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Embodied Form in Grisey's *Prologue*: Variation, Opposition, Tension

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Abstract. This article explores intersections of embodied cognition and form in Gérard Grisey's *Prologue pour alto seul* (1976). Drawing on work in mimetic imagery, gestural cognition, and body-based conceptualization, I trace *Prologue*'s seemingly abstract processes of variation, opposition, and tension to the performer's actions and an embodied listener's responses to those actions. My analysis demonstrates how *Prologue* relies on the body as a medium and metaphor for its structuring, from Grisey's bodily metaphors for its motives to listeners' responses to its boisterous and noisy climactic section. By concentrating on performance and embodiment concerns, I aim in my analysis to bring out the implicit role of bodies and materials in spectral theory and discourse more broadly. In conclusion, I reconsider the commonly held notion that spectral music is "about" sound in light of the close associations of sound with movement and action identified by embodied cognition.

Keywords and phrases: Embodied cognition; gesture; conceptual modeling; form; spectral music; Gérard Grisey.

Introduction

Recent work in music and embodied cognition has convincingly shown the links between bodily understandings and musical experiences. Perceptions of musical movement relate to listeners' knowledge of movement—whether that movement is observed in performance (Mead 1999), related to natural "dynamic processes" (Zbikowski 2017), or filtered through proprioceptive, haptic, or kinesthetic experiences in their own bodies (Acitores 2011; Peters 2012; Kozak 2015). Listening to music entails representations of motion alongside patterns of sound (Godøy 2018); these representations contribute to judgements about music's structure, time, and affect (Cox 2011; Kozak 2020). More broadly, important analytical concepts such as tension and release can be traced to body-based image schemata (Saslaw 1996; Brower 1997/98; Lakoff and Johnson 1999), or else related to basic life functions, such as breathing and abdominal contractions (Cox 2016).

The embodied perspective is especially important (though under-explored) in the case of avant-garde music, whose expanded palette of sounds and forms invites listeners and analysts into a direct engagement with performance and movement.[1] Consider Gérard Grisey's *Prologue pour alto seul* (1976; hereafter, *Prologue*), a piece of early spectral music for solo viola. *Prologue* consists of a gradually developing process, wherein an initially soft five-tone melodic motive is repeated and transformed into a series of complex and noisy glissandi played with extreme bow pressure. Past analyses of *Prologue* have expounded its construction

[1] One challenge to embodied analysis of recent music is the role of acousmatic, electronically generated sounds. In this regard, Peters (2012) finds residues of touch and movement in synthesized sounds, while Mason (2019) investigates embodiment and affect in electroacoustic spectral works.

from the combination of discrete neumes (Baillet 2000), traced the historical evolution of the piece through successive versions incorporating acoustic and electroacoustic resonators (Féron n.d.), and related its repetition-and-variation form to Grisey's ideas about temporality (Hennessy 2009). Missing from these analyses is the human body. Grisey, in fact, conceived of this piece bodily, labeling its two main motives a "respiration" and a "heartbeat."[2] Moreover, *Prologue*'s phrases can be clearly classified as "gestural": they foreground "analog" aspects of musical structure such as non-discrete pitch continua (through the use of microtones), fluid tempi, and swelling dynamic contours ("hairpin" shapes).[3]

There is, I would argue, a compelling way of listening to *Prologue* that focuses less on its construction and more on the immediacy of its feeling. Such a hearing depends on engaging with the bodily movements of the violist, out of which the form springs. This engagement will be rooted in the embodied listener, whose familiarity with the gestural-material roots of sound production and expression—to varying degrees of specificity—shapes what they hear and feel in the form.[4] The piece offers a visceral experience on several levels: the *variation* of the motive relates to human movement patterns and intentions; an *opposition* between motives outlines a form with a kinesthetic contrast between modes of sound production; and formal tension is expressed through increasing timbral noise, deriving from bodily tension in the production of said noise.

This article re-situates *Prologue* between performance and perception. My analysis demonstrates how its process-driven form relies on the body as a medium and metaphor for its structuring. I elaborate on the three levels of experience introduced above—variation, opposition, and tension—in three successive takes on the form. In doing so, I unpack these seemingly abstract formal concepts in light of theories of embodiment, from gestural cognition (Godøy 2010) to Mimetic Motor Imagery (Cox 2016) and body-based conceptual modeling (Brower 1997/98; Mead 1999; Zbikowski 2017), among others. Taken together, the analyses elucidate how the specific actions required of a performer, the changes to those actions over time, and their interaction with the materiality of the viola relate to aural impressions and in-time conceptualizations of formal structure and development. More broadly, by concentrating on performance and embodiment in a close reading of the piece, I aim to bring out the implicit role of bodies and materials in spectral theory and discourse. I return to this last claim in the conclusion, where I reconsider the commonly held notion that spectral music is "about" sound by contextualizing existing interpretations of *Prologue* (and theories of Grisey's music) in light of an embodied framework.

1. Respirations and Heartbeats: Embodied Metaphors in *Prologue*

Prologue is the opening movement of Grisey's six-piece orchestral cycle, *Les espaces acoustiques* (1974–85).[5] However, it was composed after the two movements that follow it, *Périodes* (1974) and *Partiels* (1975). *Prologue* builds on elements of *Périodes*, notably pitch and harmonic material—both are based on an E_1 harmonic spectrum. *Prologue* also inherits a set of bodily metaphors for form from *Périodes*, centered on an essential life process: breathing. Example 1 reproduces the formal diagram included in the score for *Périodes*. Alternating sections act like *inspirations* and *expirations*, denoting generic increases and decreases in tension, respectively. Larger breathing cycles (each pair of inspiration and expiration) are delineated by moments of *repose*, expressed through sustained harmonies at very low volumes and an almost complete cessation of movement. Grisey generates a dramatic work by analogizing his cyclical developing form with a basic bodily process. The tension and relaxation inherent to everyday breathing, as well as breathing's ability to pace and measure the flow of experienced time, inform the piece's conceptual structure.

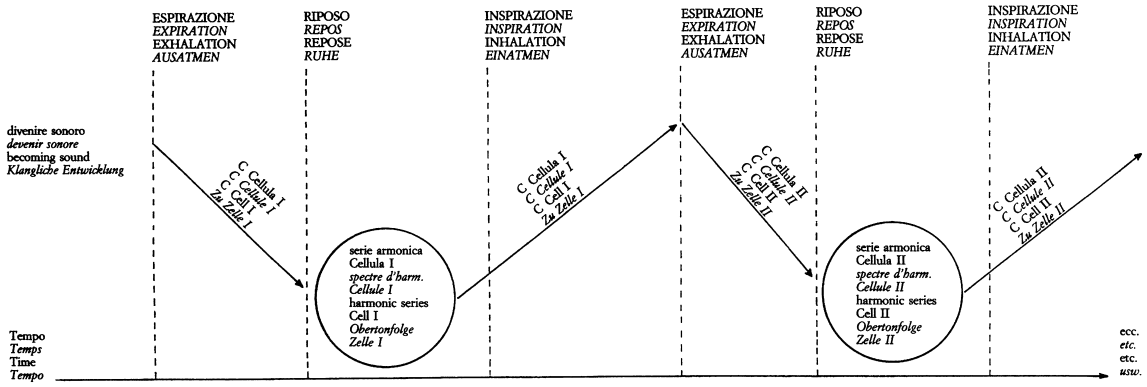
Where inspiration and expiration describe extended sections in *Périodes*, in *Prologue* the breath serves as a more local metaphor for the dynamic shape of a single melodic

[2] I discuss this metaphor and its implications further in the next section.

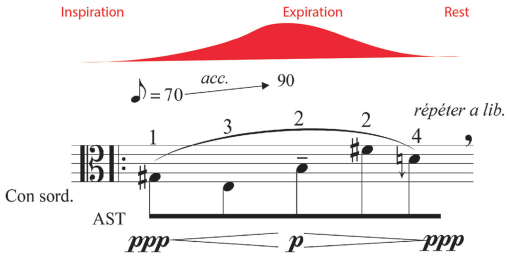
[3] Hatten (2004, 124–125) describes musical gestures as "*Analog*, as opposed to digital or discrete," meaning gestures as a mental category are wholes with continuity (deriving from the continuous actions of their production), articulate shape, and distinctive envelopes. Most broadly, gesture depends on a sense of movement: "Musical gesture *is movement* (*implied*, *virtual*, *actualized*) *interpretable as a sign* … [which] *communicates information about the gesturer*." Hence, for Hatten gestures are "*beyond precise notation*," since notation is itself digital and discrete (excepting more dynamic but vaguer marks, such as slurs and *crescendi*). Notably, some of Grisey's notational innovations bend traditional notation toward the analog, for instance representing duration with solid extended horizontal lines.

[4] On embodiment, affect, and their place in analysis, see Cox 2016 and Kozak 2020.

[5] The six movements of this cycle expand in forces from the solo viola of *Prologue* (1976) to the large orchestra with six solo horns of *Epilogue* (1985). The work is almost always performed in sequence, with an intermission between movements three (*Partiels*) and four (*Modulations*)—although some movements can be performed stand-alone (for example, *Modulations* was recorded alone by the Ensemble Intercontemporain under Pierre Boulez). Some movements even contain optional endings for when they are played alone. *Prologue* is not one of these: its final three minutes are a direct transition into *Périodes*, including a creative retuning of the strings for that piece. Violists looking to play *Prologue* by itself are faced with the challenge of creating their own ending or choosing when to stop playing.



Example 1. Breathing as metaphor in Périodes.



*Accorder la IV^{0} corde un demi-ton plus bas.

Example 2. The "respiration" motive as an inspiration-expiration-rest pattern.

motive, united in the single shape of a "respiration" (see Example 2). Another motive, based on a similarly life-sustaining and time-marking bodily process, a "heartbeat," inculcates a different type of time. This motive mimics the heart's beating rhythm: played on a single pitch, its short-long patterns emphasize rhythm and immediately call to mind a heartbeat. Finally, the static repose sections of *Périodes* become moments of literal rest in *Prologue* through silences between statements of the respiration and the heartbeat, which provide space for the phrases to "breathe" while more clearly delineating segments and developmental phases.[6]

Now of course, one could not maintain life with this pace of breathing, and if our hearts beat only between breaths (and sometimes not for minutes at a time), we would not be long for this world. Moreover, we could hardly

The "respiration" motive

Audio Example 2. (click to play audio).

"breathe" along with the respiration motive beyond the first few phrases, which becomes so protracted and erratic just minutes into the piece that we would likely hyperventilate.[7] To be sure, *Prologue* is not a literal, one-to-one imitation of a body's life-sustaining processes. Nevertheless, Grisey's metaphors transcend mere resemblances. By using these metaphors, he implicitly draws on his own embodied experiences of breathing, of feeling his heartbeat, of easing into repose between movements. These quotidian experiences then inform his conception of *Prologue*'s motives and formal development.[8] Further, these metaphors

[6] Throughout his career, Grisey expresses interest in composing the same structure at vastly different timescales. The translation of the three large cycles of *Périodes* into three-second motives in *Prologue* represents a "contraction" of *Périodes*'s time. *Prologue*'s respirations, heartbeats, and reposes are based on a similar structural concept, but are perceived in a completely different way because they unfold at a timescale calling for different kinds of perception and engaging different levels of memory.

[7] The illusion of breathlessness can be an equally powerful experience. Mead (1999) recalls feeling stressed at a clarinet performance when he tried to subconsciously breathe along with the performer—who, using circular breathing, never seemed to breathe at all. While we are under no illusion that the violist needs to breathe with the melodic statements of *Prologue*, the breath-like quality of the phrasing suggests a secondary metaphor of breathlessness accompanying the expansion of phrases later in the piece.

[8] Intriguingly, Grisey ([1982] 2008, 32–33; first published 1978, two

readily activate bodily concepts for audiences, whether they have explicit knowledge about them (from reading the program notes) or merely implicit knowledge (the motives clearly "sound like" their bodily correlates). The gentle viola phrase resonates with the tensing-and-releasing shape of a breath that we experience thousands of times a day—not to mention the pervasive historical comparison of musical phrases to the breath. Finally, the bodily character of Grisey's metaphors beget larger metaphorical associations with life processes. The piece may seem to have a life of its own: as it breathes and pulses, it also grows and evolves into something new.[9]

Grisey's bodily metaphors in conceiving, composing, and describing the piece are an instance of embodied cognition *par excellence*. Breath and heartbeat animate what could have been a stoic expression of the E_1 harmonic spectrum into a compelling composition. More levels of bodily meaning accrue from the performer, whose body moves to create not just sounds but motives, shapes, relationships, and affects.[10] All this embodied meaning culminates in the form-focused listener, who recognizes metaphorical and literal movement in the sounds they hear in their quest to understand the form and interpret their affective responses to it.[11]

The embodied aspects of *Prologue*'s form may not be immediately evident to a listener, since embodiment influences our cognition at mostly a preconceptual, nonconscious level (Cox 2016).[12] Consequently, one goal of the present analysis is to unpack how generic formal concepts (e.g. tension) in the piece reflect bodily engagements and assumptions. In the process, I also draw the reader's attention to how bodily movement informs what there is to hear in the piece and how they may themselves hear the form. Foregrounding embodiment and performance can enrich subsequent hearings in new and profound ways as listeners become more attentive to how they engage with the music and how they might imaginatively "move" along with it.

2. Analyzing *Prologue*: Three Formal Concepts from the Body

My analysis highlights the main portion of *Prologue*: a twelve-minute process of increasing complexity and growing timbral noise leading to a climactic peak. In the caption for each example, I refer to the excerpt's location within the published score by page and line number, abbreviated as page:line (e.g., 3:2). However, the location of a passage in the score is an imperfect measure of *when* a passage occurs. *Prologue*'s tempi and timings are fluid (every phrase accelerates or decelerates smoothly), the notation is spatialized (the distance between notes correlates to inter-onset interval), and there are no conventional measures or meters. To give a better sense of temporal proportion, I also list timestamps in the example captions based on the commercial recording by Garth Knox (Knox et al. 2005), from which I also draw the included audio examples.

There are three main elements of *Prologue*'s processual form. The first is the continuous *variation* of the respiration over time. Despite significant parametric differences between phrases, the form comes across as a series of variations on a few persistent motives. I connect this sense of variation to aspects of gestural cognition, particularly the tendency to perceive motion as action trajectories intentionally oriented toward important goal points. The second element is an *opposition* between respiration and heartbeat. This opposition stems from the motives' differing modes of production and extends to formal function, with the heartbeat principally serving as a divider between larger sections of respiratory variations. But in two significant passages the two motives blend together, creating heartbeat-like melodies that blur distinctions and functions. The third element is an increase in *tension* over time. The increasing tension points toward the climactic passage, where peak tension is expressed by loud, scratchy glissandi. I trace the growing tension to the progressive transition from *ordinario* playing to extended techniques, arguing that *Prologue*'s increasingly tense sounds reflect the underlying tension of the violist's muscular contractions and the viola's strings' tautness under extreme bow pressure. Analysis of the climactic passage and its aftermath extends the notion

years after *Prologue*'s composition) cites both heartbeats and respirations as examples of "the psycho-physiological time of the listener" which, in relation to "mechanical" or measured time, "envelop" the listener in a dynamic conception of time key to spectral thinking.

[9] Describing music as an organism is a common metaphor for Grisey, see Grisey (1982) 2008, 53. On organicism and music theory generally, see Neubauer 2009.

[10] Godøy (2010; 2011) roots Gestalt perceptions in the intentionality of gestures, which we perceive in terms of action trajectories and goals. I unpack this insight further in my analysis of variation below.

[11] Kozak (2020) explores how listeners' self-knowledge informs their experience of music, particularly time. Readers interested in relating to an audio-visual experience may be interested to watch the performance by Grégoire Simon currently available on the Ensemble Intercontemporain's YouTube channel: https://youtu.be/jQgLUogjPtI (accessed 7/15/20).

[12] Studies of music and embodied cognition, such as Cox 2016, tend to emphasize the preconceptual and automatic nature of embodied responses. However, there are also conscious consequences of embodied thinking: a listener can actively imagine how the sounds are being produced, how they are "moving" along with the music, or how the music exhibits the motion of an imaginary persona's "body." One can also willfully cast attention to the kinesthetic and haptic aspects of sound, such as the "acoustic impact" of the sounds on the body (Cox 2016, 185–187) or the feel of a particular timbre.

of tension beyond sheer sonic impact and ties it additionally to bodily tension. These passages show, in direct succession, how tension can be heard in both loud, energetic and soft, static passages.

3. Variation[13]

The primary element of *Prologue*'s form is the variation of the respiration motive.[14] This variation comes early and often: in just the first line of the score, eight discrete versions of the melody are heard (see the discussion of Example 3 below). Pitch content and contour, dynamic envelope, and bowing pattern vary in every statement. Yet the aural impression is not of eight distinct phrases, but of a single musical object or shape undergoing variation. In fact, Grisey describes *Prologue* as a process that reveals the *Gestalt* of the melodic motive out of (or despite) the "la pesanteur et de l'hypnose de la repetition (the ponderousness and hypnosis of repetition)": "La mélodie est ici travaillée dans son essence même" (Here the melody is molded into its very essence).[15] No two statements of the motive are alike, yet it is easy to hear one thing, one motive, consistently repeating and developing. How can we reconcile the changes with this elusive sense of motivic consistency?

The answer, I argue, lies in the gestural aspects of *Prologue*'s respiration motive. Despite the generality of the term gesture, numerous scholars have in recent years explored systematic applications of gestural thinking to listening and analysis. Thinking about the motive as varying gestures entails elevating "relationships among segments" over "set[s] of features" (Hanninen 2012, 117), "movement qualities" over individual statements of a motive (Fisher and Lochhead 2002, 49).[16] A gestural approach concentrates on the *synthetic* and *emergent* meanings of musical motives and melodies (Hatten 2004, 111–112). Gestures are meaningful wholes, heard as the combination of different parameters; as cognitive things, they are infused with intuited meanings, principally with regard to expression. Rolf Inge Godøy (2010; 2011; 2018) proposes a central role for gesture in sonic perception, arguing that sound is understood in a manner similar to how seen gestures are processed by the mind: as patterns of action ("motion scripts") that are organized around *goals* connected by intentional *action trajectories*.[17] To borrow Hatten's (2004) language again, gestures are analog rather than digital: they move dynamically through continuous spaces, with trajectories only broken up by the goals for which they aim.[18] It is through the coupling of sonic and motor information that we hear goals, directionality, and expressive agency in music. More theoretically, the gestural approach traces ideas about phrases and motives with the movement units that we imagine a performer (or ourselves) executing.[19] On a higher conceptual level, Candace Brower (1997/98) relates the sense of goal-directed motion in musical forms to the PATH schema, which maps embodied experiences of traversing distances and arriving at destinations onto analytical judgements about musical structure.

From this perspective, the "essence" of the respiration motive is not found in its individual notes, but rests in the synthetic shape that emerges from their combination.[20] Further, the motive's repetition draws attention to micro-gestural differences of emphasis and dynamic shaping. The variations of the respiration heighten its cohesion as an analog gesture with bodily origins and implications. Fortuitously, *Prologue*'s respirations clearly foreground goal-

[13] I set aside from my analysis the last three minutes of the piece, which serve as a direct transition to *Périodes*.

[14] While the following section examines variations of the primary motive of *Prologue* (i.e., the respiration), it could also be argued that the heartbeat also undergoes variation. The heartbeat is at first stated once at a time, then later repeated several times in a row. Further, it too undergoes performative variations, such as when it is played with a *ricochet* bowing (see Example 13 below). I focus on the variations of the respiration here, because they make up the majority of the piece, are more structurally significant in Grisey's conception, and are more wide-ranging and distinctive.

[15] My translation of Grisey's program notes (Grisey n.d.).

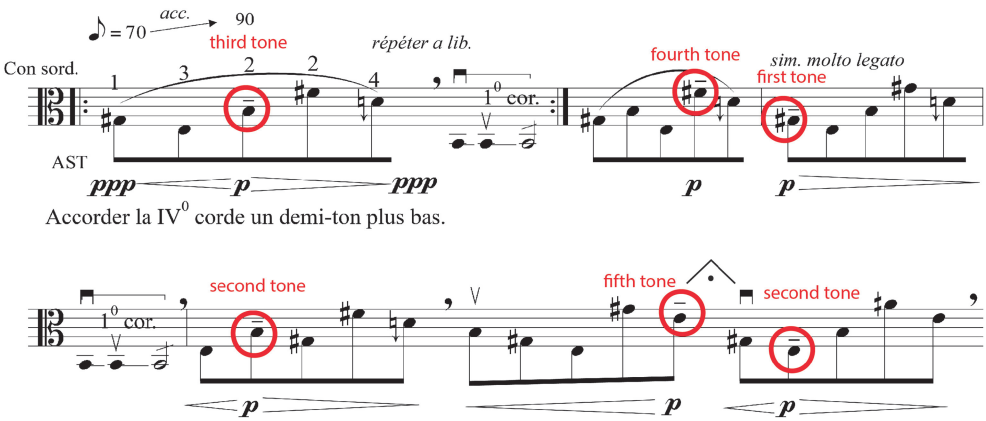
[16] "Motives … can be reconceived in terms of their gestural qualities, and the analysis of motivic relationships in a given piece can focus on the preservation or change of movement qualities associated with them" (Fisher and Lochhead 2002, 49).

[17] Godøy compares this view of gestures to storyboarding in film and animation: gestures can be summarized by their goals, but it is the imagined motion between these goals that makes the scene. There are further aspects of agency, will, and subjectivity to explore here—such as how we impute intentionality to others' gestures. For now, I acknowledge that we attribute agency to others' actions based on our own embodied experiences, even if this agency is an illusion. See Cox 2016, 222–223 for a cogent discussion on the ramifications of accepting illusions as part of our epistemology.

[18] Hatten (2004, 113–120) contextualizes this analog nature of gesture in the intentional actions of an implied agent working within (and against) environmental natural/physical laws—in the case of his study, meter and tonality. While *Prologue* has neither, a sense of analog shaping is implied in the "curvilinear" shapes imbued by the notation of tempo and dynamic change, as well as the embodied tension of playing higher, louder, and more timbrally complex pitches in subsequent phrases (unpacked further in my analysis below).

[19] Crucially, gestural cognition does not require visual confirmation of a performer: we can hear goal-directed gestures in music by imagining what movements might create or accompany sounds. Cox (2016, 147–153) considers the implications of path schemas and goal-directed motion in the sense of self-, performer-, and metaphorical-motion. Alternatively, we can use self-knowledge about our own bodies to understand motion in music; see Kozak 2015 and 2020 for (self-)enactive conceptions of phrase, form, and time in recent music.

[20] For another discussion of musical goals and literal gestures, see Davidson 2005. For an instrumental perspective on motion and goals, see De Souza 2017.



Example 3. Changes in the position of the goal tone alters the shape of phrases in Grisey, Prologue, *1:1–2.*

directed motion. In each respiration, the violist pushes toward an emphasized goal note—always marked *tenuto*—by accelerating and growing louder into that goal. For instance, in the first statement of the motive (Example 2), the violist moves from an initial tempo of 70 BPM to 90 BPM at the goal tone—the third pitch, B_3. At the same time, they broaden from a *pianississimo* opening to a *piano* climax on the B_3. The first two notes appear discrete and digital on the page, but in practice they aurally dissolve into an analog action trajectory wherein increasing energy drives toward a goal. From there, energy dissipates with the falling dynamic through the final two notes and into the silent lift that ends the phrase.

The preceding gestural analysis of the first respiration phrase recalls Brower's generalizations about the role of goals in perception: goals are "focal points that shape our experience of motion before, during, and after their attainment. As we near a goal, we often move toward it with increased speed, energy, and anticipation" (1997/98, 43). Heard as goal-oriented gesture, the first phrase entails a few basic assumptions that are in fact realized by the phrase: "we expect tension and speed to remain constant or increase until a goal is attained, and to be followed by relaxation and the stopping or slowing of motion" (43).[21] Conceptually, the phrase can be quickly understood in terms of smooth, dynamic, goal-directed motion tracing a tensing-and-releasing shape.

The basic elements of the respiration—its dynamic temporality, its swelling and fading dynamics, its tenuto

Prologue

Audio Example 3. (click to play audio).

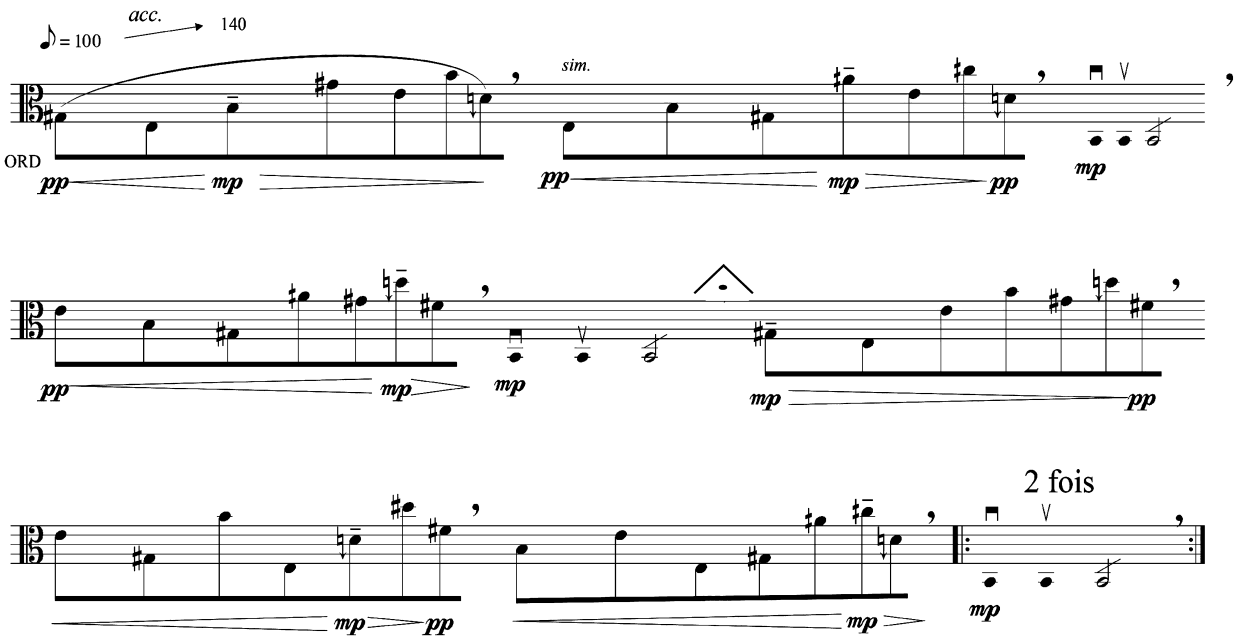
goals—persist throughout the piece. What varies is the scope of phrases, the position of goals within phrases, and how each goal is approached and left. Eventually, discrete melodic pitches dissipate, replacing discrete digital pitches with literal analog trajectories (glissandi sliding between goals). In the following discussion, I analyze the various techniques and stages of variation in terms of changes in the violist's actions, leading up to the moments just before the climax.

3.1 Scope and Shape

The first variations are changes in the position of the goal tone within the phrase. At the opening of the piece, the goal tone changes ordinal position in each successive phrase, altering the shape of each five-note respiration. See Example 3. Subsequent phrases emphasize the third, fourth, first, second, and fifth tones, respectively, using the same volume and tempo means discussed above in connection with the first phrase.[22] The shared gestural characteristics of the phrases mean that they can all be heard as related, while the phenomenal differences of goal position (and thus of dynamic contour) provide a sense of variation. The motive is not defined by a unique pitch contour, set of intervals, or rhythm, but by the gestural qualities established by the invariants common to these early phrases.

[21] While the phrase in Example 2 does not slow down—the same tempo is maintained to the end—Brower's statement applies in the abrupt "stopping" of its motion after two final pitches. Moreover, performative interpretations may differ: the violist may choose to shape the phrase with a bit of rubato, slowing through the *decrescendo* and to the phrase ending, as is the stylistic convention in much Western solo melodic music; or else they may continue apace, marking the ending merely by the cessation of sound.

[22] This section is further delineated by an evolution of the pitch collection: an additional pitch—A_4 one-quarter sharp, the eighth partial of the E_1 fundamental—arrives in the final statement, receiving special emphasis as the goal tone of this phrase and marking the end of the process. I thank the anonymous reviewer for pointing out this detail.



Example 4. Expansion to seven-note phrases in Grisey, Prologue, *1:2–3 (systems differ from published score).*

As the form continues, phrases expand, accruing more intermediate pitches and incorporating additional goal points. First, phrases stretch to seven note lengths (Example 4). These phrases continue to point toward a single goal through volume and tempo curves, albeit one notch faster (100–140 BPM) and louder (*pianissimo* to *mezzo piano*) than before. Later, phrases of eleven or more notes string together multiple goals within a single respiration (Example 5). Such phrases conceptually fuse two or more action trajectories into a more complex gesture. The simple tensing-and-releasing shape of the earlier gestures becomes cyclical—tense-release, tense-release—reminiscent of how, in our ordinary lives, "the attainment of one type of goal is followed by striving for the other" (Brower 1997/98, 36). Often these multi-goal phrases suggest a terraced phrase structure, where an early goal is achieved, then eclipsed by a more dramatic second goal. For instance, in Example 5 the wide leap from E_3 to the second goal tone, B_4, overshadows the earlier, less dramatic leap from $G\sharp_3$ to the first goal, E_4.

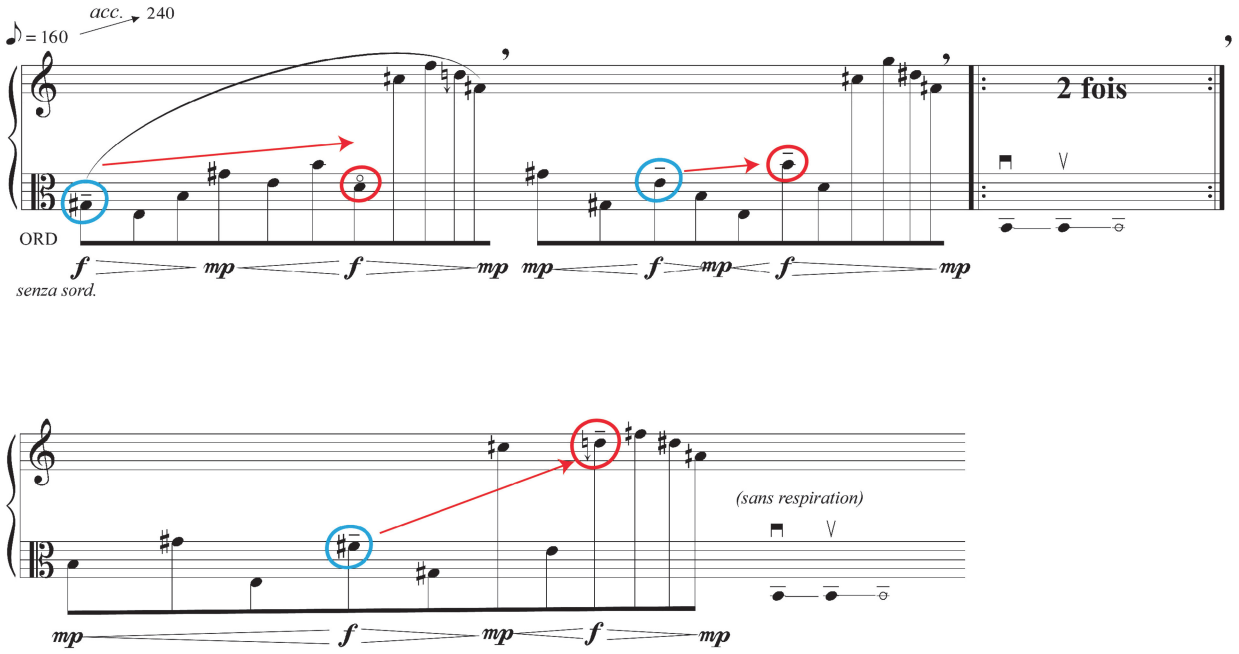
3.2 Tempo and Volume

The gestural essence of the motive is most clearly heard in the tempo and volume curves of each phrase.[23] For the vast majority of phrases, volume and tempo increase into the goal tone; after the goal, the sound decays back down to silence, creating a lift or pause separating one phrase from another. The degree and direction of the tempo and volume curve varies from section to section, suggesting the larger form sketched in Figure 1. In general, successive sections operate at louder volumes and faster speeds than preceding sections. The first phrases of the piece begin *pianississimo*, growing only to *piano* at each goal tone. The next two sections reach goals at *mezzo-piano* (second section) and then a full-throated *forte* (third section). These dynamic increases correspond to greater energy output from the violist and greater tension on the strings. The first three sections thus project a formal progression toward not only louder but also more effortful, exciting, and weighty playing. At the same time, sections feature increasingly rapid tempi. From the initial, relatively constrained range of eighth note equals 70–90 BPM in the phrases of the first section, the second section's phrases each begin at 100 BPM and accelerate to 160 BPM, while the third section's phrases each move from 160 to 240 BPM. Not only is each section moving at a faster pace than the preceding one, but the tempo delta also climbs from a modest 29% increase in tempo in the first section ($90/70 = 1.29$) to a dramatic 60% surge in the second ($160/100 = 1.60$). The violist's more ef-

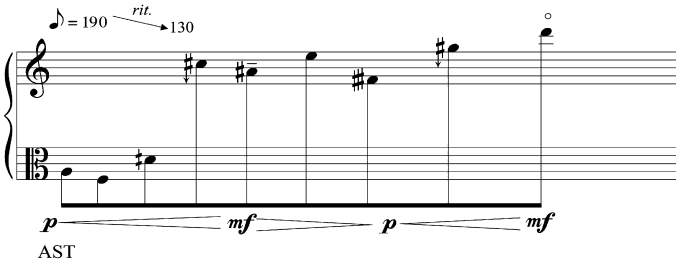
Prologue

Audio Example 4. (click to play audio).

[23] Tempo changes are indicated by a range of starting and ending tempi in beats per minute, but the acceleration patterns are also shown spatially in Grisey's notation: notes get closer together as each phrase unfolds, translating the shorter durations between note onsets as shorter intervals of distance on the page.



Example 5. Phrases with multiple goal tones in in Grisey, Prologue, *1:4–5. Blue circles show initial, weaker goals, which are superseded by later, stronger (and higher goals), circled in red. The arrows describe the sense of progression from one goal to the next.*



Example 6. Decelerating respiration phrase in Grisey, Prologue, *2:3.*

fortful movements move at more rapid tempi and navigate more extreme arcs of acceleration. The shape of the respiration is thus amplified with a sense of urgency, purpose, and perhaps even abandon as the piece drives on toward its formal climax.

However, tempo and volume variations are not strictly linear in their appearance. Phrases in the first three sections all accelerate into their goals, but in sections four and five, this trend reverses, and phrases instead decelerate from 190 to 130 BPM.[24] At the same time, the trend toward increasing volume is reversed one level, now spanning *piano* to *mezzo forte*. At first blush, the slowing tempi and reduced volumes of phrases such as the one shown in Example 6 might seem to reduce the goal-directedness of these respirations. Nevertheless, these phrases can still be heard as gestures conceptually oriented toward goals. Earlier phrases train listeners to anticipate certain goals and to expect them to be approached and left in specific ways. The decelerating phrases of sections four and five are variations in shape, not fundamental character. From the standpoint of performance, slowing into a goal invites a more

Prologue

Audio Example 5. (click to play audio).

Prologue

Audio Example 6. (click to play audio).

[24] This deceleration is represented in the explicit tempo indications as well as the reversal of the spatialized notation for duration: notes now begin close together and gradually spread out, indicating a slowing trajectory and increasing durational values for successive notes. Both notational elements are evident in Example 6.

Section	Section begins	Initial tempo (eighth note)	Final tempo (eighth note)	Tempo delta (percentage)	Dynamic range	Section ends
1	p. 1, line 1	70	90	+29%	*ppp* – *p*	Three-note neumes, slows from 110 to 60
2	p. 1, line 2	100	160	+60%	*pp* – *mp*	Three heartbeats
3	p. 1, line 3	160	240	+50%	*mp* – *f*	Extended echo in upper register tenths
4	p. 2, line 3	190	130	−32%	*p* – *mf*	Heartbeat blends with respiration
5	p. 2, line 7	190	130	−32%	*p* – *mf*	Decaying echo with alternating bowing
6	p. 2, line 9	190	300	+58%	*mf* – *ff*	Transitioning to linear descending glissandi

Figure 1. Formal diagram of Grisey's Prologue.

dramatic execution and allows the performer to linger on the goal tone, giving it a greater sense of accent and weight. Conceptually, slowing down suggests a more monumental arrival and brings with it the attendant exertions required to reach a goal point—an experience reminiscent of struggling to reach a ledge we are climbing, or to surmount the last few stairs in a tall building. Following this dramatic diversion in sections four and five, the sixth section restores the accelerating orientation with a markedly increased tempo (from 190 to 300) and dynamic range (*fortissimo* goals).

Stepping back, the overall pattern of these six sections traces the respiration shape, writ large: the first three sections build in tempo and volume just as the melodic phrase does (inspiration), the fourth and fifth sections counterbalance this directionality with decreasing tempi and reduced volumes (expiration), and the sixth section drives forward into the climactic section (another inspiration). The metaphor of respiration thus explains the subtler form laid out by the tempo and dynamic variations, in which general motion toward a climax incorporates a digression in the opposite direction.

3.3 Suffixes

A further element of variation is the addition of a *suffix* to later phrases. I call these suffixes because they are appended to the main respiration statements, beginning after the conclusion of the dynamic, goal-directed motion of the phrase proper. In contrast to the dynamic shapes of the respirations that precede them, suffixes are more sedate, composed of steady movements that maintain or reduce volume.[25] In fact, many of *Prologue*'s suffixes mimic the acoustic aftereffects of their respirations. For example, the earliest and most prominent suffix is an "echo" (Grisey's term).[26] Like its environmental counterpoint, an echo repeats the two preceding pitches and falls in volume, as if the end of the respiration is resonating in the space. The echo is a suffix to the main phrase because it is not gestural: its apparent adherence to the natural laws of acoustics sublimates the sense of an intentional agent pushing against the physical laws of a tonal space.[27] Rather, echoes catalog the ongoing resonance of an agent's sounding actions in a space.

A simple instance of echo is shown in Example 7. The final two notes of the preceding melody repeat in an even, rocking rhythm.[28] The rote repetition of these two pitches and the unchanging volume projects a static quality that, in contrast with the dynamic curve of the preceding respiration, suggests an "ending" formal function. In the example, the shape of the respiration is depicted with a rising and falling red curve, while the static qualities of the echo are shown with a blue line.

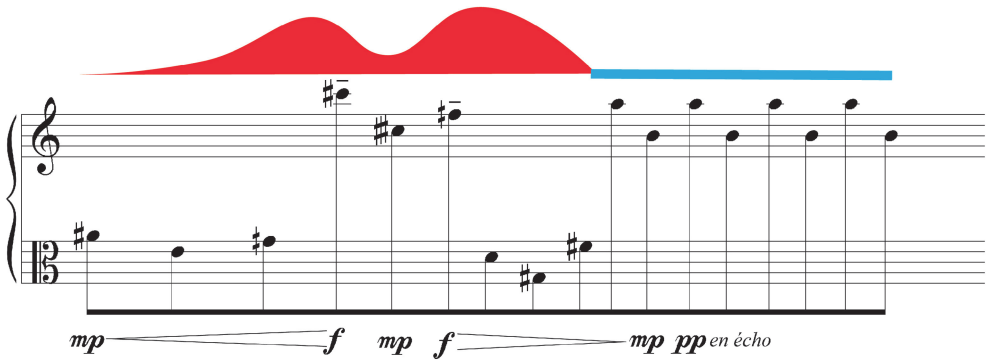
Later echoes are more substantial and incorporate their own variations. Example 8 reproduces a section where

[25] In terms of Hatten's (2004) gestural approach, suffixes follow the "physical laws" implied by tonal space, in contrast to respirations, which push back on those laws with intentional, agential gestures. For instance, echoes decay in volume as if by natural resonance, recalling what might happen if a note was played and allowed to ring in a space without maintaining the energy behind it. In reality, of course, the performer creates both echo and respiration, but by referencing an acoustic phenomenon and sublimating agency, the echoes seem to take us out of the realm of subjective gesturing and into the objective aftereffects of those sounds on an environment.

[26] In sketches for the piece, Grisey also calls the echo a "binary beating" (*battement binaire*) in recognition of its isochronous rhythm and in contrast to the uneven "iamb" of the heartbeat (*battement de coeur*). See Féron n.d. for a reproduction of this sketch.

[27] Indeed, in Hatten's (2004) terms the echoes are *not* gestural because they conform to the implied physical laws of the imaginary environment (i.e., acoustics, echoes). This stands in contrast to the gestural respirations, which express an intentional defiance of those laws by an agent in the goal-directed dynamic curve and tempo increase.

[28] In the score instructions, Grisey (1976) notes that "all the 'echo' notes should be of strictly equal duration."



Example 7. Echo suffix appended to a phrase in Grisey, Prologue, *1:9. The red curve illustrates the dynamic shaping of the respiration in contrast to the static shape of the echo (depicted as a blue line).*

Prologue

Audio Example 7. (click to play audio).

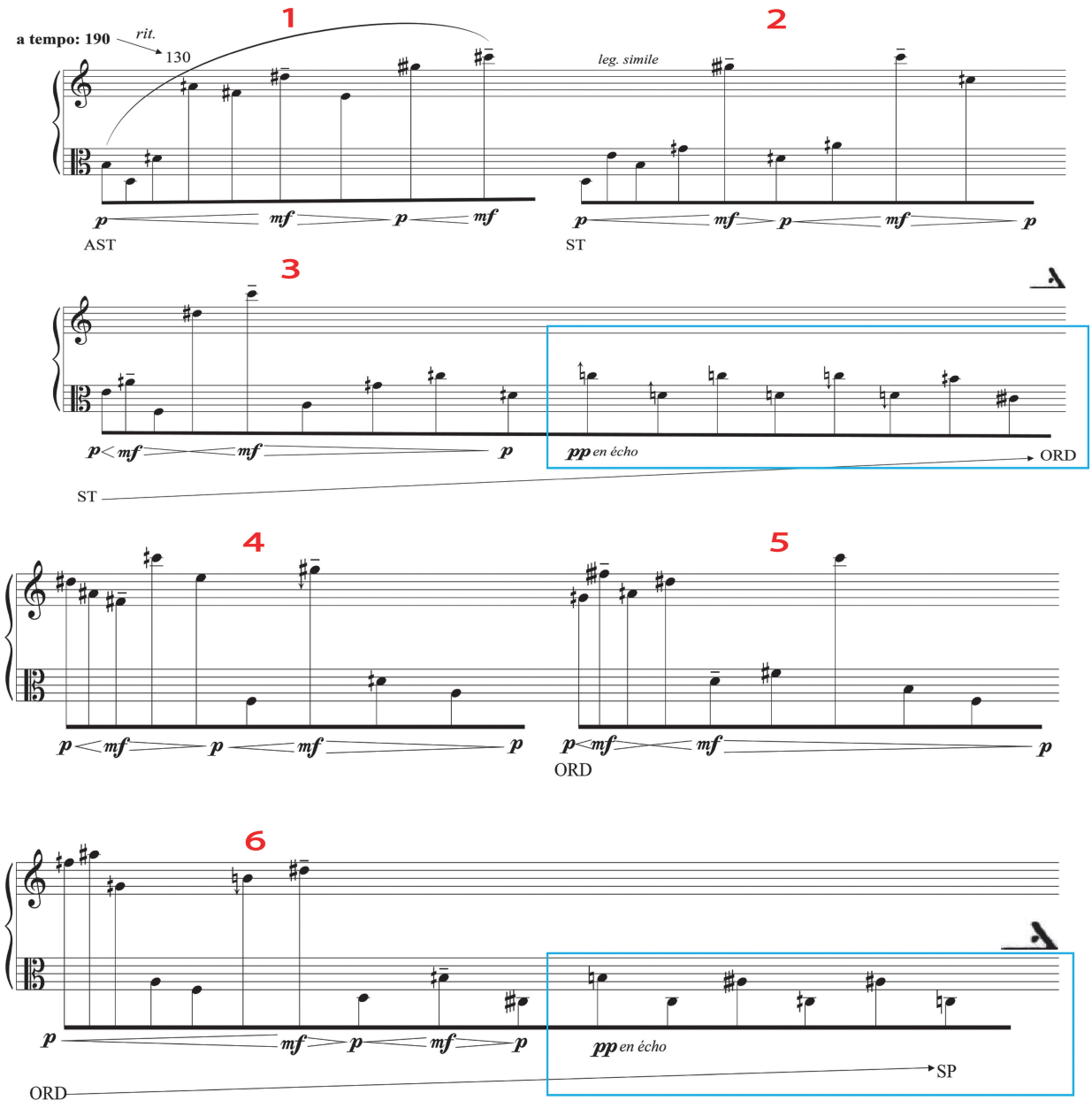
extended echoes contribute to a marked change in character. The first two respirations proceed normally, with no added suffixes, before the third phrase introduces an eight-note echo that eclipses the main phrase itself. But the echoed pitches are no longer mere repetitions; rather, they descend in frequency by alternating quarter tones, "decaying" through the echo as if the sound is naturally distorting as it bounces around the space and encounters physical resistance. Two more suffix-less phrases follow (phrases four and five), leading to another extended decaying echo in the sixth phrase. This echo is in a substantially lower register and accompanies a shift in timbre from the *sul tasto* that characterized the first six phrases to the contrasting *sul ponticello*. The seventh phrase restores the echo to the upper register but inverts the order, beginning the pair with the low pitch (i.e., low-high replaces high-low). This echo is then cut off mid-cycle, after the first pitch of the fifth pair of pitches. After a suffix-less eighth phrase, the extended passage is capped by a dramatic echo in the ninth phrase. The ninth phrase's respiration moves to regularly alternating bowing (down-up), in contrast to the longer bowing patterns heard thus far. This rapid bowing continues into the phrase's echo, heightening the cyclical sense of the repeating pitch pair. The ninth phrase's echo further rounds out the larger passage with a more dramatic shape, including a louder dynamic (*mezzo piano* in place of earlier echoes' *pianissimo*), contrasting timbre (*alto sul ponticello* opposes the first phrase's *alto sul tasto* sounds), and *alla corda* bowing.

Later in the piece, another kind of suffix—a rapid, *alla corda* tremolo—is introduced in the final approach to the climax. An early instance of the tremolo appears in Example 9, which directly follows the dramatic conclusion of Example 8. Where echoes dissipated the energy of the preceding phrases with falling pitches and volume, tremolos maintain energy and volume. They reduce the sense of repose between phrases, both aurally (they sound busier and more active) and gesturally (the violist moves more quickly and frenetically; the tremolos come from agential actions, not environmental echoes). At first heard only in select phrases, tremolos soon appear at the end of every phrase, contributing to the building energy and excitement before the climax.

3.4 Dissolution

The tremolos continue until the respiration motive itself dissipates into descending glissandi moments before the climax. First, the violist transitions to *poco portamento* playing, then *molto portamento* only forty-five seconds later; see Example 10. Notes quickly blur together; discrete pitches flow into uninterrupted action trajectories. The move to *portamento* culminates in a flattening of the respirations into simple descending lines. Example 11 examines the gestural changes involved in this final variation. Written accents on alternate pitches supplant the register and contour accents of earlier phrases. Nevertheless, the overall goals of these phrases are clearly at their nadir by the end of each line. In fact, this end-orientation extends to the violist's engagement with the instrument: every phrase requires a linear motion on the instrument (from near the bridge to the fingerboard). The change is visually apparent when we watch a performance and can see the performer sliding down the strings in each phrase. However, a listener with even a passing familiarity with stringed instruments can understand this change in fingering technique from sound alone, simulating the literal linear motions through space alongside the metaphorical descending motion through pitch space.

The descending lines lead directly into the climactic section, where the smooth sliding motion converts into a series of continuous, scratchy glissandi. In a gestural sense,



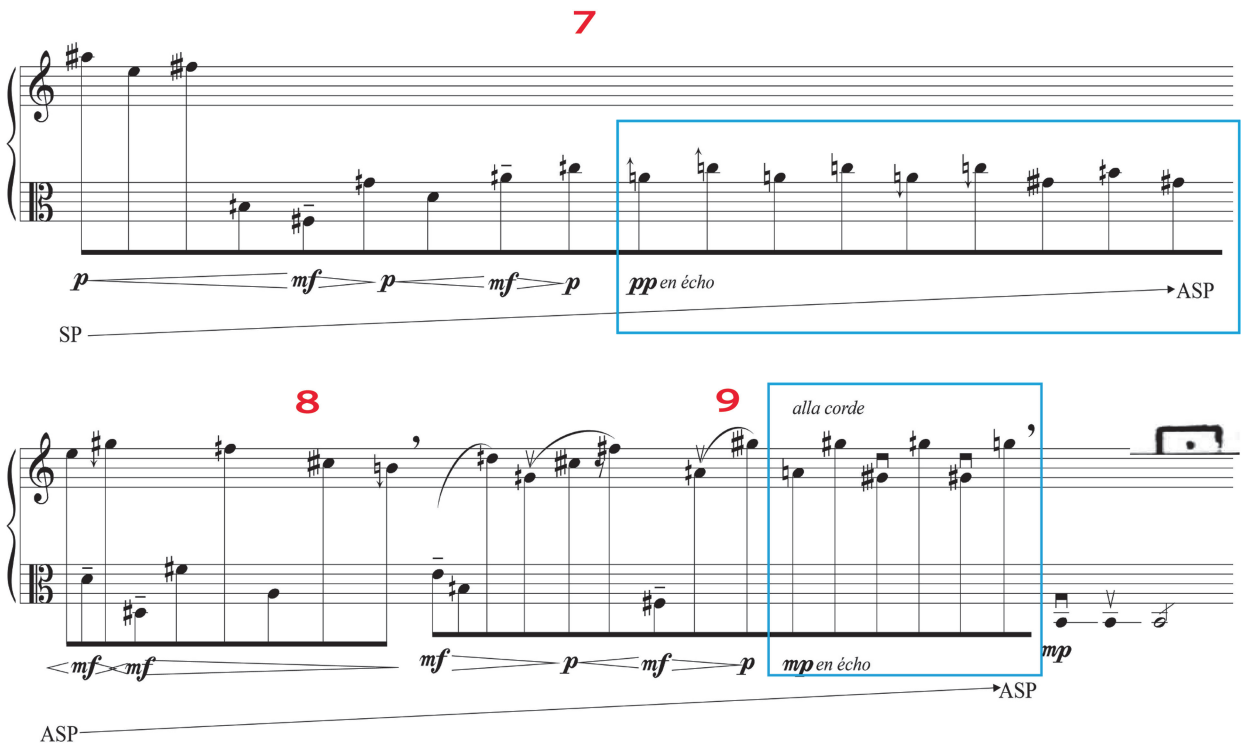
Example 8. "Decaying" echoes in a section beginning in Grisey, Prologue, *2:7. Phrases are numbered in red following the discussion in the text; echoes are boxed in blue.*

the climax reveals the goal-directed, gestural essence that unites the motivic variations. The subtleties of the melody's tempo, pitch contour, and rhythm are replaced by fluid movements on the instrument from one position to another: gestural motion beyond melodic convention and discrete phrase.[29] But the other two formal elements, opposition and tension, also reach their conclusion in this moment. Therefore, before discussing the climax in greater detail, I need to turn back to the opening moments of the piece to trace the heartbeat's contributions to the form.

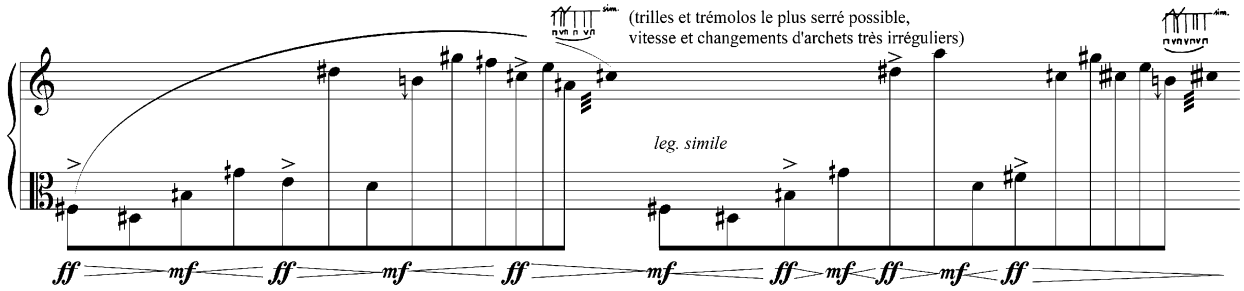
4. Opposition

A process of motivic opposition unfolds alongside the variations of the respiration, enriching the larger form of *Prologue*. This opposition is introduced when the heart-

[29] Grisey abandons durational notation at the climax in favor of clock time, indicating that a glissando should take a certain number of seconds to complete.



Example 8. (Continued).



Example 9. Alla corda *tremolos maintain energy within the suffix phrase as the climax approaches in Grisey,* Prologue, *3:1.*

Prologue

Audio Example 8. (click to play audio).

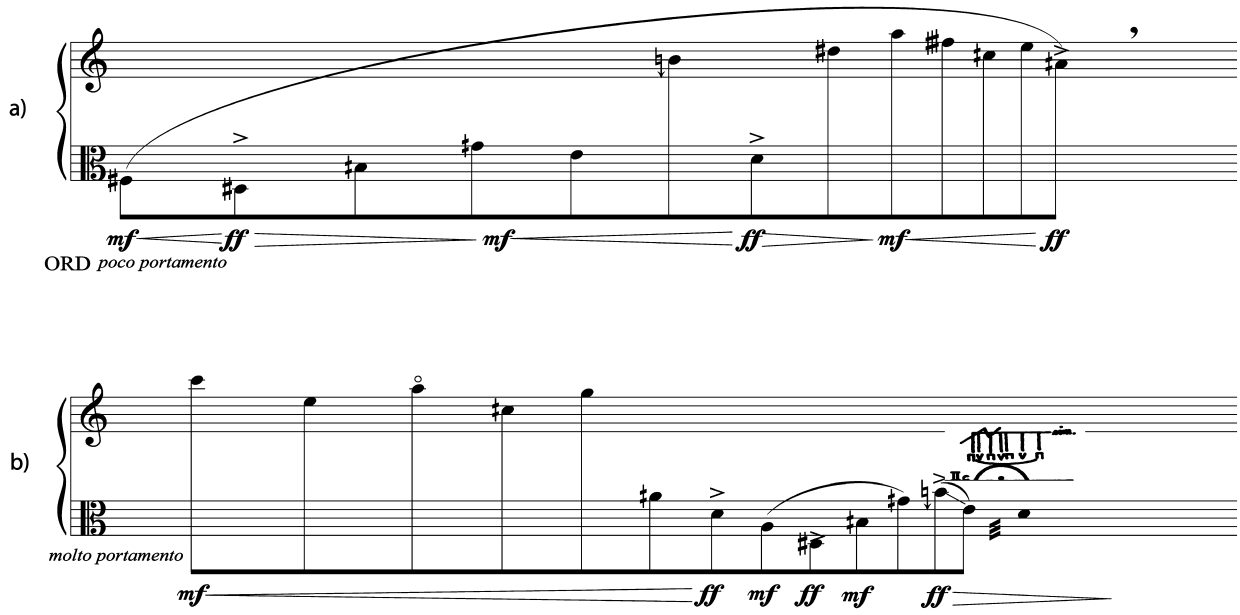
Prologue

Audio Example 9. (click to play audio).

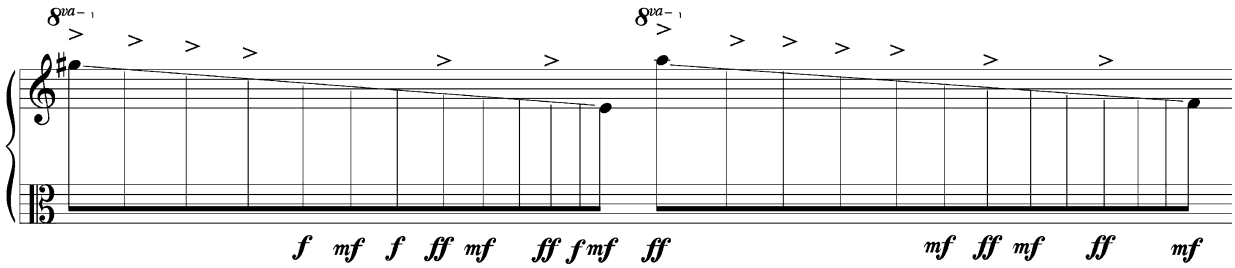
beat follows the first respiration and repeats with it (Example 12). Just as the respiration motive mimics certain aspects of human breathing, the heartbeat motive's short-long rhythm on an open string (detuned to B_2) clearly imitates its namesake process.[30]

Opposition arises from the contrast between the dynamic motion of the respiration and the cyclical stasis of the heartbeat. The annotations in Example 12 summarizes these contrasting elements. The respiration is primarily melodic: its focus is on pitch contour and expressive shape, and although its component notes are conceptually (nota-

[30] Recalling that the piece's pitch content is derived from an E harmonic spectrum, this pitch accrues some of its contrast and dividing function from tonal reference. Specifically, the B_2 recalls a conventional dominant tone standing against the tonic-outlining respiration that precedes it. However, the centricity of E is acoustic, not tonal, and the attendant contrapuntal and harmonic implications of tonality do not obtain here.



Example 10. Poco portamento *playing in 2:9 (a) leads to* molto portamento *playing forty-five seconds later in 3:2 (b) in* Prologue. *Note that the excerpts are not consecutive.*



Example 11. The respiration dissolves into linear descents in Grisey, Prologue, *3:7.*

poco portamento

Audio Example 10a. (click to play audio).

molto portamento

Audio Example 10b. (click to play audio).

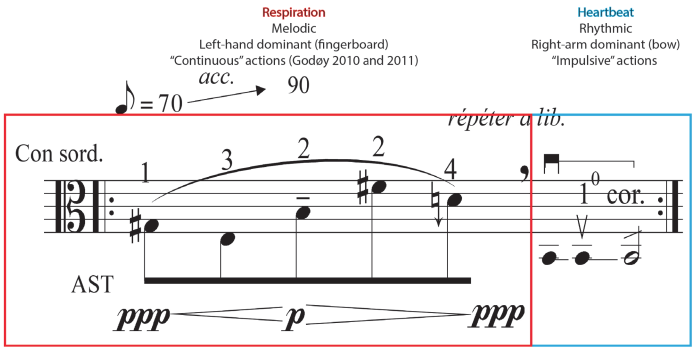
linear descents

Audio Example 11. (click to play audio).

tionally) equal, the dynamic tempo of the *accelerando* prevents hearing an underlying beat or meter.[31] The heartbeat is primarily rhythmic: lacking pitch contour and presenting only a single pitch, its focus is on the short-long rhythm and the sharper accents and articulations it requires. This opposition extends to performance technique in the different roles of the right and left arms and hands.[32] To produce a respiration, the violist presses down the strings with their left hand in the correct fingerings, while their right arm draws the bow slowly across the strings to make them resonate. In these first, simple phrases, respirations are produced by one long bow stroke—a physical manifestation of the sense of a unified gesture-phrase. By contrast, the heartbeat relies almost exclusively on the actions of the

[31] Of course, melody is a rhythmic phenomenon as well; I focus on pitch in maximal contrast to the single-pitch rhythm of the heartbeat. I thank the anonymous reviewers for pointing out the rhythmic qualities of the respiration.

[32] On the traces of this left–right dichotomy in the "idiomaticity" of string instrument musical structures, see De Souza 2017, 40.



Example 12. Comparing the respiration and heartbeat in musical-gestural terms in Grisey, Prologue, *1:1.*

Comparison

Audio Example 12. (click to play audio).

right arm, which plays sharp alternating bow strokes on the open string. The left hand is uninvolved, except as a support for the instrument and as a counter to the bow's push into the strings. More generally, the respiration and heartbeat represent different types of sound-producing actions (Godøy 2010; 2011). The respiration arises from "continuous" actions, in which energy is continuously applied to the instrument: the uninterrupted bow stroke through all five notes. Continuous actions tend to create sustained, singing sounds—in other words, they support melodies, phrasing, and legato playing. The heartbeat, meanwhile, requires "impulsive" actions: short, repetitive bursts of energy. Impulsive actions generate rhythms and pulse streams with more differentiated articulations, as in the accented down-bow/up-bow pattern of the heartbeat.

The distinction between continuous and impulsive actions explains how non-violist listeners can conceptualize the gestural opposition between the motives, even without direct or explicit knowledge about how they are played. From the perspective of Arnie Cox's (2016) Mimetic Motor Imagery (MMI), listeners can cross-modally simulate these categories of sound production on their own instrument or with their voice.[33] Alternatively, Mariusz Kozak (2015) proposes that listeners' spontaneous movements in response to sounds represent a motor-intentional understanding of music independent of the actual, physical movements of performance. Listeners tend to move in predictable ways for certain types of sounds, producing flowing motions for continuous legato lines (as in *Prologue*'s respiration) and sharper or more abrupt movements for impulsive sounds (as heard in the heartbeat) (Kozak 2015, [3.15]). Finally, studies of overt movements in response to sound offer insight into covert responses by revealing the motor-intentional activity of interpreting sounds through the medium of analogous bodily movement. Even when the overt response is suppressed, motor imagery can be heard in, and enacted alongside, musical sounds and participate in musical imagery (Godøy 2018, [8.3]).

4.1 Heartbeat as Boundary

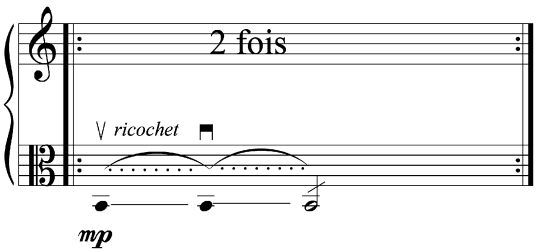
The heartbeat principally serves a segmentation function: its rhythmic contrast to the flowing melodies of the respiration breaks up the latter's unfolding variations into discrete chunks. The heartbeat is not heard after every respiration; more often, it serves as a divider, interrupting one phase of the respiration's development and heralding a new variation in the following section. As rare and memorable segments that break up the respiration's development, heartbeat statements provide significant formal "cues" (Deliège and Mélen 1997) that can articulate boundaries and help enable listeners parse *Prologue*'s nearly fifteen-minute form.[34]

At first, one heartbeat occurs after every two or three respirations (refer to Example 3). Later, heartbeats are heard only after many consecutive respirations. However, these rarer heartbeats stand out, for they are now repeated three, four, five, or more times.[35] Heartbeats are also subject to the timbral evolutions heard in the build-up to the

[33] Cox (2016, 28–34) differentiates subvocalization from instrument-specific MMI. Margulis et al. (2009) examines how experience with specific instruments shapes how one hears music on that instrument versus other instruments.

[34] Along similar lines, Hanninen (2012, 174–186) explores how rare "patches" of associative sets can articulate (and generate) form in post-tonal composition.

[35] For instance, on 1:4 three heartbeat statements precede the beginning of a new section (with a change in tempo, dynamic range, and respiration phrase size). On 2:1, six repetitions of the heartbeat announce the start of the first phrase to blend heartbeat and respiration characteristics (discussed in the next paragraph).



Example 13. A timbral evolution of the heartbeat, played with ricochet *bowing in Grisey,* Prologue, *3:2. Note that this instance of the heartbeat marks the transition into* molto portamento *respirations.*

Example 14. Characteristics of the heartbeat and respiration blend in a dramatic hybrid phrase in Grisey, Prologue, *2:1. Heartbeat characteristics are noted in the blue text, while respiration characteristics are described in red text.*

ricochet heartbeat

Audio Example 13. (click to play audio).

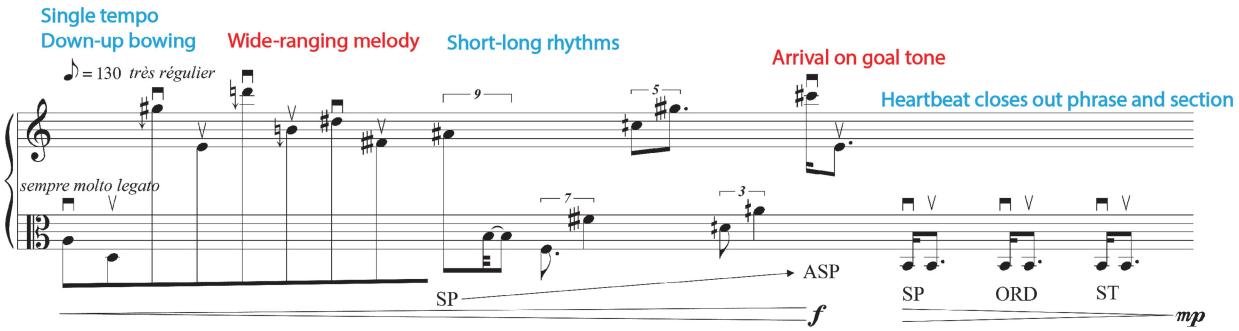
Blending

Audio Example 14. (click to play audio).

climax (and discussed further in the analysis of tension below). For instance, in Example 13 the violist plays a heartbeat *ricochet*, creating additional (somewhat uncontrolled or random) articulations as their bow bounces freely within the overall short-long rhythm. The impulsive character is preserved, while the strict rhythm is loosened, and the timbre diffused, as part of the move toward unified sliding lines in the upcoming climax.

4.2 Blending Motives

The opposition is ultimately resolved in the climax, where the distinctive playing methods and qualities of respiration (melody) and heartbeat (rhythm) blend into a unified glissando gesture incorporating both of the violist's limbs. Crucially, this blending is hinted earlier in the piece, when characteristics of the heartbeat rhythm intrude into or "contaminate" (Baillet 2000, 111) the respiration. Example 14 reproduces the first instance of this motivic blending. Following several consecutive heartbeats, a respiration melody begins. But in lieu of its usual flowing rhythm, the melody unfolds in lilting pairs of durations (short-long). Moreover, in place of the respiration's usual continuous bowing—with many notes in a single bow stroke—alternating down-up bowing patterns break up the melody according to its short-long rhythms. These changes attenuate the goal-directedness of the melody



Example 15. Gradual introduction of heartbeat characteristics into a respiration statement in Grisey, Prologue, *2:6. Respiration characteristics are noted in red text; heartbeat characteristics are noted in blue text.*

Prologue

Audio Example 15. (click to play audio).

by fragmenting the arch-shaped contour. In place of this contour, the lilting rhythms create several localized goal points: each long note feels like a miniature arrival point in the overall phrase. The result is a jagged melody with a more varied and dramatic shape.

A similar transformation unfolds more gradually a few phrases later, shown in Example 15. The intrusion of heartbeat characteristics into a respiration begins with the marking *très régulier* and the establishment of a steady tempo of eighth note equals 130 BPM. Alternating (down-up) bowing, again borrowed from the heartbeat, further bends this respiration out of its fluid temporal domain and into a more periodic or metric type of time. After eight isochronous eighth notes, the phrase again transitions to short-long rhythms. This lilting rhythm materializes gradually. Complex rhythmic ratios lengthen one note and shorten the other on each successive pair. Grisey's brackets in the score show that while each pair of notes is to last a quarter note in duration, each pair divides that quarter note by nine, seven, five, and three, giving durational ratios within each bracket as 4:5, 3:4, 2:3, and 1:2, respectively.[36] This process culminates in a *forte* arrival on a sixteenth note–dotted eighth note rhythm, leading directly into three statements of the heartbeat in the same rhythm to close off the section.

4.3 Culmination

The fusion of the respiration and heartbeat just described dovetails with the shift to descending glissandi respirations (Examples 10 and 11) and the final instance of heartbeat-as-boundary (the *ricochet* statement, Example 13). Henceforth the opposition becomes less a motivic contrast and more a parametric contest traceable to the associated limbs. Modified bowing actions (heartbeat, right arm), especially increased bow pressure, obscure the changing pitches of the melody (respiration, left hand). The sonic focus turns from pitch and contour to timbre and impulse. At the same time, the switch to *portamento* transforms the left hand's role from one of delineating discrete pitches on the continuous strings to emphasizing those strings' continuity via non-discrete pitches and sliding lines. The contest culminates at the climax, where right arm and left hand move synchronously to generate its extreme sounds. The left hand slides around the fingerboard, while the bow slides up and down the bridge between *sul ponticello* and *sul tasto*. The extremely loud sounds (triple *forte*), crunchy timbres (extreme bow pressure), and smooth motion sublimate the independent actions of either limb as well as the characteristic parameters of either motive. Melody and rhythm give way to sound and noise. This brings us to the last element of the form—the increasing tension associated with these timbral-bodily changes—which comes to the fore in the approach to this climactic section.

5. Tension

Prologue's increasing tension projects the performer's relationship with the instrument. The sounds seem tense because they encode the exertions of the performer. They are also tense because listeners can imagine or simulate the actions that might produce such sounds—and even if these are not the exact actions involved in the performance, they will most likely mimic the effort of the sound production. While they seem like secondary, subjective judgements of an objective acoustical signal, listeners are more likely to

[36] Féron (n.d.) sees in this rhythmic scheme the influence of Messiaen, who taught Grisey at the Paris Conservatory in the late 1960s and early 1970s.

identify directly with concepts of effort, exertion, and (bodily) tension than with the signal itself. Andrew Mead observes that volume tends to come across "not so much as strength of signal but as index of effort" (1999, 11), while very high and very low pitches project the "extra 'oomph' and nerve required to bring them off" (9).[37] The climax of *Prologue* sounds climactic and tense not because it is acoustically loud and timbrally dense, per se, but because these characteristics reflect the effort and energy required to produce them.

More broadly, the concept of tension engages a sense of bodily balance. Judgements of musical tension typically follow a cycle of tensing and releasing, which are related to ubiquitous cycles of tension and release in everyday experiences such as breathing. The performer's actual balance is not necessarily accessible to a listener, yet the sounds they produce reflect their balance or imbalance.[38] The tensing and releasing shape of *Prologue*'s respirations, for example, could also be described in terms of a move away from and back to bodily balance. In fact, this movement is visible in the "ancillary" body movements of performers, whose posture tends to trace (and thus visually heighten) the balance-imbalance-balance path of their musical phrasing.[39]

In *Prologue*, the increasing complexity of the respiration (variation) and the intrusion of elements of the heartbeat (opposition) contribute to a general increase in tension over time. The performer's movements become more energetic, effortful, wide-ranging, and extreme. Phrases are played at successively faster tempi, with more dramatic accelerations or decelerations, more pitches, and additional peaks. They increase in volume, calling for more effort and greater contrasts of effort within phrases. Phrases cover a wider range in pitch and instrumental space, corresponding to larger movements and leaps in physical space. Finally, phrases migrate to the extremes of the instrument and viola technique, as very high pitches become commonplace, leaps between registers dominate phrases, and extended techniques shift where energy is applied and how the body interfaces with the instrument.

This last point is perhaps the clearest indication of increased tension. In the latter stages of the piece, extended techniques generate noisier timbres that viscerally communicate effort and energy. Defined broadly as unusual ways of playing an instrument, extended techniques typically create unusual timbres by manipulating familiar instruments in unfamiliar ways.[40] Extended techniques in *Prologue* can be generally conceived as variations in the amount, location, and type of force that a performer applies to their instrument. Applying more or less force alters volume and timbral quality. For example, increased bow pressure on the viola creates a louder and scratchier sound that, if pushed to the extreme, supplants pitch with scratchy noise, highlighting the materiality of the viola string over its musical possibilities. Changing where the force is applied to the instrument transforms the attack and resonance of a sound. For instance, playing on the fingerboard (*sul tasto*) thins out the timbre and makes the sound more fragile, while playing on the bridge (*sul ponticello*) adds more overtones to the sound, thickening pitch into a more complex timbre. Finally, alterations in the type of force drastically transform the sound of an instrument. A Bartók pizzicato has a much harsher articulation and a drastically shortened resonance compared to the same note played with *ordinario* bowing; the sound of striking the strings with the wood of the bow (*col legno battuto*) is quite unlike drawing the hair of the bow across them.

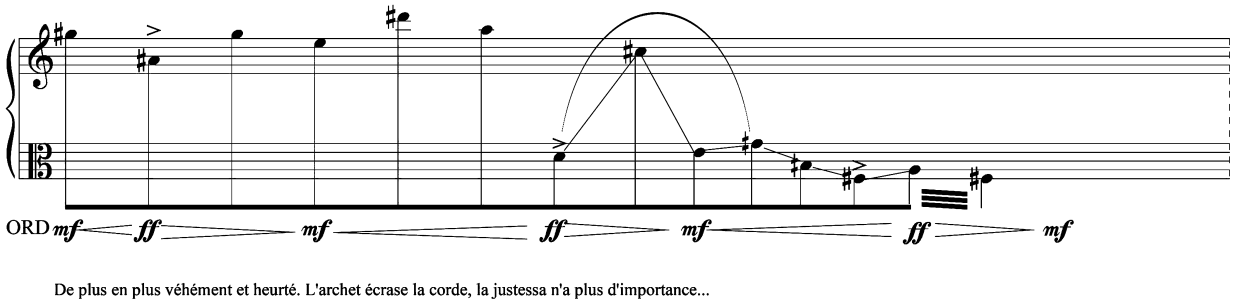
In *Prologue*, this type of timbral tension arises primarily from increased bow pressure. The increased volume and timbre of bow pressure techniques index the violist's less balanced bodily position and increased forcefulness. The harsh timbres signal bodily tension—the violist exerting their muscles, pressing their bow down—as well as instrumental tension (the tension of the viola strings under pressure). Beyond such a direct matching of musical tension to gestural tension (Cox's intra-modal imagery), there are cross-modal, amodal, and conceptual aspects to this sense of tension (Cox 2011). The tension can be analogized with pushing a listener's own (non-viola) instrument or voice beyond its limits, such as overblowing a flute or singing verging on screaming (this is cross-modal imagery). Or the viola's timbre could be related to metaphors that link hearing

[37] Higher and louder are relative to the instrument in question, of course: a C_4 on a tuba sounds effortful because it is so high on that instrument, while on a trumpet it would sound quite relaxed. Similarly, pitches that are higher on a given string instrument will project the greater tension of the string (a cello's high note sounds tenser than the equivalent pitch on a viola or violin). Pitches that sound high in *Prologue* might not sound as effortful if played on a violin because they are lower on that instrument and require less string and finger tension to produce.

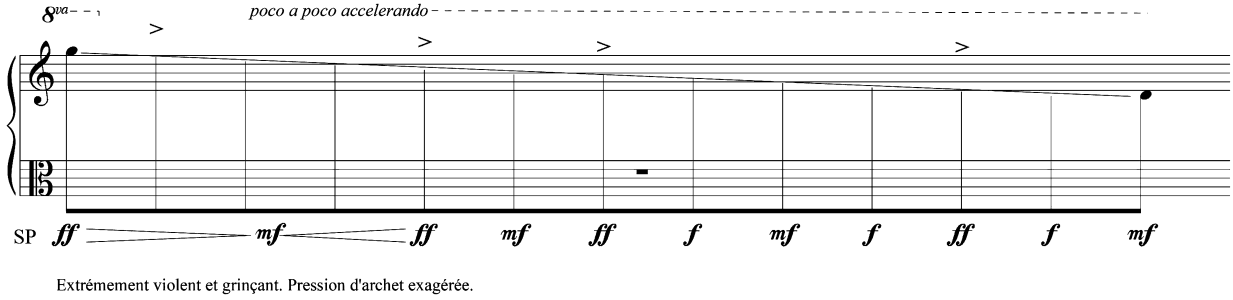
[38] Cusick (1994, 18–19) discusses her sense of imbalance when playing a Bach chorale prelude on the organ. Although this imbalance may not come across in the tonal structure one hears, Cusick finds personal meaning in its relation to the text and in the bodily experience of an organist playing the passage.

[39] For a review of ancillary gestures, see Wanderley et al. 2005. A performance of *Prologue* demonstrating the postures and phrase-related ancillary movements I am referencing can be viewed at https://youtu.be/jQgLUogjPtI (Simon et al. 2014).

[40] Scholarly literature on extended techniques is sparse beyond didactic manuals on execution, see e.g., Read 1976. Davies (2001) discusses some of the playing techniques required of instrument families in twentieth-century music, while Cizmic (2010) analyzes the ideology and effects of piano extended techniques in Cowell's *The Banshee*.



Example 16a. "Increasingly vehement and jerky. The bow crushes the string, accuracy no longer matters..." performance instructions in Grisey, Prologue, *3:4.*



Example 16b. "Extremely violent and grimacing. Exaggerated bow pressure." Performance instructions in Grisey, Prologue, *3:6.*

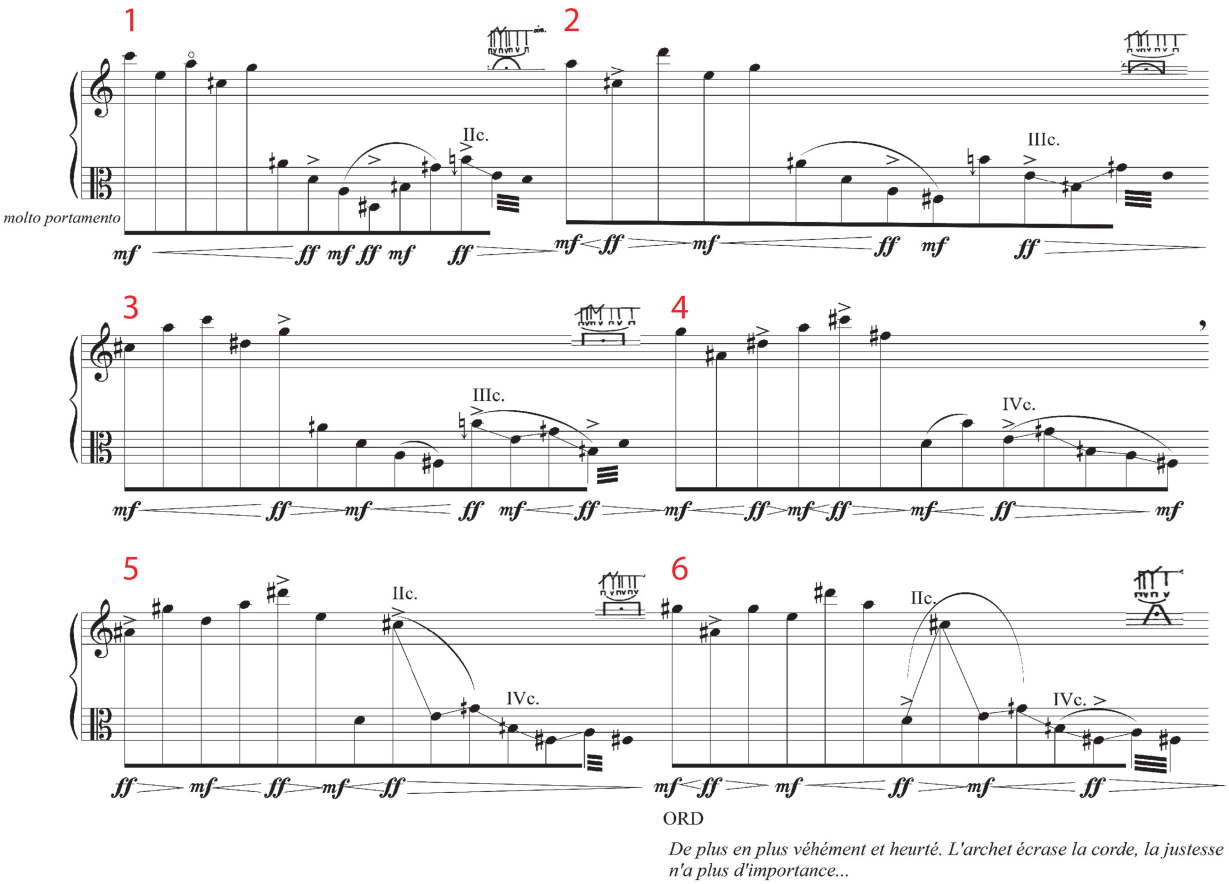
and touch, as in the common comparison of scratchy timbres to the texture of rough surfaces (amodal imagery).[41] Finally, a listener familiar with Grisey's aesthetic can conceptually associate the sounds with Grisey's ideas about timbre and harmony—wherein feedback, static, and white noise serve as antithetical foils to "pure sounds" and harmonic spectra (Grisey [1982] 2008, 45–48).[42]

In the final stages of the form, tension-generating extended techniques overtake gesturing respirations and heartbeats as the primary form-defining actions. Like all aspects of this piece, the change is gradual. First, the violist is instructed to play "increasingly vehement and jerky," crushing the bow into the string, in Example 16a. According to Grisey's notes to the performer in the score (reproduced in Example 16a), tuning becomes less important here. The violist should allow the "crushing" timbre to override the pitch focus of the respiration, while still tracing the contour of the line. The trend toward greater timbral tension continues when "extremely violent and rasping" playing and "exaggerated" bow pressure obscures the melodic contour in Example 16b. Coupled with the contemporaneous change to *portamento*, the rasping bow pressure helps pave the way for the dissolution of the motive into the climactic passage.

Example 17 reexamines the dissolution of the respiration into descending lines in terms of extended techniques. Growing out of the *portamento* style noted above, rapid concluding slides gradually eclipse and then subsume the phrases of this section. The slides begin as the interval B_4 to E_4. One additional pitch is added to the slide of each subsequent phrase for twelve iterations, eventually yielding thirteen-note slides that outlast their corresponding respirations. These slides mostly descend, but there are significant countermoves through upward leaps, especially at the starts of phrases. The upward leaps open space for the following descents: for instance, the eleventh and twelfth phrases leap upward to new heights before descending from this apex for the rest of their durations. Further, initial pitches track higher and higher, ascending chromatically from phrase to phrase. These high register pitches project tension via the tautness of the strings, as well as through the added pressure required of the violist's fingers as they hold down the strings so near the bridge. Tempo, articulation, and dynamics further contribute to the building tension of this passage. Phrases accelerate to a breakneck pace.

[41] Peters (2012) proposes a haptic basis for embodied knowledge about electroacoustic sounds, which might be extended to include stylistically unusual sounds like those produced by these extended techniques.

[42] In fact, Grisey ([1982] 2008) conceives of these terms as opposite poles in continuous spaces: parameters can bleed into one another (timbre becomes harmony, pitch becomes rhythm); and sound can become noise and vice versa. The sound/noise axis in particular acts as a common formal principle throughout Grisey's oeuvre.



Example 17. Development of the descending lines in Grisey, Prologue, *3:2–5. Phrases are numbered to correspond with the description in the text.*[43]

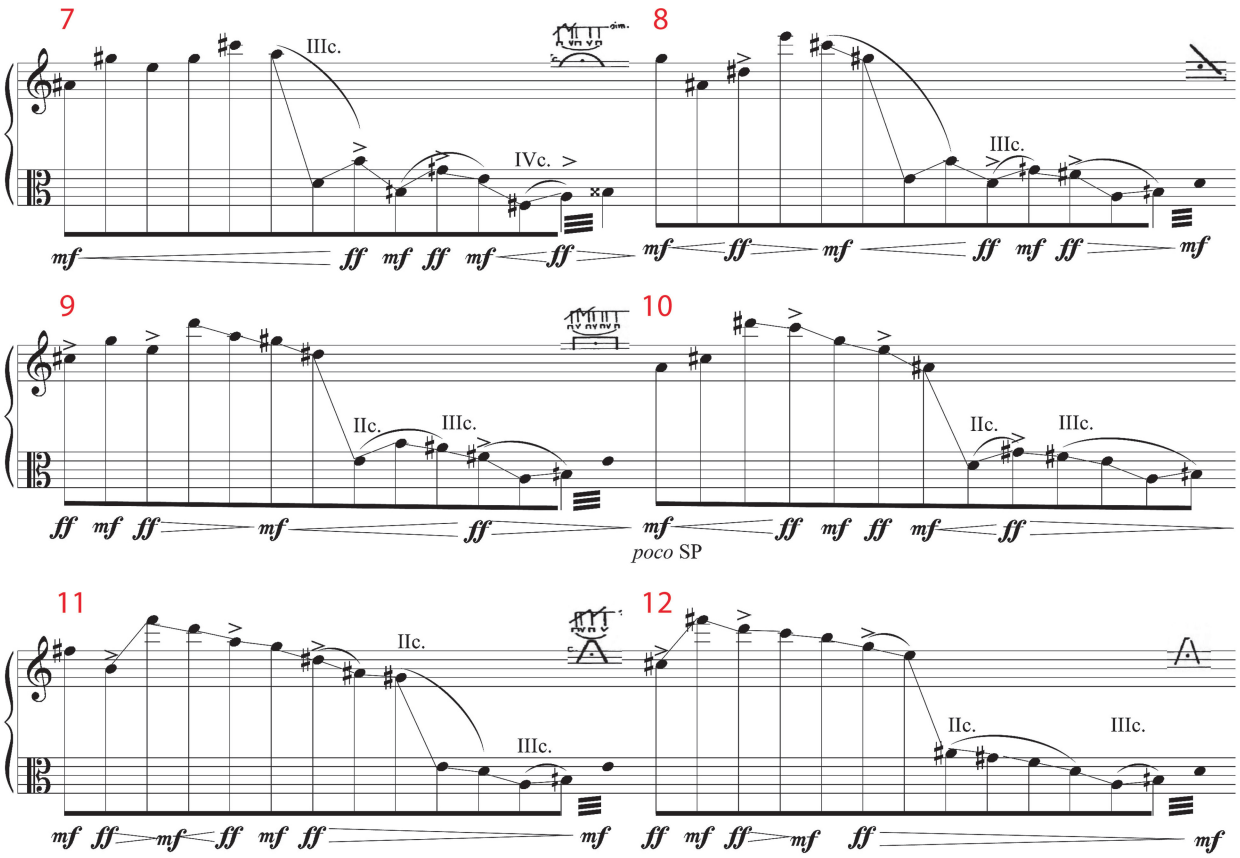
Each descent takes less time than the last; the violist must traverse the entire instrumental space ever more rapidly. Further, intermediate accents accrue to every "pitch" within the line. The violist is paradoxically asked to smoothly slide downward at a breakneck pace while emphasizing twelve to thirteen points within that slide. Finally, dynamics are pushed to the extreme, arriving at *fortissimo* near the bottom of page three and growing louder from there.

Overall, the violist pushes their body and instrument to extremes as they play ever more rapidly, forcefully, and loudly. Listeners, sensing the effort required in this performance, can anticipate an arrival—a climax—followed by a winding-down of this unsustainable level of bodily-musical tension.

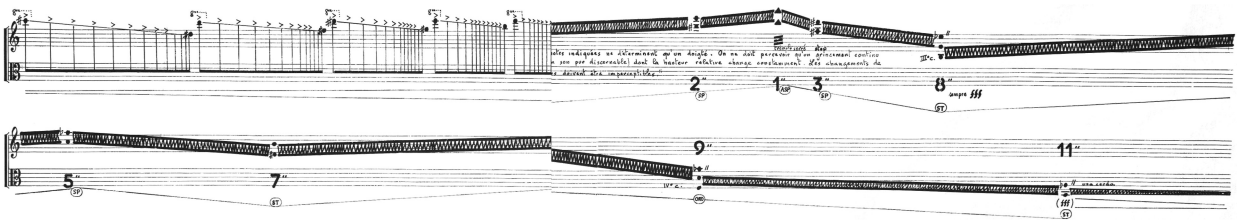
The climactic section, reproduced in Example 18, is announced by a tremolo that arrests the accelerating trajectory of the preceding descending phrases. What follows is a series of noisy glissandi played at the edge of bow pressure. All notated pitches represent approximate points on the instrument rather than important tones—pitch is indeterminate in the signal because the bow pressure stifles the resonance of the strings. The violist is instructed to outline a contour while abandoning precision and restraint as they pour unbridled energy into the instrument. But this energy does not necessarily translate into volume. There is so much bow pressure that sound itself is almost stopped. Moreover, although the passage is marked triple *forte*, the viola's strings are damped by the pressing of the bow. The dynamic marking refers not to audible decibels but to the intensity of the violist's actions. This intensity comes across in sound as the scratchy timbre, demonstrating how sound can encode volume and effort beyond sheer amplitude.

The climactic section concludes with tension of a different kind; see Example 19. The violist gradually reduces bow pressure, returning to *ordinario* sounds. They move their left hand up to the tuning pegs and slowly retune the lowest string from B_2 up to D_3 over the course of nearly ten seconds. At the same time, they slide the bow up to *sul tasto*,

[43] In Example 17, the distance between pitches in each phrase has been normalized from the published score, and some crescendi and descrendi between dynamics have been omitted in phrases 7 to 12 for spacing concerns.



Example 17. (Continued).



Example 18. Climatic section in Grisey's original notation in Prologue, *3:8–9.*

Prologue

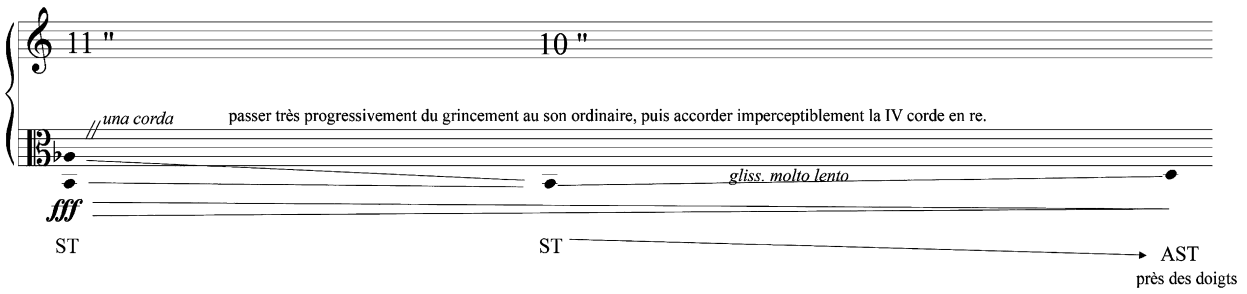
Audio Example 17. (click to play audio).

Prologue

Audio Example 18. (click to play audio).

then *alto sul tasto*, and finally out onto the fingerboard and near the fingers ("*près des doigts*" indication in the score). The pitch of this passage changes slowly, and by unusual (mechanical) means, while the timbre thins and diffuses as the bow encroaches on the left hand's realm. All the while, the phrase fades in volume as the violist continues to release bow pressure and reduce energy. The climactic passage ends in silence and repose.

This is not tension by sheer force, as was the case in the passages preceding the climactic passage. Rather, here we have a uniquely body-based tension, stemming from the fragility of the sounds and their delicate means of production. When watching a performance, the tension of this passage is evident in the visually delicate actions of a violist operating at the extreme end of their instrument, imperiling their balance and hold on the instrument (intra-



Example 19. Ending of the climactic section, demonstrating a soft instance of tension in the re-tuning of the scordatura string in Grisey, Prologue, *4:1.*

Prologue

Audio Example 19. (click to play audio).

modal imagery).[44] But even without seeing these specific and unusual movements, the quiet, foreboding tension of this passage can be sensed and represented in other body-based ways. For instance, listeners might relate the slow-moving and soft sounds to similar actions on an instrument they play (cross-modal imagery). Brass players cannot relate to the string-instrument specific actions involved in this passage—but they can recognize the gentle exertions of soft playing that hold for both brass and string instrumental performance. This passage's tension could also be traced to the cognitive difficulty of predicting what will happen next in the context of slow and gradual change. Tension also arises in the perceptual task of focusing attention on an extremely quiet passage that is getting softer, points toward no discernable goal, and concludes with stillness and silence. The key to hearing this passage is understanding the tension inherent in its production and imagining the bodily correlates of the sounds it includes. An embodied reading imbues the passage with meaning: a human meaning beyond acoustic facts and practical effects.[45]

Conclusions

In the conventional view, spectral music applies acoustic and psychoacoustic facts and electroacoustic techniques to composition for mostly acoustic, orchestral instruments. In other words, spectral music is primarily about "sound" itself and its manipulations in time. Like the idea of absolute music, it does not reach outside itself to reference: in the words of Grisey's famous dictum, "literature…mathematics…theater, the plastic arts, quantum physics, geology, astrology, or acupuncture"; instead, the only "model is sound" (Grisey [1982] 2008, 53). The most striking example of this privileging of sound is Grisey's *Partiels*, the third movement of *Les espaces acoustiques* and arguably the *locus classicus* of spectral music. The E_1 spectrum presented at the opening of that piece mimics the unfolding of the eponymous partials of a trombone's E in a succinct proof of concept for instrumental synthesis, a technique Grisey innovated in which live instruments stand in for sine tone generators, analogously recreating analyzed spectra as an electroacoustic composer might, but via acoustic means. Similarly, *Prologue* could be considered an experiment in melodic writing based on spectral theory; an early application of Grisey's ideas about temporal experience to composition (Hennessy 2009); and an exploration of how Gestalt theory, psychoacoustics, and repetition can be harnessed to create new musical experiences (Grisey n.d.).

But this approach elides the essential role of bodies: both the expressive bodies of performers and the enacting bodies of listeners.[46] *Prologue*'s melodic variations, motivic oppositions, and building tension depend on a performer's enactment of Grisey's ideas and instructions. The gradual unfolding of the three formal aspects I identified here highlights the bodily and material origins of the sounds and relationships in this piece.

Rather than supplanting past perspectives, my embodied approach can reframe and recontextualize them.

[44] The scordatura tuning adds an element of danger: one could easily break a string or peg in the process. In a personal conversation, one violist described this passage to me as "nerve-wracking" because he vicariously senses that risk while listening. This observation demonstrates some of the culturally conditioned aspects of embodiment.

[45] The following passage transitions into *Périodes* directly. Since that piece was written prior to *Prologue*, the violist must retune their lowest string, and absent any break between movements, Grisey chooses to include that retuning in the performance. Another intra-opus retuning sequence occurs in *Périodes*, where two violinists humorously attempt to match two tones a quarter tone apart, motivating one to retune their strings before the piece can proceed.

[46] Two exceptions to the largely disembodied discourse of spectral studies are Mason 2019 and Nonken 2014.

The extreme, hypnotic degree of repetition that Grisey highlights in his program notes (n.d.) requires a performer to concentrate and execute hundreds of similar phrases over a fifteen-minute span, all while imbuing each with character and motion to maintain interest and overall affect. The layers of temporal experience explored by Jeffrey Hennessy (2009)—and inspired by Grisey's (1987) own writings—owe their origin to embodied engagements between the performer, who interprets the tempi and durations, and the listener, who feels musical time unfold in relation to their body. Or as Kozak (2020) would have it, the listener enacts or "secretes" musical time in the embodied encounter with the unfolding music. And the subtle timbral evolutions prized by spectral composers and infused into *Prologue*'s DNA can be traced back to the movements (such as extended playing techniques) and materials (instrumental characteristics, resonance qualities, room acoustics, etc.) essential to their sounding. Sound is action, and transformations of sound are transformations of body and instrument. Music is more than organized sound: it is an agglomeration of sound and action, and its sonic structures are always rooted in and experienced with their embodied correlates (affect, agency, etc.). Spectral music may be "about" sound, but sound is about *action*. This article, then, does not so much reject as reframe existing spectral studies in a more comprehensive analytical framework that acknowledges the role of body, working in concert with ears and mind, in parsing the complex timbre-harmonies, temporalities, and affects of spectral forms.

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pp. 25–45

Vocal Pitch in Rap Flow

by Robert Komaniecki

Abstract. In this article, I argue that pitch plays an important role in the structure and delivery of rap flows. I demonstrate the ways in which rappers manipulate pitch to create a structural parameter that can operate independently from or in tandem with rhythm and rhyme. Furthermore, I argue that pitched vocals take a wider array of forms in rap music than in other genres of popular music, ranging from carefully-pitched singing of modern rap flows to the imprecise and exaggerated declamatory features of speech that distinguished rap from other genres during its formative years. I assert that all rap flows can be classified as using pitch in one of five different ways, with each technique carrying its own unique set of analytical implications.

Keywords and phrases: Rap; hip-hop; pitch; voice.

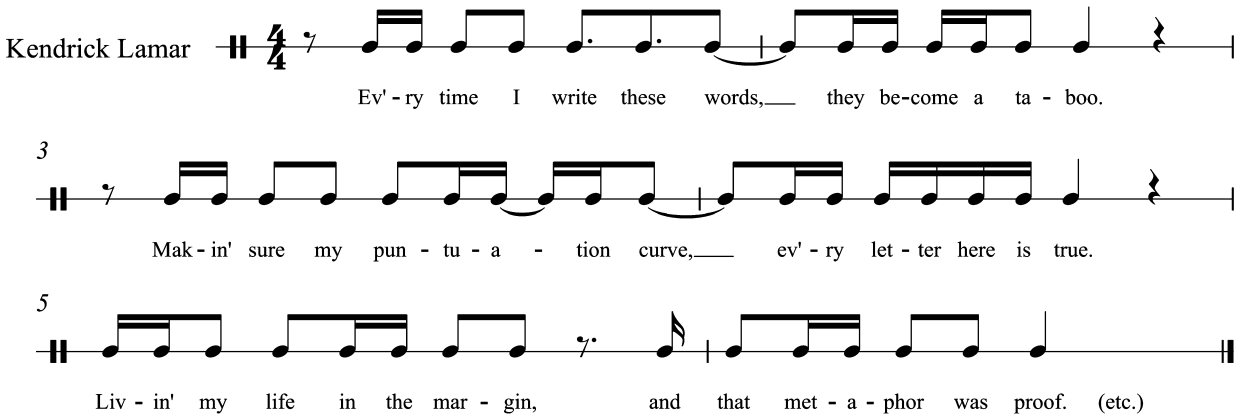
One of the defining aspects of rap music as a genre is its tendency to eschew the precisely pitched vocals heard in most popular music. We can accurately characterize much of rap music as rhymed prose, spoken rhythmically over a background track—like in Example 0a, a section of Kendrick Lamar's "Poetic Justice" (2012). In the example below, the pitch of Lamar's voice is ostensibly not carefully pitched—as is true in most rap.

However, there are countless examples of rap tracks in which MCs are consciously pitching their vocals using a variety of techniques—emphasizing pitch in a way that paradoxically seems at odds with one of the very defining characteristics of rap music. Example 0b shows a song by the same artist and from the same year as Example 0a. In Kendrick Lamar's "Swimming Pools (Drank)" (2012), the rapper pitches his vocals so that his verse takes on the guise of a quasi-melodic chant that adheres to a B minor tonic reinforced by the backing track.

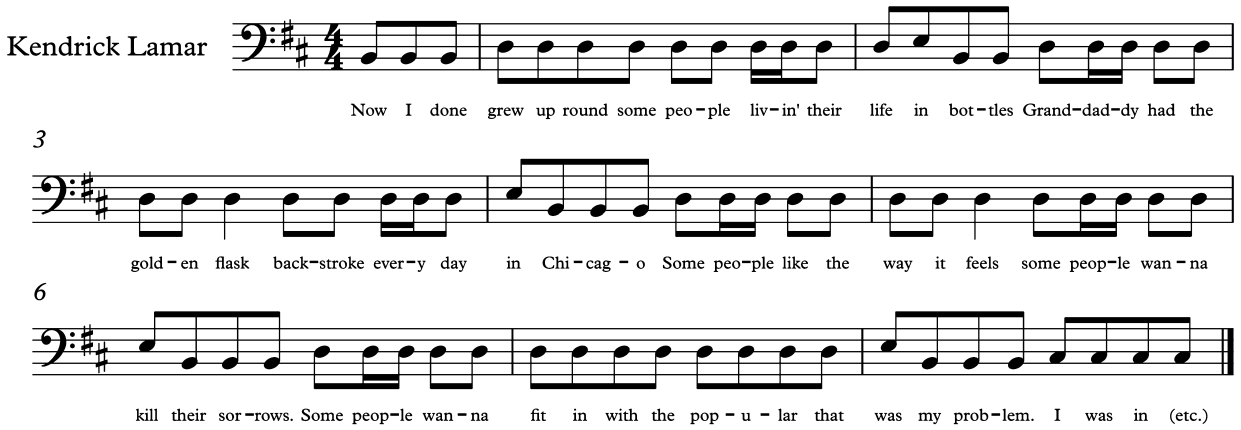
The disparity in vocal pitch between two tracks by the same artist leaves us with many questions. To what extent should vocal pitch be considered when analyzing rap tracks? How do we differentiate between rapping and singing? What techniques do rappers employ to manipulate their vocal pitch in ways that are meaningful and musically impactful? These questions are the motivation for the present article.

While rap "flow"—a rapper's delivery of the lyrics—has been the subject of an increasing amount of scholarship, the importance of vocal pitch as a parameter of flow is undertheorized. While the pitch of a rapper's flow is technically no less quantifiable than rhythm or rhyme, it is less readily so when using typical music notation, making pitch perhaps a less attractive subject for analysis. This is because while rhythmic notation has theoretically infinite complexity, our standard pitch notation asks that we quantize notated pitches to one of twelve semitones. This leaves little room to notate the rapid pitch shifts that characterize spoken word.

As such, it makes perfect sense that the majority of music-theoretical scholarly attention thus far has been focused on musical characteristics that are both more readily-quantifiable and unique to rap, such as developing a typology of flow techniques (Adams 2009), attending to various issues via corpus studies (Condit-Schultz 2016;



Example 0a. A transcribed section of Kendrick Lamar's "Poetic Justice" (2012, 3:11–3:21).[1]



Example 0b. A transcribed section of Lamar's "Swimming Pools (Drank)" (2012, 0:25–0:39).

Poetic Justice

Audio Example 0a. (click to play audio).

Swimming Pools (Drank)

Audio Example 0b. (click to play audio).

Ohriner 2016), and the interaction between rapped flow and produced beats (Adams 2008). While it is technically possible to quantify all pitches and rhythms in a rapper's flow with the help of software, I have chosen to ground my analyses in observance of pitch done by ear. In doing so, I have offered descriptions of pitch in rap flows that are easily replicated in a classroom setting, or by an analyst basing their work on aspects of rap music that are more easily identifiable by ear.

In this article, I contend that pitch plays an important role in the structure and delivery of rap flows. In what follows, I demonstrate the ways in which rappers manipulate pitch to create a structural parameter that can operate independently from or in tandem with rhythm and rhyme. Furthermore, I argue that pitched vocals take a wider array of forms in rap music than in other genres of popular music, ranging from carefully-pitched singing of modern rap flows to the imprecise and exaggerated declamatory features of speech that distinguished rap from other genres during its formative years. I assert that all rap flows can be classified as using pitch in one of five different ways, with each type of pitched rap flow carrying its own unique set of analytical implications.

Introduction

While a rapper's vocal pitch is the least-discussed parameter of flow in music-theoretical scholarship, it is

nonetheless mentioned briefly by several writers. Discussing emphasis or accent in rap flows is connected to vocal declamation pitch, because one of the most common ways that rappers introduce accents is by raising the pitch of a word or syllable. Thus, nearly every rap analyst to date has mentioned vocal emphasis to some degree. Kyle Adams briefly discusses the purposefully pitched, melodic rap flows of Nelly, aptly comparing them with psalmody since they mainly take place on one or two repeated pitches (2009). Mitchell Ohriner mentions accented syllables in his corpus study on metric ambiguity in rap, though he stops short of including aspects of pitch in his data sets (2016). Condit-Schultz deals more intricately with vocal pitch in his own corpus study, including three pitch intonation features (2016). Condit-Schultz briefly discusses some of the ways in which vocal pitch can shape flows, including emphasizing certain syllables through pitch accents. Additionally, Condit-Schultz notes that "certain pitch intonation patterns contribute to the marking of phrasing boundaries" (130), much like the ways in which pitch impacts our perception of declamatory phrases (i.e., ending a question with an upwards glide in pitch). Finally, Condit-Schultz claims that pitch intonation can be used by rappers to create "musical parallelism[s]," working with additional parameters of rhythm and rhyme. Condit-Schultz ostensibly codes some of these parameters into his corpus analysis, but does not return to the issue of pitch in his article.

Ohriner's 2019 article, "Analysing the pitch content of the rapping voice," is the first extended discussion of vocal pitch in rap in musicological scholarship. In this article, Ohriner documents the various ways in which rapping differs from normal prosody by measuring the precise pitch content of select excerpts. Ohriner's study is essential for any music-theoretical discussion of vocal pitch in rap, but differs greatly from my own not only in its goal (to demonstrate the ways in which rapping differs from prosody), but also in its methodology—Ohriner's article showcases empirical data, including precise pitch measurements, while in the present article I am more focused on a humanistic analysis of pitch in rap music that is easily replicated without the aid of additional software or technology.

Much of the published commentary on vocal pitch in rap comes from rappers themselves, through the numerous interviews transcribed by Paul Edwards in his *How to Rap* (2009) and *How to Rap 2* (2013). In these monographs, Edwards covers a wide range of topics with various rappers, touching on everything from rhyming techniques to stage presence. As the many observations on pitch in Edwards' books vary in level of detail, I think it necessary to briefly outline his relevant contributions in this section, before threading it into my classifications of vocal techniques when appropriate.

As the audience of Edwards' *How to Rap* books is ostensibly readers who are interested in learning how to rap themselves, Edwards frames the issue of pitch in rap flow as a means by which rappers can differentiate themselves from the competition. A unique voice, Edwards (2013) says, can help you sound "original and distinct" (61)—and pitch is a vital component of each rapper's voice. Edwards lists rappers who have relatively high voices, singling out both B-Real of Cypress Hill and Eminem. "A higher pitch," Edwards states, "cuts through the other musical elements of the track well and is often used for playful, fun deliveries" (62). Glossing over mid-pitched rappers, Edwards moves on to discuss MCs with deeper voices, such as Method Man and 2Pac, noting the increased aura of "authority" of such rappers (63). Edwards' characterization of lower rap vocals as being more authoritative may be generally true, but numerous counterexamples exist. For example, Jay-Z, Eminem, and Danny Brown all have relatively high voices, yet generally rap in a way that could be considered "authoritative."[2] Conversely, rapper Chali 2na of the Jurassic 5 has an exceptionally low voice, yet is not particularly authoritative, certainly not more so than Method Man or 2Pac.

Moving on from these general classifications, Edwards then discusses ways in which rappers may choose to pitch their voice over the duration of a track, ranging from monotone to frequent peaks and valleys in a rapper's vocals. Though Edwards does not state this outright, the implication in his writing is that when rap vocals have a wider pitch band, the result is a more expressive flow. Edwards includes a few observations about the potential benefits of monotonous rapping, however, saying that it is more ideal for speedy rapping and can make the voice sound more like a percussion instrument (not unlike the rapping that Adam Krims refers to as a "percussion-effusive" style [2000, 51]).

Later in his book, Edwards launches into a more exhaustive discussion of pitch possibilities in rap flows—telling readers that they can deliver certain syllables higher, lower, or change pitch during a single syllable in order to emphasize or deemphasize a word. Edwards even addresses variations of pitch that are natural in English speech, such as raising one's voice at the end of a sentence if one is asking a question, or lowering the pitch at the end of a phrase to give a sense of phrasal and grammatical closure. Edwards also observes that rappers will occasionally gradually heighten their vocal pitch throughout a larger phrase or verse, giving listeners a sense of

[1] All transcriptions in this article are my own.

[2] For exemplary tracks, see "99 Problems" (2003) by Jay-Z, "Till I Collapse" (2002) by Eminem, and "Really Doe" (2016) by Danny Brown.

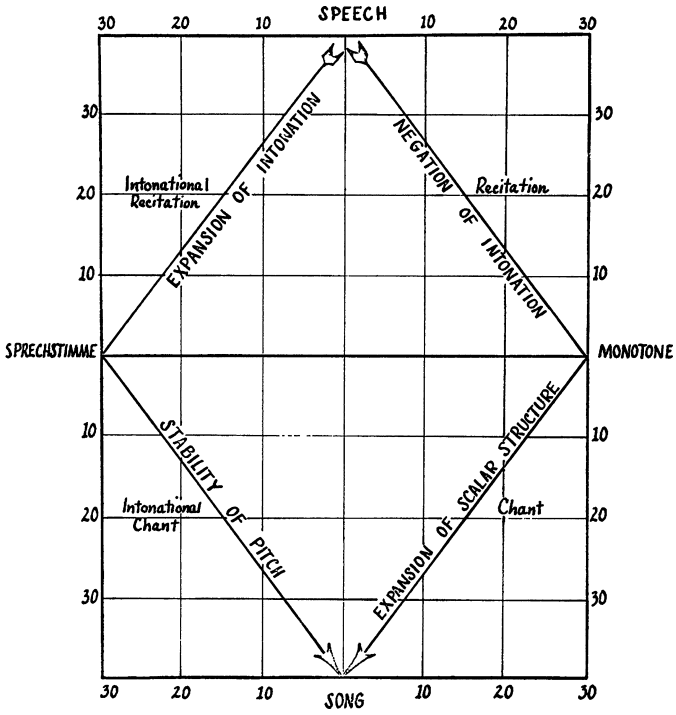


Figure 1. Reproduced from George Lists's diagram of a spectrum from speech to song (1963).

steadily increasing urgency. Edwards' assertion that rappers can "[create] patterns with pitch" is perhaps most relevant to my own discussion of pitch as a parameter of rap flow. "Often, series of lower- and higher-pitched syllables or phrases will be used to create a pattern in the delivery," Edwards writes. "This can be done to create a structure for the verse, *in a similar way to how rhythm or rhyme is sometimes used* (emphasis added)" (2013, 106). In comparing the use of pitch to rhythm and rhyme, Edwards makes a connection that few other scholars have, and one that I will return to shortly.[3]

1. A Spectrum of Pitch Techniques

All phonations are pitched. Any speech, laughter, whoop, grunt, or clearing of a throat could be theoretically mapped in pitch space. That said, not all phonations are pitched with the same level of intention. A soprano singing a heavily-ornamented *da capo* is more precisely pitched than an imprecise singer like Bob Dylan, whose own vocal performances are more precisely pitched than the average rap verse by Lil' Kim. When analyzing the usage of pitch in rap flows, one must become familiar with a spectrum of pitch techniques employed by rappers, each yielding different results for the listener.[4]

While little scholarly writing compares rap flow to speech, the relationship between speech and song has been discussed at length in literature outside of the music-theoretical sphere, and scholars have acknowledged that speech is much more purposefully-pitched than it might at first seem. In his article "The Boundaries of Speech and Song," George List states that both speech and song are vocally produced, linguistically meaningful, and melodic (1963). List goes on to state that while tones of speech are "meaningful at the phonetic level," they are "less susceptible to exact analysis than phonemes or tones" (2). List notates speech and song along a spectrum as shown in Figure 1, in which types of communication that share aspects

[3] The present article is primarily focused on English rap, and thus will not go into issues of rapping in other languages, including tonal languages. There is precious little English-language scholarship on non-English hip-hop, though Manabe (2006) writes on adapting the Japanese language to rap, which presents as a challenge due to cultural insignificance of rhyme in Japan. One would imagine that rapping in tonal languages presents an additional layer of complexity, as the meaning of words is inextricably bound to their pitch contour. However, at this time no scholarly literature exists that deals with this topic.

[4] This is to say nothing of the myriad of timbral techniques employed by popular vocalists, on which several articles and monographs have been written. While the nuances of vocal timbre are outside the scope of this essay, interested readers should begin with Heidemann (2016).

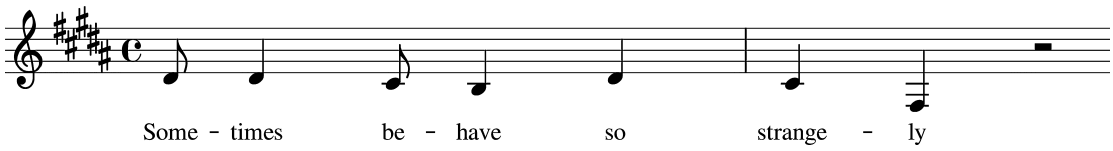


Figure 2. Reproduced from Deutsch (1995, Figure 1).

of both speech and song exist somewhere in the middle of his diagram. While rap music did not exist at the time that List wrote his article, he differentiates between speech, song, and middleground types of communication, such as monotonous chanting or *Sprechstimme*.

Diana Deutsch further demonstrates the connection between spoken word and song with her well-known illusion, in which a spoken segment of a sentence is repeated until the listener perceives it as a tonal melody (1995). In this experiment, Deutsch records herself speaking a sentence normally, then isolates a segment in which she speaks the words "sometimes behave so strangely." Deutsch plays the recording of her speaking this segment at regular intervals. As she does so, listeners begin to hear the sentence fragment as taking on musical characteristics. After several repetitions, most listeners hear Deutsch's (not purposefully pitched) recording reproduced in Figure 2.

My proposed spectrum of five different pitch techniques in rap music is shown in Figure 3. I have arranged these techniques on a line, with techniques closer to the top of the diagram being imprecisely pitched as in typical speech, while techniques towards the bottom are more precisely pitched as in typical song. Brief definitions of each technique are as follows:

- **Rhyme strengthening:** In a declamatory style, pitching words or syllables so that rhymed lyrics also correspond to one another in pitch.
- **Exaggerated declamation:** Distorting or magnifying naturally occurring speech patterns in rap flows.
- **Pitch-based rhythmic layers:** Deliberately and markedly altering the pitch of one's voice at specific points in their flow to create a separate rhythmic layer that is woven in with the composite rhythm of their flow.
- **Sung interjection:** Interrupting the tonally imprecise and speech-like pitch of one's flow to sing a segment of lyrics.
- **Sung/chanted verses:** Performing the entirety of one's flow on a pitch or set of pitches in accordance with the tonic from the track's backing beat.

As rappers "move" along the continuum in Figure 2 from top to bottom, they rap with more specific pitches, progressing from flow that invokes speech to flow that invokes song. Rappers can and do use several of these pitch

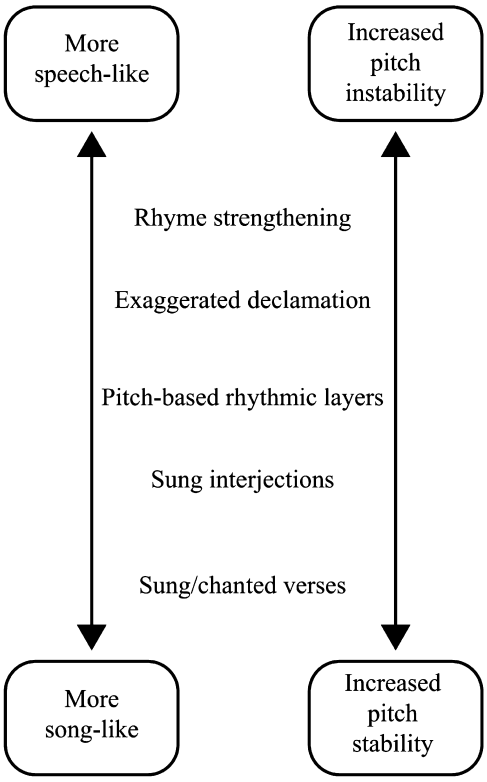
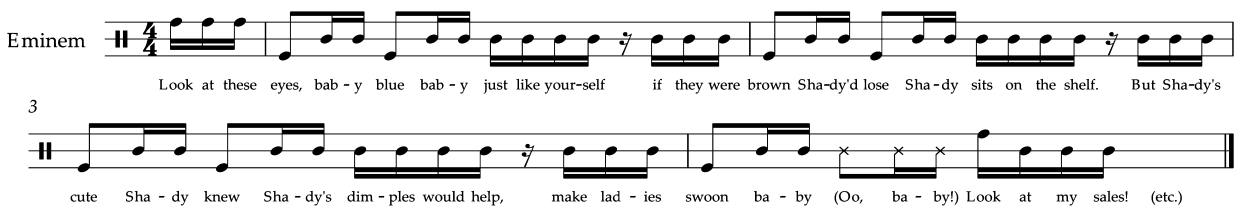


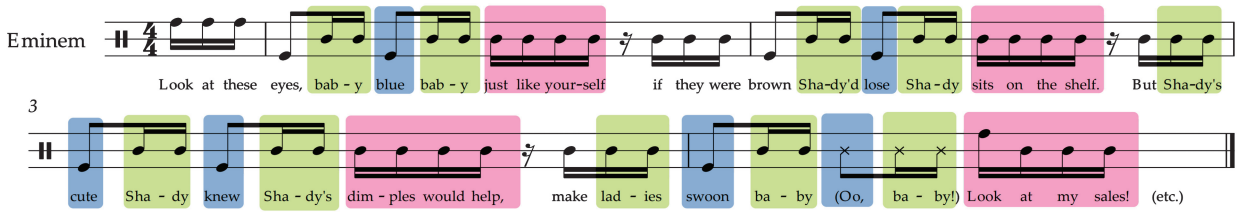
Figure 3. Spectrum of pitch techniques.

techniques simultaneously or in close proximity in a single track or verse, but for the purpose of this article, I will primarily focus on passages that exemplify one technique at a time. In the following sections, I will detail each of the five techniques in turn, supplying exemplary rap verses and commenting on the potential analytical usages for each. As I progress along the spectrum from least to most precisely pitched vocals, I will discuss the problematic boundaries between the vocal techniques of rapping and singing.[5]

[5] Auto-Tune (an audio processor that "snaps" recorded vocals to one of a chosen set of pitches) is widely used in popular music, with hip-hop being no exception. For the purposes of this article, I think of Auto-Tune primarily as a production tool and a means to an aesthetic end, rather than its own vocal delivery category. This decision is in part due to the fact that not all uses of Auto-Tune are easily perceptible, as it can be used quite subtly. That said, Auto-Tune is certainly a factor in whether or not a vocal performance is "pur-



Example 1a. Rhyme strengthening in Eminem's "White America" (2002, 1:42–1:48).



Example 1b. Rhyme strengthening in Eminem's "White America" (2002, 1:42–1:48).

White America

Audio Example 1a. (click to play audio).

White America

Audio Example 1b. (click to play audio).

1.1 Rhyme Strengthening

"Rhyme strengthening" refers to rappers altering the pitch of certain words or syllables in order to create aural connections between rhymed groups. In the context of rap analysis, "rhyme" can refer to more than traditional poetic rhyme. Generally speaking, we can say that areas of rap flow that have a strong perceived connection can "rhyme"—even if they don't have rhyming vowel sounds. In the same way that we would say that certain aspects of visual art or architecture may "rhyme," so we can say general aspects of rap flows can invoke "rhyme." This said, most mentions of rhyme in this article will refer to traditional poetic rhyme.

As an example of rhyme strengthening through manipulating the pitch of rap flows, see Eminem's "White America" (2002) in Examples 1a and 1b. In this example, I have used three separate lines of notation to denote the relative pitch of Eminem's voice at a given moment.

This method of transcription is deliberately imprecise, and each line does not necessarily represent an exact pitch. Instead of prioritizing precision, I have chosen to notate some rap flows using percussion notation, where each line represents an approximate pitch "zone" in the rapper's voice as it is heard on a given track. Even a cursory listen to the track will reveal that Eminem uses three pitch zones in the verse. From the listener's perspective, relative pitch levels are more salient than absolute pitches, thus an analysis of the pitch content of this verse is best aided by approximating pitch placement, rather than by attempting to pinpoint pitches exactly. If we take the middle line in Examples 1a and 1b to be Eminem's mid-range voice, then each note head that appears on the higher or lower staff lines represents a syllable rapped at a higher or lower pitch.

By notating Eminem's flow using this method of pitch approximation, several analytical observations come to light. While the majority of Examples 1a and 1b are rapped in Eminem's mid-range voice, a rudimentary pitch analysis reveals that there are two separate pitch streams functioning in the same phrase, each with their own unique set of rhymed syllables.

While every syllable that rhymes with "blue" (highlighted in gray) is performed at a relatively lower pitch level, anything that rhymes with the lyrics "baby" or "just like yourself" is rapped closer to the center of Eminem's vocal range on this particular track.[6] Separating the rhymed groups into disparate pitch levels allows listeners to more readily apprehend Eminem's rhyme scheme in this verse, which is characteristically complex due to the rapper's signature polysyllabic rhymes (e.g., "sits on the shelf" and

posefully" pitched, and more study on the use of this processor in popular music is needed.

[6] I specify that I'm referring to Eminem's vocal range on this track, rather than in general, due to the fact that Eminem's speaking voice is much lower than most of his recorded rapping.

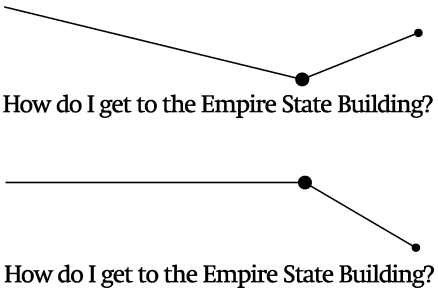


Figure 4. Reproduced from Fery's Prosody and Intonation (2016, 112).

"dimples would help"). An argument could even be made that there is a multi-pitch, multi-syllable rhyme between groups like "blue baby" and "lose Shady."

It is difficult to say whether Eminem parsed his rhymes into discrete pitch levels consciously. While little scholarship on pitch in rap exists, there is an immense amount of writing on the subject of linguistic prosody, detailing the ways in which intonation, rhythm, tempo, and articulation shape our presentation and perception of speech. From this research, we know that much of the information conveyed in speech is done through manipulation of our vocal pitch. For example, see two different versions of a question in Figure 4. The first question is polite due to the rising pitch at the end, while the second sounds ruder to our ears.

I assert that pitch conveys two types of information in rap flows: In addition to simply conveying the meaning of lyrics to the listener as in speech, the pitch of rap vocals also helps to connect rhymed syllables to one another, highlighting a rapper's rhyme scheme.

Using pitch to highlight rhymed syllables may be a conscious decision on Eminem's part, but it could just as likely be an instinctive inflection due to the rhymed syllables in his lyrics. We can test our own instinctive usage of pitch in rhymed verse by reciting a simple limerick, such as "Hickory Dickory Dock." My own vocal inflections follow the contour shown in Figure 5.

As shown in the diagram above, I tend to instinctively pitch rhymed syllables at approximately the same level as one another when reciting poetry or verse. Reciting the words "dock" and "clock" at the same pitch level highlights them as a rhymed pair to listeners. Readers can experiment with pitching rhymed syllables at dramatically different levels to highlight how unintuitive this seems to our ears.

When surveying rap tracks across decades and subgenres, it becomes clear that rhyme-strengthening pitch techniques are extremely prevalent, strengthening the impression that this technique is to a certain extent instinctual. Example 2 shows an excerpt of Tech N9ne's "Erbody But Me" (2016), in which the rapper uses his vocal pitch to emphasize rhymed syllables.

Tech N9ne's flow is generally pitched near the middle of his vocal range in this track. However, for every two-syllable rhyme in Example 2, the rapper creates a pitched correspondence in addition to the rhyming syllables. A "high-low" precedent is set on the word "drinkin'," and each subsequent rhyme follows the same pitch pattern, with none of the connecting non-rhymed syllables intruding upon the pitch space that Tech N9ne reserves for his rhymes in this section. As the rapper continues in this track, he exaggerates this technique further, and begins to shout rhymed syllables, making them stand in even more stark contrast against his calmer, mid-range "base" flow (Example 3).

Example 4 shows a curious extension of the rhyme-strengthening vocal pitch from Doja Cat in her track "Rules" (2019). Doja Cat's rhymes are marked via her vocal pitch, but not every rhyme is pitched at the same level—instead, she alternates between pitching rhymed syllables at the relative lowest and highest parts of her vocal range. The aesthetic result is similar to the previous examples, in that listeners are able to more easily pick out rhymes that are emphasized via their placement in the rapper's vocal range, and a novel low/high pattern is created that repeats in each of the four bars shown.[7]

Example 5 illustrates a final example of rhyme-strengthening vocal intonation. In "California Love" (1996), Tupac marks rhyming syllables "program" with another notable instance of "high-low" vocal pitch.[8]

In Example 5, I have chosen to notate the highest and lowest pitch zones using the spaces above and below the middle line, due to Tupac using a slightly narrower pitch band in his flow than either of the previous examples. Tupac's use of rhyme-strengthening pitch in Example 5 is notable because his use of pitch creates a connection between two seemingly disparate sections of his verse. After rapping four lines whose ends rhyme with "program" (highlighted in green in Example 5), Tupac introduces a new rhymed syllable, beginning his next chain by rhyming with the word "say" (highlighted in purple below). However, at the end of this new rhymed chain, Tupac raps the word "Oakland" at the same relative pitch level that he did his initial rhymes (in green) from earlier in the verse.

[7] The credit for observing this phenomenon in this track belongs entirely to Alissandra Reed, who was kind enough to clue me in to it after an SMT presentation (2019, Columbus).

[8] While each example of rhyme strengthening that I have highlighted in this article uses three approximate pitch zones, rappers can and do utilize this technique while using more or fewer than three pitch zones.

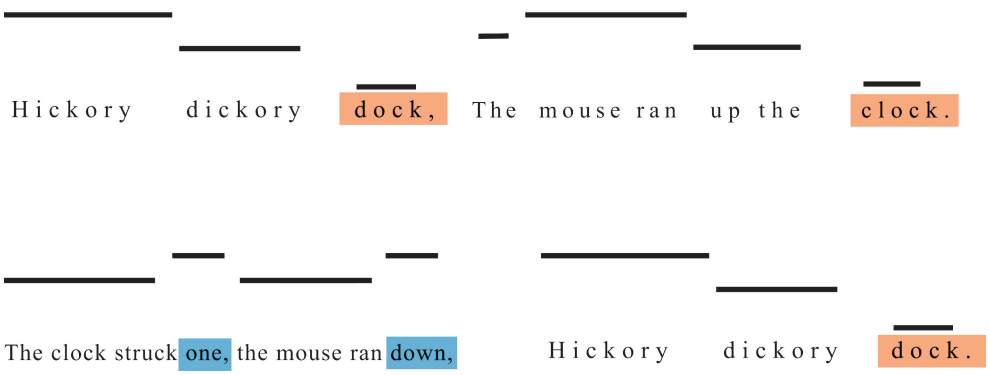
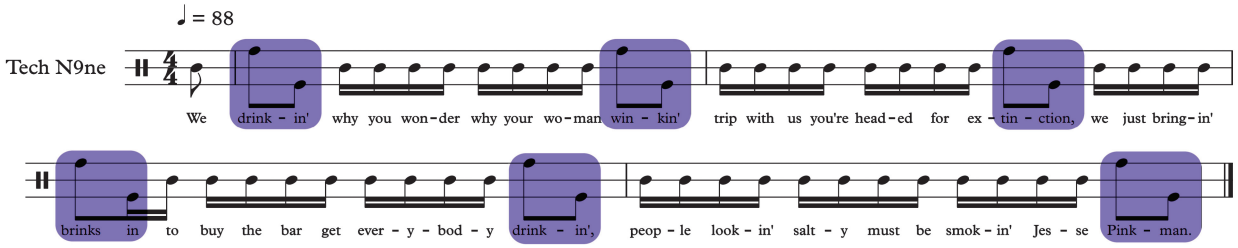
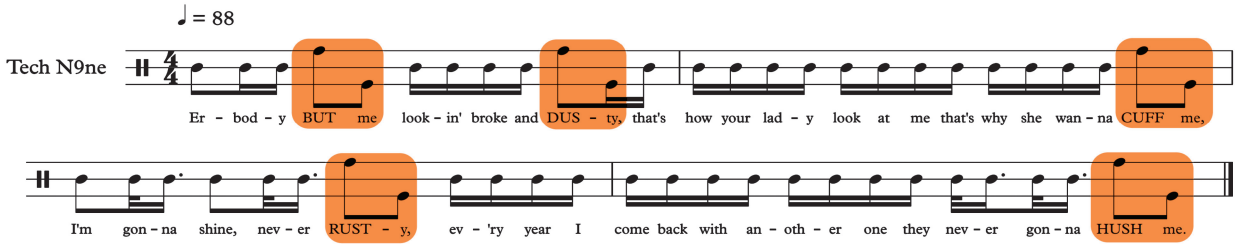


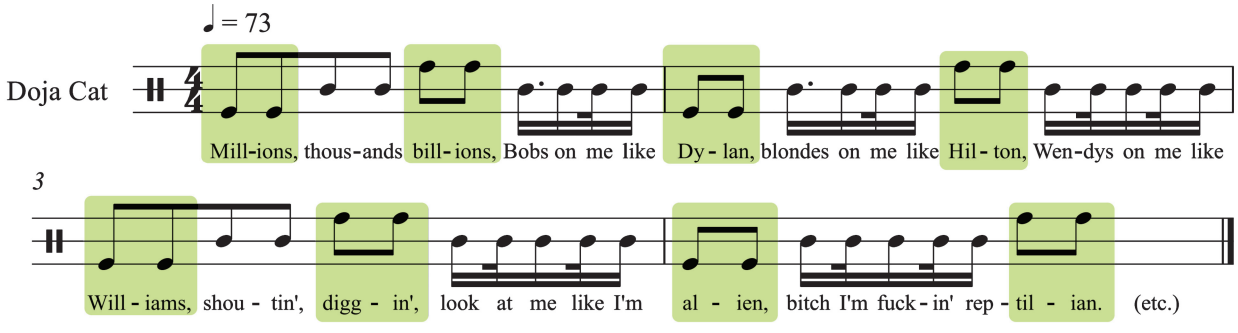
Figure 5. Contour of "Hickory Dickroy Dock".



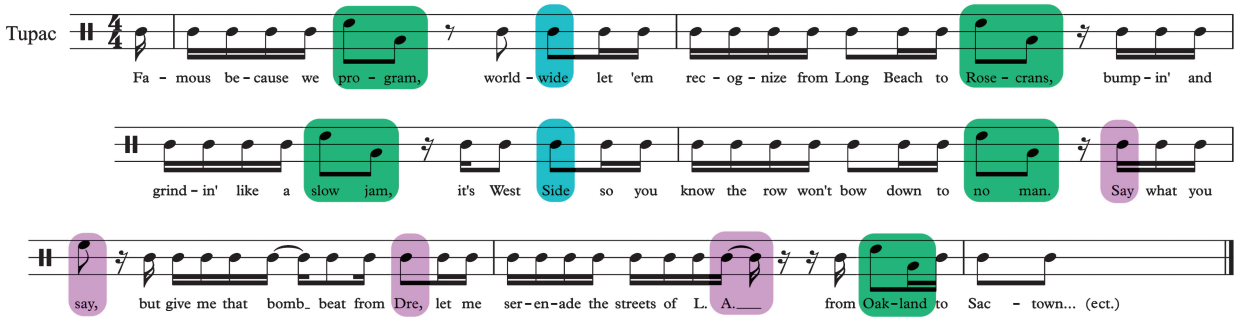
Example 2. Rhyme strengthening in Tech N9ne's "Erbody But Me" (2016, 1:54–2:04).



Example 3. Rhyme Strengthening in Tech N9ne's "Erbody But Me" (2016, 2:04–2:09). Shouted syllables are shown in all caps.



Example 4. Rhyme Strengthening Doja Cat's "Rules" (2019, 0:52–1:04).



Example 5. Rhyme strengthening in Tupac's "California Love" featuring Dr. Dre (1996, 2:40–2:55).

Erbody But Me

Audio Example 2. (click to play audio).

Erbody But Me

Audio Example 3. (click to play audio).

Rules

Audio Example 4. (click to play audio).

California Love

Audio Example 5. (click to play audio).

Example 5 demonstrates the power of relative vocal pitch levels, even if they are imprecise, in creating aural connections within rap verses. Ohriner (2016) discusses the "upper limit" to our perception of rhyme in rap music. Ohriner's position is a logical one: Listeners can only make connections between rhymed pairs if the pairs are within a certain temporal distance of one another. If a rhymed pair is split up by a large enough section of interpolated lyrics, we won't hear the pair as being rhymed at all. Usually, the "upper limit" for our perception of rhyme is relatively short, even more so when a verse is packed with as many rhymed syllables as Tupac's is in "California Love." However, in imbuing his rhymed motive with a vocal pitch motive, Tupac allows listeners to connect the lyric "Oakland" to the earlier rhymes in his verse with the same pitch contour, highlighted in green. As is demonstrated in Example 5, manipulation of pitch can not only draw attention to existing rhymes, but it can strengthen connections between slant (i.e. partial) rhymes.[9]

1.2 Exaggerated Declamation

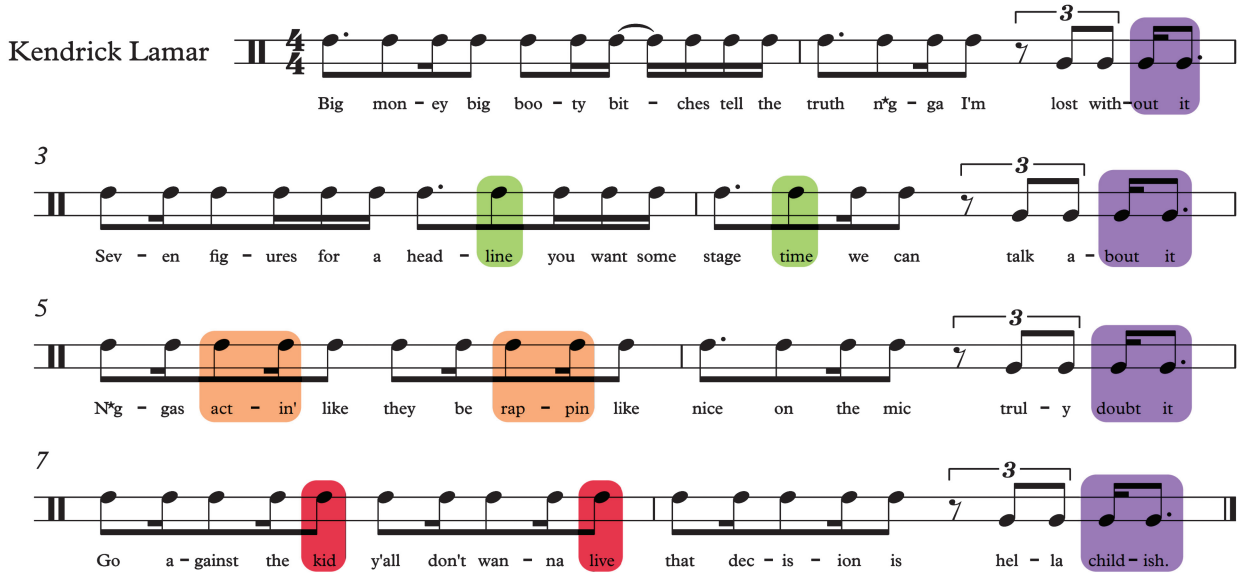
Similar to the first pitch technique described above, exaggerated declamation is an outgrowth of speech patterns found in rap. More specifically, exaggerated declamation refers to the deliberate distortion or magnification of naturally occurring speech patterns in rap flows. This technique is rather like the more familiar *Sprechstimme* in that both exaggerate typical speech patterns—however, exaggerated rap declamation is not directed by a score, while *Sprechstimme* is. When English speakers speak declamatory sentences, it is typical for the pitch of their voice to drop during the final few words (Celce-Murcia et al. 1996).[10] This phenomenon received some scholarly attention due to its contrast with the relatively new "High Rising Terminal" (HRT) speech pattern, more commonly referred to as "upspeak," in which speakers will raise the pitch of their voice at the end of their sentences (Ladd 1996).[11] In rap flows, normal declamation patterns are sometimes elongated or exaggerated—perhaps we could term this phenomenon "Sinking Terminal." These declamatory drops in pitch can happen suddenly, or be stretched out over entire phrases or stanzas.

Example 6 shows a transcription of Kendrick Lamar's guest verse in "Vice City" (2015) by Jay Rock. While Lamar's pitch levels are imprecise, they are exceptionally marked—the ending of each line is not only separated in terms of rhythm, but in pitch as well. Indeed, Lamar purposefully and repeatedly drops the pitch of his voice at the ending of each line, sometimes lowering his voice by more than an octave—a clear exaggeration of the Sinking Terminal phenomenon that would occur naturally if he were simply speaking the lyrics.

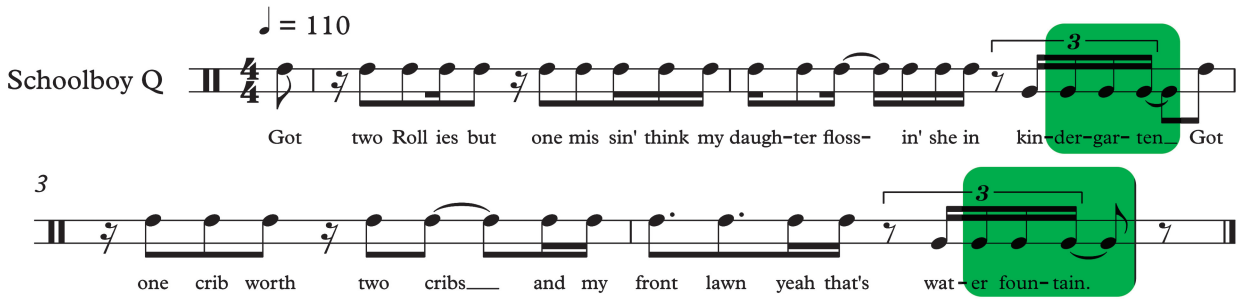
[9] For another example, see "dimples would help" and "sits on the shelf" in Figure 1b.

[10] For an example of this phenomenon, imagine a judge stating "This case is now resolved."

[11] This speech pattern is also sometimes called "Valley Girl Speak," thanks to its popularization through young actresses in television shows taking place in California in the 1980s.



Example 6. Exaggerated declamation in Kendrick Lamar's verse in Jay Rock's "Vice City" (2015, 0:50–1:06).



Example 7. Exaggerated declamation in Schoolboy Q's verse in Jay Rock's "Vice City" (2015, 3:53–4:01).

Vice City

Audio Example 6. (click to play audio).

Vice City

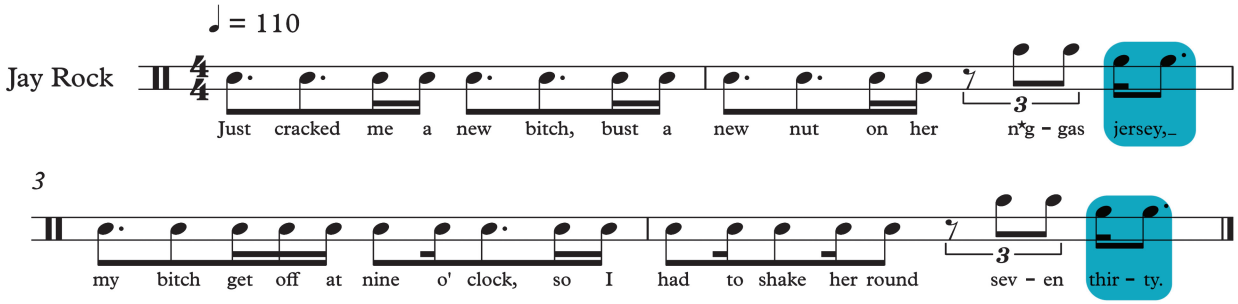
Audio Example 7. (click to play audio).

Similar to the rhyme-strengthening phenomenon mentioned previously, Lamar's dramatic drop in vocal pitch at key moments gives his verse a signature motive. Lamar's halting, rhythmically loose flow has been referred to as "Obama flow" in some hip-hop fan circles (Genius), due to its resemblance to President Barack Obama's occasionally halting speech cadence. Indeed, Lamar's unconventional flow on the first verse of "Vice City"—a segment of which serves as a refrain throughout the track—seems to have influenced other rappers on the track, each one of whom structures their flow in a similar way.[12]

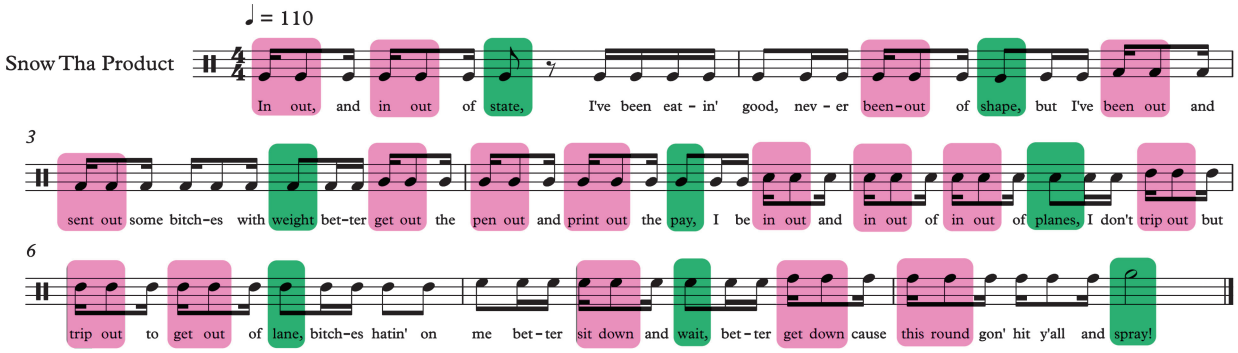
Example 7 shows an excerpt from Schoolboy Q's verse on the same track, in which he imitates Lamar's exaggerated declamation in his delivery. Similar to Example 6, the rapper uses vocal pitch techniques familiar to us from everyday speech in order to cultivate a type of quasi-tonal resolution at the end of each phrase, as if he is finishing a thought.

Example 8 shows a novel intra-track development of Kendrick Lamar's exaggerated declamation in "Vice City." Lamar raps the first verse in the track, and is immediately followed by rapper Jay Rock performing the track's second verse. Jay Rock begins by closely parroting Lamar's "Obama flow," dropping the pitch of his voice on end-rhymes, and

[12] For an extended discussion on rappers taking on each other's flows in shared tracks, see: Robert Komaniecki (2017).



Example 8. Exaggerated declamation in Jay Rock's verse in his track, "Vice City" (2015, 1:40–1:48).



Example 9. Exaggerated declamation in Snow Tha Product's "Get Down Low" (2016, 0:55–1:11).

Vice City

Audio Example 8. (click to play audio).

Get Down Low

Audio Example 9. (click to play audio).

rhythmically separating these moments from the rest of his lyrics. However, after following Lamar's vocal pitch precedent for several lines, Jay Rock inverts the pattern, speaking several end rhymes high in his falsetto range.

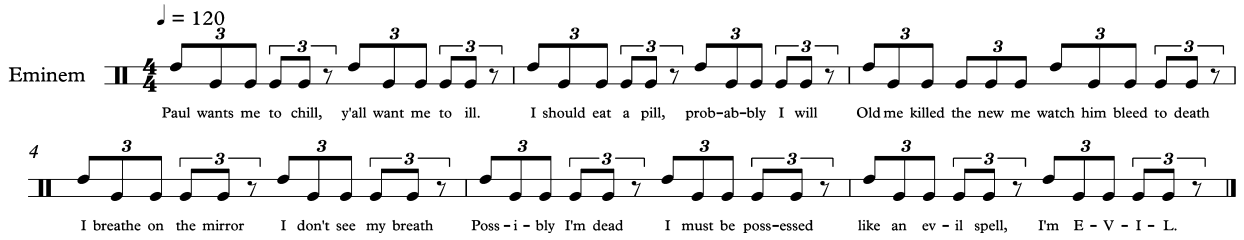
Raising the pitch of one's voice during speech can convey surprise, urgency, or disbelief, and Jay Rock's exaggerated declamation during the latter half of his verse in "Vice City" reinforces these emotions—especially in relation to Lamar's previous declamation; listeners are left with the impression that Jay Rock heard Lamar's flow, appropriated it, and modified it so that his verse was unique.[13]

Similar to the rhyme-strengthening pitch technique, exaggerated declamation is common across rap genres and decades, again likely due to its close relationship to typical speech. Exaggerated declamation is not only done to strengthen rhyming groups of syllables, however. Additionally, contrary to Examples 6 and 7 above, not all examples of exaggerated declamation involve pitching one's voice down at the end of a section of lyrics.

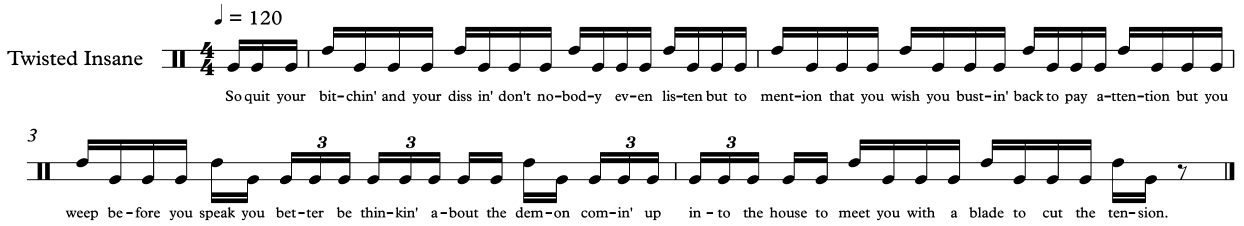
While Kendrick Lamar and Schoolboy Q used speech-like pitch to "resolve" phrases at the end of rhymed lines, rapper Snow Tha Product uses an exaggerated declamatory style in her track "Get Down Low" (2016) to achieve the opposite effect. Example 9 shows the way in which Snow Tha Product gradually increases the pitch of her voice from line to line, forgoing rhyme-strengthening vocal pitch in exchange for a sense of quickly mounting tension.

In Example 9, the primary end-rhyme syllables are highlighted in green. As is shown, Snow Tha Product eschews the tendency to pitch each of these words/syllables ("state," "shape," etc.) at the same level. Instead, every new occurrence of a green-highlighted rhymed syllable is marked by the rapper's voice raising in pitch. Snow Tha Product is not raising her voice by a specific interval each time, nor is she rapping in a perfect monotone between pitch shifts. Thus, the net effect of this exaggerated declamation on Snow Tha Product's flow is that it imbues the

[13] It's difficult to say with certainty the order in which verses are written and recorded on collaborative tracks like "Vice City." What we can say for certain is that the use of pitch in this track unifies the flows of each rapper.



Example 10. Pitched rhythmic layers in Eminem's "The Ringer" (2018, 1:29–1:42).



Example 11. Pitched rhythmic layers in Twisted Insane's "200 Round Clip" (2015, 0:36–0:44).

lyrics with a sense of urgency and building tension, which is not released until after the transcribed excerpt finishes on the word "spray" delivered in a high-pitched shout.[14]

1.3 Pitched Rhythmic Layers

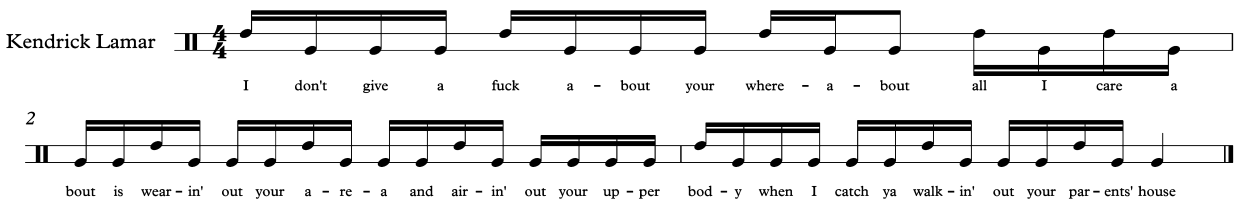
When a rapper creates a pitched rhythmic layer, they deliberately and markedly alter the pitch of their voice at specific points in their flow to create a separate rhythmic layer that is woven in with the composite rhythm of their flow. The net effect of this technique is the sensation that two rhythmic layers are progressing simultaneously and dependently—one signified by the general pitch of a rapper's flow, and the other signified by an altered or unusual pitch at select moments. An Edwards (2013) quote from earlier in this article bears repeating: "Often, series of lower- and higher-pitched syllables or phrases will be used to create a pattern in the delivery. This can be done to create a structure for the verse, *in a similar way to how rhythm or rhyme is sometimes used* (emphasis added)" (106). In the examples that follow, we will see moments where rappers are able to erect two simultaneous rhythmic patterns, differentiating between the two of them using their vocal pitch.

For a relatively straightforward example of this technique, see Eminem's "The Ringer" (2018) in Example 10, in which Eminem uses his vocal pitch to strongly emphasize the first and third beat of each bar. The regularity of Eminem's pitched rhythmic layer contrasts his usually irregular and complex rhyme schemes, and is underscored by an atypically straightforward set of end rhymes. Similarly, Example 11 shows the way in which rapper Twisted Insane uses vocal pitch in the track "200 Round Clip" (2015) to emphasize all four beats of each measure, de-emphasizing the underlying patter of steady sixteenth notes in favor of the background quarter note pulse.

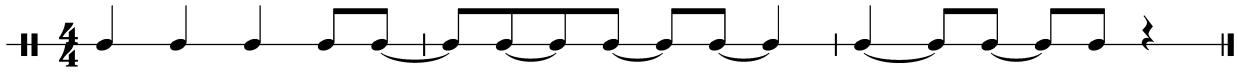
A more complex example of pitched rhythmic layers can be seen in Example 12a—another transcription of Kendrick Lamar, this time from his guest verse in Dr. Dre's track "Deep Water" (2015). In this brief section from a larger featured verse, Lamar markedly alters the pitch of certain syllables, placing them high in the falsetto part of his vocal register, approximately an octave higher than the surrounding lyrics. The result is a moment that sounds more complex than it looks on paper—Lamar distills a secondary rhythmic stream from his rapid, sixteenth note flow. The secondary rhythmic stream can be seen in Example 12b—note how the more widely-spaced attack points and syncopation contrast the mostly consistent deluge of sixteenth notes in the transcription in Example 12a.

Pitched rhythmic layers are by far the least common of the five types of pitch manipulation I have identified in rap music. This could be for a variety of different reasons. Perhaps its position on the middle of my spectrum that stretches from "more speech-like" to "more song-like" means that pitched rhythmic layers are least intuitive in terms of both musicality and speech. While I suggest that rhyme strengthening via vocal pitch occurs intuitively, it would be difficult to make such an argument for pitched rhythmic layers. Likewise, the pitched rhythmic layers above bear little resemblance to typical singing in

[14] Edwards (2013, 104) observes the same phenomenon.



Example 12a. Pitched rhythmic layers in Lamar's verse in Dr. Dre's "Deep Water" (2015, 2:32–2:39).



Example 12b. A distillation of the upper rhythmic layer in Figure 12a.

The Ringer

Audio Example 10. (click to play audio).

200 Round Clip

Audio Example 11. (click to play audio).

Deep Water

Audio Example 12a. (click to play audio).

pop music. It is possible that the "unnaturalness" of pitched rhythmic layers is the best way to explain their relative scarcity in hip-hop music.

1.4 Sung Interjections

A sung interjection is a moment in which a rapper interrupts the tonally imprecise and speech-like pitch of their flow and sings a segment of their lyrics. This fourth category of pitch manipulation in flow is the first in this article in which there is a purposeful and precise adherence to the ideas of a scale or tonic, since the pitches involved always have a clear tonal relationship to the underlying beat. Example 13 is a transcription from Dr. Dre's track "Darkside/Gone" (2015), featuring Kendrick Lamar, Marsha Ambrosius, and King Mez. The section transcribed in Example 13 is the seam between two verses in "Darkside/Gone," the first performed by guest rapper King Mez, the second performed by Dr. Dre himself. The tonic key of the section is E minor, and Dr. Dre fittingly comes in on the pitch E, bouncing between two octaves in a sung interjection before continuing in a more typical declamatory fashion.

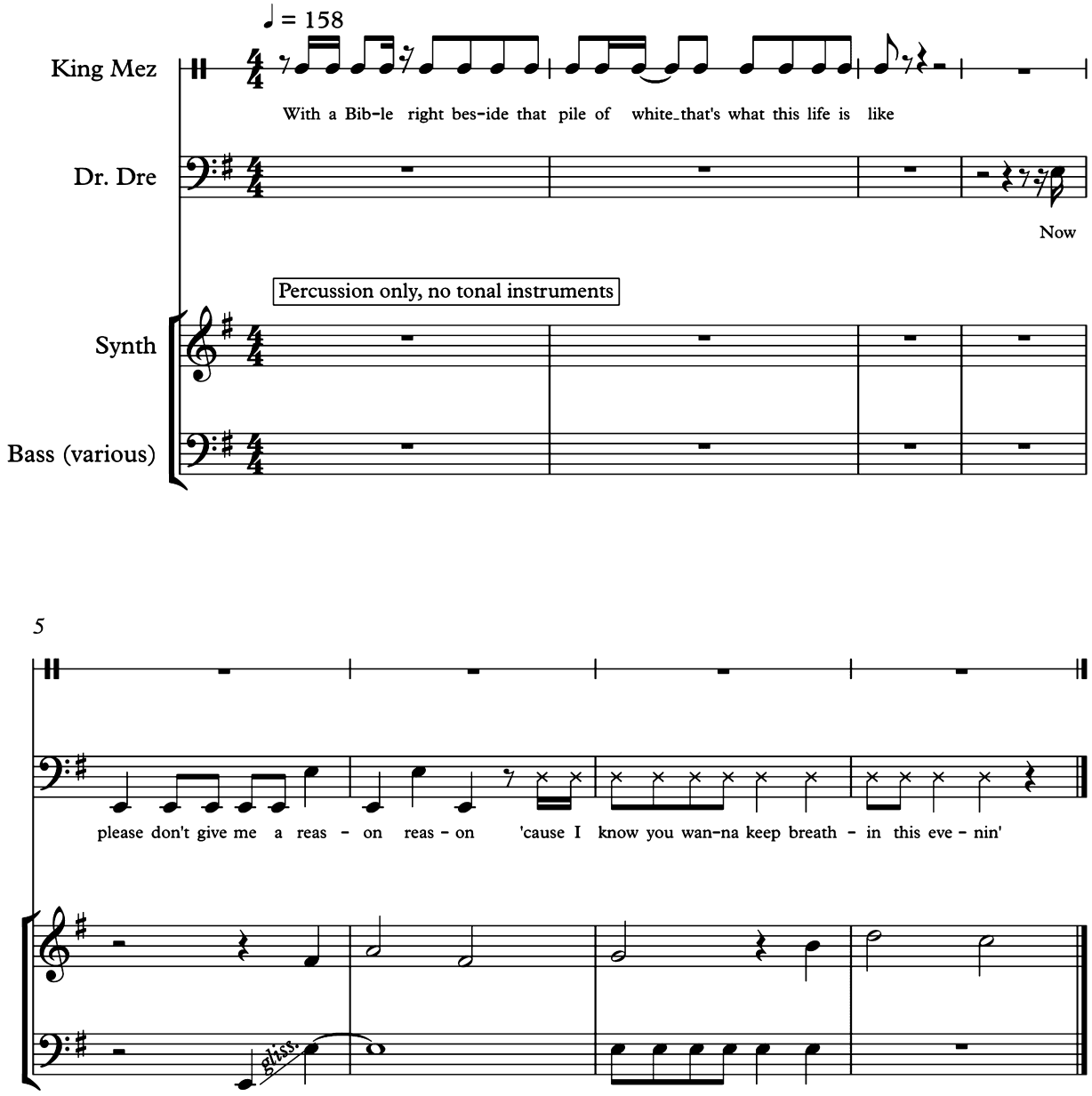
Since rap music's advent, there have been artists that blur the line between rap and R&B genres, splitting their time in a verse between less purposefully pitched rapping and more precise singing. Example 14 shows a transcription of Queen Latifah's "Princess of the Posse" (1988). While Latifah is more active today as a singer and actress, she began her entertainment career as a rapper in the late 1980s, mixing hip-hop with soul while rapping about black women's issues. In Example 14, after several bars of rapping in a verse, there is a brief, diatonic interjection (one that is harmonized by backing vocals, in Latifah's case), followed by a continuation of less purposefully pitched rap flow.

Example 15 shows a transcription from rapper/singer Lizzo's track "Good as Hell" (2016). Lizzo begins her track with several bars of rapping in declamatory tone, then switches to traditional singing for the majority of the song. Freely flitting between R&B, soul, and rap tropes (sometimes within a single track) is increasingly popular with recent "crossover" acts like Lizzo, Chance the Rapper, Drake, Noname, and many others.

The increased presence of singing in rap verses could be indirectly attributed to the "sung hook" gaining popularity amongst rappers and labels since the late 1990s. In rap's earlier years, there little consensus on what should constitute a chorus (i.e. "hook"). Hooks could be comprised of a rapped refrain, singing, scratching, or a sampled instrumental. Some tracks omitted a refrain entirely. Despite this variety of refrains, it was the sung hook that eventually became predominant in the hip-hop sphere. "It Takes Two" by Rob Base and DJ EZ Rock (1988) is an early example of a sung chorus, in which Rob Base raps the verses, and the chorus is sung by Rhonda Parris.[15] The formula of rap singles featuring a vocalist on the hooks increased in popularity, becoming what Michael Berry (2018) considers a "standard" form in hip-hop after 1995.[16]

[15] Rhonda Parris is actually covering Lyn Collins's "Think (About It)" (1972) on the track "It Takes Two," at the request of Profile Records. See also Andrew Limbong (2018).

[16] Countless examples exist, but some notable tracks include:



Example 13. Sung interjection in Dr. Dre's "Darkside/Gone" (2015, 0:42–0:53).

Darkside/Gone

Audio Example 13. (click to play audio).

Additionally, as sung hooks became more common, rappers even began experimenting with singing their own hooks. Results were mixed, as many commercially successful rappers were not trained singers. Rapper Ja Rule takes credit for this trend, saying "I think for the people, that's what made it popular, that they were able to sing along with it and they weren't intimidated by singing along to it because it was a guy that can't sing" (2011).[17]

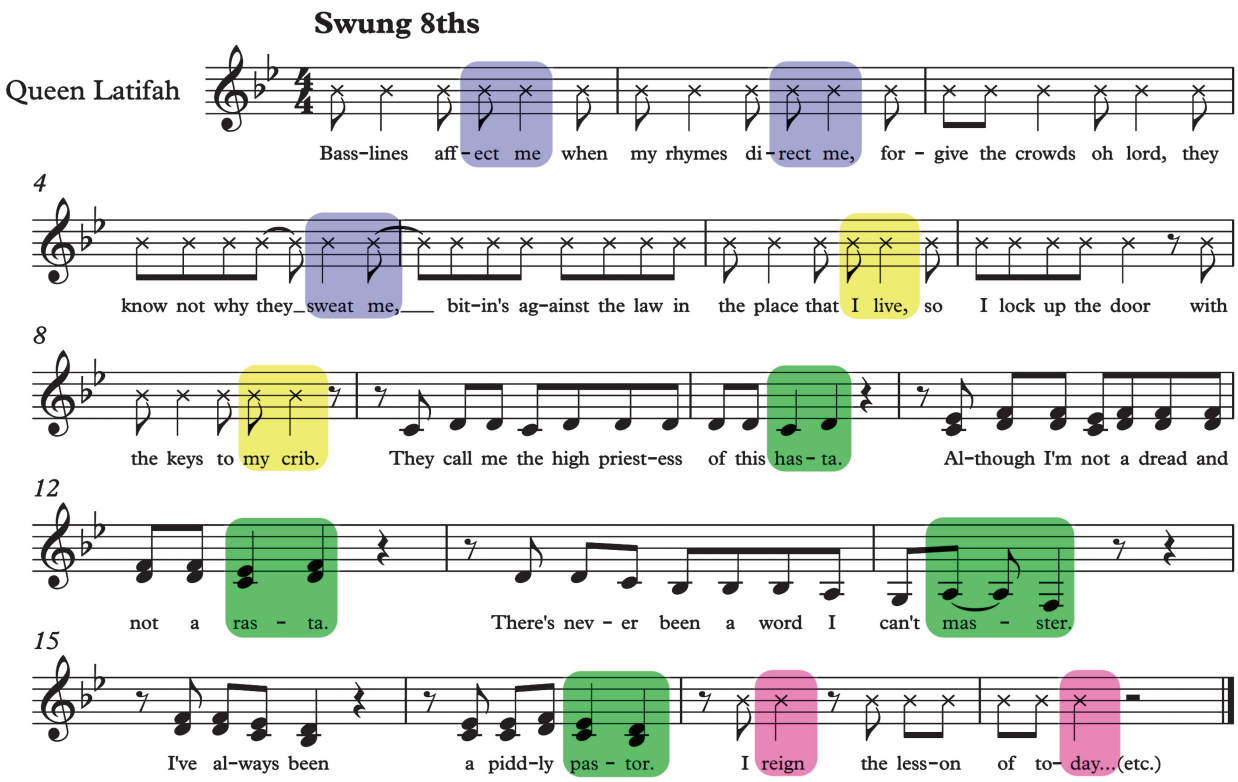
"Where is the Love" (2003) by The Black Eyed Peas, hook sung by Justin Timberlake (and Fergie, group member).

"Slow Jamz" (2003) by Kanye West feat. Twista, hook sung by Jamie Foxx.

"Pimpin' All Over the World" (2005) by Ludacris, hook sung by Bobby V.

"Empire State of Mind" (2009) by Jay-Z, hook sung by Alicia Keys.

[17] Some examples of tracks in which rappers sing their own hooks include:



Example 14. Sung interjection in Queen Latifah's "Princess of the Posse" (1988, 0:23–0:49).

Princess of the Posse

Audio Example 14. (click to play audio).

1.5 Sung/Chanted Verses

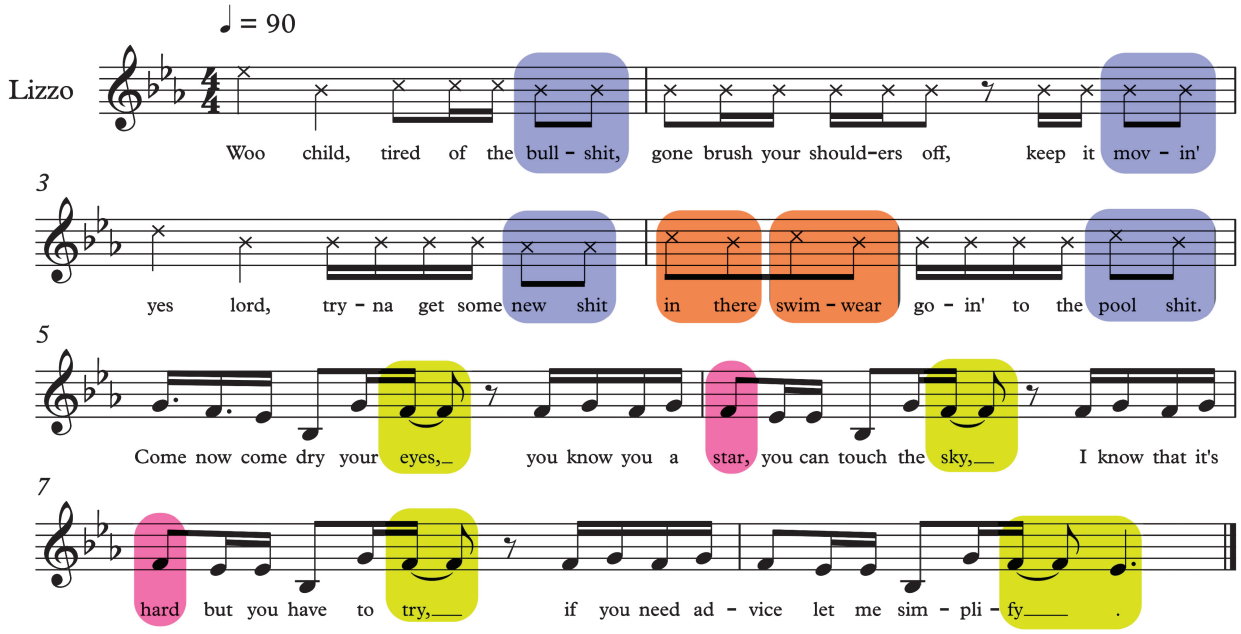
The fifth and final category of pitched rap flow is furthest removed from normal speech. In a sung or chanted rap verse, the rapper will perform the entirety of their flow on a pitch or set of pitches in accordance with the tonic from the track's backing beat. As mentioned in the Introduction, Adams (2009) has remarked on this chanted flow technique in the music of rapper Nelly, noting that it is "oddly reminiscent of psalmody," a syllabic text setting of chant or sacred canticles. When one examines Nelly's performance on "Country Grammar" (2000) in Example 16, the comparison with psalmody is apt with regards to text setting. The verse is almost completely purposefully pitched, save for a few spoken, unaccented syllables scattered throughout. These unstressed syllables are nearly always pitched lower than the surrounding syllables, and often occur on schwas, blending the line between speech and song as Nelly clearly emphasizes stressed syllables with a pitch adhering to the background tonic. As is evident in the transcription, the verse is primarily syllabically set, free of melisma—a characteristic shared with most of Nelly's rapping throughout his career. If one were to place Nelly's vocals in "Country Grammar" in the context of a complete musical scale, a likely choice would be D Dorian—which, while not entirely realized by Nelly's vocals, is established by the song's chorus and backing track.

In a 2010 interview with Complex magazine, Nelly framed himself as the progenitor of sung/chanted rap verses. Interestingly, Nelly characterizes his choruses as being sung, while the verses are rapped, despite both being deliberately pitched in the majority of his music:

> It's crazy; we did *Billboard*'s "top artists of the decade," and they asked me, "Who do you think is one of the biggest influences on music today?" And I was like, 'Shit . . . me!' I mean, let's just be real about it! Who else was doing it like that? Who else was singing on hooks? And rapping on verses? Putting bridges in the songs and doing it like that? I mean whether I get the credit or not, it don't matter (Nelly 2010).

Nelly echoed a similar (albeit less boastful) sentiment in his interview with Paul Edwards (2013). Edwards, who

"I'm Real" (2001) by Ja Rule feat. Jennifer Lopez.
"Cleanin' Out My Closet" (2002) by Eminem.
"P.I.M.P." (2003) by 50 Cent.



Example 15. Lizzo switches from rapping to singing in "Good as Hell" (2016, 0:11–0:31).

Good as Hell

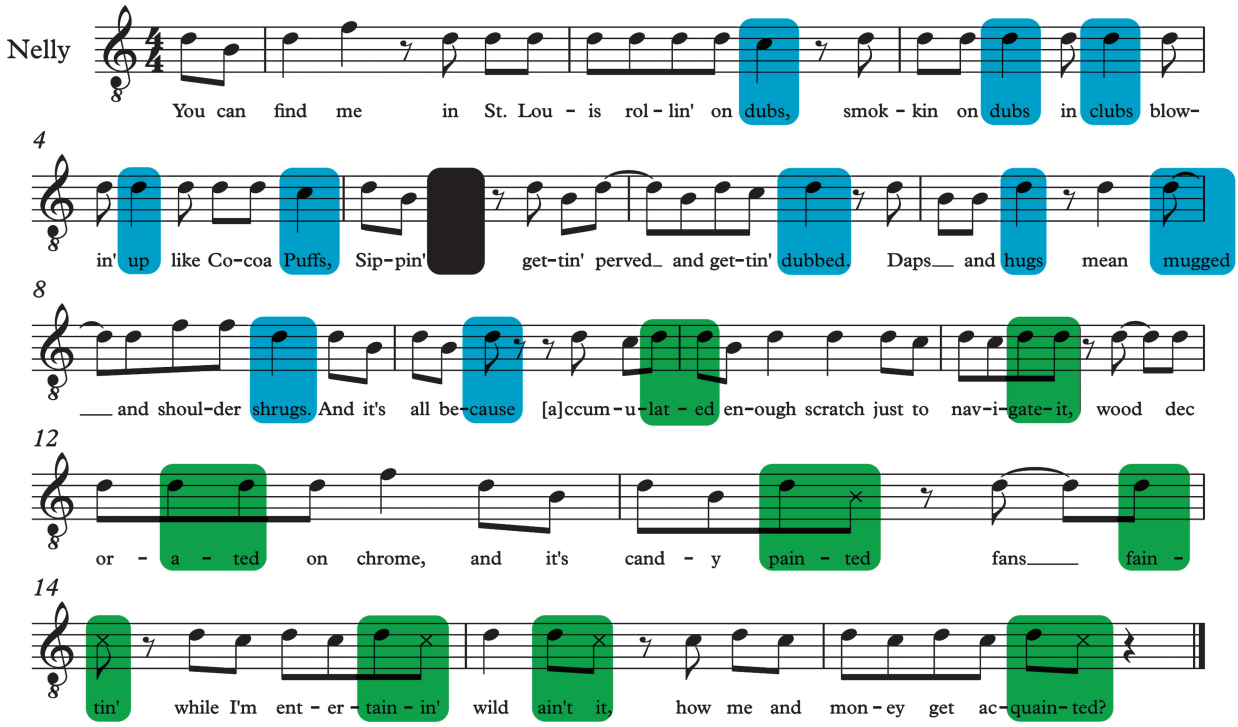
Audio Example 15. (click to play audio).

characterizes Nelly's delivery as "half-sung," quotes Nelly as stating that he considers his delivery to be a combination of R&B and rap, one of the "distinctive things" that Nelly was able to do as an artist (Edwards 2013, 142). Nelly's success in the early 2000s is influential in as of itself—his 2000 debut album *Country Grammar* was certified diamond in 2016 by the Recording Industry Association of America (RIAA), placing him in an exclusive group of top-selling rappers that includes 2 Pac, Notorious B.I.G., and Eminem.

While Nelly certainly influenced his successors with his sung style of rapping, it would be disingenuous to frame him as the first to have success using sung vocals in hip-hop tracks. In fact, sing/rapping has occurred with some regularity for decades, likely due to the hip-hop's close association with soul and R&B. Rapper Shock G states that "[there] was the '80s wave of hybrid hip-hop groups and melodic MCs, like Jimmy Spicer, Planet Patrol, Full Force, Jonzun Crew, [...] and especially Queen Latifah, who took rap-singing to a whole 'nother level of believability and harmonic accuracy when she dropped the game-changing 'Wrath of My Madness/Princess of the Posse' single in '88" (Edwards 2013, 142). Indeed, Latifah's blend of rapping and singing in Example 14 is clear indication that mixing the vocal styles in a single track, or within the same verse, had an ample precedent by the time Nelly released *Country Grammar* some two decades later.

Even Nelly's signature style of rapping primarily on a single note with occasional motion to nearby pitches was established well before the new millennium. Hip-hop group Bone Thugs-n-Harmony popularized this style of rapping as early as 1991, calling it "rapping and singing at the same time" in interviews (Bone, 2015). Example 17 shows a short excerpt of group member Bizzy Bone's verse in Bone Thugs-n-Harmony's biggest commercial success, "Crossroads" (1996). Bizzy Bone's flow is remarkably similar to Nelly's—both rappers perform the lyrics nearly exclusively on a purposefully pitched set of several notes, heavily syllabic, and adhering closely to the tonic established by the backing beat. Unlike Nelly, however, Bizzy Bone primarily performs on the dominant scale degree, rather than tonic—but his fellow Bone Thugs-n-Harmony groupmates emphasize each pitch of the tonic triad in turn throughout the track.

The chanting, syllabic, and pitched flows of Bone Thugs-n-Harmony have indirectly influenced rappers well into the 2010s. Example 18 shows an exemplary verse from Kendrick Lamar's "Swimming Pools (Drank)" (2012), in which the rapper can be heard "singing" his lyrics on a highly-constrained group of pitches. Again, we can observe that Lamar's flow strictly adheres to the background tonic of B minor. Particularly noteworthy in this example is Lamar's tendency to use an identical melodic cell for rhymed syllables. As is shown in Example 18, each two-



Example 16. A sung/chanted section of Nelly's "Country Grammar" (2000, 0:26–0:49).

Country Grammar

Audio Example 16. (click to play audio).

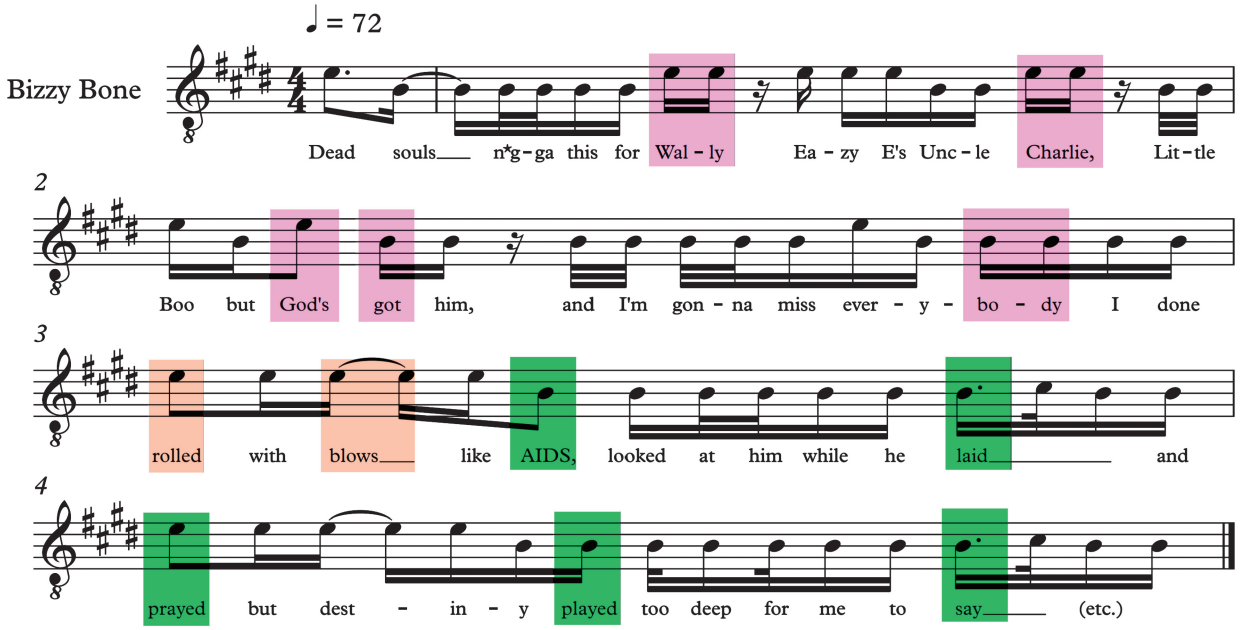
syllable rhyme is part of a larger four-note motive, which is similar in each highlighted occurrence. By using this repeated melodic cell, Lamar creates a type of "melodic rhyme" that functions concurrently with the rhymes in his lyrics. To show this, I have highlighted each "rhymed" four-note melodic cell in light red, while highlighting each of their smaller two-note lyric rhymes in dark red.

Occasionally rappers will perform a precisely pitched verse that is more melodic in character than Lamar's chanting in Example 18. Example 19 shows a transcription of Chance the Rapper's guest verse in DJ Khaled's "I'm the One" (2017), which also features sung verses from rappers Quavo and Lil Wayne, and a sung hook by Justin Bieber. As can be seen in the example, Chance performs his verse using a G major pentatonic scale, spanning over an octave in range, with repeated melodic motives as well as a variety of gestures. There is even a moment in which Chance injects some dissonance into the pop standard I–vi–IV–V chord progression—note his repeated singing of the tonic over dominant harmony in measure 4 and $\hat{3}$ in measures 11 and 15 over a IV triad. Additionally, Example 19 demonstrates that Lamar is not alone in his use of "melodic rhymes" to strengthen existing lyrical rhymes. There are three primary rhymed groups in Example 19, shown in blue, red, and green. Chance assigns each of these rhymed groups their own short motive, each distinct from the others. To an extent, what Chance does in "I'm the One" is similar to the "rhyme strengthening" use of pitch shown in Section 1.1—the main difference being the level of clear intention behind his purposefully pitched melody.

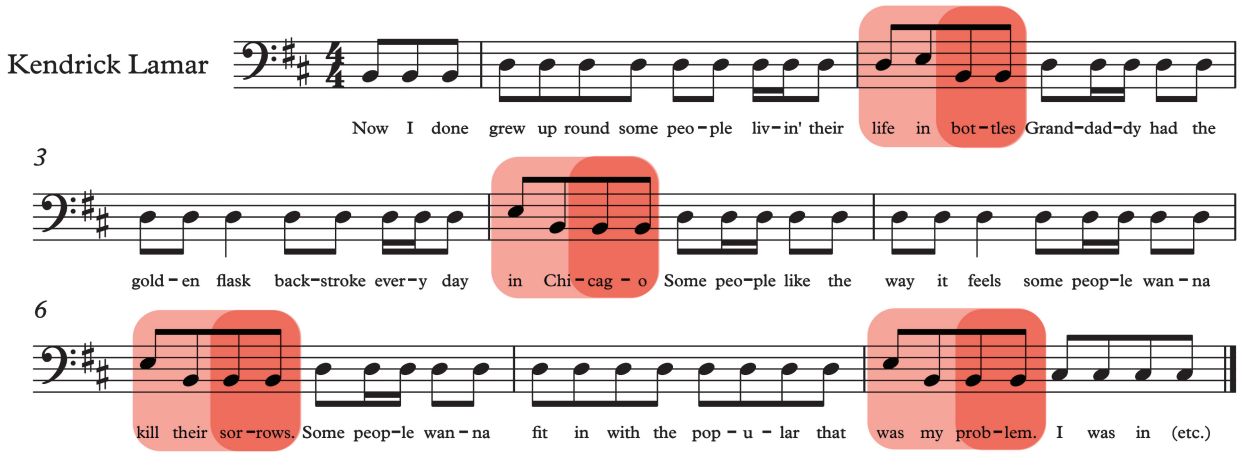
Genre Classification and Conclusion

The style of rap flow shown in Example 19 creates a genre classification problem. There are few concrete features that separate a rap verse like that seen in Example 19 from a verse in any melodic pop music track—in fact, Chance the Rapper uses a wider array of pitches in his performance than is utilized in many verses by pop singers, which tend to be more restrained in range to contrast an inevitable belting chorus. For an example of this, see Example 20—a transcription of the verse of Katy Perry's recent single "Bon Appétit" (2017), which is arguably less "melodic" or "sung" than Chance the Rapper's verse in Example 19.

This raises a genre classification issue with no easy answer. It certainly seems safe to allow performers to classify



Example 17. A sung/chanted performance by Bizzy Bone in "Crossroads" (1996, 0:18–0:32) by Bone Thugs-n-Harmony.



Example 18. A sung/chanted section of Kendrick Lamar's "Swimming Pools (Drank)" (2012, 0:25–0:39).

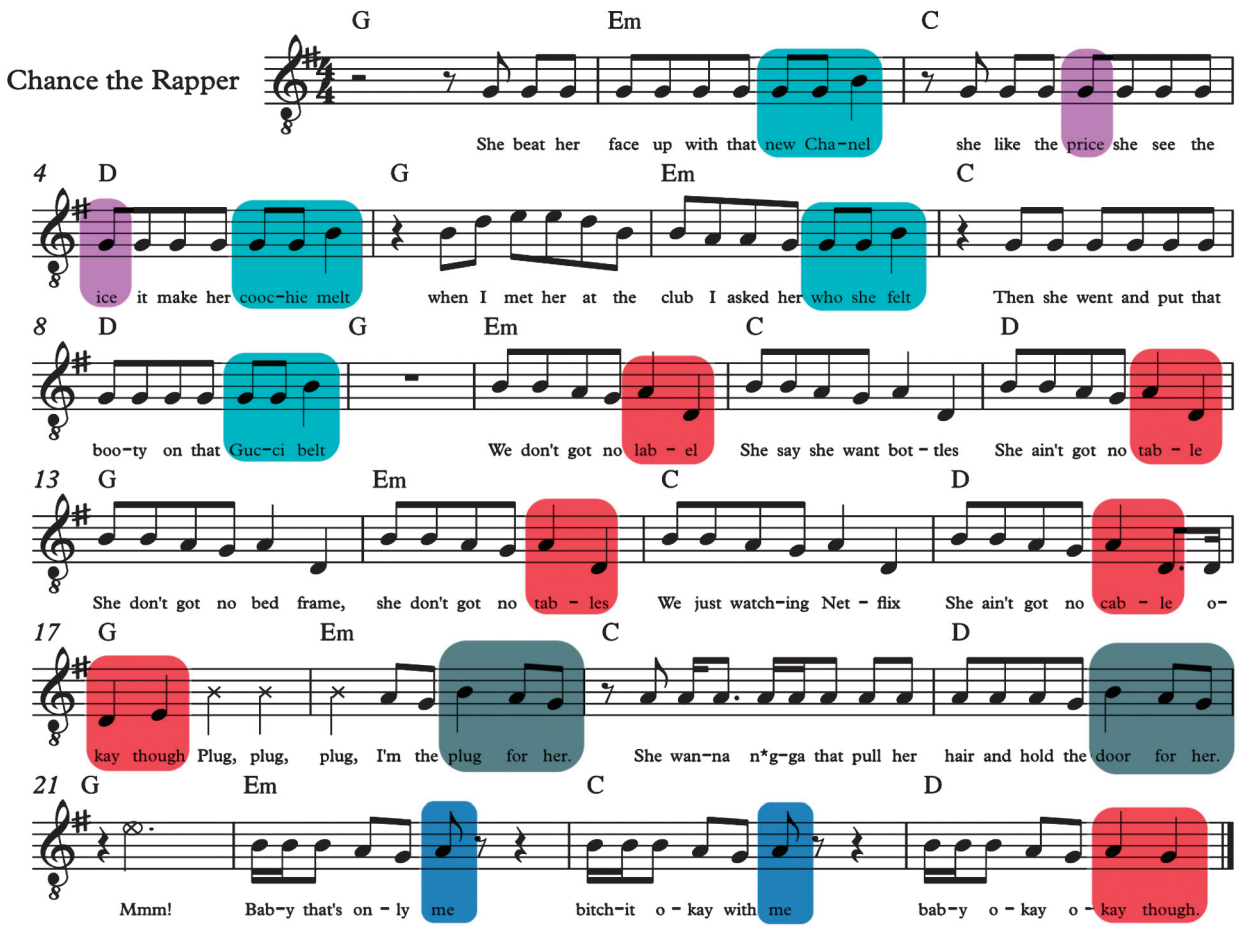
Crossroads

Audio Example 17. (click to play audio).

Swimming Pools (Drank)

Audio Example 18. (click to play audio).

themselves: Singers sing, rappers rap. Since rapping is usually defined by the very fact that it is *not* singing, however, performances like that in Example 19 put us in a confusing situation. Thanks to the professional alias that Chance the Rapper has chosen, there can be little doubt as to whether he identifies more as a singer or a rapper. That said, what are we to make of examples like Examples 16–19 of this article, in which each an argument could be made that what each rapper performs is more singing than it is rapping? Could we, in an effort to compromise, agree that a performance can be considered *both* rapping and singing, despite the two vocal styles typically being discussed as diametrically opposed? Perhaps these borderline cases could be classified considering other factors: style, fashion, lyrics, timbre, method of production, or any indication from the artist



Example 19. A transcription of Chance the Rapper's sung/chanted verse in DJ Khaled's "I'm the One" (2017, 1:59–2:33).

I'm the One

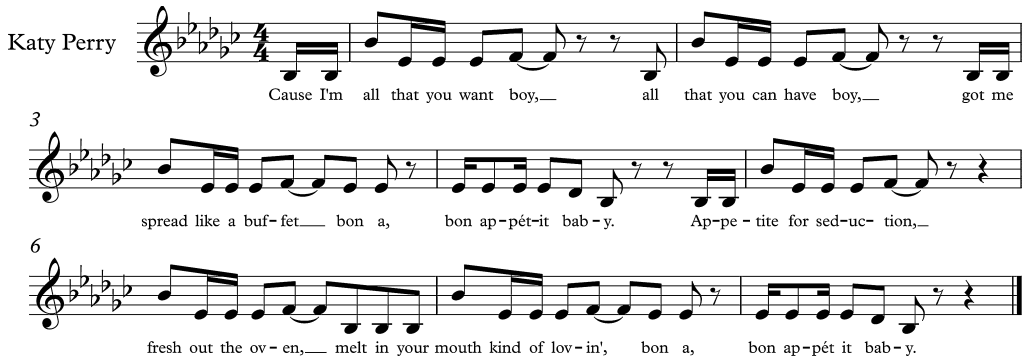
Audio Example 19. (click to play audio).

as to which genre they feel they represent.[18] Ultimately, the issue is more of a problem for analysts than it is for performers. Regardless of how I or anyone else classify Chance the Rapper, Kendrick Lamar, Nelly, or any other rappers that sing in their tracks, they are unaffected by said classification, and will likely continue to present themselves as rappers.

I contend that the question of rapper or singer be left to the artists themselves. If we view rapping as more of a technique that can be employed than a specific, gated genre of music, our understanding of hip-hop music is much more complete. In short: Analysts should concern themselves with what is happening in the realm of rap music and resist the urge to nitpick over whether a rapper has misclassified themselves. If we accept that all the rappers mentioned in this article are indeed rappers, performing in their own unique way, we can move on to discuss a broad range of techniques and styles that are used in hip-hop music more generally.

Pitch techniques in rap flows exist on a spectrum of precision, ranging from barely noticeable techniques that could very well be holdovers from the performers' speech patterns to purposeful and melodic singing of rap lyrics. Despite pitch being one of the last parameters analysts typically remark upon when discussing rap flows, understanding and recognizing the techniques above are essential for music theorists hoping to become increasingly conversant with the genre of rap music.

[18] Vocal timbre is undoubtedly influential when subjectively determining genre. While a discussion of vocal timbre in popular song is outside the scope of this paper, I again urge interested readers to consider Kate Heidemann's 2016 article in *Music Theory Online* on this very topic.



Example 20. A transcription of a verse from Katy Perry's "Bon Appétit" (2016, 0:27–44).

Bon Appétit

Audio Example 20. (click to play audio).

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Review of *Performing Knowledge: Twentieth-Century Music in Analysis and Performance*, by Daphne Leong, Oxford University Press, 2019

by Jonathan Dunsby

Joseph Kerman, then Heather Professor of Music at Oxford University, advised the present writer that the best topic for his doctoral dissertation could be a study of the history of the interpretation of Brahms in recordings, focusing on the piano works. The modern reader is probably thinking: so? Yet this caused consternation among the rising graduates of the time, leading to heated debate out of earshot of the professors—who were, as Heine wrote of his professors, in his 1824 essay "The Harz Journey," "like the pyramids of Egypt, except that they contained no secret meaning." The student consensus was that you cannot conduct serious academic research on something so ephemeral, so contingent, as musical performance, and not even "live" musical performance at that. Time's arrow has moved things on. The one feature on which most would agree about this book in today's world of music research, aside from its many estimable qualities, is that it is hardly surprising from a disciplinary point of view. Performance studies have become an integral part of the modern music theory scene.

That said, it is surprising in all the best senses as to its originality and rigor. Its structure is such a feature, organized around a triptych of "Variations," each panel consisting of three chapters; these panels concern, in turn: how performance influences analysis, how analysis influences performance, and finally the "duo of analysis and performance" (as the author puts it, retrospectively [382]). The "Theme" of these variations is expressed by the title of the first chapter, "Performers, Structure, and Ways of Knowing," followed by a chapter called "Counterpoint: Cross-Disciplinary Collaboration." Leong reevaluates the framing chapters' topics in reverse at the end, "Counterpoint" reconsidered and "Theme" concluded. In view of Leong's persistent concern with "structure"—"musical structure itself is a shared item, present to some degree in the score, the composer's mind, the analyst's conception, the performer's take, and the listener's hearing—that shifts shape across and within all of these" (384)—this makes for gratifying authorial attention on how to "perform" the structure of a book itself.[1] The triptych that forms the bulk of the book is a richly collaborative project, with composers and performers Alejandro Cremaschi, Hunter Ewen, Adam Ewing, Judith Glyde, David Korevaar, Jonathan Leathwood, Elizabeth McNutt, Robert Morris, and the Takács Quartet, joining Leong in each co-authoring one of the "Variations."

The reader will naturally want to know the big picture of what music Leong is discussing in this book. Is it about "performing knowledge" with regard to Joey Bada$$'s tracks, or *4′33″* perhaps, or maybe Ewe drumming? One is tempted to say: of course not. Perhaps not so long ago, when this book was conceived, an ultra-canonical approach to what counts as "music" would have been less conspicuous, but nevertheless guessing the composers on whose music Leong focuses would make for an interesting parlor game played by those content to call themselves "clas-

[1] This reviewer therefore finds here a sturdy response to his feeling that "in an age when it is not so apparent as it used to be what the idea of 'book' really is, it becomes ever harder to say what the value of a book may be" (Dunsby 2009, 132).

sical" musicians, were it limited to, say, three: Charles Ives, Judith Weir, George Lewis? Not exactly, and here is the actual list of nine names: Ravel, Schoenberg, Bartók, Schnittke, Milhaud, Messiaen, Babbitt, Carter, Morris. Nobody could fail to notice the ethnicity—a matter of historical record—and presumed gender of those nine names. Perhaps the point to bear in mind is that Leong is working within a particular canonicity, inside which she is hoping to persuade readers to open their ears and minds to the post-tonal world, to what one may call the post-1908 experience of Western art music. In this regard, there is an interesting, late-comer footnote, appended to the sentence "New Music of the twentieth and twenty-first centuries is perhaps the most challenging of all concert musics" (252):

> By concert music, we mean so-called "classical music" … The repertoire includes "art music" for solo performer, chamber ensemble, orchestra, and chorus written from about 1750 to the present, but focusing on music of the Classical and Romantic western music periods, from 1780 to 1910. Concert music is the main kind of music taught in music conservatories and music schools in North America, Europe, and some Asian countries. (252)

In 2021, the reader, like this reviewer, may feel that our new era of unforeseen change is driving the most recent published scholarship somewhat into its unforeseen historical place—a place that Leong most likely could not have anticipated.

The first panel of the triptych, about how performance influences analysis, was perhaps Leong's biggest challenge, and it echoes calls from venerable figures in the performance studies world to foreground performance rather than text as the object of music analysis. Nicholas Cook, for instance, famously asked us to regard the score as a script, and to analyze the realizations of that script (2001). Leong tackles in turn the opening cadenza of Ravel's Piano Concerto for the Left Hand, a short Schoenberg piano solo, and the central section of Bartók's Fifth String Quartet. The aspects of performance that influence analysis are commendably clear in each case: in the reviewer's words, embodiment (how *écriture* for left hand alone translates into particular kinds of musical meaning), articulation (how you perform the Schoenberg will determine how its form comes through), and rhythm (the multiplicity of ways in which Bartók's relatively idiosyncratic take on meter and accentuation translates into viable performance inflection).

One of the issues any scholar faces is to navigate the boundary between originality and plausibility. This can be illustrated via two points regarding Leong's second "Variation" chapter, which addresses No. 4 from Schoenberg's Six Little Piano Pieces, Op. 19, and occupies about a tenth of the substance of the book. First, although she acknowledges the piece's formal ambiguity, outlining the "three ways" in which its form may be understood (her Ex. 2.9), she does not ask what the poietic angle may have been, and still be. If Schoenberg himself thought the piece was an example of her second reading, "a two-part form in which the third phrase contrasts with the first two" (74), would he not have simply called that AAB a "bar form"?[2] And is there not some preference for that reading in view of the detailed hierarchical, rhythmic, bar-form analysis graphed by Cooper and Meyer some sixty years ago (1960, 175), a hallowed moment in the history of music theory? This is not to argue that there is any "correct" interpretation of the piece's outer form, but to ask if there may not be a most plausible reading; and Leong herself privileges the rhythmic aspects of this composition, which for Cooper and Meyer was its *raison d'être*, or at least its reason for being analyzed. Secondly, although one may applaud Leong's historical due diligence in working on recordings of Op. 19 No. 4, by Steuermann, Pollini, and Uchida recorded in 1949, 1974, and 2000 respectively, again for plausibility one cannot but ask about Glenn Gould's recording (1966), in which he performs m. 10 of this 12-measure piece suddenly at half tempo before reverting back to full tempo in m. 11.[3] Leong rather concentrates on the last phrase, or *Abgesang*, mm. 10–12 as a whole (see for instance her Ex. 2.17, in which she notates perceived, subtle differences between score and interpretation of this measure in Steuermann's recording); and she also discusses Louis Closson's notated redistribution of the hands in m. 10 that eases the physical challenge of playing it at *rasch* speed and *martellato* (71–74).[4,5] Simply described, however, the Gould offers a radically different interpretation of that *Abgesang*. With these two observations, about form and recording history, this reviewer may seem to be nitpicking, but the intention rather is to dramatize the importance of evidential plausibility. This is not to undermine Leong's commendable intention in this chapter to explore "the creation of musical structure by analyst and performer,

[2] For a recent study of bar form in Wagner, see Bribitzer-Stull 2016. It is characteristic of the most widely used modern American theory textbooks not to teach bar form as such, probably because in general they suppress the phenomenon of Wagner, and therefore distort our image of one aspect of transitional, modern, and postmodern compositional thinking in Western art music, by composers who had assimilated Wagner or Wagner's influence—and which composers had not? For an account of bar form in Schubert songs, see Bretherton 2007. Bar forms became central to "blues" and common in much other popular music of the last century or so.

[3] This is not a hapax in Gould, and is certainly deliberate. In his recording of the first movement of Mozart's Piano Sonata in E♭, K. 282/189g, Gould literally halves the tempo in the final measure (Gould 1968).

[4] Louise Closson was a Belgian pianist, taught by Busoni, who premiered Schoenberg's Op. 19 in 1912.

[5] It would be absurd to suppose that m. 10 at full speed would have presented Gould's technique with any hint of challenge.

alongside that of a score's entailments—its meanings and its affordances" (59), but to underline how crucial in music theory the selection and treatment of evidence can be.

In the central panel elucidating how analysis influences performance, readers may pounce upon the central chapter, a study of Milhaud's *mélodie "L'Aurore,"* to see how Leong addresses issues of vocality. Here the potential disconnect between theory and practice may seem most apparent, when she offers a conventional parsing of the music without, some might complain, transcending the merely descriptive. For example, what we may call the basic idea of the composition is what Leong cites as "motive X," and she discusses in detail its interaction with "motive Y" (that is in fact a variant of motive X). Yet she does not discuss how Milhaud's pervasive, indeed obsessive deployment of motive X throughout the song happens only in the "voice" of the piano, which is surely significant with respect to how the poetic meaning is composed by Milhaud. (Moreover, the motive's zigzag disjunct intervals would barely have been singable in Milhaud's neo-Romantic style.) Considering Leong's liking for detailed epistemological discussion, in a book dripping with footnotes, this might have been a place for her to discuss too how there is nothing, at all, that singer or pianist can do either to minimize or to maximize the obsessive predominance of motive X, in any interpretation of Milhaud's setting that retains normal fidelity to the score.[6]

You could of course somehow "perform" Milhaud's original by recomposing it, and this is the level of engagement with Mahler's scherzo fragment from about 1875 that was launched by Schnittke in his 1988 Piano Quartet, the topic of the preceding chapter. Here Leong's movement from analysis to performance may seem more successful, as she tells four distinct but related "stories"; the first compositional, about how Schnittke's music attempts repeatedly to "remember" Mahler's fragment and finally does; then about the performers' thinking on how, mostly technically, to communicate their reading of the music; about the listeners' experiences, resting on the sheer lure of a piece that is attempting to recover an earlier piece, as it eventually does, only to reveal that the original, incomplete composition never really came into being; and finally about the music-analytical take on Schnittke's foiling of "time's directedness" (158ff.). The chic ambivalence of Leong's title, "performing knowledge," comes into its own in this chapter, where we genuinely receive knowledge—of performance—that is also a performance of that knowledge; and this is the place to mention Leong's excellent companion website, clearly cued from the text wherever the reader needs it, and offering commendable interpretations of the actual music.

One of the virtues of the Schnittke chapter is the deft way in which Leong embraces a fairly substantial piece, about ten minutes in real time, and the sixth "Variations" chapter on Messiaen's *Visions de l'Amen* certainly achieves it, given that Messiaen's seven movements are about four times that. Messiaen research often hones in on one poietic level, in that commentators cling to the authority of the composer, who in this case was highly articulate, indeed commanding, about what his music was "about" and how to understand it. Leong incorporates poietic evidence invaluably here, as elsewhere in the book, yet is also able to stand aside from it and with her co-author for this chapter, Alejandro Cremaschi, include an insightful and original account of the difference between the characters of Piano 1 ("drama"), with its virtuosity and *joie de vivre*, and Piano 2, with its more "ritual" and perhaps epic character. Any two pianists who have the physical and musical accomplishment to seriously tackle the virtuosic Visions could not fail to benefit from Leong's analysis-influencing-performance meditation on this maximalist refusal (written in Nazi-occupied Paris in 1943) to allow that human tyranny, which eventually always dies in shame in a bunker, can so much as touch contemporaneous, sublime human creativity.

In the eighth chapter, about Carter's *Changes* for guitar, Leong's co-author Jonathan Leathwood is strongly present and offers a different kind of perspective in suggesting that improvisation using a composer's precompositional materials can be the key unlocking the work itself to a performer, and vicariously to listeners. Writing a "Postlude" to this chapter, Leong suggests:

> Leathwood's deep and sophisticated analysis of *Changes* may appear daunting to the guitarist wishing to learn the piece. But practical exercises can put Carter's set-class lexicon into the ears and hands. We suggest a few here. All are explorations that Leathwood carried out while learning *Changes* . . . . Notice that the exercises involve improvisation, a word that Leathwood has used to describe both Carter's play with and between his structural chords and a performer's intuitive facility resulting from tactile and aural familiarity with these chords. (320)

It is basically "scales and arpeggios" but in Carter's musical language. This will be familiar to those who have learned to perform Second-Viennese serial music, and absorbed the tone row, its potential pitch-space resonances so far as is practicable, in something like the way the composer will have done, but on one's instrument, or in singing. It will be familiar too to those who have learned to conquer multiphonics in wind playing; and there are many other

[6] Although it is not generally helpful for reviewers to itemize might-have-beens, out of scholarly integrity it should be pointed out that, in discussing French prosody in this chapter, Leong omits to mention Hunter's (2005) authoritative guide.

analogies in modern and postmodern music performance.[7] This is a point in the book where the reality of the performer's work comes through strongly. The last triptych chapter about Morris's *Clear Sounds among Hills and Waters* for piano solo highlights it too, in the sense of researching audience perception. There may be a good deal of confirmation bias in the data here, and other hazy factors in the understandable obsession of music psychology with the much-vaunted ordinary listener, which is a pretty exclusionary idea when you consider that by definition it cleaves practitioners from audience. "It is interesting that participants felt able to judge the quality of the performance without knowing the piece at all" (349). One might suggest instead that while some might be all-too-ready to express self-important feelings about affordances of which they have little or no prior knowledge, others instinctively hesitate to pass judgment, for all their acculturation and perhaps expertise; one might even dare to say that the latter know better.

The Babbitt chapter seems to stand out, not least because of the exceptional voice of its co-author Elizabeth McNutt, discussing *None but the Lonely Flute* (1991). McNutt's perceptions are not only fascinating in relation to Babbitt's composition, but also in the context of Leong's whole inquiry. This is a key moment in McNutt's realistic overview:

> Performance is intrinsically holistic: the entire work must be performed from start to finish. In this real-time experience, connections and generalities are unfolded as relationships of timbre, articulation, phrasing, pacing, and so on. The flutist conveys her conception of the work through calibrated nuances instead of reasoned explanations. No detail can be ignored or glossed over in this process; every part of the score must be dealt with at the same level of intensity. Where the theorist has the luxury of focusing her interpretation on pitch sets, rhythmic structuring, references to Tchaikovsky, and other particular dimensions of the music, the flutist cannot do this. (280)

Particularly telling is McNutt's advice that, in performance, "every part of the score must be dealt with at the same level of intensity," an insight that must ultimately undermine Leong's idea that knowledge can be performed, given that a "performance" is purely itself and by definition always replete, whereas empirical "knowledge" is by definition always incomplete. Yet we do not need to dwell on Leong's snappy title as a philosophical proposition: accept it instead as an aspiration, as hoping that the work of music theory and live music can be brought into ever more symbiotic collaboration.

[7] A pioneering publication in this arena was the *Thesaurus of Scales and Melodic Patterns* (Slonimsky 1947), not mentioned by Leong. This might be a surprise in the context of guitar music, not least given its importance not only for "classical" guitarists of successive generations, but also for jazz and rock musicians of the 1970s (on the latter, see Walser 1992, 269).

The first, framing, afterbeat chapter, "Cross-Disciplinary Collaboration," is Leong's own review of the triptych analyses with respect to the sharing of objectives and agents that formed the fabric of those studies. She ends this with an account of institutional practices (syllabi, journals, societies, and so on) and some of the differences between them—given that the Atlantic is still quite a river for anyone to aim to cross intact. The broad-mindedness of her tone crystallizes when she writes how "our [analytical] interpretations are by no means definitive, but rather 'thicken' the description of analysis-and-performance relations and imbue it with particular meanings" (369). Finally, she returns to "Performers, Structures, and Ways of Knowing" in this pass, briefly reviewing the epistemological status of her triptych studies and showing her own penchant for crossing that river by calling in evidence Barthes's "grain of the voice" as well as classical rhetoric, both of which are, supposedly, emblematic of "a reaching across, through individual partnerships, the cultures of theory and performance" (385).

Carefully structured though the book is, probably few will read it from cover to cover. Apart from the sheer musical proliferation on offer—that this review's main intention has been to try to convey—it is also a major work of scholarship, with a bibliography of some four hundred items, cited not only in the copious, ever-appropriate footnotes, but sprinkled relevantly through the text itself. One can well imagine that performers specializing in transitional, modern, and postmodern repertoire could benefit from experiencing its entire argument and evidence, but equally from mining it for repertoire and issues with which they are familiar, or would like to be. For a music theorist, to do the book justice, the whole probably needs to be absorbed. However it may be read, it will remain an invaluable resource. Its length and density represent its author's wealth of musical expertise and experience, and the plurality, diversity, and cultural range of its collaborators' interactions with the author, as well as the inherent complexity in Leong's ambition to promote intradisciplinary understanding.

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Review of *Hearing Homophony: Tonal Expectation at the Turn of the Seventeeth Century*, by Megan Kaes Long, Oxford University Press, 2020

by Liam Hynes-Tawa

We all know the story. Claudio Monteverdi is so modern and rebellious that he dares to write an unprepared ninth and seventh into the setting of *Cruda Amarilli* that opens his fifth book of madrigals, and a stodgy fellow named Giovanni Maria Artusi grumbles about it loudly enough that tonality begins. If we know the slightly more nuanced version of the story, we might also know that Artusi's angry reproduction of the dissonant passage left out its text (*Ahi, lasso!*), and that the Monteverdi brothers explained in their reply that the text was of utmost importance to Claudio's decision to publish such flagrantly non-traditional dissonance treatment. And thus we all learn some version of the story that common-practice tonality, and its all-important dominant seventh chord, arose out of a felt need to express text more expressively, and that eventually these text-setting licenses became so popular that they spread to instrumental music as well, and suddenly there we are in the High Baroque, putting Roman numerals under Bach chorales.

Megan Kaes Long's *Hearing Homophony: Tonal Expectation at the Turn of the Seventeenth Century* not only argues against this story, but also turns it exactly on its head. What if, Long asks us, tonality arose not because composers wanted to set text expressively, but rather because they wanted to set it *in*expressively? Susan McClary is already on record writing that despite the mythology surrounding them, Monteverdi's madrigals are not particularly tonal, and if anything point away from the incipient tonality already audible in the frottola (8).[1] What Long's book does is to propose a radically different account of the forces that gave rise to those characteristics that we now habitually identify as tonal.

If I had to choose, "tonal" might claim second prize in the category "music terminology that makes me wary." First prize would go to "modal," which Long handily does away with in her very first chapter. But my close second, "tonal," is right there in the title, and so it is clear from the start that Long will be spending a great deal of time with it over the course of the book.

Long assures the skeptical reader early on that she is being intentional and precise with her use of the term "tonal"; as she puts it, "I believe we should narrow our focus to consider single panels in the tapestry of tonality and tug on the particular threads that combine to form one compelling figure. We won't understand tonality fully if we only gaze on the tapestry from a distance" (3). For her in this book, discussions of tonality always tie in with "expectation," the next word in the title. By contrast, her first chapter makes clear to distance her project from a related phrase, "harmonic tonality," whose purview is too large and ungainly to serve well in Long's study, which needs the sharp focus that she brings it. By bracketing "harmonic tonality" and mode off to the side, she clears the oft-murky ground around the concept of tonality to make room for the

[1] See McClary 2004, 6.

more focused question of how pitch material can be used to create expectation for other pitches further down the line; and, as happens with the best of such studies, her focus on a particular question and an even more particular repertory ends up having meaningful implications that readers can easily transfer to the tonal or questionably-tonal repertories of their choice.

Most of Long's study is centered around the *balletto*, a light genre that is not often given attention either in the performance world or in the grand narrative of music history that we all imbibe during our courses of study. But Long explains her reason for focusing on it early on, and sticks to it: "they strategically deployed dominant harmonies at regular periodicities and in combination with poetic, phrase structural, and formal cues, thereby creating expectation for tonic harmonies" (3). The genre's simple homophonic texture forced composers to center their energies on parameters other than those that tended to hold sway in more complexly polyphonic genres, generating tonal expectation in a way that was new at the time, but has remained with us ever since.

As Kyle Adams notes on one of the book's dustjacket blurbs, the parameters that these *balletto* composers had to foreground were precisely those that are so often excluded from discussions of tonality: rhythm, texture, and text-setting, to which I might also add meter on many hierarchized levels. As Long notes in her last chapter, which takes brief looks at a few other homophonic genres (the frottola, *musique mesurée*, and the Lutheran chorale), homophony tends to arise when making the text more easily understood is an important concern. But the *balletto*, with supplemental studies of the companion *canzonetta* genre along the way, provides Long with a particularly fruitful corpus because it is so predictable: as the pieces go on, one's attention is drawn more and more to the long-range relationships established by the hypermetrically-regular placement of cadences on the same few scale degrees. This regularity—not only within individual songs but across the corpora at hand—trains listeners to hear a V in m. 8 forecasting a I in m. 16, no matter what the intervening chords may be.

This may be one of the most important points to highlight about Long's book, which can often feel like an implicitly learned lesson even though Long does state it explicitly a few times: that "tonal expectation is a feature of large-scale harmonic frameworks rather than surface-level chord syntax" (18). This view runs counter to Edward Lowinsky's idea of the cadence as the "cradle of tonality" (1961, 4), which suggests that the expanding sixth-to-octave cadence, as long as the semitone rose rather than fell, was so conducive to V–I harmonization that the habit ossified and eventually propagated outward, such that this basic cadential harmonization eventually governed more and more of the music on larger and larger levels. Long challenges this trajectory by suggesting instead that local chord-to-chord syntax followed the long-range positioning of multiple cadences throughout the form, with the latter being the crucial factor after which the more local progressions could be filled in as a comparatively inconsequential aftereffect. This contention naturally brings up the question of whether one can actually hear the long-range tonal architectures for which Classical and Romantic multi-movement behemoths are famous, but the advantage of the *balletto* is that it is so short and repetitive that one has no choice but to hear these tonal relationships—as Long puts it, it lies "at the intersection of phrase structure and form" (166). The implication seems to be that the type of tonal expectation engendered in the *balletto* here entered the realm of possible techniques, even if it would take about another century for it to take over as the central one.

One great advantage to Long's focusing so closely on one genre made up of such short pieces (or two genres, if one counts the *canzonetta* as separate) is that it allows her to present to us a sizable corpus of pieces that the reader becomes familiar with just by reading the book. The pieces are short and simple enough that anyone with a decent education in sight-singing can get a feel for them just by humming along to the clearly-printed and generously-annotated two-staff transcriptions with which Long has kindly filled the book. There is even a companion website that gives one the opportunity to do so in the virtual company of a lovely chorus (which includes the author herself!), sometimes with lute accompaniment.[2] Singing through these songs together with them—which I found myself doing more for amusement than to intentionally study the genre—helps reveal to the reader aspects of this music that no prose writer, no matter how lucid, could elucidate, but which do have to do with the senses of mid-to-long-range expectation that is the centerpiece of Long's account. Especially because she stresses that this was music made for the singers rather than for a non-participatory audience, this facilitation of participation on the reader's part is not simply a nice bonus, but rather a crucial part of understanding her argument.

Despite the inclusion of such audio and notational resources, however, Long still does her very best to help the reader of her prose to understand the experience that this music creates for the singer and/or listener. Long's skill and experience as a singer allow her to speak from the point of view of the oft-neglected alto, giving readers a valuable view into the inner reaches of these pieces' textures—which, again, is especially crucial for a repertory like

[2] www.oup.com/us/hearinghomophony

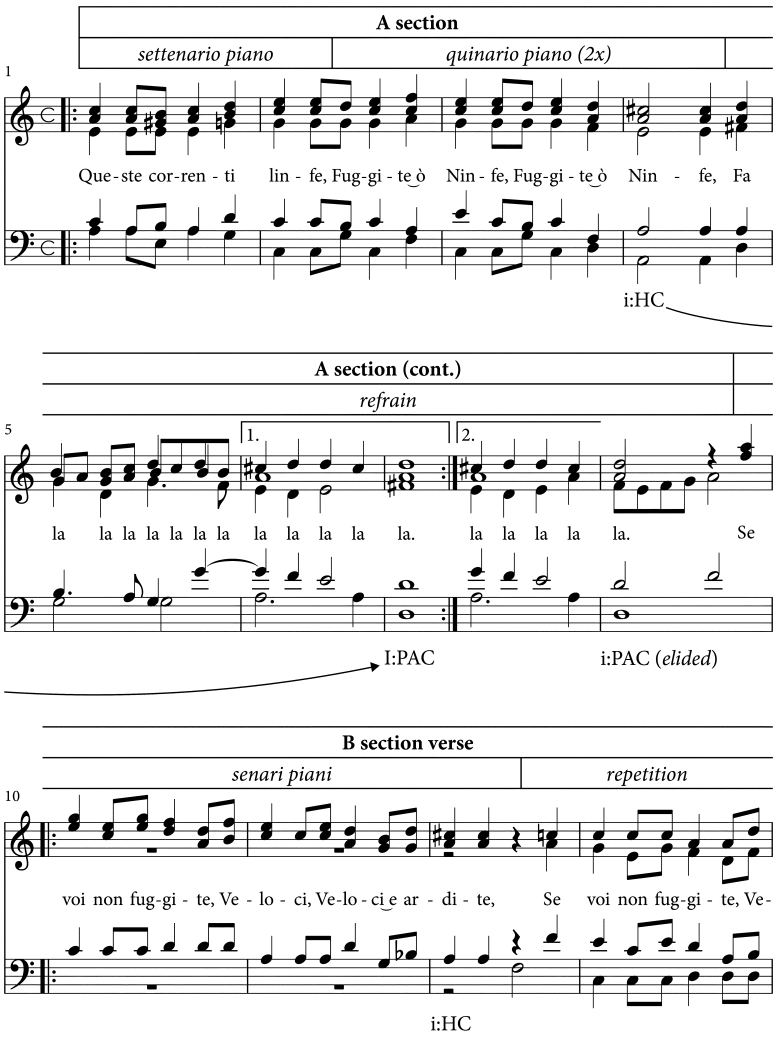
this in which the primary audience was always the singers themselves.

Furthermore, extended analogies to the painting of miniatures and to city cartography govern the fifth and sixth chapters respectively, and the latter case is especially extensive, with Long comparing the project of mapping out a city from a bird's-eye perspective to that of comprehending the full tonal form of a piece of music all at once, from an out-of-time perspective. The analogy recurs regularly and ties the whole chapter together, giving readers a way to visualize the process occurring in their brains as their relationship with a piece grows towards the synoptic level, which happens at a uniquely quick rate in the *balletto*. Long presents the analogy with the caveat that she does not mean to suggest that the coexistence of the cartographical and musical practices she describes in the same time and place are meant as a statement about different arts in the same cultural sphere influencing each other, but it is hard not to draw the conclusion that there might be some link, based on a culture newly interested in mapping out the known world and, at least in England, reaching towards building its empire (175). An article that came to mind for me when reading this passage was Christopher Field's "Jenkins and the Cosmography of Harmony" (1996) on the concept of circumnavigation: he suggests that an interest in exploring the totality of the globe in the seventeenth century is indeed reflected in "circumnavigational" pieces of this era, in which a complete chromatic circle of fifths is at some point achieved, inevitably with at least one enharmonic respelling en route. It probably would have taken Long too far afield from her main purpose to prove or more explicitly argue for a cultural link between cartography and tonality in this way, and perhaps she was concerned about not letting it spin too far out of control. In any case, even though she intentionally stops short of pursuing this perhaps tangential link, she does open us up to think about it more, and lays the ground for the tonal side of a potential future study along these lines.

Another question that arose for me, this one in the more granular sphere of tabulating pitch-related events to draw up a tonal map of a piece, is whether cadences really are the only and best "landmarks" that one can place on one's tonal map when listening to a piece from this period and figuring out how it creates its sense of tonal expectation. Long reproduces Gastoldi's *Caccia d'Amore* as her Example 6.5 (included here as Example 1), commenting enlighteningly on how the "bonus refrain" in its second section may seem to violate the *balletto*'s formal norms, but in fact only clarifies the sense of harmony and form reinforcing each other and creating a strong sense of tonal expectation (186). Her analysis of this *balletto*'s second section, and its effects, is unimpeachable. But she also writes that its first section is "normative." This is absolutely true as far as its cadential layout goes, which is after all what Long is tracking. In featuring a half cadence on A followed by an authentic cadence on the tonic D, followed by a repeat of that section with its two cadences, there would seem to be hardly any better candidate for an open-and-shut expression of D minor.

And yet when I listen to this *balletto*—or, even more, when I sing it—that is not quite the impression I am left with. After all, the first three of the section's seven measures do not give us any hint that D is important at all. It begins on an A minor chord, oscillates back and forth with E major, and then proceeds to sit on C major for nearly two whole bars. Before m. 4's A major chord, these first three measures would seem to be establishing tonal expectation for A minor, not D minor, and I must admit that I still hear the authentic cadence on D that arrives in m. 7 as a IV:PAC, not a I:PAC. None of this is to say that Long's analysis is "wrong"—rather, it is to say that there are limits to cadence-based analysis, and that the mere act of sitting on a sonority, even without a cadence, may be enough to influence tonal expectation. Cadences have long been a natural feature to focus on in analyzing pre-Corelli music, because they are satisfyingly observable and nameable, and have clear effects on our hearing. But the material that exists in the spaces before and between cadences is, I would argue, just as effective, and Long's emphasis on meter as such a crucial element of tonal perception may be just the avenue we need to figure out how these non-cadential areas affect one's sense of tonality as well.

Another advantage of focusing so closely on the *balletto* is that Long is able to give us detailed and vivid portraits of how the genre's style differed in the three countries in which it became popular. Far from a mere curiosity in the story of partsong fashion alone, Long elucidates at length how each national flavor of the genre represents a different strategy for imparting a sense of tonal expectation to a light homophonic genre like this. The English style's strategy most resembles that of common-practice tonality: its tendency (especially Thomas Morley's tendency, it seems) to place cadences on V such that a later cadence on I is set up to land in a predictable place is stronger than in Italian models, which rely more on tonic by assertion than by juxtaposition (150–151). German composers, on the other hand, especially Hassler, are shown to rely a great deal on block transposition, which allows the transposition to take on some of the expectation-related work that, in English music, is accomplished more fully by the V-to-I polarity itself (124–128, 162). These characteristics of national taste are shown most clearly in songs like *L'innamorato* in which both English and German composers made their own versions of an Italian original (as *Sing we and chant it* and *Tantzen und springen*,



Example 1. Long's analysis of Gastoldi, Caccia d'Amore, *mm. 1–13 (2020, 190).*

respectively). Far from being mere translations of the text that keep the music as similar as possible, these are true localizations in which the musical content is adjusted to fit the tastes of the expected customers, and Long's treatment of them all in close quarters helps to bring these differences in national taste to the reader's attention in ways that likely they never have been before, at least as far as this genre is concerned.

But once again, these differences in taste tell us much more about tonality than merely what these localized habits were, because they reveal different strategies towards achieving the same goal. That goal was a homophonic style in which the words were intelligible but energy was still retained, by some means other than by the contrapuntal webs or vivid text-painting that characterized the weightier genres. All of the *balletto* strategies that Long outlines work towards creating tonal expectation, perhaps because the English and German composers observed (consciously or not) that Gastoldi had created such a sense, and then modified the details of their technique while still aiming for the same goal.

Another area in which Long's book breaks with norms of analyzing texted music is the depth with which she addresses poetic meter. Perhaps because the florid style of the more exalted madrigal makes it possible to set almost any poetic line in a great variety of metrical and rhythmic ways, most of which relate little to the type of poetic line in question, learning the vocabulary and taxonomy of Italian poesy is not typically part of the music theorist's training. Long's argument, however, is that the conditions that made poetic meter so salient in the *balletto* were precisely the same as those that made it such a ripe genre for engendering tonal expectation. Borrowing a term from Ruth DeFord (1985), Long distinguishes between *dramatic* text-

setting (as we might find in a madrigal) from *schematic* (as we would find in a *balletto*), the latter of which sacrifices the richness of madrigalian text-painting but "has the benefit of encouraging musical rather than textual organization" (63). Its musical organization manifests in both meter and pitch, but its metric organization is, for the most part, simply inherited from the text itself, leaving pitch the primary domain in which these composers could experiment. The conclusion is therefore essentially that a focus on poetic meter gives rise to tonal expectation—or, even more succinctly, that tonality comes from meter (compare Prince and Schmuckler 2014). While this conclusion is not without precedent, Long's book is among the first, if not the very first, to situate this connection so clearly in a particular historical and cultural phenomenon that motivated such a new way of approaching pitch organization in European music (4–5).

Following upon this useful distinction between dramatic and schematic text-setting, Long engages another dichotomy, this one inherited from Dahlhaus, between *paratactic* and *hypotactic* phrase structures (107). The difference between them—that paratactic phrases simply follow each other while hypotactic phrases are consequences of each other—snaps into clearer focus than ever before within Long's poetic frame. The question of whether one musical gesture is a logical consequence—or even an inevitable one!—of what came before has long been a vexed and discomforting one, and it often all too easily slides into overtones of an Austro-German-supremacist flavor, largely due to the way that Beethoven and his imitators prioritized constructing phrases that *sounded* inevitable, and the mythology that built up around them afterwards for largely non-musical reasons. Long is able to avoid making any such specious claims about inevitability by placing her discussion of hypotaxis immediately after her discussion of poetic meter, of which one might almost say it feels like an inevitable consequence. The *balletto*'s faithful reproduction of poetic meters in and as musical meters means that without some new form of pitch-related logic, there would seem to be little meaning in setting these texts to music at all—it would approach unpitched recitation. Hypotaxis thus emerges as a byproduct of schematic text-setting, reinforcing the always-healthy reminder that no sixteenth- or seventeenth-century composer was trying (and therefore failing) to write common-practice tonal music, but rather that the myriad purposes to which they put music demanded different things of them—and in this case, the solution ended up looking quite similar to a future type of tonality, for reasons that had little to do with pitch or harmony at their roots.

A question that remains for me after reading this beautiful account of the *balletto* is what happened to its unique brand of tonality after its star faded, and to what extent it may be genealogically linked up to the tonality of Corelli and Vivaldi that more obviously inaugurated the tonal common practice that still governs how we learn about pitch organization. Were Gastoldi's tunes such earworms that some memory of their effects persisted in the minds of future generations, such that they reached for similar techniques when they had need of those effects again? Or was the *balletto*'s high level of tonal expectation essentially a fluke, a unique solution to a particular set of circumstances that had to be more or less entirely rediscovered again later on in the century? Perhaps it doesn't matter too much for Long's project, which is concerned more with what factors can give rise to tonal expectation whenever it occurs than with the question of whether Gastoldi fits on the tonal family tree of Mozart and Beethoven. But Long's study is also admirably historically aware and responsible, locating the origins of the *balletto*'s form of tonality in its particular cultural environments in which particular types of poetry were popular, and so it is natural to wonder how the *balletto* fad affected the structuring of pitch materials in other repertories that followed not too long afterward.

Her final chapter does go some way towards hinting at answers to this question, demonstrating how three other homophonic genres from a similar time period seem to have arisen in response to the same larger cultural trends—most broadly, humanism—that helped give rise to the *balletto*. Long's argument is essentially that this humanistic spirit caused new importance to be placed on textual intelligibility in a variety of contexts, each of which independently gave rise to its own type of homophony; and that homophony is especially conducive to the development of musical styles that generate tonal expectation, causing some amount of tonal expectation to emerge multiple times in multiple contexts. Considering the amount of cultural exchange and cross-pollination going on in Europe at the time (as demonstrated by Long's account of the *balletto*'s peregrinations), it is only to be expected that many independently arising tonal styles in such close quarters would soon enough meld into something approaching an international common practice. The reason questions remain, at least for me, is because Long is so convincing in arguing for the *balletto*'s uniquely transparent sense of tonality that lies, once again, "at the intersection of phrase structure and form" (166). Her portrait of the genre really makes it feel like something special, at the very least in hindsight, and not simply one out of however many other homophonic genres could equally well have played the starring role in her study.

Be that question as it may, the very fact of its existence points only to the strength of the picture Long has painted of the *balletto*. A genre that our Romantic lenses

make us likely to ignore on account of its lightness turns out to be full of clues and questions that can point us any which way: towards understanding the history of Western tonality specifically, towards understanding some hidden fundamental relationship between pitch and meter, and perhaps even towards unlearning the bias we have inherited in favor of Art that comes in large, self-important packages. Long's book helps us along the road to all three, and should not be expected to answer every one of the manifold questions that her study has raised—that can be the job of us who respond to it. And, to paraphrase Morley, "I hope before such time as we [have] sufficientlie ruminated & digested those precepts which she hath [given] us, that we shal heare from her in a new kind of matter" (1597, 182).

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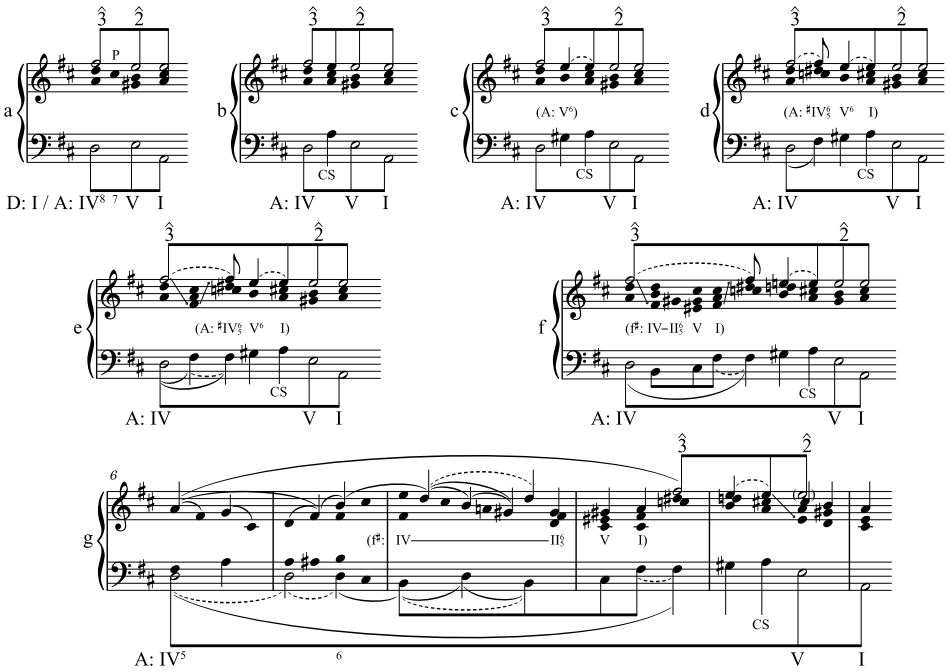
Review of *Graphic Music Analysis: An Introduction to Schenkerian Theory and Practice*, by Eric Wen, Rowman & Littlefield, 2019

by Lauri Suurpää

With *Graphic Music Analysis*, Eric Wen enters a densely-populated arena of Schenker-analytical textbooks. David Beach (2012; revised edition 2019) and David Damschroder (2017) have recently published Schenker guides, and the several older textbooks include those by Allen Forte and Steven Gilbert (1983) and by Allen Cadwallader and David Gagné, joined by Frank Samarotto in the fourth edition (2019). Although not a textbook, Carl Schachter's recent *The Art of Tonal Analysis: Twelve Lessons in Schenkerian Theory* (2016) is a transcript of Schachter's lessons given in 2012 at the CUNY Graduate Center, and the book's orientation is clearly pedagogical. With such abundance of pedagogical material on Schenkerian analysis, is there still room for another textbook? With Wen's book my answer is yes, because it brings a particular perspective to Schenkerian pedagogy that differs from other textbooks: its penetrating and exhaustive concentration on the interdependence and interaction among structural levels distinguishes it from other Schenkerian guides. As always with a book that includes numerous musical analyses, there are individual interpretations with which any given reader may disagree, or find even idiosyncratic, but the vast majority of Wen's analyses are musical, technically flawless, and clearly presented. Throughout the book, one recognizes an experienced teacher, with the ability to communicate complex issues in clear examples and prose.

The book divides into four sections that gradually move from fundamentals of graphic analysis (Section 1) into more technical descriptions of the principles of Schenkerian analysis and its individual techniques (Sections 2 and 3). About one third of the book's length is devoted to interactions between form and tonal structure (Section 4). The first three sections, and much of the fourth, address almost exclusively phrase-level events. Even a quick leafing through the examples shows that Wen's emphasis is on local levels, which are often discussed in an exhaustive manner, while the broader organization of musical works is not examined as thoroughly. Entire musical works or even large-scale formal units are only analyzed in the final chapters (23–27). The companion web page includes a workbook, the scores and audio links for the pieces that Wen analyzes, as well as an explanation of Schenker's analysis of the C-major Prelude from the first book of Bach's *Well-Tempered Clavier*. The book's organization and the material on the web page suit well the intended audience, "advanced undergraduates" and "graduate students" (xi), although some of the material may require more background than most undergraduate and many graduate students have.

Throughout the book, Wen's pedagogical strategy is to subdivide musical units, often the length of a single phrase, into short excerpts that may be as short as a few bars only. He then meticulously clarifies, step by step, how the foreground structure of these segments derives from voice-leading patterns governing at deeper levels. There are often at least three or four structural levels that elucidate the voice leading of the short musical excerpts. Occasionally, Wen traces the origins of the excerpts' voice-leading structure from strict counterpoint, in this way clarifying how an elaborate musical foreground is related to strict voice-



Example 1. Wen's analysis of Mendelssohn, Song without Words, *op. 85, no. 4, mm. 6–11. (2019, 300).*

leading procedures. The clarity with which Wen's examples and verbal commentaries describe the rapport among structural levels is not only valuable for students; more experienced music theorists may also learn much about the interaction among structural levels. Indeed, sometimes the subtlety of the logic among the many layers may be thoroughly understood only by a reader with a deep knowledge of Schenkerian analysis.

This pedagogical strategy of emphasizing short excerpts is evident also in the workbook that is available on the accompanying web page. Here Wen gives all (or practically all) top-voice and bass pitches of excerpts covering a few measures, and the student's task is to organize these pitches into structural and prolongational units. In his instructions, Wen points out issues that the student should take into account when working on the assignments. In the assignments for the final chapters of Section 4 on musical form, entire works are first subdivided into small segments. After having worked out foreground reductions on the segments, the student is asked to make middleground graphs of the whole.

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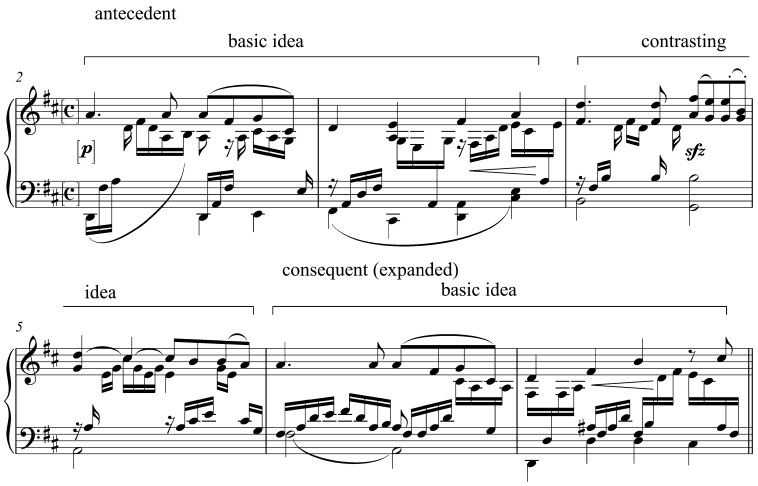
Because Wen's strategy of showing several gradually more complex structural levels of short excerpts is the one feature that most clearly distinguishes *Graphic Music Analysis* from other textbooks on Schenkerian analysis, I will start by discussing this approach, leaving the commentary on the book's organization to a later point.

Stressing the inner organization of short excerpts has obvious pedagogical merits. The student gets a very clear idea of the rapport between structural levels, one of the key ideas in Schenkerian analysis. The relationships between harmony and counterpoint, another key idea, is elucidated in a way that is easy to comprehend. At the same time, detailed examination of short excerpts may occasionally make it more difficult for the student to grasp the larger structure as well as the role that the excerpts described in exhaustive detail play in this global context. In other words, there is a danger that the student may get the impression that the analysis of large structure can be arrived at by simply putting short excerpts one after the other. In order to elucidate these pros and cons, I will discuss Wen's analysis of mm. 6–11 from Mendelssohn's *Song without Words*, Op. 85, No. 4 (Ex. 1; Wen's Ex. 25.21 on p. 300).

Wen examines this work in a section dedicated to periods with modulating consequents that constitute the opening A sections in a ternary form. When analyzing the modulating consequent (mm. 6–11), Wen shows seven layers that start with the simple skeleton shown at the (a) level—a IV–V–I progression in the dominant key, the opening global tonic reinterpreted as a IV in A major. The final layer (g) eliminates only the accompanimental figuration, retaining all top-voice pitches, bass notes, and harmonies that appear in the score. The student gets a very clear idea of a number of subtle technical issues: for example, the way in which a dissonant passing tone (level a) is



Example 2. Mendelssohn, Song without Words, *op. 85, no. 4, mm. 2–7.*

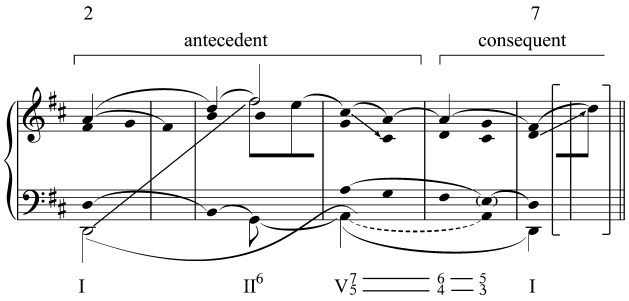
given a consonant support (level b); the way in which a consonant sonority—a $\frac{5}{3}$ sonority over F♯ (level e)—is subordinate to a dissonant sonority—a $\frac{\sharp 6}{\sharp 5}$ sonority over F♯ (level d); or the ways in which registral transfers and arpeggiations relate to stepwise progressions at deeper levels. The example preceding Ex. 25.21 (Ex. 1 in the present review) describes the antecedent (mm. 2–5), which, according to Wen, consists of "an interrupted *Urlinie* descent from $\hat{3}$ to $\hat{2}$" (299). Therefore, both the antecedent and the consequent end, in Wen's reading, on a back-relating dominant.

Wen's discussion of the Mendelssohn song is characteristic of the book's pedagogical orientation. His analysis consists of 12 examples, ten of which show phrases (among them Ex. 25.21 shown as my Ex. 1), pairs of phrases, subphrases, or still shorter excerpts, while only two examples provide a more global view. The final example is an overview of the entire work and it receives a very brief verbal commentary. A context for the details is thus given only at the end, and the function of the shorter excerpts within this global context is not thoroughly discussed; for example, it is left for the reader to note that the latter of the two back-relating dominants in the opening period discussed above occurs at a deeper level than the former, a feature that might have had significance also for understanding the inner organization of the period. This mode of presentation characterizes Wen's pedagogical approach. The short excerpts, often analyzed in great detail, are first discussed one after the other, and the larger context is provided at the end, often with only a brief commentary.

Yet a more thorough discussion of the ways in which the excerpts interact, and how the larger context may affect the interpretation of details, might give the student a more vivid picture of the music. As an example, let us return to the opening period of the Mendelssohn song and consider how the antecedent and consequent, which Wen discusses separately, might be seen to interact. Ex. 2 shows the score of the antecedent and the beginning of the expanded, modulating consequent. Although thematically identical, the beginnings of the antecedent and the consequent differ in their harmonic structure and figuration. The tonic of m. 2 is unequivocal, with a D2 heard in the bass on the first and third beats. Measure 6, by contrast, begins with the first inversion of the tonic, the F♯ on the first beat heard, moreover, in a higher register than the dominant that follows it on the third beat. In his analysis (Ex. 1), Wen acknowledges the first inversion and the relatively high F♯ only by placing the tonic pitch in parentheses at level (g) that shows the musical surface. At other layers, he simply shows a D in the bass.

If the consequent is studied in isolation, as Wen does, his reading is plausible. However, if the period is approached as a whole, there is a closer voice-leading connection between the antecedent and the consequent. This continuity is primarily suggested by the register of the bass, and the key to this reading is the hierarchy between the bass-pitches F♯3 and A2 in m. 6. Owing to the A2 heard already in m. 5, I would argue that the As in mm. 5 and 6 are structurally connected. The F♯3 that opens m. 6 in the bass, in turn, is prepared by a G3 in the preceding measure, so it sounds like an element in a stepwise inner-voice progression (A3–G3–F♯3) rather than as the arrival at the bass pitch of a new *Stufe*, a I^6. Later, in m. 7, the D2 provides an unequivocal landing on the tonic, regaining the D2 sounded in m. 2.

Example 3 shows a graph clarifying this reading. I interpret the D-major six-three chord in m. 6 as a passing sonority within a prolonged dominant, as fundamentally a six-four chord above the A in the bass. Unlike Wen, I do



Example 3. Song without Words, *op. 85, no. 4, mm. 2–7. An alternative analysis to Wen's graph.*

not read a local interrupted $\hat{3}$–$\hat{2}$|| progression in the antecedent, but instead take the E5 as a passing tone within the third progression F♯–E–D.[1] All in all, I would suggest that the phrase-structural boundary in m. 6 is bridged over by voice-leading continuity.[2] I don't mean to say that my reading is more "correct" than Wen's, or even that it is better in any demonstrable sense. What I do maintain, however, is that my reading can't be arrived at unless one considers the opening period as one voice-leading entity. A strict division of the music into an antecedent and a consequent—segments that Wen treats as quasi-independent entities—prevents the student from considering these kinds of continuous voice-leading processes.[3]

I have spent so much time on one example because it clarifies both the pedagogical merits and challenges in Wen's strategy of often concentrating on detailed discussion of relatively short musical excerpts. The merits of this approach are evident throughout the book. By studying the interactions among structural levels in short excerpts, the student gets a clear, thorough, and consistently-explained view of the tonal structure. The Mendelssohn example is one of the numerous I could have chosen for showing this. At the same time, there is a danger of giving a somewhat pointillistic picture of the musical structure; in other words, the student may get the impression that the larger structure can be arrived at by assembling relatively independent musical excerpts one after the other. In this respect, the Mendelssohn example is an extreme case in Wen's book; I have consciously chosen an example that clearly indicates the discrepancy between the independence of local segments and the global continuity. In fact, Wen often elucidates ways in which consecutive segments create larger structural arches; as an example, the discussion of the opening nine measures of Brahms's First Symphony (87–92) clarifies relationships and apparent tension between local impressions of fleeting keys and more global prolonged *Stufen*.

The interaction between details and the larger context addresses one recurring challenge in teaching Schenkerian analysis: if one emphasizes details, the global perspective as a framework may remain unspecified or at least undervalued; on the other hand, if one concentrates on middleground structure, especially a newcomer to Schenkerian analysis may not be able to follow the logic with which the deeper levels have been inferred from the surface. Wen's decision is clearly to emphasize analysis of details.

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Graphic Music Analysis is organized in a way that makes it easy for the student to understand the complex and subtle aspects of tonal structure—and for the teacher to explain them. As mentioned, the book divides into four sections. The first section (Graphic Music Analysis) mainly concentrates on graphic notation, linear progressions, and the idea of hierarchy. Here Wen's strategy of concentrating on short excerpts works well; carefully chosen examples and clearly-illustrated structural levels gradually introduce ways in which individual pitches belong together and constitute structural, prolongational units. Wen ends the first section in an extended and very detailed discussion of the first-movement introduction of Mozart's "Dissonance" Quartet. It is wise not to introduce many Schenkerian concepts and techniques in this opening section. The student

[1] Registrally, this F♯–E–D progression reaches its concluding D5 only in m. 8, when the harmony has already arrived at a B-minor triad, resulting from a 5–6 progression above D. (This harmonic progression is not shown in Ex. 2.) The arrows in Ex. 3 indicate the shift of the top voice into an inner voice and back to the treble.

[2] This kind of bridging over, where a thematic return occurs in the middle of a tonal progression, is a device that Mendelssohn frequently used. When discussing Mendelssohn's *Songs without Words*, William Rothstein (1989, 192) has applied the term "deceptive recapitulation of a principle theme" when referring to a situation in which "a thematic motive, which initially formed the beginning of a phrase, returns in the middle of a phrase—trying but not succeeding, as it were, to appear like its old self." Rothstein speaks about overall form, but at the subphrase level the same principle can be applied to the return of the initial basic idea that opens the consequent.

[3] Elsewhere, Wen is sensitive to voice-leading continuities transcending formal boundaries, writing that "the voice-leading structure can sometimes bridge across both phrases of a period" (249).

learns the basics of tonal structure and graphic notation without having to cope with many new terms.

The second section (*Semper idem, sed non eodem modo*) directly addresses Schenkerian analysis with a chapter on the concept of *Ursatz* and a chapter each for *Urlinie* descents from $\hat{3}$ and from $\hat{5}$. All of Wen's examples in this part consist of phrase-level *Ursatz* replicas; thus the emphasis is on local phenomena. This is pedagogically sensible; Wen can introduce the idea of tonally closed and independent structural entities without losing sight of the details that constitute such units. In this way, the student begins to understand self-contained structural units and how they are related to the foreground. It is also helpful to introduce stricter analytical graphics only here, after first having addressed issues of tonal structure in Part 1 in a somewhat more informal manner. Again, the analyses are convincing, verbal clarifications clear, and the examples well chosen.

The third section (Techniques of Elaborating the *Ursatz*) concentrates on individual Schenkerian techniques; in particular, ones that elaborate the governing *Ursatz*. Wen clarifies techniques like substitution, delaying the initial tone of the *Urlinie*, implied tones, mixture, and auxiliary cadence. As in the preceding section, Wen treats *Ursatz* replicas that occur at the phrase level. Together, the first three sections address most of the primary Schenkerian techniques through musical examples and analytical prose. Many of the techniques also appear in the chapter headings. Thus, the table of contents, with additional help coming from the index, guides students to the principal techniques of Schenkerian analysis.

As comprehensiveness is not possible in any textbook, some techniques must be emphasized more than others. In *Graphic Music Analysis*, unfolding and reaching-over are discussed only in passing.[4] As students will unavoidably encounter both techniques when working on voice-leading graphs, they would merit their own chapters alongside the other techniques. In my own experience, both concepts are quite difficult to grasp, in part owing to the complex interaction among individual parts of the imaginary continuo.

The auxiliary cadence is one of the *Ursatz*-elaborating techniques that Wen discusses in Section 3 (Chapter 19). As his definition of this concept somewhat differs from the standard application, I will briefly comment on his view. Wen uses this concept when a "succession of chords… is used to make a nontonic chord or key area sound like a temporary tonic" (203).[5] In Wen's analyses, transformations of a nontonic chord into a temporary tonic often occur when the music modulates to the dominant key. In these instances, Wen suggests a retrospective reinterpretation of the structural tonic as a IV in the dominant key; in other words, the structural tonic functions as a deep-level "pivot" (205) initiating an auxiliary cadence. This view differs from Schenker's definition of the auxiliary cadence, in which the chords preceding the goal tonic "are related only to the forthcoming I; they point only to it" (Schenker [1935] 1979, 88). That is, Schenker sees the chord that begins the auxiliary cadence to be cut off from the preceding music; it is only related to the tonic (either global or local) that ends the auxiliary cadence, thus having a kind of anticipatory function.

According to Wen's definition, anticipation is not required in an auxiliary cadence as Schenker's definition implies and as William Rothstein's (1981, 122–128) and Edward Laufer's (1999, 135–137) descriptions explicitly state.[6] Wen's view on the auxiliary cadence can be seen in Ex. 1 above, of which he writes "[l]evel a shows how the dominant key is established by an auxiliary cadence in which the original D-major tonic functions as IV in A major" (301). That is, he takes the opening D-major triad as a pivot (D: I = A: IV), thus disregarding Schenker's view that the sonorities constituting the auxiliary cadence are structurally connected only to the forthcoming tonic.

The deep-level pivot chord is also applied in the book's fourth and final section on interactions between voice leading and form (Tonal Structure and Musical Form). For example, Wen writes of the exposition in the F-major slow movement of Mozart's *Jupiter* Symphony that "[b]y regarding the opening tonic as IV in the key of C major, the augmented-sixth chord in bar 28 represents a transformation of this stable IV into an active leading-tone chord" (319). In his Example 26.17 that shows mm. 1–28 of the movement, Wen labels the opening tonic as IV in the dominant key. While I agree with Wen's interpretation of a chromaticized voice exchange, I find it musically counterintuitive to label the opening tonic as a IV in the dominant key. I would prefer to call the opening sonority only the tonic—that is the chord's unequivocal impression, after all—and

[4] The relative sparseness of Wen's descriptions of reaching-over may be due to the fact that he defines this technique in a somewhat narrower way than Schenker does. For Wen, reaching-over refers to a "two-note descending figure" (361) while Schenker refers to "a group of *at least* two descending tones" (Schenker [1935] 1979, 47; italics added).

[5] Wen is not quite consistent with his requirement of the need of an auxiliary cadence to confirm a nontonic key, however, although he states this requirement twice (203, 359). When discussing the opening theme of the Finale of Mozart's Piano Concerto, K. 453, he interprets a harmonic progression starting on I^6 as an auxiliary cadence (207), even though the progression ends on the home-key tonic. See also Ex. 25.40 (306).

[6] Poundie Burstein (2005, 164–167) notes that Schenker's emphasis on the primacy of "the forthcoming I" does not always lead to anticipatory metrical structures in the analytical applications appearing in *Der freie Satz*.

follow Carl Schachter's (1999, 137) idea that the "tonal center of a passage may change during the prolongation of a single harmony." That is, the opening chord is a tonic in the key of F major while the augmented-sixth chord that ends the voice exchange occurs in the key of C major. This idea might also be easier to grasp for students, who may not hear the opening tonic sonority as belonging to the forthcoming dominant key. Such interpretations of the opening tonic as a IV in the dominant key occur often in the book.

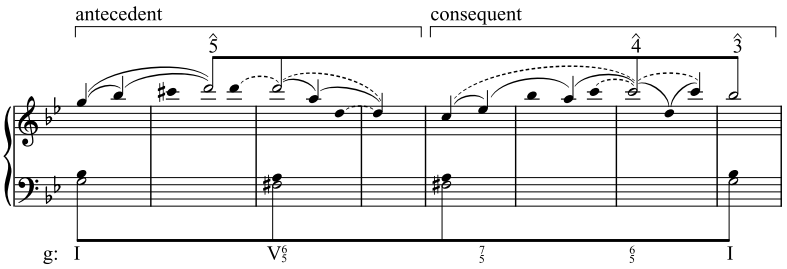
Wen starts Section 4 with periods and moves via ternary form to the concluding discussion of sonata form. The chapters on ternary form mainly address the inner organization of, as well as the differences between, the two A sections. He discusses the voice leading in the contrasting B sections either briefly or not at all. The chapter on sonata form includes an extended and detailed discussion of one major-mode movement (the slow movement of Mozart's *Jupiter* Symphony referred to above) and one minor-mode work (the first movement of Beethoven's *Appassionata* Sonata). Here, for the first time, Wen analyzes entire pieces, showing the student how Schenkerian analysis operates in describing global structure. This is rather late in the book to address tonal structure in entire works; Ex. 23.5 is the first graph showing the structure of a whole piece (252). In the two analyses of entire sonata-form movements, the largest part is again devoted to examination of short excerpts, but here Wen also devotes some space to discuss the global structure towards the end of the two analyses. He also shows and discusses in some detail paradigmatic sonata-form patterns.

Wen does not contextualize or clarify in detail his approach to musical form. Although briefly referring to William Caplin's (1998) functional theory of Classical form and to Sonata Theory by James Hepokoski and Warren Darcy (2006), he does not use these or other recognized approaches for describing formal organization in any comprehensive manner, apart from frequent references to the "medial caesura." Wen's undertheorized approach to form makes it occasionally difficult to follow his elucidations of the interactions between form and tonal structure. His usage of the terms "phrase" and "parallel period" is a case in point. The definitions of these terms are very flexible. A phrase may be either "open" or "closed" (219). (Wen does not explain his usage of the terms "open" and "closed," however; he probably means either that phrases may or may not end in a cadence, or that only a perfect authentic cadence suffices to "close" a phrase.) The parallel period, then, pairs two such phrases, which "have something equivalent to each other" (ibid.). This tentative definition of the parallel period differs from the common usage of this term, which is strongly based on cadential punctuation; such a usage appears both in the *Formenlehre* tradition (e.g., Caplin 1998, 49–58) and in Schenkerian discussions of form (e.g., Rothstein 1989, 16–18; and Beach 2012, 40–56). Indeed, Wen mostly, but not always, discusses parallel periods organized by clear cadential punctuation, and also mentions the organizational role cadences play (220). However, his examples of periods *without* cadences are problematic as elucidations of the rapport between form and tonal structure.

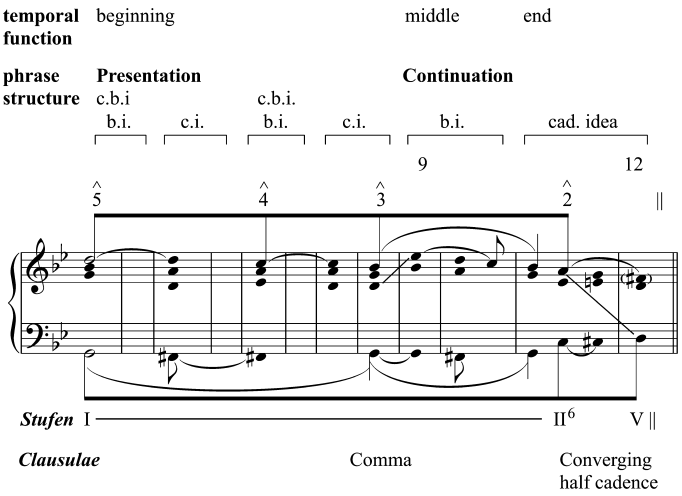
As Wen does not take cadential conclusion as a defining feature of a parallel period, it is not possible to define whether the parallel periods he discusses are formally and tonally independent units—in the cases which do not end in a cadence, some continuation is required in order to reach a functional conclusion and a tonal goal. This uncertainty relates directly to the question of interrelationships between details and context; attempting to analyze periods lacking cadential closure outside of the larger context gives only a partial view of the interactions between voice leading and form. An example occurs in the section examining "parallel periods with a symmetrical tonal structure" (238–241). Wen uses this term when referring to pairings of phrases with a harmonic structure I–V, V–I. From Caplin's form-functional perspective of phrase structure, at least some of the parallel periods that Wen discusses under this rubric would be interpreted as presentations within larger sentential structures, and would thus not represent parallel periods; that is, closed form-functional units. Wen acknowledges this, stating that "whether or not these periods serve as a 'presentation' within a larger thematic construction in no way precludes partitioning and understanding them as tonal entities by themselves" (241). Wen is of course right in maintaining that it is possible to examine such segments as independent units. However, I am not convinced that understanding presentations "as tonal entities by themselves" helps to clarify interactions between tonal structure and form, the topic addressed in Section 4 of *Graphic Music Analysis*.

In order to substantiate my doubts, I refer to Wen's interpretation of the opening of Haydn's Symphony No. 83, which appears in the section on "parallel periods with a symmetrical tonal structure." Ex. 4 (Ex. 22.6 on p. 239) is Wen's analysis of mm. 1–8, which he interprets as a parallel period. In the "antecedent," the graph shows a motion from the tonic to a V^6_5 chord, while the "consequent" leads the music back to the tonic.[7] The top voice, in turn, shows a $\hat{5}$–$\hat{4}$–$\hat{3}$ progression, with the $\hat{4}$ functioning as a passing tone supported by the dominant. Wen is correct in maintaining that this passage can be understood as a

[7] As there is no C (the seventh) in mm. 3–4, a more correct harmonic label in these measures would be V^6 rather than the V^6_5 that Wen shows.



Example 4. Wen's analysis of Haydn, Symphony no. 83, I, mm. 1–8. (2020, 239).



Example 5. Haydn, Symphony no. 83, I, mm. 1–12. A larger context for Wen's analysis.

tonal entity in itself; harmonically it closes on the tonic, while the top voice consists of a tonic-prolonging third-progression. Yet it does not constitute, in my opinion, a musically meaningful form-functional unit. Part of the reason is that the dominant occurs only in first inversion; thus, there is no proper cadential arrival to indicate a tonal closure.

Example 5 shows a larger context for mm. 1–8. As I completely agree with Wen's interpretation of the voice-leading structure of mm. 1–8, my graph of these measures is identical to his, only clarifying a somewhat deeper level. In the lowermost line of Ex. 5, I show two harmonic resting points, or *clausulae*, labeling them according to Robert O. Gjerdingen's terminology (2007). Wen's parallel period concludes in m. 8 with a V^6_5–I progression, or in Gjerdingen's terminology, a "Comma": a resting point that provides the music only with a weak sense of closure. From the perspective of voice leading, the dominant occurs in first inversion, built above a neighboring F♯ in the bass, so V is not a proper *Stufe* but rather a neighboring, contrapuntal sonority. Owing to the lack of deeper-level harmonic motion, I interpret mm. 1–8 as a beginning of a larger musical unit, a presentation in a compound sentence (see the lines "temporal function" and "phrase structure" in Ex. 5).[8] As a result, rather than interpreting an antecedent and a consequent as Wen does, I read a repeated compound basic idea, a signal of an initiation of a larger phrase-structural entity. As m. 8 only concludes the initial phase of a larger formal unit, I do not take the top-voice $\hat{3}$ of this measure as a conclusion of an independent third progression either, but rather as a member of a fourth-progression that continues one step further to a $\hat{2}$ (mm. 11–12). This $\hat{2}$ is first supported by a II^6 and then by a back-relating dominant. The arrival at the dominant is enhanced by a "Converging half cadence," a resting point that is much stronger than the Comma in m. 8, and one that suffices to provide the music with a functional, cadential conclusion.

I do not question the plausibility of Wen's voice-leading analysis shown in Ex. 4; on the contrary, I completely agree with it. However, I find it musically counter-intuitive to understand mm. 1–8 as a parallel period. If the intent is to discuss interactions between form and voice-

[8] Caplin (1998, 69–70) has a similar analysis of the phrase structure; the only difference between his interpretation and mine is that he does not show the inner subdivision of the continuation.

leading structure, analysis of mm. 1–8 as an independent unit gives only a partial view on the rapport between form and tonal structure. To be sure, Ex. 4 and its commentary explain voice leading well if this segment is considered outside of its musical context. However, Ex. 4 does not clarify how tonal structure may help to locate formal boundaries, for example, or, at a general level, which elements of tonal structure have an effect on interpretation of form. As a result, this example (and others like it) does not much deepen, in my opinion, the student's understanding of the interactions between form and tonal structure.

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The orientation of *Graphic Music Analysis* is more analytical than theoretical, and all techniques are introduced as they appear in the pieces that Wen examines. The student thus learns general principles of tonal structure and particular details of Schenkerian analysis through Wen's observations. With the detailed nature of the analyses, the principles of Schenkerian analysis and the pertinent concepts are thoroughly explained. The exhaustive manner in which numerous short excerpts are analyzed at a number of structural levels distinguishes *Graphic Music Analysis* from other textbooks on Schenkerian analysis. Yet, the rapport between musical details and their larger context is not always clarified as thoroughly as it might have been; this point concerns both structural relationships between independently-examined short excerpts (as in the Mendelssohn song) and interrelationships between form and tonal structure (as in the Haydn symphony). But I assume that not everyone will find the emphasis on short excerpts problematic; teachers willing to concentrate on local levels of tonal structure will value the short musical segments.

As there is no one correct approach to Schenkerian pedagogy, the unique orientation of *Graphic Music Analysis* makes it a valuable contribution to the pedagogical material on Schenkerian analysis. In particular, teachers and students willing to study tonal structure of shorter musical segments in penetrating detail will find *Graphic Music Analysis* an excellent guide.

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