to keep rapping instead of selling drugs.

4.2 "King Kunta": Accessible, Chorus-Based Section Blends

Unlike the sparing use of formal blends in "R.O.T.C.," "King Kunta" saturates chorus-based blends to create an accessible hit song. Co-written with Thundercat and Redfoo, and produced by Terrace Martin, Michael Kuhle, and Sounwave, "King Kunta" has an interesting background suggesting that it was intended as a hit: recorded March 24, 2015, it was the third of five songs from *To Pimp a Butterfly* that were released as singles. Lamar's 2015 concert tour promoting the album was entitled "Kunta Groove Sessions Tour," suggesting that the song's title refers to Lamar. Unsurprisingly, "King Kunta" has ranked well in Lamar's discography: it peaked at No. 11 on the U.S. Hot Rap Songs chart. Compared with Lamar's most successful song ever, "Humble" (2017), which has 830 million YouTube views as of February 2022, "King Kunta" is just shy of 150 million, a respectable total given its earlier release (compared to "Humble") and Lamar's increasing fame thereafter.

"King Kunta" examines the idea that Lamar is suspended within a power dynamic between the recording industry and his authentic Compton upbringing, so that he ambiguously takes (metaphorical) roles of both king and slave (Bungert 2019, [4.6]). In an interview (Lamar 2015), Lamar noted that the song originated as a play of words between King Kunta and Kunta Kinte, the fictional 18th-century slave (and protagonist of Alex Haley's historical novel *Roots*). Bungert (2019, [5.2]) views Lamar's situation within power dynamics as analogous to the formal "double consciousness" of the song, which he portrays as simultaneous verse-chorus and chorus-verse formal cycles (our Figure 6).

We argue instead that formal ambiguity in "King Kunta" arises through chorus-based section-level blends, formal overlaps, and weak section differentiation. Figure 10 provides our overview of its form that focuses on its rapped content, omitting its lengthy outro. Overall, "King Kunta" has an underlying situational form of Intro–C^1–V^1–C^2–V^2–C^3–V^3/Bridge–C^4 (seventh column). Compared with "R.O.T.C.," "King Kunta" has a low level of tension: rhymes move from BC 12 to BC 8 and back, and the greatest levels of tension result from low rhyme prevalence. The chorus role saturates the song since all sections (except one) have at least some chorus aspect. That is, after an intro/chorus in mm. 1–8, two chorus/verse blends alternate with verse/chorus blends leading to a third chorus/verse, a verse/excursion (mm. 56–70), and a final chorus/verse. Due to the overall lack of tension and the chorus role's saturation, additional formal contrast is provided by tonal centers (column 8): situational choruses (mm. 9–16, 33–40, 49–55, 73–80) are in E minor, whereas part of situational verse 1 and all of 2 (mm. 25–30, 41–48) are in F minor.

"King Kunta's" techniques of formal ambiguity aim for greater accessibility and memorability. First, the chorus role appears in all but one section, suggesting greater accessibility but also weak section differentiation. Second, as shown in the gray-shaded rows of Figure 10, at three locations the juncture between a situational verse and its following chorus is overlapped, thereby announcing that chorus as an arrival. And lastly, weak section differentiation can be seen in the rhyme prevalence column, which keeps high, consistent values throughout the song with two exceptions: the intro/chorus in mm. 1–8, which has four differing periodicities, and the verse/excursion in mm. 56–70, which mostly has values of 2 x (16).

Unlike Bungert's view that "King Kunta's" formal double consciousness is created by offset formal cycles, we view it as resulting from a persistent blend of chorus and verse in which one aspect predominates in one section, versus the other in the next section. Since choruses correlate with Lamar's boasts ("king-like," first-person view), and verses with his disses of other rappers (ghostwriters, third-person view), we find that the double consciousness in this song

	Stages 1, 2→				Stages 3, 4→			Stage 5 (GOAL)
Lyrics	**Primary Rhyme Placement**	**Primary Rhyme Periodicities**	**Primary Rhyme Prevalence**	**Tension Levels**	**Formal Roles and Blends**	**Situational Form**	**Tonal Centers**	**Formal Mentalities**
"I got a bone…" (1–8)	BC 8	greater than whole	"pick:" 5 x (28, 8, 40, 32)	Moderate tension	Intro/Chorus	Intro	Em	Disses other rappers, 1st-, 2nd-person views
"Bitch, where you when I was…" (9–16)	mm. 9–15: BC 12 m. 16: BC 4	whole	"walking:" 12 x (mostly 16, some 6, 10); "Bitch:" 5 x (24, 12)	High relaxation	Chorus/Verse	C^1	Em	Boast as king, 1st-, 2nd-, and 3rd-person views
"The yam is the power…" (16–30)	BC 7 (≈8) + 8	whole	mm. 16–30: "be:" 7 x (mostly 4) "rappin':" 4 x (24, 6, 10) "tell:" 7 x (4, various)	Moderate relaxation	Verse/Chorus	V^1	Em→Fm	Disses other rappers, 3rd-person focus
"and if I gotta…" (31–32)	m. 31: BC 8 + 12 m. 32: BC 4 + 8 + 12	quarter	mm. 31–32: "brown:" 3 x (2, 4) and "bum:" 3 x (4)		Overlap		Fm→Em	
"Bitch, where you…" (33–40)	Same as mm. 9–16	whole	see 9–16	High relaxation	Chorus/Verse	C^2	Em	See mm. 9–16
"The yam brought it out of Richard Pryor…" (41–45)	BC 8	whole	"Pryor:" 6 x (mostly 4)	Moderate relaxation	Verse/Chorus	V^2	Fm	Critique of corrupt figures, 3rd-person view
"Twenty- four…" (46–48)	BC 12	whole	"days:" 3 x (16)		Overlap		Fm→Em	
"Bitch, where you…" (49–55)	BC 12	whole	see 9–16	High relaxation	Chorus/Verse	C^3	Em	See mm. 9–16
"I was gonna kill…" (56–70)	mm. 56–64: BC 4 + 12 mm. 65–70: BC 12	whole	mostly 2 x (16), sometimes (8)	Moderate relaxation	Verse/Excursion	V^3/B	unpitched →Em	Boasts about triumph as rapper, 1st- and 3rd-person views
"Straight from…" (71–72)	BC 4 + 8 + 12	quarter	"bottom:" 3 x (4) "prince:" 6 x (16)		Overlap		Em	
"Bitch, where you…" (73–80)	BC 12	whole	see 9–16	High relaxation	Chorus/Verse	C^4	Em	See mm. 9–16

Figure 10. Formal overview of "King Kunta" (2015).

is not within Lamar himself, but within the community of rappers from Lamar's perspective (Figure 10, column 9). For instance, the situational C^1 glorifying Lamar (mm. 9–16) is a boast while the situational V^1 (mm. 16–30) disses other rappers. Therefore, although Bungert's aspects of "king" and "slave" certainly operate as layers of meaning, these are not amplified by the song's form.

We next examine formal ambiguity and accessibility more closely. The opening role of intro/chorus (mm. 1–8), as shown in Example 14, sets in motion a series of chorus-based formal blends. Its role results from situational aspects of an intro plus internal aspects of intro and chorus. The intro situation is suggested by the excerpt's temporal position beginning the song and by the lack of lyrical repetition thereafter. Internal intro aspects include sparse syllables and rhymes—"pick'" is 5 x (28, 8, 40, 32)—as well as lyrics that set up the "question" of the song: why were his friends absent when he was poor and unsuccessful? The chorus aspects include primary rhyme placement on BC 8, the first- and second-person perspectives, and lyrics that critique rappers who lack authenticity.

By mm. 9–16, the feel of a regular pulse suggests that the song is truly underway, thereby drawing the listener's attention and increasing this section's memorability (Example 15).[53] The chorus aspect is situational since the lyrics, key of E minor, and other identifiers return later three times, making four chorus sections in total; this section

[53] Bungert (2019, [2.3]) also notes that "the song only seems to get going with the onset of the first chorus."

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Metrical State
1						I	got	a	**bone**		to	**pick**					≈ 12
2													I	don't	want	you	
3	**mon-**	key	mouth		**mot-**	her-	fuck-	ers	**sit-**	tin	in	my	**throne**		a-	**gin'**	8
4																	≈ 0
5							I'm		**mad**		(he		**mad)**				8
6					**but**	I	ain't		**stress-**	in'							8
7											true		**friends**				
8							one		**ques-**		tion						8

Example 14. Intro/chorus in "King Kunta" (2015), mm. 1–8 (0:02–0:20).

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Metrical State
9					**Bitch,**		where		**you**	when	I	was	**walk-**	ing			12
10	**Now**	I	run	the	**game**		got	the	**whole**		world		**tal-**	kin'	King		12
11	**Kun-**	ta,	Ev-	ry-	**bo-**	dy	wan-	na	**cut**	the	legs		**off**	him.			0 + 4 + 12
12	**Kun-**	ta,			**Black**		man		**tak-**	ing	no		**loss-**	es.	(oh	**yea h)**	0 + 4 + 12
13					**Bitch**		where		**you**	when	I	was	**walk-**	in'			12
14	**Now**	I	run	the	**game,**		got	the	**whole**		world		**talk-**	in'	King		12
15	**Kun-**	ta,	ev-	ry-	**-bo-**	dy	wan-	na	**cut**	the	legs		**off**	him			0 + 4 + 12
16	**When**	you	got	the	**yams**				(what's		the	**yams?)**					4

Example 15. Chorus/verse in "King Kunta" (2015), mm. 9–16 (0:20–0:38).

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Metrical State
17																The	
18	**yam**		is	the	**po-**	wer	that		**be**		(that		**be**		that		8
19	**be**		that		**be**		that		**be**		that		**be)**		You	can	8
20	**smell**	it	when	I'm	**walk-**	in'	down	the	**street**		(oh		yes		we	**can)**	8
21			(oh		yes		we	**can)**					I	can	dig		≈8
22	**rap-**		pin'														0
23							But	a	**rap-**	per'	with	a	**ghost-**		**writ-**	er	8
24					**what**	the	fuck		**hap-**		pened?				(Oh		8

Example 16. Verse/chorus in King Kunta" (2015), (0:38–0:56).

also includes lyrical repetition (mm. 9–11 and 13–15), the song's hook ("King Kunta"), and background vocals ("What's the yams?"). The verse aspect is strongly present internally: rhyme placement is on BCs 4 and 12, the latter of which is primary until m. 16; Lamar's sentences are long (measure-length); and his delivery is rapped. Point of view suggests both roles: this section combines first- and second-person perspectives from a chorus ("I run the game," "B**** where you") with a third-person one from a verse ("King Kunta, everybody wanna cut the legs off him").

Example 16 shows a verse/chorus blend that demonstrates the song's continued saturation of the chorus role. Chorus qualities result from rhymes on or very near BC 0 or 8 and from ample echoes of words in background vocals (e.g., "that be"). The situational context is a verse since the lyrics do not repeat elsewhere in the song. Internally, the perception of verse quality results from a clear, third-person focus on the symbol of the yam (mm. 17–21),[54] followed by a critique of inauthentic rappers who use ghost-writers (mm. 23–24). In addition, following this excerpt (0:58, not shown), the tonality shifts to F minor, thereby creating a tonal contrast with the E-minor choruses.

As shown in Example 17, the situational verse 3 functions both as a verse/excursion blend and as a pop-rock bridge. Verse aspects include the situational context of a verse, rhyme placement on BCs 4 and 12, and measure-long sentences in the lyrics. Excursion aspects include low rhyme prevalence, with rhymes relatively short (couplet-

[54] This symbol refers to the yams that the protagonist in Ralph Ellison's Invisible Man smells when walking down the street. Positively, it refers to authenticity, home, prestige, and success ("When you got the yams—"); negatively, it is tied to the temptations of power ("The yam brought it out of Richard Pryor…").

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Metrical State
56	Goat-mouthed mammyfucker)												I	was	gon-	na	
57	**kill**	a	cou-	ple	**rap-**	per s	but	they	**did**	it	to	them -	**selves**		Ev-	ry-	12
58	**bo-**	dy's	su-	i-	**ci-**	dal	they	ain't	**e-**	ven	need	my	**help.**			This	12
59	**shit**	is	e-	le-	**men-**	ta-	ry,	I'll	**pro-**	bly	go	to	**jail**		if	I	4
60	**shoot**	at	your	i-	**den-**	ti-	ty	and	**bounce**		to	the	**left.**		Stuck	a	4
61	**flag**		in	my	**ci-**	ty	ev-	ry-	**bo-**	dy	scream-	ing	**"Comp-**	ton"	I	should	4 + 8 + 12
62	**prob-**	ly	run	for	**may-**	or	whe n	I'm	**done**		to	be	**ho-**	nest ,	And	I	12

Example 17. Beginning of verse 3 in "King Kunta" (2015), mm. 56–62 (2:06–2:21).

long) and sparse, and quick jumps in thought ("they did it to themselves" transitions quickly to "I'll probably go to jail" in mm. 57–59). A pop-rock bridge role is suggested by a new, contrasting texture, increased syllable density, and the section's location just over halfway through the song.[55] This section's pop-rock aspects provide yet more evidence for the song's commercial leanings.

We have thus seen how "King Kunta" creates formal ambiguity through chorus-based section blends, overlapped arrivals into choruses, and weak section differentiation. These techniques help achieve the song's aims of becoming an accessible, memorable hit single, while also suggesting a formal duality of perspectives between Lamar's boasts as the "king of rappers" and his disses of competing rappers as inauthentic.

On the surface, the two songs—"R.O.T.C. (Interlude)" and "King Kunta"—seem contrasting: "R.O.T.C." subtly stretches the verse creating greater musical variety, whereas "King Kunta" contains a more homogeneous saturation with the chorus role. However, underlying these songs is a common set of techniques: rhyme manipulation, metrical tension and relaxation, normative formal roles, formally ambiguous techniques such as blends, and correlations between roles and lyrics.

Outro: Lamar's Flow Style

In conclusion, we return to the question of Lamar's flow style. We have suggested that three techniques underlie his consummate artistry: first, his manipulation of rhymes subtly controls metrical tension and relaxation; second, he adjusts tension and relaxation to suggest formal roles and ambiguities; and third, he correlates roles with lyrics to create "formal mentalities." We have supported these three techniques using five lines of evidence: our measurements of tension are more comprehensive than previous methodologies; our formal roles are analogous to those in pop and rock traditions, but frequently reworked to fit aesthetic aims of Lamar's rap and conscious rap genres; we have codified patterns of tension and relaxation into new, previously unaddressed roles; we have uncovered comprehensible chorus-verse forms within verses; and our correlation of formal roles and lyrics has uncovered formal mentalities such as the duality in "King Kunta" between Lamar's verse-based disses of other rappers and chorus-based boasts of his own abilities.

Broadening our purview from Lamar's practice, this essay points toward further inquiries into rhyme manipulation, formal roles, and formal ambiguities in hip-hop music. First, do other rappers set up formal norms as Lamar does, or different norms; and do groups of rappers (perhaps defined geographically, chronologically, or by subgenre) have characteristic formal norms? Second, what are the expected attributes of other formal roles that are borrowed from pop and rock traditions in hip-hop, such as "bridge" or "prechorus?" And third, how widespread in other rappers' songs is the stretching of verses into subsection-level roles, for instance in single-verse songs? A mix of large-scale corpus studies and in-depth analyses of rappers (both individuals and groups) may be necessary to explore these questions. Regardless of these questions, though, what is not at stake is Lamar's consummate artistry and well-earned status as "hip-hop's reigning king" (Alvarez 2020).

[55] The textural contrast results from the dropping out of the bass, and from a phasing (or filtering) of the vocals that continually pans from left to right, taking about four measures to return to the starting point hard left and giving them a sense of width.

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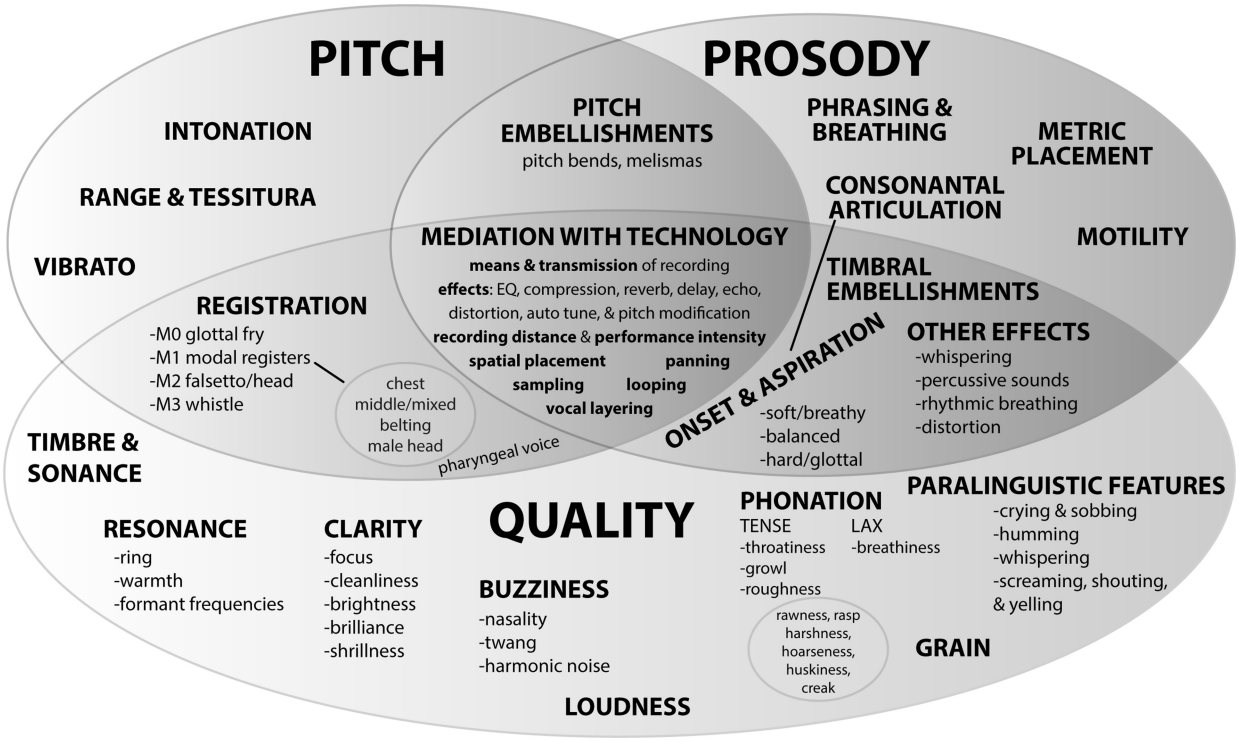
Review of *A Blaze of Light in Every Word: Analyzing the Popular Singing Voice* by Victoria Malawey, Oxford University Press, 2020.

by Emily Milius

The voice holds immense power and is one of the most critical aspects of listener perception in popular song. In her book, *A Blaze of Light in Every Word* (2020), Victoria Malawey delivers a concrete methodology for analyzing the singing voice in popular music that synthesizes the wealth of vocal scholarship across multiple disciplines. Her groundbreaking methodology, which draws from vocal science, music theory, and performance, gender, and embodiment studies, as well as the analytical model presented in her 2011 article, aims "to provide a systematic approach for discussing the wide-ranging and often ineffable aspects of vocal delivery in popular music recordings, with the goal to aid and enhance musical analysis" (2020, 2). In Chapters 2–5 of this five-chapter monograph, she employs this methodology to examine covers of popular songs from the last forty years. Ironically, it seems as though Malawey's own voice can get somewhat lost as she engages with such a vast array of scholarship in her literature reviews and analyses throughout each of the book's five chapters. In short, Malawey's conclusions can sometimes be veiled within her references. That being said, no other scholar has done such extensive work to harmonize these various forms of dense research on the voice, and this work will no doubt be an imperative and indispensable resource for anyone who studies the singing voice, especially in popular song.

Malawey opens the introduction (Chapter 1) with a discussion of Jimmy Fallon and Jamie Foxx comically imitating iconic singers during the "Wheel of Musical Impressions" on *The Tonight Show*. In this example, Fallon mimics Barry Gibb (with the song "I Love You, You Love Me" from *Barney and Friends*) and Bruce Springsteen (singing *America's Funniest Home Videos*'s theme song). Foxx performs impressions of singers identifying with different races and genders: Mick Jagger (singing "Hakuna Matata"), John Legend (performing the Toys "R" Us jingle), and Jennifer Hudson (with a rendition of "On Top of Spaghetti"). Through this example, Malawey shows how changes in vocal pitch, register, phrasing, and quality of sound create successful illusions of different performers and their "seemingly 'unique'" singing voices (2). In doing so, Malawey draws from Nina Sun Eidsheim (2019) and others (Neumark 2010; Eidsheim 2012, 2015; Weidman 2014) to demonstrate the performative and malleable qualities of vocal timbre both in the *Tonight Show* example and other similar cases. Throughout this and other discussions about how aspects of the voice can be understood to be representative of identity, Malawey is clear to point out that these are ideas and assumptions made by those *listening* to the song and being *created* (consciously or not) by performers. She subsequently draws the conclusion that markers of identity are not innately bound inside the voice itself, and asserts that "we must not assume certain markers of vocality are essential or biological features of any individual or group identity" (24). Additionally, she highlights that the gendered discussions of voice obviously leave out not only transgender, non-binary, and genderqueer singers, but also cisgender performers whose voices do not fit within normative ideas about the voice.

To outline her analytic methodology, Malawey provides a helpful Venn diagram (Example 1) that illustrates how different aspects of the voice—pitch, prosody, and

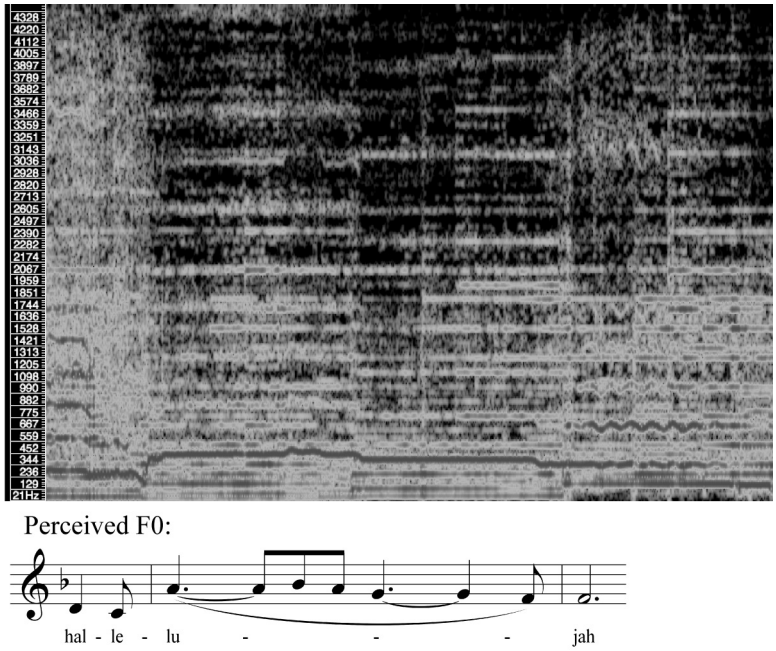


Example 1. Malawey's conceptual model for understanding voice. (2020, 7).

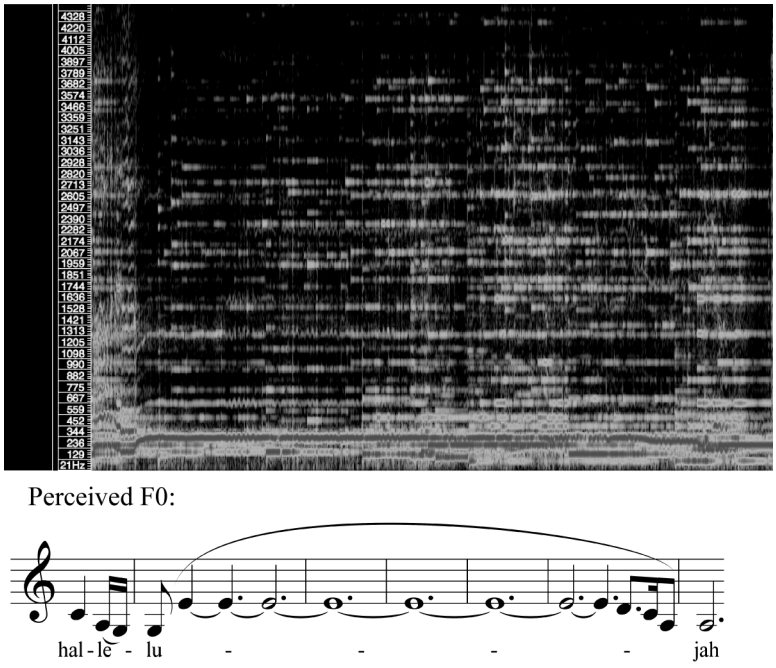
quality, which are the subjects of Chapters 2–4, respectively—interact with one another, and are mediated with technology (the topic of Chapter 5). In this diagram, Malawey thoroughly depicts the various components that make up pitch, quality, and prosody, as well as the ways in which they overlap with one another, such as registration, timbral and pitch embellishments, and mediation with technology. Beyond showing the combination of elements that play into understanding the voice, her chart could also be used as an excellent resource for anyone trying to understand how these elements can be assessed, both separately and together. It would therefore serve as a useful system for undertaking a dynamic analysis of the popular singing voice (or possibly any singing voice, for that matter). In the chapters following, she explains in greater detail pitch, prose, and quality—the largest circles in the Venn diagram—and digs deeper into the smaller aspects that characterize them.

In Chapter 2, Malawey discusses pitch and its relationship with the voice, which has the ability to convey meanings in ways that instruments cannot. Malawey's description of pitch considers range and tessitura, intonation, vibrato, and register. To show how these elements can be heard and analyzed by listeners as markers of gender identity and age, she compares covers of Leonard Cohen's "Hallelujah" (1984), including those by Jeff Buckley (1994), Rufus Wainwright (2001), k.d. lang (2004), Imogen Heap (2006), Alexandra Burke (2008), and Kate McKinnon (2016). Using these aspects of pitch, she argues that each of these performers brings their own meanings into this song based on their vocal expressions. These various meanings in turn each add something to "the larger narrative that unfolds over the course of this song's three-decade history" (57). Malawey's analyses pair musical transcriptions with spectrograms to illustrate how range, intonation, vibrato, and register are used across these different performances. An example of two of her visualizations can be seen in Examples 2 and 3. In Example 2, the spectrogram displays an example of k.d. lang's head voice, in which the darker space at the top shows less overtone activity at the upper end of the series. Even less activity (and more dark space) is shown above the fundamental in a clip of Buckley's falsetto voice, as can be seen in Example 3.

By comparing these performances, Malawey convincingly demonstrates "how aspects of pitch relate to the *constructions and perception* of gender identity and age" and the creation of different narratives (32; italics added). For example, she notes that Buckley's ability to easily navigate registration with such a large range (especially in his higher registers) conveys ethereality and sexuality, with the high voice possibly allowing for a queer interpretation. In opposition, lang's performance includes a stark contrast be-



Example 2. Malawey's spectrogram and transcription of lang, "Hallelujah" at 1:58. (2020, 47).



Example 3. Malawey's spectrogram and transcription of Buckley, "Hallelujah" at 6:11. (2020, 48).

tween registers, as well as the use of vocal fry, making it more emotionally expressive. These interpretations relate to gendered stereotypes (e.g., men's sexual prowess and emotional detachment and women's lack of emotional control) as well as age assumptions (e.g., sexuality implies biological maturity), which listeners associate with the performers through their voices. Using excerpts from the various covers of "Hallelujah," she shows how each performer uses aspects of pitch and register in particular ways, such as Buckley's switches from chest, to head, to falsetto voices

and the use of both chest and head voice in lang's and Burke's recordings. More specifically, she observes that the song's lyrical and expressive meaning varies through these renditions, ranging from a religious or spiritual hymn, like Cohen's or Burke's, to an explicitly sexual narrative, like Buckley's.

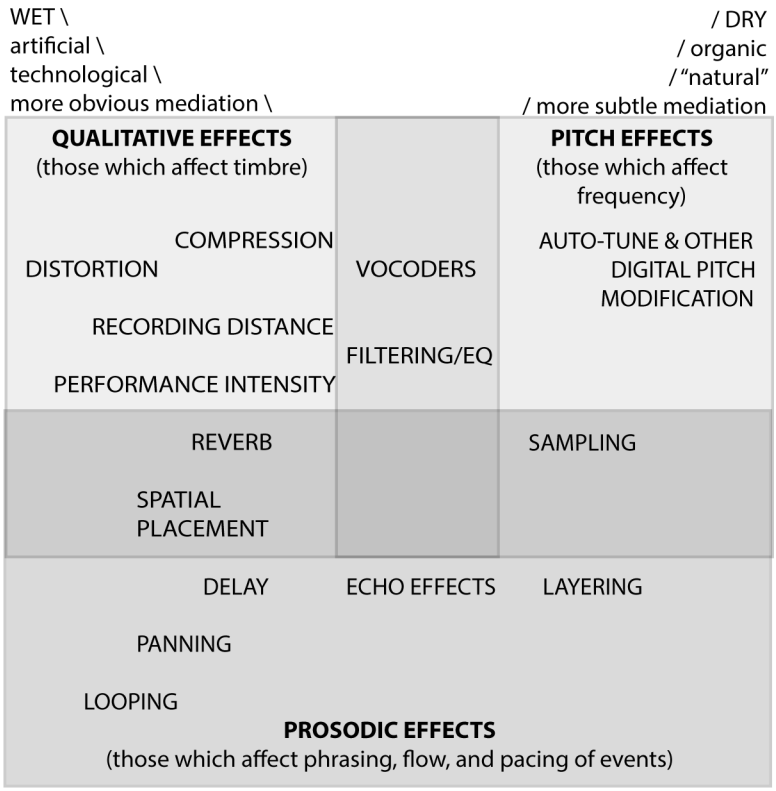
While Malawey touches upon aspects of range and tessitura, intonation, and vibrato, she devotes most of the second chapter to discussing register and listeners' assumptions about the identity of a singer based on their voice. Malawey draws from multiple types of vocal scholarship—including vocal science (e.g., Callaghan 2000; Henrich 2006), linguistics (e.g., Kreiman and Sidtis 2011), vocal pedagogy (e.g., McKinney 1982; Morris and Chapman 2006; Malde et al. 2009), and voice studies in musicology (e.g., Wise 2007; Feldman 2015)—to distinguish how the thickness and connection of the vocal folds create four distinct vocal registers: M0/vocal fry, M1/modal voice (which encompasses multiple forms of vocality), M2/head voice and falsetto, and M3/whistle tone.[1] Additionally, she explains the problems associated with essentializing gendered (or even sexed) distinctions based on biological factors connected to vocal registers, citing both vocal and feminist scholarship. She specifies that even when discussing sex, "biological" factors of the vocal tract have been societally constructed and not proven as essential fact (60–62). Malawey draws upon scholarship by Suzanne Cusick (1999), Susan McClary (2013), Nina Sun Eidsheim (2015), and others, as well as her own analyses of the covers of "Hallelujah," to problematize listeners' automatic gender assumptions based on vocal sounds, particularly in regard to register, amount of breathiness, and musical genre. She maintains that these aspects of pitch not only play into listeners' assumptions about genre and gender, but that they also should be reconsidered to include more expansive ideas about gender identity.

Malawey continues with a similar organization and methodology to examine prosody in Chapter 3. She effectively provides "a method and language for describing the characteristics of vocal prosody that have previously been difficult to address" (93). She breaks prosody—or "the pacing and flow of delivery"—into five components: phrasing, metric placement, motility (or a singer's "capacity for agility"), embellishment, and consonantal articulation (69–70, 79). After examining these components, Malawey makes three levels of what she calls "prosodic profiles" (70): broad (or genre-specific), middle (or artist-specific), and local (or individual performance-specific). Similar to the previous chapter, cover versions of a single song form the basis for her analyses—in this case, Justin Timberlake's "Cry Me a River" (2002)—allowing her to propose a way to analyze vocal flow across multiple genres and show how speech and song integrate in vocal prosody to portray meaning within song texts. In addition to Timberlake's original version, which represents R&B-infused pop, Malawey explores versions by Glen Hansard (2003, folk-rock), Ten Masked Men (2003, death metal), and The Cliks (2006, indie rock). Through her investigations of these covers, Malawey discovers individualized uses of inter- and intra-phrase connectivity, syncopation and word stress, ease of movement, and accent of consonants that distinguish both individual performances and larger genre categories from one another. By examining the ways that text is organized and stressed in these songs, Malawey is able to demonstrate how voice and lyrics not only intertwine in portraying meaning, but also in the production of sound more generally.

Vocal quality, one of the most important factors influencing the consumption of recorded popular music today, is the subject of Chapter 4. Here, Malawey expounds upon different features of vocal quality, including timbre and sonance, phonation, onset and aspiration, resonance, clarity, buzziness, vocal effects and paralinguistic features (such as crying or screaming), and loudness. Drawing from scholarship by Fales (2002, 2005), Moore (2012), Heidemann (2016), Wallmark (2014), and others, Malawey develops a strong methodology for analyzing vocal timbres that focuses on the physical production, acoustic information, and listener perception (including embodiment) of vocal quality. When applying her methodology throughout this chapter, she points out the strong correlation between listeners' associations of timbre and individuality. Furthermore, she provides reasoning for the ways in which aspects of sonance "may help us better describe and specify the physiological, acoustic, and perceived qualitative aspects that we associate with various emotive effects in popular music" (125). To illustrate the ineffability of vocal quality, she examines assorted recordings of The Cliks' lead singer, Lucas Silveira, both pre- and post-testosterone hormone therapy (pre-T/post-T) to offer perspectives on the ways that the vocal changes he experienced through transition affect how listeners associate his voice with his gender and vice versa.

Malawey continues to use both musical transcription and spectrograms to portray her analyses in the fourth chapter. Following Kate Heidemann (2016), Malawey contends that by showing acoustic information, spectrograms can be helpful in deciphering this information into perceptual discourse, particularly when considering the embodied aspects of timbral production. For example, in

[1] The M# designation is in regard to the laryngeal positions and the name (vocal fry, modal voice, etc.) refers to the register the respective position creates.



Example 4. Malawey's continuum of technological processes applied to vocal tracks. (2020, 128).

Malawey's examination of the original and two cover versions of "Bad Romance"—Lady Gaga (2009, original version), Lucas Silveira and The Cliks (2009, pre-T and 2011, post-T, respectively)—she uses spectrographic analysis to illustrate differences in the perceived clarity in the artists' voices, specifically the varying amounts of overtones in each recording. Malawey notes that "Silveira's 2009 version features the fewest prominent overtones of all three versions during this passage, which acoustically represents the relative clarity listeners might perceive" (116). In brief, Malawey's analysis of a transgender singer's timbre not only gives visibility to transgender singers and the transgender community writ large, but also provides commentary on the performance and perception of gendered aspects of the voice.

In Chapter 5, Malawey focuses on the voice's mediation with technology, emphasizing "the fiction of the natural" (127–130). After discussing the idea of a voice being either "wet" (perceived to be manipulated by technology in one or more ways) or "dry" (perceived to be natural), she states,

> all recorded sounds—no matter how seemingly dry—are indeed technologically mediated: a sound source is first mediated by the microphone used to record it, then by the amplifier and audio interface that sends the signal to a digital audio workstation, which is then mixed as a track into the recording … which is then bounced to a digital audio file such as a .wav or .mp3, then transmitted to a listener's speakers or headphones. (129)

She goes on to problematize the "concept of naturalness" (130) and asserts that many aspects of identity, which are assumed to be innate—such as gender and race—are actually unnatural constructions created by many societies. Malawey describes many different ways in which the voice can be edited with technology, including layering, multitracking, looping, digital pitch modulation, equalization and filtering, distortion, spatial placement, microphone placement, performance intensity, reverberation, delay effects, and compression. Additionally, she provides another helpful diagram depicting a continuum of these effects from "wet" to "dry," which can be seen in Example 4.

To exhibit how these various effects can affect listener perception and vocal analysis, Malawey supplements her explanations with another set of cover song analyses, this time using two songs originally performed by Björk. In the first selection, "Hunter" (1997), Malawey juxtaposes Björk's performance, which she describes as alternating between seemingly dry and wet vocals, with Kaitlyn ni Donovan's 2004 cover. Donovan's cover, Malawey explains, uses far less technological mediation than Björk's recording. For Malawey, Björk's "marked contrasts in vocal processing" al-

low for various interpretations, while Donovan's "creates a more straightforward storytelling experience" (143). For the second song, "Who Is It," Malawey compares Bon Iver's 2012 cover with Björk's original recording (2004). Malawey concludes that "technological processes may become fused with musical content, form, and an artist's vocality to such a degree that they define…sound and musical identity" (146). Through the analyses in this chapter, Malawey provides both a reason and methodology for considering the technological aspects of the voice as part of the sound and musical narrative.

Malawey explores issues related to the reproduction of emotive quality and authenticity in musical covers in Chapter 6, titled "Synthesis, or Why Covers of Elliott Smith Songs Don't Work." Here, she argues that "the same emotive quality becomes difficult if not impossible to convey through other singing voices" in subsequent musical covers (147). Moreover, she suggests that the quality of both the singing voice and emotion in the original and cover versions of a song affects listeners' perception of an artist's authenticity. She examines three songs by Elliott Smith—"Between the Bars" (1997), "Twilight" (2004), and "Roman Candle" (1994)—and their cover versions by Seth Avett and Jessica Lea Mayfield (2015) using the tools and methodologies from Chapters 2–5 to reinforce these points. For Malawey, the Avett and Mayfield covers "do not work" based on their differences in pitch, prosody, quality, and technological mediation. In short, "no one else can sound, and therefore emote, just like Elliot Smith" (176). While Malawey makes a compelling argument about why the variances in vocal aspects create versions that may or may not "work," this chapter's title carries the implication that covers of Elliot Smith's songs are "wrong" or "bad," even though that does not seem to be what Malawey is saying. It is clear that the variances she points out are important and create different meanings in the original and subsequent covers; they make unique recordings that are independent from the original in ways that cannot be exactly the same, but that are not necessarily "incorrect" or "poor." That being said, Malawey's assessment that covers cannot recreate the original performer's expression and vocal quality is convincing and perceptible as a listener. Throughout this final chapter, she provides multiple examples of her methodology in action that serve as persuasive analyses. In doing so, she emphasizes the usefulness of these analytic tactics in assessing authenticity and meaning, among other things, in recordings of popular song.

In conclusion, Malawey presents an extensive literature review and develops a cutting-edge methodology for anyone who seeks to analyze, or just learn more about, the popular singing voice. Malawey's scholarship in *A Blaze of Light in Every Word* not only dissects and explains the many aspects that comprise the voice, but also proposes ways to perceive and discuss how these aspects work together to create vocal expression in popular song. By using cover songs as her main source of study, Malawey is able to point out distinct differences in songs which are, on the surface, the same. In the process, Malawey convincingly showcases the immense power the voice holds, most especially in how listeners perceive emotional expression, authenticity, and meaning in songs containing the same basic lyrical, melodic, formal, and rhythmic content.

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Review of *Making Sense of Recordings: How Cognitive Processing of Recorded Sound Works* by Mads Walther-Hansen, Oxford University Press, 2020

by Stephen S. Hudson

Mads Walther-Hansen's admirably short monograph on cognitive metaphors for sound quality and timbre may not be filed under music theory, but lies just outside of a disciplinary boundary that is rapidly expanding towards it. This condensed theoretical text doesn't look like music theory traditionally has; it contains no score examples, it analyzes a corpus of technical and journalistic writing about music instead of patterns of pitch and duration, and it cites very few card-carrying members of SMT. It has been published by Oxford, but not under their Studies in Music Theory series—and yet, it is an important contribution to the field that resonates with recent trends, especially in embodied cognition and topic theory. In this review, I will examine how Walther-Hansen's book is compatible with established music-theory epistemologies, and propose ways in which aspects of his model could be adapted to make an even clearer fit for music theory's norms of systematicity and rigor. Finally, I will discuss the advantages and consequences of this field including more research that departs from its traditional methodologies, which have usually focused on segmentation and classification of patterns of notes in a score. Specifically, music theory must include more research like Walther-Hansen's work on cognitive metaphors if it is to describe listeners' musical intuitions and experiences with a substantial degree of completeness or veridicality.

1. Cognitive Metaphors and Music Theory

The goal of music theory has famously been described as a "*formal description of the musical intuitions of a listener who is experienced in a musical idiom*" (Lerdahl and Jackendoff 1983, 1; italics are original). Traditionally, most music theory has formalized musical knowledge as patterns of notes found in a score; then in analysis, these familiar patterns are demarcated in a score, and the resulting segmented score is often described as a map of composers' or listeners' musical expectations, understanding, or experience. Walther-Hansen describes a very different kind of musical knowledge, and provides a very different kind of formalization, in terms of "cognitive metaphors" (also known as "conceptual metaphors"), analogical mappings which we use to understand and experience one idea or domain of experience in terms of another. (Some famous examples include TIME IS MONEY, according to which one can save time, spend time, bank time, etc.; ARGUMENT IS WAR, by which arguments are experienced as conflicts, and one can take sides, concede territory, and win or lose; and HAPPNIESS IS UP, which means that sadness is down, motivating thoughts and expressions such as "she's feeling down today" or "he's over the moon.") Walther-Hansen's theory explains how we use cognitive metaphors to perceive *sound quality*, which he describes as "the timbral characteristics of the sound as it emerges in experience, rather than the char-

acteristics of the sound source or the physical properties of the sound wave" (2020, 8).

"Cognitive metaphors" is a term made famous by Lakoff and Johnson (1980), and Walther-Hansen uses this term to describe how we process music by understanding sound in terms of other domains of knowledge or experience. Following Lakoff and Johnson, Walther-Hansen argues that metaphors are not merely poetic comparisons in artful language, but form the basic structure of virtually all human cognition of sound, ranging from our basic understanding of what sound is to timbral qualities like "*heavy*" or "*wet*." (Walther-Hansen generally uses italics for sound qualities, even when they are considered as metaphors; metaphor names are in all-caps only when "functioning in the background of our cognitive system." See Walther-Hansen 2020, 127.) Some of these metaphors directly invoke physical qualities, such as when "*heavy*" sounds feel powerful and are low in pitch, qualities associated with large objects in human experience; but Walther-Hansen also argues that cognitive metaphors can be more abstract mappings with less immediate connection to physical experiences (2020, 3). For example, "*wetness*" does not describe a quality of sounds made by wet objects, but by convention refers to the amount of reverberation, and this mapping is one which is usually learned from encounters with the discourse of sound producers, rather than one which is intuitively understood.

Cognitive metaphors may even be used to understand unfamiliar, unconventional, or even unreal descriptions (see Walther-Hansen 2020, 51). For example, a recent obituary of ZZ Top's late bass player, Joe Michael "Dusty" Hill, quoted Hill's crude, self-effacing parody of rock guitarists' self-obsessed equipment-talk as a testament to Hill's shy but off-color character: "Someone once asked me to describe my tone, and I said it was like farting in a trash can. What I meant is it's raw, but you've got to have the tone in there" (Risen 2021). Of course, Hill's guitar tone doesn't literally sound like farting in a trash can, and is quite easily recognizable as a bass guitar; but this description directs our attention towards particular salient aspects of bass guitar timbre and allows us to experience them in a new way. Even if we have never been in the situation Dusty Hill described ourselves, we can imagine what he might have meant by drawing on our previously separate experiences of flatulence and of large metal cans. Part of why Hill's joke is so effectively raunchy is that our understanding of his timbral description is already physical, even though it references an imaginary experience. At the same time, it serves as an immediately understood and highly memorable metonym for Hill's bass guitar tone, a metaphor that (for me, at least) gives vivid character and renewed physical impact to a sound that had not previously caught my attention.

2. Chapter Outlines

Walther-Hansen's book proceeds from the assertion that any conscious perception we have of timbre is filtered through cognitive metaphors for physical qualities. To that end, the book is split into two halves, Part I "Foundations and Theory," followed by a concrete survey of conceptual metaphors in Part II "Encyclopedia." Before Part I, the Introduction explains the concept of "cognitive metaphors," and justifies the author's choice to focus exclusively on these metaphors rather than sound spectra (this may be one reason why the author engages so little with existing analytical studies of timbre, which often are grounded in spectrographic analysis, such as Cogan 1984, Fales 2002, Berger and Fales 2005, and Lavengood 2020). Chapters 1–3 in Part I subsequently develop this framework, contextualize it in history, and interface with other fields. Chapter 4, "An Encyclopedia of Selected Sound Terminology," comprises all of Part II and defines the most common cognitive metaphors from the author's corpus of writing about sound recordings.

Chapter 1 explores the evolution of sound recording media and traces the development of one particular cognitive metaphor for sound, showing how the early assumption that a sound recording captured a more-or-less veridical record of reality (the THERE IS ONE REALITY metaphor, 32) gradually evolved into an understanding that sound recording could capture that reality from many different perspectives, and even fabricate sonic unrealities (the MULTIPLE REALITIES metaphor, 41). Many of the examples in this chapter are well-rehearsed objects and scenes from sound studies scholarship on the history of recording and listening (such as Sterne 2003). Walther-Hansen's contribution here is to formalize the evolution of particular cognitive metaphors during this history. In doing so, he introduces a key move from cognitive linguistics that underlies much of this book, the argument that the structure of discourse represents the structure of cognition; the *evolution in words for describing* how sound represents reality indicates an *evolution in ways of thinking*.

Chapter 2 explores "ontological metaphors," or metaphors we use to understand the nature of sound itself. For example, we often talk about something happening "in" the sound, or something "sticking out too much" from the sound; these descriptions draw on the SOUND CONTAINER metaphor (2020, 60–62). This chapter also explores how the framing of sound in terms of cognitive metaphors relates to previous scholars' philosophical positions on whether we hear sounds as representations of real-world objects, or as purely sonic events (for example, the latter position is represented by Pierre Schaeffer's "acousmatic listening"; see Schaeffer 1966, Chapter IV).

Chapter 3 extends the methods of the previous chapters to nonverbal dimensions, exploring cross-domain mappings between timbre and color, physical shape, and smell. This chapter is more speculative than the other chapters; for example, several of the author's arguments culminate in a prediction that the future of audio interfaces will represent sounds as tactile, physical shapes through the SOUND CONTAINER metaphor, replacing the now dominant SIGNAL FLOW metaphor in sound engineering. Lakoff and Johnson's concept of "image schemas," referenced throughout the book, is discussed at more length here to explore our sensorimotor experiences of sounds, resonating with music theorists' similar applications of this idea though the author does not cite this work (for example, Cox 2016 and Zbikowski 2017). The chapter ends with a compelling argument that cognitive processing of sound quality works best if metaphors, discourse, action, etc. have the greatest possible fit or resonance between different sensory domains.

Throughout this book, but especially in Chapter 3, Walther-Hansen often considers the actions and experiences of producers and sound engineers, while rarely discussing fan culture in much depth. Cognitive metaphors for timbre have an enormous impact on fans' listening experiences and relationship with their favorite styles, so this omission is a critical missed opportunity to demonstrate the power and relevance of Walther-Hansen's framework. Examples include experiences of rough timbre as "*threat*" and "*violence*" in death metal culture (Wallmark 2018), or the use of tape and vinyl sounds as markers of pastness or nostalgia in hip-hop (Harrison 2006; Fouché 2011). Another missed opportunity is Walther-Hansen's omission of listeners' perceiving actions from his discussion of how actions can be used to understand sound, not just shape it (2020, 73). In my own research, I argue that metal listeners' headbanging creates and amplifies experiences of heaviness, by adding corporeal impact to whatever is already heard in the sound (Hudson 2022). But emphatic listener motion doesn't have to be "*heavy*," it can engage other conceptual metaphors. In the music video for the 2007 rap hit "Pop, Lock & Drop It" by the late St.-Louis-based artist Huey, the female dancers "drop it," squatting down and bouncing up simultaneously with the bass hits on beat 2 while the chorus vocals repeat the song title. Whether we join the dance or just watch the video, this butt-drop surely contributes something significant to our multi-modal understanding of the bass's weight, motional quality, and meaning—and it definitely adds something different than the heaviness of headbanging.

The methodology of music theory (as articulated in the quotation above from Lerdahl and Jackendoff 1983) is most clearly approached in Chapter 4, a brief "Encyclopedia" which explores 15 opposing pairs of sound qualities such as "*Dark*/*Bright*" and "*Clean*/*Dirty*." Each entry has the following sections: "Metaphor" describes the domains which the metaphor maps sound onto (emotion, physical and spatial qualities, etc.), "Physical Signal" briefly describes the sonic attributes associated with this metaphor, and "Discourse" sketches the metaphor's usage in technical and critical writing. Finally, each entry includes a table of binary characteristics which are entailed by this metaphor. For example, the table for "*Clean*/*Dirty*" lists under the header "Clean sound," "Is non-distorted; Sounds sterile (unexciting); Is noise-free; Is unoffensive," while in the opposing column "Dirty sound" it lists the opposite qualities, "Is distorted; Does not sound sterile (exciting); Is noisy; Is morally unclean/offensive" (2020, 95). In sum, the cultural meanings and physical characters evoked by these descriptors are certainly "musical intuitions of a listener who is experienced in a musical idiom," and Walther-Hansen's detailed encyclopedia entries are certainly "formal descriptions" of these intuitions.

3. Adaptation for Musical Analysis

Musical analysis usually works through segmenting and labelling a musical score or an auditory experience, as Dora Hanninen (2001, 2012) has highlighted. Walther-Hansen's short encyclopedia provides an understandably coarse-grained taxonomy, which is arguably not yet a rigorous segmentation method for musical analysis (to be fair, this is outside the stated scope of his book). Below I suggest additional degrees of systematicity that help this encyclopedia meet some recommendations Hanninen has for theories of segmentation and analysis.

Hanninen suggests that in the most general sense, "Music analysis might be described as the conceptualization and representation of musical relationships" (2001, 345), which can include relationships between individual notes, but also relationships between different kinds of musical objects or concepts. Hanninen argues that music analysis's descriptions of these relationships can be more powerful when there are clearer criteria for demarcating these objects or concepts and distinguishing between them, because this additional rigor can "open up the possibility for precise and reasoned intersubjective discourse about how…analytic interpretations differ, and about ambiguity, richness, and multiplicity of hearings" (2001, 346).

Adding more systematicity to Walther-Hansen's method enables it to speak to the richness and plurality for which Hanninen advocates, by elucidating both the relationships between different cognitive metaphors for timbre, and the criteria for their distinction. One way to make Walther-Hansen's account more systematic is

to import additional tools from cognitive linguistics to describe the relationships between concepts and linguistic objects, such as Ronald Langacker's (2002) account of schematicity and interrelated senses of lexical items. "Lexical items" is a broad category which includes parts of words, single whole words, and conventional chains of words that together form a language's basic vocabulary. Langacker argues that our understanding of any one of these items is more complex than a single definition, but is better depicted as a network of related metaphors, derivative terms, and more fine-grained distinctions.

> The precise configuration of such a network is less important than recognizing the inadequacy of any reductionist description of lexical meaning. A speaker's knowledge of the conventional value of a lexical item cannot in general be reduced to a single structure, such as the prototype or the highest-level schema. For one thing, not every lexical category has a single, clearly determined prototype, nor can we invariably assume a high-level schema fully compatible with the specifications of every node in the network. (Langacker 2002, 2–3)

Similarly, timbres and the cognitive metaphors we use to understand them are often best conceived as a "considerable array of interrelated senses" (Langacker 2002, 2) in which each sound quality consists of a network between several overlapping metaphors, related near-synonyms, and diverse resonances and associations with other dimensions of experience. Walther-Hansen's encyclopedia definitions are already admirably multi-layered and multimodal, but an application of his ideas to musical analysis must recognize the breadth of overlap between related cognitive metaphors as well as the depth of more fine-grained distinctions.

For example, the cognitive metaphor for "*Heavy*" overlaps considerably with "*Dark*," "*Hard*," and "*Rough*." While these are not identical metaphors, most instances of "*Heavy*" arguably also draw on one or more of the other three metaphors. Additionally, in Walther-Hansen's definitions, these four cognitive metaphors share many overlapping entailments, as I've mapped out in Figure 1. For example, "*Heavy*," "*Hard*," and "*Rough*" sounds all entail apparent force or effort; "*Heavy*" and "*Dark*" sounds are both low in pitch; etc.

Additionally, a single metaphor like HEAVY operates in the background for a large network of related sound qualities with distinct connotations and associations, which often are not entirely represented within a single definition or term. Figure 2 takes a few of the large number of senses for HEAVY used within the metal genre, grouped into two categories by speed. The *Heavy & Fast* category is also closely related to another background metaphor, HARD. The broad metaphor of HEAVY could be

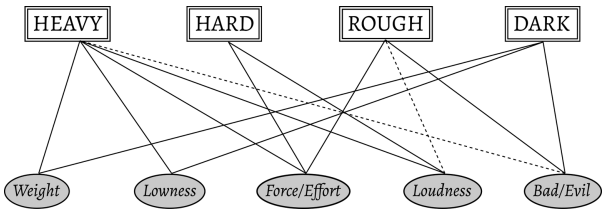

Figure 1. Four cognitive metaphors with their overlapping entailments. Top row: cognitive metaphors for sound quality; Bottom row: entailments / characteristics from other domains of experience. Based on Walther-Hansen's encyclopedia definitions (Chapter 4). Dotted lines represent two additional entailments I added: rough sounds are often literally loud or imply loudness, and heaviness is often associated with badness or evil.

described as a kind of schema which passes on many entailments (like size, weight, impact, etc.) to each of the more specific senses (such as "*brutal*," "*thunderous*," "*adrenalized*," etc.). But many of these individual senses resonate with other metaphors as well, and those other metaphors could be viewed as schematic for these individual terms. For example, "*funereal*" could be described as a finer sense of both HEAVY and DARK. This network represents a diverse and multidimensional space of interrelated senses, which cannot be reduced to a single definition for HEAVY; for example, "*funereal*" and "*adrenalized*" are practically opposite in meaning, but both are senses of HEAVY which apply this metaphor in divergent ways to create their distinct qualities of physical impact.

4. Consequences for the Field

But there's something else that theorists can get from this book, besides a new method of segmentation analysis. Music theory has traditionally focused on the syntax of notes and patterns of notes, but there are many other kinds of intuitions listeners make beyond distinguishing between different musical pattern-objects and construing their syntactic structure. The greatest strengths of Walther-Hansen's approach to timbre may lie not in distinguishing between different timbres, but in mapping out the qualities and experiences invoked by those timbres, and explaining timbre's instantaneous and compelling pull over us. In other words, Walther-Hansen's work points towards a new direction for music theory and analysis, but one which is still within the scope of formalizing listeners' intuitions: instead of segmenting and labelling different regions of a score or temporal experience, or elucidating principles of syntax, music theory and analysis can investigate the rich web of metaphors and concepts that listeners might bring to understanding individual musical qualities such as timbre, harmony, melodic motion, or topic.

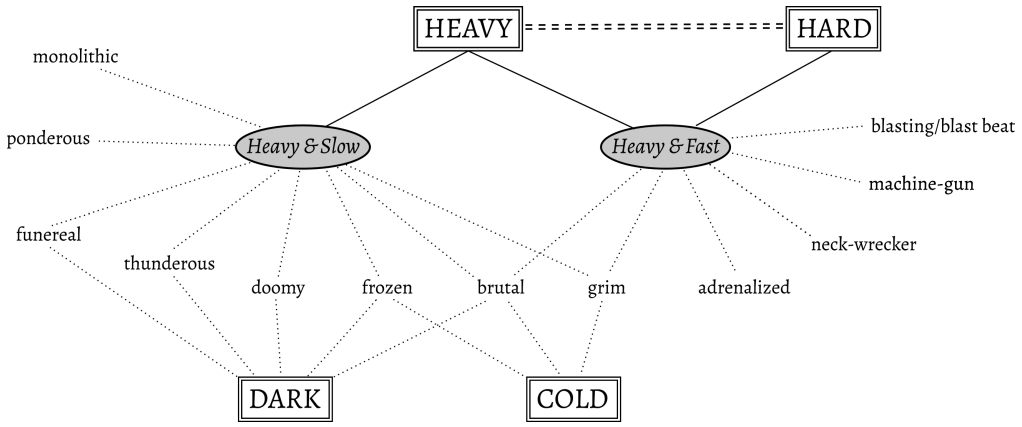

Figure 2. Network of senses of the cognitive metaphor HEAVY. Square boxes contain cognitive metaphors. Shaded circles provide two distinct senses of "heavy" categorized by the characteristic of speed. Individual descriptive terms are in normal text. Dotted lines show that a term draws on a specific metaphor. Double-dashed line indicates that HEAVY and HARD are closely related metaphors; both metaphors are activated by the sense "Heavy & Fast".

If Lakoff and Johnson's arguments about cognitive metaphors are correct, and virtually all cognition involves metaphor, then music theory needs more cognitive metaphor research like Walther-Hansen's book if it is to map the "intuitions of an experienced listener" and describe our musical experiences. And music theory is already moving in this direction; musical meaning and embodied cognition have become hot topics in the last decade, to the point that many of Walther-Hansen's non-music references are already well-cited in some areas of music theory. In fact, though it is not framed in this way, the recently ascendant subfield of topic theory is already a kind of cognitive metaphor theory, as it maps how music can metaphorically represent and evoke affects, images, people, and even other music—although unlike Walther-Hansen's theory of timbre, topic theory still shares music theory's traditional locus of note patterns in scores. While the field of music theory may once have prioritized "abstract principles" of musical structure, over the last decade or two more and more attention has been devoted to concrete and situated explorations of cognition and experience. Fully realizing this scope will mean including more research that works in new modes other than segmenting scores into discrete segments or describing the syntax of those note patterns. It's a substantial shift, but one the field seems poised to take.

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