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ANABEL MALER

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Abstract

This dissertation asks a fundamental question: how do listeners make sense of the relationships between the constitutive units of post-tonal compositions? Hearing such constitutive units—that is, hearing in terms of musical forms—requires attending to a rich, dense web of interrelated ideas, moving beyond the harmonic relationships that are typically valued in formal analysis. The approach I take assumes that a wide variety of musical features—including rhythmic and melodic contour, pitch content, timbre, and texture—shape listeners' expectations when they encounter post-tonal music. As a way of explaining how listeners manage this variety, I propose that formal units in post-tonal music can be thought of as possessing specific "affordances," taking inspiration from cognitive scientist Don Norman's work on material design. These affordances reflect the physical attributes of sound sequences as well as the listener's past experiences and beliefs when encountering similar units, and offer a means of apprehending the formal units specific to a given composition. The result of this approach is a view of musical form in which the listener and composer mutually construct the significant formal units of a musical work through their interactions, a perspective particularly well adapted to the challenges presented by post-tonal music. My dissertation thus formulates a methodology for analyzing formal function in post-tonal musical contexts based on this listener-centered approach. Chapter 1 introduces the concept of post-tonal formal function, based on the notion of affordance. Chapter 2 takes a closer look at phrase in post-tonal music, demonstrating how the analyst can draw on parameters that the composer marks as salient in order to make determinations about phrase boundaries. Chapter 3 engages with large-scale formal structures in works by Arnold Schoenberg and Pierre Boulez. In Chapter 4, I explore the concept of post-tonal closure or

"cadence" in works by Alfred Schnittke and György Ligeti. Chapter 5 deals with some aspects of phrase in the music of Luciano Berio. Finally, Chapter 6 discusses how my listener-centered model for formal analysis of post-tonal works may be applied in other contexts, expanding our understanding of what it means to hear formally.

Preface

This dissertation came into being in response to a phenomenon that I observed, anecdotally, over a number of years of attending conference presentations, reading scholarly articles, speaking with colleagues, and reading textbooks on the subject of post-tonal music. It seemed that an intuitive understanding of form, phrase, and cadence came easily for all of my interlocutors, despite the fact that no cohesive, robust theory of formal functionality existed in the scholarly literature on post-tonal repertoires. My curiosity was piqued by this seeming mismatch between our realities as listeners of post-tonal music and the theories we use to understand them—for I, too, seemed to be hearing post-tonal form in a way that could not be accommodated by existing methodologies for analyzing this music.

My curiosity about whether the idea of formal functionality could be applied in post-tonal contexts collided with my ongoing skepticism over the dominant narrative conveyed to students by history textbooks on twentieth-century music: that the history of twentieth-century composition is defined by breaks or rifts in style, and by a proliferation of irreconcilable styles. Of course, the work of scholars of twentieth-century music such as Joseph Straus has gone a long way towards rectifying this false impression, but there remains a preponderance of theories of post-tonal form based solely on the oeuvres of single composers or small groups of composers. As a listener, this again did not match with my experience: my ears—or, more properly, the cognitive processes I used to make sense of what I was hearing—did not fundamentally alter when listening to different kinds of music.

The convergence of these two lines of thought—first, that my intuitive understanding of units in post-tonal music as functional might be shared by other listeners, and second, that there

may be continuity in listener perception and understanding even where there is discontinuity in composition style and philosophy—led me to frame my approach to post-tonal form through the ears of a potential listener, and to ultimately take a broad, inclusive approach to selecting composers and works for closer analysis. This potential listener is one who may be familiar with post-tonal compositional techniques, or may be hearing this music for the first time. She brings a number of assumptions, past listening experiences, generic expectations, and connections into her lived experience of a work's particular attributes.

There are precedents, of course, for theories of formal function, but they come from the tradition of analyzing common-practice music. My emphasis on the cognitive processes that underlie a listener's understanding of formal function led me towards a broader view of the concept. What I was interested in, ultimately, was really talking about what a unit within a piece of music *affords* within a specific musical landscape—that is, the possibilities that a listener may imagine when she comes into contact with the composer's choices. This new way of conceptualizing formal function on the listener's terms may thus also prove useful in the analysis of other repertoires, beyond the post-tonal music for which it was developed, suggesting as it does that the apprehension of formal units reflects the habits and tendencies of listeners as well as compositional design.

Part I of the dissertation, comprising Chapters 1 through 3, sets out the methodological basis of my approach. Part II of the dissertation, comprising Chapters 4 and 5, builds on the methodology established in Part I by exploring expressive and rhetorical aspects of formal function. The three composers whose works are the main focal points of the analyses in Part II represent three different approaches to composition after 1945: Alfred Schnittke's innovations in polystylism allow me to explore how tonal and post-tonal formal features interact rhetorically;

György Ligeti's textural approach leads us away from pitch and towards timbre and texture as formal agents; and Luciano Berio's music guides us toward an understanding of form as process-based.

The first chapter of this dissertation introduces the concept of post-tonal formal function, based on the aforementioned notion of affordance. I offer an introduction to my approach through an analysis of Edgar Varèse's *Density 21.5* for solo flute before turning to Webern's *Three Little Pieces*, developing further both my analysis of this work and the ideas about formal listening that will be explored in the following chapters.

The second chapter takes a closer look at the concept of phrase—often considered the fundamental unit of form—in post-tonal music, demonstrating how the analyst can draw on parameters that the composer marks as salient in order to make determinations about phrase boundaries. The analyses of excerpts from Milton Babbitt's *Composition for Four Instruments*, as well as of the first movement of Luigi Dallapiccola's *Dialoghi* for cello and orchestra, and Dallapiccola's *Preghiere* for baritone and chamber orchestra demonstrate that phrase structure as perceived by a listener hinges on three factors: salient parameters, object categorization, and prospection/retrospection.

Chapter 3 engages with large-scale formal structures (on the scale of an entire movement or work) in works by Arnold Schoenberg and Pierre Boulez. The point of departure is an analysis of Schoenberg's *Kammersymphonie* Op. 9 (1906), which leads to a consideration of two mid-century works of Boulez: his Piano Sonata No. 1 and the *Sonatine* for flute and piano (1946). My analysis explores how serial structure and the formal model adopted from Schoenberg interact in the *Sonatine*, and how this interaction shapes Boulez's approach to large-scale formal structure

and thematic development. The chapter further establishes multiple listener perspectives in order to address the particular challenges of performing formal analysis of post-tonal music on the large scale.

In Chapter 4, I explore the concept of post-tonal closure or "cadence" in works by Alfred Schnittke and György Ligeti. I attend particularly to Schnittke's Concerto for Viola and Orchestra, his third string quartet, and Ligeti's Piano Concerto. I examine the broader role of cadential closure in Schnittke's oeuvre and its impact on the listener's understanding of closure.

Chapter 5 deals with some aspects of phrase in the music of Luciano Berio. I identify three main types of formal process in Berio's music: linear form (the development of one or more motives over the course of the piece), circular form (the constant return to a motive throughout a piece while developing that motive), and mirror form (the development of material around a steady axis or reflective surface).

Finally, Chapter 6 discusses how my listener-centered model for formal analysis of post-tonal works may be applied in other contexts, expanding our understanding of what it means to hear formally. I explore how the methodology proposed in this dissertation may also prove useful in the analysis of earlier music, as its essential aim—to understand how the listener and composer mutually construct the form a piece of music through their interactions—has implications for the study of form more generally.

Part I

Chapter 1: An Introduction to Post-Tonal Formal Function

1.1: Webern's *Three Little Pieces* Op. 11, no. 1

Imagine that you are listening attentively, perhaps for the first time, to Webern's *Three Little Pieces for Cello and Piano*, op. 11, no. 1, the opening measures of which are given in Figure 1.1. (Although my focus in the following will be on the way the musical materials of the opening of the movement shape the listening experience, reference to the score in what follows will greatly simplify the discussion.) First, the cello sounds a low F♯2: it swells softly out of the silence then backs away again before being interrupted by a delicate arpeggiated chord in the piano. A beat of silence and then, in m. 2, the piano states the first melodic fragment of the piece, ending with an inquisitive ascending diminished fifth and followed immediately by its answer, a dramatic falling gesture of just over two octaves in the cello. A shorter silence spanning only an eighth note follows, after which the piano enters with a gesture that clearly echoes the one heard at the work's opening, although now the roles of the piano and cello are reversed: the piano's first note is a held F♯4 in the right hand supported by a three-note sonority in the left hand, which are together interrupted by the cello's sudden upward flight in m. 4, emphasized with a crescendo and the nasal timbre of "am Steg." Yet another short silence precedes the piano's entrance with an arpeggiated chord in the latter half of m. 4, leading into a melody whose contour resembles the one heard in m. 2. Over this melody, the cello plays a falling gesture reminiscent of that heard in mm. 2-3, but now overlapping with the piano. A slightly longer

silence, and the piano in its turn takes up the cello's descending gesture before both instruments dissolve into silence.

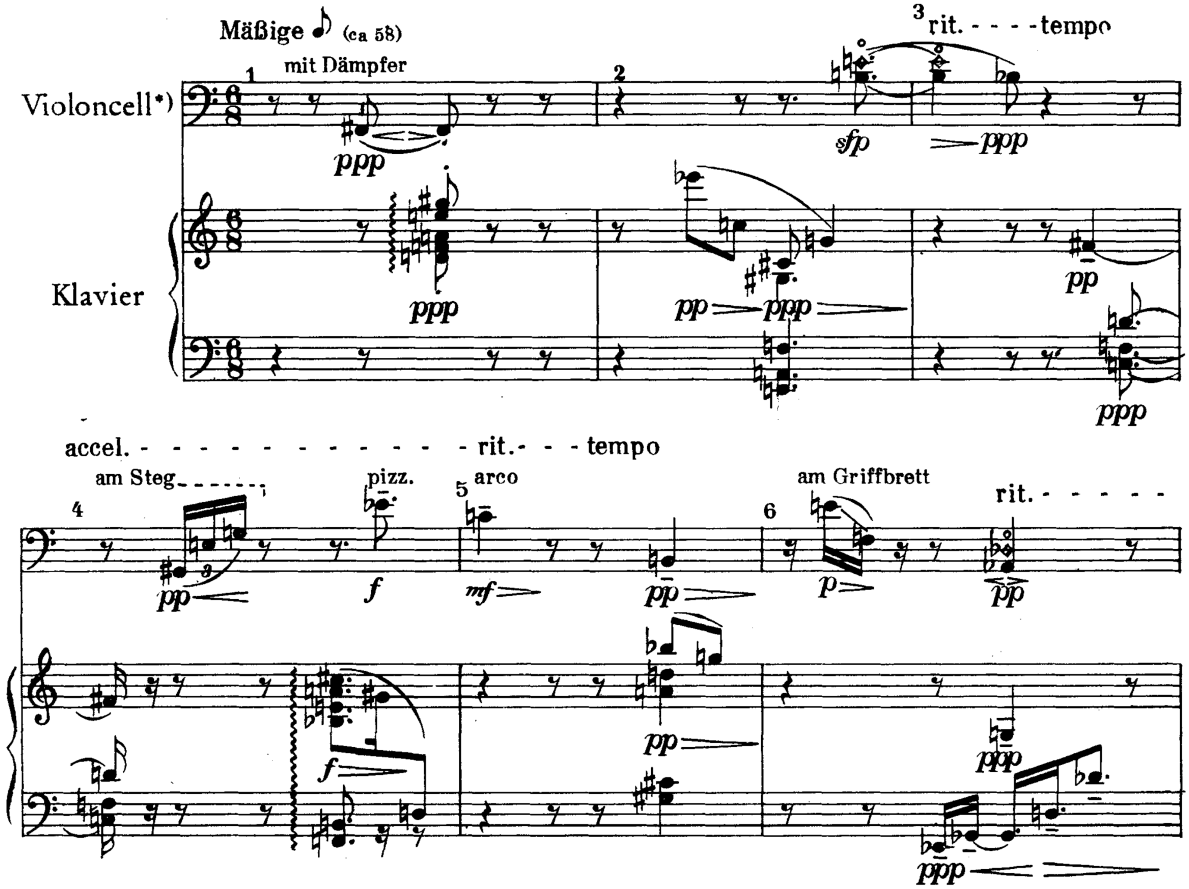

Figure 1.1: Webern, Op. 11, no. 1, mm. 1-6

How might one make sense of these units as one hears them—not just in terms of segmenting them, which is fairly straightforward, but in terms of relating each unit to surrounding ones? An analysis by Robert Clifford—in which he takes a broad view of the work's structure, accounting for the myriad symmetries present in its melodic contours—provides one way to think about relationships within the work.[1] These structural symmetries, however, may not reflect more immediate relationships heard by a first- or second-time listener. As a way to

[1] Robert Clifford, "Multi-Level Symmetries in Webern's Op. 11, No. 1," *Perspectives of New Music* 40, no. 1 (2002).

understand how moment-to-moment relationships form and create broader structural relationships over time, let me propose an interpretation of the opening measures of Webern's op. 11 no. 1 informed by theories of formal function adopted from recent theories of form in music of the late eighteenth and early nineteenth centuries. When we hear the first idea return in its altered, expanded form at the end of m. 3, we might retrospectively interpret the first three measures and their three constituent ideas as cohering into one unit, much like the "basic idea" of a presentation phrase (an interpretation diagrammed in Figure 1.2). One might then understand the gesture beginning in the second half of m. 4 in the piano and taken over by the cello as a variation on the second element (*y*), with the piano and cello combining in order to enrich the original melody of m. 2 (as shown in Figure 1.3). Measure 5 then recalls the cello's falling gesture in mm. 2-3. In other words, mm. 1-3 present a cohesive "basic idea" with three elements, each of which is subject to a varied reprise from the end of m. 3 through m. 5—loosely, a repetition of the basic idea—suggesting that mm. 1-5 are a "presentation" phrase. This series of experiences and recollections may then encourage a listener to anticipate elements of a continuational nature to follow.

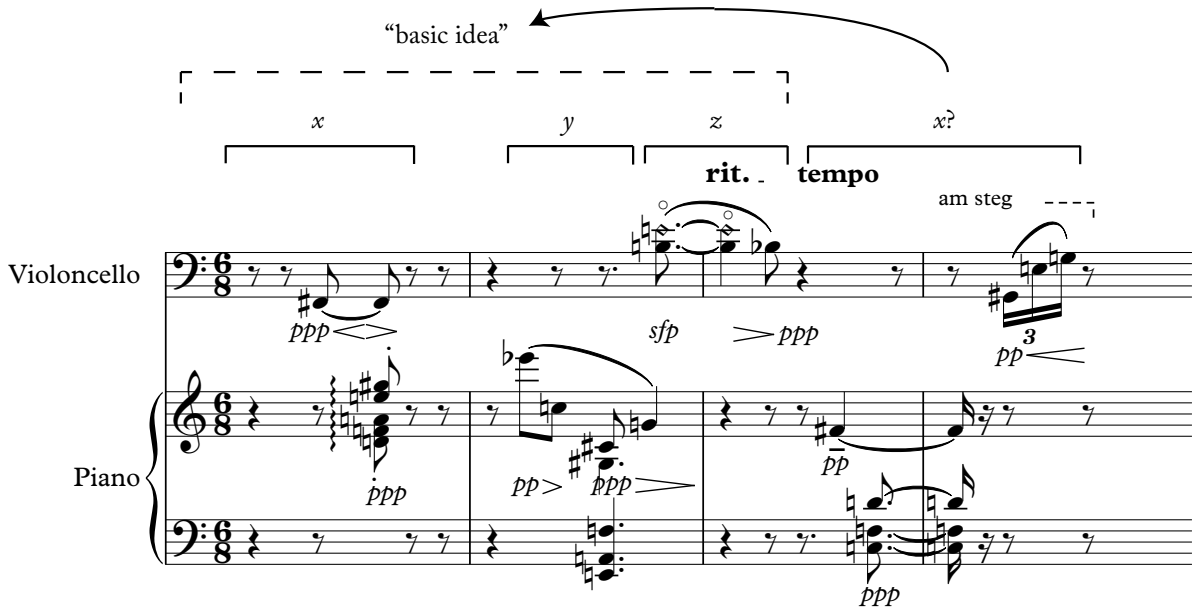

Figure 1.2: Webern, Op. 11, no. 1, mm. 1-4: the reiteration of motive *x* in mm.3-4 confirms the cohesion of mm.1-3 as a "basic idea" with three internal motives.

To speak of mm. 1-3 forming a basic idea, retrospectively realized with the apprehension that the material at the end of m. 3 is related to the work's opening idea, is to understand each individual musical segment as performing a particular formal *function* in relation to the surrounding segments. This understanding in turn allows the listener to make predictions about possible future paths, and to reevaluate these functions as the piece progresses. The idea that a phrase in a post-tonal composition—or a musical event within a phrase—may possess a changeable function in relation to surrounding musical events raises questions about how we analyze form in post-tonal music. Namely, it asks us to consider a phrase as a topography or constellation of moments, events, or features that have the potential to cohere into a unit, or to disintegrate, separate, fragment, or form connections with other moments or other constellations.

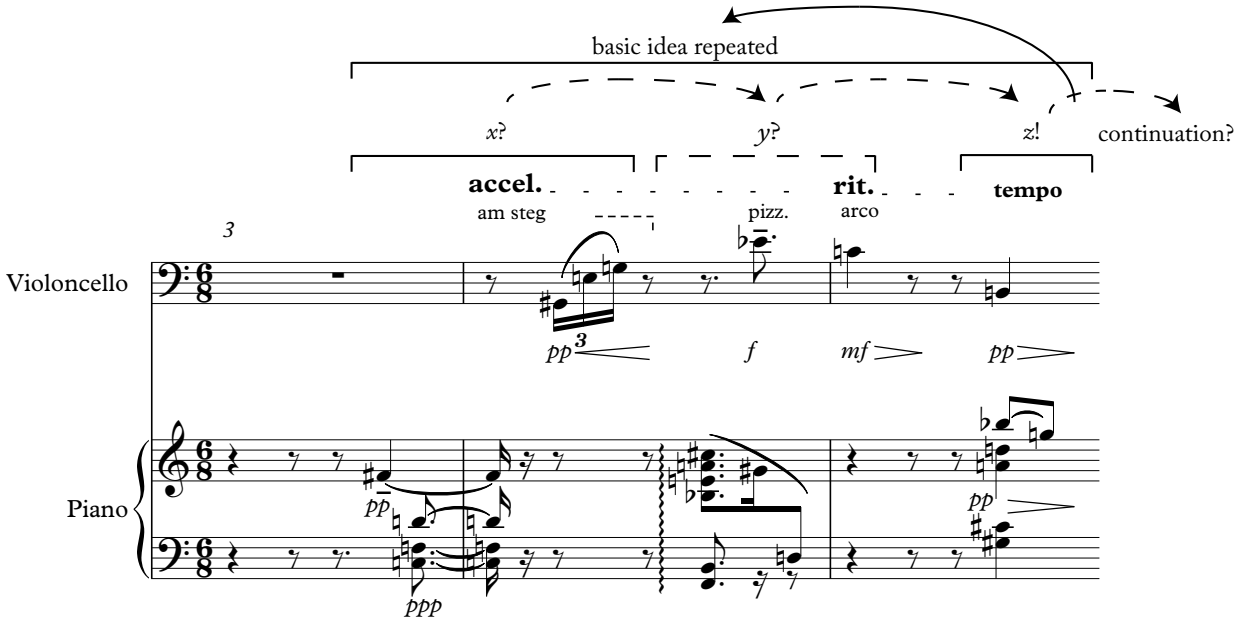

Figure 1.3: Webern, Op. 11, no. 1, mm. 3-5: the entrance of a chunk resembling motive *x* in mm.3-4 leads to a possible anticipation of motives *y* and *z*; upon realization, this provides retrospective confirmation that mm. 3-5 are a varied repetition of the "basic idea."

In contrast to conceiving of musical events as units or segments fixed in a particular time and place, the idea of post-tonal formal function urges us to think of them as (a) fundamentally relational, since musical events accrue function, and therefore meaning, only in relation to other events and contexts, and (b) constantly mutable, since the listener will reevaluate the meaning of these events in response to how the events unfold over the course of the piece. With respect to the opening of Webern's op. 11 no. 1, this means adopting the view that each of the musical fragments comprised by mm. 1-3 gradually acquires meaning for the listener through their relationships to the surrounding fragments, such that the weight of those meanings accumulates over time and leads the listener to develop and refine her or his formal expectations.

In this chapter, I explore the concept of formal function as it might relate to post-tonal music, beyond its origin in the common-practice analytical tradition. The application of the notion of formal function to post-tonal music allows us to deal with longer time spans, from

phrases to themes to sections, and thus to approach the topic of narrative in post-tonal works. Such an application, of course, must not be simple or indiscriminate—the absence of functional tonality in post-tonal music, and therefore the absence of large-scale tonal relationships, necessitate an approach that is sensitive to the tensions created by using Classical formal theory in a post-tonal context. Specifically, post-tonal music challenges the dominance of harmony and melody in making determinations of formal type and function by giving precedence to other parameters in creating musical form and coherence. It also challenges the idea of unity in formal analysis, and introduces the possibility of irony, reference, and pastiche to a theory of form. Finally, post-tonal compositional techniques challenge the notion of linearity, succession, and teleology as essential aspects of formal cohesion, in favor of multidimensionality.

Despite the many challenges it presents to a theory of formal function, music of the twentieth and twenty-first centuries also has the potential to offer a great deal to our understanding of form more broadly. Because of the absence of tonal structures, post-tonal music has the potential to clarify the more fundamental cognitive processes involved in a listener's perception of form. Without tonal structures to guide formal listening, we must necessarily turn our attention to other parameters and how they determine formal functionality for a listener. The result is a listener-centered theory of formal function that takes as its analytical object not the abstract structure of music, but the active process of listener interaction with the musical material. As such, this dissertation takes as its primary material European art music of the twentieth century.

In order to reformulate the idea of formal function for post-tonal repertoires, I conceive of formal functionality as a musical instantiation of what cognitive scientist Donald Norman

has called *affordances* in his work on material design.[2] For Norman, affordances reflect the potential uses or actions latent in materials, and affordances are perceived not only based on physical attributes but based on the perceiver's past experiences. In a recent monograph, Caroline Levine applies this terminology to literary forms in order to demonstrate that "each shape or pattern, social or literary, lays claim to a limited range of potentialities."[3] So too does a formal pattern in music lay claim to a specific range of potentialities when it meets with a listener and all her beliefs and past experiences, and from that interaction we may come to determine its formal function. I contend that formal function is an emergent property of music through which a listener actively shapes musical organization in time. The approach that I develop in this dissertation formulates a methodology for analyzing formal function in post-tonal musical contexts based on the notion that the listener and composer mutually construct the form of a piece of music through their interactions.

Before developing that approach, however, it will be necessary to touch upon the identity of the "listener" in this dissertation. Any listener-centered contribution to music-theoretical discourse must grapple with the thorny concept of the "listener," whether that listener is real or imagined. In formulating a listener- (or perceiver-) based theory of formal function, specifically, one might take one of two distinct approaches to situating the listener. The first approach would see any given listener existing at the intersection of his or her own particular configuration of historical and cultural situations. All listeners, then, are constructed according to a specific set of norms. Within the domain of music theory, a particularly high

[2] Donald A. Norman, "The Design of Everyday Things, Revised and Expanded Edition," (New York: Basic Books, 2013).
[3] Caroline Levine, *Forms: Whole, Rhythm, Hierarchy, Network* (Princeton: Princeton University Press, 2015), 6.

value is placed on what Joseph Straus has termed "prodigious hearing" in his work on disability studies—a form of hearing that is highly trained and vastly knowledgeable.[4] Straus argues that such implied listeners in traditional music theory inhabit "prodigious bodies" that are distinguished from those inhabited by "normal listeners."[5] Furthermore, even these "normal listeners," so often the subjects of music cognition studies, are no less socially and historically constructed than their prodigious counterparts, despite pretending to "naturalness and universality."[6]

The second possible approach would concentrate on those aspects of musical listening and comprehension that are shared among humans—that are based, that is, on shared cognitive resources and strategies for making sense of musical information. This approach is modeled in the work of Lawrence Zbikowski in *Conceptualizing Music*, which engages with the general capacities used by human perceivers of music to structure their understanding.[7] One might presume that these two approaches are mutually exclusive—that is, that an approach based on historical and cultural specificity cannot be reconciled with an approach based on more widespread (although not necessarily universal) cognitive principles.

The tack that I take in this dissertation, however, seeks to combine these two seemingly irreconcilable constructions of the listener. Denys Bouliane, in his work on Ligeti's piano études, has drawn attention to one of the "fundamental problems" of contemporary composition, which is that "events can never be culturally neutral." He goes on: "each musical

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[4] Joseph N. Straus, "Extraordinary Measures: Disability in Music," (New York: Oxford University Press, 2011).
[5] Ibid., 152.
[6] Ibid., 157.
[7] Lawrence M. Zbikowski, *Conceptualizing Music: Cognitive Structure, Theory, and Analysis*, AMS Studies in Music (New York: Oxford University Press, 2002).

gesture invokes ways of listening which have been conditioned by the very nature of our perceptual mechanisms and, to a large extent, by the cultural baggage each tradition has accumulated."[8] This dissertation approaches Bouliane's fundamental problem through a new analytical approach based on the notion of affordance. Through my analyses of small units in the present chapter, phrases in Chapter 2, and large-scale form in Chapter 3, I demonstrate how attending to the notion of musical affordances means bringing basic shared cognitive processes into conversation with the historical situation of individual listeners. My listener, therefore, is not necessarily a "prodigious" one, in the sense of being highly trained. Rather, she is an attentive, twentieth- or twenty-first listener who is familiar with the sounds and procedures of tonal music.[9]

In the section that follows, I expand the concept of formal function in order to apply it to new contexts, and explore some of the problems that arise in doing so. In section 1.3, I offer a first approximation of formal listening through an analysis of Edgar Varèse's *Density 21.5* for solo flute. By way of conclusion, I return to Webern's *Three Little Pieces* and develop further both my analysis of this work and the ideas about formal listening that will be explored in the following chapters.

[8] Denys Bouliane and Anouk Lang, "Ligeti's Six "Etudes Pour Piano": The Fine Art of Composing Using Cultural Referents," *Theory and Practice* 31 (2006): 163.
[9] While it would be interesting to investigate possible formal interpretations of twentieth-century European "art" music by listeners unfamiliar with common-practice, tonal music, such an inquiry is beyond the scope of this dissertation.

1.2: Formal Function

1.2.1: Classical Formal Functions

Formal function as it is presently understood in the field of music theory has developed principally for the study of European music of the late eighteenth and early nineteenth centuries, a repertoire that has informed much recent work in the field as a whole. The concept of formal functionality—the idea that formal units play specific roles in articulating the structure of a piece of music—is strongly tied to ideas about musical form that emerged through the teaching of composition in the early nineteenth century, and that was codified in the writings of Arnold Schoenberg and Erwin Ratz, and more recently in those of William Caplin. Caplin defines formal functionality as a concept in which "a listener is able to discern the formal disposition of events within a work by means of specific musical criteria, largely based on harmonic-tonal relations but also involving processes of grouping structure, melodic directionality and texture."[10] In an essay on the nature of formal functions, Caplin further distinguishes between formal functions and types. He defines formal function as the "unique temporal character" of any given musical time span, while the notion of formal type refers to idiomatic phrase, theme, or movement types that comprise multiple functions, such as the sentence, period, small ternary, sonata, or concerto.[11] In reference to Classical music, Caplin minimally defines the form of a musical work as consisting of a hierarchical arrangement of perceptible and discrete time spans, where each chunk of music has a *formal function*—a role that the group plays within the formal

[10] William Earl Caplin, "On the Relation of Musical *Topoi* to Formal Function," *Eighteenth Century Music* 2, no. 1 (2005): 115.
[11] William Earl Caplin et al., *Musical Form, Forms & Formenlehre: Three Methodological Reflections* (Leuven: Leuven University Press, 2009), 33.

organization of the music.[12]

In Caplin's approach to Classical form, we can summarize the analytical process as follows: the analyst identifies and segments distinct musical chunks or objects, categorizes them into generic types (from two-measure basic ideas to cadences to entire phrases or theme groups), and generalizes functions from those categories and from the "temporal character" of the time span. This process can be seen modeled in Figure 1.4, which shows an analyst's process of segmentation, categorization, and generalization into formal functions. One of the most important characteristics of Caplin's theory of formal functions is its implicit assertion that musical chunks or spans are fundamentally relational in nature—that is, a musical beginning, or middle, or end has no meaning outside of its relationship to the other two functions.

[12] William Earl Caplin, *Classical Form: A Theory of Formal Functions for the Instrumental Music of Haydn, Mozart, and Beethoven* (New York: Oxford University Press, 1998), 9.

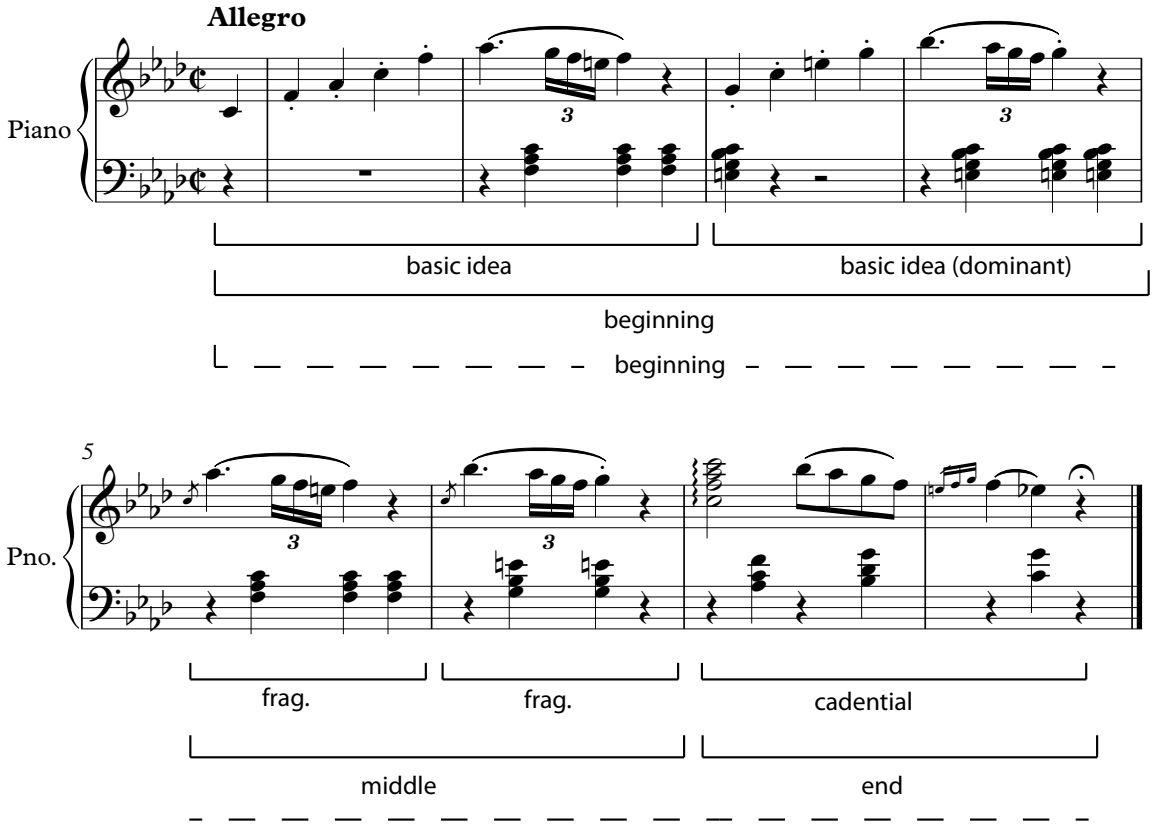

Figure 1.4: A possible form-functional analysis of the opening of Beethoven's Op. 2, no. 1, i, based on Caplin's theory

Within Caplin's theory of Classical form, formal functionality "arises from harmonic, melodic, and rhythmic processes" distinct from those that create the work's grouping structure.[13] A given group may express more than one function or several groups may express a single function, and groups may be retrospectively reinterpreted as expressing a different function than initially suspected. Some of the foundational formal functions identified by Caplin include: basic idea, contrasting idea, presentation, continuation, antecedent, consequent, and framing functions such as introductions or postcadential functions. Each of these is then defined in such a way that it can be correlated with other formal functions. In Caplin's theory, then, the basic idea functions

[13] Ibid., 4.

as a fundamental building block, often comprising more than one motive in a single gesture. Presentation function emerges as the result of repeating a basic idea, through which the basic idea emerges as a distinct, demarcated unit. The presentation, Caplin argues, creates a "strongly ongoing quality" that generates demand for a phrase with continuation function. He identifies two characteristics of the function of continuation: "*fragmentation*, a reduction in the size of the units; and *harmonic acceleration*, an increase in the rate of harmonic change."[14] A contrasting idea presents opposing ideas, rather than offering a repetition of the basic idea. The presence of these two opposing forces, which brings about an intermediary cadence, forms an antecedent phrase, which prompts repetition in the form of a consequent.

Each of these formal functions can then be shaped by formal processes. These include: fragmentation, harmonic acceleration, extension, expansion, and compression. Fragmentation involves a reduction in the size of constituent units; harmonic acceleration involves an increase in the rate of harmonic change. Extension and expansion are both processes that involve lengthening units, extension by addition and expansion by an internal process.

James Hepokoski, in a response to Caplin's exposition of his form-functional theory, argues that the theory is too dependent on temporal functions, given that all temporal structures—whether or not they have a coherent structure—have beginnings, middles, and ends. Hepokoski further denies that there is any significant difference between the two categories fundamental to Caplin's theory: formal type and formal function. He criticizes the separation of content and function implied in these two categories, arguing that "to identify a type, such as a period or a sonata exposition, is always already to declare on behalf of a concomitantly implied

[14] Ibid., 10.

internal function or ordered array of functions."[15] Hepokoski's observations notwithstanding, in post-tonal music the distinction between formal type and function is a crucial one: while musical events can cohere into groups with functional meaning or import for the listener, any reference to a formal type such a period or a sonata exposition risks invoking the concepts of allusion or parody[16].

Crucially, the formal function of a musical event or phrase may change over time as the listener reevaluates and reinterprets the musical material and context. Caplin does not fully explore this concept in his work on formal functions, but Janet Schmalfeldt delves into this nonlinear conception of musical form through her principle of becoming as set out in her monograph *In the Process of Becoming*. In this historically-informed exploration of nineteenth-century form, Schmalfeldt conceives of form as both processual and communicative. Schmalfeldt describes the process of form-functional becoming as "the special case whereby the formal function initially suggested by a musical idea, phrase, or section, invites retrospective reinterpretation within the larger formal context."[17] This approach allows for a richer understanding of how we perceive post-tonal music in time, as it encourages the analyst to think about form as multidimensional rather than exclusively linear. It opens the possibility that the relationship between form and time is not linear, which challenges the idea that formal units

[15] Caplin et al., *Musical Form, Forms & Formenlehre: Three Methodological Reflections*, 42.
[16] In response to this debate, Matthew Arndt proposes eight structural functions based on the conceptual metaphors that he argues underlie musical form, thus establishing the inseparability of form and content. Arndt's emphasis on what the parts in a form are *doing* resonates with my own approach based on affordance. Matthew Arndt, "Form—Function—Content," *Music Theory Spectrum* 40, no. 2 (2018).
[17] Janet Schmalfeldt, *In the Process of Becoming: Analytic and Philosophical Perspectives on Form in Early Nineteenth-Century Music*, Oxford studies in music theory (New York: Oxford University Press, 2011), 9.

must be both temporally discrete and adjacent in order to form larger units. Dora Hanninen takes a complementary approach in her exploration of Stefan Wolpe's musical forms. She notes that two related assumptions about form are that it "denotes a well-formed hierarchy of inclusion relations among parts," and that it is "necessarily teleological."[18] Hanninen goes on to posit that in Wolpe's music, form involves "knotty webs of relation" between "discernible musical objects," which necessitates finding new ways of modeling form.[19]

One of the fundamental assumptions of my work is that formal listening and understanding did not abruptly change or cease to exist when composers stopped explicitly basing their compositions on formal archetypes derived from tonal music. The *Formenlehre* tradition, as transmitted through authors like Caplin in *Classical Form*, James Hepokoski and Warren Darcy in *Elements of Sonata Theory*, and Schmalfeldt in *In the Process of Becoming*, is intimately tied to music of the high Viennese classical style. That said, my proposal is that listeners did not stop trying to make sense of musical form in terms of its organization into functional groups after some arbitrary date, or in response to the opinions of any particular composer or critic in the early twentieth century. Accordingly, the type of attentive listening to formal functions, formal processes (such as prolongation, repetition, fragmentation, extension, expansion), and hierarchical organization basic to Caplin's theory are not tied exclusively to the formal types with which Caplin engages. In fact, attending to these processes in post-tonal works can have, I propose, a positive impact on our understanding of their formal organization.

[18] Dora Hanninen, "Understanding Stephan Wolpe's Musical "Forms"," *Perspectives of New Music* 40, no. 2 (2002): 10.
[19] Ibid., 12.

Furthermore, the relics of Classical formal models inevitably haunt both the formal perceptions and constructions of contemporary composers as well as listeners.

In the course of analyzing post-tonal works, I therefore make use of terms that may be familiar from Classical formal theory. When I do so, it is not to point out some surface similarity between the formal group being presented and its counterpart in a Classical formal type, but to make an observation about the way that musical group is functioning in relation to surrounding musical materials. The core idea, then, is that the musical concepts implied by functional labels such as "basic idea" or "contrasting idea" remain relevant in post-tonal contexts. Given that these labels for analyzing formal function were specifically formulated to accommodate tonal music, they may not seem readily applicable to post-tonal compositions. However, these analytical labels are also built upon the shared cognitive strategies used by some listeners to make sense of this music.

For example, a "basic idea"—as laid out in Schoenberg's work and developed by Caplin—refers to a short, complete musical idea that introduces the elementary motivic material of the piece in a single gesture, and which acts as a starting point for a work.[20] A "contrasting idea" then furnishes musical material that contrasts in some significant way with the basic idea. The premise of a basic idea and contrasting idea draws on our shared cognitive strategy of attending to similarity and dissimilarity in making sense of music. Alexandra Lamont and Nicola Dibben provide an overview of two main models in cognitive psychology for understanding similarity and

[20] In *Fundamentals of Musical Composition*, Schoenberg describes what Caplin terms the basic idea as an opening segment that presents the theme's basic motive (normally in the form of a two-measure phrase). Arnold Schoenberg, *Fundamentals of Musical Composition* (London: Faber and Faber, 1967), 21.

categorization.[21] The first, prototype theory, is based on perceptual equivalence, or the relationship between the object and an abstract prototype. The second, theory-based classification, emphasizes the role of background knowledge and conceptual models in categorization. Drawing on the latter model for categorization, Lawrence Zbikowski has developed a robust theory of how these conceptual models are applied in different musical contexts.[22]

Another important musical concept that originates in theories of common-practice form is that of "cadence," which is commonly understood as a largely harmonic and contrapuntal phenomenon. Our understanding that some unit has cadenced or closed in tonal music is the result of the alignment of several different features. A study of the perception of musical closure in Mozart's keyboard sonatas by David Sears, William Caplin and Stephen McAdams confirms the importance of a number of rhetorical features of cadences in the perception of cadential strength.[23] Nicola Dibben's research on the perception of structural stability in atonal music

[21] Alexandra Lamont and Nicola Dibben, "Motivic Structure and the Perception of Similarity," *Music Perception: An Interdisciplinary Journal* 18, no. 3 (2001). Other recent students that have engaged with the concepts of repetition include Emilios Cambouropoulos's study of similarity, which emphasizes the importance of context, Irène Deliège's work on similarity relations in listening experience, and Elizabeth Margulis's work on musical repetition. Emilios Cambouropoulos, "How Similar is Similar?," *Musicae Scientiae* 13, no. 1_suppl (2009). Irène Deliège, "Similarity Relations in Listening to Music: How Do They Come into Play?," *Musicae Scientiae* 11, no. 1_suppl (2007). Elizabeth Hellmuth Margulis, *On repeat : how music plays the mind* (New York, NY: Oxford University Press, 2014); "Musical Repetition Detection Across Multiple Exposures," *Music Perception: An Interdisciplinary Journal* 29, no. 4 (2012).
[22] Zbikowski, *Conceptualizing Music: Cognitive Structure, Theory, and Analysis*.
[23] David Sears, William E. Caplin, and Stephen McAdams, "Perceiving the Classical Cadence," *Music Perception: An Interdisciplinary Journal* 31, no. 5 (2014).

further reveals that listeners' understanding of stability more broadly has a great deal to do with the perception of salience, dissonance, and the horizontal movement of voices.[24]

One could develop new terms for these concepts that do not recall formal types of the classical period, but rather than drawing attention away from the similarities between formal functions in classical and post-tonal music, I wish to highlight continuity in listening practice and in the shared cognitive processes that underlie these concepts.

1.2.2: Approaches to Post-Tonal Form

Post-tonal music presents several unique challenges to the prospective formal and form-functional analyst. First, the proliferation of different compositional styles, techniques, philosophies, and media in the twentieth century has encouraged analysts to take a narrower view, focusing on single composers or groups of composers rather than attempting to generalize across the whole of post-tonal music. Second, the move away from the concept of a tonal center (even in works that make reference to tonality) means that the cadential articulation of tonal areas no longer provides a sure guide to musical form. Caplin's essential criterion for the differentiation of higher-level thematic functions, as opposed to lower-level phrase functions, "is one of tonality, as confirmed by cadential articulation."[25] Tonality, no longer a driving force behind the creation of formal boundaries and relationships in post-tonal music, cannot play the same role in post-tonal theories of form as it does in Classical formal theory, although analogous

[24] Nicola Dibben, "The Perception of Structural Stability in Atonal Music: The Influence of Salience, Stability, Horizontal Motion, Pitch Commonality, and Dissonance," *Music Perception: An Interdisciplinary Journal* 16, no. 3 (1999).
[25] Caplin et al., *Musical Form, Forms & Formenlehre: Three Methodological Reflections*, 35.

changes in pitch centers or scalar areas remains one way of indicating formal boundaries. Third, formal theories of Classical music rely on the particular compositional strategies shared by composers of a particular era.[26] One of the defining characteristics of Caplin's methodology is its establishment of rigidly defined, idealized formal types, from sentences and periods to forms that encompass an entire movement, such as sonata or rondo forms. In the context of twentieth-century music, the identification of such rigid formal types would be less than useful, but the idea of function remains operative.

Theorists have taken a variety of different approaches to post-tonal form, which can be roughly placed into four categories: experiential or temporal approaches, segmenting approaches, theory-based approaches, and composer-based approaches. Each of these approaches prioritizes a different set of issues, and accordingly each has its strengths and weaknesses. Further, the boundaries between these approaches are not sharply defined, and indeed some analyses draw on more than one of them. That said, each of these approaches presents a different view of post-tonal music; thus, each deserves its own explication.

1.2.2.1: Experiential approaches

Experiential or temporal approaches focus on the perception of materials, in time, by listeners. James Tenney's work in the area of post-tonal form, *Meta + Hodos* (first published 1986), presents an experiential approach to the topic. Tenney proposes a method of musical analysis based on Gestalt psychology, in which the primary unit of music is sounds or sound-

[26] The idea of "compositional strategy," from Lawrence Zbikowski's work on musical syntax, refers to how composers arrange musical materials in order to express or communicate something specific. Zbikowski, *Conceptualizing Music: Cognitive Structure, Theory, and Analysis*, 138.

configurations. Tenney's basic unit is the *clang*, which refers to "any sound or sound-configuration which is perceived as a primary musical unit—a singular aural *Gestalt*."[27] The subordinate parts of a clang are referred to as *elements*, and the term *sequence* refers to a succession of clangs "set apart from other successions in some way, so that it has some degree of unity and singularity, thus constituting a musical *Gestalt* on a larger perceptual level or temporal scale."[28] From this primary temporal gestalt unit, Tenney builds his formal theory based on a hierarchical network of sounds, motives, phrases, phrase groups, and so on. Tenney largely limits his observations to the more "objective" aspects of musical experience, whereas in what follows I intend to embrace possible "subjective" aspects of post-tonal listening, such as the influence of past musical experiences with tonality.

Tenney also works from the idea that twentieth-century music gives great importance to all the various parameters of musical sound, to the extent that parameters other than pitch carry more of the responsibility for the articulation of musical ideas. Tenney calls for a broadening of our conceptual framework, to include shifts of our "parametric focus" to non-pitch parameters. The trend of shifting analytical focus from "primary" to "secondary" parameters has gained a great deal of traction in recent years in the work of other scholars of post-tonal music; I discuss some of this work in the following sections.

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[27] James Tenney, *Meta-Hodos and Meta Meta-Hodos: A Phenomenology of 20th Century Musical Materials and an Approach to the Study of Form* (Frog Peak Music, 1988), 23.
[28] Ibid.

Other experiential accounts of post-tonal form include work on perception and cognition, such as Irène Deliège's work on perceptual approaches to contemporary musical forms, or the embodied approach taken by Candace Brower in her analysis of Varèse's *Density 21.5*.[29]

1.2.2.2: Segmental approaches

Segmentation-based approaches focus on the process of disentangling and categorizing the musical materials themselves. One example of this approach is Patricia Howland's recent theorization of integrated parametric structures (or IPSs)—that is, coherent small-scale structures defined by different musical parameters.[30] Howland identifies an "urgent need to develop a formal theory" for music of the postwar period due to the "near-absence of theoretical investigation of post-tonal form."[31] She suggests that analysts "shift our attention to what are sometimes referred to as secondary parameters" like temporal and spatial density, dynamics, register, and timbre, in order to better understand the formal structure of this music. Her model for understanding small-scale structures in the music of Babbitt, Carter, and Stockhausen employs the concept of "integrated parametric structures." Howland identifies and explores five types of IPS, each identified by the parametric technique that provides them with coherence: tension/release, departure/return, symmetric, directional, and steady-state. This IPS-based theory provides a useful starting-point for a theory of post-tonal form, but does not go into detail

[29] Irène Deliège, "A Perceptual Approach to Contemporary Musical Forms," *Contemporary Music Review* 4, no. 1 (1989); Candace Brower, "Pathway, Blockage, and Containment in 'Density 21.5'," *Theory and Practice* 22/23 (1997-98).
[30] Patricia Howland, "Formal Structures in Post-Tonal Music," *Music Theory Spectrum* 37, no. 1 (2015): 71.
[31] Ibid.

about how these parametric structures relate to each other or inform the listener's account of the piece of music as a whole.

An earlier example of a segmental approach can be found in two pathbreaking articles by Christopher Hasty published in the 1980s, which together present a theory of phrase formation in post-tonal music. In "Segmentation and Process in Post-Tonal Music," Hasty deals with the issue of segmenting post-tonal works into constituent pitch-class sets by selecting structurally significant relationships between intervals. He creates multiple segmentations through recourse to the musical *domains* of timbre, dynamics, intervallic associations, register, and contour. The *structure* of these domains, Hasty argues, depends on their continuity or discontinuity: a change of value in one domain will create a discontinuity that forms a perceptual object. Hasty thus defines *segmentation* as "the process of structural formation, the action of structures producing formal articulations."[32] For Hasty, then, structure and segmentation are closely related, so that segmentation is understood as inherent to the work rather than imposed on it by the analyst. This is a fundamental difference between Hasty's approach and my own: as will emerge in the sequel, I do not consider formal boundaries as inherent within the composition, and draw a distinction between structure, as conceived by the composer, and form, as experienced and constructed by the listener.

In a second article, "Phrase Formation in Post-Tonal Music," Hasty considers form at the level of the phrase or phrase-group in two works by Stravinsky and Webern. The phrase, in Hasty's understanding, is a fundamental musical unit that arises out of perceptual constraints,

[32] Christopher Hasty, "Segmentation and Process in Post-Tonal Music," *Music Theory Spectrum* 3 (1981): 59.

within which "groupings of elements cohere to create a sense of wholeness or completion."[33] The phrase is thus defined by its attainment of structural closure, "in which all elements are related and derive their structural meaning from one another."[34] Hasty sees phrases as made up of constituents, articulated by discontinuities within domains, which gradually become integrated as constituents of larger units and so form structural connections with surrounding events. While I agree with Hasty's characterization of the phrase, I am less convinced by his account of our understanding of phrases as they relate to each other in time. Hasty makes a strong distinction between past, present, and future in listening to phrase structure. Phrases may be interpreted in light of previous, remembered phrases "as a whole, given some common structural basis;" as these related phrases form sections, these two may be related to each other as wholes.[35] Phrases themselves do not admit of any ambiguity, however; while constituents may bear ambiguities and be open to interpretation, the closure of that phrase fulfills certain possibilities while denying others. In my own work, I consider my idea of formal functions in post-tonal music to be less constricted; functions within phrases may relate to each other, they may be retrospectively reinterpreted to take on new meanings, and they may remain open to future alterations.

More recently, Dora Hanninen has set out a theory of segmentation and categorization in two articles—"Orientations, Criteria, Segments: A General Theory of Segmentation for Music Analysis" and "Associative Sets, Categories, and Music Analysis"—and a monograph, *A Theory of Musical Analysis: On Segmentation and Associative Organization*. In these writings, Hanninen defines three domains of discourse in music analysis—sonic, contextual, and structural—and five

[33] "Phrase Formation in Post-Tonal Music," *Journal of Music Theory* 28, no. 2 (1984): 171.
[34] Ibid., 172.
[35] Ibid., 187.

levels—orientations, criteria, segments, associative sets, and associative landscapes. The sonic and contextual domains, which pertain to psychoacoustic attributes of individual sound events and to similarities among groups of sound events respectively, are essential to musical experience. Hanninen defines the structural domain as concerning the systematization of relationships with respect to a specific music theory. From Hanninen's perspective, then, my own work falls largely into the contextual domain. Hanninen also defines three different orientations or modes of attending in music: a disjunctive orientation attends to differences and boundaries, an associative organization attends to categorization and chunking, and a theoretic orientation deals with conceptual representations of groupings in a composition, supported by an abstract conceptual system.

1.2.2.3: Theory-based approaches

Theory-based approaches rely on pre-existing theories or analytical tools in approaching post-tonal music. Examples of a theory-based approach include both Martin Gümbel's and Jean-Jacques Nattiez's analyses of Varèse's *Density 21.5*, which I address in detail in section 2.1 below. Another example is Candace Brower's analysis of the same piece, in which she develops a theoretical model for applying the concept of image schemas to music, and then applies that theoretical model to the analysis of *Density*. Theory-based approaches are not as ubiquitous in post-tonal analysis as in tonal music, since post-tonal music often resists generalization. Approaches specific to composers or groups of composers are more common. My own approach is related to theory-based ones in that it draws on pre-existing theories of Classical formal function, adapting the concepts therein for post-tonal contexts. However, in adapting theories of

Classical form and function for post-tonal music, my approach necessarily excludes many aspects of existing formal theories.

1.2.2.4: Composer-based approaches

Composer-based approaches rely on sketch materials, historical documents, or other historical material in order to explicate form from the perspective of a single composer or group of composers. This approach—which can be seen, for example, in Christoph Neidhöfer's work on Luciano Berio's unique approach to serialism—looms large in the literature on post-tonal form.[36] The diversification of genres post-1945 also means that many of these approaches tend to be developed on an ad hoc basis and are more or less specific to a composer or group of composers. Composer-based approaches play the smallest role in my own analytical approach, as my attention rests primarily with the listener. Throughout this dissertation, however, I hope to show how a composer-based approach might come into alignment with a listener-based one at moments when a work's compositional structure and musical surface interact with one another in a perceptible way.

1.2.3: Summary of Previous Approaches

Any theory of post-tonal formal function must be in dialogue with each of the preceding perspectives to some degree. For example, my analytical method takes as given some of the principles that guide Hasty's approach to segmentation. Additionally, many of my analyses engage with the parametric structures identified as significant by Howland. Of course, given the

[36] Christoph Neidhöfer, "Inside Luciano Berio's Serialism," *Music Analysis* 28, no. 2-3 (2009).

listener-focused nature of my methodology, I also draw extensively on existing research in experiential approaches to post-tonal form. In the following analysis of Edgard Varèse's early twentieth-century composition for solo flute, *Density 21.5*, I combine these existing frameworks with my own listener-centered perspective on formal functionality, based on the idea of affordance outlined above. In analyzing this classic work of the twentieth century, I ask how listener expectations and predictions interact with the musical materials furnished by the composer and performer. I focus on the level of small units, interrogating the process of determining formal functionality at the most immediate level of perception, as experienced moment by moment in time.

1.3: Varèse, Density 21.5

1.3.1: Overview

Edgard Varèse composed *Density 21.5* in 1936, for the premiere of Georges Barrère's platinum flute. Varèse revised the work ten years later, in 1946; the title refers to the density of platinum, which is close to 21.5 g/cm^3. The opening part of *Density 21.5* (A, mm. 1-18) features a gradual ascent from the lowest register of the flute over a series of phrases separated by short silences and breaths. This section establishes a sentential thematic structure with symmetrical phrases, which achieve closure through the repetition of units that hold multiple parameters in common. With respect to pitch and interval class relationships, interval classes (ICs) 1 and 2 are often grouped together and provide the primary motivic material, while IC 6 (the tritone) provides contrasting motivic material. Varèse also briefly introduces a third interval class in the A section, IC 3, as a variant on the motive featuring IC 6.

Following the A section, in m. 18 a new starting pitch and different phrase structure herald the start of a new section. This contrasting B section (mm. 18-40) emphasizes IC 3 in particular, which contrasts with the predominant interval class material in the A section. By m. 24 at the very latest it becomes evident that a new section has begun, largely due to the introduction of the innovative percussive key click technique in mm. 24-28. Due to the frequent silences and disjointed nature of the musical material in these measures, however, previous analysts have struggled to interpret this section. The remainder of the B section takes place at a slower tempo (quarter = 60), and consists of three phrases, each lasting approximately four measures.

In m. 41, the return of IC 1 and 2, as well as the return of the original motivic material and phrase structure of the first theme, indicate a large-scale thematic recurrence. The A section material is altered when it returns, however, through the incorporation of both thematic and intervallic elements from the B section—including the use of whole tone collections—to generate formal closure.

There is a long and rich history of analyzing *Density 21.5*, and analysts have approached the work using a variety of theoretical frameworks and perspectives. In what follows, I explore a few key essays from this intellectual tradition to demonstrate some of the challenges of understanding form as it is expressed in this particular work as well as in post-tonal music more broadly.

1.3.1.1: Early Approaches to Density 21.5

The earliest analysis of *Density 21.5* of which I am aware appeared in *The Score* in 1957. At the very end of his "An Introduction to the Music of Edgar Varèse," Marc Wilkinson provides a dense, section-by-section account of *Density* in a scant page and a half, furnishing the reader with the full score of the work as well. Wilkinson concentrates on the harmonic and melodic structure, characterizing the elements of rhythm and dynamics as "not particularly problematic."[37] The analysis itself is concerned for the most part with what I call the compositional scaffolding of the work, rather than taking as its goal an experiential, segmental, or theory-based account. Wilkinson makes a number of assumptions in his analysis, most of which are not well supported by the musical evidence, but which reveal important elements of his own formal thinking. For example, of the final measures of the piece, he writes "the final cadential phrase neutralizes the relations established during the piece […] It becomes a resolution of all centres and all polarities, and dissolves the tendencies toward harmonic motion."[38] While this characterization falls short of capturing the effect of the work's final measures, it does reveal that Wilkinson thought about Varèse's music in terms of formal function.

The next attempt at an analysis of *Density*, by Martin Gümbel, comes from the first volume of the *Zeitschrift für Musiktheorie*.[39] In this brief analysis Gümbel takes a "statistical" approach to the work. He makes a number of assumptions about the nature of the phrases, stating simply that the formal schema of the phrases takes an a a' b shape, which he sees

[37] Marc Wilkinson, "An Introduction to the Music of Edgar Varèse," *The Score* 19 (1957): 17.
[38] Ibid., 18.
[39] Martin Gümbel, "Versuch an Varèse Density 21.5," *Zeitschrift für Musiktheorie* 1, no. 1 (1970).

reproduced on the scale of the work as a whole. However, Gümbel sees this sort of formal analysis as inadequate for a deeper understanding of the work, thus justifying his use of statistical methods in order to delve deeper into the work's compositional structure. Gümbel's approach is a theory-based one, in which he applies a pre-existing analytical technique to the composition. In this case, the approach is a particularly shallow one, with little interpretation of the data generated.

1.3.1.2: Nattiez and Beyond

Jean-Jacques Nattiez's massive semiological analysis of *Density 21.5* appeared in full, translated from the original French by Anna Berry, in the first volume of *Music Analysis* in 1982. Most of the publication is devoted to the analysis of the work's neutral level, while the end of the article briefly addresses the poietic and esthesic levels.[40] This analysis uses both the theory-based and segmenting types of approach. Nattiez partitions the work into units, from the smallest to the largest, dividing the work into 83 distinct units on the smallest level and into 3 parts on the largest.

The most revealing moments of Nattiez's analysis come, for me, when he briefly abandons the veneer of pseudo-scientific objectivity that accompanies analysis on the "neutral" level (see Bernard's critique of Nattiez's analysis, summarized below, for more on this) in favor of

[40] The neutral level is defined by Nattiez as "a descriptive level containing the most exhaustive inventory possible of all types of configurations conceivably recognizable in a score." The poietic level deals with the "process of production by which the work unfolds" and the esthesic with the "processes of perception" to which the work gives rise. Jean-Jacques Nattiez and Anna Barry, "Varese's 'Density 21.5': A Study in Semiological Analysis," *Music Analysis* 1, no. 3 (1982): 244-45.

speculating on how units relate to each other. This first occurs early in the analysis in the discussion of the work's first few measures, where Nattiez introduces his concept of "deception." Nattiez does not seem to use the word as it is typically employed with respect to the "deceptive cadence" or "*cadence rompue*" in Rameau's terminology.[41] Instead, by "deception" Nattiez means that the events at the beginning of m. 2 function to delay the passage of F♯ to G.[42] This is the first suggestion of something akin to a formal function in Nattiez's analysis. Nattiez further develops his concept of deception in his broader description of the material in mm. 1-11. He sees the D in m. 11 as an important goal note that divides the B section of his "first part" into two halves.[43] He identifies the pattern of "short-short-long" as an equivalence class that relates the opening gesture to its variation at the beginning of m. 9, and sees the D as prepared through a developmental procedure of upward semitonal motion that characterizes the material from mm. 1-11. For Nattiez, the D ♭ 5 of m. 9 acts as "a kind of preparation for the D in b.11. In a sense, the play of permutations on two notes contributes to the principle of deception: it delays the appearance of a predictable event, the ascent to D."[44]

Later, Nattiez notes other kinds of functions, such as the summarizing function of mm. 15-17, a characterization that aligns with my own analysis below.[45] His most explicit mention of

[41] As Bernard somewhat aggressively states, "Nattiez is not entitled to speak of any kind of operative deception in Varese's music, which is not part of a common practice with expected norms." Jonathan W. Bernard, "On 'Density 21.5': A Response to Nattiez," *Music Analysis* 5, no. 2/3 (1986): 223.
[42] Nattiez and Barry, "Varese's 'Density 21.5': A Study in Semiological Analysis," 251.
[43] In Nattiez's first part, the first three units, the A section, comprise mm. 1-5, while the B section contains six units: the first three comprise mm. 6-11, the second three mm. 12-17. The C section of the first part contains mm. 18-23.
[44] Nattiez and Barry, "Varese's 'Density 21.5': A Study in Semiological Analysis," 261.
[45] Ibid., 265.

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

> the permutation is stagnant, delaying the appearance of a new note which is generally a semitone higher; or oblique paradigms allow the piece to progress; or rapid flights lead to a climax. Between them, these types set up a dialectic: the permutation acts as a brake on development—in relation to the oblique paradigms and the flights it favours a period of rest rather than moments of tension. Varèse restores, on another level, what the tonal system is no longer able to offer, by alternation of distinct functional types.[46]

Nattiez's "functions" in the context of *Density 21.5* are neither particularly well defined nor employed analytically in a consistent manner, and they generally undermine any possible objectivity suggested by the idea of a neutral level. They do, however, provide a glimpse into the potential advantages of approaching a piece like *Density* from the perspective of formal function, despite the absence of tonal idioms.

Jonathan Bernard's critique of Nattiez's semiological analysis, and his own analysis of *Density*, is founded on his insistence that the analyst account for the composer's thoughts and intentions in analyzing the work. His main criticism of Nattiez is that the assumptions governing his neutral-level analysis are not "at all neutral or value-free but rather are informed by surface-oriented melodic examination, a strong bias for perceived 'recurrence' of patterns, and relatively traditional notions of form."[47] He argues that a "comprehensive examination of Varèse's own statements about his work" will provide far better tools for analysis, based on the composer's understanding of his music as "spatial."[48] Bernard thus identifies four operations to describe the relationships between Varèse's sound-masses: *projection*, the replication of any vertical entity in another spatial location; *rotation accompanied by projection*, when a structure "defined by three or

[46] Ibid., 283.
[47] Bernard, "On 'Density 21.5': A Response to Nattiez," 217.
[48] Ibid., 217-18.

more points" is "turned 180 degrees within the 'plane' of the music;" *expansion*, when the boundaries of occupied space are enlarged by the same number of semitones at the upper and lower limits of the space; and *contraction*, the opposite of expansion.[49] Bernard's use of the composer's own writings in making analytical determinations suggests an approach that is primarily composer-based. Given Bernard's focus on the structure of the composition as a whole, his approach may also be thought of as theory-based and rather abstract.

1.3.2: Analysis

If we now reexamine the work's opening, we can see how the composer's framework and the listener's groupings and expectations interact to shape the work's emerging form. The work begins with a dynamic three-note double chromatic neighbor motive, straining upwards from the lowest register of the flute, shown in Figure 1.5.

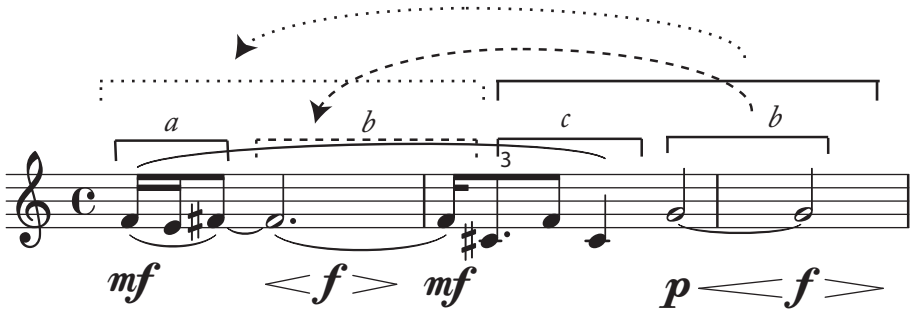

Figure 1.5: Varèse, *Density 21.5*, mm. 1-3: arrows indicate retrospective understanding of formal event

This first idea, and its continuation in the form of a crescendo and decrescendo on the sustained F♯4, create a unit, the first half of a thought that finds completion in mm. 2-3. The

[49] Ibid., 218.

return to a sustained note with a hairpin dynamic after a third idea establishes retrospectively the presence of three main motives in these first few measures. In Figure 1.5, I have labeled the first idea motive *a*, which groups together ICs 1 and 2; the second is *b*, the sustained note with a dynamic swell; the third, *c*, leaps down and alternates quickly between C♯4 and F♯4. In m. 3, the flute returns to motive *b*, this time sustaining the note G4; the return of motive *b* at this moment, with the same dynamic marking as in m. 1, establishes these events as one cohesive "basic idea," shown by the arrow with a dashed line connecting the second sustained note (*b*) with its predecessor in m. 1.[50] The thought achieves provisional closure through the repetition of *b*, followed by the introduction of silence in the form of a rest lasting one quarter note. Having established this unit as a basic idea, the listener may predict that this basic idea will be followed either by similar material, suggesting a repetition of the idea, or by contrasting material. In either case, I argue that the listener will share my sense, upon reaching the pause in m. 3, that the function of "beginning" or "opening" is still in operation at this moment, and that the following material will prolong that function.

Imagine if the sustained G4 had *not* concluded this first phrase, and thus had not retrospectively prompted the listener to consider, at least provisionally, the presence of a single basic idea in mm. 1-3, one that contains three distinct motives *a*, *b*, and *c*. Figure 1.6 conceives of a possible alternate ending for the first phrase, in which motive *a* reenters after motive *c*. This

[50] "Basic idea" as in, a short, complete musical idea that introduces the elementary motivic material of the piece in a single phrase or gesture and acts as a starting point for a work. According to Caplin (following from Schoenberg), the basic idea is the "fundamental building block" of a theme, and often contains several distinct motives, which are developed over the course of the theme. Caplin, *Classical Form: A Theory of Formal Functions for the Instrumental Music of Haydn, Mozart, and Beethoven*, 9-10.

recomposition of the first measures prompts an entirely different understanding of the formal functions at play, in which the repetition of motives *a* and *c* in a compressed and partially inverted form in mm. 2-3, immediately after their initial presentation in mm. 1-2, suggests that the listener reinterpret the first two measures as a basic idea that is immediately shortened and repeated. Now the basic unit of the work is much shorter, since the first three measures no longer suggest a single, incomplete idea, but a complete opening phrase containing two units that suggest the function of "beginning." The listener may now have a different expectation for the material that follows: they may predict that contrasting material will enter, material that moves the piece along and draws it further away from the familiar intervallic, rhythmic, and motivic space established in the first three measures. For the moment, however, let us return to Varèse's original composition, and the material that follows the unaltered mm. 1-3.

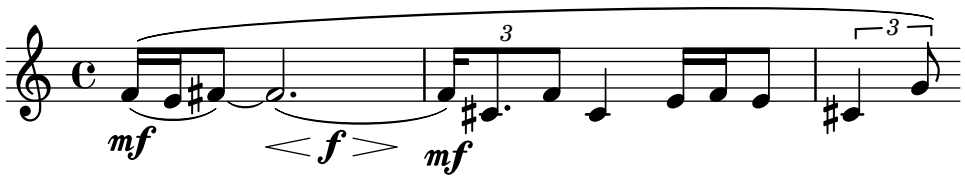

Figure 1.6: Recomposition of Varèse, *Density 21.5*, mm. 1-3

In Varèse's original, the rest in m. 3 is immediately followed by the entrance of motive *a*, which begins a varied repetition of the basic idea, shown in Figure 1.7. This varied repetition confirms the cohesiveness of the basic idea in mm. 1-3 by submitting the individual elements to an expansion. Motive *a* is subject to a linear expansion through its continued melodic ascent to G, while motive *c* develops in the vertical realm, expanding from IC 5 to 6 (mm. 3-4). The repetition of the basic idea is once again symmetrical: motive *a* returns in an inverted form at the

end of m. 4, and a repetition of the expanded version of motive *c* closes the variation on the basic idea as a whole.[51]

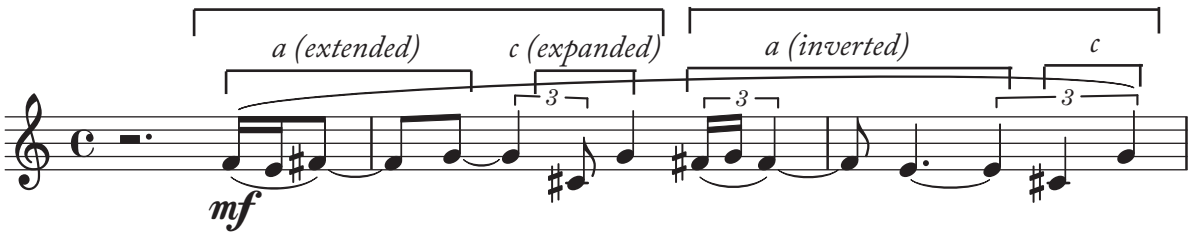

Figure 1.7: Varèse, *Density 21.5* mm. 3-5

In m. 6, we hear the closing gesture of the previous phrase recast as a beginning through its restatement after a pause and its continuation as part of the next phrase (shown in Figure 1.8). The material that follows draws on motivic elements from the basic idea (a rising stepwise line), recontextualized within the octatonic scale. While the repetition of the basic idea hinted at the octatonic scale as a background collection in the descending portion (second half of m. 4 to m. 5), the music of m. 6 onward confirms it. This phrase also revisits and emphasizes IC 3 (introduced briefly between motives in m. 5) in the form of an oscillation between B ♭ and G in mm. 7-8: this oscillation recalls the contour and character of motive *c* from the opening basic idea and completes the outline of the fully diminished seventh chord C ♯ E G B ♭ . The original motive *c* was expanded from IC 5 to IC 6 in the basic idea's repetition, so the contraction to IC 3

[51] George Perle has noted that the first five measures of the piece outline the C♯ to G tritone, which is in turn divided by E natural. Perle argues that this division exists from the work's opening, in which the first note, F, is nothing more than an upper neighbor to the structural note E; this C ♯ E G diminished triad is confirmed in m. 5, and subsequently expanded to a fully diminished seventh chord with the addition of B ♭ in m. 6. While my own interpretation clearly does not view the initial F as incidental, I do agree that the introduction of IC3, bridging the gap between motive *a* and the tritone of motive *c* in m. 5, is crucial. George Perle, *The Listening Composer*, Ernest Bloch Lectures (Berkeley, California: University of California Press, 1990), 12.

in mm. 7-8, and the use of an octatonic background collection, lend mm. 6-8 a feeling of urgency. The themes and motives of the A section are so tightly knit, with a high degree of varied repetition and little obvious contrast, that small differences within phrases take on heightened meaning.

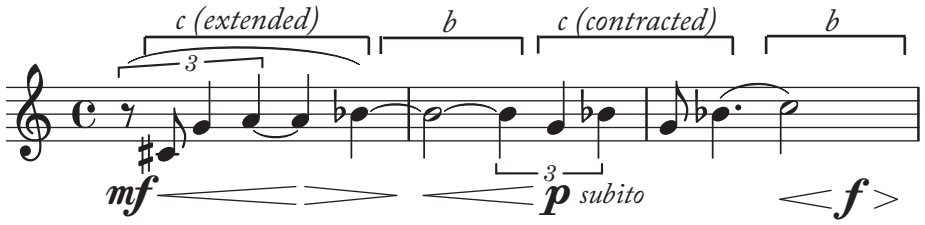

Figure 1.8: Varèse, *Density 21.5,* mm. 6-8

The phrase from mm. 6-8 achieves conditional closure through the repetition of motive *b*, which was already associated with internal divisions when it ended the basic idea, retrospectively allowing us to understand the basic idea as internally divided by motive *b* into two smaller units. Motive *b* now also divides this first continuational phrase into two smaller units: first an internal division in m. 7, with the dynamic arch-shape reversed (decrescendo-crescendo), followed by a more conclusive iteration at the end of m. 8, with the original dynamic marking of motive *b* restored.

We can now revisit my hypothetical recomposition of the first measures, in which the first three measures (a basic idea and its foreshortened repetition) are now promptly followed by material from the original mm. 6-8, fulfilling the listener's expectation that the complete presentation of ideas in mm. 1-3 will be followed by material that develops these ideas in a continuational manner. The fully recomposed mm. 1-5 may be seen in Figure 1.9, comprising a much shorter presentation of materials than is found in the original. One notable feature of the recomposition is that I have kept mm. 3-5 nearly identical to the original mm. 6-8, only

shortening the note value of the intermediary statement of motive *b* on B ♭ 4. Despite the fact that this change is minor, when combined with the elimination in the first phrase of the concluding motive *b* (replaced with the repetition of motives *a* and *c*) it significantly reduces the sense of closure when motive *b* returns at the end of m. 5. With such a short first phrase and a weak sense of closure, a listener might now predict that the entire first five measures form one larger unit, which may be merely the first half of a full phrase. Figure 1.10 shows a possible second half of the phrase.

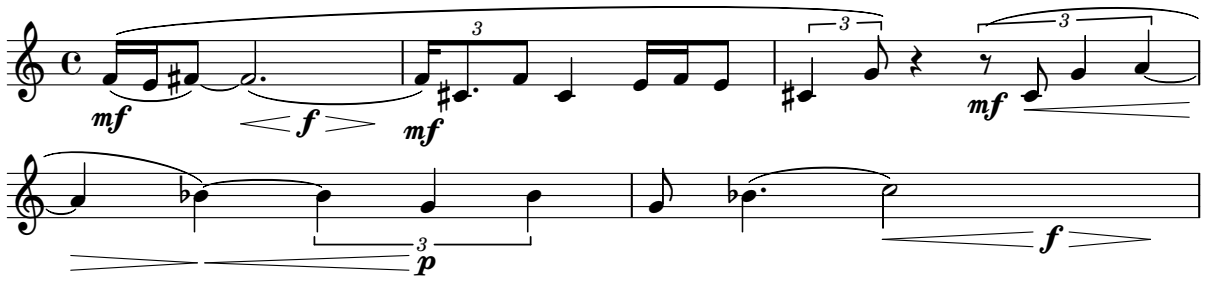

Figure 1.9: Recomposition of Varèse, *Density 21.5*, mm. 1-5

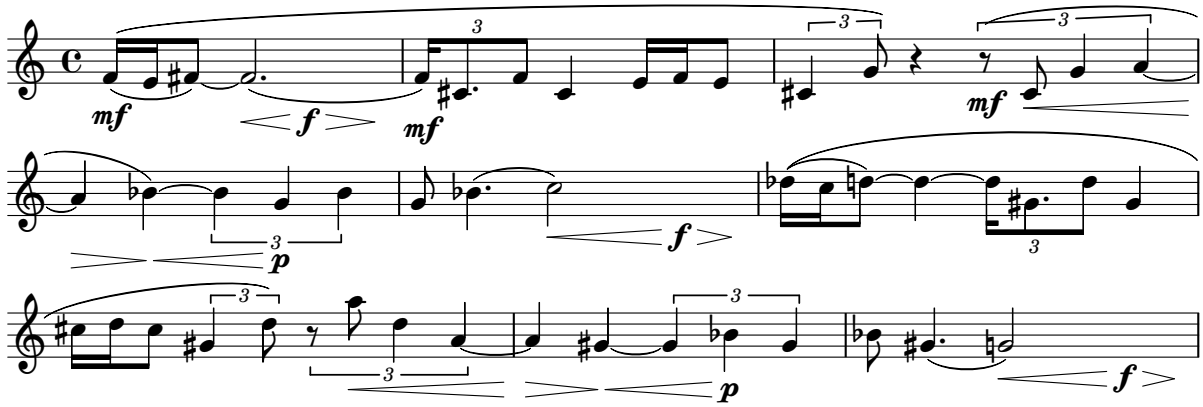

Figure 1.10: A possible second half of a phrase spanning mm. 1-9 of *Density 21.5*

In the recomposed version of mm. 1-9, mm. 1-5 as a whole now act as an antecedent phrase; the repetition of motive *a* in m. 6 reinforces the listener's assessment of the previous phrase as functioning to open a longer unit, rather than being sufficiently closed on its own.

The material of mm. 6-12 spins out the three motives in varying configurations, pushing ever higher in register and becoming more intense through each varied repetition. In my view, this section takes on the function of a middle or "continuation" for the listener, due to its use of fragmentation, repetition, and speeding up of the rhythmic values, all of which increase the sense of tension or urgency in anticipation of closure. My "continuation" thus spans three units that decrease in length: the first from mm. 6-8, which emphasizes the octatonic collection and contracts motive *c*, the second from mm. 9-11, and the third from the end of m. 11 through m. 12.

There is certainly a distinct sense of gradual ascent through the first eleven measures of *Density*, but in mm. 6-8, the first phrase of my continuation and the first two units of Nattiez's section B, that ascent becomes part of the octatonic collection, and no longer operates purely by semitone motion. When I hear the D natural in m. 11, then, I do not hear it as the predictable, logical next step in a progression; rather, it comes a sudden break from the octatonic collection, ascending from D ♭ by semitone rather than whole tone.[52] The arrival of the D prompts a sudden and dramatic spatial expansion into the realm of a new tritone, that between D and G♯. This measure of wild, uncontrolled leaps, as well as the preceding two measures, which oscillated between D ♭ and C, call to mind the functions of fragmentation and disintegration, augmenting the sense of urgency and prompting my comparison with the function of continuation.

[52] This feeling of surprise upon the arrival at the D natural is supported by other analyses of the work, including George Perle's and Jonathan Bernard's. Both Perle and Bernard see mm. 1-10 as partitioning the octave symmetrically by tritone, first between C♯ and G, then between G and D ♭ . Perle views breaking that symmetry—through the arrival of D in m. 11—as the only way the composer could continue the piece.

As revealed in Figure 1.11, mm. 13-14 combine several features previously associated with closure (a long held note, dynamic swell, and emphasis on IC 6) with the octatonic collection, providing a summary of the preceding material in a single, concise gesture, while also continuing the spatial expansion brought about by mm. 11-12. The next measures repeat and confirm this closure, using only ICs 1 and 2 and recalling both the motivic material and phrase structure of the opening basic idea. By repeating the functions of summary and closure (also alluded to by Nattiez in his use of the phrase "rounding off and summing up" in reference to these measures[53]) and by echoing the contour of the material in mm. 13-14, mm. 15-17 confirm that a structural close has been achieved and encourage the listener to anticipate the introduction of new or contrasting material.

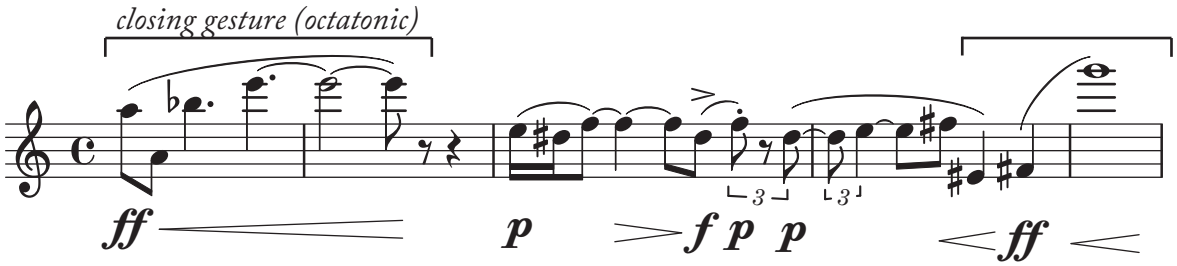

Figure 1.11: Varèse, *Density 21.5,* mm. 13-17

Measure 18 introduces a new starting pitch (B4) in a contrasting register from the preceding material, and features a new type of phrase structure based on inversion around the starting pitch. After a reference to the rhythm of motive *a* (m. 21), the newly introduced idea is subjected to fragmentation until, in m. 23, only a single repeated pitch remains. This repeated pitch, played *piano*, is followed by the longest silence heard so far, out of which emerges a

[53] Nattiez and Barry, "Varese's 'Density 21.5': A Study in Semiological Analysis," 265.

passage that features the use of percussive key clicks.[54] Over the course of mm. 24-28 the phrase structure is not particularly clear,[55] but by way of compensation the passage projects IC 3 in a fairly straightforward manner.

The next phrase, spanning mm. 29-32 and shown in Figure 1.12, consists of a new idea repeated twice and followed by a contrasting idea and a closing idea, which again makes reference to the octatonic collection and careens upwards through a series of leaps, referencing the trajectory of the closing idea of the main theme. A second phrase, from mm. 32-36 (Figure 1.13), features a simple basic idea (outlining a seventh chord) that is repeated and fragmented. Finally, from mm. 36-40 (Figure 1.14), the same process occurs with an even simpler basic idea—the single, descending pitch interval 9 (IC 3), a gesture that recalls the opening gesture of the section's first phrase (mm. 29-32)—which is then fragmented and dissolved into ICs 1 and 2. The entire B section thus consists of a gradual process of simplification: from more complicated ideas and phrase structures in mm. 18-28, to simpler phrase structures and increasingly simple ideas in mm. 29-40. At the end of m. 40, the languid gesture based on the whole-tone collection reinforces the listener's sensation that the B section has undergone a process of dissolution and come to an end.

[54] By contrast, Nattiez interprets the material from mm. 18-23 as belonging to his "first part," although he also acknowledges that the passage possesses a transitional quality.
[55] In Hanninen's terminology, this passage features low-profile associative organization Dora A. Hanninen, "Associative Sets, Categories, and Music Analysis," *Journal of Music Theory* 48, no. 2 (2004).

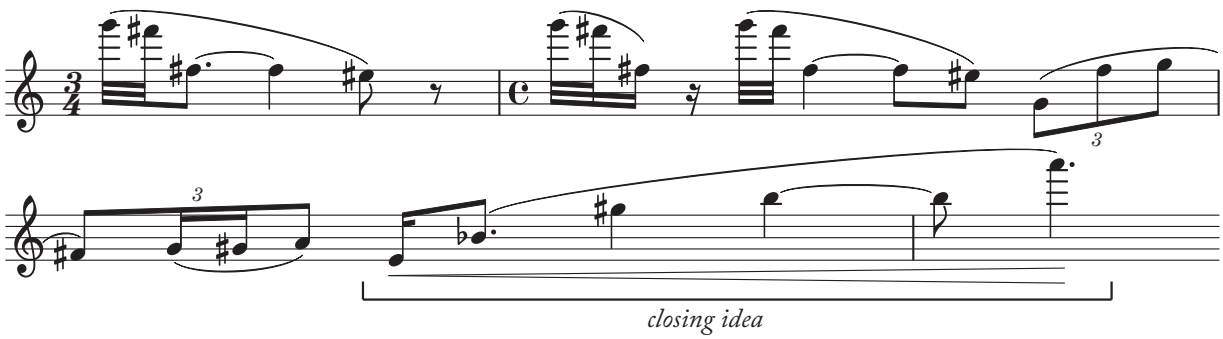

Figure 1.12: Varèse, *Density 21.5*, mm. 29-32

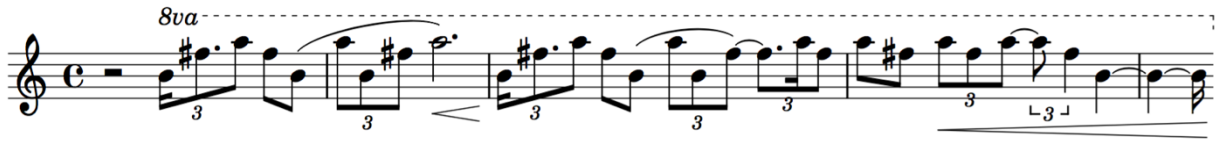

Figure 1.13: Varèse, *Density 21.5*, mm. 32-36

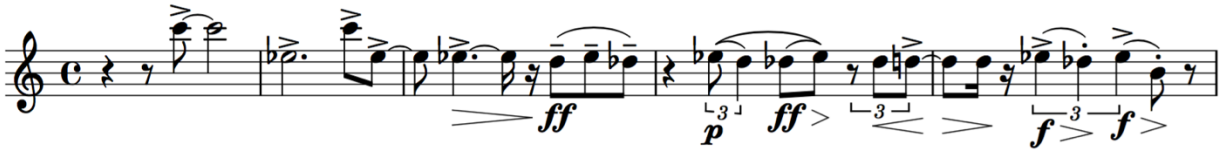

Figure 1.14: Varèse, *Density 21.5*, mm. 36-40

When the work's first motive enters in its original rhythm in m. 41 after the dissolution of the B section (Figure 1.15), it strongly evokes a sense of return: return to the register, motivic and intervallic material, and phrase structure of the A section. Bernard dismisses Nattiez's characterization of this moment as a kind of "recapitulation" as prompted by a "strong bias for perceived 'recurrence' of patterns, and relatively traditional notions of form."[56] It seems

[56] Bernard, "On 'Density 21.5': A Response to Nattiez," 217.

unrealistic, however, to ignore the obvious relationship of this moment to the opening of the work as a whole, and the formal implications this relationship would encourage in a listener. The feeling of return is confirmed by the immediate repetition of the (shortened) basic idea at the end of m. 42, and by the closing idea that follows directly afterwards, in mm. 44-45. The closing idea, which is based on the octatonic collection, recalls closing gestures from the A section, and ends by combining IC 6 and IC 3 to outline a diminished triad. Although IC6 played a crucial role in the A section and IC 3 was heavily emphasized in the B section, we hear them brought together for the first time in mm. 44-45, contributing to the sense that this section has a summarizing function.

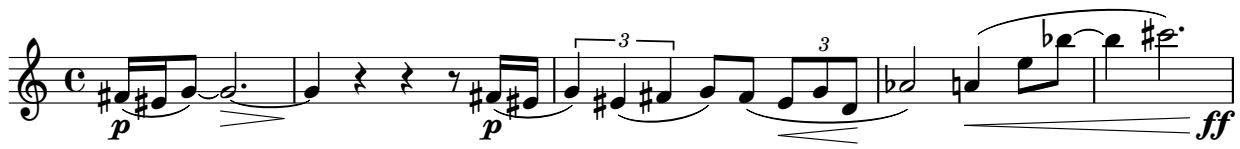

Figure 1.15: Varèse, *Density 21.5*, mm. 41-45

Given the functions of return and summation that dominated mm. 41-45, m. 46 may come as a surprise, as it brings about the return of material from the B section (Figure 1.16). The descending minor third interval clearly recalls mm. 29-32, except that now Varèse has climbed even higher in pitch, to the very top of the flute's range (D7-B6). The lengthy belaboring of this interval in different rhythms over mm. 46-50, eventually dissolving into a repeated D7 in m. 49, may give the listener cause to doubt that this passage is, after all, fulfilling the function of a recapitulation. These repeated alternations between D7 and B6 are followed by a sudden drop to A ♭ 4, opening a registral chasm (and forming IC6, once again playing on the relationship between IC3 and IC6), forming IC6 with the preceding D.

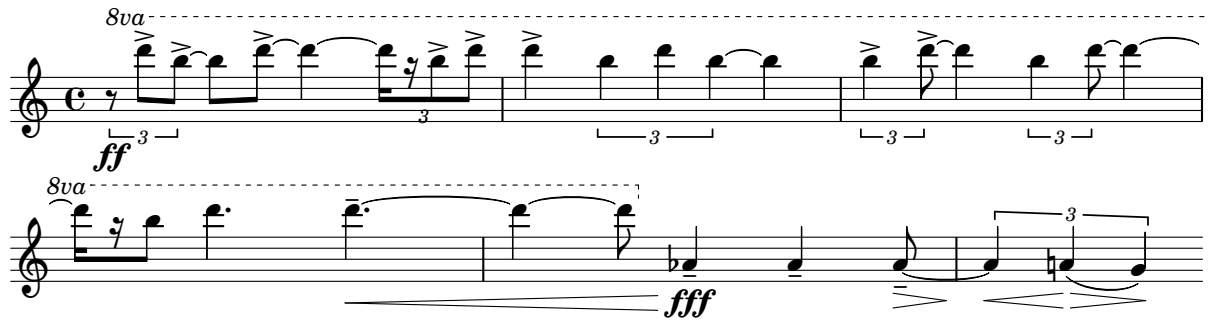

Figure 1.16: Varèse, *Density 21.5*, mm. 46-51

The dramatic repetition of the diminished triad in completing a phrase from the B section may reinforce the sense of summation that was initially weakened by the return to the B section material. The summarizing quality continues with the restatement of the descending motive from the B section (recalling mm. 29-32 both in rhythm and contour), altered to include the important IC6. This phrase (mm. 51-55, Figure 1.17) is the final well-formed phrase in the piece, and recalls many of the work's important features: the motive featured in mm. 29-30 of the B section (which was derived from motive *a*), the octatonic collection, and a closing idea (m. 55) that makes reference to the contour of the closing idea of the A section. First, an idea (the B section motive) is stated and repeated; next, the contour of the motive is reversed and the interval widened to an ascending perfect fifth. This reversal precedes another dramatic descending leap to the register that began the entire work, followed by an ascending octatonic fragment, referencing the contrasting idea of mm. 30-31. The phrase ends with the closing idea, transposed down by a major tenth from the closing idea in mm. 31-32.

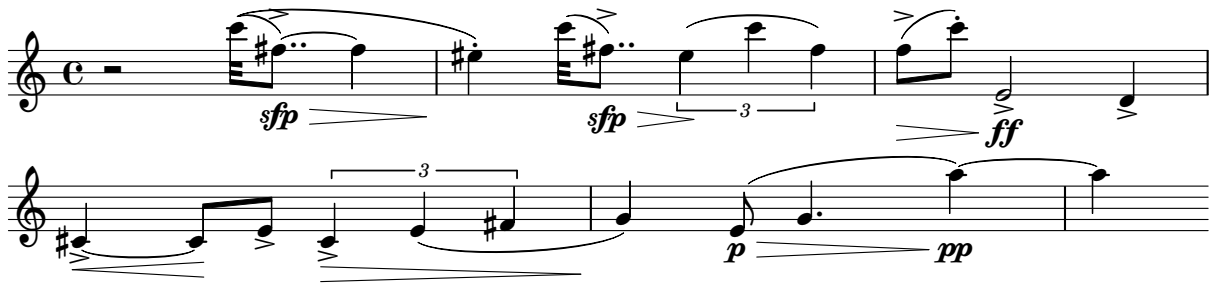

Figure 1.17: Varèse, *Density 21.5*, mm. 51-55

Beginning in m. 56, IC6 is explicitly incorporated into the whole-tone collection referenced at the end of the B section. The melody rocks back and forth between pitches in mm. 56-58, until finally the ascending contour of the closing idea from the A section blends with the whole-tone collection in a seemingly limitless ascent, all motivic and thematic material washed away in favor of exploring the sheer physicality of the instrument.

At the beginning of my analytical musings on the form of *Density 21.5*, I noted the work's ternary organization, reflecting the seeming return to the opening material starting in m. 41. With the entrance of material from the B section soon after this moment, however, the listener may experience some doubt as to the function of m. 41's severely truncated "recapitulation" of the A section. Indeed, rather than coming to a conclusive final cadence, the work ends by first restating and then disintegrating its melodic material in a sweeping demonstration of the flute's registral capabilities. For the listener, the impression of an emerging ternary form thus transforms into an understanding of the work's openness, its refusal to conclude by unifying or summarizing its constituent materials.

In the preceding analysis, the form of *Density 21.5* emerges as a series of negotiations between composer and listener. The composer's choice of pitch collection influences the listener's perception of similarity and contrast, but the listener's understanding of function and grouping

impact how the work coheres. The analysis reveals a process by which musical elements interact—combine, coexist, push against one another, accumulate, disintegrate, negate—to produce longer spans that take on functions, which themselves interact to produce the experience of form.

1.4: Conclusion: Webern's *Three Little Pieces* Revisited

Having explored issues of formal functionality in Varèse's *Density 21.5*, I now return briefly to Webern's *Three Little Pieces* op. 11, no. 1. As I intimated in the introduction to this chapter, mm. 1-3 present a phrase containing three ideas (which were shown in Figure 1.2), which is reprised in varied form in mm. 4-5 (Figure 1.3). The varied repetition ends with the overlapping of the cello and piano, where the piano's dissonant rolled chord—containing two tritones an eleventh apart (F2–B2, B ♭ 3–E4)—sets off a condensed version of the melody presented in m. 2. A silence lasting two eighth notes heightens the anticipation of the final melodic gesture from the first iteration of the basic idea, which was a sweeping descent from the artificial harmonic B5 to B ♭ 3 (IC 11). At the end of m. 5, this unit is mimicked, both in in the piano's descending minor third gesture, and in the interval between the cello's pitch and the highest pitch in the piano (IC 11). The presentation of the opening unit and its varied repetition in mm. 1-5 may lead the listener to anticipate hearing continuational characteristics in what follows.

Immediately after the conclusion of the presentation phrase in m. 5, the cello repeats its falling gesture of IC 11, this time played close to the fingerboard and in sixteenth notes, rather than the quarter or eighth notes of previous iterations. Next, the piano plays an ascending

melody that begins with ICs 3 and 8, which appeared in the opposite order in the cello's rapid ascending line at the beginning of m. 4. The ascending gesture concludes with an ascending IC 11, mirroring the cello's descending motive at the beginning of m. 6 (shown in Figure 1.1). The piano's ascending melody, which is marked ritardando, thus acts as a fragment of the idea that opened both the basic idea and its repetition. Instead of a held note or chord followed by a rapid ascent, the ascent in m. 6 is elongated and occurs simultaneously with the held notes in the cello and the right hand of the piano. After a brief silence, m. 7 similarly elongates the descending gesture that first appeared in the cello in mm. 2-3. Measure 6-7 thus manipulate and fragment in various ways the ideas presented in the work's first five measures.

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

My brief analysis of the first movement of Webern's op. 11 provides one potential path through the piece, one way in which a listener's experience of the work might be constrained as they seek to hear emergent relationships between musical events. There are a number of other

potential relationships to which an experienced listener may attend, of course, in both the Webern and Varèse. My goal in focusing on formal function is to account for how a listener might make sense, moment by moment, of a work whose form may not be predictable or clear to the average listener.

In analyzing both Varèse's *Density 21.5* and the first movement of Webern's opus 11, I have dispensed with many aspects of Caplin's form-functional theory. What I have retained are, I believe, the essential elements of hearing formally: the segmentation of units from each other based on perceptual information such as rhythmic profile, intervallic content, dynamic profile, register/referential pitch, timbre, voice-leading; the perception of those units interacting with each other, shaping our expectations for future units and relationships; and finally, the understanding that these formal units in turn form themes, sections, and narratives on the level of the movement or work as a whole. The ability to discuss post-tonal music on these multiple levels, across composers and styles, is ultimately what a theory of post-tonal formal function has to offer the music analyst.

The analyses in this chapter posit formal function as an ongoing process of negotiation between the composer and the listener. This listener-centered formulation leads to an obvious question: who is "the listener" here, and in this dissertation as a whole? As I suggested at the beginning of the present chapter, there is no single, "ideal" listener whose existence is central to this dissertation's argument; rather, I offer a number of possible interpretations, based on the following assumptions: first, that the listener is actively attending to the music (rather than listening to it in the background); and second, that the listener, in actively engaging with the music, is listening for formal relationships to some degree. This listener need not be an expert in post-tonal compositional techniques by any means; in fact, I frequently assume a mantle of

naïveté in these analyses, asking what it would be like to hear these works as if for the very first time.

The chapter that follows addresses formal function on the level of the phrase, often considered the fundamental unit of musical form, at least within theories based on tonal repertoires. In this chapter, I ask how the concept of formal function on the phrase level may productively be applied to compositions by Milton Babbitt and Luigi Dallapiccola. In analyzing these works, I argue that three main factors contribute to phrase formation for a listener: the perception of salient parameters, the categorization of chunks, and prospective and retrospective projections.

In chapter 3, I expand my theory to account for larger-scale relationships, asking how individual phrases function in relation to one another, forming entire sections or movements. Through analyses of Pierre Boulez's *Sonatina for Flute and Piano* and *First Piano Sonata*, I show the value of incorporating multiple listener perspectives into our understanding of musical affordances.

Chapters 4 and 5 delve in more detail into specific issues concerning closure and phrase types in compositions by Alfred Schnittke, György Ligeti, and Luciano Berio. Chapter 4 explores issues related to cadential closure in works by Schnittke and Ligeti, revealing the different ways an attentive listener may understand the formal function of tonal and post-tonal cadences within a post-tonal context.

Chapter 5 takes on some of the complex phrases found in Berio's music, revealing how these musical structures belong to three main categories: linear, circular, and mirror-based phrase types. While these phrase types are certainly prevalent and clearly articulated in Berio's compositional oeuvre, they are also common to many other composers of the late twentieth

century. Understanding listener perception of phrase structure in relation to these three main categories may prove useful for analyzing music beyond that discussed in this dissertation.

Chapter 2: The Post-Tonal Phrase

2.1: Introduction

2.1.1: The Concept of Tonal Phrase

The guiding concept of the phrase underpins much analytical work on post-tonal music and is fundamental to any theory of form. Discussions of the musical phrase within theories of musical form extend far back in the history of music theory. For example, Heinrich Christoph Koch's theory of the way musical materials are organized, as set out in the *Versuch einer Anleitung zur Composition* (1782-1793), is based on the basic unit of the phrase, "a division articulated by melodic and harmonic means which in conjunction with other phrases creates a supra-metrical rhythm." As Nancy Baker explains, the two most important features of the phrase for Koch are "the phrase's ending and its length."[1] Arnold Schoenberg's *Fundamentals of Musical Composition* begins with what he terms the "phrase," a unit approximating what one can sing in a single breath, punctuated by something akin to a comma.[2] Roger Sessions, too, defines the musical phrase in terms of the "portion of music that must be performed, so to speak, without letting go, or, figuratively, in a single breath." He then goes on to define the phrase more specifically as "a constant movement toward a goal—the cadence."[3]

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[1] Nancy K. Baker, "Heinrich Koch and the Theory of Melody," *Journal of Music Theory* 20, no. 1 (1976): 3.
[2] Schoenberg, *Fundamentals of Musical Composition*, 3.
[3] Roger Sessions, *Musical Experience of Composer, Performer, Listener* (Princeton: Princeton University Press, 1950), 13.

In his exploration of phrase rhythm, William Rothstein emphasizes tonal structure specifically as "crucial to a clear understanding of the notion of phrase in tonal music." A phrase, for Rothstein, must involve "directed motion in time from one tonal entity to another . . . *If there is no tonal motion, there is no phrase*" (emphasis original).[4] The formulation is striking, not least because—unless one defines "tonal motion" quite broadly—it would appear that there is no mechanism for phrase formation in post-tonal music.

William Caplin defines the phrase quite strictly as "minimally, a four-measure unit, often, but not necessarily, containing two ideas." Of course, the "measure" is entire notational, and Caplin himself grapples with the concept of "real" versus "notated" measures in his work, suggesting that the correlation of the phrase with the four-measure unit is not quite as strict as it seems—indeed, Caplin's definition would appear to be beholden to the stylistic constraints of Viennese composition circa 1750-1825. Caplin's definition of the different formal types that may be conveyed by specific configurations of those four-measure units and their constituent ideas is also highly constrained. If, however, we remove the "four-measure" constraint from Caplin's definition—since even within his theory there remains the problem of notational practice being removed from listening practice—we are left with the definition of phrase as "a unit often, but not necessarily, containing two ideas." The phrase, for all that it looms large in any theory of form and formal function, is an alarmingly slippery concept, reluctant to be tied to any particular length or content.

Moreover, theorists have proposed many different types of phrase construction. The sentence, an extraordinarily malleable and historically popular type of phrase construction, has

[4] William Rothstein, *Phrase Rhythm in Tonal Music* (New York: Schirmer, 1990), 5.

recently been the subject of a number of studies that have expanded upon the sentence model initially identified by Schoenberg and codified in English-language scholarship by Caplin.[5] Caplin defines the sentence as "an eight-measure theme built out of two four-measure phrases," expressing "three formal functions—presentation, continuation, and cadential."[6] Mark Richards locates Caplin's sentence as merely one type of sentence (a "sentence theme") within a larger sentential paradigm. He identifies a broader concept of the "sentential idea," minimally consisting of a single basic idea and a continuation. The defining feature of this sentential idea is the continuation, which "accelerates motivic, harmonic, or rhythmic material in relation to the basic idea."[7] Matthew BaileyShea characterizes the two constituent phrases of the sentence as follows: the presentation phrase is "defined by repetition; without the repetition of a basic idea, there can be no sentence," while the continuation phrase is understood in terms of its drive towards cadence. [8]

The theme-type identified by Caplin as the "most common tight-knit theme-type in instrumental music of the classical style" is the period, which is divided into "two, four-measure phrases fulfilling *antecedent* and *consequent functions*, respectively."[9] One of the most essential elements that distinguishes the period from the sentence is its pattern of cadential closure: where

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[5] Mark Richards, "Viennese Classicism and the Sentential Idea: Broadening the Sentence Paradigm," *Theory and Practice* 36 (2011). Matthew BaileyShea, "Wagner's Loosely Knit Sentences and the Drama of Musical Form," *Intégral* 16/17 (2002/2003). "Beyond the Beethoven Model: Sentence Types and Limits," *Current Musicology* 77 (2004).
[6] Caplin, *Classical Form: A Theory of Formal Functions for the Instrumental Music of Haydn, Mozart, and Beethoven*, 35.
[7] Richards, "Viennese Classicism and the Sentential Idea: Broadening the Sentence Paradigm," 182.
[8] BaileyShea, "Beyond the Beethoven Model: Sentence Types and Limits," 8.
[9] Caplin, *Classical Form: A Theory of Formal Functions for the Instrumental Music of Haydn, Mozart, and Beethoven*, 49.

the sentence only has one cadence at the end, the period theme-type contains a "musical unit of partial cadential closure," which is repeated "so as to produce a stronger cadential closure."[10] From these two basic theme-types—the sentence and the period—emerge a number of hybrid and compound theme-types, related to the basic types by a) their internal phrase components, such as antecedents and consequents (basic idea, contrasting idea), presentations (basic idea, repeated), and continuations; and b) their cadential closure(s).

Whatever name we choose to call it by, the notion of phrase is of prime importance to any theory of tonal form, and is itself intimately tied to notions of breath, singing, and speech. As suggested by the preceding definitions from the literature on tonal music, the musical phrase is also tied to the concepts of punctuation, articulation, and cadence. In post-tonal music, however, the guiding structure of tonal motion—which seems fundamental to the definitions of phrase in various existing theories of tonal music—is absent. How, then, can we speak of the phrase in post-tonal music?

2.1.2: The Concept of Post-Tonal Phrase

Despite Rothstein's insistence that tonal motion is essential to the very notion of a phrase, the term "phrase," and related concepts, shows up with surprising frequency in analyses of post-tonal compositions. Often, phrases and other quasi-tonal formal structures are identified without any further explanation or definition, as if the meaning of these terms and their musical function is self-evident in a post-tonal context. For example, in her dissertation on post-tonal formal processes Patricia Howland refers frequently to "phrases" and "subphrases" as well as

[10] Ibid.

related terms such as "closure" and "coherence."[11] Terminology associated with phrase and closure appear regularly in writing not explicitly focused on phrase structure as well, such as Judy Lochhead's article on repetition and form in Joan Tower's *Wings* and *Breakfast Rhythms I and II*, or Eric Drott's work on triadic harmony in Ligeti's music.[12] The notion of phrase also appears in empirical work on the perception of post-tonal compositional structures: for example, Nicola Dibben has found that the perception of structural stability coincides with "phrase endings."[13]

The question of what makes up a musical phrase has been the subject of much recent scholarship. The notion of "phrase," being intimately tied to patterns of speech and breathing, is easy to grasp intuitively but rather more difficult to define, especially in the context of post-tonal musical composition. Christopher Hasty defines the phrase as a perceptual necessity, within which "groupings of elements cohere to create a sense of wholeness or completeness," and which is segregated from unrelated elements by means of closure.[14] Patricia Howland's concept of the "integrated parametric structure" (IPS) is based on Hasty's definition of the post-tonal phrase as well as James Tenney's post-tonal "sequence." Howland defines the phrase-like IPS as "a succession of elements in which the whole exhibits coherence and articulation."[15] Following from these definitions, the post-tonal phrase, as it were, seems to possess the following necessary

[11] Patricia Howland, "Formal Processes in Post-Tonal Music: A Study of Selected Works by Babbitt, Stockhausen, and Carter" (The City University of New York, 2010).
[12] Judy Lochhead, "Joan Tower's Wings and Breakfast Rhythms I and II: Some Thoughts on Form and Repetition," *Perspectives of New Music* 30, no. 1 (1992). Eric Drott, "The Role of Triadic Harmony in Ligeti's Recent Music," *Music Analysis* 22, no. 3 (2003).
[13] Dibben, "The Perception of Structural Stability in Atonal Music: The Influence of Salience, Stability, Horizontal Motion, Pitch Commonality, and Dissonance."
[14] Hasty, "Phrase Formation in Post-Tonal Music," 171-72.
[15] Howland, "Formal Structures in Post-Tonal Music," 71.

features: it contains more than one item, it coheres together, and it is articulated from other groupings.

This is not merely to say that the frequency with which writers on post-tonal music make use of terminology related to phrase and cadence is, in itself, informative. Rather, what strikes me as important is that, to speak of a post-tonal phrase, one must possess an underlying understanding of post-tonal compositional structures as: a) inherently embodied; b) adhering to guiding principles of logic and coherence such as those set out by Schoenberg; c) possessing forms of punctuation akin to cadences in tonal music; and d) tied to the resources of a listener's working memory. To employ the term "phrase" to describe a phenomenon in a post-tonal composition is therefore to acknowledge an underlying perceptual framework that is tied to historical, and specifically tonal, compositional techniques. Like phrases in tonal music, as described by Rothstein, phrases in post-tonal music need a coherent progression from beginning, to middle, to end—articulated with something that functions to cadence, or close. Currently, however, these functions—and how they are expressed by composers and cognized by listeners—are ill-defined in the literature on post-tonal music. The section that follows proposes a new theory of post-tonal phrase, based on the listener-centered perspective on formal functionality outlined in chapter 1 of this dissertation.

2.1.3: Towards a New Theory of Post-Tonal Phrase

The main distinguishing features of the phrase thus appear to be: it contains multiple elements, it is coherent, and it is articulated. It bears mention that each of these features as they appear in Hasty's and Howland's formal theories emphasizes the composer's scaffolding rather

than the listener's construction of phrases in time. As a way of shifting toward a more listener-focused perspective, I offer an alternative conception that focuses on three factors that inform the identification of musical phrases by a listener, rather than their formation by a composer. These three factors are salient parameters, object categorization, and prospection/retrospection.

I. **Salient parameter**: A musical element that emerges as especially important in making determinations about formal constituents. The salience of parameters refers to their markedness within a musical context, and that markedness may become apparent from the work's outset or as the work progresses. For instance, Andrew Mead points out that in works by Elliott Carter such as *Esprit Rude/Esprit Doux*, polyrhythmic structure is one of the most important—and salient—factors in identifying phrase boundaries.[16]

II. **Object categorization**: A listener's active formation of categories from the collection of perceptual objects put forth by the composer. These objects cohere into categories that, as Zbikowksi frames it, reflect "the attributes shared by those [objects]."[17] The process of object categorization as it relates to form might arise, for example, when an analyst identifies a musical object as separate from other objects and serving as a "cadential" marker. In the case of both Brian Fennelly's and Christopher Hasty's analyses of Webern's Op. 22, the analysts make use of the salient parameter of rhythm in order to categorize some musical object as

[16] Andrew Mead, "Time Management: Rhythm as a Formal Determinant in Certain Works of Elliott Carter," in *Elliott Carter Studies*, ed. Marguerite Boland and John Link (Cambridge: Cambridge University Press, 2012).
[17] Zbikowski, *Conceptualizing Music: Cognitive Structure, Theory, and Analysis*, 49.

"cadential," in contrast to surrounding units.[18] Hasty notes that, in addition to the salient parameter of rhythm, the repetition of the material at section boundaries marks this unit as belonging to a "cadential" category. At the same time, he notes that the figure also acts to begin a section through a process of elision; this observation draws upon the final factor, prospection/retrospection.

III. **Prospection and retrospection**: The notion of phrase is intrinsically both prospective and retrospective, in that it requires the listener to predict its continuation and in that it requires the listener to retroactively group its units together. The phrase thus necessarily takes place within the *present*. Briefly summarized, the present—as conceptualized by Husserl's 1901 model of time consciousness—is experienced as a continuously temporally unfolding span whose horizons are bookended by "retention" (referring to the ever-more distorted view we have of past events as the now moves inexorably forward), and "protention" (referring to our view of the immediate future).[19] Akin to Husserl's concepts of protention and retention, I submit that the musical phrase emerges through a process of listener *prospection* and *retrospection*. The element of prospection refers to the listener's judgment, based on the presence of salient parameters, musical context, and culturally engrained patterns, of the presence of an emerging phrase

[18] Brian Fennelly, "Structure and Process in Webern's Opus 22," *Journal of Music Theory* 10 (1966). Christopher Hasty, "Composition and Context in Twelve-Tone Music of Anton Webern," *Music Analysis* 7, no. 3 (1988).

[19] I take this helpful summary from Alfred Gell's essay, "The Network of Standard Stoppages," originally written circa 1985. Alfred Gell, "The Network of Standard Stoppages," in *Distributed Objects: Meaning and Mattering after Alfred Gell*, ed. Liana Chua and Mark Elliott (New York: Berghahn Books, 2013), 102-07.

in the present moment. The process of retrospection involves the deciphering of what has just occurred based on expectations met or denied.

According to the perspective I would like to develop, a phrase in post-tonal music is a unit that contains more than one musical idea. Its constituent ideas must form a coherent whole, to which the listener is guided by a musical parameter (or multiple parameters) that, within the context of the composition, has particularly salience. The perception of salient parameters informs the formation of categories by establishing which attributes determine category membership; those categories then provide a structure for the processes of prospection and retrospection.

My development of these concepts in relation to post-tonal music emerges from a recent move towards basing analytical discussions within an understanding of cognitive processes shared among human listeners. Specifically, by making use of discoveries in cognitive science, Lawrence Zbikowski has established a cognitive footing for Schoenberg's focus on the motivic level for musical comprehension and cohesion, as such a basic level of categorization at the middle of a taxonomy "maximizes both efficiency and informativeness."[20] The listener's understanding that a group of musical things coheres as a category then "reflects the attributes shared by those things."[21]

The processes of prospection and retrospection have to do with how listeners form expectations and react to events in musical time, a subject that forms the basis of David Huron's "ITPRA" (Imagination-Tension-Prediction-Reaction-Appraisal) theory of expectation.[22]

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[20] Zbikowski, *Conceptualizing Music: Cognitive Structure, Theory, and Analysis*, 34.
[21] Ibid., 49.
[22] David Huron, *Sweet Anticipation: Music and the Psychology of Expectation* (Cambridge, Mass.: MIT Press, 2006), 16.

Huron's work reveals how common musical devices make use of these basic psychological responses, arguing that expectation "appears to shape many aspects of musical organization."[23] As I suggested in Chapter 1, some of these expectations also emerge from the affordances of particular musical structures. The ability of the listener to make predictions based on these affordances is dependent on her ability to form basic-level categories based on her perception of salience in the music. As Donald Norman explains, "The term *affordance* refers to the relationship between a physical object and a person […] An affordance is a relationship between the properties of an object and the capabilities of the agent that determine just how the object could possibly be used."[24] Importantly, affordances are inherently *relational*—that is, they are determined in equal measure by the properties of the object and the abilities of the interacting subject. Affordances also rely on *signifiers*, which signal what actions are possible—these are akin to what I have called salient parameters. By calling attention to certain parameters and making them salient, composers point to certain musical possibilities, which in turn determine the affordances of a musical object.

In the section that follows, I provide an analysis of selections from Milton Babbitt's *Composition for Four Instruments* as a way of revealing the processes that contribute to phrase formation for a listener: the perception of salient parameters, the categorization of chunks, and prospective and retrospective projections. In section 3, I demonstrate how concepts of phrase interact with the pre-compositional structure of cross-partitions in Dallapiccola's *Dialoghi*. Finally, in section 4, I analyze Dallapiccola's vocal work *Preghiere*, in order to explore how the

[23] Ibid., 357.
[24] Norman, "The Design of Everyday Things, Revised and Expanded Edition."

presence of a text interacts with my analytical framework. Each of these works provides a new understanding of what "phrase" means for the post-tonal listener.

2.2: Babbitt's *Composition for Four Instruments*

2.2.1: Introduction

Milton Babbitt's *Composition for Four Instruments* (1948) is both the composer's first published work and one of the first compositions exhibiting the techniques associated with "total serialism," in which the principle of serial organization is systematically applied to parameters other than those related to pitch. Babbitt has confirmed that the work is indeed based on a twelve-tone row, although that row is never stated in its entirety; instead, the first trichord of the opening clarinet solo initiates a derived set (0 4 1 3 e 2; 8 5 9 7 t 6), each trichord of which is derived from four combinatorially related set forms; this derived set can be seen in the bolded numbers in Figure 2.1.[25] The hexachords of the original row, each of which is a six-note chromatic scale, are all-combinatorial. The original row form, 0 4 1 e 3 2 8 6 5 t 7 9, which is never stated literally, appears as the first trichord played by each instrument when it enters: the clarinet enters with the first trichord in m. 1, and the flute, violin, and cello with the following three trichords in m. 36.

[25] Milton Babbitt, "Responses: A First Approximation," *Perspectives of New Music* 14/15, no. 2/1 (1976): 12.

S_0:	**0**	**4**	**1**	11	3	2	:	8	6	5	10	7	9
I_3:	**3**	**11**	**2**	4	0	1	:	7	9	10	5	8	6
R_6:	3	1	4	11	0	2	:	8	9	5	**7**	**10**	**6**
RI_9:	0	2	11	4	3	1	:	7	6	10	**8**	**5**	**9**

Figure 2.1: Babbitt, *Composition for Four Instruments*, derived set

Other analysts have identified a different row as primary, one that occurs in the final section of the piece, where all four instruments play together for the first time. George Perle, for example, gives an account of a "basic set," which is "explicitly stated only at the conclusion of the work."[26] Perle's basic set is shown in Figure 2.2.

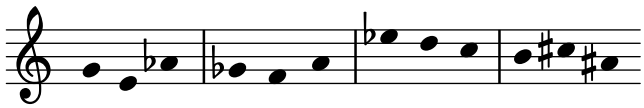

Figure 2.2: Reproduction of Perle's "basic set" (ex. 116 in original)

As Joseph Dubiel notes, Perle's basic set can be transformed into Babbitt's row by wholesale inversion plus retrogression of each individual trichord. Dubiel furnishes the pitch array used in the first 35 measures of the piece, reproduced as Figure 2.3.[27]

[26] George Perle, *Serial Composition and Atonality: An Introduction to the Music of Schoenberg, Berg, and Webern*, 6 ed. (Berkeley, Los Angeles, Oxford: University of California Press, 1991), 82.
[27] Joseph Dubiel, "Three Essays on Milton Babbitt," *Perspectives of New Music* 28, no. 2 (1990): 223.

G♭A F G♯E G C♯B♭D B D♯C ; G E G♯ F A F♯ C D♯ B D B♭C♯

D♭B♭D B E♭C F♯A F G♯E G ; C E♭ B D B♭C♯ G E G♯ F A F♯

B E♭C C♯B♭D G♯E G F♯A F ; D B♭C♯ C E♭ B F A F♯ G E A♭

A♭E G F♯A F B D♯C C♯B♭D; F A F♯ G E A♭ D B♭ D♭ C E♭ B

Figure 2.3: The pitch array of the first 35 measures of Babbitt, *Composition for Four Instruments* according to Dubiel (ex. 3 in original)

The way Babbitt presents the derived series at the opening of the *Composition for Four Instruments* notoriously caused confusion among analysts. While teaching at the University of Wisconsin, Babbitt recalled an expert writing to him, baffled at the lack of a discernible row or series in the piece, to whom Babbitt responded:

> That's not the way I conceive of a set. This is not a matter of finding the lost set. This is not a matter of cryptoanalysis (where's the hidden set?). What I'm interested in is the effect it might have, the way it might assert itself not necessarily explicitly.[28]

He goes on to explain that "by setting up the first trichord and isolating it from the rest," he thought he was setting up the continuity of that idea, which would be "very clearly displayed by the delineation in the lower register of a trichord which is obviously the inversion of the first trichord." Similarly, the upper register contains the retrograde of the first trichord, and the middle register the retrograde inversion.[29] Figure 2.4 shows the first six measures of the piece. Each trichord of the derived row is displayed in a different color: the first trichord (0 4 1) is in black (with pitch class 11 as 0), the second (3 11 2) is in red, the third (7 10 6) is in blue, and the fourth (8 5 9) is in green.

[28] Stephen Dembski and Joseph N. Straus, *Milton Babbitt: Words About Music*, The Madison Lectures (Madison: University of Wisconsin Press, 1987), 27.
[29] Ibid., 28.

As Babbitt himself points out, his surface compositional order of the twelve-tone aggregate results in an alternate set, a "chromatic thematic surface underneath which would be the properties of another ordered set."[30] The effect of this thematic surface on the listener is the aspect of the piece that warrants the most analytical attention, rather than the underlying principles that guided the composer's selection of pitch order.

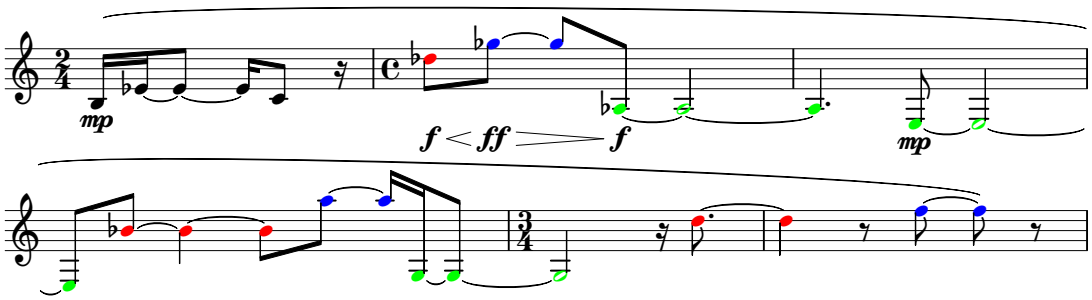

Figure 2.4: Babbitt, *Composition for Four Instruments*, mm 1-6: the colored notes reveal each of the four trichords of the derived row. This and all following examples are reproduced in concert pitch.

Dubiel provides one possible alternative to a consideration of the *Composition for Four Instruments* in purely twelve-tone terms. He argues that the fifteen different sections of the piece (each of which features a different combination of the four instruments in complementary pairs) must be referred to one another in order to acquire meaning in relation to the surrounding sections. In making evident these relationships, he employs the criteria of "priority of placement, complementation, and distinctiveness of content."[31] Dubiel's approach thus aims to get at "how a

[30] Ibid.
[31] Joseph Dubiel, "Three Essays on Milton Babbitt (Part Three)," *Perspectives of New Music* 30, no. 1 (1992): 91.

listener might be able to do what Babbitt's music often seems strenuously to resist, namely relate sections to one another as stages in a large movement."[32]

The goals of my analysis of Babbitt's composition are similar to those of Dubiel, although I proceed on a more modest scale. Where Dubiel identifies how sections complement or contrast with one another, I aim to understand how these processes emerge and shape the listener's understanding at the level of the phrase by way of the mechanisms outlined in the introduction to this chapter. With that in mind, let us turn to the opening clarinet solo, its hidden structure, and its chromatic thematic structure.

2.2.2: Composition for Four Instruments, first 19 measures

The clarinet opens with a highly recognizable and memorable three-note motive, B3-E♭4-C4, preceded and followed by silence (see Figure 2.5, which shows the first 9 measures of the clarinet solo). Knowing the history and context of the piece, we might consider its place within the concealed twelve-tone row used by Babbitt to construct the work and within the pitch array derived from the row used to shape the work's surface. We might also examine its pitch and interval content: an ascent of +4, followed by a descent of -3, creating an arch shape in the instrument's second-lowest register. As Patricia Howland observes, "the essential up-then-down outline of the contour" creates motivic coherence in work's opening measures.[33] If a listener were

[32] Ibid., 85.
[33] Howland's analysis of *Composition for Four Instruments* in her dissertation furnishes a number of observations about the work's materials, but my own analysis takes these observations in a significantly different direction. I thus make reference to some of these details that Howland has outlined at various points in my own analysis. Howland, "Formal Processes in Post-Tonal Music: A Study of Selected Works by Babbitt, Stockhausen, and Carter," 43.

to focus exclusively on the parameters of pitch and register, that listener might attend primarily to the relationships among the trichords identified by Babbitt, with the lowest register setting out an inversion of the primary trichord, the highest register a retrograde, and the middle a retrograde inversion.

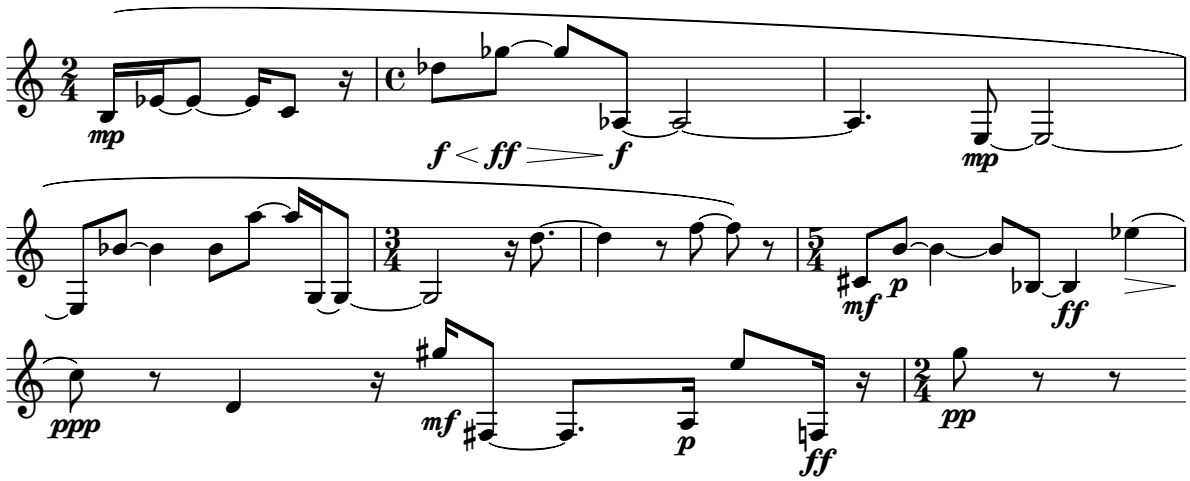

Figure 2.5: Babbitt, *Composition for Four Instruments*, mm. 1-9

However, pitch and register may not be the most salient parameters at work in these opening measures. The rhythmic contour[34] of the opening trichord (short, long, short) is just as distinctive, and partially repeats itself in the next measure. Indeed, the contours of rhythm and pitch are in harmony in these first two measures: the rhythmic contour in the second measure repeats the "short, long" beginning of the rhythm but undergoes an extension of the final note, while the pitch contour of "up, down" from the first measure undergoes a similar expansion in

[34] As Patricia Carpenter, Severine Neff, and Lawrence Zbikowski have noted, rhythmic figuration, according to Schoenberg, is an especially strong means of creating coherence in musical units. Arnold Schoenberg, *The Musical Idea and the Logic, Technique, and Art of Its Presentation*, trans. Patricia Carpenter and Severine Neff (New York: Columbia University Press, 1995). Zbikowski, *Conceptualizing Music: Cognitive Structure, Theory, and Analysis*, 26.

the second measure, starting by leaping upwards by a slightly larger interval (+4 becomes +5), then leaping downwards by a much larger interval (-3 becomes -22).

When we hear both melodic and rhythmic contours recalled in measure 2, louder and strengthened by a hairpin crescendo and decrescendo, we may begin to think of that first motive in terms of statement and repetition, and consider its possible identity as a basic idea (Figure 2.6). The first measure's motive is subjected to the process of statement, varied repetition, and expansion. The processes of statement, varied repetition, and expansion in the first two measures lead the listener to group the first two events together, and to anticipate the beginning of a medial function after the A ♭ 3, an expectation that is confirmed in m. 3 (Figure 2.7). The descent to the lowest pitch heard so far, E3, is followed by two large ascending leaps that reach the highest pitch, A5. Howland argues that the change in direction after the low E and the large interval encourage grouping the A ♭ and E together, "hearing the A ♭ as a temporary 'stopping point' along the way from the high G ♭ to the low E."[35]

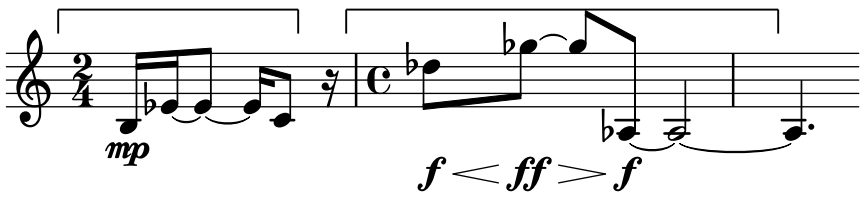

Figure 2.6: Babbitt, *Composition for Four Instruments*, mm. 1-3

[35] Howland, "Formal Processes in Post-Tonal Music: A Study of Selected Works by Babbitt, Stockhausen, and Carter," 44.

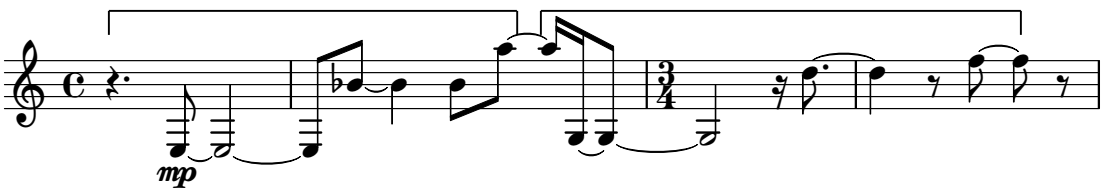

Figure 2.7: Babbitt, *Composition for Four Instruments,* mm. 3-6

I submit that hearing the two large ascending intervals (E-B ♭ -A), followed by a leap down to another low, held note (G) and two more ascending intervals (G-D-F), encourages the listener to retrospectively group the pitches (E-B ♭ -A) and (G-D-F) together as another instantiation of the statement-varied repetition paradigm set out in the first two measures (Figure 2.6). This interpretation draws on the listener's developing understanding of a) the salient parameters at work thus far in the piece, b) the categories already established, and the relationship (statement-variation) between those categories, and c) the listener's ability to project, by recourse to both retrospection and prospection, future events from her standpoint in the present. These four measures are set apart from the first three by virtue of their contrasting motivic material: while the first idea and its repetition feature an arch-shaped (up-down) contour, the second idea and its repetition only ascend. Finally, the repetition of the gradually compressed rhythmic contour from mm. 3-4 in mm. 4-6 (long, shorter, shortest) confirms both the importance of the salient parameters of pitch contour and rhythm in determining internal phrase boundaries in the work, and the identity of mm. 3-6 as a unit.

Another interesting feature highlighted by the segmentation of the first phrase I have outlined above is the process of additive expansion of the pitch-class interval of the initial ascending leap of each segment, an expansion shown in Figure 2.8.

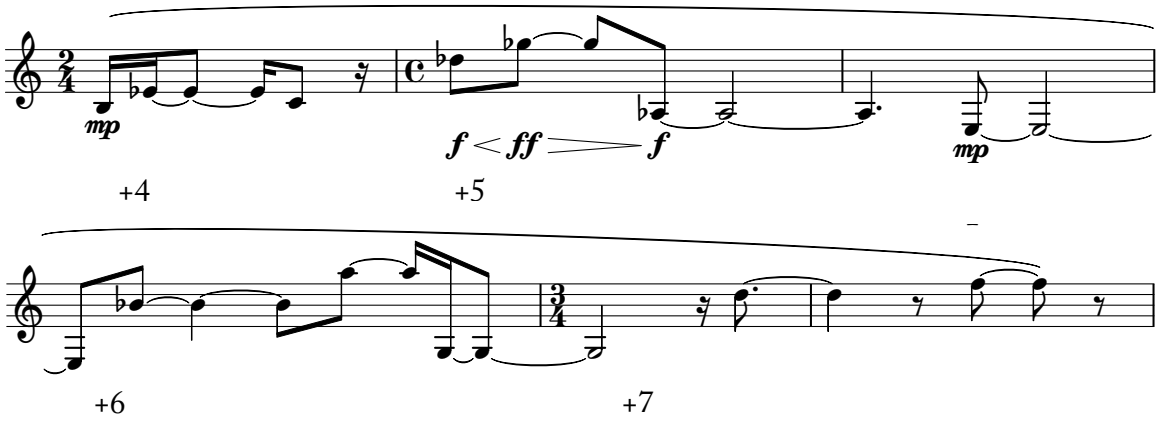

Figure 2.8: Babbitt, *Composition for Four Instruments,* mm. 1-6

The next phrase begins, in m. 7, with an arch (up-down) shape similar to the one that is prominent in the opening of the piece (Figure 2.9). The repetition of the opening gesture's pitch and rhythmic contours, along with the structure of statement-repetition presented to us twice in the first six measures, encourages the impression that the C♯ of m. 7 begins a new phrase, one that will echo the first.[36] When the next musical gesture occurs, a three-note descent from E♭5-C5-D4, the listener may hear it as the retrograded contour of the second half of the first phrase, rhythmically compressed. These two measures serve to summarize the two motives heard in the opening phrase, in varied forms (the first expanded, the second compressed and in retrograde) and within a much shorter span of time.

[36] The field of "contour theory" has been explored by a number of music theorists in the past two or so decades, through the work of Robert Morris, Michael Friedman, Larry Polansky, Elizabeth Marvin and Paul Laprade, David Lidov and Jim Gabura, and Ian Quinn. While contour theory has presented itself as a useful tool for music analysis, especially analysis of post-tonal works, its relationship with a listener's real-time experience of melody remains unclear as yet. As such, I do not develop a formal account of the relationship of contour theory to form-functional theory in this dissertation.

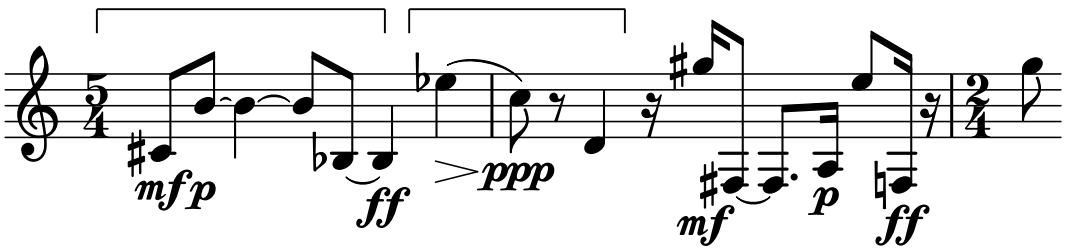

Figure 2.9: Babbitt, *Composition for Four Instruments*, mm. 7-9

Given that the previous phrase contained motive *a* and its repetition, followed by a contrasting motive *b* and its repetition, the compressed version of the two motives in mm. 7-8 might suggest the presence of continuational characteristics. This is borne out in the closing gesture of mm. 8-9, which makes audible the compound melody that was structurally implied in the opening phrase (Figure 2.9). In mm. 8-9, two voices in opposing registers can clearly be heard, each containing a variant on the opening motive: the upper voice stating an inverted version (-4, +3) and the lower a retrograde inversion (+3, -4). The two combine to form a marked closing gesture, finishing with three equal durations, which Howland, for her part, deems a "highly salient phenomenon" within the context of the piece.[37] The ending of this second phrase confirms that the salient parameters at play in at least the opening clarinet solo of *Composition for Four Instruments* are pitch contour and rhythmic contour, with register playing a supporting role in making formal determinations.

Another process binds these three measures together as a phrase: the process of registral expansion. Howland identifies this process as beginning with the D and F in mm. 5-6. Howland's examples 6a and 6b, revealing her segmentation of mm. 6-9 and the process of registral expansion in these measures, is reproduced in Figure 2.10.

[37] Howland, "Formal Structures in Post-Tonal Music," 80.

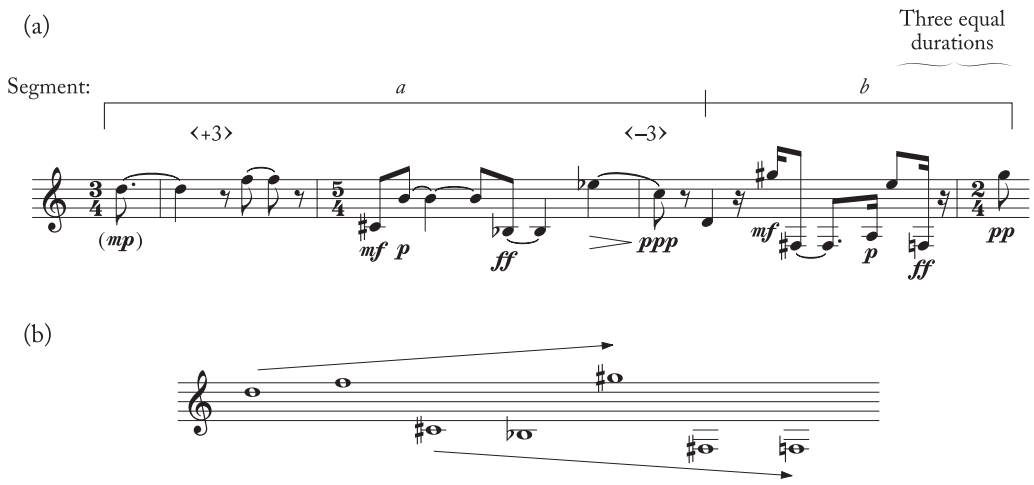

Figure 2.10: Reproduction of Howland exx. 6a (which spans from the end of m. 5 through to the beginning of m. 9) and 6b

After a pause of two eighth notes, the clarinet enters again on a B3, in the same register as the opening notes of the previous two phrases (Figure 2.11). This B acts as a pick-up to the G♯3 in the measure, which initiates another statement of motive *a*, with its characteristic arch shape and short-long-short rhythm, followed immediately by the ascending motive *b* in m. 11, mirroring the one in mm. 7-8. Following these two statements is a flurry of disjointed eighth notes that recall the compound melodic structure of m. 8, concluding with a repetition of the marked closing gesture from the previous phrase. Howland notes also that this phrase undergoes a parallel process of registral expansion to the one that occurs in mm. 5-9.

In sum, over the course of mm. 1-13 Babbitt provides a statement and varied repetition of a melodic idea, followed by a statement and repetition of a markedly contrasting idea. He follows that initial phrase with two phrases, each of which fragments the opening two ideas into smaller units before arriving on a firm, rhythmically marked closing gesture. The parallels with

sentential structure, in which a musical idea is presented, repeated, and dissolved, should be evident.[38]

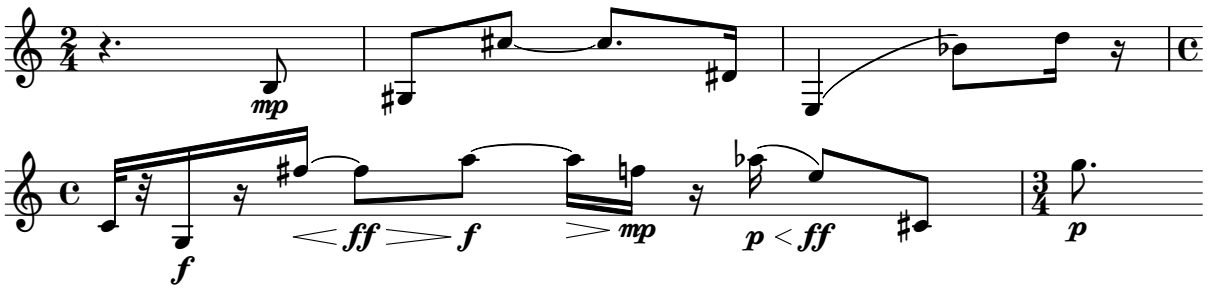

Figure 2.11: Babbitt, *Composition for Four Instruments,* mm. 10-13

After the three-note cadential gesture in m. 13, the clarinet returns once more to its previous register, this time beginning on a B ♭ (Figure 2.12). At first, the long ascending line might prompt the expectation that this new phrase will expand upon motive *b*, perhaps setting off a new section. However, the line quickly breaks into fragments, with the first direct repetition of pitches giving the impression of stuttering or halting. The gradual breakdown into two- or one-note segments projects a process of liquidation, which halts on the single low F♯3 in m. 19, held for two and half beats and followed by an eighth-note rest. That the previous sentential theme has been liquidated by mm. 13-19 becomes clear in m. 20, when a new theme that inverts and retrogrades motive *a* enters, beginning on a G5.

[38] BaileyShea, "Beyond the Beethoven Model: Sentence Types and Limits," 9.

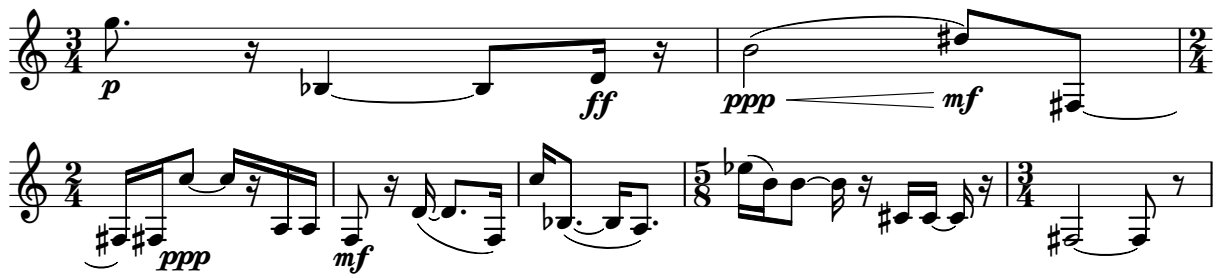

Figure 2.12: Babbitt, *Composition for Four Instruments,* mm. 13-19

2.2.3: Transition to the first trio

Figure 2.13 shows the material that follows the end of what I will call the first thematic group, comprising mm. 1-19. A new thematic group clearly begins in m. 20, after the liquidation that occurs in mm. 13-19. The onset of this new group is heralded by a dramatic change in register, with the clarinet initiation of the phrase on G5, as well as the clearly audible retrograde inversion of motive *a* that begins the phrase (mm. 20-21). The even note values of each of the three notes in mm. 20-21 also mark this moment out as notable. After an eighth note pause, motive *b* enters in a rhythmically compressed form in m. 22, leading directly into another variation on motive *a*'s contour in m. 23, again followed by an eighth note rest. These two-measure contrasting phrases (mm. 20-21; mm. 22-23) create a phrase structure that is parallel to the one found in the work's opening measures.

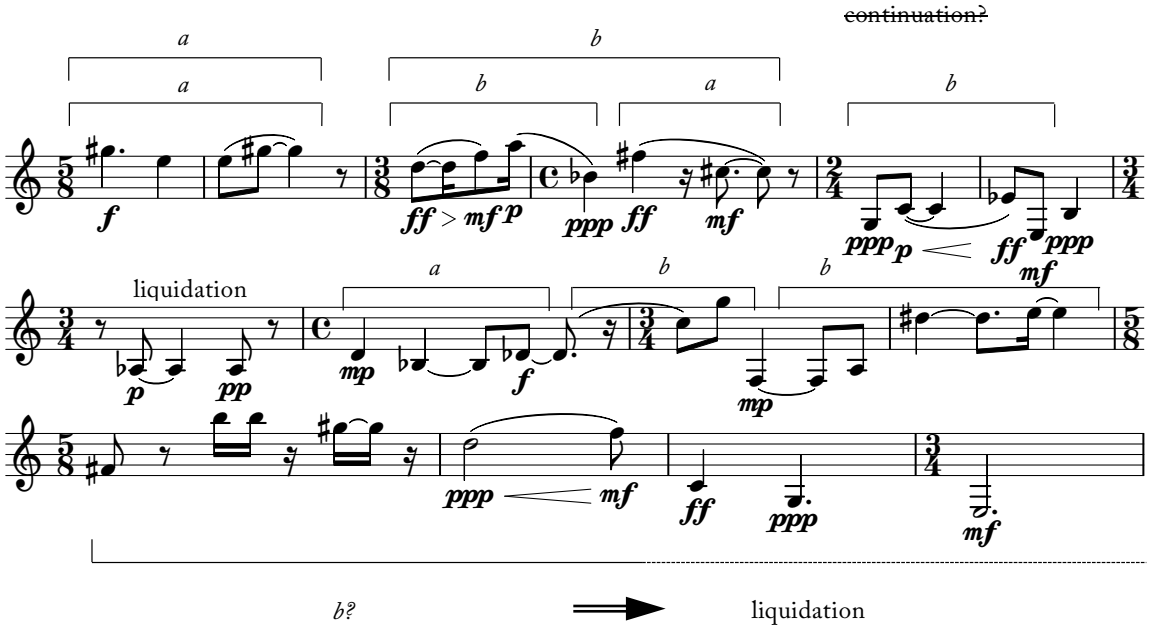

Figure 2.13: Babbitt, *Composition for Four Instruments,* mm. 20-33

The repetition of the opening phrase structure at the start of a new thematic group potentially initiates an expectation that the phrase will be followed, as it was in the first thematic group, with one or more continuational phrases and a process of liquidation. What follows in m. 24-26, however, is a relatively quick petering-out of the phrase, ending with a repeated A ♭ in m. 26 that fades to nothing. Measure 27 begins a second attempt at a continuation, again clearly inverting the intervals of motive *a*, before careening through a varied statement of motive *b* in mm. 28-29, marked by its expanded range. Measure 30 repeats the trajectory of mm. 28-29 in inversion, but compressed into one measure and punctuated with frequent rests. The phrase ends with a slow crawl down to the clarinet solo's lowest note, pausing there for three beats.

Dubiel argues that the "clarinet's so markedly winding down [in mm. 32-33]: coming to a standstill on its lowest note of the passage, closing off a burst of increasingly rapid wide ascents" makes the transition from the first section to the second feel close and quick, "so that

the trio of flute, violin, and cello seems to carry on the last impulse of the clarinet solo." Then in mm. 34-35 (Figure 2.14), when the clarinet "suddenly revives, hopping off through all its registers […] in shorter order and with less of a pattern," the new impulse is not exhausted, but taken up and continued by the flute (Figure 2.15).[39] My preceding analysis of the phrase structure of the first and second thematic groups makes clear *why* the transition to the trio seems to interrupt the clarinet's impulse in mm. 34-35; in fact, it interrupts what seemed to be the final, liquidating phrase in the second thematic group, mirroring the last phrase of the first thematic group.

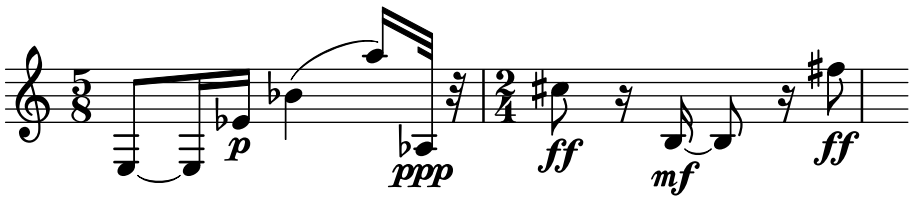

Figure 2.14: Babbitt, *Composition for Four Instruments*: last two measures of clarinet solo, mm. 34-35

[39] Dubiel, "Three Essays on Milton Babbitt (Part Three)," 87.

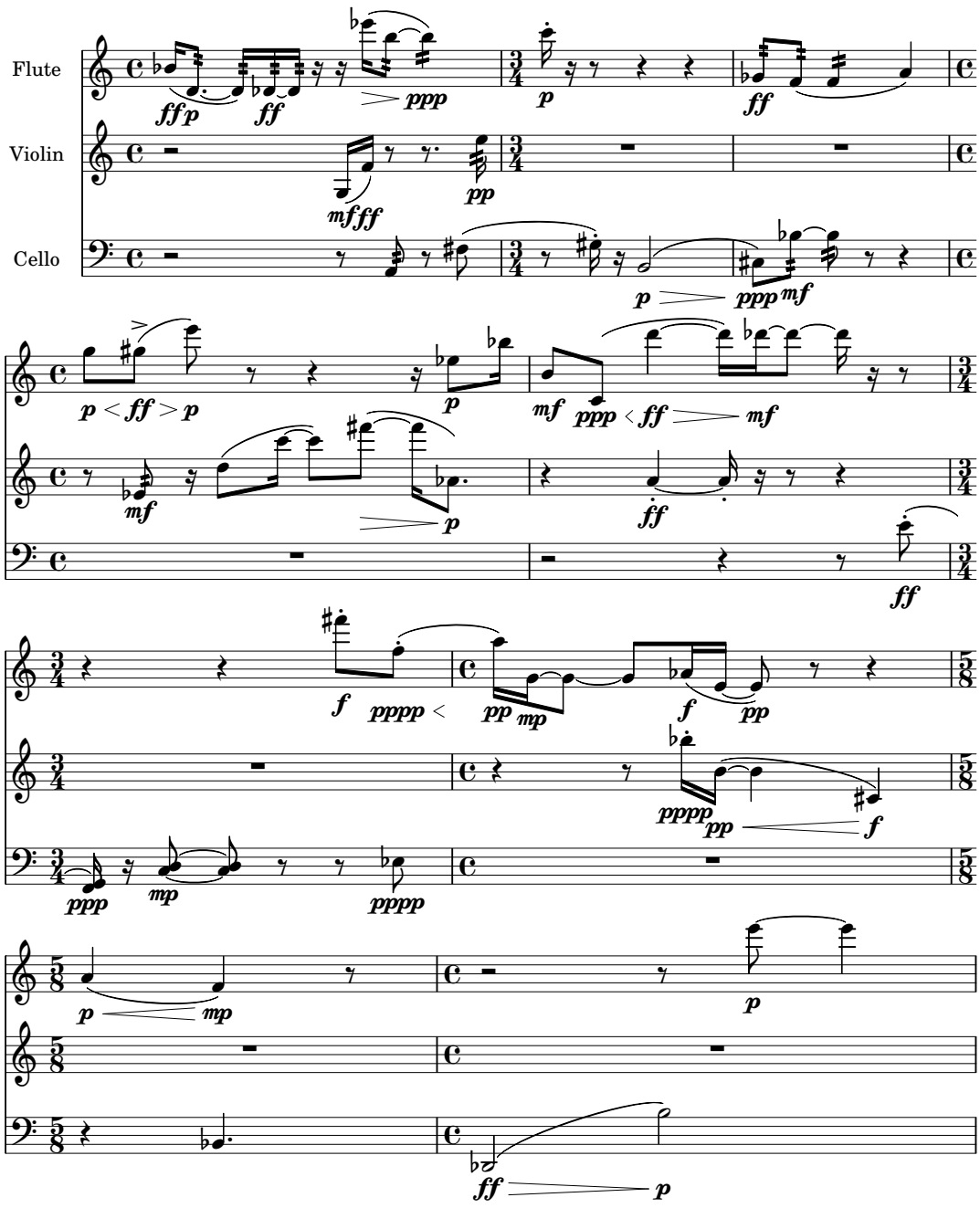

Figure 2.15: Babbitt, *Composition for Four Instruments,* mm. 36-44

For the first two measures, the trio continues the process of liquidation begun by the clarinet. In m. 38, the flute seems to attempt to start a new phrase, but it quickly fragments and gradually loses energy, until the only motivic material really remaining in mm. 43-51 is a series of

falling dyads. In m. 52, the flute has a burst of energy reminiscent of the end of the clarinet solo in mm. 34-35, which is similarly interrupted mid-phrase by the violin and cello (Figure 2.16). This prompts another liquidation into fragments, ending with a series of mostly even, sustained notes reminiscent of the closing gestures in the clarinet solo (i.e. mm. 8-9, 12-13, 32-33). These sustained pitches clear the way for the clarinet's entrance in m. 60, which, as Dubiel observes, "has an especially strong effect of starting anew—less of returning to the beginning than of opening a new line of action."[40] The effect of starting anew rather than continuing within an existing thematic group, of course, is partially due to the return of the clarinet's familiar timbre after a prolonged absence. Equally as important, however, is the fact that the trio section completes its process of fragmentation and liquidation before the entrance of the clarinet, while the clarinet solo was interrupted in the middle of a formal process.

[40] Ibid.

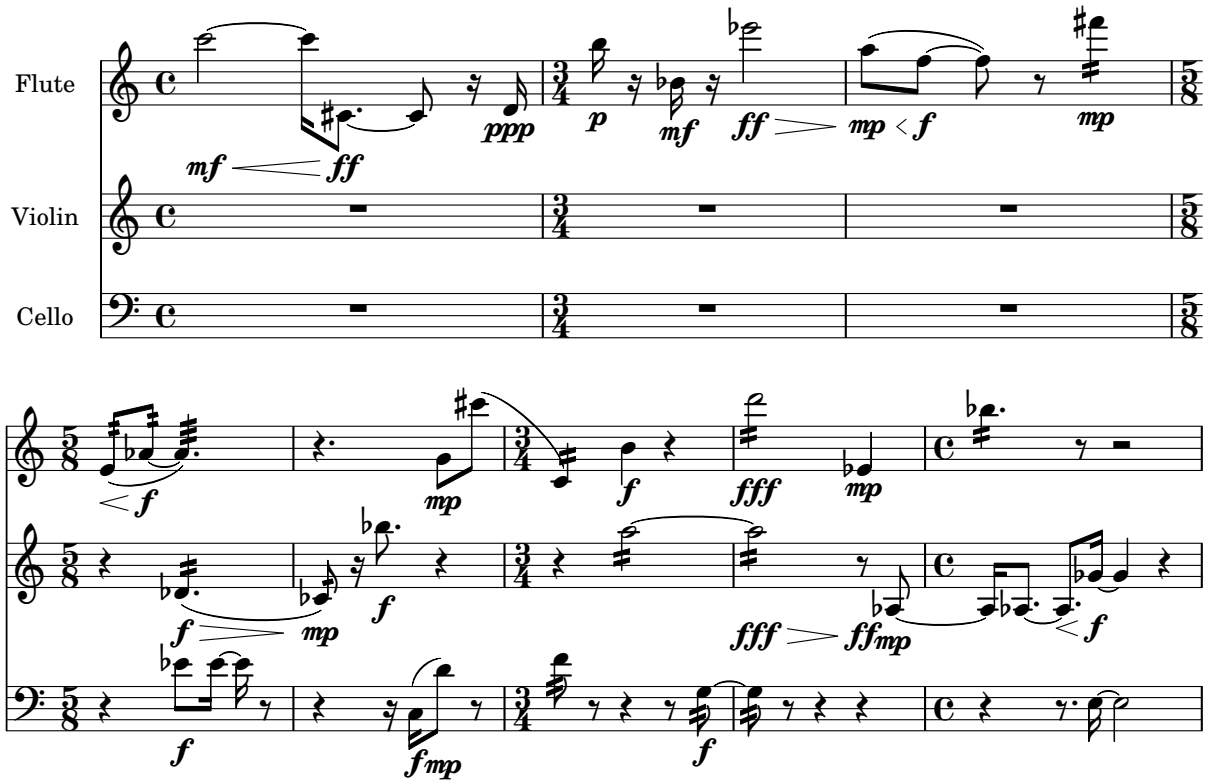

Figure 2.16: Babbitt, *Composition for Four Instruments,* mm. 52-59

2.2.4: Conclusion

My analysis of Babbitt's *Composition for Four Instruments* has several consequences for our understanding of the "phrase" in post-tonal repertoires. First, it emphasizes that understanding the salient parameters that dominate a particular work is essential for making determinations about phrase boundaries. In *Composition for Four Instruments*, those salient parameters were pitch and rhythmic contour. Second, the analysis demonstrates that the manner in which chunks of music relate to each other early in a piece can affect phrase determinations throughout the rest of the piece. Third, it shows that phrase structure as perceived by a listener consists of a combination of prospection and retrospection. Finally, it demonstrates that function and process

are intertwined in the perception of musical form. Just as the composer may submit an idea or a motive to the formal processes of statement, repetition, and liquidation, so too may the listener perceive these processes as functioning to constitute a sentence, and develop expectations accordingly. An idea does not merely function to begin a phrase or end it; its function is, instead, shaped by everything that comes before or after.

2.3: Dallapiccola's *Dialoghi*

2.3.1: Introduction

The preceding analysis of Babbitt's *Composition for Four Instruments* largely set its serial structure aside from the analysis of its phrase structure and formal functions. In the case of Luigi Dallapiccola's *Dialoghi* for cello and orchestra, however, the composer has inextricably tied phrase structure to a particular serial technique: cross-partitioning. Gaining an understanding of the particular configurations of cross-partitions in this work is inherently valuable from the perspective of twelve-tone analysis, but an approach that views those cross-partitions through the lens of formal function is necessary to develop an understanding of the work's most striking features: its clarity of phrasing, the melodious quality of the cello line, and the unique framework of interactions between the cello and orchestra. Analyzing the phrase structure of *Dialoghi*'s first movement alongside and through its twelve-tone innovations can provide insights into the composer's choice of this particular style of cross-partitioning, as well as its effects on a listener. Moreover, a clear and detailed analysis of phrase structure appears essential for understanding the dramatic arc of the first movement, which is firmly tied to the work's first phrase: three measures

of cross-partitions in the orchestra, clearly cohering into one, arch-shaped unit. As I show through my analysis, the structure and sequence of musical events on the level of the phrase contribute to a larger-scale formal process of loosening in the first movement's A section.

In the present analysis of *Dialoghi*'s first movement, I review the serial mechanisms at work in the music before showing how those mechanisms manifest themselves in the form of phrases through the composer's use of salient parameters and a listener's processes of object categorization and retro/prospective listening.

2.3.2: Serial structure of the first phrase

Although Luigi Dallapiccola's *Dialoghi*, a four-movement work composed in 1959-1960 for cello and orchestra, shares aspects of compositional design with Babbitt's *Composition for Four Instruments*, their effect is markedly different in the context of Dallapiccola's more extended work. As does Babbitt, Dallapiccola somewhat obscures the row that underlies the work's serial structure, and he makes use of some of the techniques associated with total serialism by arithmetically structuring rhythm and timbre at certain moments in the piece. One of the ways in which Dallapiccola obscures the row form is through the technique of cross-partitioning, which has been given a thorough treatment by Brian Alegant.[41] In a cross-partition, a twelve-tone row is partitioned in order to create vertical harmonies. A twelve-tone row may be divided into equal partitions of 2 groups of 6, 6 groups of 2, 3 groups of 4, or 4 groups of 3. Analysts often represent cross-partitions through a table that sets out the subsets, resulting in a "two-

[41] Brian Alegant, "Cross-Partitions as Harmony and Voice Leading in Twelve-Tone Music," *Music Theory Spectrum* 23, no. 1 (2001).

dimensional configuration of pitch classes whose columns are realized as chords, and whose rows are differentiated from one another by registral, timbral or other means."[42] The pitches in the resulting vertical combinations may be reordered in order to maintain the vertical harmony while altering the horizontal melodies.

Dallapiccola's *Dialoghi* is based on the twelve-tone row < 0, 1, t, 2, 6, 4; 5, 3, 7, e, 8, 9 >.[43] The row is inversionally combinatorial and, as Alegant observes, RI-symmetrical: its P_o and I_9 forms are retrogrades of each other:

P_0: < 0, 1, t, 2, 6, 4; 5, 3, 7, e, 8, 9>

I_9: < 9, 8, e, 7, 3, 5; 4, 6, 2, t, 1, 0>

Figure 2.17 shows the first cross-partition, D_e, featured in *Dialoghi*, which is based on the unordered hexachords of R_2: <e, t, 1, 9, 5, 7; 6, 8, 4, 0, 2, 3>. The subscript D_e represents the "root" of the first chord, which in this case happens to be pitch-class 11 (indicated by the letter "e"). The first column of the cross-partition is the first collection played in the piece, and is sounded *pianissimo* by the violins and cellos. The second column represents the second sonority, played by the same instruments. Each column contains one unordered hexachord of the row form P_2. Figure 2.18 reproduces the chords in their sounding registers.

[42] Ibid., 1.
[43] Where 0 = C.

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

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

b) The second cross-partition (m.2), $\mathbf{D}_{5}$

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

Figure 2.17: The first two cross-partitions of Dallapiccola's *Dialoghi*, with each row representing one voice, ordered by register

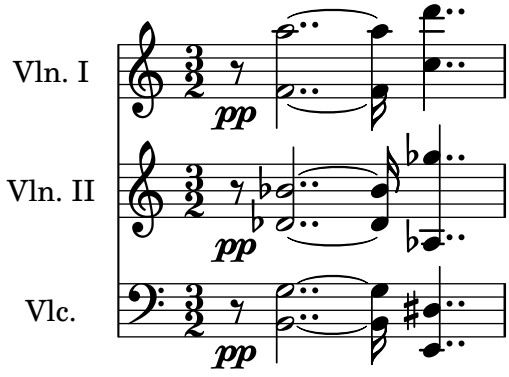

Figure 2.18: Dallapiccola, *Dialoghi,* m. 1

Figure 2.17a shows a near-transposition between the two hexachords: the pitches A, F, D ♭, and B all move by perfect fourth or fifth. The other two pitches, B ♭ and G, move by 4 semitones, or by major third. Figure 2.17b shows what Alegant terms a "slot-machine" transformation of D_e in which new intervals are introduced: the semitone, the minor third, and the tritone. This new ordering of the cross-partition, D_5, appears in the second measure, both timbrally and registrally contrasting with the first measure (Figure 2.19). The contrast in instrumentation between measures 1 and 2 cues the listener to identify timbre as a salient parameter in the work: m. 1 is played entirely by string instruments, while m. 2 sees the entrance of the piccolo, clarinet, and bass clarinet, in addition to the violas and bass. In m. 1 the voicing of the cross-partition is also constrained to a span of three octaves, while m. 2 expands the range to four and a half octaves. Finally, there are important differences in the voice leading of mm. 1-2. Measure 1 sees each of the three top voices leap upwards by a perfect fourth, perfect fifth, and minor sixth, working down from the first violins. Each of the lower three voices descends, by perfect fifth, major third, and perfect fourth, working upwards from the cellos. In m. 2, each of the three top voices descends, by augmented fourth, minor third, and major third (piccolo, clarinet, viola), while each of the three lower voices ascends, by minor second, minor second, and minor third (bass, bass clarinet, viola). The first and second measures thus establish contrasts in register (which expands significantly in m. 2 from a more centralized collection in m. 1), timbre (which changes from violins and cellos in m. 1 to low strings and woodwinds in m. 2), and intervallic content (from ascents to descents and vice versa, with an emphasis on perfect fourths and fifths in m. 1, compared to semitones and the marked descending tritone in the piccolo in m. 2). These extreme contrasts in register, timbre, and intervallic content are marked for the

listener as salient parameters.

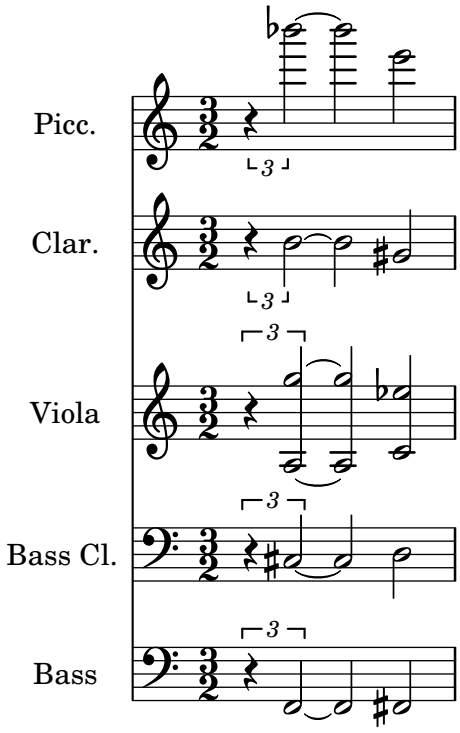

Figure 2.19: Dallapiccola, *Dialoghi,* m. 2

In m. 3, Dallapiccola restates D a third time as D_9. D_9 introduces the final missing interval class, the major second (Figure 2.20). For the first time, this cross-partition exhibits the technique of splitting, in which a single voice splits into two pitches or two pitches merge into one. In terms of the three salient parameters introduced so far (register, timbre, intervallic content), D_9 presents a return to the material of m. 1 by returning to a timbre of predominately stringed instruments (now including harp and celesta), with a prominent ascending chromatic stepwise motion in the highest register and a prominent descending perfect fourth in the bass. The register, however, has expanded yet again, to six octaves. Figure 2.21 shows a reduction of the first three measures of the piece.

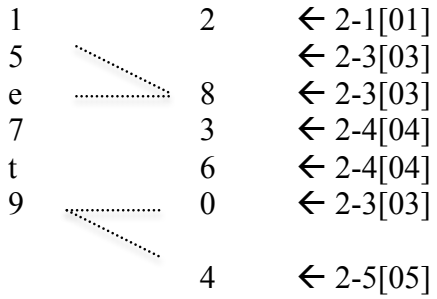

Figure 2.20: Dallapiccola, *Dialoghi:* the third cross-partition, D_9, in m.3

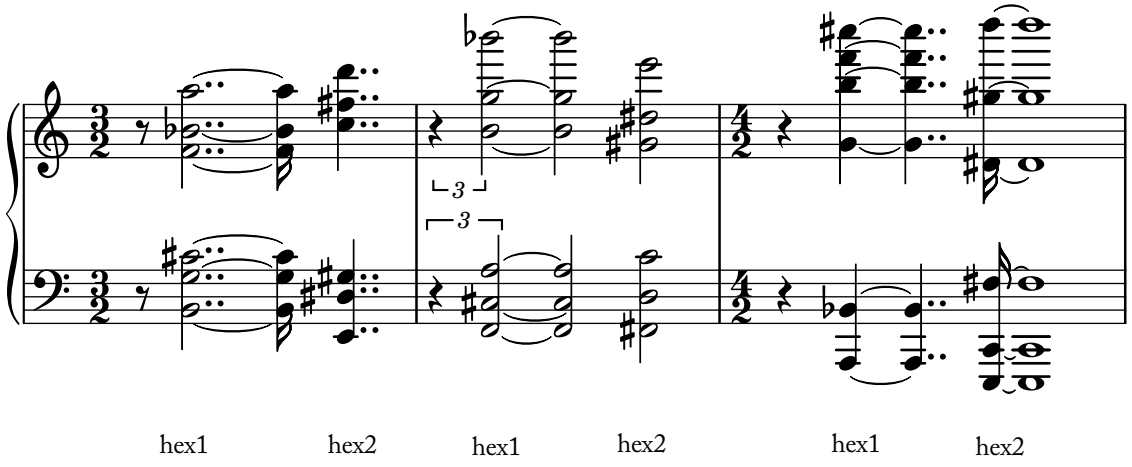

Figure 2.21: Dallapiccola, *Dialoghi:* reduction of mm. 1-3; each chord change represents a change in hexachord within the row P_2

2.3.3: The entrance of the cello

Measure 3 also sees the entrance of the solo cello, *poco sforzando*, *tremolo*, and *sul ponticello*, on a B3. This marked change in the salient parameter of timbre encourages the retrospective process of grouping together the first three measures and their three constituent cross-partitions into one coherent phrase group, whose dominant process of departure and return forms an arch shape. In m. 4, the orchestra drops out as the cello plays the first four notes of its melody: B C A C♯. After stalling on C♯ for a measure, the cello reaches up to F♮, a tritone

away from its opening pitch. These are the first five notes of P_e (B C A C♯ F), which the cello answers with the first five notes of I_e (B A♯ C♯A♮ F). As Alegant notes, "the notes of the I_e pentachord are inverted in pitch space from B4; the rhythms of the I_e pentachord are halved."[44] Figure 2.22 shows the entrance of the solo cello, accompanied in m. 5 by the orchestra playing I_2: the first hexachord is played by the vibraphone and harp, followed by the strings, and finally the harp, celesta, horn, and flute.[45] In m. 5, the orchestra enters again with P_8.

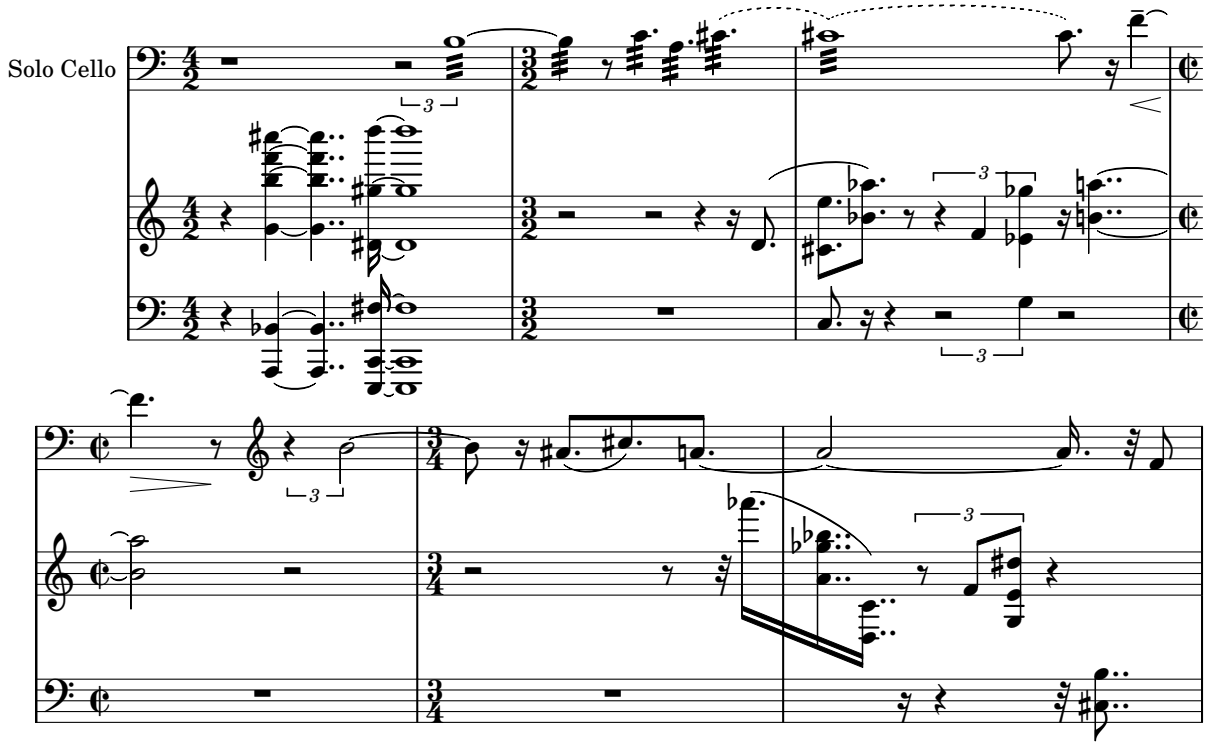

Figure 2.22: Dallapiccola, *Dialoghi,* mm. 3-8, showing the entrance of the solo cello

In mm. 9-10, the hexachordal pairs of mm. 1-3 reenter, this time in retrograde and with all three statements compressed into two measures (row form P_2). Figure 2.23 presents the three

[44] Brian Alegant, *The Twelve-Tone Music of Luigi Dallapiccola* (Rochester: University of Rochester Press, 2010), 74.
[45] Ibid.

cross-partitions as they appear in the score, while Figure 2.24 shows the cross-partitions, RD_9, RD_5, and RD_e. I have labeled these according to the final note in the bass since they are retrograde forms of the opening cross-partitions, and thus exactly reproduce the first three measures in retrograde. By placing the three cross-partitions in direct juxtaposition and slurring across hexachords, Dallapiccola draws attention to the melodic features of the three hexachordal pairs as a single unit. This strategy also emphasizes the quasi-cadential effect of hexachordal pair in RD_e, which emphasizes leaps by perfect fourth and fifth.

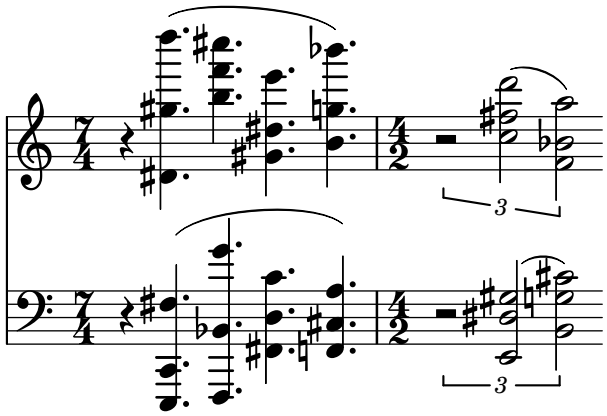

Figure 2.23: Dallapiccola, *Dialoghi:* orchestra, mm. 9-10

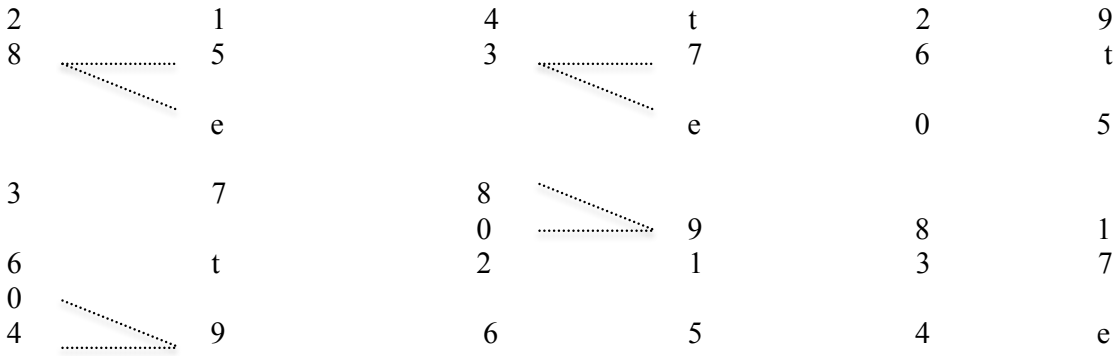

Figure 2.24: Dallapiccola, *Dialoghi:* cross-partitions RD_9, RD_5, and RD_e in mm. 9-10

2.3.4: Cross-partitions and phrase structure

In his analysis of *Dialoghi*, Dana Richardson refers to the hexachordal pairs in mm. 1-3 and those of mm. 9-10 as "tonal pillars," which he sees as setting out a "tonic row." Indeed, the reentrance of this tonic row in the form of three "tonic pillars" after the initial melody played by the solo cello does call to mind a cadential progression signaling the end of a phrase.[46] Most importantly, the return of the hexachordal pairs in retrograde validates for the listener a process of phrase formation based on the voice leading and timbre of cross-partitions.

Confirming that the three statements of P_2 in mm. 9-10 acted to close a large, arch-shaped theme comprising the three phrases in mm. 1-10, the cello reenters in m.10 with a new thematic statement (Figure 2.25). The cello's new melody continues the row forms it abandoned in its initial melodic statement of mm. 3-8, picking up at the sixth note of P_e. While that melody was highly constrained in terms of its range—circling obsessively first around B3 and then, in the inverted repetition of the first five-note idea, around B4—the theme that enters in m. 10 features a three-note ascending line with the intervals +1, +10. That idea is repeated in a slightly contracted form in the next measure, the dotted quarter notes becoming quarter notes. Coming out of that repeated idea in m. 11, the cello's melody sweeps downwards and then upwards again; this melodic idea is condensed rhythmically even further into a quintuplet and brings P_e to a close. The cello then picks up I_e again, beginning on its sixth pitch class and inverting the preceding melody around G4. This clear inversion of the melody that was just heard, rhythmically identical to the first idea except with each note value shortened slightly, gives the impression of a basic idea-contrasting idea structure.

[46] Dana Richardson, "Dallapiccola's Formal Architecture" (PhD thesis, New York University, 2001), 157.

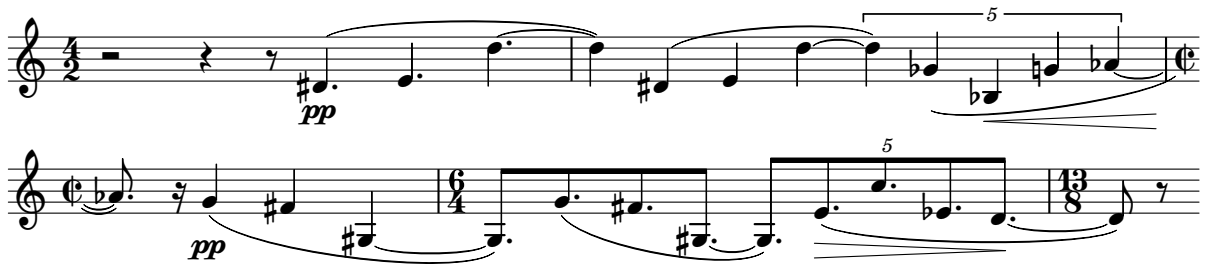

Figure 2.25: Dallapiccola, *Dialoghi,* mm. 10-13

Here is where our close attention to the function and phrase structure of the cross-partitions begins to pay off in our understanding of the phrase more generally in *Dialoghi*. Figure 2.26 reveals how mm. 1-10 form a tightly-knit first theme, marked off by the repetition of the three "tonic" pillars—these are marked in orange in Figure 2.26. The formal process at work in the entire A section is one of loosening: as the following phrase-level analysis of m. 10 onwards demonstrates, the phrases following the first tightly-knit theme become more loosely-knit and expansive, paving the way for the long, free cello solo of the B section. This process begins with the basic idea-contrasting idea structure in mm. 10-13, which suggests the possibility of a continuation.

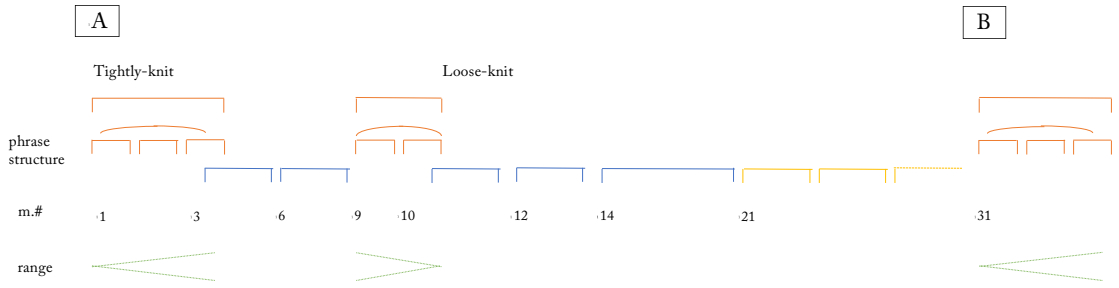

Figure 2.26: Graph showing the phrase structure of the A section

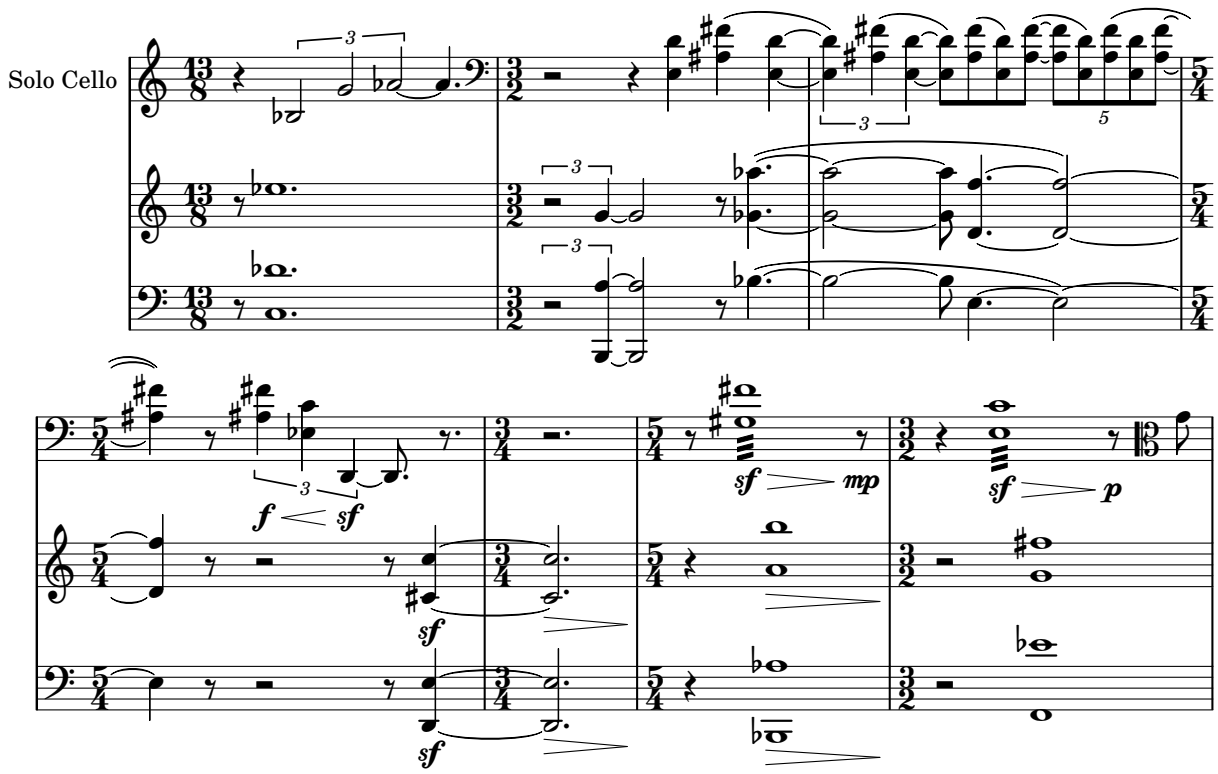

Figure 2.27: Dallapiccola, *Dialoghi,* mm. 14-20

The impression of mm. 10-13 as a coherent phrase that initiates a thematic process is confirmed in mm. 14-16 (Figure 2.27). In m. 14, the cello states an elongated variation on the rising motive in m. 10, in a near-retrograde inversion (+1, +10 becomes +9, +1), using the pitches of R_e. The cello is accompanied by a 4x3 cross-partition of R_4, first in the brass, and in mm. 15-16 answered by the winds (Figure 2.28). The percussion instruments also enter en masse at this moment. The cello then begins to alternate between two dyads, <E, D> and <A♯, F♯>, increasing in speed and liquidating the preceding theme's motivic material. This continuational section also looks forward to new cross-partitions, by providing the first 4x3 partition in the piece, and one based on a new row form. At the end of this continuational passage, the cello erupts with a descending triplet (based on row form P_2), marked forte with a crescendo to a

sforzando; a marked difference from the previous overwhelmingly piano and pianissimo dynamic level. As if in answer, the brass and strings enter with a four-note chord played *sforzando*, setting off a 3x4 cross-partition based on I_2 (Figure 2.29). Despite the fact that both of these events—the descending triplet in the cello and the four-note chord in the orchestra—begin new row forms, the build-up of tension from the repeated dyads and the new pitch material during the preceding continuation, followed by the sudden, paired outbursts by the cello and orchestra, lead me to group these events together into a single phrase.

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

Figure 2.28: Dallapiccola, *Dialoghi*: 4x3 cross-partition D_0, mm. 14-16

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

Figure 2.29: Dallapiccola, *Dialoghi*: 3x4 cross-partition D_2, mm. 18-20

In m. 19, the second two tetrachords of the D_2 cross-partition combine with the second trichord of P_2 in the solo cello, so that the cello and orchestra align for the first time in order to herald the start of a new section. This new section, beginning in m. 21, brings a new idea and a new way of disguising its row forms, RI_t and I_t, by distributing the first hexachord of each row

across two simultaneous melodic streams in the winds. The first hexachord of I_t is inverted in pitch space around the axis of symmetry between F and F♯4 (Figure 2.30).

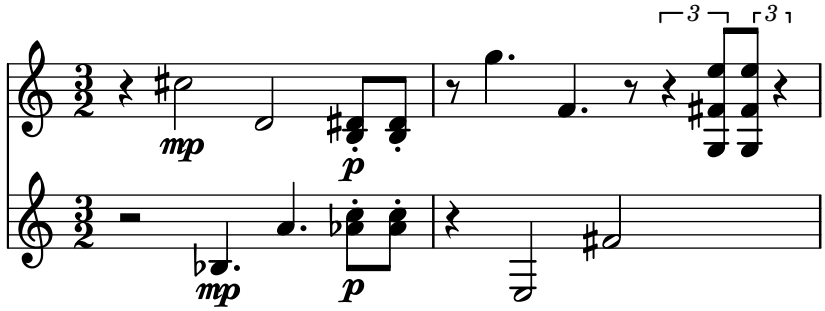

Figure 2.30: Dallapiccola, *Dialoghi*: orchestra, mm. 21-22

This new structuring of the salient parameter of pitch materials creates the impression of a new internal section, which begins with a mirrored melody that is immediately repeated. From that repeated idea emerges a series of fragments from row R_5, based on the same principle of mirroring. This is followed in m. 26 by a rare and notable moment of homophony in the strings, where Dallapiccola creates a 4x3 cross-partition in which three melodic lines stem from a single pitch, C5 (Figure 2.31).

0	2	8	5	← 4-27[0258]
0	e	6	1	← 4-6[0127]
0	t	7	4	← 4-27b[0368]
		9		
	↑	↑	↑	
	3-3[014]	4-1[0123]	3-3b[034]	

Figure 2.31: Dallapiccola, *Dialoghi*: cross-partition D_0, m. 26

Another clearly continuational phrase follows: the violin enters with melodic fragments based on RI_4, pausing before each disjointed two-note fragment before becoming stuck on D♯4

and E4, trilling between them in a manner reminiscent of the liquidation in mm. 15-16 (which, of course, led to the cadential gesture in mm. 17-18). This time, the trill fades to nothing, clearing the way for the return of the three cross-partitions based on the original row (R_2), which heralds the start of the movement's B section (Figure 2.32). Like the A section, the B section is again framed by cross-partitions in the orchestra. After a long cello solo, the three cross-partitions appear once more in retrograde in mm. 50-51.

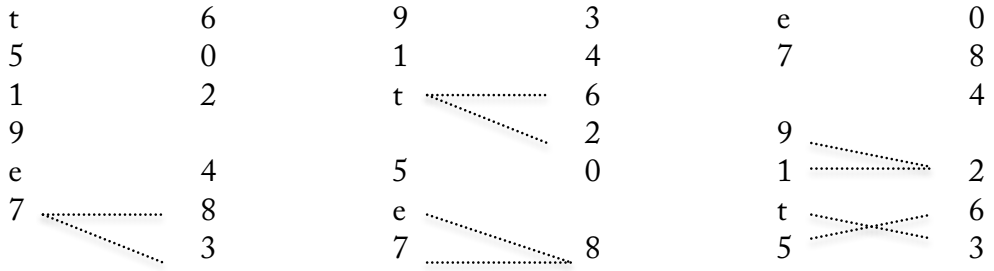

Figure 2.32: Dallapiccola, *Dialoghi:* cross-partitions in mm. 31-34

2.3.5: Conclusion: Compositional Scaffolding and Salient Parameters

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

2.4: Dallapiccola's *Preghiere*

The first movement of Dallapiccola's *Preghiere* (1962), for baritone and chamber orchestra, exhibits some characteristics reminiscent of *Dialoghi*, such as a particular configuration of sonorities that returns throughout the movement and provides a structural frame. *Preghiere* presents a new challenge in terms of functional phrase-level analysis, however: first, the presence of a text complicates issues of phrasing, and second, Dallapiccola uses more complex phrase structures including elision.

Alegant characterizes the recurring sonority in *Preghiere* as a strict ritornello, which alternates with loose episodes.[47] The work is based on a row, which, as Alegant notes, is hexachordally combinatorial. Figure 2.33 shows the row form P_1 above row I_0, its inversional partner. An important invariant segment between the row's hexachords is the (3, 4, 9, t) tetrachord, which appears in row forms P_7 and I_6 as well; because of this shared tetrachord, Alegant observes that "set class [0167] can function as a referential sonority."[48]

P_1: < 1, 0, 3, 4, 9, t; 8, 7, 2, 6, 5, e >

I_0: < 0, 1, t, 9, 4, 2; 5, 6, e, 7, 8, 2 >

Figure 2.33: Dallapiccola, *Preghiere*: row forms P_1 and I_0

I would be remiss in not pointing out that *Preghiere* is a texted work, and that the particular sonic and grammatical qualities of the poetry may affect a listener's perception of the form. The text of the first movement of *Preghiere*, written by Brazilian poet Murilo Mendes and

[47] Alegant, *The Twelve-Tone Music of Luigi Dallapiccola*, 89.
[48] Ibid., 90.

translated into Italian by Ruggero Jacobbi, is reproduced in Table 2.1 below:

Italian translation	English translation[49]
Oscura vita, Ciò che ti chiedo È di svelarmi i tuoi disegni, Oscura vita: D'essere trasparente, Concisa, A esempio della morte - Chiara speranza.	Dark life, What I ask of you Is to unveil to me your designs, Dark life: To be transparent, Concise, Like death - Light hope.

Table 2.1: Text of *Preghiere* with English translation

The relationship between music and text in art song has been the subject of a great deal of scholarship. Famously, in *The Composer's Voice*, Edward T. Cone defines three personas in art song: poetic-vocal persona, an instrumental persona, and a complete musical persona.[50] Later, Cone revised his theory; as Stephen Rodgers has pointed out, in the revised version the "poetic persona is no longer just a proxy for the actual poet; it is also a proxy for the composer," pushing the poetry to the periphery.[51] Berthold Hoeckner critiques Cone's model, arguing instead that "even when a poem has been molded into a through-composed song; even when its words have lost the rhythm of their original metre; and even when its text has been altered by the composer: the poetic text still remains an independent component of a song."[52] Stephen Rodgers offers an alternative mode of analysis, attending to the phonetic and sonic details of the poetry *and* the

[49] English translation provided by Jessica Peritz, with many thanks.
[50] Edward T. Cone, *The Composer's Voice* (Berkeley and Los Angeles: University of California Press, 1974).
[51] "Poet's Love or Composer's Love," in *Music and Text: Critical Inquiries*, ed. Steven Paul Scher (Cambridge: Cambridge University Press, 1992); Stephen Rodgers, "Song and the Music of Poetry," *Music Analysis* 36, no. 3 (2017).
[52] Berthold Hoeckner, "Poet's Love and Composer's Love," *Music Theory Online* 7, no. v (2001): para. 2.6.

music, "paying special attention to the ways in which these two sound worlds seem to remain indifferent to each other, to reinforce each other and to exist in conflict with each other."[53] As I will argue in the following analysis, while the text may indeed constrain certain aspects of the form, itself affording particular functions, it exists in conversation with the specifically musical affordances at play as well.

The opening measures of *Preghiere*, presenting rows P_1 followed by I_0, are shown in Figure 2.34. First: a dramatic descending leap from D ♭ 3 to C2, *quasi forte*, in the low strings and bassoon opens the ground up from under us before the violas, second violins, horn, trumpet, English horn, and bass clarinet punch through the texture with a sustained, accented tetrachord, (E ♭ , E, A, B ♭), over which the harp and celesta play a sweeping five-octave descent. In m. 3, the xylomarimba repeats B quietly but insistently, as if to say yes: this is the last note of the row.

[53] Rodgers, "Song and the Music of Poetry," 6-7.

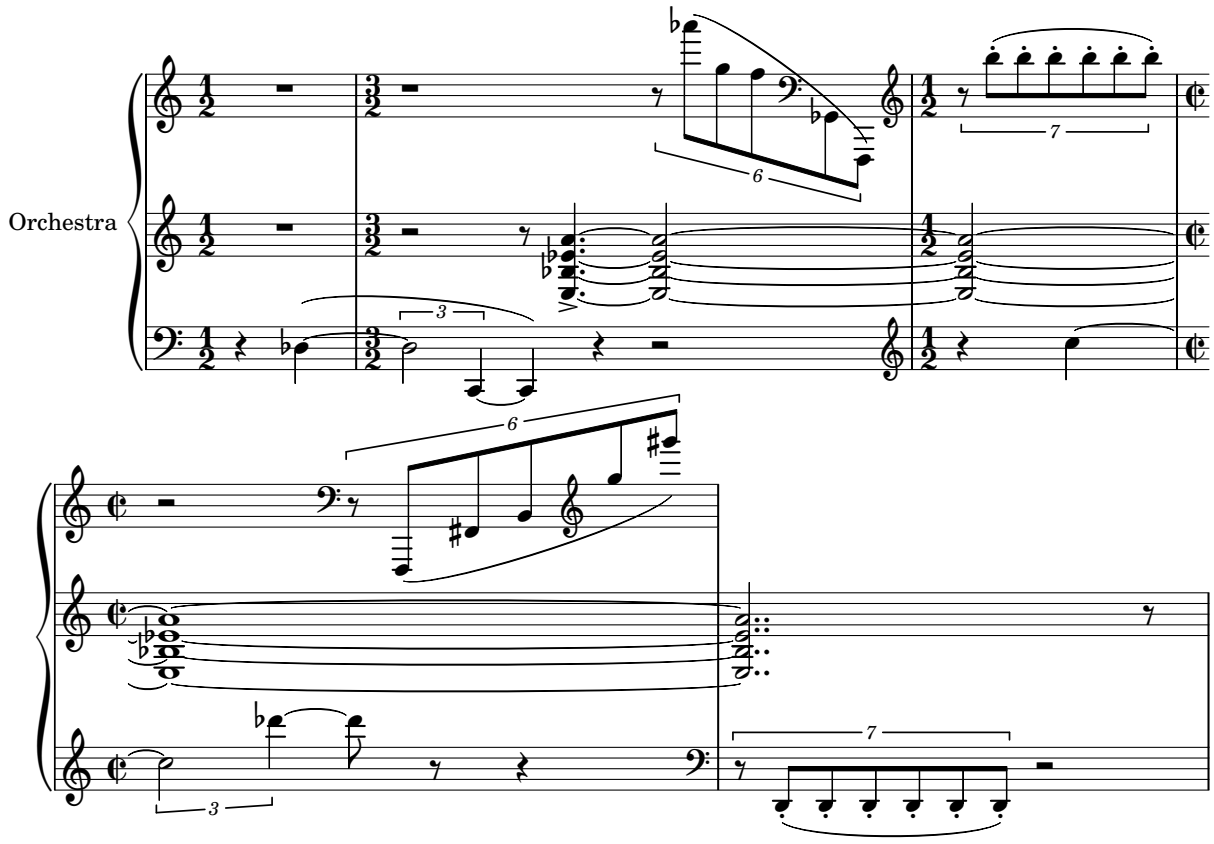

Figure 2.34: Dallapiccola, *Preghiere*: orchestra, mm. 1-5

So far, in these first three measures, we have encountered three distinct objects, markedly different from each other and well-articulated. These are demarcated through the parameters thus far made salient to the listener: relative pitch contour (that dramatic descending leap), texture (a single line as opposed to a punctuating chord and arpeggio), timbre, and rhythmic contour (that last repeated note).

The fourth measure sees the start of row I_0 and the inversion of P_1 in pitch space, with an upward leap of +13 semitones in the oboe, an inversion of the first gesture and a dramatic change in timbre. The listener now might make use of her ability to make prospective decisions based on retrospective observations: what will enter next will be some version, possibly inverted, of the musical object from m. 2. Indeed, we hear an upward sweeping gesture in m. 4, with the chord

having been sustained throughout. With the entrance of the repeated staccato notes in m. 5, the listener now has access to several categories: the category of "melodic leap material," "sweeping arpeggiation gesture," and "repeated staccato notes." Each time these three categories are combined, they together form one well-articulated, multi-part phrase, which is elided with the next.

When the voice enters in m. 5, again elided with the previous phrase, it begins with a large leap similar to the ones that began each of the first two phrases. After a dotted-eighth pause, the next measure repeats that leap before climbing a whole tone higher to C natural, ending the gesture with a double neighbor figure before coming to rest on a B natural. These four measures are based on the row form R_3, the first hexachord of which is shared between the voice and the cello, bassoon, bass clarinet, and B ♭ clarinet in mm. 5-6, the second between the voice, cello, viola, and violins in mm. 7-8. Row form RI_0 enters in the voice at the end of m. 8, beginning with the inversion of the phrase's opening interval and ending with another double neighbor figure (Figure 2.35). The pitches of the row are once again distributed between the voice and other instruments: this time the first hexachord between the voice, viola, trumpet, horn, and bassoon, and the second between the bass, cello, viola, and violin. This phrase thus exhibits a structure of two parallel ideas, reproducing the formal structure of the first five measures. It, too, articulates the end of each unit (in m. 8 and m. 10) with a series of three repeated notes in the strings, recalling the repeated staccato gesture that ended each unit in the movement's first section.

In m. 10, the material of the opening five measures returns, this time in a compressed form, with the large leap upwards, broad sweeping gesture, and sustained tetrachord all taking

place almost simultaneously within the span of one measure. Additionally, this iteration of the "ritornello," as Alegant calls it, uses two forms of the row: I_1 and R_0. The only gesture that is set apart from the rest in this iteration is the repeated staccato note figure, which serves to articulate the end of each unit.

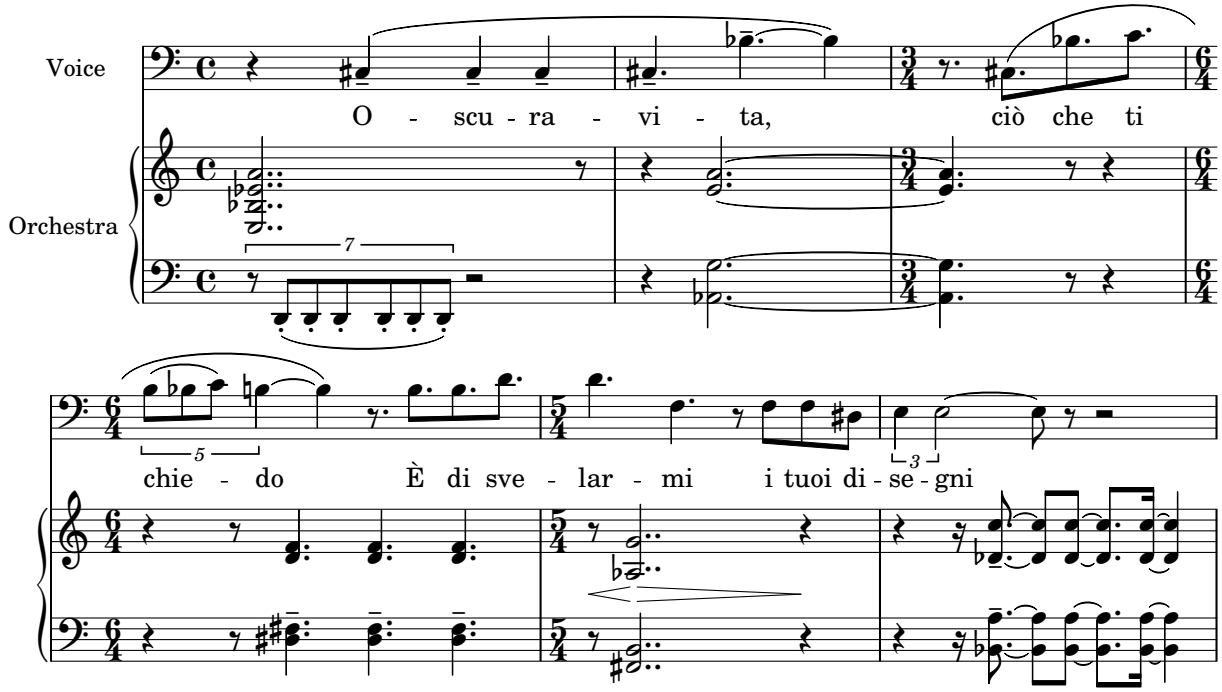

Figure 2.35: Dallapiccola, *Preghiere*, mm. 5-10

The voice enters again in m. 15, as shown in Figure 2.36, first with row form I_1 (mm. 15-16), then R_8 (mm. 17-18) and P_2 (mm. 18-19). Now the voice takes up the repeated notes that had previously been the orchestra's purview. The change in function of the repeated notes, which previously had an almost cadential effect and which now serve as the middle of a phrase, contributes to the sense of looseness in this section. In m. 18, the orchestra breaks away from the voice. Instead of taking on a supporting role, underlining the baritone's statements with sustained [0125], [0167], and [0134] tetrachords, as it did in the first phrase, in mm. 18-19 it

picks up energy, layering rows P_e and I_t over the voice's P_2.

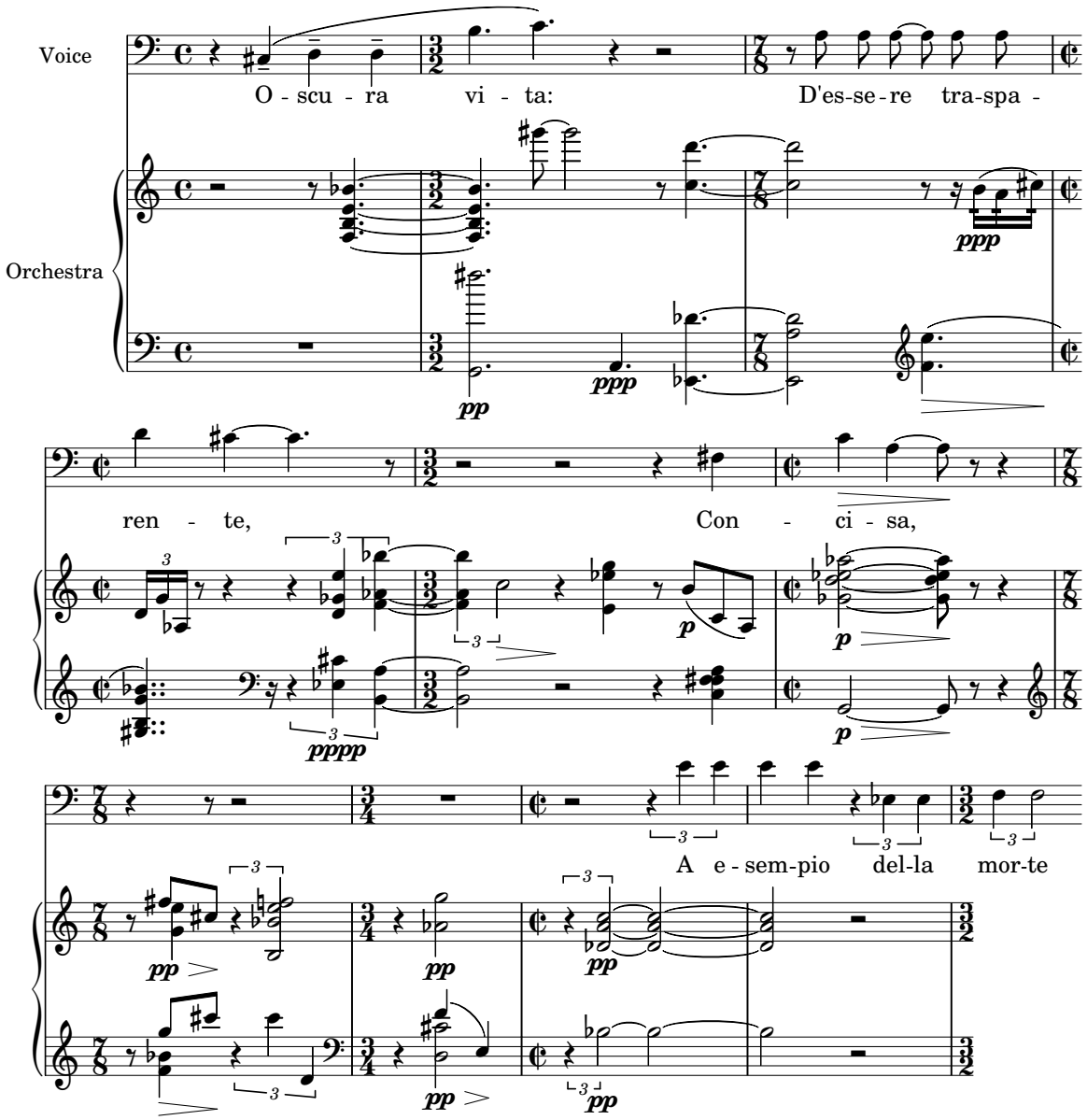

Figure 2.36: Dallapiccola, *Preghiere*, mm. 15-25

With the most salient marking of unit and phrase endings unmoored from its original meaning, the voice begins to sing in fragments of phrases. In mm. 19-20, it seems to begin a new phrase, but is quickly interrupted by the orchestra, playing a series of chords and falling gestures

based on row forms P_0, P_e, and P_t (Figure 2.36). After three of these falling gestures, the voice enters again, still with only a fragment: the trichord (E E ♭ F) from row I_0, with each note repeated, first four times, and then twice for the trichord's second and third notes. Dallapiccola's strategic use of orchestral timbre to interrupt the voice, along with melodic fragmentation and rhythm, create a sense of slowly winding down, eliminating motivic material until all that remains is the repeated-note gesture that had been marked as a closing gesture.

The breakdown of motivic material in mm. 15-25 clears the way for the return of the orchestra's original "ritornello" material, which occurs halfway through m. 25. The exact repetition of the first half of the ritornello in mm. 25-27 encourages the listener to hear this moment as a return to A section material. The voice's final phrase, shown in Figure 2.37, exhibits several features from the first vocal phrase, particularly the emphasis on the double neighbor figure. This time, the double neighbor figure both begins and ends the phrase, acting as a frame. First, the voice presents the double neighbor figure in even triplet half notes, initially descending by a semitone and then ascending by minor third; the next measure contains a contrasting, faster quintuplet figure, ending on a sustained pitch. Measure 30 provides a varied repetition of the preceding gesture, slightly higher and faster (now a sextuplet rather than a quintuplet). After a pause of three quarter notes, the voice enters in retrograde, creating the impression of a two-part phrase in which the second part mirrors the first. This tightly knit mirror form is confirmed with the voice's final gesture, the double neighbor-note figure, which retrogrades the figure in m. 29.

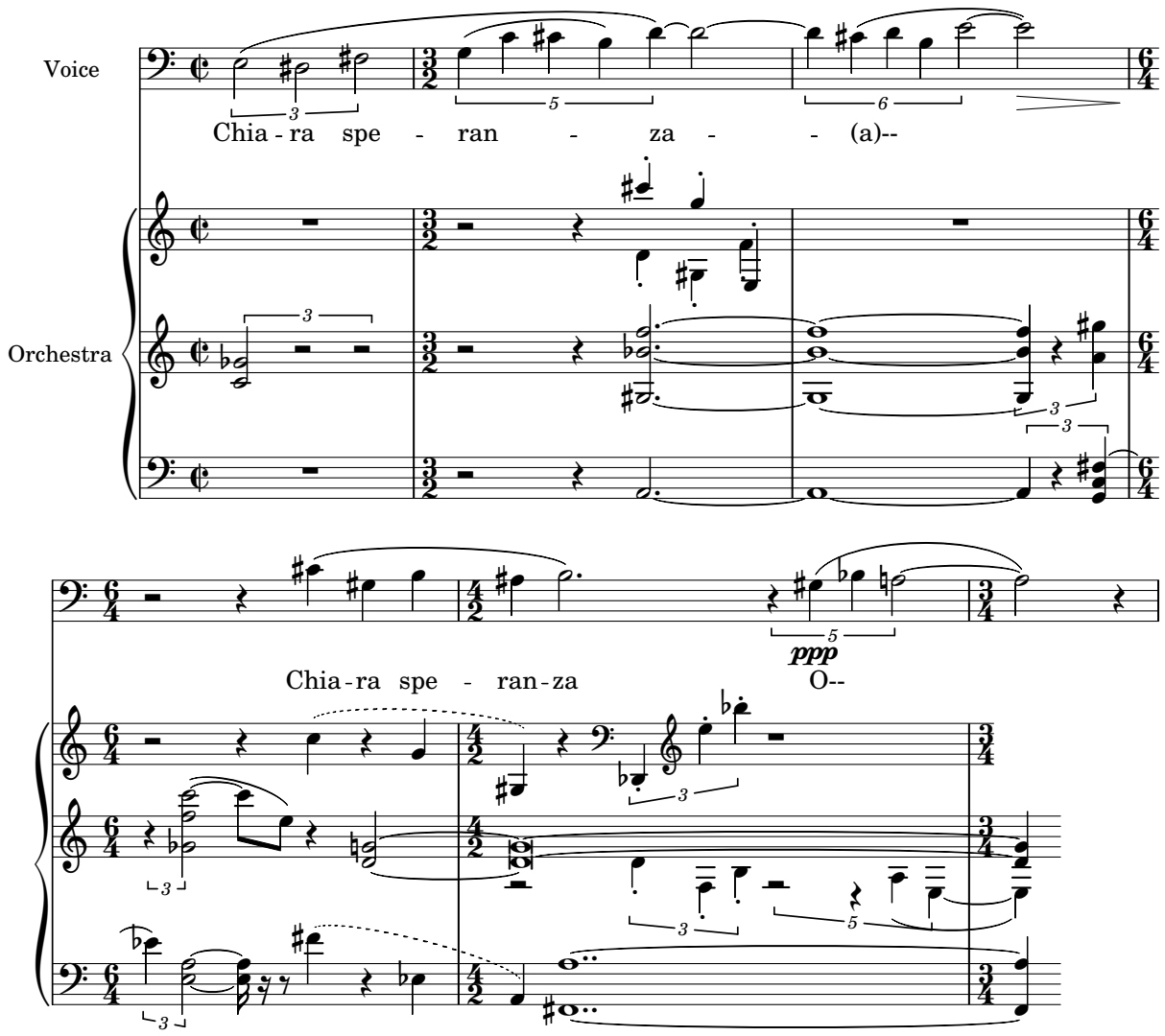

Figure 2.37: Dallapiccola, *Preghiere*, mm. 28-33

The orchestra has now finished its process of disconnecting from the voice: its entrance is delayed, so that the voice begins by singing alone, and when it enters it provides motivic material unrelated to the voice's neighbor figures. Its symmetrical two-part phrase structure is now set off from the voice's by half a measure.

As the preceding analysis demonstrates, the listener's conception of phrase in a piece of vocal music such as *Preghiere* is not necessarily determined by the phrasing and accents of the

text. The text is but a single parameter, one which the composer may choose to make more or less *salient* during the course of the piece. In this particular piece, the listener must also make a number of decisions about how musical objects relate to each other apart from the text, based on parameters that have emerged as salient, on categories, and on the processes of prospection and retrospection. In addition, *Preghiere* was composed using a twelve-tone row, and while the twelve-tone structure of a work might be an important compositional frame, that pitch structure may or may not be the most salient parameter for the listener, although it clearly shapes the organization of the piece.

2.5: Conclusion

One can approach the problem of defining the phrase from multiple angles: one might theorize the various elements that make it up (motives, basic and/or contrasting ideas, continuations, cadences), look at examples of musical objects experienced as phrases and categorizing them, or investigate the historical category of "phrase" and its defining features, noting how different concepts of phrase relate to one another. In my view, the phrase encompasses all of these concepts: it is at once an abstracted collection of elements, an experienced phenomenon, and a historically constructed category. As I have established throughout this chapter, there are three main factors that influence listener perception of musical phrase: these are salient parameters, which are musical elements that emerge as especially marked within a musical context; object categorization, which involves the listener's active formation of categories from the perceptual objects put forward by a composer; and prospection/retrospection,

which involves the listener making predictions and retroactively deciphering what has just occurred.

The preceding analyses of works by Babbitt and Dallapiccola have revealed several important features of the post-tonal phrase. First, composers may make salient different parameters, which in turn aid listeners in making determinations of boundaries, both within and between phrases. Composers may then manipulate the function of the perceived units, altering their relationship with surrounding units as Dallapiccola did in *Preghiere* by playing with the meaning of the repeated staccato note closing gesture. The elements that make up a post-tonal phrase are thus potentially porous and admitting of shifts in meaning and function. The manner in which chunks of music relate to each other early in the piece affects not only how phrase formation is perceived throughout, but also the ways in which listeners interpret the changing functions within phrases and of phrases. Through this process, the phrase—being the most immediately accessible and graspable type of musical structure—can become an essential marker for larger-scale formal processes at work, as demonstrated by the analyses in this chapter.

Given that the phrase can be such an important marker for large-scale form, it stands to reason that understanding how post-tonal music functions on the level of the phrase will be essential to analyzing larger units—units such as sections, movements, and even entire works—in compositions of the twentieth and twenty-first century. The next chapter in this dissertation takes on the task of addressing large-scale form, and it does so through detailed analysis of the musical surface and how that surface is organized by listeners into phrase structure. The ways in which pieces teach us to listen to phrases will necessarily inform and organize how we hear relationships that are more distant from one another in time, and which are thus outside the framework of working memory. At the same time, since these larger-scale relationships *are*

outside the realm of working memory, they will necessarily draw on other resources, like long-term memory, encouraging the listener to make connections outside of the work at hand—connections that may be historical or more abstract in nature, as the analyses in the next chapter suggest.

My conception of the post-tonal phrase will remain foundational throughout the rest of this dissertation, as I explore the relationships between phrases and large-scale form in chapter 3, the mechanism for ending phrases—the cadence—in chapter 4, and some rather unusual types of phrase structures—with their attending challenges—in chapter 5. The perspective of phrase developed in this chapter is fundamentally listener-centered, and hinges on the working memory of the listener as well as the cognitive resources she may draw on to categorize musical objects in relation to others and to retrospectively interpret function and prospectively anticipate it. This understanding of phrase is, however, also built upon the parameters made salient by the composer. These two perspectives come together in the notion of affordance (as introduced in chapter 1). The manner in which the affordances of phrases interact with the affordances of larger sections is complex and multifaceted, and forms the basis of the analyses in the chapter that follows.

Chapter 3: Large-Scale Formal Design, Function, and Rhetoric

3.1: Introduction

The specter of sonata form looms large over any study of twentieth-century form on the large scale—that is, on the scale of sections, movements, and entire works. Composers thinking about how to organize their works often grappled with what Joseph Straus calls "the paradigmatic form of tonal music," for indeed, sonata form is inextricably linked to tonality.[1] In Straus's study of the influence of tonal tradition on musical modernism, he locates a "dichotomy of form and content in twentieth-century music," in which a sense of tension underlies the relationship between musical organization and the traditional form.[2] This tension forced post-tonal composers—Straus's examples are drawn from the work of Stravinsky, Bartok, and Schoenberg—to radically redefine and undermine sonata form. For example, Straus argues that Schoenberg, in his String Quartet No. 3, "profoundly reinterprets the sonata form" through the "revisionary strategy of symmetricization."[3] Schoenberg accomplishes this by balancing the first movement's sonata form using a large-scale inversional relationship between the exposition and the recapitulation.

Straus thus recuperates Schoenberg's use of sonata form from its reputation as a sign of compositional weakness (as a reflexive retention of past practice) by situating it as an assertion of the strength of twelve-tone principles like "motivic association, set-class equivalence, aggregate

[1] Joseph N. Straus, *Remaking the Past: Musical Modernism and the Influence of the Tonal Tradition* (Cambridge: Harvard University Press, 1990), 96.
[2] Ibid., 98.
[3] Ibid., 130-31.

completion, and, above all, inversional balance."[4] In the same manner, Straus shows how Schoenberg uses pitch-class inversion to negate the tonal associations of the triad in his choral work "Verbundenheit" (op. 35, no. 6), arguing that Schoenberg turns to the past not out of weakness but rather "to demonstrate the power of his new methods to encompass and redefine the music of his predecessors."[5]

The reframing of tonal materials through post-tonal techniques has not, however, been viewed as an unalloyed good. Pierre Boulez famously criticized such strategies in his essay "Schoenberg is Dead," published in 1952 in *The Score* magazine. Boulez identified three main characteristics of Schoenberg's compositions that threatened to negate the bright promise offered by serial composition: variation; the use of anarchic (i.e. tension-filled) intervals and elimination of the octave; and a reliance on contrapuntal constructions. Boulez's principal objection to Schoenberg's method of twelve-tone composition lay with the "pre-classical and classical forms ruling most of his compositions," which he identified as a weakness in "most of his twelve-tone works." He explained that these forms were

> in no way historically connected with the twelve-tone discovery; the result is that a contradiction arises between the forms dictated by tonality and a language of which the laws of organization are still only dimly perceived."[6]

Going even further, Boulez saw these old forms and the new material as incompatible, and derided Schoenberg's method of combining them as invalid, a twisted form of romantic classicism.

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[4] Ibid., 132.
[5] Ibid., 86.
[6] Pierre Boulez, "Schönberg is Dead," *The Score* 6 (1952): 20.

The problem for post-tonal formal analysis that emerges from both Boulez's and Straus's conceptualizations of form is that each of them—the first in trying to distance his compositional practice from that of Schoenberg and the second in trying to repair the composer's reputation—must calcify tonal forms and materials in order to accomplish their goal. In Boulez's understanding, the tonal form is a hollow shell that confines post-tonal materials; in Straus's, the post-tonal impulses that animate Schoenberg's materials take over and guide the corpse of a tonal form. In both cases, however, the tonal object is not in any way functional. As a result, both Straus and Boulez reinforce the notion that once tonal forms or gestures are incorporated into a post-tonal context, their functionality is effectively neutralized. Predicated as it is on the notion that tonal objects cannot be functional in post-tonal contexts, both of these conceptualizations are, in fact, products of the modernist anxiety of influence.

In this chapter, I interrogate the two perspectives outlined above—and through this interrogation, develop a perspective on large-scale form in post-tonal composition—by analyzing two of Boulez's earliest works: the *Sonatine for Flute and Piano* and the First Piano Sonata. The compositional anxiety exhibited by Boulez makes it especially challenging to analyze the composer's earliest piece, the *Sonatine*, due to its established historical connection with the form of Schoenberg's *Kammersymphonie*. By analyzing Boulez's *Sonatine* in three different readings (or *listenings*) I make explicit three possibilities for different form-functional readings. The first two listenings, based in traditional analytical methods, reveal a gap in our understanding of how listeners actively make sense of the large-scale form of a piece of post-tonal music such as the *Sonatine*. My third listening bridges that gap by considering the sonata-form elements in the *Sonatine* as nodes in the work's form-functional web. I develop in this final listening the view that form is, rather than a container, a path that is generated by the listener as she walks it in

time. Through analyses of Boulez's *Sonatine for Flute and Piano* and the First Piano Sonata, this chapter asks us to reconsider what it means for post-tonal music to be functional on a scale larger than small units or phrases.

In the analyses that follow, I offer a range of form-functional hearings of pieces in order to accommodate the plurality that post-tonal music affords. Theories of form in general encounter problems on the larger scale; the days of assuming that relationships on the small scale can simply be organically transformed into larger-scale ones have long since passed. In order to address the plurality of possible connections a listener may make as she listens, I set out an analytical method that encompasses a plurality of possible forms. While relationships on the local, phrase level within the realm of working memory can influence how we hear relationships across time in a piece of music, the former does not fully determine the latter. Since these larger-scale relationships *are* outside the realm of working memory, they encourage the listener to make connections outside of the work at hand—connections that may be historical or more abstract in nature. By formulating a method for approaching large-scale form that embraces this plurality, I allow for the possibility of a work's form intersecting with a particular historical form (such as sonata form), while also accounting for the diversity of compositional strategies that characterizes compositional practice of the twentieth century.

3.2: Three Readings of a Boulez Sonatina

3.2.1: Introduction

Pierre Boulez's *Sonatine for Flute and Piano*, composed in 1946 and revised in 1949, was written on the heels of his studies with Olivier Messaien and René Leibowitz. Boulez characterized the work primarily as a twelve-tone composition, describing it as "the first piece which [he] considered polished in this technique," and secondarily in terms of its relationship to the form of Schoenberg's *Kammersymphonie* op. 9.[7] It came at a critical juncture of the twentieth century, immediately before Boulez's turn towards integral serialism and the outspoken rejection of tonal musical organization by Boulez and others of the Darmstadt School.

In the three sections that follow, I explore three radically different readings of Boulez's *Sonatine*, by conjuring three different potential listeners. The first listener hears the historical echoes of Schoenberg's first chamber symphony—Boulez's formal model for the *Sonatine*—and uses this as a basis for a conception of the work's formal design. The second listener engages with the formal implications of serial structure as it is presented in the *Sonatine*, drawing on the extensive scholarly literature that has focused on the work's twelve-tone structure.[8] The third listening posits another kind of experience, one that is far "messier" than that of the others. This third type of listening gets at the experience of grappling with the emergent form of a piece of

[7] Pierre Boulez in personal correspondence with George Mellott, published in Mellott's dissertation. George Kenneth Mellott, "A Survey of Contemporary Flute Solo Literature with Analyses of Representative Compositions" (PhD thesis, State University of Iowa, 1964).
[8] Carol K. Baron, "An Analysis of the Pitch Organization in Boulez's "Sonatine" for Flute and Piano," *Current Musicology* 0, no. 20 (1975); Sangtae Chang, "Boulez's *Sonatine* and the Genesis of His Twelve-Tone Practice" (PhD thesis, University of North Texas, 1998); Wilma Anne Trenkamp, "A Throw of the Dice: An Analysis of Selected Works by Pierre Boulez" (PhD thesis, Case Western Reserve University, 1973).

music as it develops and changes, and as the listener's expectations and recollections develop and change in turn. This third listener attends to the affordances of each formal unit in time, based on both the events of the work and her past experiences and knowledge.

3.2.2: First listening

Boulez long acknowledged that the *Sonatine*'s form is modelled after Schoenberg's *Kammersymphonie* Op. 9 (completed in 1906), and its relationship to the chamber symphony is often treated as structural. In conversation with Célestin Deliège, Boulez affirmed that he chose Schoenberg's First Chamber Symphony as his model for the sonatina for "objective reasons," since it "shows the ambiguity that can be achieved within a single form." [9] He goes on to describe the form as "the four movements of a sonata, but at the same time these four movements constitute the four stanzas, the four developments of a single movement."[10] Boulez denied, however, that there was any audible relationship between Schoenberg's Chamber Symphony and his own *Sonatine*, emphasizing that the listener would notice only the four forms, "nothing more. For the rest, any stylistic influence is absolutely non-existent."[11] It is worth quoting the rest of this passage, which continues to deny any thematic influence from Schoenberg:

> The Chamber Symphony is in a post-Romantic idiom, and this aspect of it did not influence me at all. I have always had a tendency to separate the formal context very clearly from the ideas themselves, although I know full well that in composition style is intimately bound up with form; I conduct a sort of chemical dissociation to help me seize and retain what interests me and to drop what does not.[12]

[9] Pierre Boulez, *Pierre Boulez: Conversations with Célestin Deliège* (London: Eulenburg Books, 1976).
[10] Ibid., 27.
[11] Ibid., 27-28.
[12]Ibid., 28.

Boulez thus firmly distances himself from Schoenberg's "post-Romantic idiom," while drawing on the assumption that form is, in fact, easily separable from content.[13] This chemical dissociation, the blunt dissection of a work into first theme, second theme, scherzo, slow movement, and finale, is made possible by this terminology's network of associations with Classical form—or, more accurately termed in this context, form*s*. When Boulez pilfers formal concepts from Classical idiom, the "scherzo" transforms from "form" to "a form;" a type, a set of boundaries, a container.

As Sangtae Chang has noted, there are discrepancies between Boulez's different accounts of the *Sonatine* and its form. In a letter to George Mellott, Boulez confirmed that the work's form is closely modelled after the form of the Chamber Symphony:

> The general plan is that of the Chamber Symphony, but I have added a subsidiary development which is located between the movements and which expands itself gradually. The first sketch of it is at the end of the first allegro and the main development is placed, precisely, between the return of the scherzando and the last allegro.[14]

In the later conversation with Deliège, by contrast, he denies any deeper influence from Schoenberg. Chang argues that the ambiguities in Boulez's various accounts "may very well

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[13] For a thorough exploration of how Boulez's compositional practices and personal writings interact with the idea of anxiety of influence, see Joseph Salem's exploration of the significance of *blocs sonores* in Boulez's compositional aesthetic and their relationship to the composer's broader aesthetic goals. For more analytical details on the *blocs sonores*, see Losada and Scotto. Joseph Salem, "Boulez's *Künstlerroman*: Using *blocs sonores* to Overcome Anxieties and Influence in *Le marteau sans maître*," *Journal of the American Musicological Society* 71, no. 1 (2018); C. Catherine Losada, "Complex Multiplication, Structure, and Process: Harmony and Form in Boulez's Structures II," *Music Theory Spectrum* 36 (2014); "Isography and Structure in the Music of Boulez," *Journal of Mathematics and Music: Mathematical and Computational Approaches to Music Theory, Analysis, Composition and Performance* 2 (2008); Ciro Scotto, "Reexamining PC-Set Multiplication, Complex Multiplication, and Transpositional Combination to Determine Their Formal and Functional Equivalence," *Perspectives of New Music* 52, no. 1 (2014).

[14] Mellott, "A Survey of Contemporary Flute Solo Literature with Analyses of Representative Compositions," 220.

suggest a structural predicament of the *Sonatine* whose salient features are selectively and variously emphasized to come to terms with different circumstances."[15]

3.2.2.1: The Chamber Symphony

Boulez's reluctance to acknowledge any deeper connection between the musical materials of the *Sonatine* and those of the Chamber Symphony seems to arise partly out of the latter work's strong engagement with tonal formal functionality, via sonata form. Indeed, the *Kammersymphonie* provides a dramatic portrayal of the main issues concerning post-tonal form, beginning in its very first measures, which lay out an expansive and startling quasi-cadential gesture. It is easy to find the elements of tonal form that Boulez derided in Schoenberg's compositional output in the Chamber Symphony. As other scholars have observed, the work is clearly based on sonata form design, with well-marked formal divisions.

The shape of the opening four measures has an enormous impact on our understanding of the formal trajectory of the work as a whole. As shown in Figure 3.1, the symphony opens with a single pitch, A ♭ 4, which transforms in m. 2 into a six-part quartal harmony designated the "*Quartenakkord*" by Alban Berg in his thematic analysis of the work.[16] In m. 3, three voices shift by semitone to create another dissonant harmony, this time a whole tone chord.

[15] Chang, "Boulez's *Sonatine* and the Genesis of His Twelve-Tone Practice," 87.
[16] Alban Berg, *Arnold Schönberg. Kammersymphonie Op. 9: Thematische Analyse* (Leipzig and Vienna: Universal, 1921).

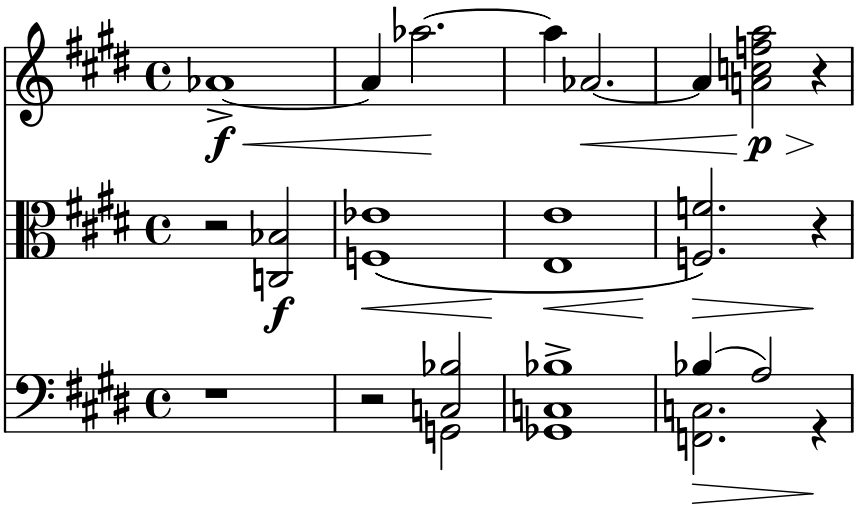

Figure 3.1: Schoenberg, *Kammersymphonie* Op. 9, mm. 1-4

The gradual shifting and addition of pitches to create dissonant quartal and whole tone harmonies contributes to a strong sense of tension in the opening measures. The tension is heightened by the crescendo that plays out over measures 1-3 and intensified when the strings move in contrary chromatic motion from the quartal to the whole tone harmony in m. 3. The outward resolution of the augmented sixth in the lower strings in m. 4 then produces a sense of release, resolving first to F minor before suddenly brightening to F major on beat two, as if a shaft of sunlight has suddenly pierced the murky ambiguity of the opening harmonies. The sudden resolution to a major chord, made all the more striking by the entrance of the high woodwinds and the sudden drop in dynamics to *piano*, prompts a retrospective reinterpretation of the entire unit as having fulfilled the rhetorical conditions of the phenomenon termed "cadence" in Classical music, with the whole tone chord in m. 3 acting as a dominant substitute.

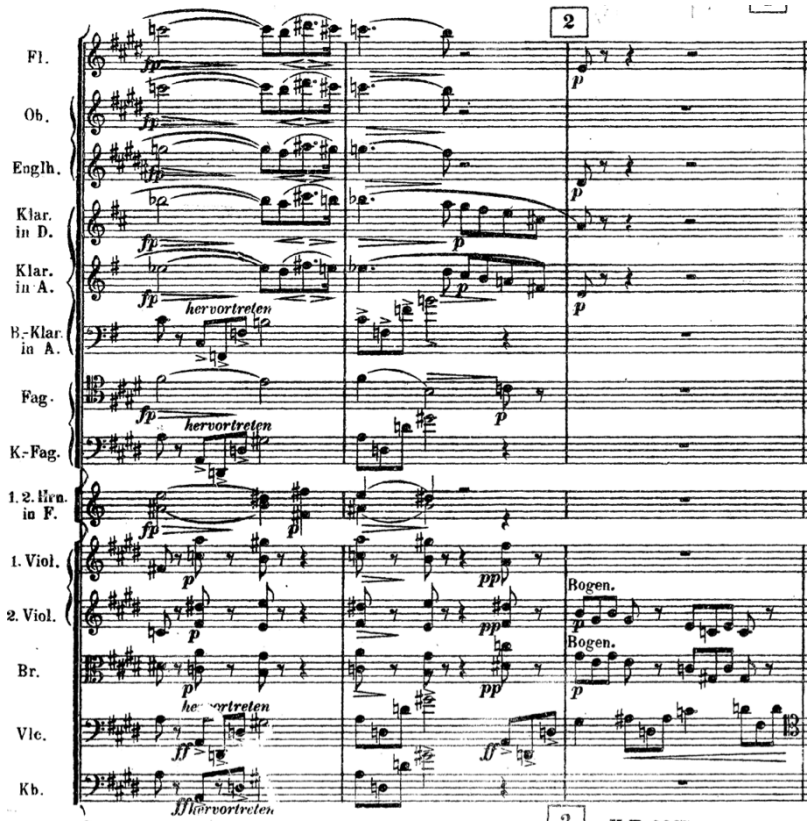

Figure 3.2: Schoenberg, *Kammersymphonie* Op. 9, mm. 8-10

This four-measure introductory unit exerts a strong influence on our understanding of what closure means in the context of the chamber symphony. At the end of the main theme, which begins immediately following the introductory four measures, we hear a strong motion towards the E major triad in measure 8 (and repeated in measure 9, as can be seen in Figure 3.2) in the horns and upper strings, supported by a dynamic gesture in the contrabass, cello, and bass clarinet that Berg calls the "cadencing theme."[17] This is a cadence in E major in a more traditionally tonal sense, in that a type of dominant chord moves to a chord that can be heard as a local tonic, and in the sense that it brings the theme to a close harmonically. The harmonic close brought about by this motion does not, however, align with the melodic close of the theme,

[17] Ibid.

which occurs in m.10 and elides with the beginning of the next theme in the cello. The cadence in m.9, while it articulates the harmonic end of a theme and is harmonically more closely related to a tonal cadence than the opening gesture, seems, as Anthony Payne has suggested, meaningless and "arbitrary" in its chromatic context, especially after having heard the opening *Quartenakkord*.[18]

The rhetorical impact of the *Quartenakkord* becomes a matter of significant import in determining the work's form. Schoenberg uses the *Quartenakkord* to frame the work's internal slow movement, which highlights its role as a marker of structural divisions. For an example of the importance of the *Quartenakkord*'s cadential quality more specifically, we might look to the end of the piece. There has been some debate in past analyses as to the location of the final structural close of the chamber symphony.[19] Returning to the four-measure introduction and its impact on the formal function of "closure" may clarify the location of the work's final closure. My hearing places this event at m. 576, coinciding with what Berg termed the start of the *Endkoda*. The approaching close is first signaled by the arrival (marked forte-piano) on D♯ in the flute and first violin in m. 573, which is sustained over the descending fourths motive in the second and bass clarinets, horn, and second violin. In mm. 574-5, Schoenberg's indication of a

[18] Anthony Payne, *Schoenberg* (Oxford: Oxford University Press, 1968), 12.
[19] Alban Berg finds the coda to begin in m. 497, while a more recent analysis by Catherine Dale identifies the coda as beginning in m. 555. Dale correctly notes that Berg's placement of the coda in m. 497 fails to take into account the "extensive restatement and continuing development of the slow movement theme in bars 508-41." However, her own designation of m. 555 as the coda implies that work's final cadence is on B♭, a diminished fifth away from the symphony's main tonal center, E. Even more troubling is that in the previous chapter Dale identifies bars 573-81 as the "close of the work," which is articulated by the use of the structural use of the framing fourths motive (24). Just eleven pages later, she identifies the final cadence as taking place from mm. 582-93 (35). On the very next page, she identifies a final cadence in m. 585 (36) and implies that the coda begins directly after this moment.

crescendo, ritardando, and the addition of a trill to the sustained D♯ in the flute and violin all strongly support hearing this moment as leading to the structural close in m. 576. Finally, the bass, cello, bassoons, and bass clarinet all reiterate the motive from Berg's "cadencing" theme, and the other winds move in contrary chromatic motion against the leading tone-tonic resolution in the first violin and flute, which makes reference to the fundamental contrary contrapuntal motion in the introductory *Quartenakkord*. This hearing is retrospectively reinforced by the material of the coda that follows, which cycles through cadential gestures in several keys before fragmenting into repeated iterations of the cadence on E, beginning in m. 584.

At m. 576 Schoenberg employs motives strongly associated with closure at the phrase level—the descending fourths motive, the motive from the end of the first theme, and the crucial contrary chromatic motion found in the introductory *Quartenakkord*—in order to effect large-scale structural closure. Schoenberg also uses secondary parameters like dynamics, ornamentation, and orchestration to heighten the sense of closure at this moment, emphasizing this moment as a point of arrival.

The listener can thus draw on certain formal functions, like those of opening, closure, or continuation, in order to form a model of the work as a whole. These functions are a byproduct both of composer decisions and listener groupings and expectations, and are shaped and colored by various musical parameters. In the case of Schoenberg's chamber symphony, the intervallic, contrapuntal, and timbral qualities of the work's first four measures are grouped together and take on a framing function in the piece, which makes it possible for the listener to make judgments about when and how the work achieves formal closure. We might also look to this

striking rhetorical gesture, which takes the formal function of "cadence" and casts it in a new light, to better understand the form of the *Sonatine*.

3.2.2.2: The Form of the Sonatine

Several analysts have also grappled with the relationship between the form of the *Sonatine* and the Schoenberg's Op. 9. In her dissertation, Diana Tiffany summarizes three previous analyses of the work's formal structure, as well as providing her own, simplified reading of the form as it relates to the Chamber Symphony.[20]

Paul Griffiths' analysis of the four "movements" of Boulez's *Sonatine* follows closely the design of Schoenberg's Chamber Symphony; he identifies a slow introduction followed by "an 'allegro,' […] a 'slow movement' (the cantus firmus section), a 'scherzo' ('Tempo Scherzando'), and a 'finale' where toccata-like motion races the music towards its close."[21] Griffiths identifies various "themes" in the work, noting, for example, how the closing bars of the work display "an emphatic recall" of the first theme of m. 33 onward in the flute (which aligns with the first clear statement of the full series). The return of this first theme thus functions to frame the work's form.

By contrast, George Mellott divides the work into five sections preceded by an introduction: a First Allegro, Slow Movement, Scherzando, Second Allegro, Final Allegro, and Coda. Anne Trenkamp, for her part, identifies six sections in total—an introduction, exposition

[20] Diana M. Tiffany, "An Analysis and Performer's Guide to the Sonatine for Flute and Piano by Pierre Boulez" (DMA thesis, Louisiana State University and Agricultural and Mechanical College, 1999), 7-8.
[21] Paul Griffiths, *Boulez*, Oxford Studies of Composers (Oxford: Oxford University Press, 1978), 11.

of the first theme, exposition of the second theme, development, recapitulation, and coda—each of which is subdivided further by internal divisions. Trenkamp argues that the essential form of the piece is actually a "single-movement sonata form," and that focusing on the work's relationship with the Chamber Symphony is a distraction from the sonatina's true form.[22] There are some important points of convergence and divergence between these different readings. All of them identify the slow introduction and coda as taking place in mm. 1-31 and 496-510, respectively, although Trenkamp identifies the latter as a codetta within a larger coda. They each identify the first allegro or exposition as occupying mm. 32-96, but beyond that point the readings begin to diverge quite rapidly.

In Figure 3.3, I summarize these readings in an abstracted, graphic form, showing the different hierarchical groupings put forth by Mellott, Trenkamp, and Tiffany. The latter provides a simplified reading closest to Boulez's description of the form he derived from Schoenberg, although Tiffany does not explicitly identify the subsidiary developments in her reading. Some of the main disagreements between analysts appear to be whether to identify the introduction as its own formal unit, independent of the exposition/first allegro, whether or not the main subsidiary development is a part of the development/scherzo, and where any codas or codettas begin.

In summary, there are quite a few conflicting readings of the form of Boulez's *Sonatine*, specifically in terms of its relationship with sonata form as conveyed through the Chamber Symphony. As I have pointed out in my own reading of that work, however, the particular iteration of sonata form found in the Chamber Symphony has its own complexities, specifically

[22] Trenkamp, "A Throw of the Dice: An Analysis of Selected Works by Pierre Boulez," 22.

surrounding the structural role of the *Quartenakkord* and its formative effect on a listener's experience of form. Reading the form of the *Sonatine* through the lens of the Chamber Symphony therefore brings up echoes not just of sonata form, but of the common-practice cadence as it is explored and dismantled in Schoenberg's early twentieth-century composition. This first, historical listening can thus offer us a richer understanding of the historical implications of the *Sonatine* and its resonances with compositional practice from the early twentieth century and before. It does not, however, give us a clear understanding of how the work is constructed with respect to pitch, or how each phrase relates to the next. The following two listenings will attempt to bring us closer to an understanding of both of these: the second listening will approach the *Sonatine* from the perspective of twelve-tone theory, and the third listening will develop an understanding of phrase structure as a listener might experience it.

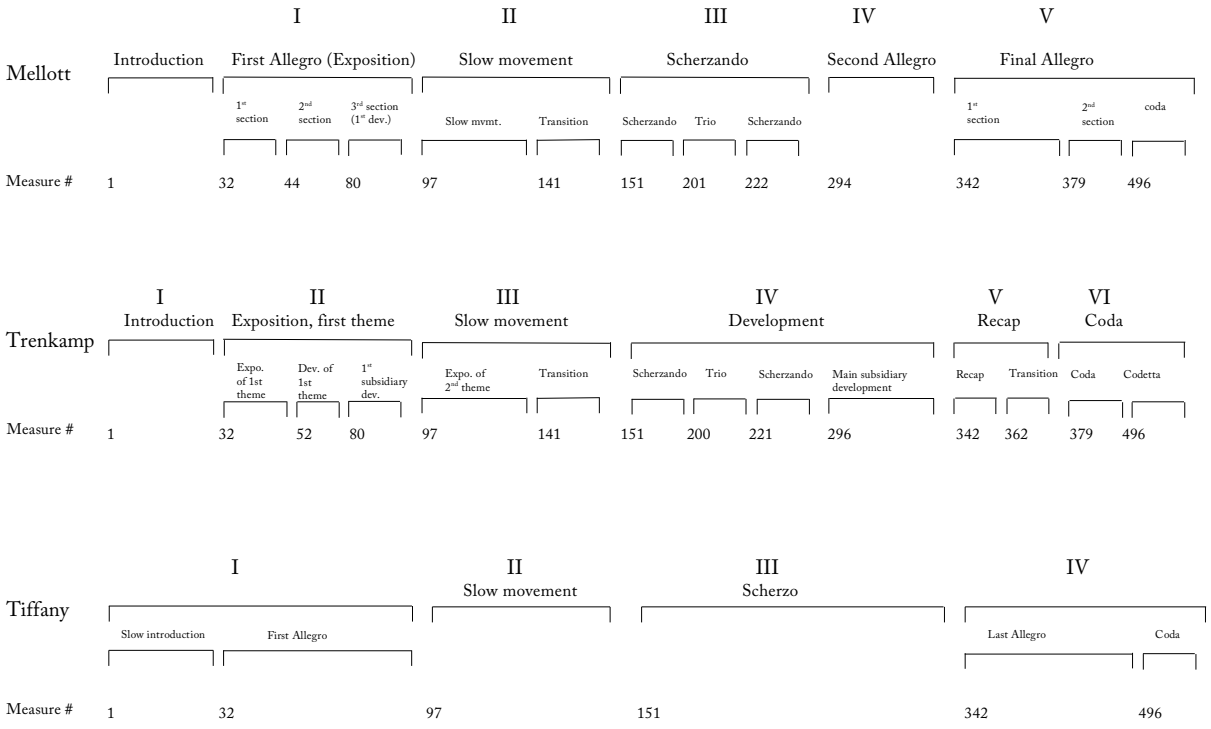

Figure 3.3: Visual comparison of formal readings of Mellott, Trenkamp, and Tiffany of Boulez's *Sonatine for Flute and Piano*—all readings are based on the form of Schoenberg's Chamber Symphony

3.2.3: Second Listening

Boulez's *Sonatine for Flute and Piano* begins with a full statement of the following twelve-tone row in inversion:

0 1 5 e 4 8 9 3 t 2 7 6

The work opens with a statement of I_0, while the prime form of the row enters clearly for the first time at the beginning of the exposition in m. 32. The row has several significant perceptual features: it begins and ends with IC 1, and is internally divided with another instance of IC 1 at its midpoint; other than the three iterations of IC 1, its interval class content is limited

to IC 4, IC 5, and IC 6; and it contains several trichords of set classes 3-5 [016] and 3-4 [015]. Boulez makes audible many of the row's properties from the first measures, in which the row is divided into two pentachords. The first, in the piano, builds upwards from the initial C1, held in the left hand while the right hand enters with the remaining four unordered pitches in a vertical sonority. The second pentachord rockets upwards from E4 in the flute with each pitch marked staccato, ending with a dyad presented as a grace note (F) and a held flutter-tongued F#. Each pentachord begins with IC 1, and the final dyad presents IC 1 as well (Example 1). This partitioning of the row form is made explicit in the work's exposition, beginning in m. 32, in which the flute presents the row form clearly to the listener.[23]

Another of property of the row is its ability to overlap with other row forms, following from the invariance of the row's beginning and ending dyads.[24] This overlapping property is made apparent in the work's first few measures, in which the first row form, I_0, blends seamlessly into the following statement of P_5 beginning in m. 3, with PCs 5 and 6 ending I_0 and beginning P_5 (Figure 3.4). The entrance of P_e in m. 4 heightens the intensity of the overlapping rows and the sensation of compression in time (Figure 3.5). Finally, the entrance of I_6 in m. 5 results in further compression of the row (Figure 3.5).

[23] Chang, "Boulez's *Sonatine* and the Genesis of His Twelve-Tone Practice," 90.
[24] Ibid.; Baron, "An Analysis of the Pitch Organization in Boulez's "Sonatine" for Flute and Piano."

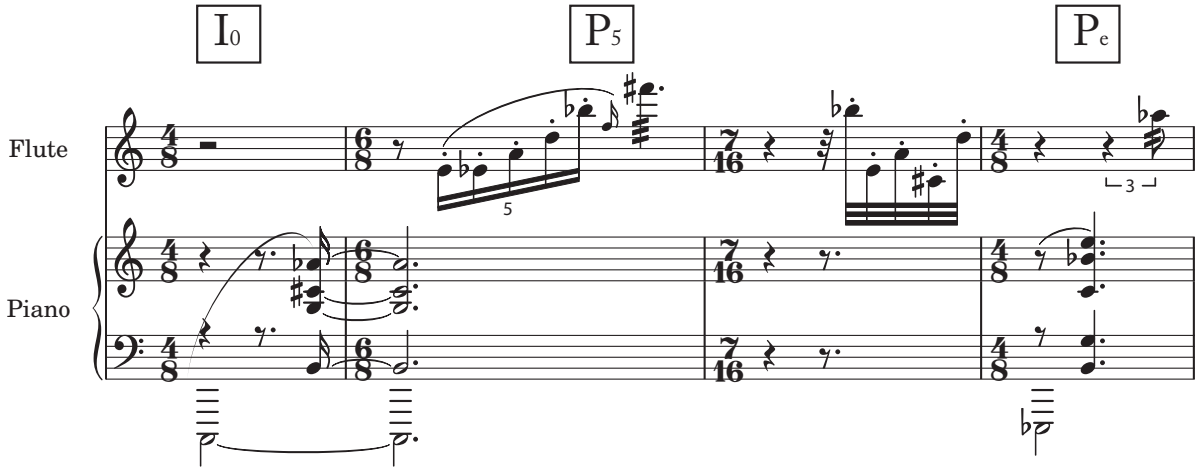

Figure 3.4: Boulez, *Sonatine,* mm. 1-4

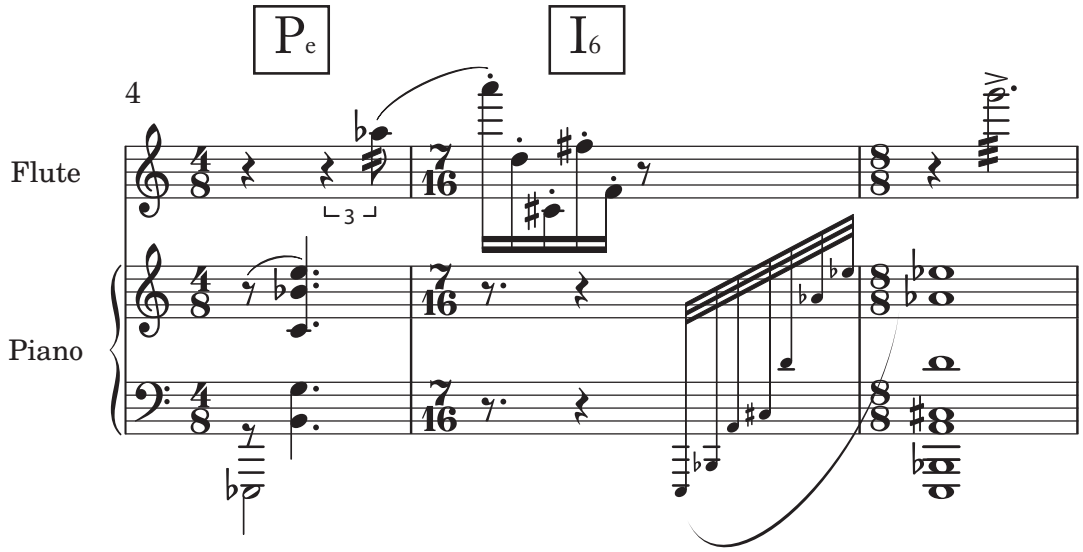

Figure 3.5: Boulez, *Sonatine,* mm. 4-6

In m. 7, as Chang observes, the contrapuntal arrangement of row RI_6 further lessens the importance of linear ordering of the row (Figure 3.6).[25] The process of disintegration of the serial organization continues throughout the rest of the slow introduction. Furthermore, the slow

[25] Chang, "Boulez's *Sonatine* and the Genesis of His Twelve-Tone Practice," 94.

introduction enacts the disintegration of the row's internal organization, which was established in the first measures as consisting of two pairs of pentachords and one dyad. We hear the internal organization clearly repeated in the contrapuntal setting of RI_6 in mm. 7-9 (Figure 3.6), but its hold loosens in mm. 10-12, where duplet and quadruplet pitch organization dominates (Figure 3.7). In Chang's reading, this subversion of the row partitioning suggests a kinetic structural change. By m. 13, the statement of R_{11} is quite disordered, as is the following statement of P_3 in m. 16-17. The row forms I_0 and I_7 appear in the correct ordering in mm.18-22, but they are merely partial statements of the final hexachord of I_0, and pitches 2-8 of I_7.

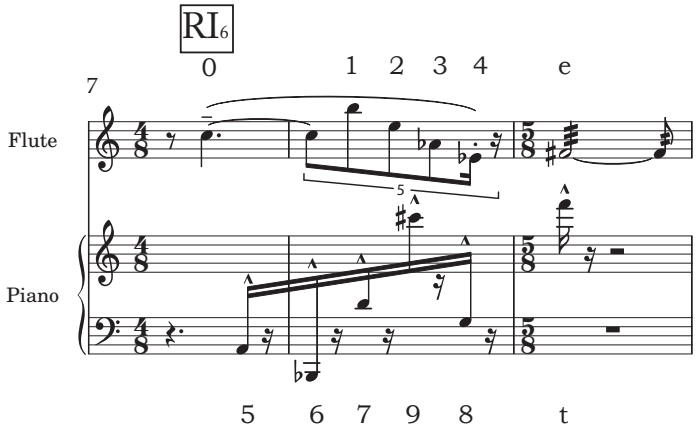

Figure 3.6: Boulez, *Sonatine,* mm. 7-9

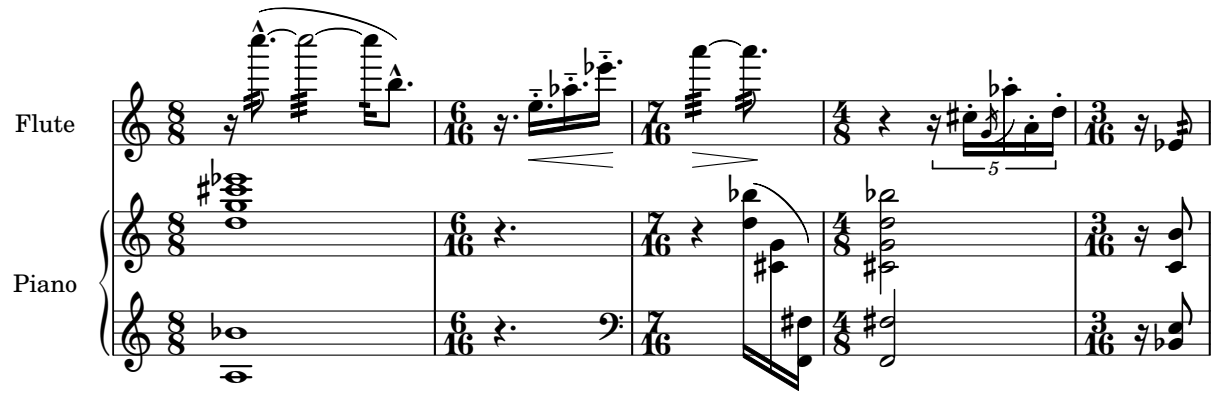

Figure 3.7: Boulez, *Sonatine,* mm. 10-14

Set classes 3-4 (015) and 3-5 (016) play an important role in structuring this opening slow introduction of the sonatina. In the first measure, the piano's right hand sounds 3-5 [016], which is echoed in the first three notes of the flute's pentachord. The flute's second pentachord in m. 3 similarly begins with 3-5. The opening trichord from the piano's first measure returns in its original voicing and in the same register at the end of the slow introduction, accompanied by the lower voice from mm. 1-4, which moved from C1 to E ♭ 1. The recollection of this opening motive both frames the section and emphasizes the disintegration of the serial ordering. In the statement in mm. 29-31 at the end of the slow introduction, the trichord and its accompanying lower voice are removed from the 12-tone context of the three row forms that unfolded over mm. 1-4 (Figure 3.8). In the final measures of the slow introduction, the listener hears them "crystallized as an independent entity," rather than as a meaningful set of pitches draw from three rows forms.[26]

[26] Ibid., 98.

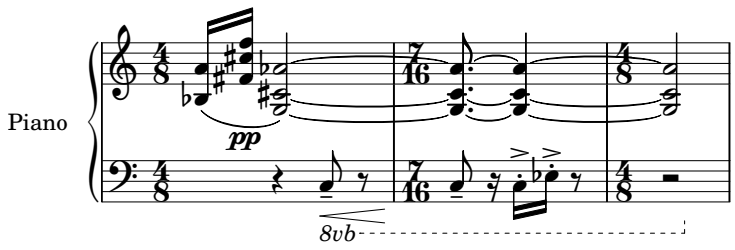

Figure 3.8: Boulez, *Sonatine,* mm. 29-31

In m. 32, the work's first thematic section begins with the first clear linear exposition of the row form in the flute, which states row P_5 (Figure 3.9). The flute is accompanied by various arrangements of fully or partially unordered aggregates in the piano, a scheme that has been thoroughly explored in Chang's analysis of the serial structure in mm. 32-52. Chang divides the work's exposition into three sections, each of which is characterized by a particular use of the row: mm. 32-52, mm. 53-79, and mm. 80-96. In the second section of the exposition, beginning in m. 53, we hear I_4 begin to unfold linearly in the piano before breaking up into segments. A fragment of P_2 enters in the right hand in m. 54, but is not completed. The listener thus hears a clear internal break from section 1 to section 2 of the exposition, enacted first by the piano taking complete control over the row, and second by a new distribution of row forms that contrasts with the preceding section. As opposed to one clearly articulated row form accompanied by partially or fully unordered aggregates, the second section presents several row fragments, some of which are complete, and all of which interact contrapuntally. By contrast, Chang argues that in the third section (mm. 80-96), the row forms are distributed between the voices of a two-part counterpoint.

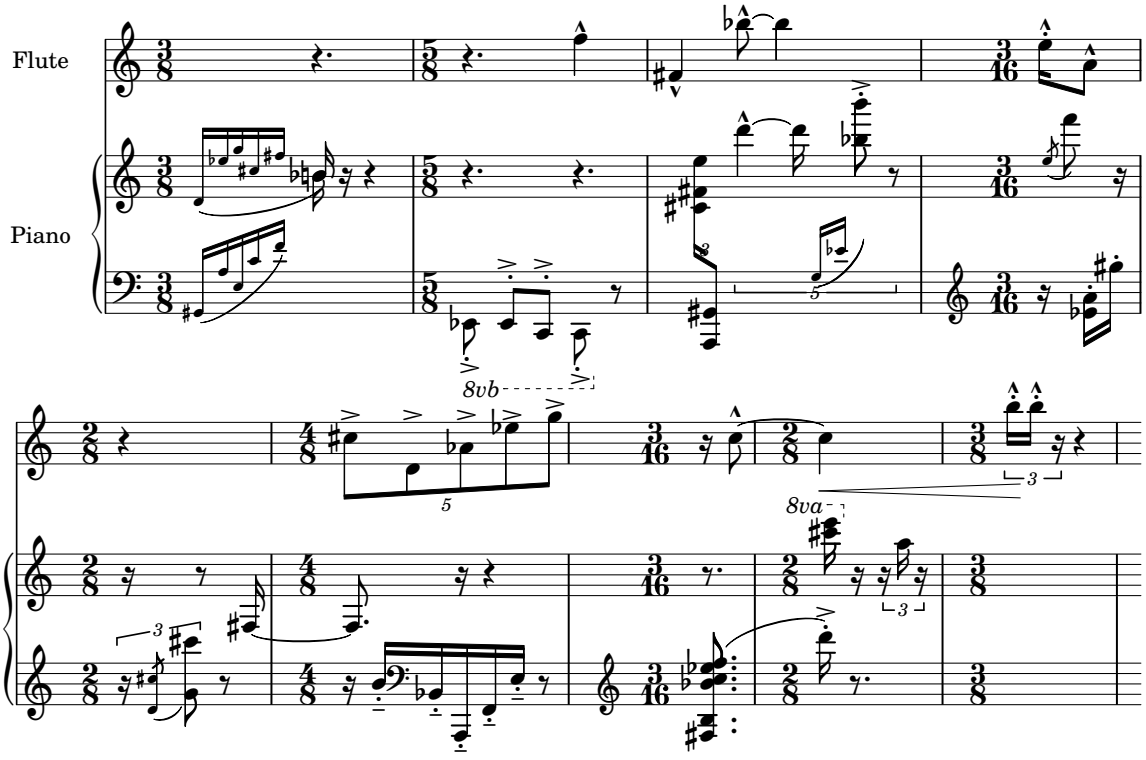

Figure 3.9: Boulez, *Sonatine,* mm. 32-40

As should be apparent from the preceding, the relationship between larger units in the *Sonatine* is dictated by various serial mechanisms: the internal divisions of the series; its overlapping properties; and the contrast between different arrangements of the row, in which the introduction's looser distribution of the row is contrasted with the first thematic section's stricter set of variations.

3.2.4: Third Listening

3.2.4.1: The Non-Ideal Listener

In the preceding analytical vignettes, I constructed two distinctly contrasting idealized listeners and confronted each of them with Boulez's *Sonatine*. We might think of the second

listener as a somewhat typical "ideal listener" to post-tonal music: if she hears tonal relationships at all, they are sublimated to a purely post-tonal experience; she is adept at hearing pitch class set relationships and twelve-tone rows; she can hold these pitch-class set relationships in her mind. This ideal—or even prodigious, to use Joseph Straus's terminology—listener can hear how a work may be structured using serial principles on a higher level of a formal hierarchy.[27] Writings on post-tonal music may not explicitly engage with this listener, but her existence is posited in them nonetheless.

The first idealized listener is more historically oriented. She hears the framework of Schoenberg's *Kammersymphonie* laid like a transparency over Boulez's *Sonatine*, perceiving elements of Schoenberg's form as interacting with Boulez's. She is capable of making connections between the musical features and formal events of two distinct pieces, hearing how they are alike or dissimilar despite their disparate styles, historical contexts, and composers.

The aforementioned two types of listeners can tell the music analyst quite a bit about the *Sonatine*: the first elucidated its serial structure and described the relationship between that structure and the work's form, while the second showed how the work's form might be seen as relating to Boulez's source, Schoenberg's *Kammersymphonie*. Neither of these two idealized listeners, however, accounts fully for a listener's experience of navigating one's way through the *Sonatine*, grappling with its emergent form as it develops over the course of the work.

In order to get closer to this experience, let me posit a third kind of constructed listener, a "non-ideal listener." My non-ideal listener is far messier than the previous two: she makes connections anarchically, drawing not only from what the composition teaches her as she listens,

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[27] For a discussion of the notion of prodigious listening, see chapter 8 of *Extraordinary Measures*. Straus, "Extraordinary Measures: Disability in Music."

but from relationships learned through other listening experiences. She may pick up on post-tonal pitch class set relationships and tone rows, but she may be just as likely to hear echoes of Schoenberg's chamber symphony, or snippets of tonal functional relationships.

Before exploring a third hearing of the *Sonatine*, however, let us explore the notion of a non-ideal listener, and what a messy reading might entail.

3.2.4.2: Formal Metaphors

My second listener heard the form of the *Sonatine* as Boulez represents it in his writings: as a container, borrowed from Schoenberg, who in turn borrowed it from Classical formal models. This conceptual metaphor—"form as container"—arises with some frequency in the way scholars discuss borrowing from Classical and Romantic forms. In fact, Jonathan Goldman's monograph on Boulez—which is organized around the concept of "form as opposition"—begins with a rejection of Classical form based on this very premise:

> Any discussion of avant-garde music of the post-war period must then accept that musical form was never conceived as the choice of an entirely constituted schema (binary, da capo aria, sonata) which is then 'filled' with a music content.[28]

Boulez, Goldman argues, would only accept a form in which the "smallest microscopic details are reflected in the macroform."[29] The Boulez of "Schoenberg is Dead" would, of course, approve of this characterization. As I discussed in the introduction to this chapter, Boulez objected to the presence of common-practice formal types in Schoenberg's compositional practice, describing them as invalid, a twisted form of romantic classicism. He saw these older forms as

[28] Jonathan Goldman, *The Musical Language of Pierre Boulez: Writings and Compositions*, Music Since 1900 (Cambridge: Cambridge University Press, 2011), 1.
[29] Ibid.

fundamentally disconnected from twelve-tone music, causing a contradiction between tonality and new laws of musical organization.

Writing on the "problem" of form in new music in 1966, Adorno cautions against the "equation of form and schema," acknowledging that "the traditional forms, the schemes, are more than just schemes."[30] In Classicism and early Romanticism, he argues, the "so-called large forms still interacted with the musical details," but before long these forms became "academic, unauthoritative, an architecture weighed down by the baggage of the past."[31] It seems that for both Adorno and Boulez, functional formal units become schemas or containers for post-tonal materials when divorced from their tonal context.

Between the covers of *The Score* and elsewhere, composers, critics, and music lovers were coming face to face with an image of themselves that, rather than resembling a whole, unified product of an unbroken line of musical progress, appeared broken or fractured. We can see some of this anxiety expressed in Adorno's essay on form:[32]

> The mismatch between the emancipation from forms which calls for a sense of form and the stunting of that same sense, itself a function of the decline of traditional forms, is what has brought about the crisis of form.[33]

The solution, for Boulez, was to restore the unity of form and content: to eliminate the vestiges of tonal form-functionality and to provide, instead, purely twelve-tone functions. Schoenberg represents to Boulez a "return to polarized functions, even to tonal functions," while Boulez

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[30] Theodor W. Adorno, "Form in the New Music," *Music Analysis* 27, no. ii-iii (2008): 201.
[31] Ibid., 203.
[32] For a discussion of the relationship between Boulez and Adorno, and an exploration of their critiques of serialism see Edward Campbell's discussion in *Boulez, Music and Philosophy*. Edward Campbell, *Boulez, Music and Philosophy*, Music in the Twentieth Century (Cambridge: Cambridge University Press, 2010).
[33] Adorno, "Form in the New Music," 215.

wants to see functions "arising from the very principle of the series."[34] Goldman discusses how Boulez's reconceptualization of form from the 1970s onward moves away from the manipulation of the twelve-tone series, so that form then "becomes a process of recomposition by the listener, a process that appeals to perception and memory."[35] Goldman's work thus reveals that Boulez had a complex and changing understanding of form in his own music.

The issues of *The Score* from 1952 present musical form in both its stagnant guise (form*s*) and a more malleable, experiential one. In the issue of *The Score* that follows Boulez's "Schoenberg is Dead," for example, Ernest Ansermet proposes an experiential approach to musical understanding.[36] Specifically, Ansermet frames music as a road to be taken by a listener.

Rather than taking on the metaphor of form, specifically "traditional form" as container—a fixed, closed, self-contained object that can be emptied and filled again—I develop in the remaining portion of this chapter the view that form is a path that is generated by the listener as she walks it—the composer shapes it, clears away the trees and the undergrowth, but the listener herself is the one who puts her feet down and chooses where to go. The path (through the composer's shaping) provides particular *affordances*, in other words—the potential uses or actions latent in materials.[37] As do physical objects or words, formal patterns in music lay claim to a specific range of potentialities when they meet with a listener and her beliefs and past experiences; from that interaction emerges formal function.

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[34] Boulez, "Schönberg is Dead," 21.
[35] Goldman, *The Musical Language of Pierre Boulez: Writings and Compositions*, 71.
[36] Ernest Ansermet, "Musical Experience and the World of Today," *The Score* 7 (1952).
[37] See the discussion of Norman's notion of affordances in Chapters 1 and 2.

This path is akin also to Jeanne Bamberger's "felt paths" through music.[38] As Bamberger points out,

> just as we must move sequentially in real time (one step or one day at a time), so performers must play a piece sequentially as it unfolds in time. And while the pianist must play one finger after the other, she knows the piece not as a sequence of separate notes or actions, but as a sequence of shapes, figural movements, 'handings.'"[39]

These shapes or movements are Bamberger's felt paths, the notion of which I would like to apply to the listener as well as to the performer. The outlines of a listener's path are shaped by countless prior footsteps in the form of traditions, by available cognitive resources, or sometimes by some chance or accident. A path can be a flexible construct: animals, for example, can form temporary paths, or a human can push her way through vegetation when no path is evident. Most importantly, though, a path must be experienced (felt).

3.2.4.3: A Messy Reading of the Sonatine

While the first two listeners attended to the pitch content and historical resonances of the sonatina's opening, our "messy" listener directs the analyst's attention to the rhetorical play with cadence and structural close in the introduction, drawing on the work's salient parameters, categorization of objects, and experience in time, as well as many of the features noted by the first two listeners. In the composition's first measure, the piano first sounds a long, low, quiet C1, out of which emerges a four-note sonority, B G C♯ A♭, and sweeping upwards gesture in the flute, landing on an F♯6 marked for salience by its register, duration, dynamic, and

[38] Jeanne Bamberger, "Turning Music Theory on Its Ear," *International Journal of Computers for Mathematical Learning* 1 (1996).
[39] Ibid., 42-43.

fluttertongued articulation (Figure 3.10). This high point drops precipitously into silence before the flute retraces its registral steps, *piano* again, meandering downwards. We hear the opening structure mirrored in m. 4, when another long, low note, this time E ♭ 1, prompts the entrance of a five-note chord and launches the flute ever higher to A6. Things are progressing quickly, and without any clear phrase structure: m. 4 seems like it might begin a repetition, but instead the music ambles quietly onward, the flute descending one more, and the piano building up a final chord—now seven notes, as if it has been gathering more and more of the aggregate, from five pitches in m. 1, to six in m. 4, to seven in m. 6. When the flute contributes one final fluttertongued note, G6 (accented, *sforzando*), to the piano's sonority, it feels akin to that brightening from F minor to F major in the fourth measure of the Chamber Symphony. The effect is achieved rather differently by Boulez than it was by Schoenberg: Boulez leads our questioning listener through a moment of possible symmetry and confusion, only to have her realize that the preceding highest pitches, F♯6 and A6, had been neighbors to the "cadential" note G6. The addition of G6 feels like it completes an aggregate, even though it is in fact never completed.

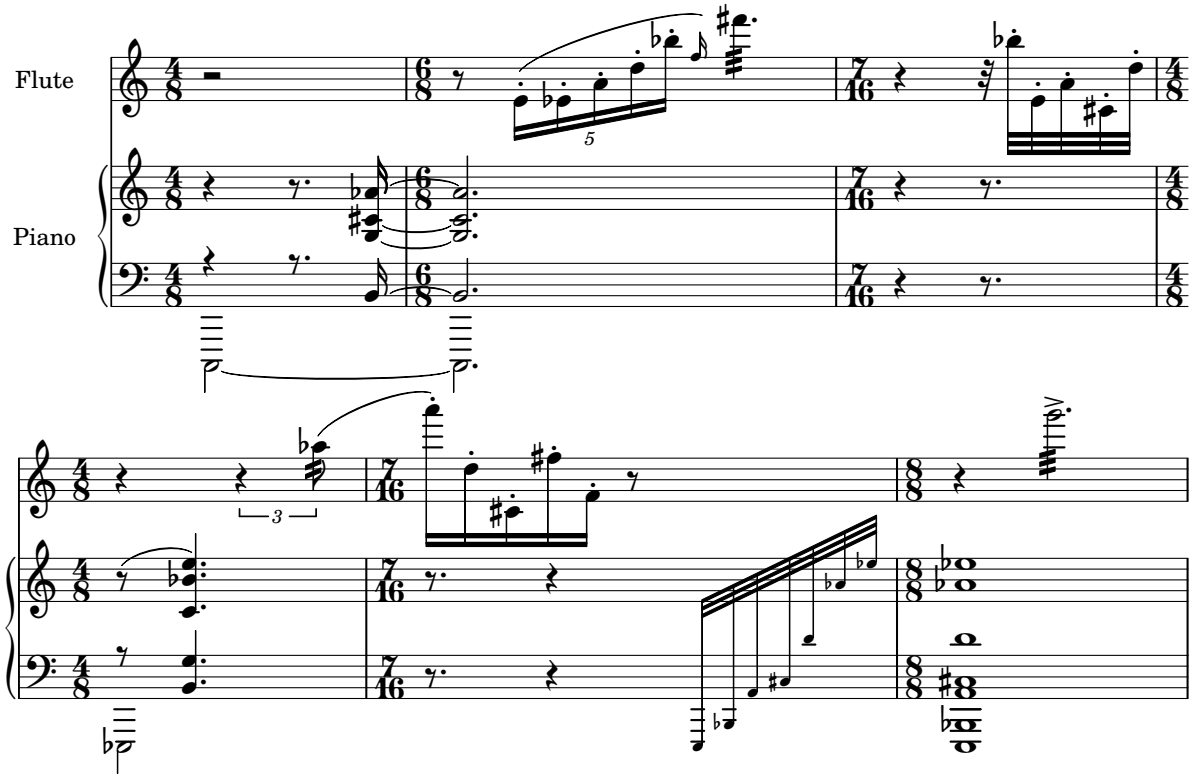

Figure 3.10: Boulez, *Sonatine*, mm. 1-6

As if to firmly move away from the gradual exploration process of the first six measures, the flute and piano enter in m. 7 with their blunt, cut and dry statement of RI_6 in two distinct voices, the piano's contour mirroring that of the flute with a slight delay, their metric offset ("rhythmic atonality" in Griffiths' words) creating a sense of tension that abates when they come together emphatically, firmly in alignment, in m. 9. Their registers, however, have been swapped: the flute had soared ever higher in the opening measures, in opposition to the very lowest notes of the piano's part, and in m. 9 their roles are reversed.

Perhaps to emphasize the slight easing of tension caused by the metric alignment in m. 9, the flute restates its row segment, now accompanied simply by a chord that restates the piano's row segment as well. Boulez spells out a row segment explicitly; for the first time it is unadorned

and unfolds slowly enough for a listener to catch the relevant intervals: minor ninth, major third, perfect fifth, and augmented fourth. These are repeated immediately by the piano, who answers the flute's ascent in mm. 11-12 with a series of gently descending ICs 4, 6, and 1 (Figure 3.11). The flute returns to the register of the piano and to a *mezzopiano* dynamic in m. 13, recalling its figurations in the opening measures of the piece, and finally the piano and flute come definitively into metric alignment again in m. 14, with the flute's fluttertongued pitch again reminding the listener of the important fluttertongued notes that defined the structure of the first six measures.

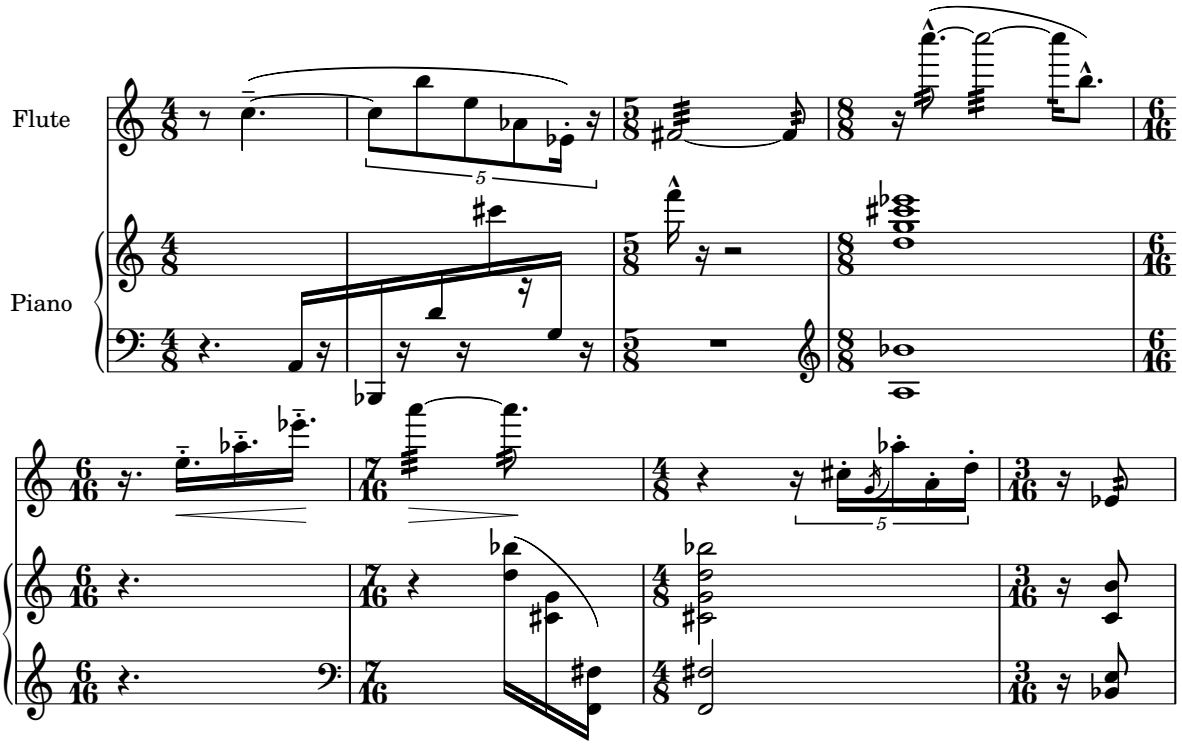

Figure 3.11: Boulez, *Sonatine*, mm. 7-14

If mm. 7-9 provide what we might call partial closure in a serial context (as opposed to the non-serial closure of m. 6, which did not complete the aggregate), then mm. 10-12 confirm and strengthen that closure, and mm. 13-14 might be called post-cadential. Like the opening quasi-cadence of Schoenberg's chamber symphony, though, these are rhetorical rather than

functional cadences: they serve to introduce the listener to the elements at play in the work, and the functions of particular elements.

In m. 16, the entrance of P_3 in the piano, arranged as a minor ninth in the left hand and a series of descending sonorities in the right hand (two 3-4 trichords built of a perfect fifth and trichord, followed by a major seventh), seems like it will set off a new phrase, especially when the piano's descent is balanced by an ascent in the flute of an augmented fourth, perfect fourth, and minor sixth, reminiscent of the important motivic intervals already introduced. This potential new phrase is interrupted by the entrance of I_7 in m. 20, inverting the contour and some intervals of the flute's melody in mm. 10-12. There are rhythmic similarities between the two melodies as well, as shown in Figure 3.12, which compares the flute's melodies in mm. 10-14 and mm. 20-24.

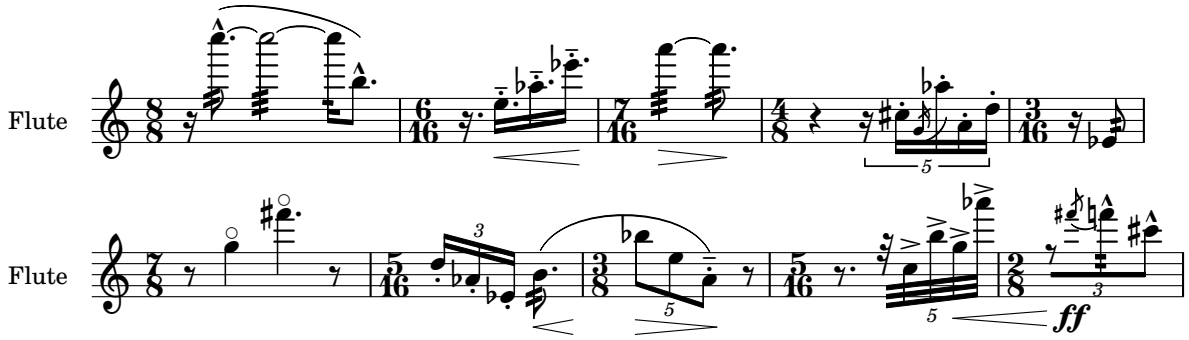

Figure 3.12: Boulez, *Sonatine*, comparison of mm. 10-14 and mm. 20-24

As Trenkamp observes, mm. 20-24 can also be seen as a summing up of all the interval class 1 adjacencies of Trenkamp's "region 1."[40] The constant reiteration of IC 1, sounding as

[40] Trenkamp, "A Throw of the Dice: An Analysis of Selected Works by Pierre Boulez," 29. Trenkamp divides all the possible row forms into six regions, a region being a group of row forms that have the same ending and beginning dyads. For example, rows I_0, I_6, P_5, and P_e all end or begin with the same two pairs of pitch classes: B-C and F-F#.

major sevenths and minor ninths in this passage, may thus start to take on a summarizing function for the listener. In m. 25, after the cadenza-like flute solo, the piano suddenly enters, aligned with the flute once more and also sounding a major seventh between B ♭ 4 and A5. The pace slows dramatically as the flute fades out over the piano's repeated low Cs. The piano is then left to summarize with two final trichords. But now the left hand's insistent repeated low Cs enter once more, now getting louder and ending on an inquisitive ascending minor third (an interval foreign to the series and not explicitly used until this moment). It seems that all of the preceding was building to something else: it was, in some sense, before the beginning.

Our listener's understanding of the slow introduction's function is dramatically changed from those of the first and second listeners. She hears elements of the serial structure, certainly, especially when it emerges explicitly if only partially at m. 10, and she also hears elements of the chamber symphony in the emergent cadential rhetoric of the first measures, as well as her identification of this section as essentially a slow introduction. In contrast to the first and second listeners, however, our non-ideal listener brings the quasi-serial structure and the Schoenbergian formal conceit together through her emerging sense of this passage's "before-the-beginning" function.

The first and second listeners both heard clearly the double barline in m. 32, which separates the introduction from the First Allegro or exposition—the first listener perceived the change to a stricter serial structure, with the flute clearly stating the full row form I_0 for the first time, while the second listener expected the entrance of the first theme based on the form of the chamber symphony (this is evident from the three readings in Figure 3.3, which are all in agreement about where the exposition begins). As our non-ideal listener walks the path of

Boulez's *Sonatine*, does she perceive immediately in m. 32 the functional relationship between a slow introduction and an exposition? And while the boundary between the first and second thematic sections is aurally quite stark, it is nevertheless worthwhile to wonder how our non-ideal listener hears these sections functioning in relation to one another.

Measure 32, marked *fortissimo* and "très incisif" and inaugurating the change in tempo from "Très Librement – Lent" to "Rapide," certainly looks on the page as though it would constitute a dramatic aural break. But the material of m. 32 bears a striking resemblance to the contrapuntal, serial "cadence" of mm. 7-9, summarized in a single rapid gesture in the piano. Its new guise, though, feels like a reversal of the serial cadence—rather than balancing the two voices between instruments and having them cross registers, the gesture in m. 32 is crammed into the piano's two hands, into the span of a single sixteenth note. The convergence of the two voices in m. 9 is delicate; a pause precedes the final interval of a major fourteenth between F♯4, fluttertongued in the flute, and the *staccatissimo* F6 in the piano. In the parallel moment in m. 32, the two hands crash abruptly together onto a minor second between B ♭ 4 and B4.

After a pause, the reversal continues: the piano reverses the gesture that brought the slow introduction to a close, its final note coinciding with the beginning of the flute's melodic statement of I_0 (Figure 3.13). Although this is moment is brief, it has an important priming effect: it recalls important ideas from the introduction, but by reversing them it calls attention to their introductory function in relation to the thematic material that enters in m. 33. The first theme-ness thus emerges only through the piano's reversal in mm. 32-33 and following the flute's entrance, allowing the listener to understand the preceding material as pre-thematic.

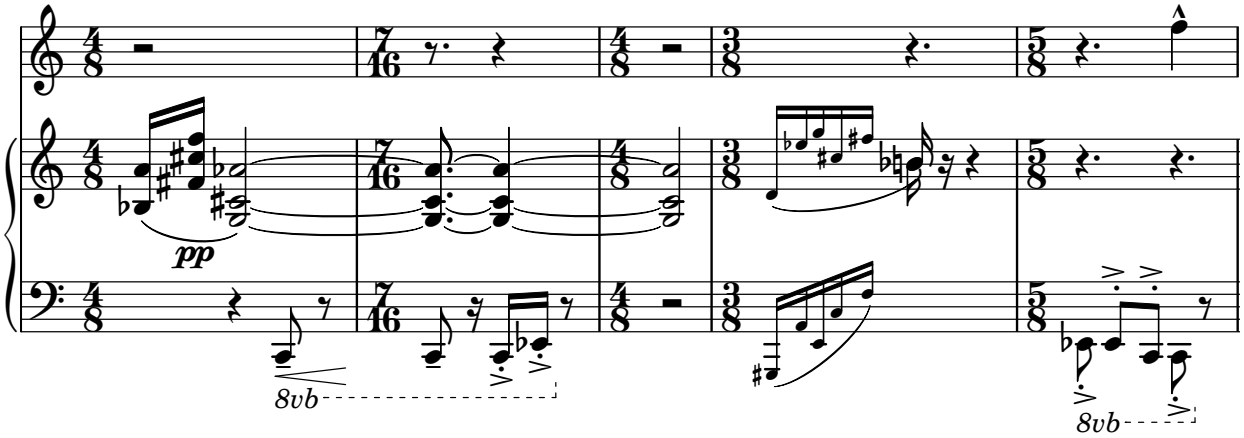

Figure 3.13: Boulez, *Sonatine*, mm. 29-33

Near the end of the first thematic section, the moment identified by Boulez as the first sketch of the subsidiary development arrives, working to expand the space between the work's "movements." Since this is a moment that Boulez identifies as outside of the formal structure adopted from the Chamber Symphony, it is worth investigating how (or perhaps if) our listener might make sense of the main thematic group as a whole, including this shift to the subsidiary material.

As the first theme unfolds, it presents a phrase structure organized around the particular internal division of the twelve-tone row, as discussed in section 3.2.3. This phrase structure is more complicated than the 5+5+2 grouping described by Chang, however: the grouping of particular pitches together is but one of the musical parameters that is salient for the listener. One parameter that has already been identified by the listener as salient is that of rhythmic alignment between piano and flute: the arrival of the two forces on the downbeat of m. 10 being a particularly memorable example. The first note of the flute's melody in m. 33 enters directly with the last note of the piano's reversal, eliding with the end of the slow introduction's material. The flute's second note, too, is aligned with the piano, as are the last two notes of the five-note

unit—it is clear from this new relationship between the two instruments that a new, more stable section has begun. For the first time, the listener perceives a clear opening basic idea of a phrase. This basic idea is characterized by a few distinct parameters. First, the basic idea displays a new melody-accompaniment distribution of parts between the flute and piano. Second, there is the first clear melody in the flute: first, the flute leaps dramatically downwards by major seventh, then up by diminished fourth to a pitch higher than the starting note—the first two notes are aligned with the piano's accompaniment, while the third is anticipated by the piano. The basic idea concludes with a faster descending fifth from E5 to A4, once again in alignment with the piano. Third, as already suggested, it displays a new pattern: alignment, disorder, and a return to alignment, enacted by the rhythmic procedure. The final quick descent in the flute is then echoed in the piano in m. 36.

When the flute next enters (after a brief pause), it is no longer in alignment with the piano, and the rhythmic pace has increased significantly—the instability creates a forward momentum for the phrase, which continues through mm. 38-39 with a dissonant cluster in the piano in m. 38 and a crescendo and sustained C5 in the flute. In m. 40, on the last pitch of the row in the flute's melody, the two instruments come into alignment once more on a 3-3 [014] trichord. Although the next phrase features a transposition of the twelve-tone series (P_7), Boulez's registral displacement of the row's pitches results in a melody that sounds distinctly like an inversion of mm. 33-35, with the melody's rhythm remaining the same. The function of mm. 41-43 is thus one of return to a previous basic idea after a contrasting idea. This time, however, the opening material is followed by a playful, imitative series of fragments, the flute chasing the piano, until they come decisively back together in m. 50. A repetition of the section's opening basic idea in mm. 51-52, now in retrograde but recognizable by its rhythm and articulation,

serves as a kind of tag to the theme, which was completed with the cadential gesture at the end of m. 50. The first theme thus establishes a new kind of closure based on a feature already recognized as salient by the listener: rhythmic alignment coming after a period of instability (now stretched over a five-measure phrase).

3.2.5: Conclusion

The preceding sequence of analyses is not intended to be understood as teleological; that is, my non-ideal listener's hearing should not be read as the culmination of all preceding analyses or as superseding them. Rather, our messy listening can be seen to provide a new vantage point from which to understand large-scale form in post-tonal repertoires.

Analyzing formal functionality on a large scale in post-tonal music offers particular challenges to the music analyst. Some of these difficulties arise from the limitations of working memory, from the lack of tonally-articulated key areas to define particular formal areas, from the difficulty of determining linear associations and prolongation in post-tonal music, and from the preexisting metaphor of "form as container," described in section 3.3.2. This notion that classically- or romantically-derived "forms" become fixed containers when employed alongside post-tonal compositional methods prevents us from integrating formal functionality into large-scale schemes in post-tonal contexts.

The question raised by our non-ideal listener is how to expand and develop our understanding large scale form with respect to a listener-focused (and thus constrained by cognitive resources) theory of function. What I propose here is an understanding of formal

function that lies at the intersection of a composer's design and a listener's constantly evolving perception as she walks the music's path.

There is a constellation of different elements that may enter into a listener's consciousness, and she may seize upon any subsection of these at any given moment: schemas, topics, categories, salient parameters, prospective or retrospective impulses, formal metaphors, the phrase structure set up within the work itself or a historical type of phrase structure or a specific type of phrase construction, such as the type heard in Schoenberg's Chamber Symphony.

3.3: Boulez's First Piano Sonata

3.3.1: Introduction

Even by the composition of his second published work, the First Piano Sonata, Boulez was moving away from transparently using formal models like the one borrowed from Schoenberg in the *Sonatine*, although he had not yet rejected Schoenberg's influence entirely. Boulez acknowledges that like the *Sonatine,* the sonata is connected to Schoenberg's op. 9, showing its influence "very clearly, even if it lacks the Romantic hypertension of the op. 11 pieces."[41] Griffiths, for his part, draws a clear line between the *Sonatine* and the first sonata, noting that in the piano sonata "there are now no thematic sections like the 'scherzo' of the sonatina, nor even any remnants of exact motivic recall."[42]

Despite the lack of a clear formal model for the first sonata, it is clear that the work's sections are articulated and meaningfully relate to one another within the musical context

[41]Boulez, *Pierre Boulez: Conversations with Célestin Deliège*, 29.
[42]Griffiths, *Boulez*, 12.

established by Boulez—in other words, that they have *functions*. This is most evident at moments of articulation between sections, such as in mm. 46-47 in the first movement, where the first thematic section clearly comes to a close and a new, scherzo-like section begins. Recalling the allusions to sonata form in the *Sonatine*, Mark Wait identifies "suggestions of the larger functions of sonata-allegro form" in the first movement of the piano sonata, citing the presence of a slow introduction, the "main body of the movement" (possibly the exposition of a main theme), which increases in complexity, and a final section—"analogous to a recapitulation"—that restates excerpts from the development (identified as the most complex portion of the movement).[43]

3.3.2: A Brief Digression on Sonata Form

As I suggested at the opening of this chapter, it is practically impossible to get away from sonata form—that most prodigious of forms—in any discussion of large-scale form; it rears its head constantly, even in discussions of post-tonal repertoires. Sonata form, and theories about it, has an illustrious history within music-theoretical discourse, stretching back to the early nineteenth century and Adolph Bernhard Marx's composition treatise, *Die Lehre von der musikalischen Komposition* (1837-47), in which Marx derives the sonata form organically, beginning with the simple *Satz*. The banner of organicism in sonata form was notably taken up

[43] Mark William Wait, "A Survey of the Piano Sonatas of Pierre Boulez" (MM thesis, Kansas State University, 1973), 7.

by Heinrich Schenker, who conceived of sonata form as "the most complex form of a highly developed era."[44]

Our current understanding of sonata form has largely been shaped by the theories of William Caplin in *Classical Form* and James Hepokoski and Warren Darcy in *Elements of Sonata Theory*.[45] These two foundational texts of modern *Formenlehre* each establish a set of norms that the authors argue define "sonata form." There have, however, been many other contributions to scholarship on sonata form that have taken different perspectives; Charles Rosen, for example, argues for a fundamentally pluralistic view of sonata form, in order to acknowledge that sonata form was developed alongside and through many other forms.[46] Mark Evans Bonds, by contrast, approaches sonata form from the perspective of rhetoric (a view similar to the one I will develop in chapter 4 in relation to musical closure).[47]

The present chapter deals with sonata form only through the distorted lens of composers' and listeners' received understandings and encounters with "sonata form" as an historical object. There can thus be no unified theory of sonata form in post-tonal music—there is, rather, a network of impulses and half-remembered rules upon which composers and listeners might draw when confronted with some musical object, titled "sonata."

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[44] Heinrich Schenker and Orin Grossman, "Organic Structure in Sonata Form," *Journal of Music Theory* 12, no. 2 (1968): 181.
[45] Caplin, *Classical Form: A Theory of Formal Functions for the Instrumental Music of Haydn, Mozart, and Beethoven*. James A. Hepokoski and Warren Darcy, *Elements of Sonata Theory: Norms, Types, and Deformations in the Late Eighteenth-Century Sonata* (New York: Oxford University Press, 2006).
[46] Charles Rosen, *Sonata Forms*, Revised ed. (New York and London: W. W. Norton & Company, 1988).
[47] Mark Evan Bonds, *Wordless Rhetoric: Musical Form and the Metaphor of the Oration*, Studies in the History of Music (Cambridge: Harvard University Press, 1991).

3.3.3: A Messy Reading of the First Piano Sonata

Boulez's First Piano Sonata begins slowly, with clearly defined and articulated phrases that introduce some of the main motives, functions, and relationships of the work. Figure 3.14 shows a possible reading of a sentential form in this slow introduction, emphasizing the opening and closing segments of each iteration of the basic idea. For a more thorough and robust explication of how I arrive at such segmentations of phrase structure in post-tonal compositions, refer to Chapter 2 on phrase construction in post-tonal music, and specifically section 2.1.3.

The opening is asserted through repetition of melodic contour, while closure is asserted through opposition: the first half of the basic idea in mm. 1-4 closes with a rapid descent marked by dynamic and rhythmic contrast, while the second half closes with an ascent marked by longer note values and register. In mm. 5-7, the repetition of the basic idea reverses these gestures. The basic idea and its repetition achieve partial closure through the reversal, but with its sparse texture, the gesture in m. 7 affords a feeling of incompleteness and expectation. That expectation is fulfilled with the continuational characteristics in mm. 8-10, with a fragment in m. 8 followed by a summarizing closing gesture that repeats the registral closure and distinctive low, short, *sforzando* final pitch of m. 7.

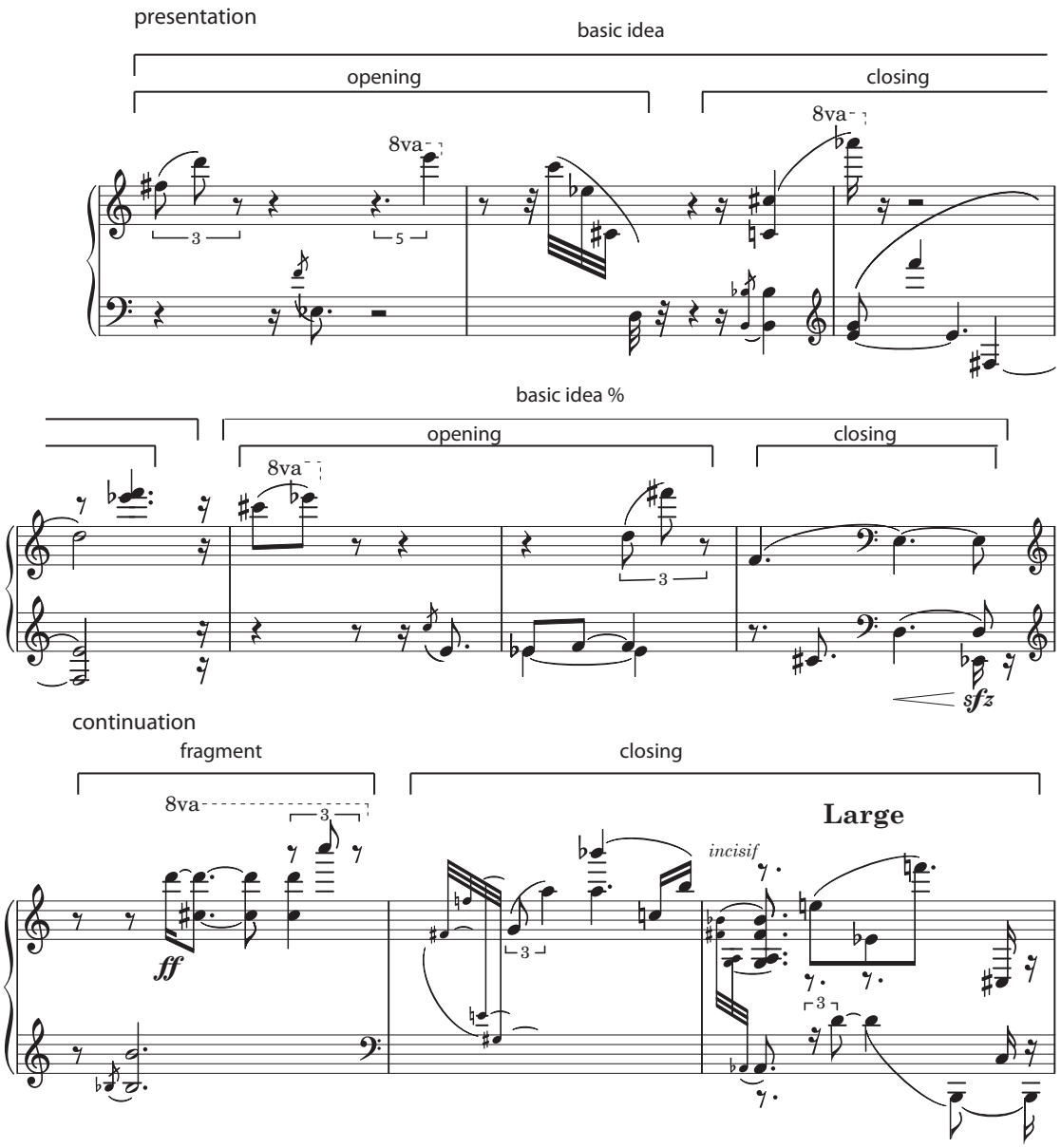

Figure 3.14: Boulez, First Piano Sonata: slow introduction, mm. 1-10

In an analytical approach informed by Webern's serial practice of dividing a complete series into small, motivically significant cells, Wait analyzes the first sonata's opening measures in terms of two cells comprising seven distinct pitches.[48] Figure 3.15 summarizes Wait's "tone-cell"

[48] Wait, "A Survey of the Piano Sonatas of Pierre Boulez," 8-10.

analysis of the first two measures, showing how cell b is generated by cell a, which also regenerates itself.

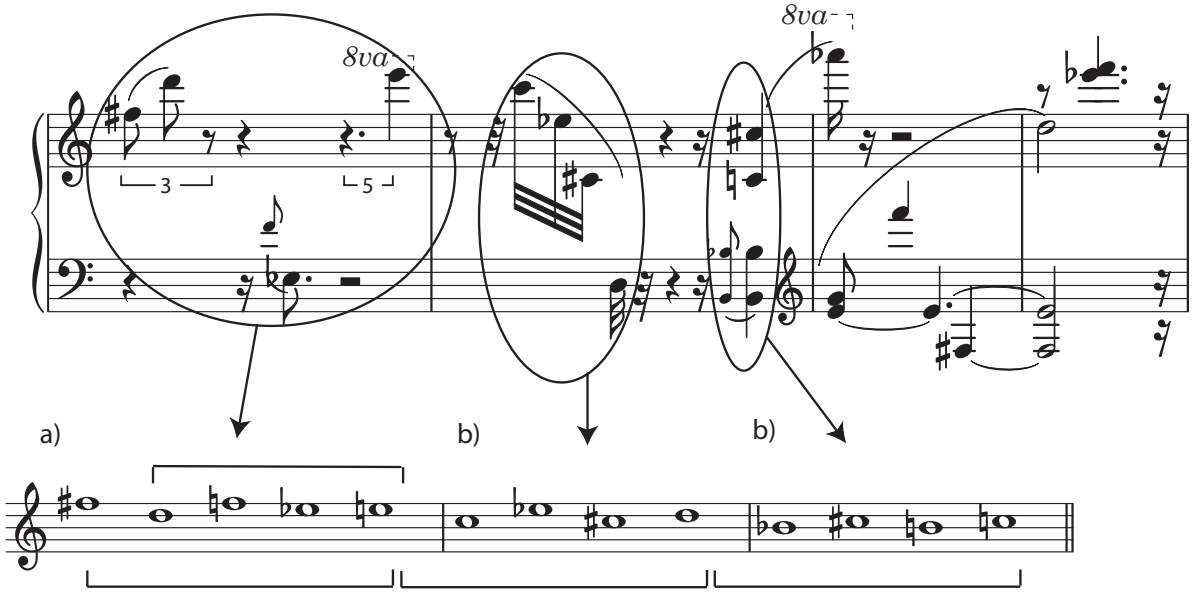

Figure 3.15: Boulez, First Piano Sonata: Wait's tone-cell analysis of the opening measures

One musical aspect that the tone-cell analysis of Figure 3.15 highlights is the process of expansion and contraction that is inherent in cell a (and therefore b), and which is realized musically by Boulez through the use of register. This interpretation is only latent in the tone-cell analysis, though; the flattening of register (and rhythm, articulation, dynamics, etc.) that reveals the relationship between cells a and b simultaneously conceals the phrase structure that uses spatialized registral contrasts to enact closure.

Where the slow introduction is articulated with a tightly-knit phrase structure, the first main thematic section of the sonata's first movement is the opposite, with more complex, loosely-knit phrases that thwart listener expectations. In a similar process, the main thematic section begins by partially stating the work's seven-tone row before quickly breaking down into

row segments that are only partially present or unordered: the first six pitches of P_2 enter in order in m. 11, but m. 12 presents the remaining trichords of the row in a new order; P_2 is then followed by an unordered collection from P_9 in m. 13. Based on the repetition of pitches within the row itself, and Boulez's willingness to pick and choose trichords and pitch classes from the row at will, it seems that the row is not particularly salient in determining thematic identity, motives, and phrase structure. The main sources of orientation for the listener are thus the markers of formal functionality introduced in the slow introduction.

At first, it seems as though the theme beginning in m. 11 will unfold using a phrase structure similar to the one in the slow introduction. The section opens with an ascending two-note gesture, mimicking the ascending dyads that began each basic idea in the introduction, now in a lower register (Figure 3.16). In m. 11, though, the line continues to rise tentatively upwards, the slight pause indicated by the breath mark at the end of the measure leaving this measure's function undecided: will it truly begin a new theme, or is it merely post-cadential material relating back to the slow introduction? The next measure's rapid descent, played *fortissimo*, seems to indicate the former, as it introduces a new motivic idea, ending on an inquisitive ascending ninth followed by another pause. The next measure verticalizes pitch material from P9, ending decisively and abruptly on an accented major second, the descent balancing the ascent in m. 11. The descent is repeated in a rapid flurry of notes in m. 14, prompting another question of function: is this a repetition of the closure of m. 13, or the start of a new, contrasting idea?[49] As opposed to the slow introduction's clarity, the main theme is more unpredictable and

[49] The performer has quite a bit of control over the answer to this question: an interpretation like Paavali Jumppanen's makes m. 14 feel like it belongs to a phrase encompassing mm. 11-14, while Idil Biret's performance makes mm. 11-13 feel strongly coherent and separate from m. 14, which seems to lead into the phrase in mm. 15-17.

fragmented, its ideas compressed and curtly stated. The basic idea is now followed by contrasting material rather than a varied repetition, and the faster contrasting material pushes urgently onward rather than closing in m. 17, dissolving into fragmentation in mm. 18-23.

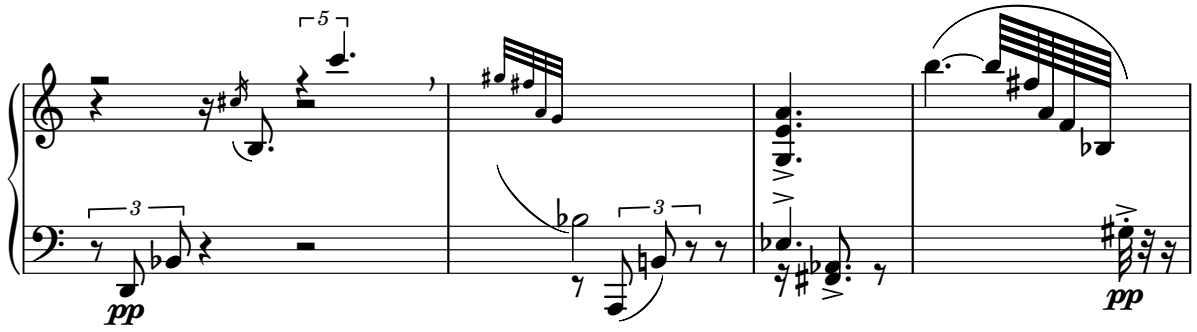

Figure 3.16: Boulez, First Piano Sonata: opening of the main theme, mm. 11-14

Measure 24 enacts another beginning, reiterating the ascent of m. 11, this time beginning with row P_0 followed by P_2, and in the next measure P_5 and R_0—all of these are row fragments. The listener only now receives confirmation that the hesitant, fragmented ascent of m. 11 was indeed part of the main thematic material; the closing function of m. 14 is retrospectively confirmed in the following measure as well.

I hinted previously at the important formal juncture between measures 46 and 47, where there is a clear change in material, from the slowly unfolding phrases of the main thematic section to a playful, staccato, scherzo-like section (Wait calls this the development of a sonata-allegro form). This moment of articulation is carefully prepared through an expansion of the main theme's closing gesture, which is fragmented with increasing urgency in the preceding measures until its final iteration over three measures, spanning nearly seven octaves. This is the strongest moment of contrast thus far in the piece, and it orients the listener in terms of the movement's trajectory—whether or not she hears this moment as initiating a kind of functional

development within a sonata-allegro form, as Wait does, it is undeniably the beginning of a new section, the function of which the listener can expect to emerge as she listens.

In this scherzo-like, possibly developmental section, the clearly articulated phrases provide a stark contrast with the unpredictability of the main theme. The descending flurry of notes remains operative as a closing mechanism for phrases, now presented as divorced from its ascending counterpart. Instead, in the scherzo Boulez develops further the relationship between the descending flurry and the staccato pitch that invariably followed it in the main theme. The first idea ends unproblematically, with the descending gesture leading into a *fortissimo* dyad (m. 49). In the second idea, the descending gesture seems to end the phrase too early—it starts up again, before being abruptly interrupted by a single, jarring C1 (m. 52).

The following phrase concludes with an ascending group of sixty-fourth notes followed by a *staccato* F6, immediately followed by a responding descending group that ends on an E1 (m. 58). In the next phrase the two gestures are once again dissociated from one another: the ascending group of notes ends the first part of the phrase, while the second part ends in m. 63 with a distinctive single, accented, *staccato* A0.

Mirroring the close of the main theme, the scherzo section ends with a prolongation of this closing paradigm over mm. 64-68, concluding with two *sforzato* sonorities. When the main thematic material enters in inversion in m. 69, it seems evident that this is a recapitulation of that material. But just as we seem to reach a point of closure in m. 81, Boulez effectively evades the cadence, leaving out the expected final, marked pitch of the gesture. Instead the scherzo theme enters again, prompting a reevaluation: was the scherzo a development at all (following Wait's association with sonata-allegro form), or was it a second theme? The question is partially answered when the main theme returns again in m. 98, but a satisfying cadence is never

achieved. The cadence of m. 103, while it recuperates the original register of the slow introduction, does not recuperate the form-functional clarity of those opening measures—instead, the piece washes away its own motivic material into the primordial soup of its generative series.

Ultimately, whether or not the first movement of Boulez's First Piano Sonata is, in some sense, "in" sonata form is not a question I (or possibly anyone) can answer. Certainly it does not meet the requirements of sonata form in any strict sense, either harmonically or thematically. But what matters more for our understanding of the work's form, I would argue, is the play of affordances at work, some of which recall the affordances at work in a sonata-form movement, and some of which recall those at work in a rounded binary form or a set of variations. The listener imagines a set of possibilities when she hears the scherzo enter; her expectations are potentially thwarted, stretched or diverted when the scherzo material enters unexpectedly during the "recapitulation"—perhaps this experience, rather than the musical objects themselves, is constitutive of "form."

3.4: Conclusion

Returning to Boulez's *Sonatine*, it is clear that neither of my first two listenings were incorrect in any way—each reflected a different facet of compositional intent. The first approach, Straus-ian in nature, sees the sonata-form frame of Schoenberg's Chamber Symphony reanimated by the post-tonal materials of the *Sonatine*. The second approach takes up Boulez's standard, focusing on the post-tonal materials that motivate and animate the work's form. As my third, "messy" listening demonstrates, however, neither of these are adequate to the *experience* of

listening to the *Sonatine*. This final approach treats the tonal frame adopted from Schoenberg precisely *not* as a frame, but as an active, living component of the work in the mind of a listener.

The view of form proposed in this chapter turns away from compositional intent and towards a consideration of 12-tone music, and post-tonal music more broadly, on a listener's terms. I conceive of form on the large scale as a path generated by the listener as she walks it. By virtue of the listener's long-term memory coming into play when listening to longer spans of music, she will be influenced not only by phrase-structural constraints established within a specific work, but by relationships to other works, generic expectations, and past listening experiences.

Part I of this dissertation constructed a methodology for listener-based analysis of formal function in post-tonal repertoires, from small units, to phrases, to entire sections of musical works. In Chapter 1, I established that musical objects *afford* certain functions for listeners. In Chapter 2, I offered an alternative conception of phrase, focusing on three factors that inform the identification of musical phrases by a listener, rather than their formation by a composer: salient parameters, object categorization, and prospection/retrospection. In the course of the various listenings proposed in the present chapter, I showed how historical forms based in tonal patterns, like the sonata form, can interact with post-tonal musical materials for listeners.

The two chapters that follow pick up on the methodology and ideas established in the dissertation's first part to delve more deeply into—and put into practice—the rhetorical implications of my analytical method. In chapter 4, I grapple specifically with the formal and rhetorical repercussions of cadential gestures through closing readings of Alfred Schnittke's Concerto for Viola and Orchestra and String Quartet No. 3, and György Ligeti's Concerto for Piano and Orchestra. In chapter 5, I grapple with some more complex phrase structures in works

by Luciano Berio, based on non-traditional modes of construction that are predominantly linear, circular, or mirror-based. In exploring these three phrase types, I expand our understanding of what formal functionality can mean in a post-tonal context.

Part II

Chapter 4: Cadential Function and Rhetoric in Works by Schnittke and Ligeti

4.1: Introduction

Alfred Schnittke's String Quartet No. 3 (1983) offers perhaps the most striking—and certainly one of the most overt or even lurid—uses of a conventional cadence in postwar music. The work, which engages with the collage technique, begins with a quotation from Orlando di Lasso's setting of the *Stabat mater*, consisting of two cadential figures in a row. The first appears to be taken from mm. 22-23 of the first part of the *Stabat mater*; the second bears a resemblance to the clausala in mm. 17-18 of the second part (Figure 4.1). Each fragment contains the typical cadential melodic turn starting on the tonic, proceeding to the leading tone with a lower neighbor, and finishing on the tonic note: this occurs first in Violin I and then in m.3 in Violin II. Oana Andreica, in "Alfred Schnittke's Polystylistic Journey: The Third String Quartet," provides useful contextual material related to Schnittke's polystylism, summarizing the composer's own thoughts on the technique as well as identifying key polystylistic compositions in his oeuvre. Andreica then provides a detailed account of the polystylistic impulses in Schnittke's third string quartet. She situates the opening Lasso quotations as a gesture that looks back at the history of Western music, arguing that the first four measures of the *Quartet* "firmly state Schnittke's intention: recognizing the phenomenon of leading-tone alterations in the

Renaissance music around 1500 as the 'genetic code' that led to the gradual dissolution of diatonic harmony and tonality."[1]

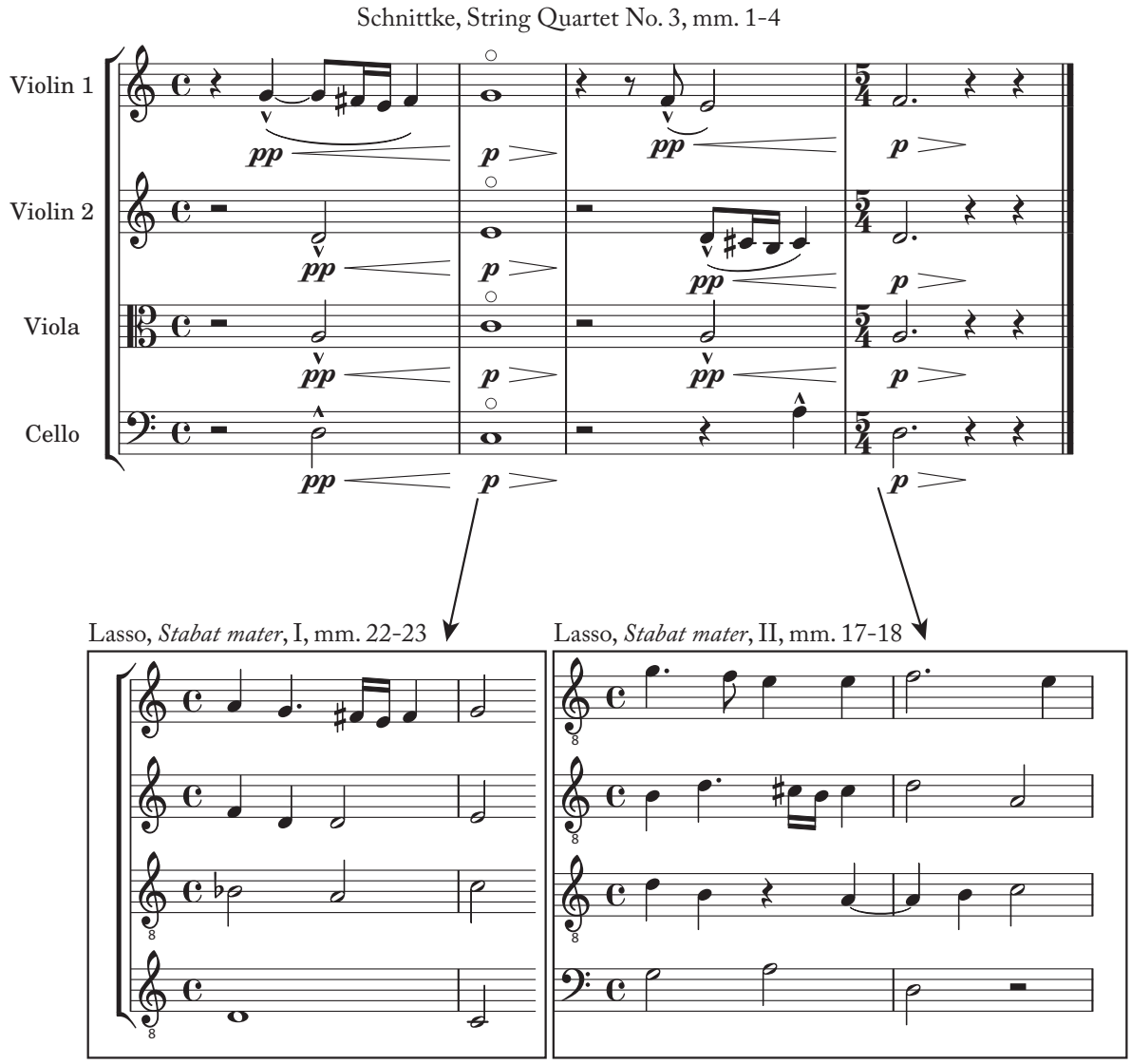

Figure 4.1: Comparison of mm. 1-4 of Schnittke's Third String Quartet with Lasso's *Stabat mater*, I mm. 22-23; II mm. 17-18

[1] Oana Andreica, "Alfred Schnittke's Polystylistic Journey: The Third String Quartet," *Studia Universitatis Babes-Bolyai - Musica* 57, no. 1 (2012): 108.

How can we understand this contrapuntal, antiquated clausula formula, presented as the opening gambit of a work written in 1983? Andreica provides one possible interpretation of these two ambiguous gestures as representing a historical shift towards leading-tone alteration around 1500. But for a moment, let us consider the perspective of Chapter 3's "messy listener," who may be familiar with the common-practice, conventionalized cadence that developed from cadences like the ones presented in Lasso's setting of the *Stabat mater*. For this kind of listener (and indeed, I would argue, many listeners whose ears are familiar with or accustomed to Western art music of the eighteenth to the late nineteenth centuries) the pattern in mm. 1-2 of Schnittke's *Quartet* might recall more strongly that conventional, "Classical" cadence, especially when the entrance of the second violin, viola, and cello on beat 3 of m. 1 makes the violin's G4 into a suspension, which resolves as expected to the leading tone using the highly formulaic melodic pattern described above.

Schnittke's striking cadential gestures force us to confront what "cadence" means *for listeners* in a post-tonal musical context. Are objects like cadences, strongly associated with tonal musical traditions, still functional as agents of formal closure for listeners of post-tonal music? How do these tonal objects affect a listener's understanding of form on small and large scales? Is the cadence even still an operative concept in post-tonal music, with respect both to cadential content and cadential function? Can (or should) the listener detangle cadential content from cadential function? How do cadences operate rhetorically in Schnittke's music? And what can Schnittke's use of cadence tell us more broadly about relationships between cadential content, function, and rhetoric?

In this chapter, I address these questions through close readings of three compositions: Alfred Schnittke's Concerto for Viola and Orchestra and String Quartet No. 3, and György

Ligeti's Concerto for Piano and Orchestra. Rather than focusing directly on Schnittke's polystylistic techniques in the concerto and string quartet (techniques that have already received significant attention in the scholarly literature), I focus on how his compositional method contributes to the form of his music, as experienced in time by a potential listener. Specifically, I argue that Schnittke's polystylistic technique, especially as it involves cadential function, forces the analyst to expand existing definitional frames for the cadence and thus to reconceive of the cadence as exceeding either its function or content. I first explore these existing definitional frames as they appear in the scholarly literature on cadence, before moving to a close reading of the Concerto for Viola and Orchestra. I argue that the Concerto stages a rupture between cadential content and function by juxtaposing a post-tonal cadence with a contrapuntal, tonal cadence, forcing the listener to confront the plurality of possible functions for these two cadences. This rupture leads me to propose two new types of cadence, which are distinguished from each other and from the common-practice cadence by their relationships to both cadential content and function. I then turn to Ligeti's Concerto for Piano and Orchestra before returning to Schnittke's String Quartet No. 3, revealing how each of these works challenges a potential listener's conception of the cadence.

4.2: Theorizing the Cadence

4.2.1: Previous Approaches

In tonal and pre-tonal music, the cadence is a compositional device that is used to attain formal closure and to confirm a key. In his detailed exploration of the history and theory of cadence, Daniel Harrison describes how the cadence evolved from "a mandatory pair of ending

intervals" in strict counterpoint: specifically, the interval of a major sixth moving to a perfect octave.[2] Broadly defined, a cadence is a contrapuntal, melodic, harmonic, and/or rhythmic pattern that concludes a formal unit, and if we were to be even broader in our definition, we could include features that are commonly considered secondary to the primary features of melody and harmony, like ornamentation, timbre, and gesture. Cadences are one of the most conventional, stock rhetorical signals within common-practice music. As Harrison argues, stopping is highly conventional "because it encodes metaphysical ideas about finality."[3] As the shared conventional language of tonality began to disintegrate in the late nineteenth and twentieth centuries, however, the cadence explicitly became a problem for composers.

The cadence has been theorized in a variety of ways throughout the history of music theory: in a recent study, Caleb Mutch has traced the history of cadential theories from John of Affligem's twelfth-century grammatical system of musical punctuation through A.B. Marx's organicist, formal conception of the cadence.[4] As Mutch notes, "The meaning of the words "cadence" and "closure" (and related terms in other languages) varies significantly in different periods and places."[5] He goes on to generalize the function of the cadence as "marking the conclusion of a formal unit (or stretch of musical utterance) and establishing to some degree a definite impression of arrival and/or conclusion, by whatever means are appropriate to the style of the music in question."[6] In music of the common-practice period, this generally means

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[2] Daniel Harrison, "Cadence," in *The Oxford Handbook of Critical Concepts in Music Theory*, ed. Alexander Rehding and Steven Rings (Oxford: Oxford University Press, 2016), 1.
[3] Ibid.
[4] Caleb Michael Mutch, "Studies in the History of the Cadence" (PhD thesis, Columbia University, 2015).
[5] Ibid., 3.
[6] Ibid.

establishing and making salient one or more tonal areas, which are associated with particular formal functions. The cadence is thus a crucial marker of form for the listener, as it provides points of stability and tonal clarity. As Mutch observes, even though the means of establishing this sense of arrival and/or conclusion may differ across historical eras, the importance of cadential function transcends these technical differences.

By some accounts, the concept of cadence became inoperative with Schoenberg. In "Schoenberg's Return to Tonality," Hans Keller argues that we have "lost the means of saying unambiguously, beyond musically reasonable doubt, that 'this is the end.'" Although we have gained many other musical advantages through this loss, he writes, in Schoenberg's dodecaphony "the unmistakable end, obvious to the naked ear of the infant, is a thing of the tonal past and the tonal present," which is repressed in Schoenberg's music.[7] Writing on Schoenberg's use of tonality, Michael Cherlin also argues that "tonality, the most 'heimlich' of musical groundings, becomes increasingly estranged and repressed as Schoenberg and others struggle to surmount it." Thus, the "glimmerings of tonality that emerge here and there […] throughout Schoenberg's compositional life can well be understood as 'unheimlich.'"[8] Beginning with Schoenberg, invocations of tonal closure and the conventional tonal cadence in post-tonal music become difficult if not impossible to employ with sincerity, their meaning slipping precariously towards the uncanny. When gestures toward tonality threaten to invoke the uncanny, then, how could one seriously use such a stereotypically tonal gesture as a cadence in a modern composition? Without the trappings of the conventional common-practice cadence, though, how else could

[7] Hans Keller, "Schoenberg's Return to Tonality," *Journal of the Arnold Schoenberg Institute* 5 (1981): 3.
[8] Michael Cherlin, "Schoenberg and *Das Unheimliche*: Spectres of Tonality," *The Journal of Musicology* 11, no. 3 (1993): 362.

one achieve formal closure?

More to the point, how do listeners hear and interpret these moments; how do they experience, or not experience, closure; and how do these moments affect their understanding of the work's emerging form? If, as Keller argues, Schoenberg's music represses tonal closure, and "is composed against the background—accent on the 'against'—of well-defined, well-implied, but violently suppressed (and psychoanalytically speaking, repressed) tonal expectations," then how does this repressed tonal background affect the listener's understanding of form and closure in his music?[9]

The cadence has been the subject of a great deal of music-theoretical interest in recent scholarship. In William Caplin's detailed study, "The Classical Cadence: Conceptions and Misconceptions" the author argues that, with the context of Classical music, the cadence represents a specific type of closure whose structural function is, fundamentally, to complete a formal unit.[10] He also makes the important argument that the cadence is a syntactical, rather than a rhetorical, function of music. I adopt both Caplin's distinction between the syntactical and rhetorical elements of cadence and his emphasis on the cadence as enacting formal closure in my exploration of the post-tonal cadence, although my approach must necessarily be more flexible than Caplin's due to the nature of the repertoire. Caplin also makes a strong distinction between cadential content and cadential function. We can identify the following primary, necessary characteristics of the cadence, in Caplin's form-functional account: the presence of a cadential progression, root position dominant and tonic harmonies, and the location of the progression at

[9] Keller, "Schoenberg's Return to Tonality," 3.
[10] William Earl Caplin, "The Classical Cadence: Conceptions and Misconceptions," *Journal of the American Musicological Society* 57, no. 1 (2004).

the end of a phrase. There are other, secondary cadential characteristics involved in the cadence as well: a descending melodic contour, and ornamentation, rhythm, and timbral and textural changes.

Many scholars have already started to soften the edges of Caplin's strict definition of cadential function; for example, Mark Richards has recently made evident the crucial role that melody and texture play in determining the boundaries of cadential function and what he terms "closural function" in Classical music.[11] He argues that "melodic and textural changes in the classical repertoire are in no way inert in formal functionality, but actively participate in the expression of cadential function," thus somewhat divorcing the complete cadential progression from cadential function understood more broadly.[12]

In *Closure and Mahler's Music: The Role of Secondary Parameters*, Robert Hopkins presents an analytical method that focuses on the role of secondary parameters in articulating formal closure.[13] Hopkins deals with Mahler's music specifically, but his book also provides more a more general consideration of musical closure and how secondary parameters contribute to its creation. Hopkins fruitfully approaches the topic of closure from the perspective of the listener in this monograph by focusing on how Mahler creates a sense of musical closure regardless of whether traditional tonal closure is achieved.

There has been some recent interest in cadential function in the post-tonal scholarly literature as well, reconceiving of cadence as something that transcends a specific type of

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[11] Mark Richards, "Closure in Classical Themes: The Role of Melody and Texture in Cadences, Closural Function, and the Separated Cadence," *Intersections* 31, no. 1 (2010).
[12] Ibid., 31.
[13] Robert Hopkins, *Closure and Mahler's Music: The Role of Secondary Parameters* (Philadelphia: University of Pennsylvania Press, 1990).

harmonic progression. In "Linear and Textural Aspects of Schoenberg's Cadences," for example, Alden Ashforth explores and classifies types of linear and textural closure found in Schoenberg's non-tonal works written after 1907. He differentiates between common and rare types of closure, as well as more and less conclusive ones, within this oeuvre.[14]

In her dissertation on cadential gestures in post-tonal music, Amari Barash identifies ten features that contribute to the perception of a cadence or musical boundary: duration, silence, contour, centricity, activity level, motivic and phrasal repetition, tempo, dynamics, texture and color, and articulation.[15] For Barash, the idea of a musical cadence is based on the perception of intensification and tension; thus, a cadence "can be anticipated by a perceived acceleration of motion."[16] Unlike Caplin, Barash treats the concept of "cadence" very broadly, conceiving of it as a process of intensification and resolution. This expansion of the concept of cadence beyond the realm of pitch provides a useful basis for my own conception of cadence as produced by multiple parameters in post-tonal music.

In her 2001 dissertation, Kristy Ann Bryden explores closural processes in five chamber works by American composers.[17] Bryden establishes six principles as a basis for her exploration of closure: that closural processes are temporal and operate on multiple levels, that they consist of lines of increasing and decreasing intensity, that they create and then either fulfill or deny

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[14] Alden Ashforth, "Linear and Textural Aspects of Schoenberg's Cadences," *Perspectives of New Music* 16, no. 2 (1978).
[15] Amari Pepper Barash, "Cadential Gestures in Post-Tonal Music: The Consititution of Cadences in Messiaen's Ile de Feu I and Boulez' Premiere Sonate, First Movement" (DMA thesis, The City University of New York, 2002).
[16] Ibid., 9.
[17] These are: Joan Tower's *Petroushskates,* the "Overturn" from John Harbison's *Piano Quintet,* the "Invention" from George Perle's *Wind Quintet No. 4,* Ralph Shapey's *Concertante No. I for Trumpet and 10 Players,* and Barbara Kolb's *Umbrian Colors.*

expectations, that they summarize past events, that they highlight concluding moments, and finally, that they may feature transitional techniques that foreshadow the following event.[18] Bryden first engages with the Adagio from Beethoven's String Quartet in C♯ Minor, op. 131, in order to show how certain closural processes—of rising and falling intensity, of summarizing past events, of emphasizing non-pitch elements—employed by Beethoven in the Adagio are similar to the kind of closural processes found in works of the late twentieth century.

Clare Eng's 2012 dissertation explores closure largely through the lens of musical motives in works by Bartók, Britten, and Fauré.[19] Eng focuses on conventions of closure largely at the level of the composer and the work, supplementing studies of closural conventions on the corpus level. She defines cadence as "a closural process that achieves conventional status within a set of stylistic norms."[20] While Eng does touch on corpus-level conventions, this is mainly to provide context for composer-level closural conventions. She pays closest analytical attention to how these three composers use motives to create closure, Bartók by restating motives, Britten by combining "motivic transformation with recollection," and Fauré by incorporating motives into cadences.[21]

Eng's approach to closure relies heavily on Leonard Meyer's communication model of music, as outlined in *Emotion and Meaning in Music*, in which Meyer asserts that the perception

[18] Kristy Ann Bryden, "Musical Conclusions: Exploring Closural Processes in Five Late Twentieth-Century Chamber Works" (PhD thesis, University of Wisconsin-Madison, 2001).
[19] Sher Ling Clare Eng, "Motif and Closure in Twentieth Century Music: Bartók, Britten and Fauré" (PhD thesis, Yale University, 2012).
[20] Ibid., 16.
[21] Ibid., 12.

of closure depends on expectation, and these expectations are style-specific.[22] Traditional tonal cadential progressions, like ii-V6/4-5/3-I, thus have different meanings and engender different expectations in, for example, late nineteenth-century music than they would in late eighteenth-century music. As Eng notes, in an eighteenth-century context this progression is unmarked, but in late nineteenth-century music "it becomes an anachronism, or what Meyer terms 'expressive deviant,' that invites speculation as to its ideological and aesthetic significance."[23] Many of the techniques used by these early twentieth-century composers and investigated by Eng resonate with ones used by Schnittke and the other composers on which I focus, although Eng's repertoire of choice tends to privilege motivic continuity more than my own.

Textbooks on atonal music have also conceptualized cadence in a number of different ways that might prove fruitful for understanding current trends in music-theoretical thought on post-tonal cadential function. In Edward Pearsall's *Twentieth-Century Music Theory and Practice*, for example, he writes:

> Sets may be delineated through a variety of means, including, but not limited to *cadences, pauses, durations, dynamic* and *textural shifts*, *rhythm, articulation, register, timbre, repetition*, and *harmonic identity*. The ways in which these elements are deployed in a piece is largely dependent on context and cannot be precisely defined. Even transparent markers such as double bar lines and repeat signs cannot always be trusted to delineate beginnings and endings.[24]

Elsewhere in the textbook, Pearsall indicates that texture, specifically, can contribute to a sense of closure or cadence, as in the static texture that arrives at the end of Debussy's *Voiles*.

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[22] Leonard B. Meyer, *Emotion and Meaning in Music* (Chicago: The University of Chicago Press, 1956).
[23] Eng, "Motif and Closure in Twentieth Century Music: Bartók, Britten and Fauré," 20.
[24] Edward Pearsall, *Twentieth-Century Music Theory and Practice* (New York: Routledge, 2012), 78.

Joseph Straus, in his *Introduction to Post-Tonal Theory*, also mentions the cadence as an articulator of formal units. In his analysis of the first movement of Bartok's String Quartet no. 4 Straus conceives of the cadence as involving the merging of set classes (0123) and (0264), so that "the two principal set classes of the passage thus are developed, progress from one to the other, define a large-scale shift in pitch location, and ultimately merge into a single cadential sonority."[25] In an analysis of the fourth movement of Bartok's String Quartet no. 6, Straus writes that "the music is headed for a cadence on a C-minor triad in measure 13. That cadential goal is approached in the cello by a descending 1-cycle (E-E ♭ -D-D flat-C) and in the first violin by an ascending 2-cycle (A-B-C♯-E ♭)."[26] From the few references to cadence in Straus's text, we can infer that the cadence has quite a bit to do with pitch materials, and that it is in some way predictable; as in, we can *know* that the music is "headed for a cadence on a C-minor triad" when we listen to it.

In *Serial Composition and Atonality*, George Perle asserts that "rhythm plays a far more important role than pitch relation in the establishment of phrase structure and cadence in atonal music."[27] In his analysis of Act 1 Scene 1 of Berg's *Wozzeck*, he also characterizes cadences as aggregates of the movement's four basic cells, indicating that cadential content in post-tonal music may involve pitch and rhythmic elements.

In a recent article that frames tonality as a topic within early twentieth-century compositions, Thomas Johnson provides another possible conceptualization of the tonal cadence

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[25] Joseph N. Straus, *Introduction to Post-Tonal Theory*, 4th ed. (New York: W.W. Norton & Company, 2016), 86.
[26] Ibid.
[27] Perle, *Serial Composition and Atonality: An Introduction to the Music of Schoenberg, Berg, and Webern*, 33.

within post-tonal music. Arguing that "the rise of atonal practices necessarily enacts a new perspective on tonality that allows it to be topicalized," Johnson articulates a theory of tonality-as-topic in which modernist composers use tonal *figurae* such as triads, metric consonance, parsimonious part-writing, and pitch centricity "to interpret the past, and […] to expose a huge semiotic code, a knotted assemblage of signifieds of the tonal topic."[28] This topical perspective presents a rather milder view of the function of tonal objects or *figurae* compared to the conceptualization of tonality as violently repressed, as articulated in the work of Keller and Cherlin.

4.2.2: A New Conceptualization of Cadence

A few important points emerge from the preceding summary of scholarship on the cadence. On the one hand, the concept of cadence seems to be quite complicated, with different content and function in different musical contexts across history. On the other hand, it is enormously simple. Theorists seem to "know it when they see it," so to speak. As the editors of a recent, thoroughgoing exploration of the concept of cadence in the common-practice period discuss, many of those who specialize in music from this period "have acquired an astonishingly robust *intuitive* understanding of the concept through repeated exposure to numerous instances commonly labeled as cadences."[29]

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[28] Thomas Johnson, "Tonality as Topic: Opening a World of Analysis for Early Twentieth-Century Modernist Music," *Music Theory Online* 23, no. 4 (2017): 4.2-3.
[29] Markus Neuwirth and Pieter Bergé, eds., *What is a Cadence? Theoretical and Analytical Perspectives on Cadences in the Classical Repertoire* (Leuven: Leuven University Press, 2015), 8.

What seems clear is that the function of cadence is still operative for listeners, even where the tonal content of cadence is lacking. As outlined in the preceding section, the *feeling* of cadence in post-tonal music involves pitch convergence, texture, rhythm, timbre, orchestration processes involving tension and abatement, and phrase structure.

The cadence is clearly an object of considerable importance—as a highly recognizable, conventionalized tonal object within common-practice music, it possesses a distinctive power in terms of formal function for listeners. It is strongly associated with the ends of phrases, it defines keys, and it has several typical and audible characteristics in terms of harmony, rhythm, and melodic contour. Thus, Schnittke's treatment of the cadence, specifically, is of crucial importance in understanding the formal structure of not only the third string quartet, but also his other works that make extensive use of the tonal cadence, like the Concerto for Viola and Orchestra.

More than merely present in this music, though, I want to argue that cadence—and cadential function—is, in a sense, *alive*, both in the minds of composers as they think about how to form and shape their music, and in the minds of listeners as we encounter that music. The experience of cadential function is thus immediate: we experience these moments as functioning cadentially rather than indexing "cadence" as a topic, or recalling cadence as a distant echo.

The enumeration of cadential definitions in section 4.2.1 demonstrates a pressing need to broaden and generalize the concept of cadence, opening up the space between content and function. We have a relatively solid grasp of what makes a cadence a cadence in Classical music: we know what to expect from its content, and we know how it functions. The post-tonal cadence, I suspect, seems a bit less clear: we have several (often conflicting) ideas about what its content might be, while its function within a phrase is not at all well-defined. The following analyses of cadential types within compositions by Schnittke and Ligeti shed light on the

complexity and ambiguity of the cadence's formal function within post-tonal repertoires, expanding the existing definitional frame to accommodate several new cadential types that emerge from these three case studies.

4.3: Alfred Schnittke, Concerto for Viola and Orchestra

4.3.1: Introduction

The kind of cadential relic that begins Alfred Schnittke's String Quartet No. 3 can be found throughout his polystylistic compositional output. Schnittke treats the cadence with special care: while other stylistic fragments are allowed to "permeate, contaminate, and pollute each other,"[30] the cadence is more often isolated, set apart from other stylistic references or quotations.

The cadential figure plays an especially important role in the Concerto for Viola and Orchestra, composed in 1985 for Yuri Bashmet.[31] The concerto's first movement exposes all of the material that Schnittke develops in the second and third movements, creating a fairly didactic piece of music perfectly suited to close analytical reading.

My analysis theorizes and explores two cadential types in the concerto: the first type achieves formal closure with post-tonal musical content; the second type employs tonal cadential materials within a post-tonal context by interjecting a decontextualized contrapuntal cadence

[30] Jean-Benoît Tremblay, "Polystylism and Narrative Potential in the Music of Alfred Schnittke" (PhD thesis, The University of British Columbia, 2007), 125.
[31] The dramatic, rhetorical use of the cadence in this concerto may have been due, in part, to what Peter Schmelz has identified as Schnittke's broader attraction to the "drama implicit in the concerto form." Peter J. Schmelz, *Such Freedom, if only Musical: Unofficial Soviet Music During the Thaw* (New York: Oxford University Press, 2009), 248.

into the first movement, and exploring its potential throughout the concerto. A music analyst could conceivably use the word "cadence" to describe both of these events, but the term would have vastly different meanings. In Caplin's terminology, we could say that the first fulfills the expectation of cadential function without (tonal) content, while the second fulfills the expectation of tonal content without function. But as I have already suggested, the relationship between cadential content and cadential function in a post-tonal work like the Viola Concerto is more complex than our existing definitions of cadence can comfortably accommodate. Thus, the following analysis of each of the work's movements formulates new vocabulary for discussing post-tonal cadences.

4.3.2: First Movement

Figure 4.2 shows the opening of the concerto. In the first eight measures, the solo viola's melodic line is supported by the strings, which select and sustain specific notes in the melodic line to create a 4-1 (0123) tetrachord. The structure of the viola's first phrase provides a crystal-clear example of sentential structure: a two-bar basic idea is immediately repeated and followed by a four-bar continuation. Motive *a*, which opens the basic idea, is characterized by intensification in two parameters: a crescendo and a large ascending registral leap. The basic idea then concludes with a small abatement, created by a decrescendo and a large descending leap, which reestablishes the original pitch level. In mm. 3-4, the basic idea is repeated in inverted and transposed form.

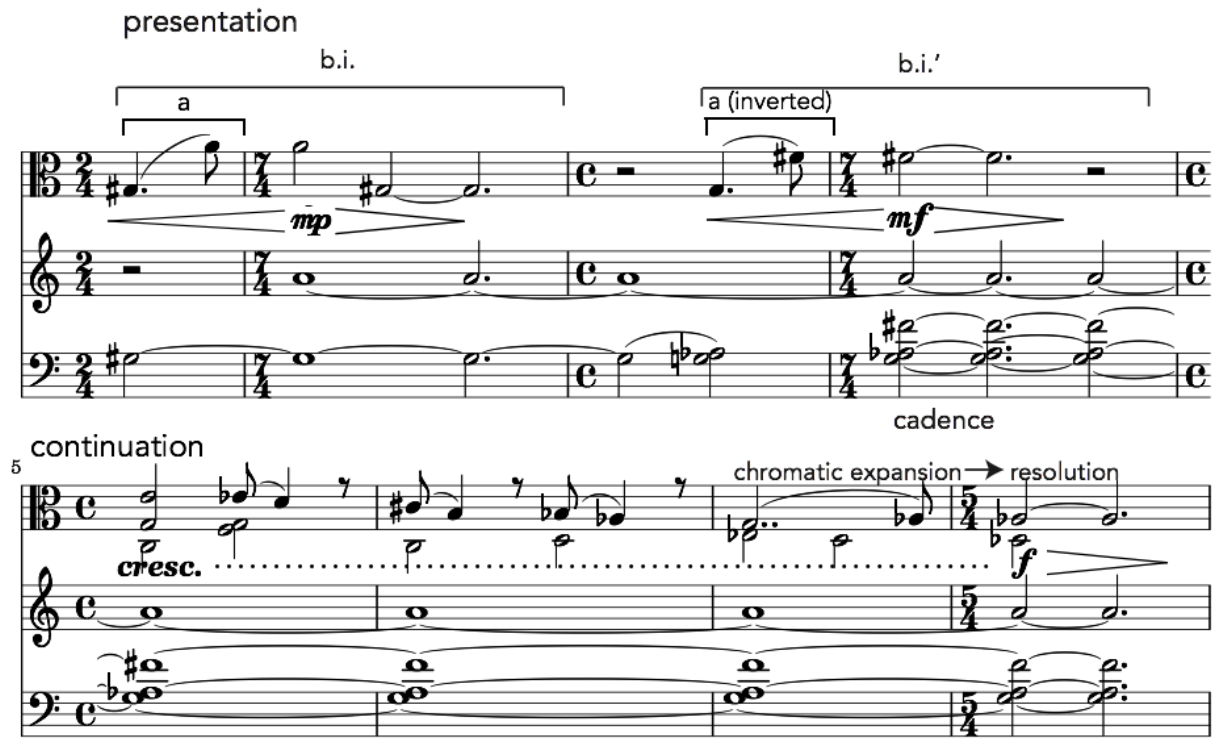

Figure 4.2: Schnittke, Viola Concerto, I: mm. 1-8

Although the repetition of the basic idea also concludes with a decrescendo, the sense of abatement is lessened by the lack of return to the starting pitch. The section from mm. 5-8 is strongly continuational in nature, featuring several intensification techniques before the cadence. In m. 5, the viola splits into harmonic and melodic lines through the use of double and triple stops. Both the surface rhythm and harmonic rhythm are noticeably faster in mm.5-6, accompanied by a slow crescendo, as well as a gradual increase in the discordance of the harmonies in mm. 5-6. In m. 7, the viola reaches a small climax, followed by an abatement and the achievement of the cadence in m. 8.

The cadence in m. 8 is signaled by the use of a chromatic expanding progression in m. 7, where the voices move in chromatic contrary motion towards a cadential goal. This chromatic

expansion is reminiscent of the chromatic wedge progression, which generally serves a dominant function in music of the nineteenth century.[32] The practice of using chromatic expanding progressions is not, however, limited to nineteenth-century compositional practice: recent work by Joseph Williams and Cara Stroud has revealed the significance of similar passages of chromatic expansion in the music of Sofia Gubaidulina.[33] Williams asserts that the compositional techniques of both wedge expansions and additive processes give Gubaidulina's first string quartet a sense of "continuity and growth."[34] A similar sense of growth occurs in m. 7 of the Viola Concerto, where the wedge expansion resolves outwards to a perfect fifth in m. 8; however, the presence of this wedge expansion alone is not enough to confirm m. 8 as a cadential goal. Rather, its "cadence-ness" is the result of the alignment of several different parameters: the abrupt change from the preceding discordance to a concordant perfect fifth in m. 8, the durational closure created by the viola's held note, the decrescendo in m. 8, the return to the original registral space of the basic idea, and the recuperation of the initial motive a, this time changing the opening's minor ninth to a minor second in order to remain in the same register, and transposed down one semitone to end on the same pitch with which the piece began (enharmonically respelled as A ♭).

[32] Robert Gauldin, "The Theory and Practice of Chromatic Wedge Progressions in Romantic Music," *Music Theory Spectrum* 26, no. 1 (2004).
[33] Cara Stroud, ""A Metaphor for the Impossibility of Togetherness": Expansion Processes in Gubaidulina's First String Quartet" (MM thesis, University of North Texas, 2012); Joseph Williams, "Discontinuous Continuity?: Structural Analysis of Sofia Gubaidulina's String Quartets" (MM thesis, University of Cincinnati, 2007).
[34] Williams, "Discontinuous Continuity?: Structural Analysis of Sofia Gubaidulina's String Quartets," 37.

Schnittke reiterates the sentential structure of the first phrase in the material that immediately follows (Figure 4.3). In this case, the continuation of mm. 5-6 is replaced by a prolongational motive in mm. 13-15, which oscillates between two pitches in a trill-like manner, speeding up into a chromatic descent broken up by registral changes. This rhythmic accelerando provides a sense of intensification that mirrors the opening's continuation phrase. Once again, the continuational section leads to a chromatic wedge and to closure achieved both durationally and dynamically. This time, however, the voices in the chromatic wedge are exchanged, as shown in the reduction of the inner voices in Figure 4.4. The inversion of the chromatic wedge undermines the sense of closure by leading to a cadence on a discordant interval, a minor second.

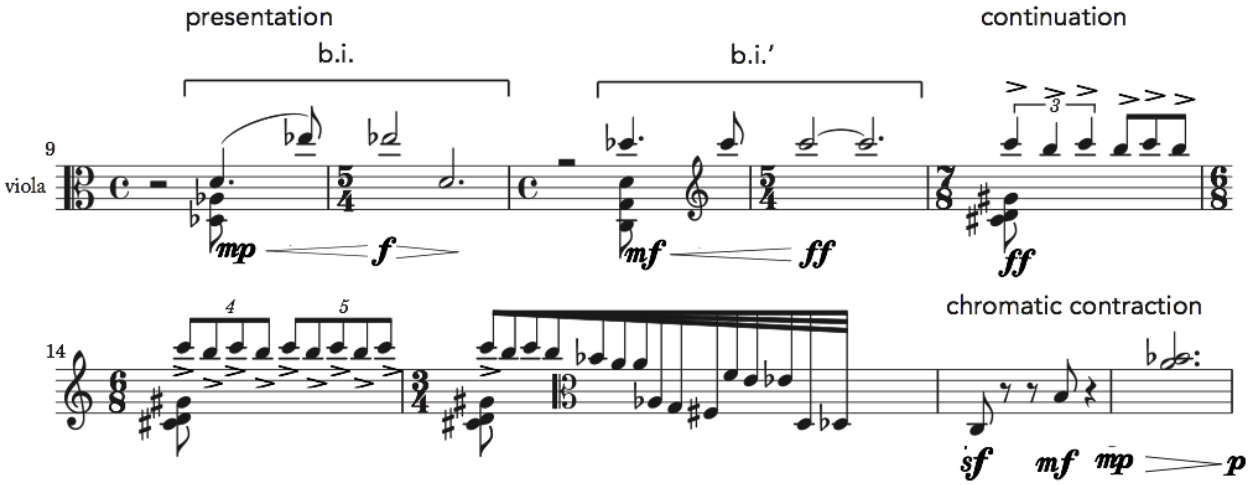

Figure 4.3: Schnittke, Viola Concerto, I: mm. 9-17

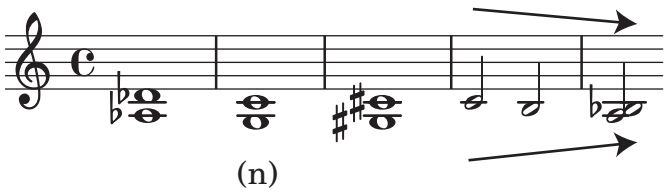

Figure 4.4: Schnittke, Viola Concerto, I: reduction of inner voices, mm. 9-17

This second sentential statement is followed by an expansion of the melodic material into the first full presentation of the Bashmet theme, shown in Figure 4.5—this theme spells out melodically the letters of Yuri Bashmet's last name. The German spelling of the name is Baschmet, from which Schnittke derives the hexachord B ♭ -A-E ♭ -C-B-E. He then completes the aggregate with the pitches C♯-F♯-F-D-A ♭ -G.[35] In m. 38, Schnittke presents the Bashmet hexachord as a simultaneity, in the form of a highly dissonant chord (the Bashmet chord) played *fortississimo*. The Bashmet chord heralds the beginning of an expanded continuation, which has been lengthened to match the expansion of the melodic ideas in mm. 18-37. This passage, presented in a heavily reduced version in figure 4.6, features an expanded, dense chromatic wedge progression. Although this dramatic expansion of the chromatic wedge might lead the listener to expect an equally dramatic cadence, a diminuendo in mm. 47-8 lends the quiet resolution of the wedge progression a distinctly evaded quality.

[35] Christa Emerson provides a detailed examination of the resulting row and its features in her 2009 thesis. Christa Marie Emerson, "Structure and Meaning in Schnittke Analysis: Oppositional Functions in the Viola Concerto" (MA thesis, University of Cincinnati-College Conservatory of Music, 2009), 14.

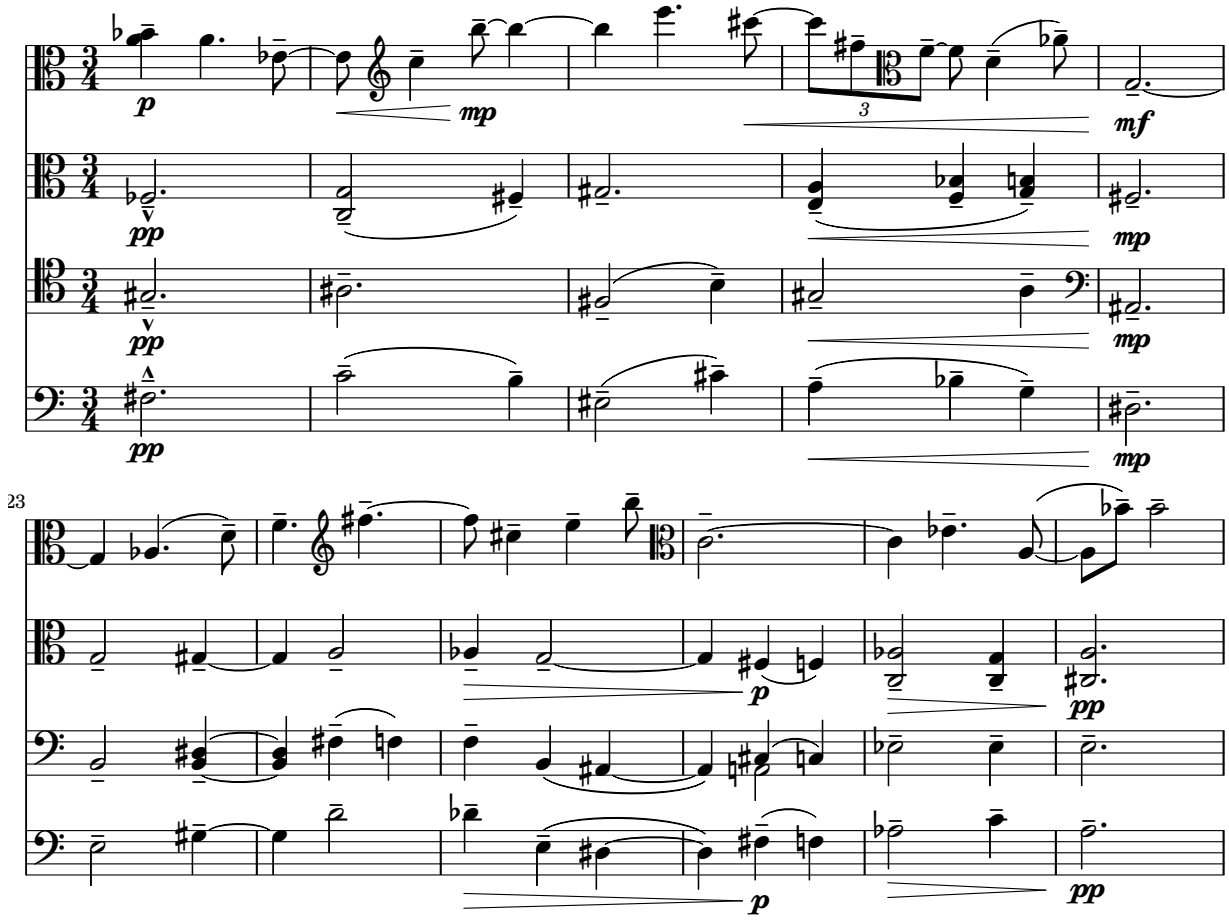

Figure 4.5: Schnittke, Viola Concerto, I: Bashmet theme, mm. 18-28

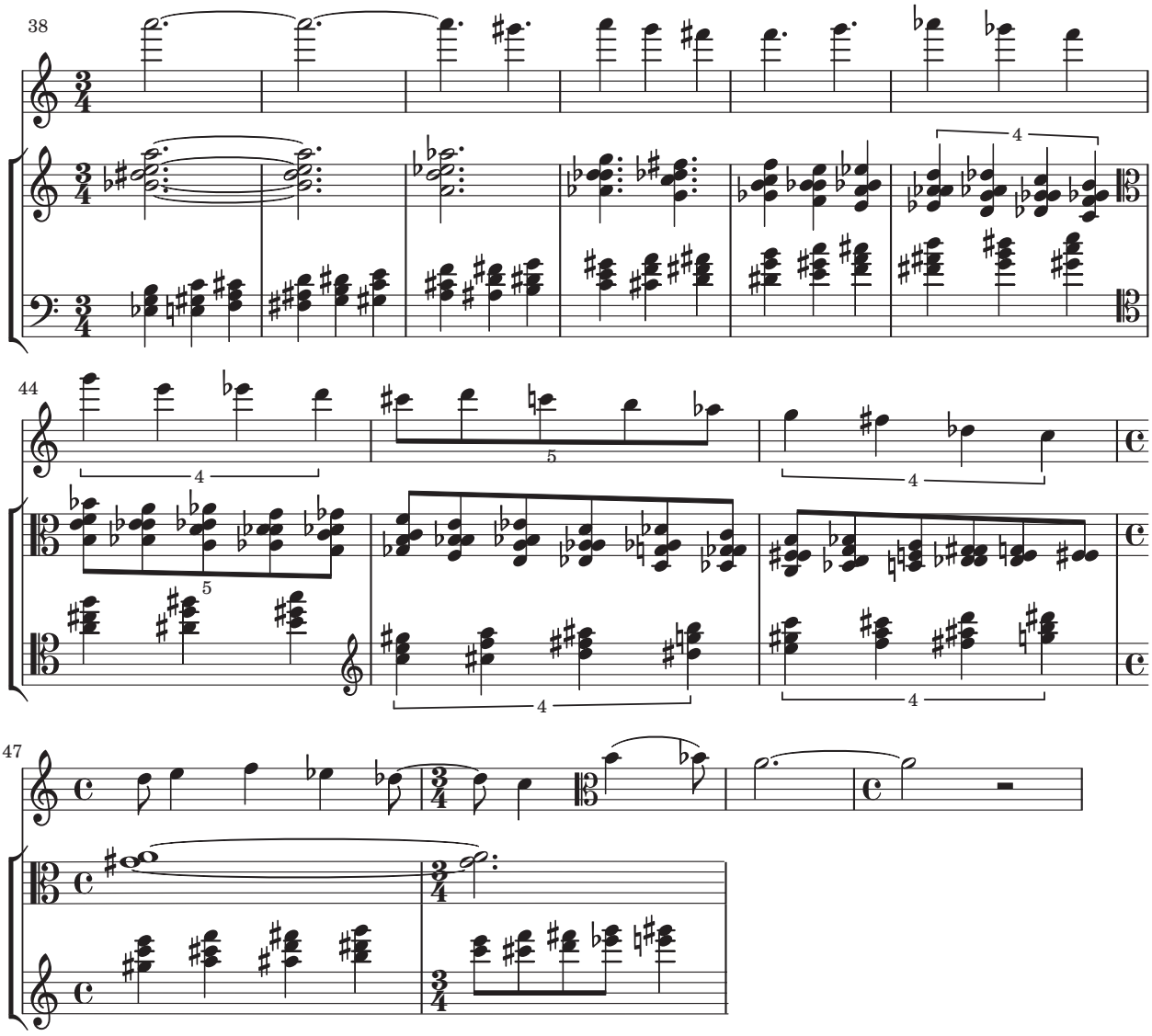

Figure 4.6: Schnittke, Viola Concerto, I: reduction of mm. 38-50

Until this point, Schnittke has firmly established that formal closure at the phrase level takes place via chromatic voice-leading in contrary motion: he has presented this type of closure in an original incarnation, an inverted one, and finally an expanded one. Now, in m. 51, he very quietly introduces a contrapuntal cadence, an altered version of the clausula formula with semitone motion in both voices, cadencing on F and A (Figure 4.7). I find it difficult, even while listening with some skepticism, to hear mm. 51-52 as anything other than a *cadence*, albeit an

ambiguous and decontextualized one. It is a cadence that has been stripped bare, tonality's conventionalized bones revealed: a diminished fifth resolves to scale degrees 1 and 3, the upper voice embellished with a trill and an inverted turn. The cadence is immediately repeated, and followed in mm. 54-55 with a chromatic descent, before the movement closes with the return of motive *a* from the concerto's opening measures.

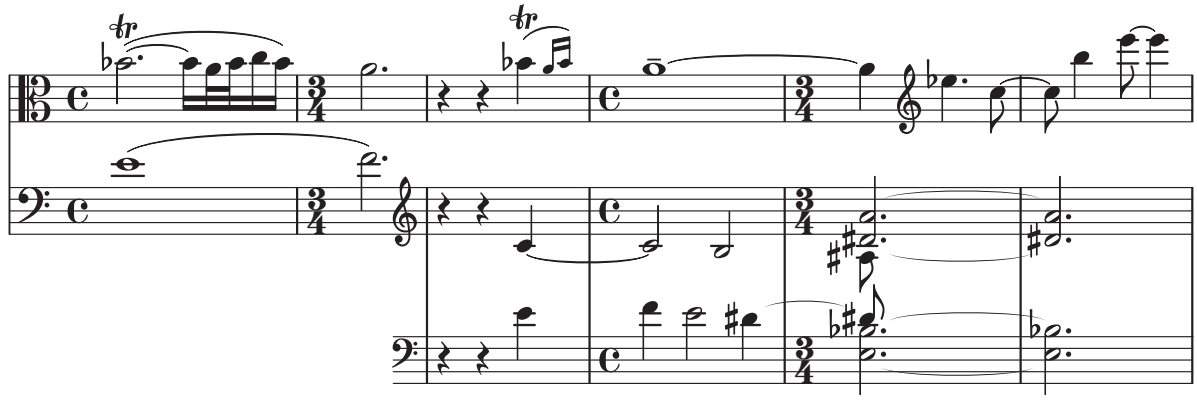

Figure 4.7: Schnittke, Viola Concerto, I: mm. 51-56

Does this more stereotypical, familiar type of closure, with all of the ornamental trappings of a Baroque cadence, end the previous formal unit, or begin a new one? The previous chromatic wedge progression resolved quietly, as if to evade a cadence, but the Baroque cadence is repeated in mm. 53-54, which suggests that we should interpret it as the beginning of a new idea. Complicating matters even more, the "cadence" continues with a chromatic descent in mm. 54-55, and the movement concludes with two statements of motive *a*, a repetition of the work's beginning. By introducing the contrapuntal cadence immediately after the evaded chromatic cadence, Schnittke presents the analyst with an important problem: which cadence provides formal closure? The syntactically strong, but rhetorically weak cadence in m. 49, or the syntactically weak but rhetorically marked contrapuntal cadence in mm. 51-52?

There is much to say here about what the cadence indexes in terms of nostalgia: Schnittke handles it quite delicately compared to other polystylistic materials, like a particularly precious or fragile antique. Thomas Johnson has recently pointed out that the markedness reversal in modernist music allows us to treat tonal objects like cadences as topics.[36] Set apart from post-tonal materials and marked as other, the cadence calls forth what Johnson terms a network of signifieds for the listener, evoking nostalgia, ruins, restoration, awe, antiquity, irrelevance, irreverence, as revealed in Figure 4.8. More specifically, the cadence acts as a kind of focal point for what Svetlana Boym calls "collective memory," the "shared social frameworks of individual recollections," which offer us "signposts for individual reminiscences."[37] Within the frame of collective memory, the cadence here might be seen to afford what Boym terms "reflexive nostalgia," a type of nostalgia that is defamiliarized, aware of the gap between reminiscence and reality.[38]

I would argue, however, that the cadence also asks us to question what we have heard as cadential so far, because even the fragile relic of the contrapuntal cadence holds a kind of formal power that the preceding topical network of signifieds doesn't begin to address. In other words, the cadence in m. 51 does not *only* look backwards, towards what Johnson describes as "pastness and simplicity"—at the same time that the cadence recalls the past, it also engenders very real expectations within the piece. The immediate repetition of the cadential figure might encourage us to reinterpret it as a basic idea, functioning to open a phrase rather than to close the previous one. At the same time as the cadence strongly indexes closure, Schnittke denies any actual feeling

[36] Johnson, "Tonality as Topic: Opening a World of Analysis for Early Twentieth-Century Modernist Music," 3.3.
[37] Svetlana Boym, "The Future of Nostalgia," (New York: Basic Books, 2001), 53.
[38] Ibid., 50.

of closure by drawing on the affordances created by the phrase structures he has already established in the piece.

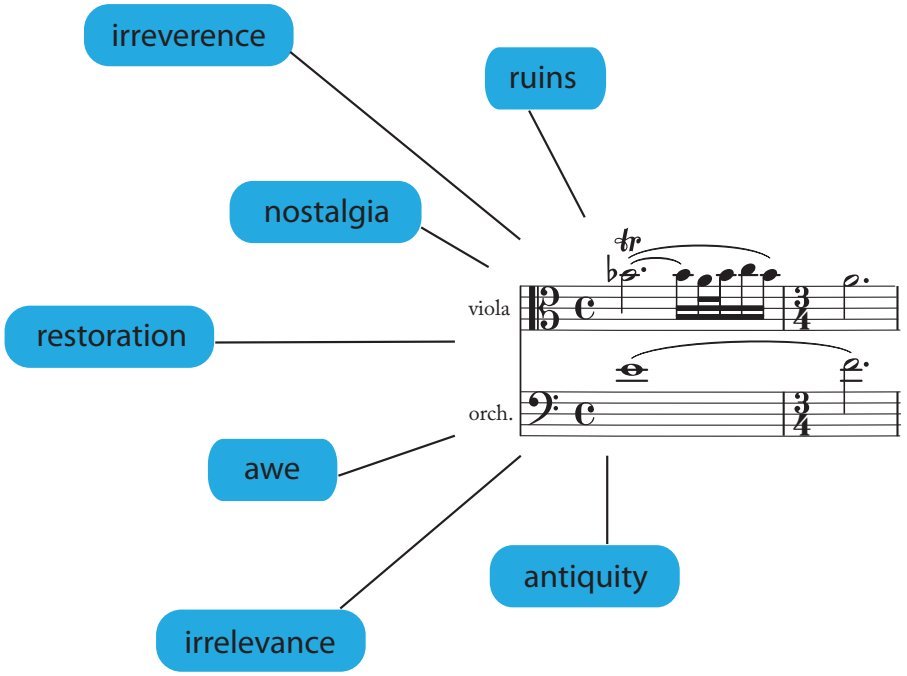

Figure 4.8: Network of signifieds for Schnittke's contrapuntal cadence

Each of the post-tonal cadences until this juncture clearly afforded closure, based on expectations internal to the piece. The contrapuntal cadence stages the intrusion of an external force, one that confuses the boundaries that had clearly tied content to function throughout the movement. At this moment, we are asked by Schnittke to rethink the cadence, to hear it with new ears, to expand our existing definitional frame for cadential function by occupying the space he has opened between content and function. The intrusion of the contrapuntal cadence into Schnittke's established framework of affordances can clearly be seen in Figure 4.9, which shows the relationships between opening and closing functions as they appear throughout the first movement, with the entrance of the contrapuntal cadence in m. 51 interrupting this process.

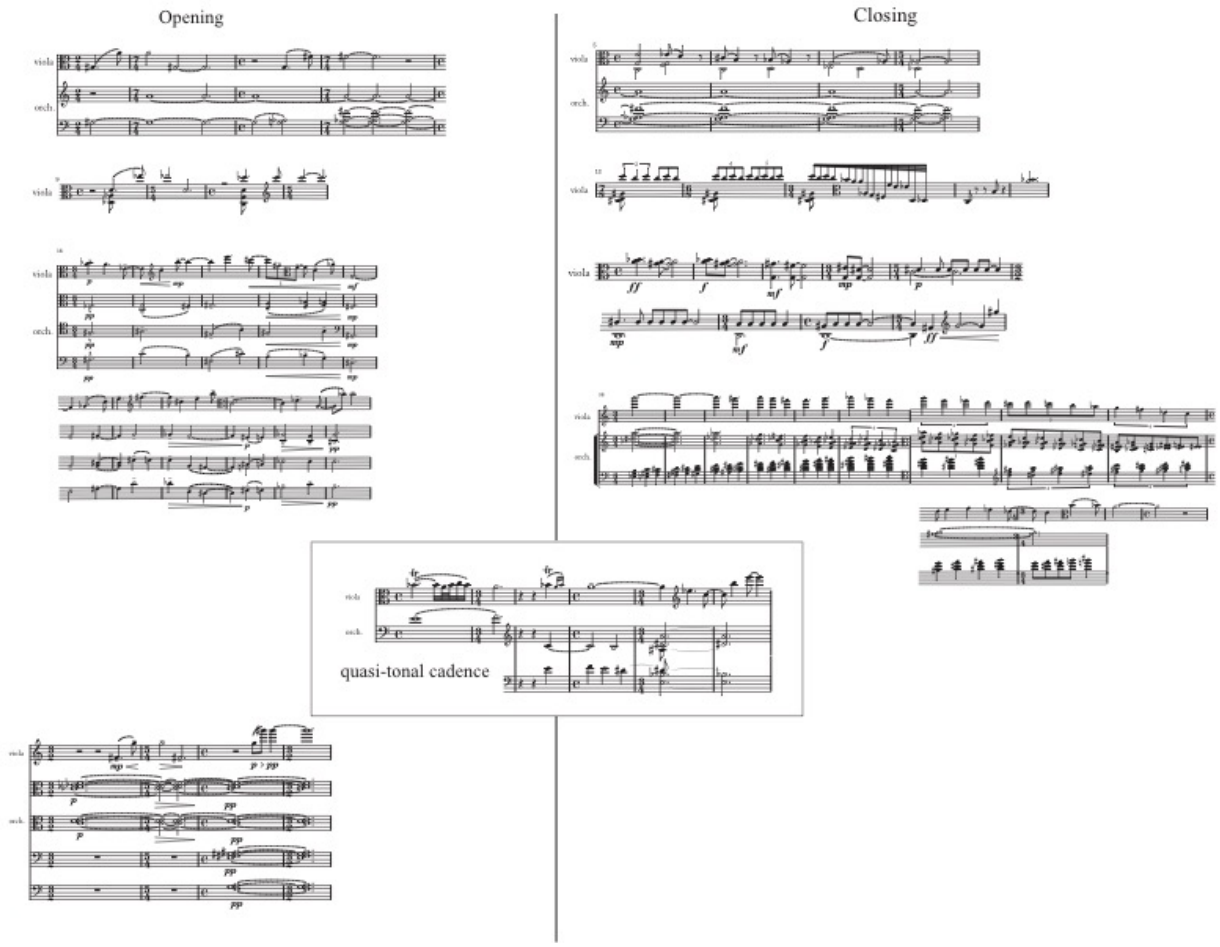

Figure 4.9: Summary of Schnittke Viola Concerto, I, showing relationship between sections exhibiting opening and closing formal functions

In both the second and third movements of the concerto, Schnittke continues to make the cadence a central site of conflict. A large middle portion of the second movement is devoted to eroding the sense of tonality in the contrapuntal cadence, while much of the third movement seems to dissect the cadence into its component parts and recombine them in new ways.

4.3.3: Second Movement

The concerto's second movement is both obsessed with, and vehemently denies, the possibility of cadence. Much of the movement shies away from explicitly articulating formal

units, but at the same time it features an extended, dreamlike middle section that focuses solely on the contrapuntal cadence motive introduced at the end of the first movement. The cadential motive first enters in m. 206, played by the first flute and ending on F (Figure 4.10). After the solo viola repeats the cadence exactly, the two-measure idea is sequenced a half step down in mm. 210-11. In m. 215, the solo viola presents a modified version of the cadential motive, which is echoed one measure later by a lone bass player. The piano accompanies these statements of the cadential motive with arpeggiated chords. Each starting and ending note of the cadence is a member of the chords arpeggiated by the piano, but they rarely act as the root of either chord. For example, in the first iteration of the cadential figure, the solo viola cadences melodically from B ♭ to A, while the piano arpeggiates a C dominant seventh chord, of which B ♭ is the seventh, followed by an F dominant seventh chord, of which A is the third.

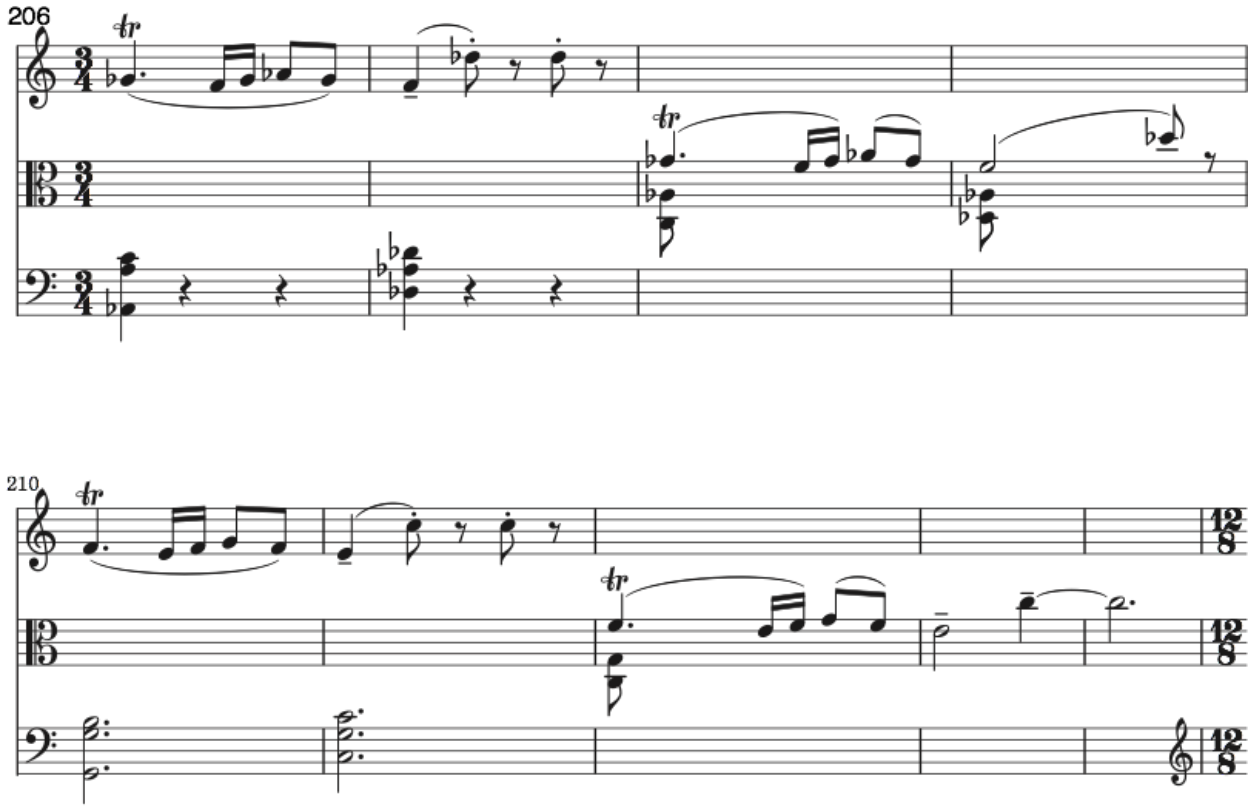

Figure 4.10: Schnittke, Viola Concerto, II: mm. 206-214

The constant sequential repetition of the cadential gesture, accompanied in this manner by the piano, serves to disorient the listener tonally and create a static atmosphere. Essentially, Schnittke removes from the cadence any trace of its tonal meaning, repeating it until it loses the sense of directionality and purpose that characterizes the tonal cadence. The section concludes with a wedge progression, emphasized by the solo viola's *glissando*, whose slow upward climb is reinforced by the strings, piano, and flexatone, and opposed by the celesta's chromatic descent (Figure 4.11).

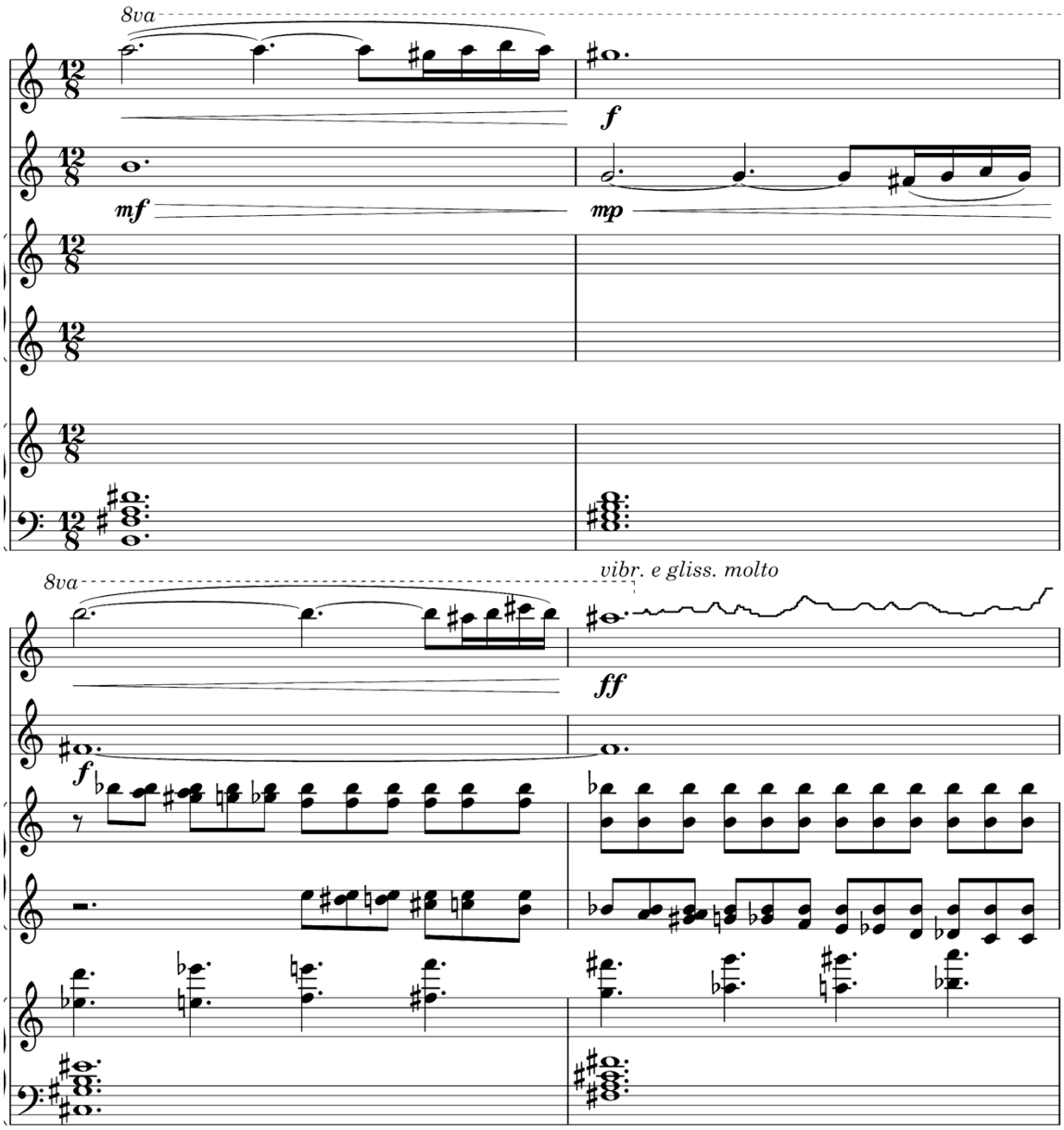

Figure 4.11: Schnittke, Viola Concerto, II: mm. 243-6

4.3.4: Third Movement

Unlike the second movement, the third movement seems to constantly engage with the different kinds of formal articulation presented by Schnittke in the work's opening. The

movement begins with a ten-bar phrase whose motivic and rhythmic contents bear some resemblance to the opening phrase of the first movement. Even the sentential structure is present: a two-measure basic idea is repeated in a varied form, followed by a six-measure extended continuation (Figure 4.12). In mm. 8-9, a chromatic wedge progression leads to a cadence, although in this case, it comes to rest on a perfect fourth (D-G) rather than a perfect fifth: a less stable counterpart to the cadence that ended the first phrase of the first movement. Although durational closure is achieved by ending the cadence on a half note, a sense of tension remains when the expected decrescendo from *forte* does not appear. Immediately after the chromatic cadence, a fragment of the tonal cadence interrupts with a trill on F♯, sounding dissonant over the D and G of the preceding cadence. The small sense of closure provided by the chromatic cadence is thoroughly disrupted by this fragment, which continues the process of intensification rather than abatement.

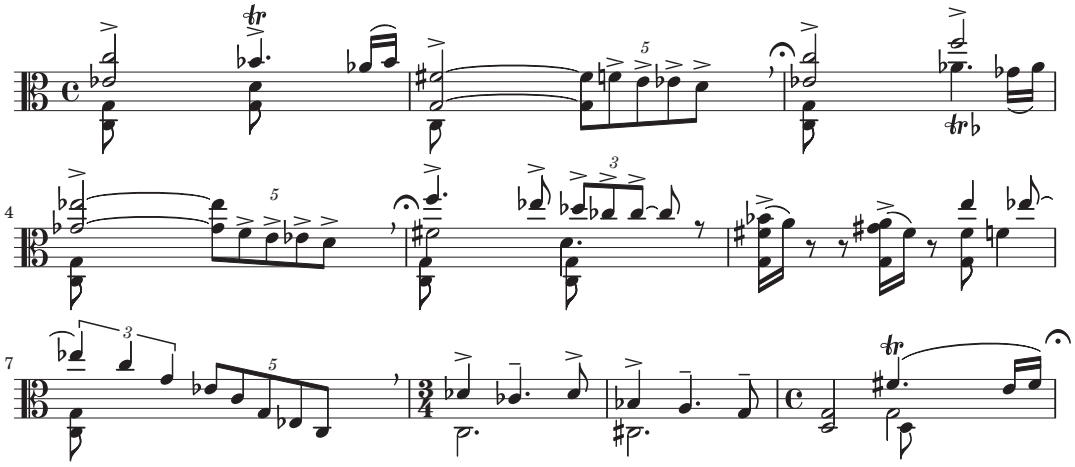

Figure 4.12: Schnittke, Viola Concerto, III: mm. 1-10

In a sense, Schnittke associates the denial of *rhetorical* closure with the achievement of *formal* closure, reinforcing this association at several cadential points throughout the third movement. A concise example comes in mm. 92-95, where Schnittke provides a compressed version of the opening phrase of the first movement: the basic idea and its repetition are compressed into just two measures, followed by one measure of continuation and a final measure in which a chromatic wedge cadence immediately precedes a reference to the tonal cadence. Any sense of abatement that could arise from the descending register of the final two measures is negated by the dynamic intensification provided by the crescendo from mezzo-forte to forte in mm. 94-95, and the more dramatic crescendo from *forte* to *fortissimo* over the last beat of m. 95 (Figure 4.13).

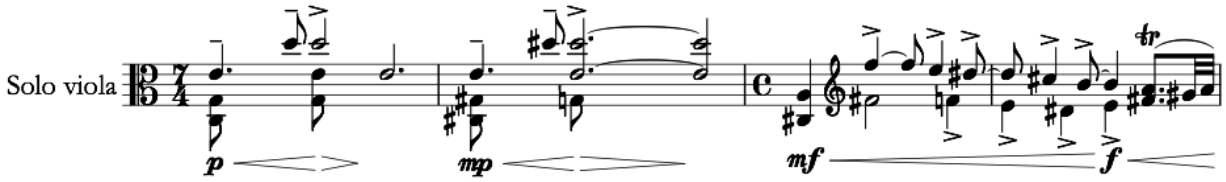

Figure 4.13: Schnittke, Viola Concerto, III: mm. 92-95

Another striking example of the denied rhetorical function of the post-tonal cadence comes in the middle of the movement, when Schnittke twice quotes the tonal cadence (Figure 4.14). The first time, in mm. 108-9, a trill from B ♭ to C in the solo viola (the B ♭ acting as the seventh of a dominant chord on C) resolves to an A over an octave on F between the cello and viola. In the second iteration, the dominant seventh resolves to an F major chord with the dissonant pitches D ♭ and G ♭ added in the clarinets. In m. 112, the addition of dissonant pitches to the dominant chord on C, and the change in the solo viola to a semitone trill from B ♭ to C ♭, signal the beginning of a large prolongation of the trill motive, separately from the

motive's context as part of the tonal cadence. In mm. 113-19, the solo viola prolongs the trill motive through a quarter-tone oscillation between B ♭ and A half-sharp, over an ominous presentation of the Baschmet theme in the harp, cembalo, and piano.

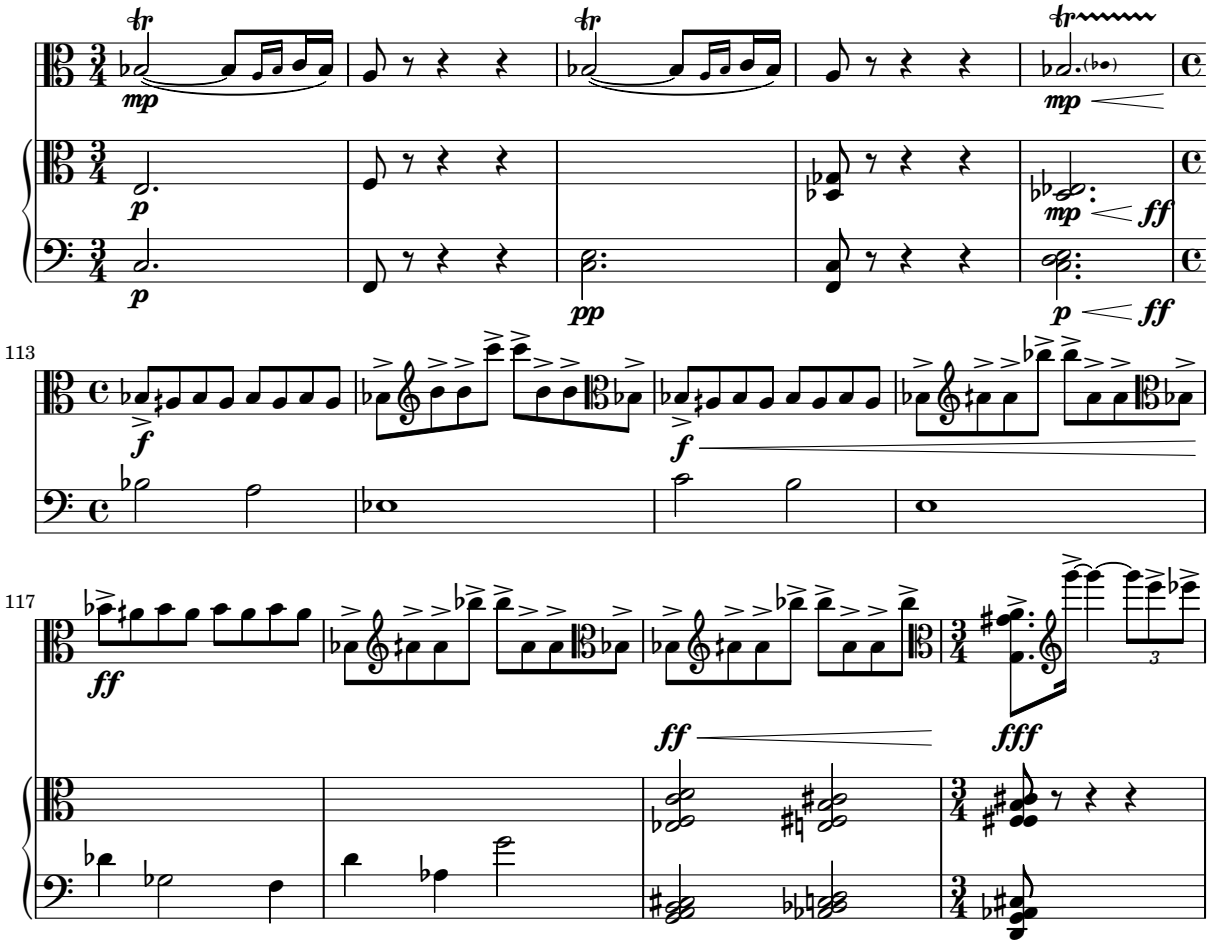

Figure 4.14: Schnittke, Viola Concerto, III: mm. 108-120

The trill motive still carries a strong connotation of "middleness" from its initial statement in the second phrase of the concerto's first movement (shown above in Figure 4.3). The long prolongation of the trill in the middle of the third movement may thus engender in a listener an expectation of cadential closure. Schnittke denies this expectation by proceeding directly into a static section, in which the strings continue to oscillate around the pitch B ♭ while

the other instruments prolong an A minor triad by chromatically altering its inner voices. Although Schnittke follows this section with phrases that gesture towards closure to varying degrees, the static A is always present in the background, so that no tonal motion is possible. This sense of stasis lends all the material after m. 139 the impression of taking place within a coda-space, without ever having achieved the final cadence that would provide formal closure. Eventually, the viola's melodic impulses towards closure subside into an oscillation between C♯ and B♯ over an A minor triad, the minor ninth between the viola's C and C♯ recalling the minor ninth that opened the entire concerto. In a sense, then, Schnittke ends the third movement, and the entire concerto, as he ended the first movement: with an opening. In another sense, though, Schnittke has associated a failure to achieve rhetorical closure with the achievement of formal closure throughout the third movement.

4.3.5: Summary

In each movement of the concerto, Schnittke alters the tonal and post-tonal cadences, placing them in different contexts in order to reinforce or deny the listener's experience of formal closure. In the first movement, Schnittke establishes the post-tonal, chromatic cadence as a marker of form, until the rhetorically striking introduction of the tonal cadence prompts us to question and reinterpret our understanding of the role of the cadence in creating formal closure. In the second movement, the idiomatic tonal cadence was repeated into oblivion, its tonal directedness washed out through a series of cyclical sequential reiterations. By the end of the third movement, the ideas of "beginning," "middle," and "end" are so stereotyped that they become rhetorically meaningless, and the movement concludes with what amounts to a rhetorical

question mark. From the very beginning of the concerto as a whole, Schnittke juxtaposes the post-tonal, functional cadence with the tonal, "rhetorical" cadence, each constantly frustrating the other's ability to provide closure. Perversely, by the end of the last movement, fading into a void becomes the only remaining viable cadential option, where all post-tonal and tonal cadences have failed.

I have primarily situated the cadence that occurs at the end of the first movement of the Viola Concerto as a rupture created by an external force, whose interjection creates waves that resonate across the entire work—indeed, the arcane cadence seems alien when it first enters. In another sense, though, it enters as the missing piece of the puzzle: the cadential content that was lacking. It is difficult not to hear the contrapuntal cadence *as* cadential, despite the work's immediate denial of its ability to provide structural closure. Schnittke's treatment of the two cadences points towards a need to grapple anew with the tonal cadence, because its power has not disappeared for listeners—impoverished as the Viola Concerto's relic of a cadence may be, it still affords closure.

Ironically, the atonality of the opening of the Viola Concerto makes it possible for us to hear tonality, and specifically the cadence, anew; Schnittke brings it back to life before our very ears. But the concept of formal articulation has always been a living, functional thing in music. The case of the Viola Concerto's cadences foregrounds the importance of treating cadences of many different types as functional within post-tonal compositions.

Within the world of the Viola Concerto, at the same time as the cadence is incontrovertibly overcome its meaning is also preserved. Through its dialectical interplay with the concerto's post-tonal cadence, the contrapuntal cadence is thus both preserved and irrevocably changed. Schnittke's Viola Concerto thus teaches us something interesting about the

viability of the notion of "cadence" in post-tonal music more broadly. Specifically, it emphasizes that as a highly conventionalized tonal object, the cadence possesses a distinctive formal power for listeners. Moreover, the cadences in the concerto demonstrate the true functionality of cadences—both tonal and post-tonal ones—within post-tonal music. In the remaining sections of this chapter, I explore other possibilities for cadential function in György Ligeti's Concerto for Piano and Orchestra and Schnittke's Third String Quartet.

4.4: György Ligeti, Concerto for Piano and Orchestra, IV

The fourth movement of György Ligeti's Concerto for Piano and Orchestra (1985-88)—considered by Ligeti as the work's "central movement"—has received attention for its twelve-tone row, which is treated in a nontraditional, fractal manner rather than through serial operations. For a listener, though, the course of the concerto's fourth movement is shaped by a startling, *fortissimo* cadence-like figure in the strings in mm. 12-13. The music preceding this moment is hesitant and fragmented, its course and purpose unclear. The cadence-like figure in m. 12-13 comes as a shock, not only because of its ferocity, but also due to its foreignness in the context of the previous three movements.

There has been much recent analytical scholarship on Ligeti's music, including discussions of his use of repetition and its impact on large-scale closure, nonfunctional harmony, parody, his stylistic influences and his complex, intersecting cultural identities.[39] Although I

[39] Sara Bakker, "Ending Ligeti's Piano Etudes," in *Form and Process in Music, 1300-2014: An Analytic Sampler*, ed. Jack Boss, et al. (Newcastle upon Tyne: Cambridge Scholars Publishing, 2016); Drott, "The Role of Triadic Harmony in Ligeti's Recent Music."; Amy Marie Bauer, "Compositional Process and Parody in the music of György Ligeti," (1997); Yayoi Uno Everett, "Signification of Parody and the Grotesque in György Ligeti's *Le Grand Macabre*," *Music Theory*

focus here on a specific use of a cadence-like figure in the Piano Concerto, my observations resonate with much of this recent research, especially the work of Bauer and Everett exploring elements of the parodic in Ligeti's output, as well as Drott's study of Ligeti's use of triadic harmony.

The cadence in mm. 12-13 seems at first to be a sort of answer to the uncertainty of the preceding fragmented musical material. The ^5-^1, A-D motion in the double bass part provides a stable sense of tonality, and after the cadence the other musical materials are silenced, entering again only tentatively (see Figure 4.15). The cadence is, however, less stable than it may appear: although the double bass, cello, and violin 1 all provide notes belonging to the dominant A major chord in m. 12, the violin 2 and viola parts contain the notes B and F♯. The dominant function of the chord is still strong, though, and B and F♯ can be accounted for as an added ninth and thirteenth. The following tonic chord is equally problematic, for stacked atop the D major chord is an augmented triad—C, E, and G♯—its pitches spread across the violas and violins. These pitches may be accounted for as partials, sounding in their actual registers, over the D2 in the bass, thus acting as a kind of sonic reinforcement of the bass—although it is one that muddies the chord somewhat at the same time.[40] Moreover, the leading tone of the dominant chord in the first violin in m. 12 (C♯6) does not resolve in register but proceeds downwards a perfect fourth to a G♯5 in m. 13. All of these factors undermine the identity of this first cadence, although it still strongly invokes the common-practice cadential paradigm.

Spectrum 31, no. 1 (2009); Richard Steinitz, *György Ligeti: Music of the Imagination* (Faber & Faber London, 2003); Bouliane and Lang, "Ligeti's Six "Etudes Pour Piano": The Fine Art of Composing Using Cultural Referents."; Amy Marie Bauer and Márton Kerékfy, eds., *György Ligeti's Cultural Identities* (2018).

[40] Thank you to Christoph Neidhöfer for this observation.

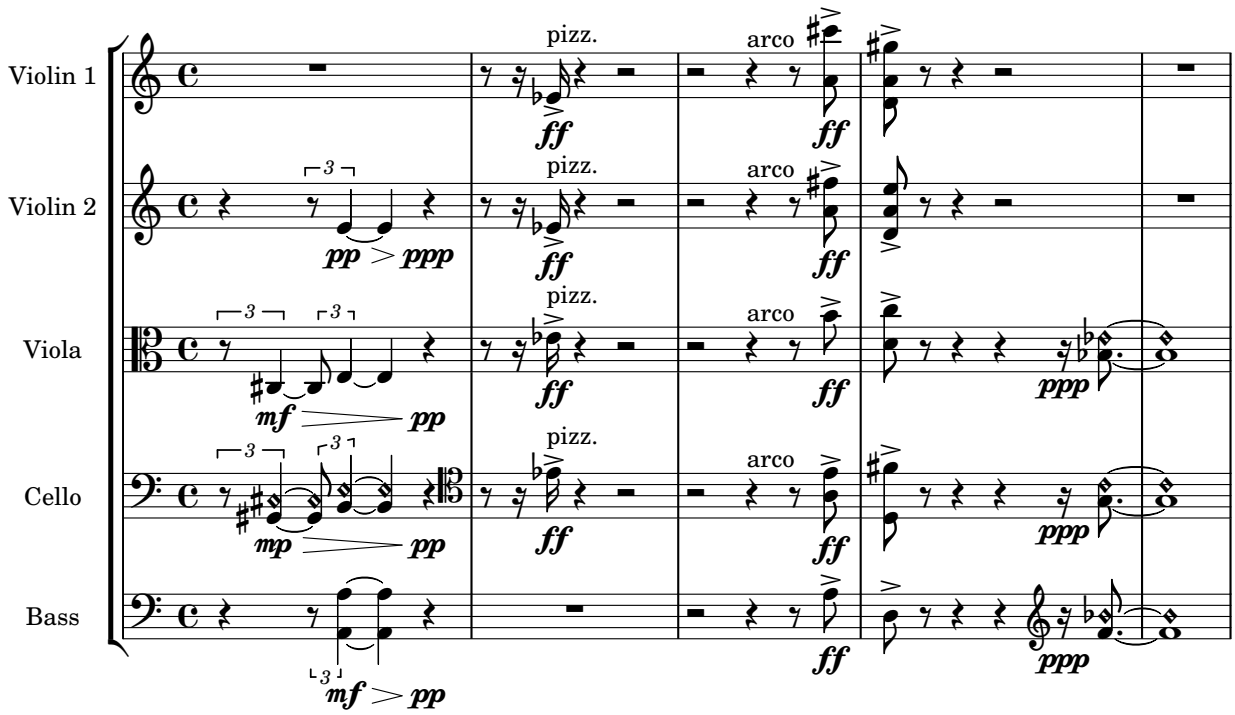

Figure 4.15: Ligeti, Piano Concerto, IV: strings mm. 9-14

The second reference to a tonal cadence, in m. 29, is even more strongly undermined by Ligeti; in fact, it is hardly a cadence in the classical sense at all, except that it recalls the cadence of mm. 12-13 so obviously that it is difficult not to hear the gesture as cadential (Figure 4.16). A true dominant and tonic are difficult to discern, since there seem to be multiples of each. The first and second violin simultaneously provide a linear E-A descending fifth as well as a D-G fifth, while the viola provides an A-D progression. The resulting chords are hardly tonal, but they still sound somewhat like a cadence; the combination of the previous cadence in the strings in mm. 12-13, the downward motion between the two chords, the accented percussion entry on the "tonic," and the silence that once again follows all work to ensure that the gesture is read as cadential.

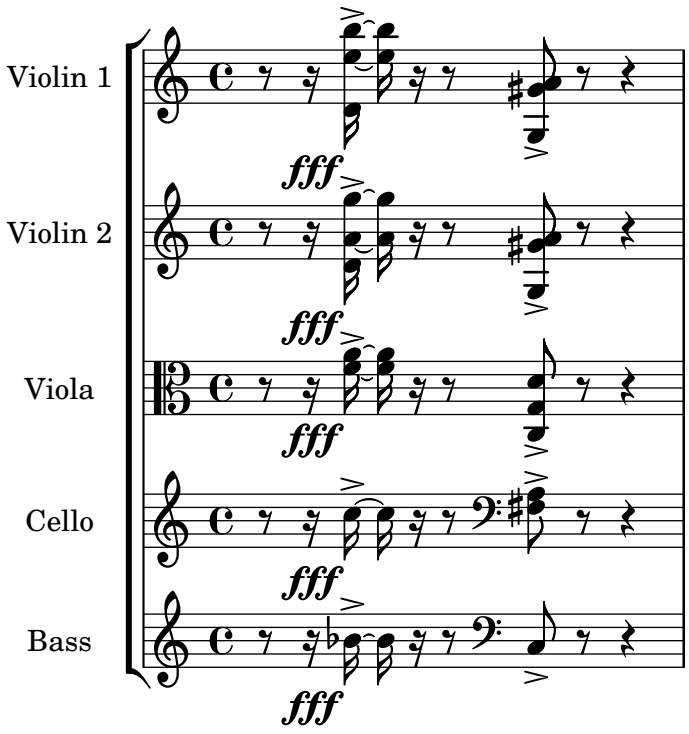

Figure 4.16: Ligeti, Piano Concerto, IV: strings, mm. 29-30

At the next cadence, in mm. 39-40, the constituent harmonies are still not obviously in a dominant-tonic relationship, and furthermore, the gesture is no longer followed by silence. Now that the strings' cadential figure has begun to lose its power to silence the rest of the instruments, it slowly becomes incorporated into the movement's other motives. For example, the crucial motion by fifth associated with the first cadence in mm. 12-13 is taken out of a cadential context. In mm. 54-55, the clarinet and French horn, separated by minor sixth, each outline two melodic fourths (Figure 4.17). Neither of these fourths is supported in such a way that they would indicate cadential motion, though: here, and throughout the rest of the movement, the V-I bass line from mm. 12-13 is taken out of context and incorporated into the work's other motivic materials. In mm. 54-55, the statement of the fifths in the winds is clearly related to the motive that was first presented in mm. 2-3. In m. 87, the perfect fifth's cadential meaning is even

more firmly erased (Figure 4.18). This time, when the strings cadence once more, they provide four unique dominants and tonics: F-B ♭ , G-C, A-D, and B-E. The result is two whole-tone clusters, now devoid of any tonal meaning.

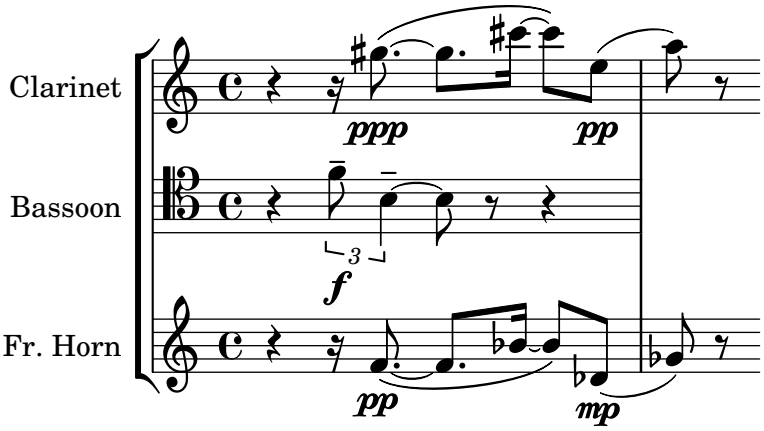

Figure 4.17: Ligeti, Piano Concerto, IV: clarinet, bassoon, and French horn, mm. 54-55

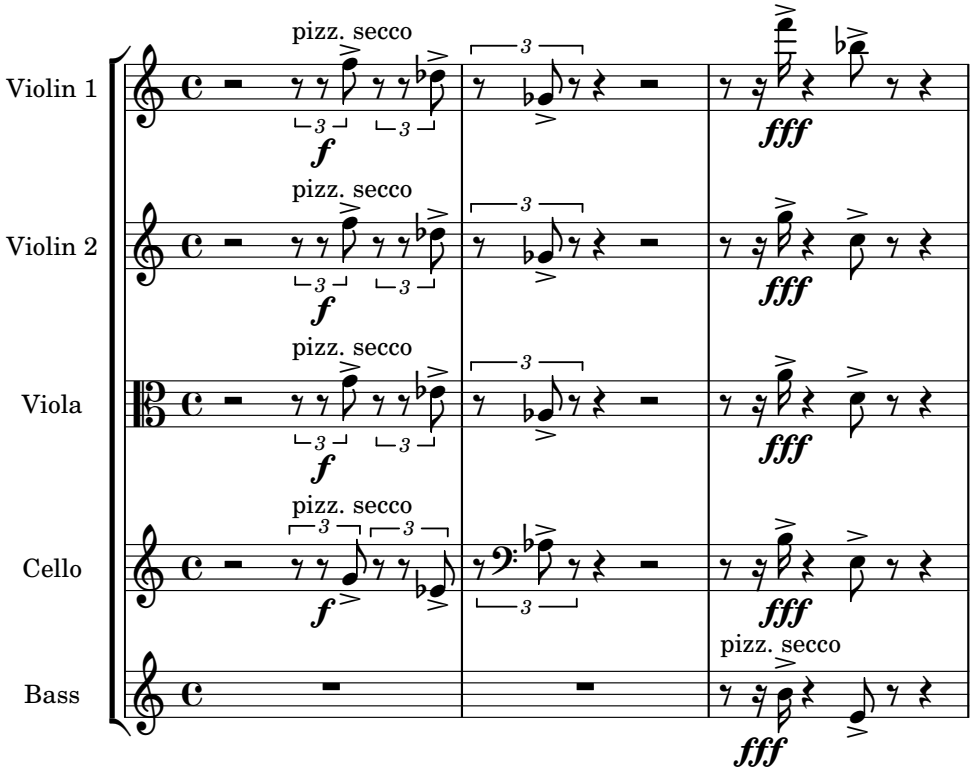

Figure 4.18: Ligeti, Piano Concerto, IV: strings, mm. 85-87

After the typical attributes of the cadence have been so thoroughly undermined, one might question whether the notion holds any more sway over the music's course. As the piano begins a dramatic ascent at Rehearsal X and the whole ensemble crescendos, however, the expectation may remain that this huge build-up will lead to a climax and, ultimately, end in a cadence. Ultimately, the movement ends not with a cadence but with a gradual, confused trailing off into a measure of silence. Deconstructed, its materials recontextualized and absorbed into the other motivic material, the cadence no longer has the power to bring the movement to a conclusion.

When the cadence enters in mm. 12-13, we know that a formal unit has ended, and this impression is emphasized by silence that follows. Although, in the measures that follow, Ligeti goes on to dismantle this notion and challenge the formal power of the cadence through the course of the movement, the fact remains that the music's course is permanently altered when the cadence first appears, allowing the listener to hear the rest of the fourth movement as a gradual but deliberate deconstruction of the notion of cadence.

Ligeti conceived of his Concerto for Piano and Orchestra, which he composed largely between 1985 and 1988, as an aesthetic credo in which, through the use of musical illusions, he distinguishes himself from both the "traditional avant-garde" and from "fashionable post-modernism."[41] In his essay, "On My Piano Concerto" (translated by Robert Cogan), he describes the piano concerto's place within his musical aims:

> The musical illusions so important to me are nevertheless not pursued as an end in themselves, but rather form the foundation of my aesthetic considerations. I favor musical forms that are less process-like and more object-like. Music as frozen time, as an object in an imaginary space that is evoked in our imagination through music itself. Music as a

[41] György Ligeti, "On My Piano Concerto," *Sonus: A journal of investigations into global musical possibilities* 9, no. 1 (1988): 13.

> structure that, despite its unfolding in the flux of time, is still synchronically conceivable, simultaneously present in all its moments. The banishing of time, the canceling-out of its passing, its confinement in the present moment, this is my chief compositional plan.

In light of the preceding analysis, it may be useful to revisit what Ligeti means by "frozen time" in the above characterization of the concerto. While the tonal cadence is certainly treated as an object in the context of the piano concerto's fourth movement, the very presence of the tonal cadence complicates the concept of frozen time. As it did in Schnittke's *Concerto for Viola and Orchestra*, the sudden intrusion of the tonal cadence can call forth a network of signifieds for the listener, many of which can make us painfully aware of the passage of time—both in a musical sense (in that forms, which are usually articulated by cadences, occur across time) and in a historical one (in that the tonal cadence is inevitably imbued with pastness when juxtaposed with the otherwise post-tonal materials of Ligeti's concerto). In the Piano Concerto, the tonal cadence thus functions to take the listener out of the time of the piece, jarringly returning her to historical time and confronting her with the historicity of the cadential figure. Ligeti may have intended this moment, and others like it, as a way to "appeal to and continually destabliize our cultural memory," as suggested by Bouliane; or perhaps it has a parodic connotation, as elaborated in the work of Everett on *Le Grand Macabre*.[42] This parodic usage of the cadential gesture may have arisen as a result of Ligeti's cultural trauma, as Wolfgang Marx has compellingly argued.[43]

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[42] Bouliane and Lang, "Ligeti's Six "Etudes Pour Piano": The Fine Art of Composing Using Cultural Referents," 166; Everett, "Signification of Parody and the Grotesque in György Ligeti's *Le Grand Macabre*."

[43] Wolfgang Marx, "Ligeti's Musical Style as Expression of Cultural Trauma," in *György Ligeti's Cultural Identities*, ed. Amy Bauer and Márton Kerékfy (Abingdon and New York: Routledge, 2018).

4.5: Alfred Schnittke, String Quartet No. 3

4.5.1: First Movement

Let me return now to Schnittke's String Quartet No. 3, which began with two striking, vivid contrapuntal cadences quoted from Lasso's setting of the *Stabat mater*. Table 4.1 shows all of the instantiations of the contrapuntal cadence motive from the first movement of the third string quartet, including the location of each cadence, its implied tonic pitch, the verticalities involved, and notes on their relationship with the original Lasso quotation as well as their special features.

I want to look more closely at these cadences, which differ crucially from each other in kind. In the second and third beats of the first measure, we have already developed strong expectations for how each voice should resolve, based on our knowledge of common-practice cadential paradigms—the listener may know that this is a quote from Lasso, but even if she does, I would argue that these two beats strongly afford closure by means of a specific type of motion. This expected, prototypical contrapuntal resolution is shown in Figure 4.19: the bass descends by fifth to the tonic G, the alto holds the fifth of the tonic chord, and the tenor rises by step to the third. Of course, the expected closure does not arrive: the predicted tonic note G appears in the uppermost voice, but it is supported by a C major triad rather than the expected G major: if there is a resolution here, it is a deceptive one.[44] The leading tone F♯ is then immediately lowered,

[44] In Lawrence Kramer's analysis of the Third String Quartet, he characterizes these opening cadences as "vulnerable to a historical entropy already audible in their unrelated keys, C and D." While it is true that the cadence resolves to a C major triad, the cadence as it is stated at the beginning of the quartet, out of its sixteenth-century context, sounds to my modern ears like a deceptive resolution to IV in G major. Lawrence Kramer, *Interpreting Music* (Berkeley: University of California Press, 2011), 172.

guiding the listener away from G, and the second violin enters unexpectedly with another cadential turn, leading to an authentic cadence with the tonic D supported by a D minor triad—but now with scale degree 3 in the uppermost voice (Figure 4.20).

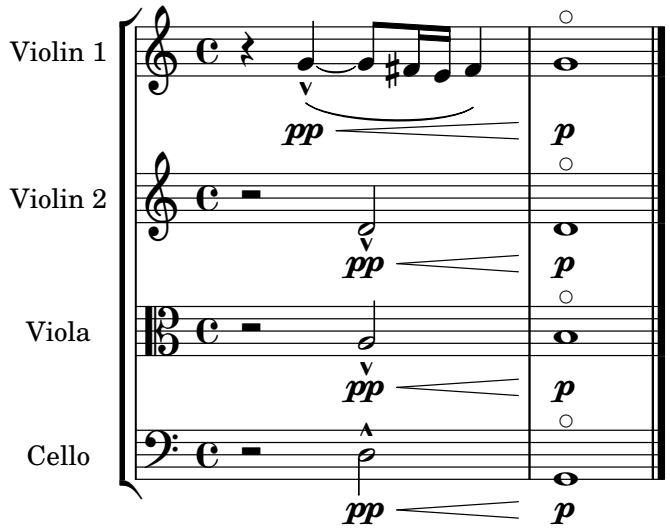


Figure 4.19: Schnittke, String Quartet No. 3, I: recomposition of opening cadence

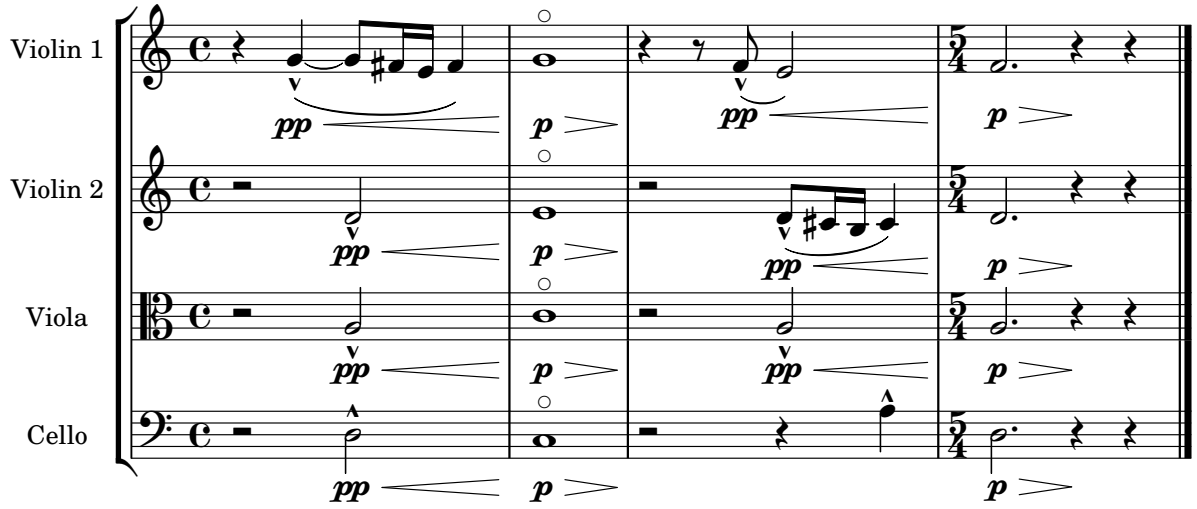


Figure 4.20: Schnittke, String Quartet No. 3, I: mm. 1-4

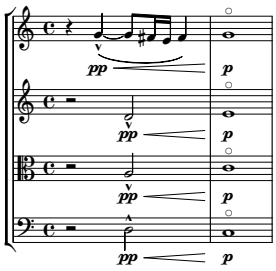
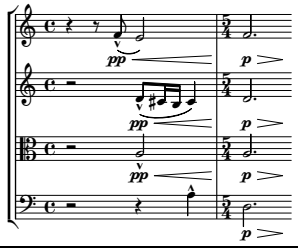
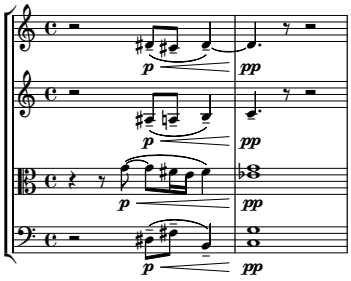
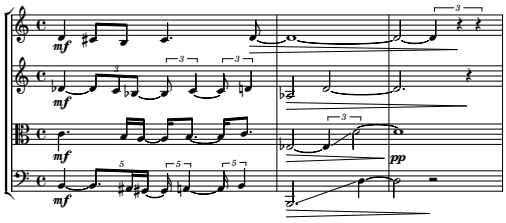
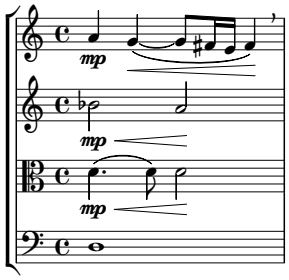
Location	Excerpt	Implied tonic	Chords	Notes
I. 1-2		G	$V^{6}_{4}{}^{5}_{3}$IV DM CM	Direct quotation from Lasso's *Stabat Mater*. Resolves deceptively to IV in G major with ^1 in uppermost voice.
I. 3-4		D	$V^{6}_{4}{}^{5}_{3}$i AM Dm	Direct quotation from Lasso. Resolves to the tonic D with ^3 in uppermost voice.
I. 9-10		G	III iv BM Cm	Resolves via slide transformation from B major to C minor, with the ornamented turning voice resolving to G in the viola; the upper voice resolves to E ♭ .
I. 24-26		D?	N/A	Each instrument plays the cadence a semitone lower than the preceding one, at a faster rate and offset slightly. All eventually converge on D.
I. 47		G	$V^{\flat 6}_{4}{}^{5}_{3}$	Evaded cadence; next formal unit begins *pianissimo* with the Grosse Fuge theme.

Table 4.1: Salient instances of the Lasso cadence, movement 1

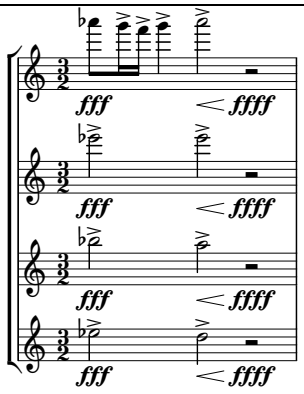
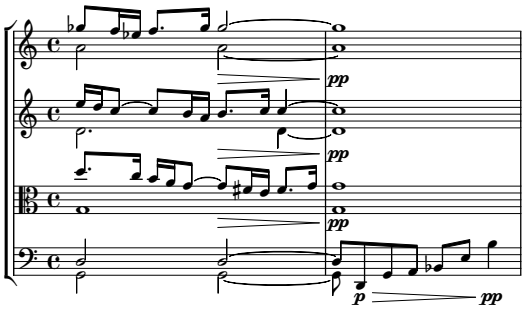
Location	Excerpt	Implied tonic	Chords	Notes
I. 64		A ♭	$V^{\flat}_{4}$ (0167)	Cadences deceptively to an 0167-type tetrachord with the implied tonic pitch A ♭ in the uppermost voice.
I. 81-82		N/A	N/A	After several failed attempts at the cadential gesture, each of the upper three voices cadences on a different implied tonic: G-flat, C, and G (forming an 016-type trichord). Meanwhile, all voices sustain a quintal harmony (G-D-A).

Table 4.1 Continued

The result is a collapse of both content and function: by twisting figures that strongly afford tonal closure explicitly into an opening function—essentially treating each cadence as a two-bar basic idea that is then repeated—Schnittke stages the cadence's failure.[45] The cadences that open the string quartet succeed in affording neither closure nor beginning. After the

[45] Schmelz notes that by the time of the late 1960s, when Schnittke was writing his Second Violin Sonata, he had become particularly interested in destruction and the instability of Soviet society, which was reflected in "musical disorganization." His Second Violin Sonata, Schmelz argues, was therefore full of "risk and doubt." Schmelz, *Such Freedom, if only Musical: Unofficial Soviet Music During the Thaw*, 253.

repeated cadences, Schnittke famously provides material excerpted from Beethoven's *Grosse Fuge,* Op. 133, as well as Shostakovich's DSCH (D-E ♭ -C-B) motive. The cadential figure then reenters in m. 9, with the melodic turn now transferred to the viola. At this point the potency of the cadential turn is diluted even further by its harmonization as the fifth of a B major triad, which resolves deceptively to a C minor triad via a slide transformation, in which the third (D♯) remains stable while the root and fifth slide up by semitone.[46] While the cadence now arrives at the end of a phrase, its expected position with respect to common-practice formal functionality, its function and content have been irrevocably altered (Figure 4.21).

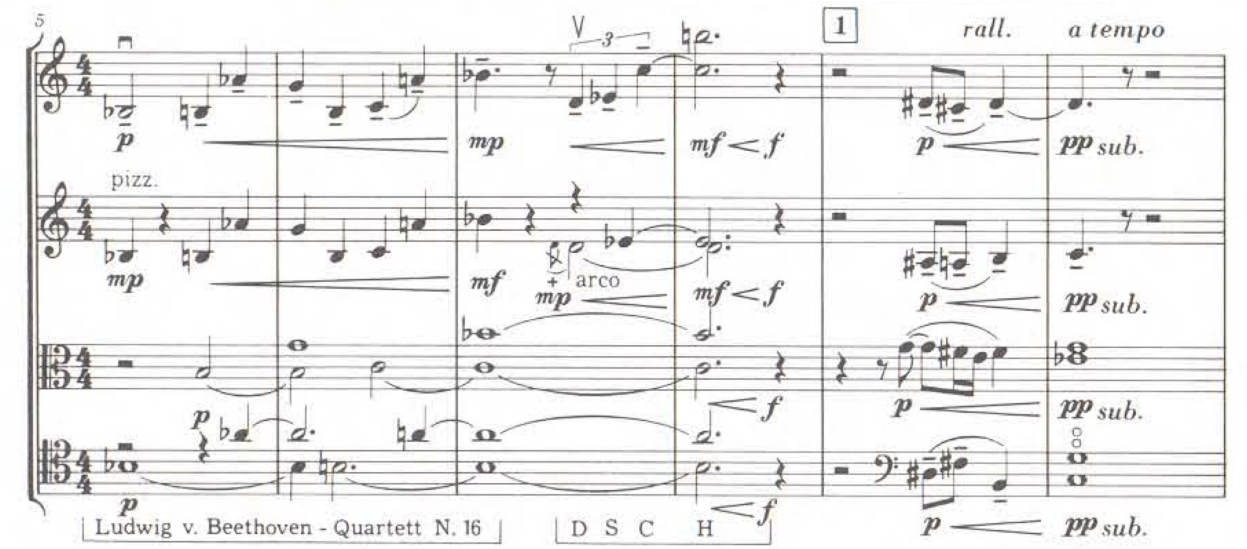


Figure 4.21: Schnittke, String Quartet No. 3, I: mm. 5-10

In contrast to the Viola Concerto's carefully prepared tonal cadence, it is important to note that the quartet begins with these failed cadences, and that they fail of their own accord and

[46] Christopher Segall provides a thorough account of how Schnittke employs triadic relationships, including the slide relationship, in order to divorce the triad from tonality. Segall shows how use of these triadic relationships are used to destabilize quoted material and bring the past into conflict with the present, supporting the argument presented here. Christopher Segall, "Alfred Schnittke's Triadic Practice," *Journal of Music Theory* 61, no. 2 (2017).

not by any external violence done to them: there is not, as in Ligeti's Piano Concerto, a process of abnegation, of voiding the cadence. It is important, too, that these failed cadences engender expectations through their attempt and failure to achieve closure, as did the Viola Concerto's cadence. In the case of the string quartet, though, Schnittke focuses explicitly on the process of becoming: the opening cadence, by virtue of its staged failure, is constantly engaged in a process-of-becoming function. Throughout the third string quartet, the cadence is always actively becoming its function; it is never allowed to remain static or comfortable.

With the failure of the cadence in mm. 9-10 to actually perform a closing function, despite its position at the end of a phrase, Schnittke begins again in m. 11 with a new phrase beginning with an 0167-type tetrachord, realized here as 0 5 6 e in a possible reference to Berg's *Lulu* (Figure 4.22).[47] The two-bar statement of the *Lulu* melody is followed in mm. 13-14 by its repetition, now retrograded and transposed to begin on F, and slightly varied by the repetition of the first descending perfect fourth. Nevertheless, the similarity between the two-bar units is clear, and evidently affords an initiating function, as if Schnittke is attempting to start over again, now with atonal materials providing the initiating function rather than the failed Lasso cadence. The ascending contour (reminiscent of the DSCH motive in contour, and ending on the same pitch) and crescendo of the following two measures then afford a mediating function.

[47] *Lulu* itself, of course, looks backwards to traditional tonal materials like the C major triad for expressive effect, as well as to the Tristan chord.

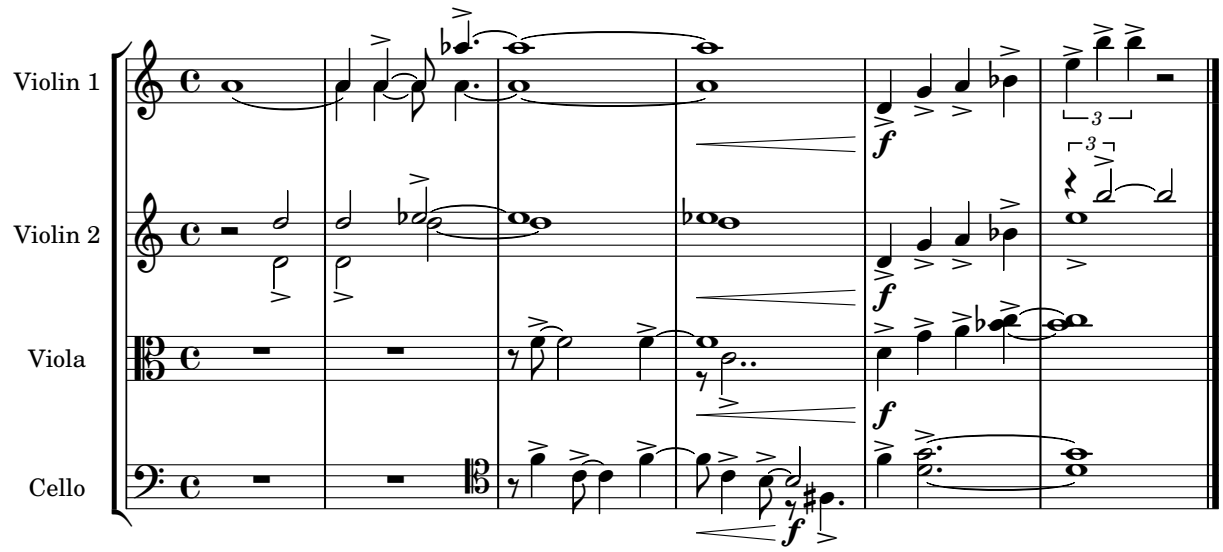


Figure 4.22: Schnittke, String Quartet No. 3, I: mm. 11-16

A massive C minor triad in m. 17 announces the beginning of a consequent phrase to the Bergian antecedent of mm. 11-16, setting off a wedge-type progression of the kind previously identified in the Viola Concerto's first movement. In the quartet, however, the glissandi between each note dissolves not just any sense of tonality from the C minor triad, but any sense of distinguishable, individual pitches (Figure 4.23). The collapsing C minor sonority attempts to come to a rest in m. 20, but on a dissonant sonority built around a central pitch (C♯); in m. 21, pitches drop out until only an 0146 sonority remains in m. 22. The three upper voices then glide downwards and the cello, still sounding C♯, glides upwards to rest on a single pitch, D4. We might think that the phrase has achieved closure by means of dissolution or liquidation, but immediately upon reaching the single pitch D4, the three lower voices break away from it, each now reiterating the Lasso cadential formula a semitone apart, the first violin in eighth notes, the second violin in triplet eights, the viola in sixteenths, and the cello in quintuplet sixteenths. Even as Schnittke appears to create a means of closure through chromatic and—more than

chromatic—microtonal means, he must still engage with the tonal cadential turn, twisting it now so that it becomes part of the ongoing process of thematic liquidation, settling once more on the single pitch D4 in m. 25.

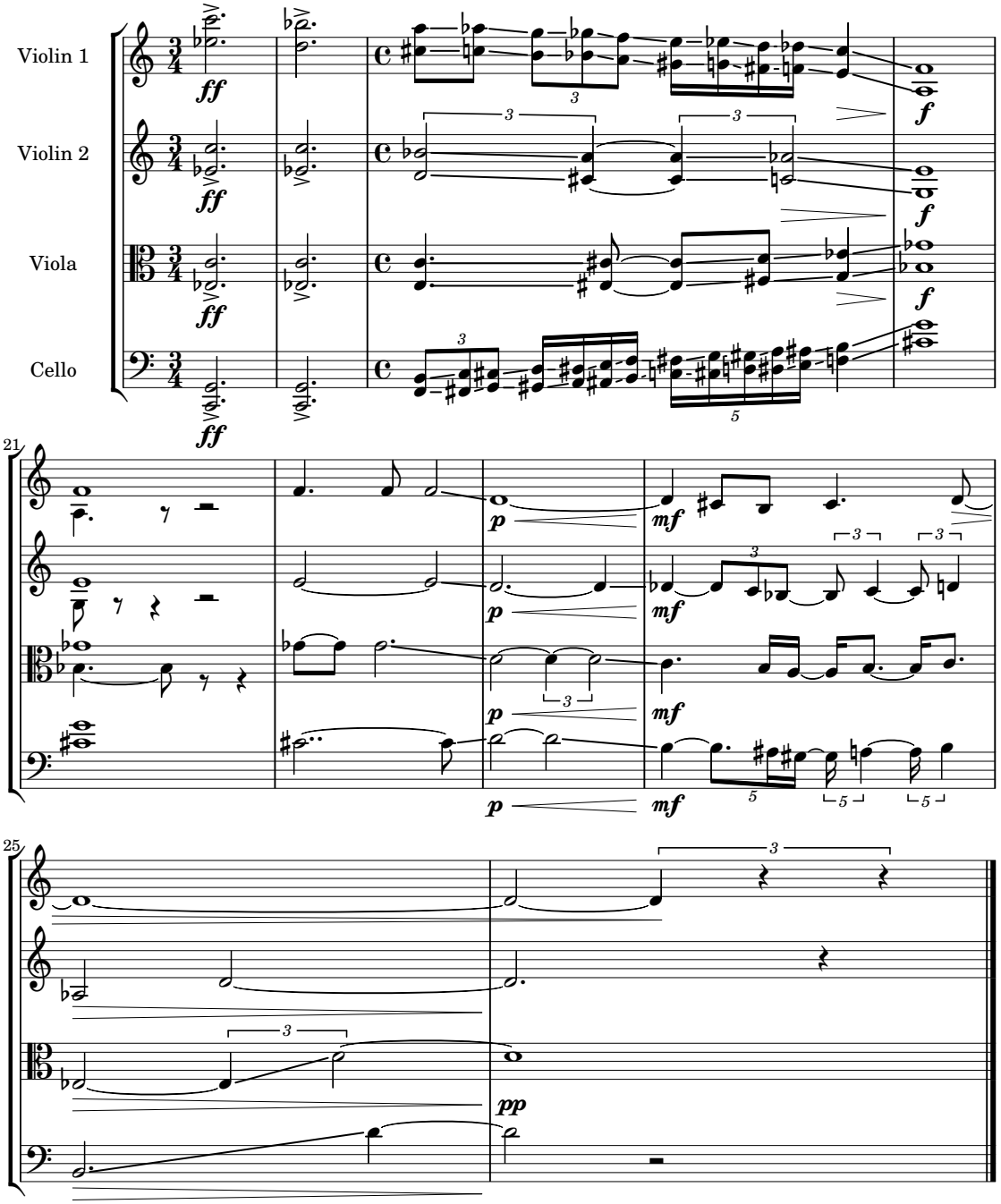


Figure 4.23: Schnittke, String Quartet No. 3, I: mm. 17-26, end of Bergian phrase

Throughout the first movement of the string quartet Schnittke makes alterations only to the ultimate chord of the cadential figure rather than manipulating other parts of the trill cadence, thus maintaining an essential element of its cadential identity as it undergoes its process of becoming. He experiments with different closing chords for the deceptive cadence: a C minor chord in m. 10 substitutes for the major one in m. 2, the cadential gesture in m. 64 culminates in an 0167 chord (Figure 4.24), and the final cadence of the movement, on G in the alto line, culminates in a chord derived from the linear accrual of pedal tones as well as melodic cadential gestures on G ♭ and C. Schnittke also makes use of the evaded cadence in m. 47, where a melodic gesture towards G is fully supported by a D major chord and emphasized through a crescendo in all parts, but the composer negates any potential feeling of satisfactory conclusion by inserting a breath mark and beginning the next formal unit *pianissimo* in m. 48. This moment is unusual in another way as well—it again actively transforms the cadential figure from *opening* function to *closing* function, again revealing how the cadence in the third string quartet enacts a process-of-becoming function. Schnittke accomplishes this switch in function by beginning on an E minor seventh chord in m. 46—each instrument then successively attempts to begin the Lasso cadential pattern, first on D in the first violin, then on A in the second violin, and on D in the viola. These false starts once again become part of a liquidation process, however, this time liquidating the completion of the cadential pattern itself. The cadential pattern is then restored fully, correctly harmonized, in m. 47 (Figure 4.25).

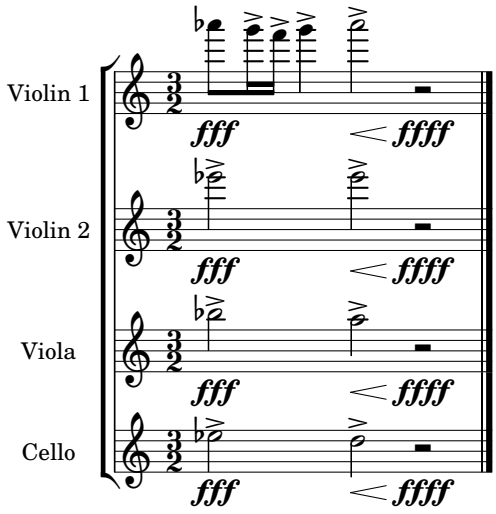


Figure 4.24: Schnittke, String Quartet No. 3, I: m. 64

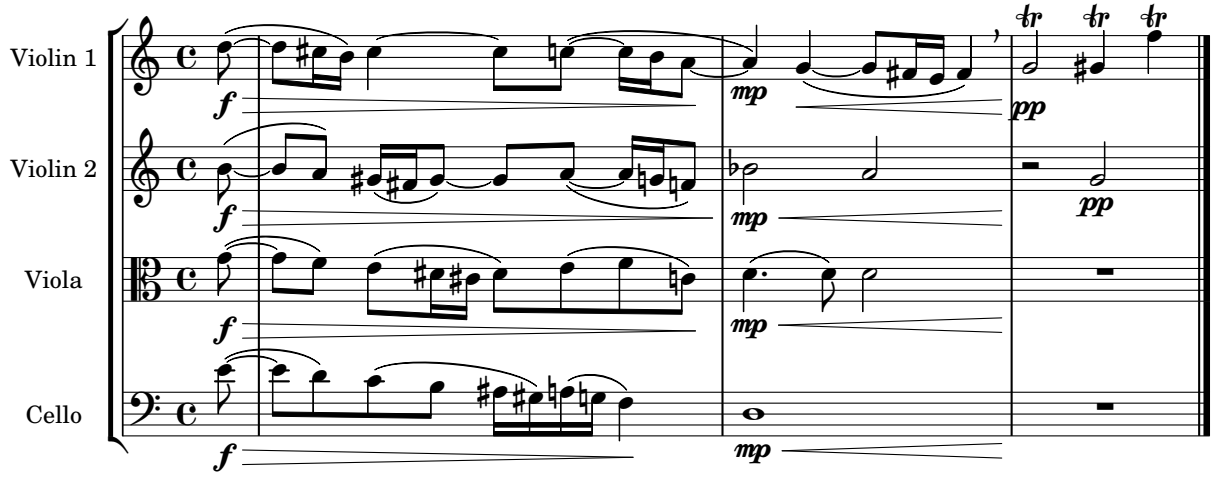


Figure 4.25: Schnittke, String Quartet No. 3, I: mm. 46-48

After an intervening recollection of the movement's opening beginning in m. 65, the movement ends with a reprise of the canon theme of mm. 27-35 and m. 26 onward. Played *piano*, without vibrato, and now featuring imitation at the diminished fifth between the first and second violin (beginning on D ♭ and G, respectively), this iteration of the Baroque canonic

theme seems much less sure of itself.[48] It hints at the Lasso cadential figure in mm. 77-78, with the upper three voices cadencing on D ♭ , G, and D. Unsatisfied with this, the canon lurches forward again, but only two measures later the cadential figure reappears, now transposed to cadence on G ♭ , C, and G (Figure 4.26).

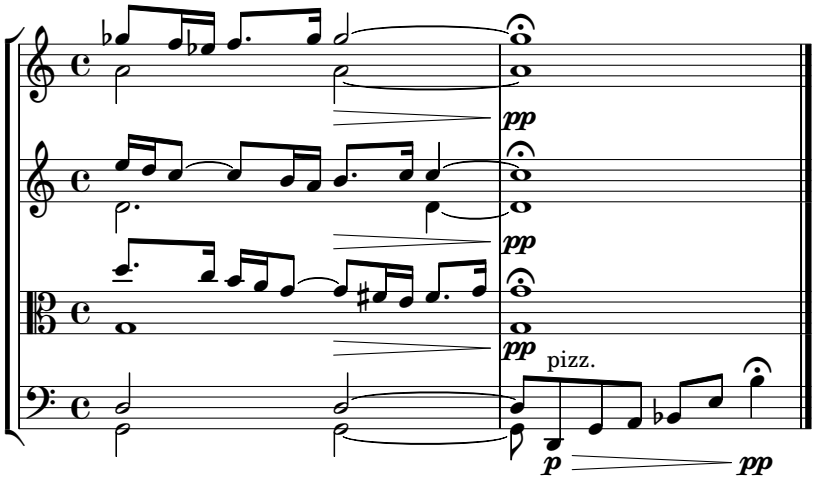


Figure 4.26: Schnittke, String Quartet No. 3, I: mm. 81-82, end of movement

4.5.2: Second Movement

In the second movement, Schnittke works to transform the cadence and undermine its functionality. An overview of the major transformations of the cadential figure can be found in Table 4.2. The movement opens in remarkably tonal fashion, clearly articulating G minor; this is especially striking in comparison to the ambiguous ending of the first movement. The opening phrase, shown in Figure 4.27, presents a clear two-measure basic idea (mm. 1-2), which is then repeated in mm. 3-4 and again in mm. 5-6 before being interrupted by a dissonant sonority,

[48] This stacked diminished fifth plus perfect fourth is presumably derived from the Lulu sonority (see Figure 18).

accented and played *sforzando*. The frenzy of misaligned tuplets and wide leaps in mm. 7-8 seem an effort to furiously scratch out the symmetry of the preceding formal units.

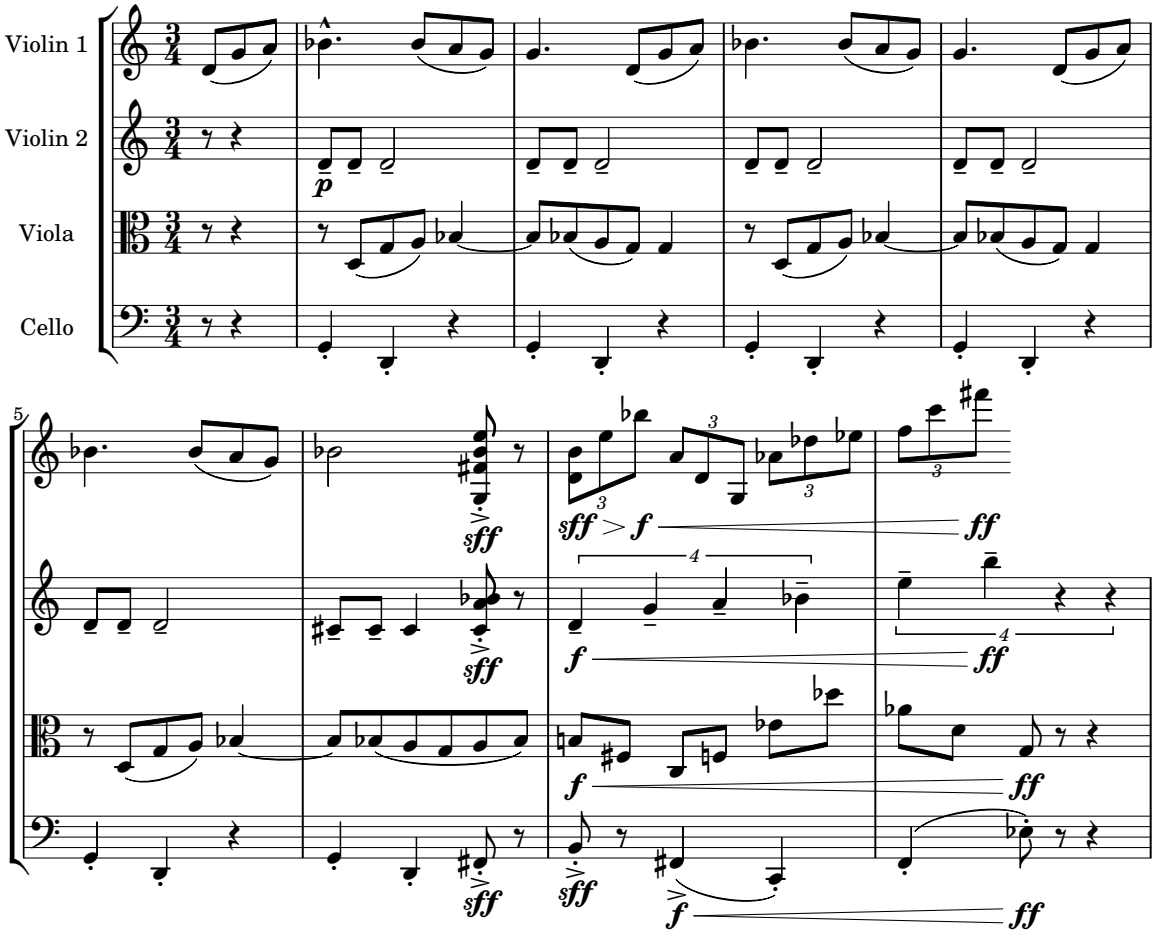


Figure 4.27: Schnittke, String Quartet No. 3, II: opening of the second movement

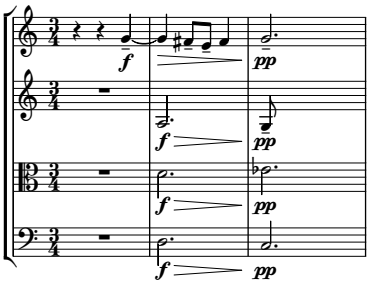
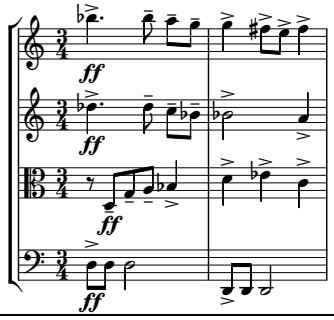
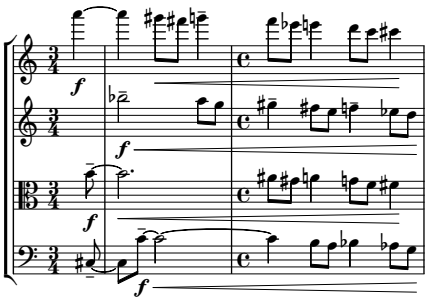
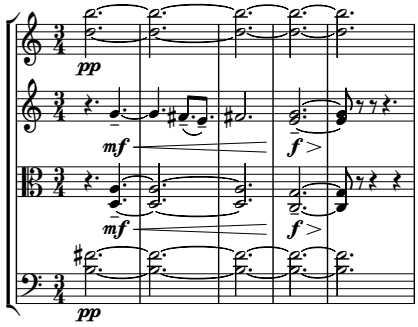
Location	Excerpt	Implied tonic	Chords	Notes
II. 16-18		G	$V^{6\,5}_{4\,3}$ iv DM Cm	Same cadence as in opening 2 measures of the first movement, but now resolving to C minor triad.
II. 32-33		G	$V^{\flat 6\,5}_{4\,3}$	Half cadence in G minor; comes after a period of motivic liquidation in mm. 18-31.
II. 43-44		N/A	N/A	Lasso cadential figure in the first violin altered on penultimate sonority and imitated at the major seventh for each successive entrance.
II. 91-95		G (over B minor)	$V^{6\,5}_{4\,3}$ IV DM CM (over B minor)	The previous sense of stable tonality provided by the Lasso cadence is effaced here by the constant presence of the B minor triad.

Table 4.2: Salient instances of the Lasso cadence, movement 2

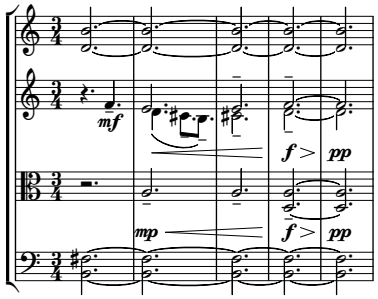
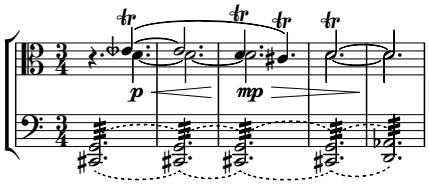
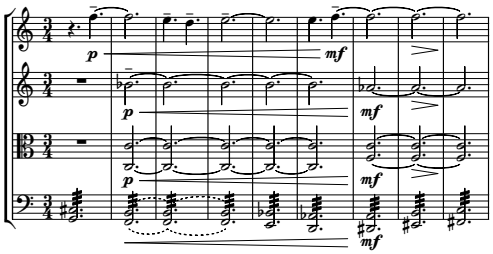
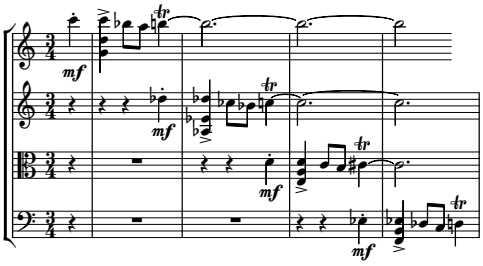
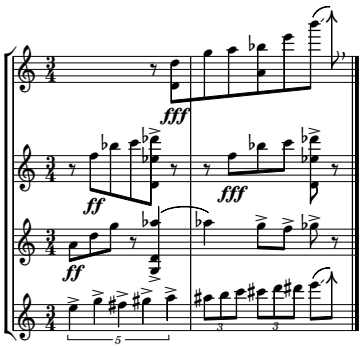
Location	Excerpt	Implied tonic	Chords	Notes
II. 95-99		D (over B minor)	$V^{6\,5}_{4\,3}$ i AM Dm (over B minor)	The second Lasso cadence on D is also destabilized by the B minor triad.
II. 140-144		E ♭ (detuned a quarter tone flat)	N/A	The first pitch of the Lasso cadential figure is now detuned. This cadence is then sequenced twice, a fifth higher each time.
II. 159-167		F	V^7 i C7 Fm (over	PAC in F minor, with chromatically descending lament bass (sul pont and tremolando).
II. 244-247		N/A	N/A	Avoided cadential gesture, with the leading tone lowered on the second beat of the melodic figure, is sequenced at the major 7th.
II. 325-326		N/A	N/A	Avoided cadential gesture in viola is mostly masked by extreme ascent and rhythmic dissonance.

Table 4.2 Continued

At the end of m. 8, the opening material returns in an inexact transposed form—the two imitative melodic voices are transposed by diminished fifth, suggesting a new key of D ♭ major, while the accompanying voices are now performed at different transpositions. The second violin's repeated D in m. 1 is now a repeated A ♭ in the viola at m. 9, and the cello's descending fourth from G to D is now a descending augmented fourth from B to F (Figure 4.28). The result is a slightly distorted-sounding answer to the first attempt at a balanced Classical phrase, which clearly failed dramatically with the scratching-out in mm. 7-8. This second attempt provides a slightly muddled, murkier version of the phrase, where the bass line no longer matches the prevailing key of D-flat major—the previously tonal thematic material did not escape unscathed from the evident failure to cadence. Otherwise, the phrase proceeds in an identical manner to the first statement of the theme, until in m. 14-15 a cadential progression abruptly interrupts. Rather than scratching out the preceding material, this time the music lands on a half cadence in G minor—but this tonal half cadence no longer makes sense within the context of the theme. It arrives triumphantly, fortissimo, but with no preparation by means of continuational material, and in the wrong key. Out of the ensuing stunned silence emerges the Lasso cadence again (mm. 17-18). Here, it is presented as almost an exact restatement of the one found at the opening of the first movement, except that it resolves to C minor rather than C major.

The second movement of the third quartet thus presents a comparable set of circumstances to those found in the first movement of the Concerto for Viola and Orchestra, in which the contrapuntal, quasi-tonal cadence emerges as a sort of solution or response to a failure to cadence. This moment in the quartet differs from the concerto in two significant ways, however: first, the theme that opens the quartet's second movement sounds decidedly tonal and

Classically symmetrical in phrase structure, leading to strong expectations for the placement and type of cadence that should have ended each phrase; and second, while the Viola Concerto's first movement was engaged in shoring up the post-tonal cadence before the ironic entrance of the tonal cadence, the third string quartet seems engaged from the start in the staged failure of the cadence, and indeed its dismantling. We can see this dismantling continue in the second movement, as the Lasso cadence begins to experience disruption not only in its resolution but on its penultimate sonority as well.

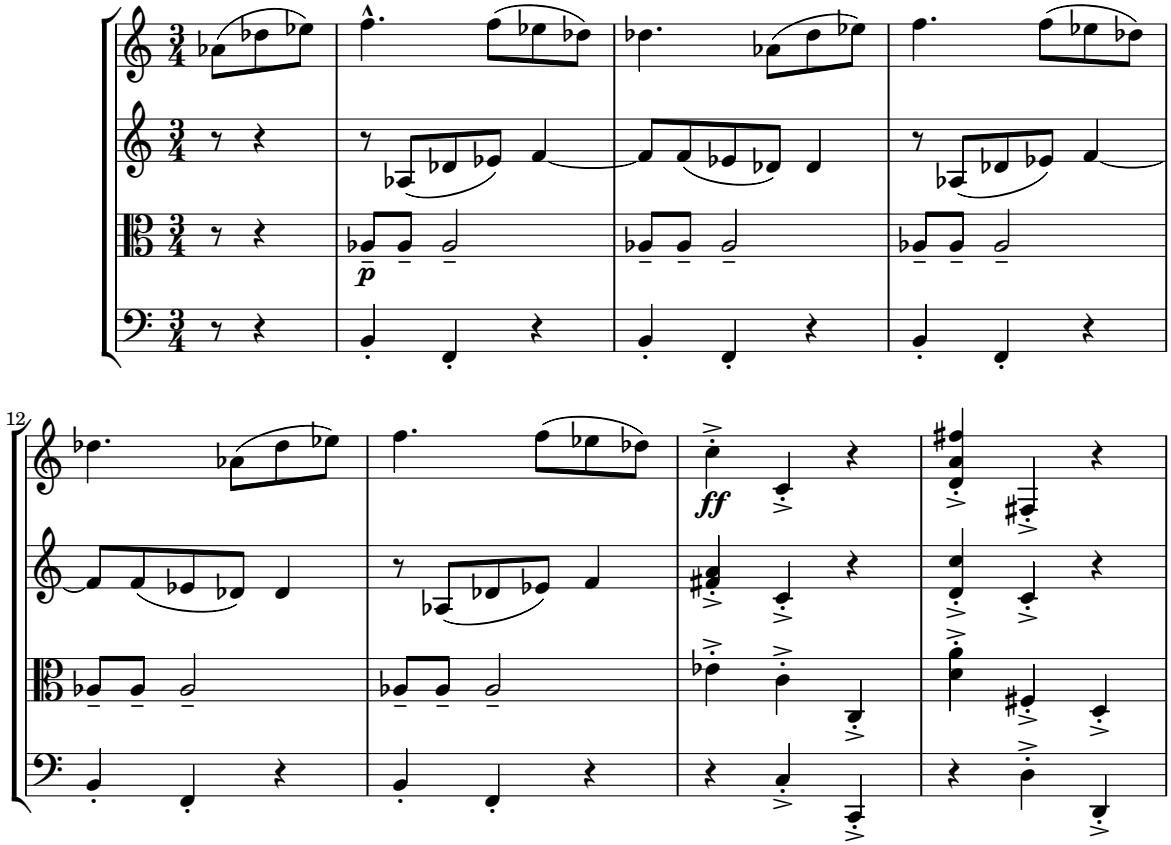


Figure 4.28: Schnittke, String Quartet No. 3, II: mm. 9-15 (second phrase)

One example of this new kind of disruption comes in m. 43, where the cadence is altered on the penultimate sonority: the leading tone of a melodic cadence on A is lowered by a semitone from G♯ to G, creating an avoided rather than an evaded cadential motion that is

then imitated at the major seventh in all voices in m. 44, so that each voice successively enters a major seventh below the previous one (Figure 4.29). In this tumultuous first part of the second movement, the original two Lasso cadences on G and D return in mm. 91-99, in the midst of an eerie chorale featuring a lamento bass in the cello (Figure 4.30). While previous, similar iterations of this cadential figure clearly implied a tonic, though, in mm. 91-99 this sense of a stable tonality is effaced due to the persistent B minor triad played by the first violin and cello. This moment represents another important change in how Schnittke treats the cadence—he removes its *tonal* potency, specifically, by placing it in the context of B minor.

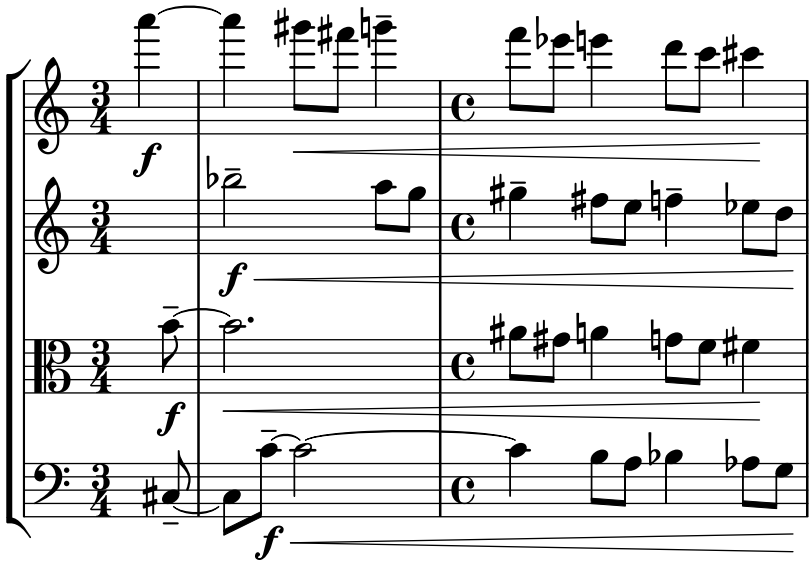


Figure 4.29: Schnittke, String Quartet No. 3, II: mm. 43-44

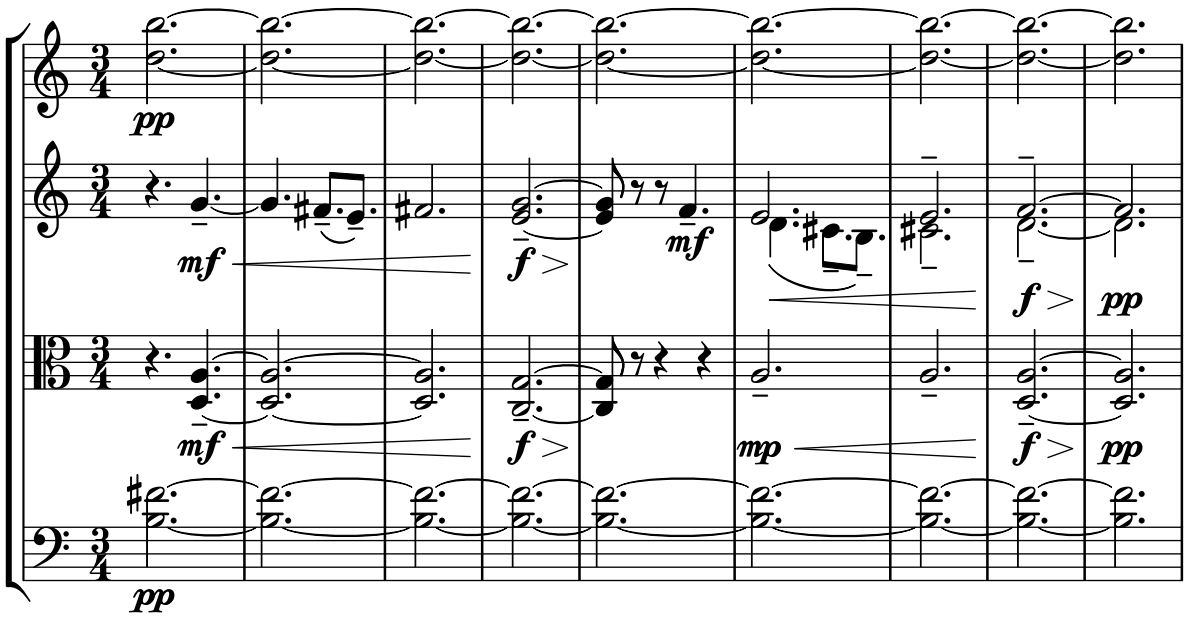


Figure 4.30: Schnittke, String Quartet No. 3, II: mm. 91-99

Exactly at the movement's halfway point, in mm. 159-164, the upper three instruments provide a perfect authentic cadence in F minor, accompanied by sul ponticello tremolandi in the cello, which slowly descends chromatically in a manner reminiscent of the lament bass at m. 60.[49] Any possibly strength this cadential gesture may have, though, is compromised by the preceding phrase, in which the Lasso cadence is sequenced by perfect fifth, where each iteration is now altered on the *first* pitch of the cadence. Schnittke detunes the first pitch of each figure by a quarter tone and does not resolve the figure to the detuned tonic.

Schnittke's dismantling of the cadence comes to a dramatic head in the second half of the movement. First, a series of avoided cadential motions—in which the Lasso cadential figure is lowered on the second pitch (^7)—are imitated at the major seventh in mm. 244-47, then at the major seventh in mm. 247-52, leading up to a seven-bar model beginning in m. 254. This model

[49] Thanks to Pierce Gradone for remarking on the centricity of this moment.

phrase, which is then sequenced at the semitone, ends with a strong tonal perfect authentic cadence in D ♭ , with bass motion from ^5 to ^1. After the first sequencing of the model, which ends with a cadence in D, the phrase is shortened with every subsequent iteration until, in mm. 277-80, only a series of chromatically ascending cadences remains. The constant repetition of the V-I PAC with chromatically rising tonic pitches rather effectively effaces the power of this gesture to establish and confirm a tonal area. As if to reiterate the confused status of the cadence, the movement ends with an avoided cadential gesture in the viola.

4.5.3: Third Movement

Near the beginning of the third movement, Schnittke reminds us once again of the two cadences on G and D as they first appeared in the piece. Compressed into a three-measure span and destabilized by the murmur of a highly dissonant trill in the viola and cello, however, this restatement only serves to remind us of what we have lost in the course of the preceding movements. The movement is saturated once more with deceptive and evaded cadences, but the ultimate chord is never reached. The cadence as representative of tonal unity is never recovered in the third movement; instead, the work ends by combining the cadential gesture with the DSCH motive in the first violin, so that the tonal meaning of the cadence is subsumed into the chromatic landscape.

Whereas I proposed that in the Viola Concerto the contrapuntal cadence is both preserved and irrevocably changed, in the third string quartet the form-functional meaning of the cadence is dissolved, and it is free to become other functions over the course of the quartet, acting to open, to prolong, and to liquidate themes. While Schnittke's polystylistic music—and

especially his third string quartet—is about more than just cadential function, the third quartet in particular confronts the listener with an enormous array of potential cadential meanings and functions within the rhetorical world of the piece.

4.6: Conclusion

Lawrence Kramer has described Schnittke's Third String Quartet as "above all a study of when, if, and whether a—musical—message from the past can arrive safely in the present."[50] The musical messages imparted by Lasso, Beethoven, and Shostakovich are "like phantoms or spectres" according to Kramer's narrative, in that "the citations that recall them are empty husks betokening a historical condition that renders the meanings, perhaps any meanings, no longer accessible except as canceled."[51]

As I have argued throughout this chapter, however, the concept of formal articulation has always been a living, functional thing in music, and to deny the meaningfulness of, say, a cadential figure in a post-tonal musical context is to fundamentally misunderstand the process of listening formally—and, I would argue, the nuances of what composers like Ligeti and Schnittke are trying to accomplish by incorporating tonal cadences into their compositions. In tonal music, cadences have traditionally offered an organizational framework that clearly defined tonal areas, allowing a listener to situate themselves both tonally and temporally within the form. In the music discussed in this chapter, cadences have performed a number of different functions with respect to both form and time. In both Schnittke's Viola Concerto and Ligeti's Piano Concerto,

[50] Kramer, *Interpreting Music*, 168.
[51] Ibid., 169.

the tonal cadence functioned to take the listener out of the time of the piece, jarringly returning her to historical time and forcing her to confront the historicity of the cadential figure. In Schnittke's Third String Quartet, by contrast, the tonal cadences become subsumed into the time of the piece, losing their capacity to recall historical time.

Schnittke's cadential treatment foregrounds the importance of treating cadences of many different types as functional within post-tonal compositions. We can describe some of these cadential types as follows: first, the one-to-one relationship between content and function, as might be found in the typical common-practice cadence; second, cadential function using new content as in the opening of the Viola Concerto; and third, cadential content with a new function, as in the end of the Viola Concerto's first movement. Further, each of these types might have new subtypes as well, like cadential content that *becomes* a new function, as in the third string quartet, and cadential content with denied rhetorical function, as in the third movement of the Viola Concerto.

This chapter shows the importance of closely analyzing cadential figurations both in post-tonal works that make reference to tonal practices (such as the polystylistic compositions of Schnittke), and in more obviously non-tonal works (like Ligeti's Piano Concerto). Further, it reveals the potential for an enhanced understanding of what "cadence" means more broadly through attention to the listener's experience of different types of cadential figurations in post-tonal repertoires.

Chapter 5: Formal Process and Transformation in Works by Berio

5.1: Introduction

5.1.1: *Sequenza I for Solo Flute*

Luciano Berio's *Sequenza I for Solo Flute*, composed in 1958 for flautist Severino Gazelloni, poses a unique set of challenges to listeners and performers.[1] The work is dense and virtuosic, with an unstoppable sense of momentum driving it onward from the flute's first explosive three-note gesture. While pitches are clearly grouped together into meaningful units, they seem to belong more to gestural arcs than to clearly defined phrases with beginnings, middles, and ends. Figure 5.1 shows the tumbling downward trajectory of the work's first phrase.[2] This and all subsequent figures are presented in the original notation, using time fields, separated by a small vertical line through the top line of the staff. Most of the work has a tempo marking of 70 beats per minute, with two short passages with the tempo markings 60 M.M. and 72 M.M. toward the end of the piece. As Ian Knopke explains in his detailed analysis of the Sequenza, "the time between notes is determined not by the usual system of flags and beams, but

[1] Cyntha Folio and Alexander Brinkman have explored the impact that performance can have on listener perceptions of *Sequenza I*, showing how differences in notation in the two editions of the work may create differences in performance. Cynthia Folio and Alexander Russell Brinkman, "Rhythm and Timing in the Two Versions of Berio's Sequenza I for Flute Solo: Psychological and Musical Differences in Performance," in *Berio's Sequenzas: Essays on Performance, Composition and Analysis*, ed. Janet K. Halfyard (Aldershot and Burlington: Ashgate, 2007).

[2] Gale Schaub similarly identifies the first line as the first phrase of the work. Gale Schaub, "Transformational Process, Harmonic Fields, and Pitch Hierarchy in Luciano Berios *Sequenza I* through *Sequenza X*" (PhD thesis, University of Southern California, 1989), 14.

by the physical distance . . . between events on the page."[3] Flags indicate that the note is not sustained, while beams indicate that the note is held for the length of the beam. Throughout, I will refer to the work's time fields with an ordered pair of numbers, the first of which refers to line and the second to time field. Thus, the second time field in the third line would thus be (3, 2).

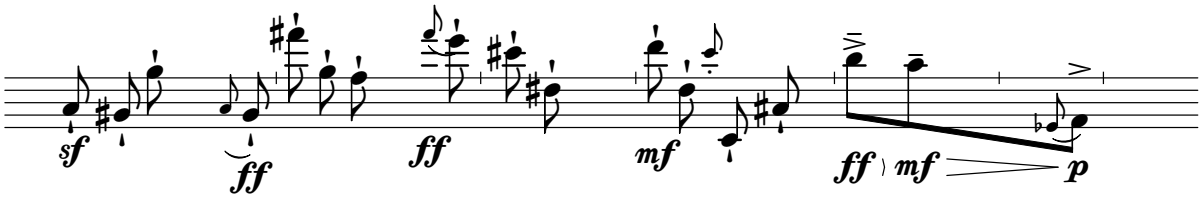


Figure 5.1: The first phrase of Berio's *Sequenza I for Solo Flute* (1958 edition)[4]

Despite the density of this first line of music, its formal functionality may be elucidated by a careful formal listening of the type I have advocated in chapters 1 through 3 of this dissertation. First, we may hear this phrase as divided into two smaller basic units, divided by the silence at the end of (1, 3). The first three time fields enact a process of speeding up and slowing down, in which (1, 1) through (1, 3) lurch frantically forward through four wide leaps, before slowing down preparatory to one further leap into (1, 3). The second half of the phrase, from (1, 4) to (1, 6), repeats this process of speeding up and slowing down, as diagrammed in Figure 5.2.

[3] Ian Knopke, "Form and Virtuosity in Luciano Berio's *Sequenza I*" (University of Alberta, 1997), 21.
[4] The 1958 edition of *Sequenza I* does not include a clef. The revised 1992 version in standard notation includes the treble clef.

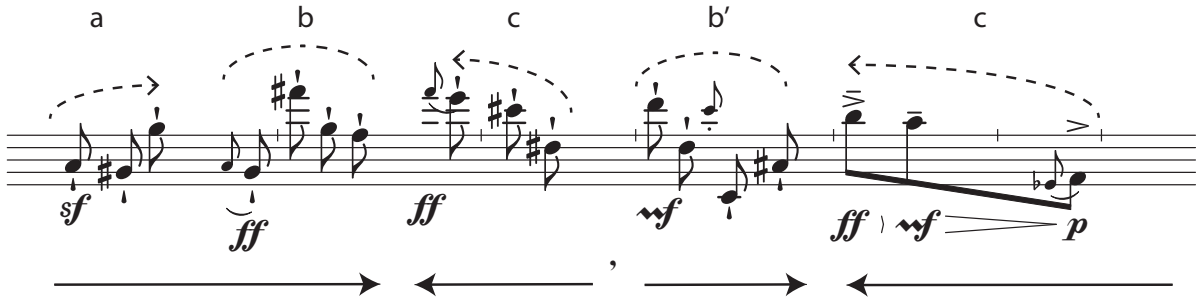


Figure 5.2: Analysis of the first phrase of *Sequenza I*, showing speeding up and slowing down of the rhythms as well as ascending and descending melodic contours.

Figure 5.2 shows the cyclical processes of speeding up and slowing down in the first phrase of *Sequenza I* through arrows placed beneath the score: right-pointing arrows indicate speeding up, while left-pointing arrows indicate slowing down. Other musical parameters also contribute to phrase formation in this first excerpt. One important parameter is melodic contour: the first three notes are characterized by an initial surge upwards by major seventh (*a*), followed by four notes that quickly attain an even greater pitch height before rapidly returning to the register achieved in (1, 1) (*b*). The dramatic leaps and upward trajectory support the sense of forward momentum conveyed by the increasing speed of pitch onset. Beginning with the last note in (1, 2), as the rate of pitch onset slows, the melody also descends to a stable midpoint (*c*). In (1, 4), as the rate of pitch onset speeds up again, we hear a melodic contour similar to that of unit b (labelled *b'*) before concluding with a slower reiteration of unit c and a brief silence.

After the descent and pause at the end of line 1, line 2 begins the process of acceleration anew, underscoring the cyclical nature of the phrase structure. Figure 5.3 shows how the phrase spanning from (2, 1) to (3, 2) expands and varies the cycle of the first phrase. Berio intensifies the second cycle by continuing the process of increasing pitch height, speed, and volume in (2, 4), rather than descending and slowing down as did motive *c* in phrase 1. In the second half of

the phrase, beginning in (2, 5), Berio then expands *b'* to become, retrospectively reconsidered, the descending motive *c*.

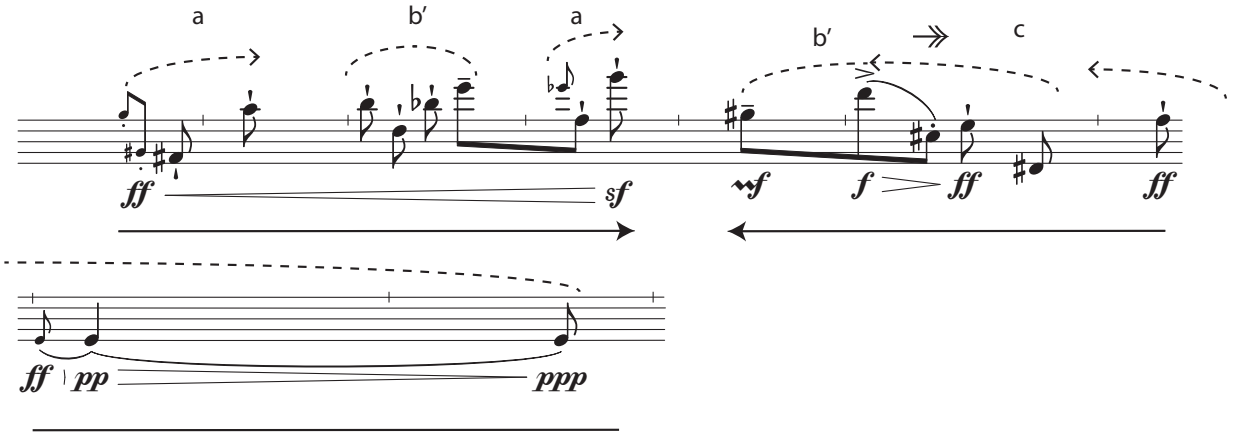


Figure 5.3: Berio, *Sequenza I*: time fields (2, 1) to (3, 2) (second phrase)

It seems evident from the preceding sketch of the first two phrases that Berio engages with ideas of circularity and cycles in the formal processes of *Sequenza I*, and that these processes are one important part of how listeners may encounter and make sense of the work. Especially as the composition becomes more dense and complex, drawing on extended techniques, the listener may draw on the established cyclical formal process to understand the relationships between units throughout.

As with many compositions of the period after 1945, it is tempting to think of Berio's *Sequenza I* and other works in isolation, or in conversation only with, say, others of the *Sequenza* series or the related set of *Chemins*. Indeed, this has been a common approach to understanding the intra- and inter-work relationships in Berio's music. For example, in discussing Berio's *Visage* (1961), a work for electronic sounds and Cathy Berberian's voice on tape, George Flynn contends that "even if some 'deep structure' could be neatly laid out […], such would be of

minimal value to the interested listener, the 'style-analyst,' or the curious student. Most listeners, of course, will be interested in the gestural (and poetic) impact."[5]

By engaging with Berio's music from the perspective of formal function, however, it becomes clear that listeners may make use of familiar resources in order to make sense of relationships between fundamental units, phrases, and sections. Indeed, this analytical perspective aligns with Berio's own compositional philosophy: in his 1961 essay on form, the composer eschews the notion of form as separate from material in post-tonal composition:

> The musical revolution of these last fifty years, confirmed by analogous experiences in the literary and painting fields, has educated us to evaluate the musical experience no longer as predisposed *schema*, but a direct place where are formed, created and developed the elements of communication—that are never *ready*-made, but always have to *be* made. Briefly, the chosen material and the form become as one."[6]

Berio further argues for an understanding of musical composition as inherently engaging with listener perception in ways similar to those I have outlined in the dissertation thus far, stating that composers deal "in the invention and elaboration of patterns of expectation; that is, creating modes of conditioning the perception of a willing listener."[7] I would, however argue—as I have throughout this dissertation—that in addition to the composer shaping the perception of a listener, the listener in turn shapes the formal processes of the work. This chapter thus takes an analytical approach informed by both Berio's compositional aesthetic and the theoretical apparatus I developed in my opening chapters.

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[5] George W. Flynn, "Listening to Berio's Music," *The Musical Quarterly* 61, no. 3 (1975): 392.
[6] Luciano Berio, "Form," in *The Modern Composer and His World*, ed. John Beckwith and Udo Kasemets (Toronto: Toronto University Press, 1961), 143.
[7] "The Composer on His Work: Meditation on a Twelve-Tone Horse," *Christian Science Monitor* 1968.

5.1.2: Phrase Construction in Berio's Music

As I have shown in Chapters 1-3 of this dissertation, there are important functional connections for listeners between formal operations at the level of the motive, phrase, and section in post-tonal music. With this in mind, in the following I will proceed as I did in my brief account of the opening of *Sequenza I*, focusing first at the level of the phrase. In addition to establishing a basic methodology for the analysis of Berio's formal designs, this will also highlight an important aspect of his compositional strategy, which organizes the relationships between phrases in one of three distinctive ways. In the first, phrase organization is linear; in the second, phrase organization is cyclical or circular; and in the third, phrase organization is mirrored. Let me take a moment to consider each of these in turn. In my conception of musical form, each of these three phrase types would be understood by listeners through the processes of phrase formation laid out in Chapter 2: the perception of salient parameters, the categorization of musical objects, and the process of prospection and retrospection based on the affordances of the musical categories at hand. My decisions about object categorization and expectation are based upon this understanding of musical affordances and how they operate on various formal levels, as discussed in Part I of this dissertation.

5.1.2.1: Relationships between phrases in Berio's compositions.

The idea of linear phrase organization involves the constant development of one or more motives over the course of the piece. Of course, this type of phrase organization has been extensively theorized as motivic development within common-practice music. Schoenberg viewed motivic cohesion as essential for listener comprehension, writing that "*motive* is at any

one time the smallest part of a piece or section of a piece that, despite change and variation, is recognizable as present throughout."[8] More recently, following Edward Cone's thorough exploration of motivic derivation, Lawrence Zbikowski has argued that how we hear motivic relationships "informs our understanding of musical rhetoric."[9] Within the realm of post-tonal composition, the opening of Berio's *Linea* (1973) provides a straightforward example of how this formal process of motivic development might look as individual voices slowly separate and develop (Figure 5.4). In this example, all four instruments begin in unison, before the marimba begins to break away and develop in the second line.

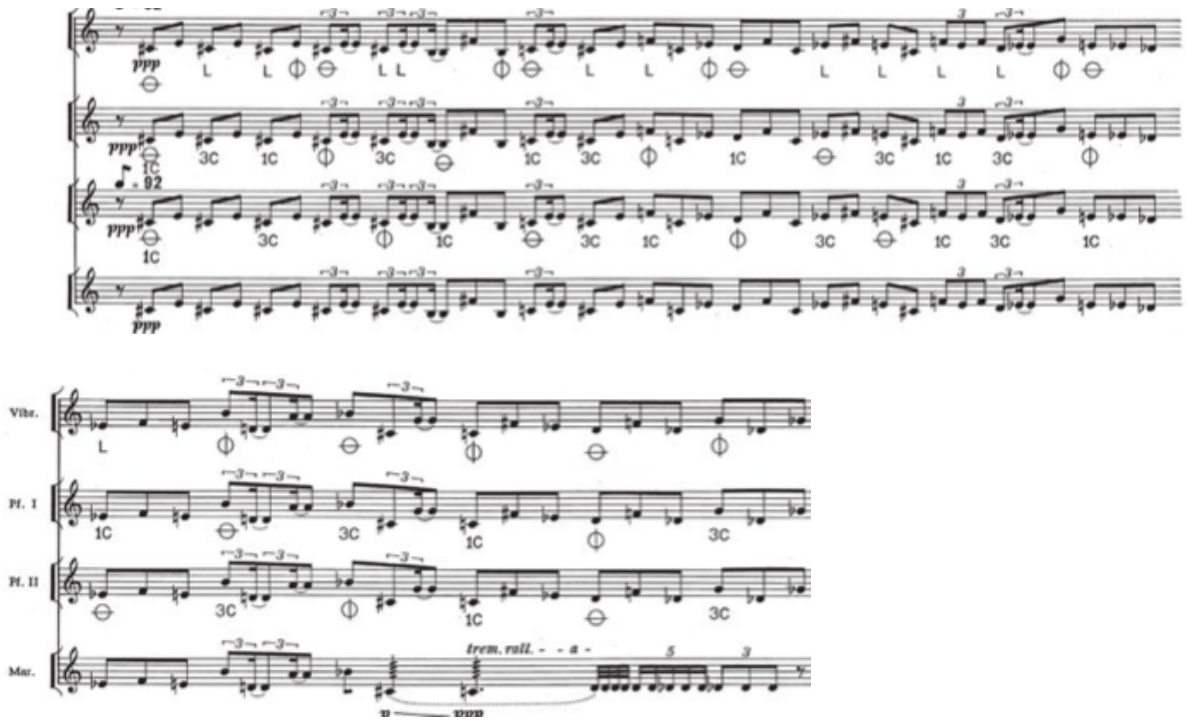

Figure 5.4: First two lines of Berio's *Linea*

Circular phrase construction involves the constant return to a motive, while developing that motive further with each iteration. The first two phrases of *Sequenza I*, analyzed above,

[8] Schoenberg, *The Musical Idea and the Logic, Technique, and Art of Its Presentation*, 169.
[9] Zbikowski, *Conceptualizing Music: Cognitive Structure, Theory, and Analysis*, 28.

provide a relatively clear-cut example of this type of phrase formation, in which the cyclical gestures of intensification and abatement in the first phrase were developed in the second phrase. On the one hand, circular techniques partake of the practice of motivic transformation that typifies much modernist music; on the other hand, the obsessive focus on one relatively small bit of material and its transformation draws attention to those materials and tends to attenuate the sense of progress often associated with motivic transformation.

Mirrored phrase construction involves the development of material around some sort of steady axis or reflective surface. This type of symmetrical inversional relationship involves the disposition of musical elements within pitch space, and may thus seem to have little to do with the temporal succession of pitches. However, despite the obvious spatialized nature of the mirror type of phrase construction, the fact remains that a listener encountering one of these phrases in her first time listening to, for example, Berio's *Sequenza VII for Oboe Solo* (1969) will hear the mirrored relationship around the central pitch, B-natural, as it emerges over time (Figure 5.5). Thus, Berio's compositional strategy of emphasizing a specific pitch and symmetrical inversion around that pitch will have specific affordances for a listener encountering that work, guiding her listening in a particular direction. In his exploration of musical space and time, Robert Morgan argues for a similar understanding of space, writing:

> a musical composition not only defines its own space, but does so by moving through this space in its own unique manner. Musical space is thus inseparable from musical time, just as musical time is inseparable from musical space. Indeed, the most salient characteristic of musical time, as distinct from ordinary, "psychological" time, is precisely its pronounced spatial—that is, structured—quality.[10]

[10] Robert P. Morgan, "Musical Time/Musical Space," *Critical Inquiry* 6, no. 3 (1980): 529.

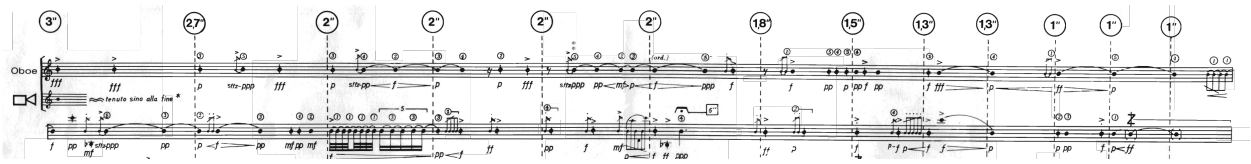

Figure 5.5: First two lines of Berio's *Sequenza VII*

Following Morgan's assertion that musical space is a "space of relationships," we can understand Berio's mirrored phrase constructions as drawing on a particular set of spatial relationships, established by the composer over the course of a work and experienced by the listener in time as she encounters the work. We can see this mirrored type of phrase construction clearly at work in the Oboe Sequenza, in which the persistent B-natural—sounding both in the oboe and in the background throughout the entirety of the piece, playing by an off-stage, possibly taped, unseen source—acts as a constant steady axis (Figure 5.5).

5.1.3: Phrase, Process, Transformation

In this chapter, I explore what I call linear, circular, and mirror form in Luciano Berio's *Linea*, *Points on the Curve to Find…*, and *Sequenza VII for Oboe*. In these works, Berio approaches form in a way that is radically different from that pursued by other composers discussed thus far. Berio plays with the listener's understanding of form and formal function through unique phrase constructions based on process, transformation, and the interrelationship of ideas. Berio's interest in process is abundantly clear both in his writings and in others' analyses of his compositional output: in Reed Holmes' 1981 study, for example, Holmes focuses specifically on relational processes and systems in Berio's music.[11] Holmes considers these processes as part of functional

[11] Reed Kelley Holmes, "Relational Systems and Process in Recent Works of Luciano Berio" (PhD thesis, The University of Texas at Austin, 1981).

relationships, arguing that Berio creates "highly unified compositions which incorporate various parametric processes and which present a hierarchical ordering of parametric functions."[12] Holmes further specifies what he means by processes being functional by distinguishing between goal-oriented and non-goal-oriented processes. He identifies two musical approaches to process: "the first one […] uses processes in a teleological environment to achieve and reinforce goal-oriented motions. The second approach is borrowed from Eastern musical cultures in which processes are not goal-oriented."[13] Holmes argues that Berio's approach to process falls into the first category and is therefore functional.

In Christoph Neidhöfer's exploration of Berio's serial practices, he demonstrates how this emphasis on process is prevalent in the composer's early serial works, arguing that "at the centre of Berio's serial practices lies the design of […] musical objects which in turn are subjected to various processes of transformation, serial or otherwise."[14]

In what follows, I build upon this existing understanding of processual form in Berio's music by identifying and analyzing three main types of formal process in Berio's oeuvre: linear form, which involves the development of one or more motives over the course of the piece; circular form, which involves the constant return to a motive throughout a piece, while developing that motive further with each iteration, and mirror form, which involves the development of material around some sort of steady axis or reflective surface. As I discussed in chapter 3, which focused on large-scale form in works by Pierre Boulez, theories of form often falter when it comes to relating phrase structure to large-scale form. I argued there for a

[12] Ibid., v.
[13] Ibid., 23.
[14] Neidhöfer, "Inside Luciano Berio's Serialism," 304.

methodology that embraces a plurality of forms, which are partially determined by phrase-level construction and partially by other connections made by the listener. In this chapter, I offer a more detailed exploration of how these three specific types of phrase construction contribute to a listener's understanding of form in Berio's music.

I argue that despite Berio's distinctive approach to form, the same tools that I have developed for making sense of form-functional relationships may be fruitfully applied to these four compositions. Berio himself was resistant to any comparisons with tonal forms, preferring to think of form in his and other post-tonal music as constantly being reinvented: "In tonal music there were predetermined forms; now we must invent form every time. In tonal music there was a hierarchy, with melody first, then harmony and finally rhythm taking their places. Now there are no such components—no melody as such."[15] As I have shown throughout this dissertation, however, while there may be few commonalities between the compositional scaffolding employed by, say, Berio and Varèse, listeners may make use of similar strategies when making sense of form-functional relationships in music by both composers.

The techniques that I identify in Berio's music are of course found in many other compositions of the twentieth century. The crucial difference is that—at least in the compositions by Berio that I explore in this chapter—these techniques are used as guiding forces that determine the formal function of units. Going even further, these techniques are what guide the narrative and rhetorical structure of these compositions.

[15] David Ewen, ed. *Composers Since 1900: A Biographical and Critical Guide* (New York: H.W. Wilson Company, 1969), 66.

5.2: Berio's Techniques of Musical Form

5.2.1: Linear form in *Linea*

Berio's *Linea* (1973), originally composed for four percussion instruments as the accompaniment to a ballet, opens with a unified presentation of a theme by all four percussionists: vibraphone, marimba, and two pianos. The theme begins with a slow, repeated interval of a minor third between C♯ and E. After five iterations of the C♯-E interval the melody starts to transform through the addition of new pitches. As the melody expands the primacy of the initial minor third quickly fades, and when it returns (at the end of line 2, for example), it feels irrevocably changed by its context. Figure 5.6 shows the first line of this melody, which already suggests a linear hearing due to its constant sense of newness.

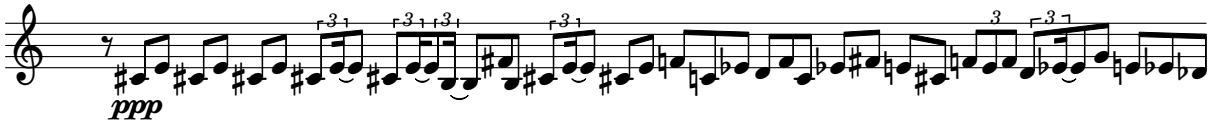

Figure 5.6: Berio, *Linea*: opening melody

By the second system, the marimba begins to separate from the other instruments. As the voices gain independence, the linearity of the phrases becomes even more evident. Indeed, the only means of distinguishing between phrases is to listen texturally, attending to how the instruments wend their way apart and back together into a unified melodic line.[16]

[16] Seth Brodsky has aptly described another of Berio's compositions, *Requies*, as "a music always shimmering and oscillating between phrase, gesture, and texture" a description that may be aptly applied to *Linea* as well. Seth Brodsky, "Utopian Strain: Ambivalent Absolutes in European Composition, 1968–2001" (PhD thesis, University of Rochester, Eastman School of Music, 2007), 19.

Appropriately enough, given its title, the work plays with ideas of counterpoint and developing relationships between independent lines. A notable example comes on the second line of the second page of the score, where two voices proceed in contrary motion, separated by an eighth note, much like a series of suspensions, before all the voices come back together into a single line (Figure 5.7).

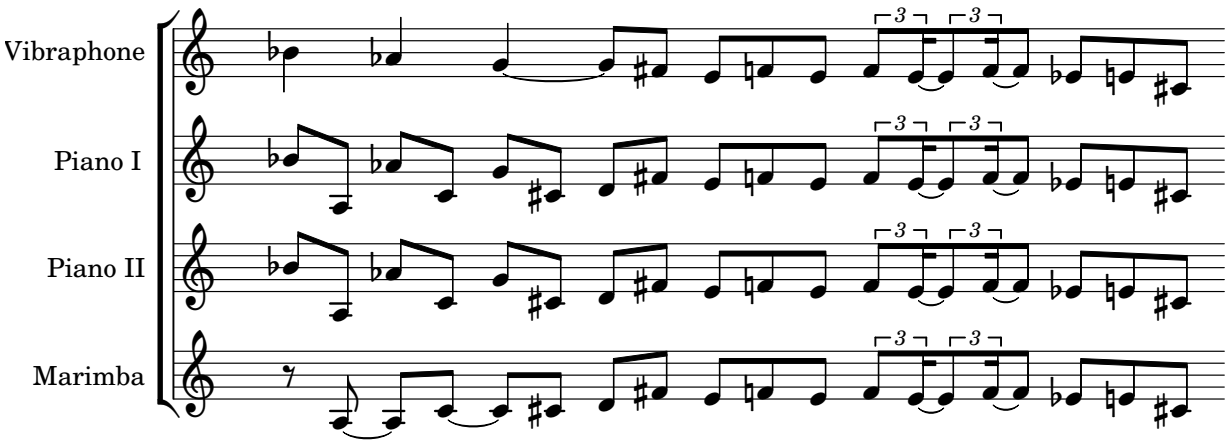

Figure 5.7: Berio, *Linea*: p. 2, line 2

As each of the musical lines in *Linea* develop independently and through interaction with each other, it becomes apparent that the listener's way of making sense of formal relationships in this music is fundamentally linear in nature. That is, our ways of making sense of units and phrases, and the relationships between them, is determined by constant change and development, rather than a sense of return.

5.2.2: Circular form in *Points on the Curve to Find …*

Points on the Curve to Find …, composed in 1974 for solo piano and 22 instrumentalists, clearly falls into Berio's circular style of composition. The work is based on a 10-note ordered

pitch row, which undergoes a process of constant transformation over the course of the work.[17] Ali Momeni has commented extensively on the importance of register displacement to the overall pitch organization of the piece, revealing how the row's pitches are displaced systematically, one at a time. Pasquale Tassone, for his part, has also shown that the work's initial statement of the 10-note row acts as a kind of registral "base," "audible and readily identifiable as the composition progresses."[18] As Momeni notes, however, "the pitches of the row go by at an astonishingly fast rate," one which is not easily perceptible by a listener.[19]

Points on the Curve opens with a trill between D and C♯, played by the solo piano. The other instruments join in, weaving in and out of the texture and doubling the piano. The intermittent joining of the other instruments into the piano's ongoing line of pitches encourages the listener to attend to the linear dimension of the music, and specifically, how the pitch range expands, circling outwards from the central trill figure (Figure 5.8).

[17] Ali Momeni, "Analysis of Luciano Berio's Points on a Curve to Find," http://alimomeni.net/analysis-of-luciano-berios-points-on-a-curve-to-find/; Pasquale S. Tassone, "The Musical Language in Luciano Berio's Points on the Curve to Find" (PhD thesis, Brandeis University, 1987).
[18] "The Musical Language in Luciano Berio's Points on the Curve to Find," 3.
[19] Momeni, "Analysis of Luciano Berio's Points on a Curve to Find" 5.

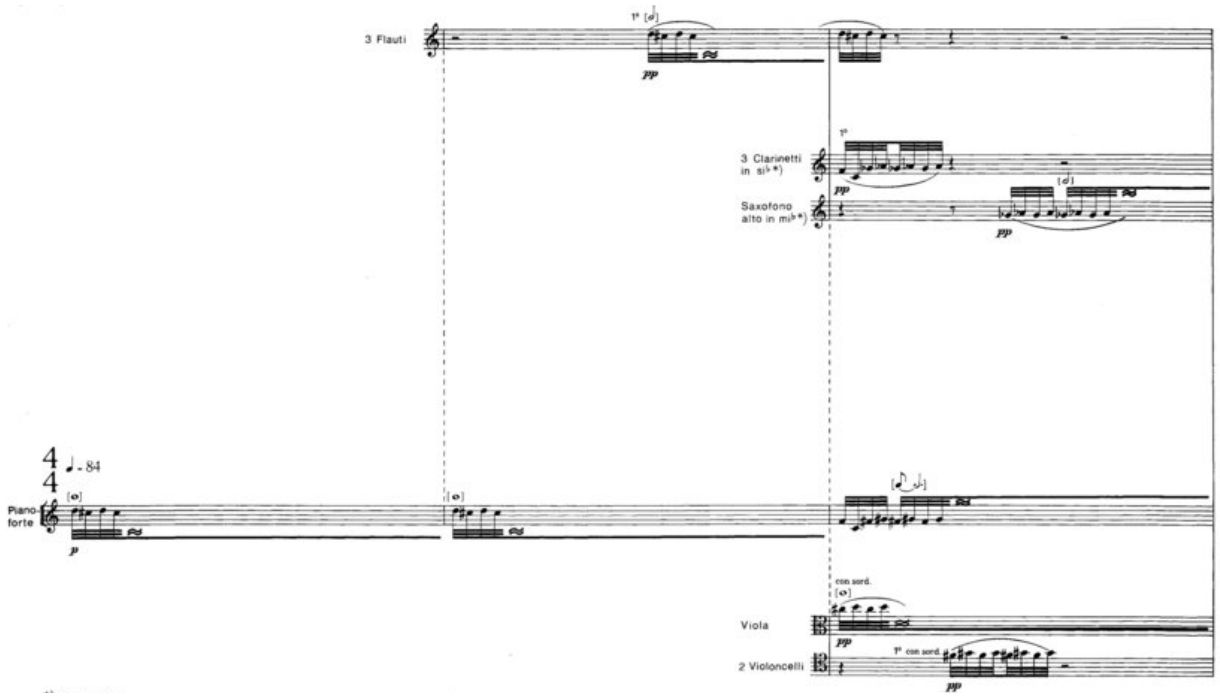

Figure 5.8: Berio, *Points on the curve to find…*: opening

The listener may hear the piano—and especially its trill—as a central focal point around which the other instruments endlessly circle, coming back to the beginning in waves of motion. Figure 5.9 shows a particularly striking example of this return on page 7 of the score, in which the piano's frantic circular have built to a climax before suddenly falling back to a repeated interval (this time a major third). The figure's labels show these circular gestures in the piano and winds, which then revert to the linear motion of the trill figure.

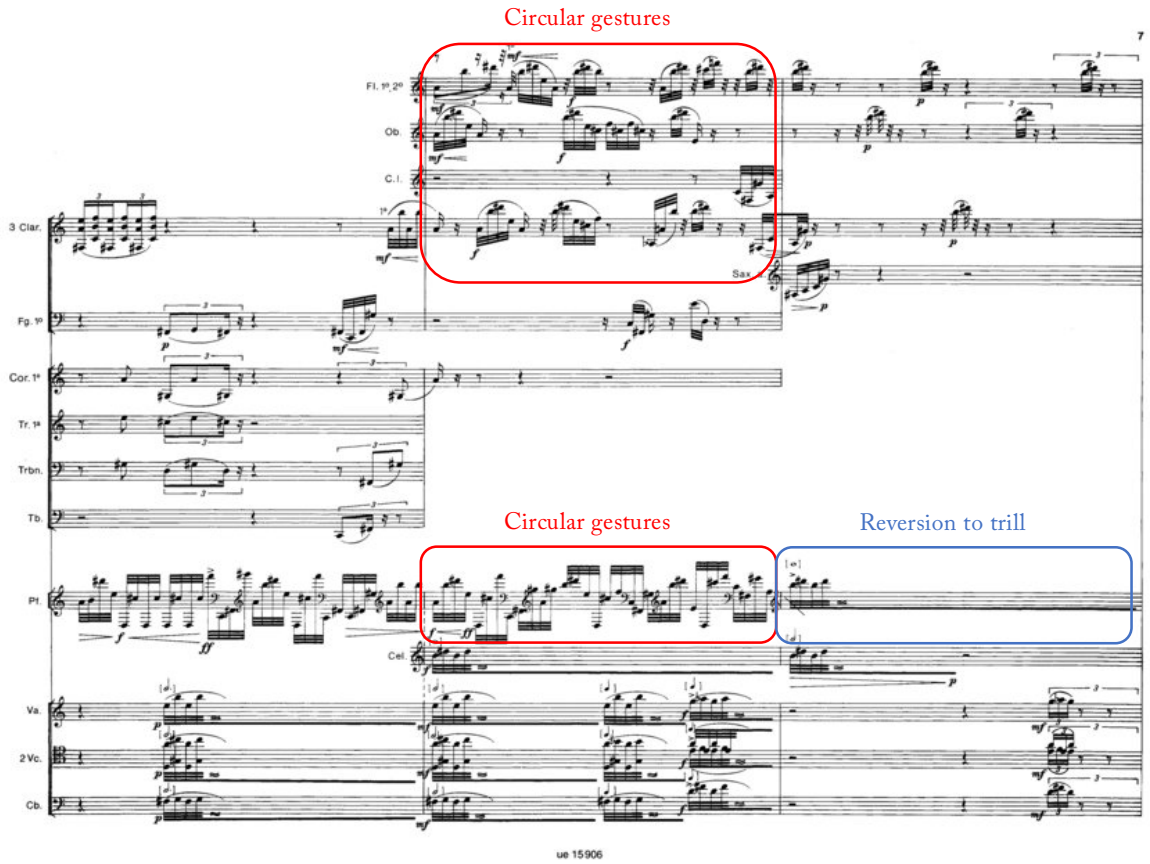

Figure 5.9: Berio, *Points on the Curve to Find…*: p. 7

This sense of circularity is not only present in small musical gestures—it also encompasses whole phrases, as in pp. 21-23 of the score, reproduced in Figures 5.10 and 5.11). On p. 21, the ensemble has reached a point of stability, with circular gestures surrounding the central trill figure in the piano. On p. 22, the ensemble as a whole sweeps downwards in register, slowing down and becoming softer at the same time. As the trombone and tuba seem to be approaching a full stop for the first time in the piece (in the first measure of p. 23), the piano begins again its process of intensification with a crescendo, and the entrance of the flute and oboe in the following measure restores the higher register, bringing us full circle once again.

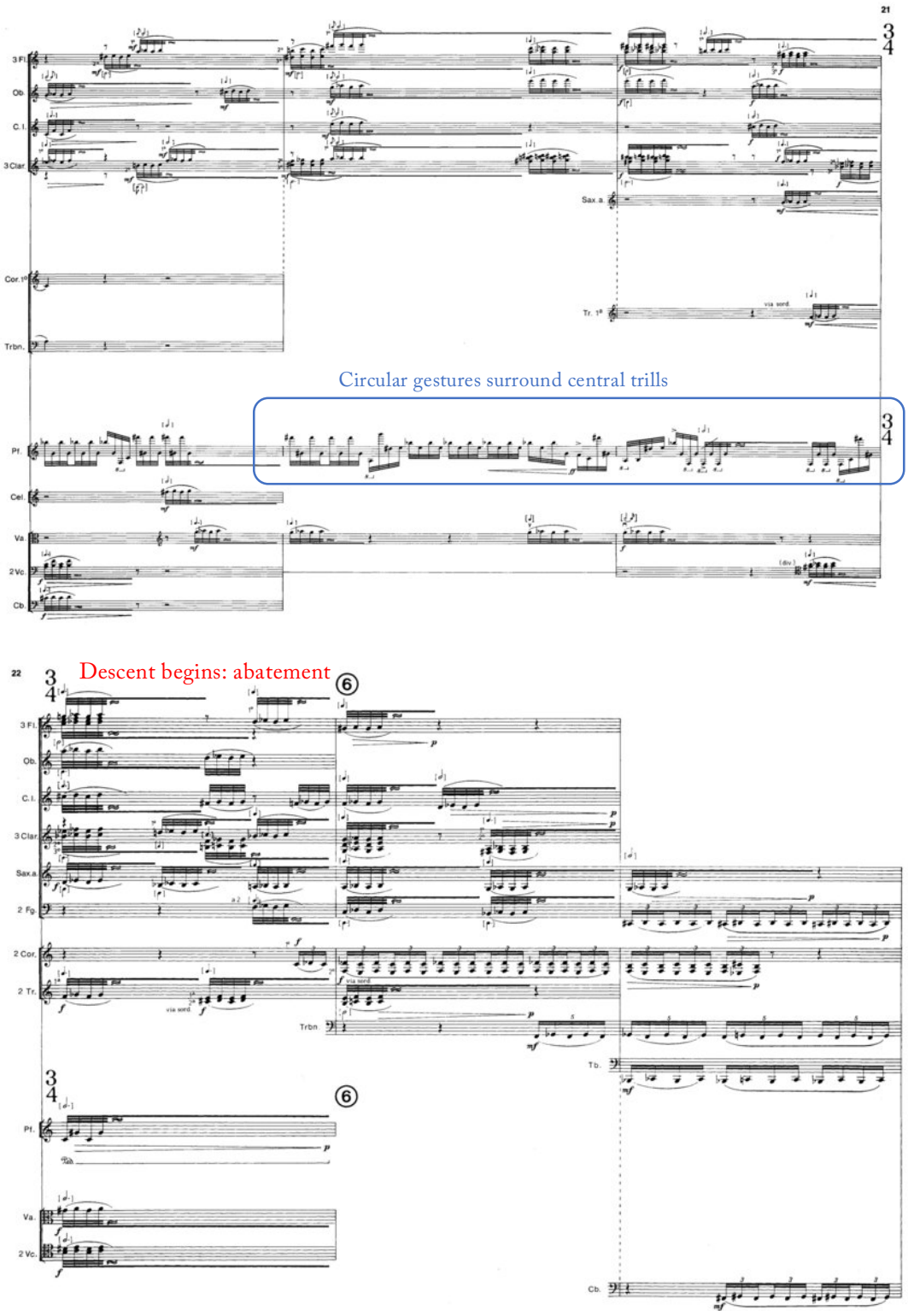

Figure 5.10: Berio, *Points on the Curve to Find…*: registral descent and written ritardando, pp. 21-22

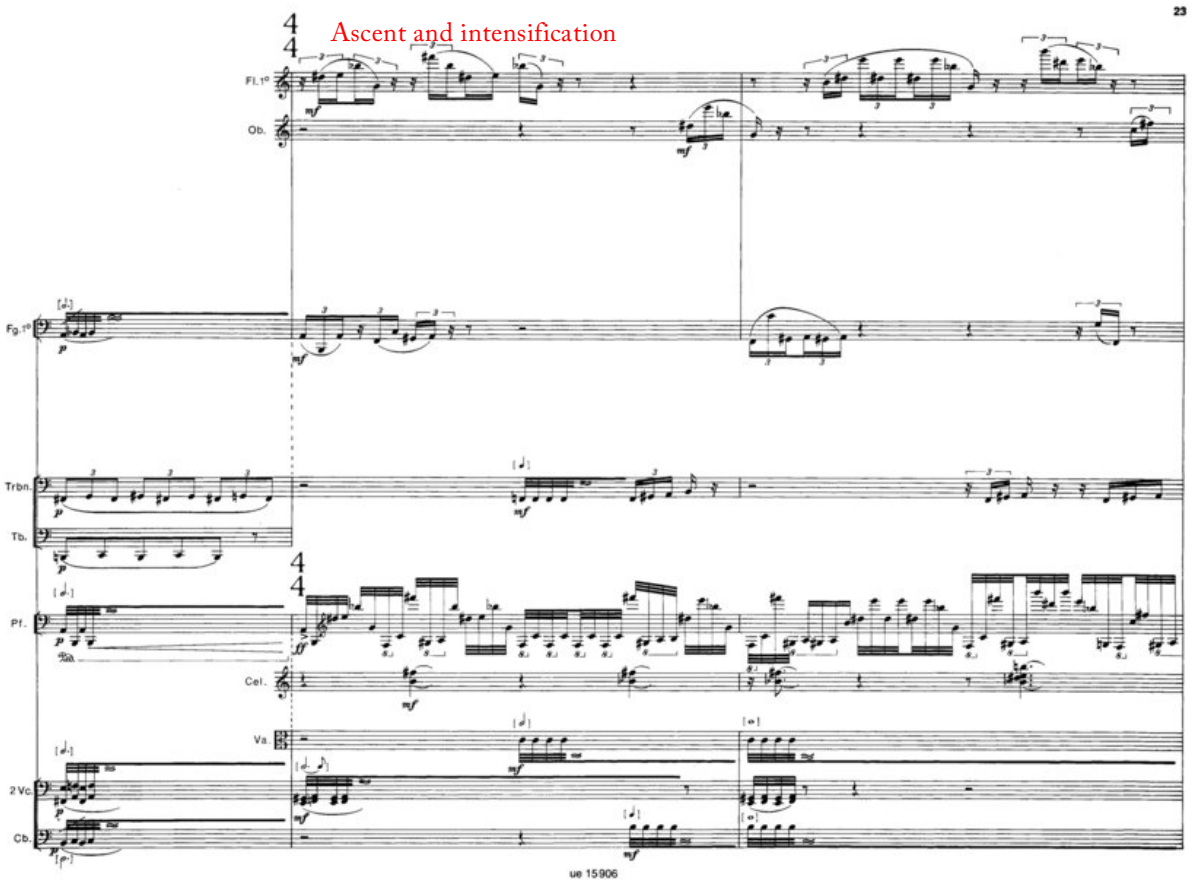

Figure 5.11: Berio, *Points on the Curve to Find…*: ascent starting in the second measure of p. 23 balances the preceding descent

5.2.3: Mirror form in *Sequenza VII* for Oboe

Berio's *Sequenza VII* for solo oboe (1969) is one of Berio's best-known compositions, and forms the basis for his *Chemins IV* for solo oboe and 11 string instruments. Famously, its entire first line consists of a single pitch: B-natural 4. The B4 is played both by the solo oboe and, throughout the entire piece, by another unspecified sound source. The oboe's B4 is colored by fingering changes (the specific fingerings are left up to the oboist and numbered 1 through 5 in

the score), articulations, and dynamics.[20] The work is written in proportional notation on a single page. For the sake of simplicity, in what follows I will refer to each of these units as a measure.

In her exploration of the work, Ivanka Stoïanova describes the *Sequenza* as presenting and resolving a particular compositional problem; that is, the "problem of the superimposition and interaction of two fundamental formal principles in musical research of the last twenty years." She continues:

> This problem involves, on one hand, the principle of directional or teleological musical narrative that keeps, though blurs, its relationship with established formal schemas, and, on the other hand, the principle of infinite proliferation that generates open and static harmonic narratives.[21]

Berio himself has described the work as seeking "a particular hierarchy of registers, that is to say a premeditated game proposing twelve notes that have defined locations: once the last of these twelve notes, G, has appeared, the piece is almost finished."[22] As Stoïanova explains, the work is based on the foundation of a "uniform and uninterrupted sound: the sound B[-natural] (H) pianissimo and with absolutely minimal modulations of intensity is present the entire length of the piece."[23] Stoïanova observes that the ever-present sounding of the B natural contributes both to the "effacement and the production of differences" with respect to the solo oboe's part.[24] With

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[20] Christopher Redgate has provided a detailed study of some of the performance issues in *Sequenza VII*, drawing on different version of the work in his analysis. Christopher Redgate, "Performing *Sequenza VII*," *Contemporary Music Review* 26, no. 2 (2007).
[21] Ivanka I. Stoïanova and Luciano L. Berio, *Luciano Berio: Chemins en Musique*, vol. 375 (Richard-Masse, 1985), 433. Translated in Nicole E. Strum, "Luciano Berio's *Sequenza VII*: Temporal Multiplicity and Alternative Conceptions of Form" (DMA thesis, The University of North Carolina at Greensboro, 2012).
[22] Stoïanova and Berio, *Luciano Berio: Chemins en Musique*, 375, 435. (translation mine)
[23] Ibid., 433. (translation mine)
[24] Ibid., 435. (translation mine)

respect to the form of the entire piece, Stoïanova argues that the macrostructure of the piece is created by one single coherent formal gesture.[25]

The pitch-class construction of *Sequenza VII* has been extensively analyzed in the scholarly literature. Figure 5.12 shows the 13-pitch fixed-register series that unfolds over the course of the piece.[26]

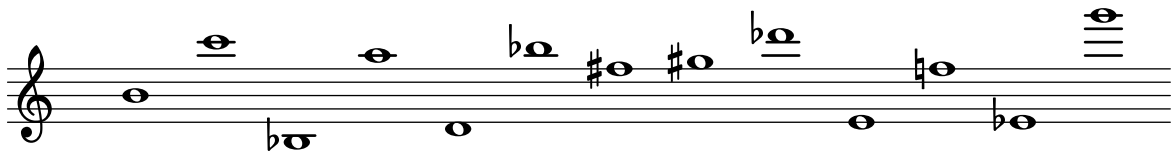

Figure 5.12: 13-pitch series of Berio, *Sequenza VII*

Other analysts have also grappled with the form of the work, largely focusing on its relationship to the serial structure and to Berio's aesthetic ideal of formal proliferation. In her 1993 dissertation, Carrie Vecchione suggests a non-symmetrical arch form for *Sequenza VII,* which "develops to achieve a climax (on g3, in Line 10) and then dissipates to return to the original pitch at the end." At the level of the piece, she identifies two sections: "the section that systematically introduces the pitches, (1,1) to (10, 9), and the section after that, (10, 10) to (13,

[25] Ibid., 433-34. "L'élaboration de la macrostructure ou de la structure formelle de la pièce dans son ensemble est soumise à un geste formel cohérent et confirme, de ce fait, le statut de l'oeuvre en tant que totalité."
[26] Jacqueline Leclair, "Luciano Berio, *Sequenza VIIa* (1969/2000) Analysis," *The Double Reed* 34 (2010); Paul Roberts, "On Luciano Berio's Sequenza VII for oboe," *Mitteilungen der Paul Sacher Stiftung*, no. 16 (2003); David Osmond-Smith, *Berio* (New York: Oxford University Press, 1991).

13). There is no discernible break between the two sections, as this would be a distraction to the 'infinite proliferation' so characteristic of the piece."[27]

Vecchione identifies (10, 10) as the start of the "coda" for compositional reasons relating to the twelve-tone procedure of the piece: "Since Berio's individual twelve-tone process involves the systematic introduction of all twelve pcs, all the material following (10, 10) (the measure after the last of the twelve pcs has been introduced) would be classified as a coda."[28]

Nicole's Strum's recent analysis goes beyond existing understandings of the *Sequenza VII*'s form as teleological and arch-shaped by pointing out that "other compositional factors may interfere with the perception of [the form], which can lead to other (simultaneous) ways to perceive and understand form."[29] Strum argues that the composition exhibits "multiple simultaneous temporal organizations that may individually be linear, partially linear, or spatial."[30] Finally, Matthew Schullman provides a detailed analysis of the surface patterning of *Sequenza VII* in his dissertation on associative formal analysis in Berio's Sequenzas.[31] Building upon these analyses of large- and small-scale form and patterns, it may be useful to consider the *Sequenza* from the perspective of formal functionality and phrase-level processes developed thus far in this dissertation.

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[27] Carrie Marie Vecchione, ""Sequenza VII" by Luciano Berio: Background, Analysis and Performance Suggestions" (DMA thesis, Louisiana State University and Agricultural & Mechanical College, 1993), 58.
[28] Ibid., 59.
[29] Strum, "Luciano Berio's *Sequenza VII*: Temporal Multiplicity and Alternative Conceptions of Form," 24.
[30] Ibid., 2.
[31] Matthew Schullman, "Rethinking Patterns: Associative Formal Analysis and Luciano Berio's Sequenzas" (PhD Thesis, Yale University, 2016).

Sequenza VII is built quite clearly around a particular pitch (B4), which acts, in time, as an inversional mirror, shaping our understanding of how pitches relate to one another within the temporal landscape of the work (Figure 5.13). For a long stretch of time at the work's opening, the listener hears only the pitch B-natural, itself reflected by its ever-present shadow, altered through dynamics, articulation markings, and five different fingerings.[32] Our first diversion from the B4 mirror comes in m. 14, with two quick leaps away from B, first to C6 (+13) and then, after briefly touching the B4 again, to B ♭ 3 (-13), creating inversional symmetry around B4 (Figure 5.14). Immediately afterwards, the oboe returns to the repeated mirror pitch.

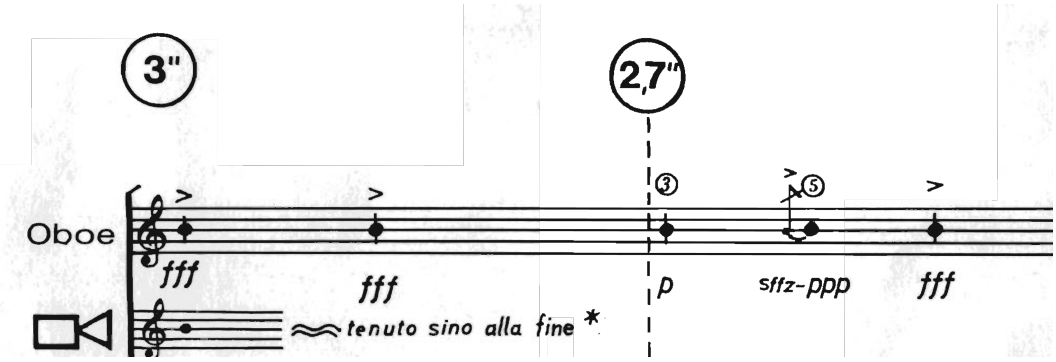

Figure 5.13: Berio, *Sequenza VII*: mm. 1-2, showing the "mirror" pitch B natural

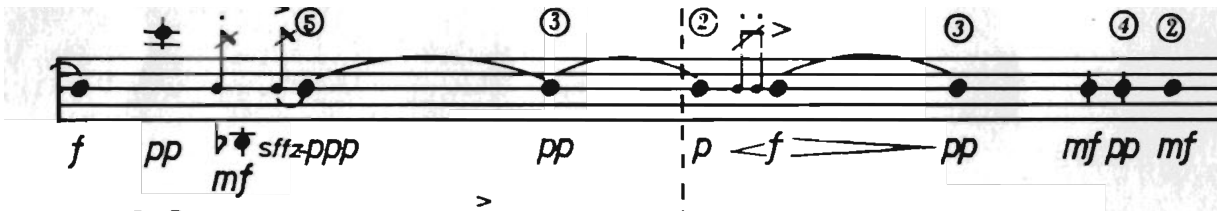

Figure 5.14: Berio, *Sequenza VII*: mm. 14-15, showing the first diversions away from the mirror pitch

[32] As Redgate notes, the specific fingers are less important than the principle of differentiation that motivates their use. Redgate, "Performing *Sequenza VII*," 221.

This early establishment of B4 as a reflective surface is then confirmed as new pitches are added to the collection, as in m. 27 for example (Figure 5.15). Each new pitch quickly returns to the original B-natural. It is important to note, though, that the B4 shown in these examples is not an unchanging, static surface against which other pitches are reflected. Although there remains a steady B4 in the background, the B4 played by the solo oboe is an active agent within the work's form. Our experience of the functionality of the oboe's B4 as a formal agent within the work is in constant flux.

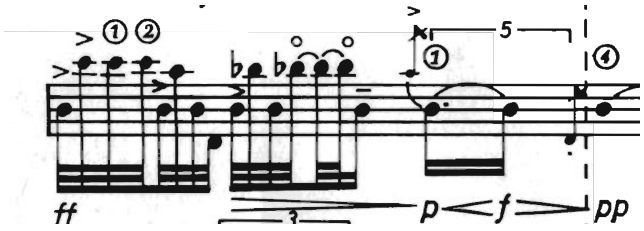

Figure 5.15: Berio, *Sequenza VII*: m. 27, showing the confirmation of B4 as mirror

Figure 5.16 shows the first six measures of the second line, where the first new pitches are added to the collection. The first ascending and descending leaps, which provide the two new pitches and which balance each other around B4, are part of a process of intensification in m. 14 (rhythmically and dynamically as well as in terms of pitch), followed by an abatement. Despite the lack of changes in pitch in mm. 15-16, the process of intensification is repeated as the oboist alternates between different fingerings of the B4, increasing in speed until halfway through m. 16. Thus, the listener may retrospectively hear the addition of the new pitches as a beginning idea, *a*, characterized by intensification through pitch. The following idea may be retrospectively understood as providing intensification through manipulation of the drone pitch; I will call this idea *b*. Finally, as we approach a moment of cadence, the intensification through pitch recurs in m. 18. This time, the oboe quickly completes one balanced gesture above and below the drone

pitch (+10, -9), followed by a repetition of the first mirrored unit (+13, -13). However, the process of abatement occurs before the descending portion of the gesture, leading to a feeling that the gesture is unbalanced in favor of the lower register. This unbalancing concludes the phrase, as the oboe returns to B4 and holds it for six seconds.

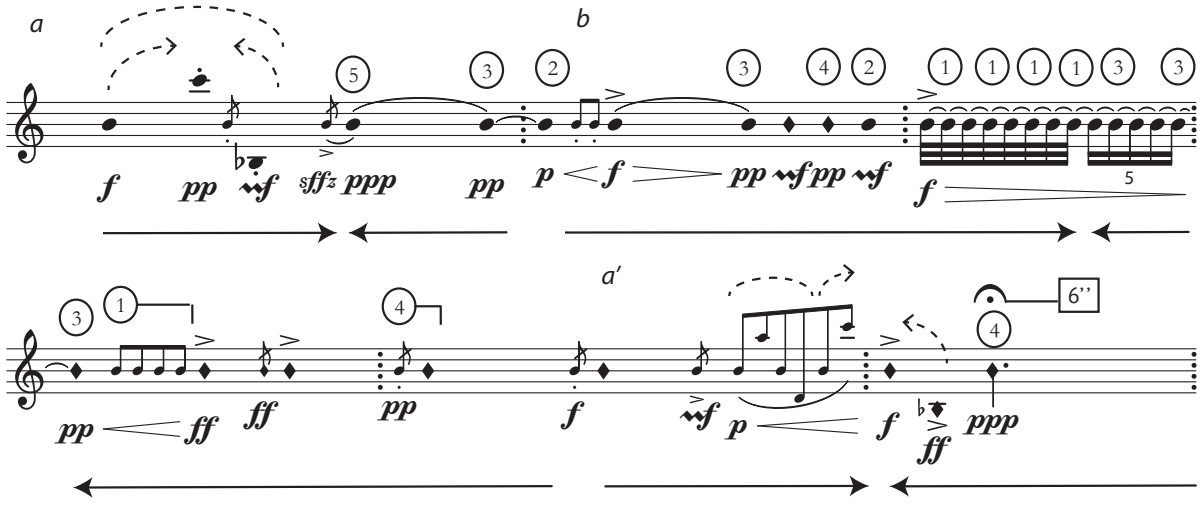

Figure 5.16: Berio, *Sequenza VII*: mm. 14-19, with dotted arrows above the staff showing ascending and descending contours and unbroken arrows below the staff showing increases and decreases in rhythmic activity.[33]

This type of phrase analysis, based as it is on the listener's developing interpretation of the persistent B-natural, can lead to a better understanding of how a listener might perceive a more complicated phrase, with more pitches added. Figure 5.17 shows the next section of *Sequenza VII*, from mm. 20-41, which expands upon the phrase structure established in mm. 14-19. It begins with a variation on unit *a*, reiterating the pitch C, which was first introduced in m. 14. After returning to rest on B4 in m. 23, the next measures significantly manipulate the drone

[33] NB: Diamond noteheads represent Berio's notation indicating that the note should be played as short as possible.

pitch by overblowing the note in mm. 25-26, which leads directly into a flurry of notes surrounding the B4 in m. 27. This intensification is followed by an abatement and return to the drone pitch in m. 28, with upper and lower added pitches again balancing each other around the central axis. It seems at first that m. 30 will instantiate a repetition of the preceding unit, but it quickly transforms into a flurry of notes surrounding B4, now trilled, and climbing up to an overblown trill on C6. The oboe then returns to the repeated drone pitch before dramatically leaping up to F#5 in m.38, treating this new pitch as a drone. Doing so significantly disrupts the previous balance around the central B4—despite the return to the mirror pitch in m. 41, the phrase still sounds registrally unbalanced, as did the preceding phrase in mm. 14-19. It seems that Berio's ending tactic for phrases involves the destabilization the mirror-relationship in *Sequenza VII*, and indeed the entire piece ends with an extended top-heavy foray into the upper register from C6 to G6. In this way, the closing strategy that Berio uses at the phrase level is reproduced at the level of the entire work.

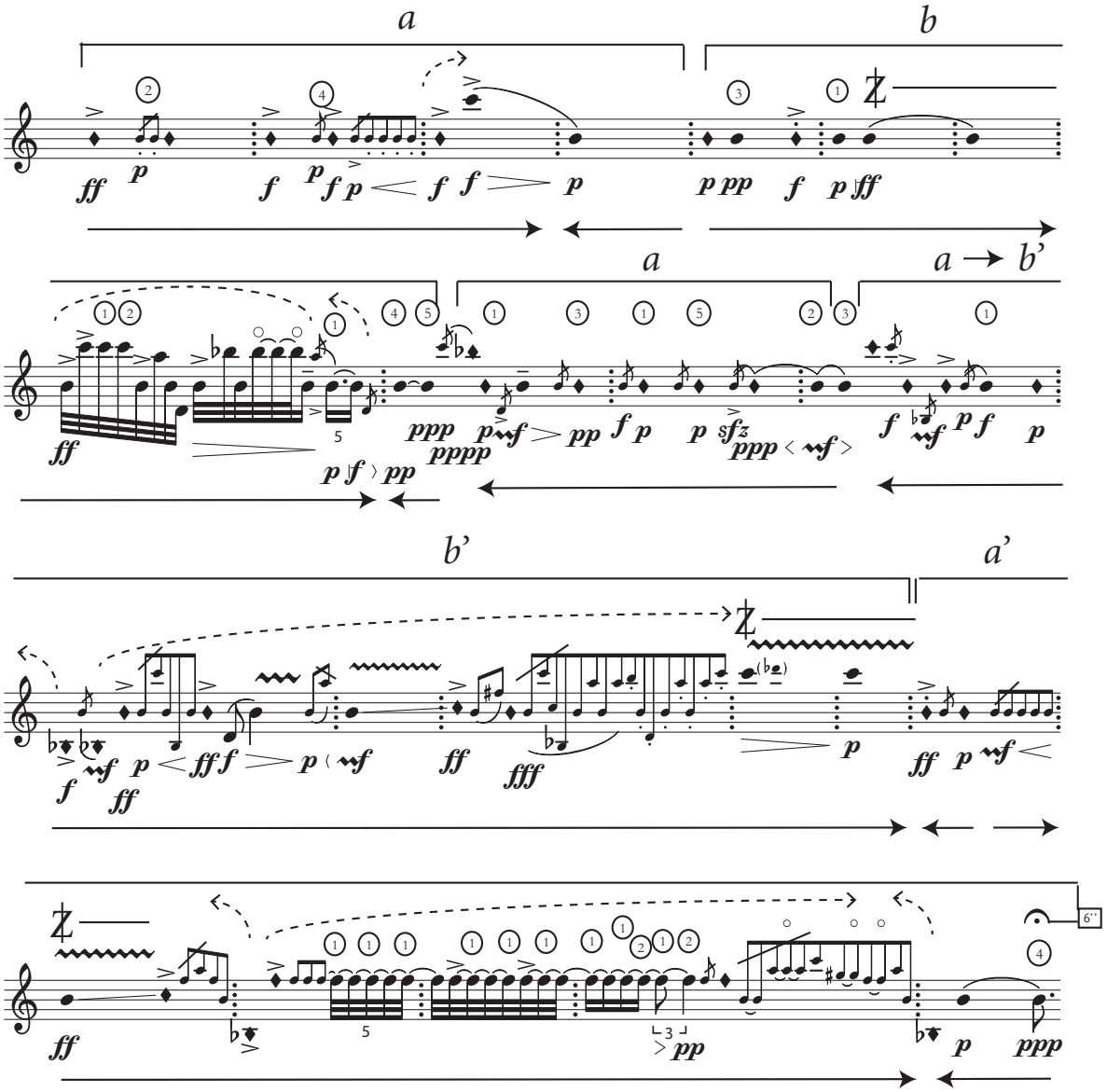

Figure 5.17: Berio, *Sequenza VII*: mm. 20-41

Nicole Strum's temporal analysis of *Sequenza VII* also centers on the symmetrical and near-symmetrical structures, noting that they "play a role in a spatial interpretation of form which is related to the perception of an atemporal temporal organization, or the idea that the whole piece can be grasped in a moment." She continues, "the presence of symmetrical and near-symmetrical structures in *Sequenza VII* directs one's attention to the vertical dimension and away

from the horizontal or linear passing of time."[34] Strum supports her analysis by showing the overall symmetrical spatial construct created by the B4 drone, arguing that one of the features of such a spatial structure is "its capacity to represent a geometric form that one can grasp in an instant" (Figure 5.18 reproduces Strum's figure 20).

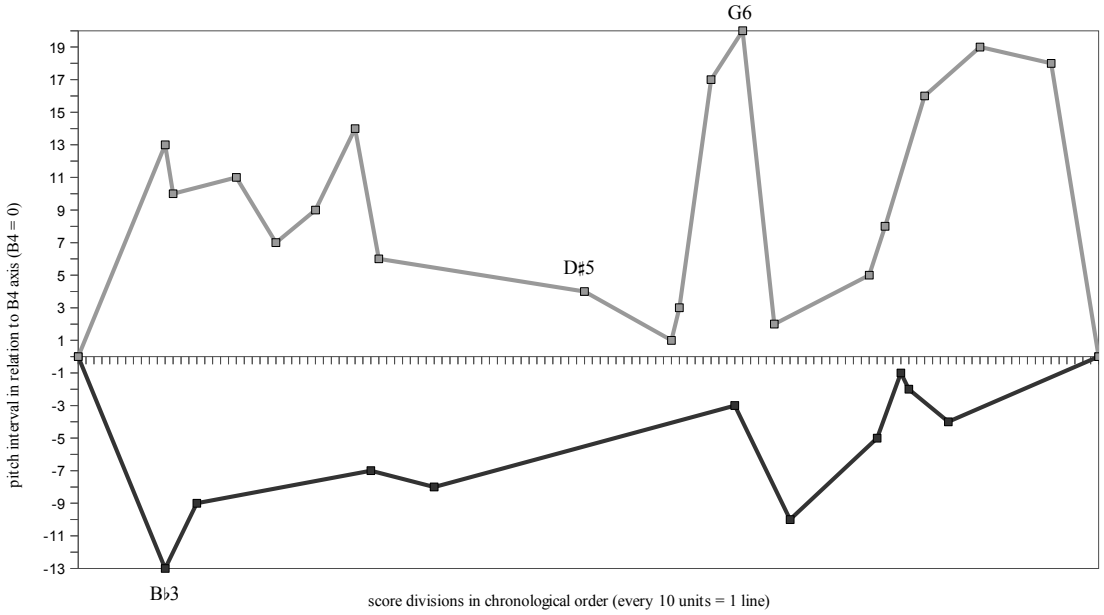

Figure 5.18: Reproduction of Strum's Figure 20 (pg. 39), showing a polyphonic spatial complex based on the entry of pitches and the B4 drone/axis.

As I have shown throughout this analysis, however, the presence of symmetrical structures also strongly impacts our hearing of formal structure *in* time. Despite the very real temptation to support Stoïanova's assertion that the work's structure can be perceived entirely at once, it remains undoubtedly true that the listener does *not* grasp the whole piece in a moment. Rather, she actively constructs the formal functionality of its constituent parts, and most importantly the B4 axis, as she encounters the work.

[34] Strum, "Luciano Berio's *Sequenza VII*: Temporal Multiplicity and Alternative Conceptions of Form," 37.

5.3: Conclusion

In this chapter, I have identified and defined three types of process-based phrase formations in Berio's compositional output. Each of these three types of phrase construction—circular, linear, and mirrored—may manifest in different ways over the course of a given work, influencing a listener's perception of the relationships between units at the level of the basic idea, phrase, and entire section. These types are meant to act as fluid analytical categories, rather than as fixed or rigid formal types. Indeed, many of Berio's compositions make use of multiple types, creating formal hybrids. One example is the Sonata for Piano (2001), which is based on the steady repetition of the pitch B ♭ . The work's first nine measures are shown in Figure 5.19.

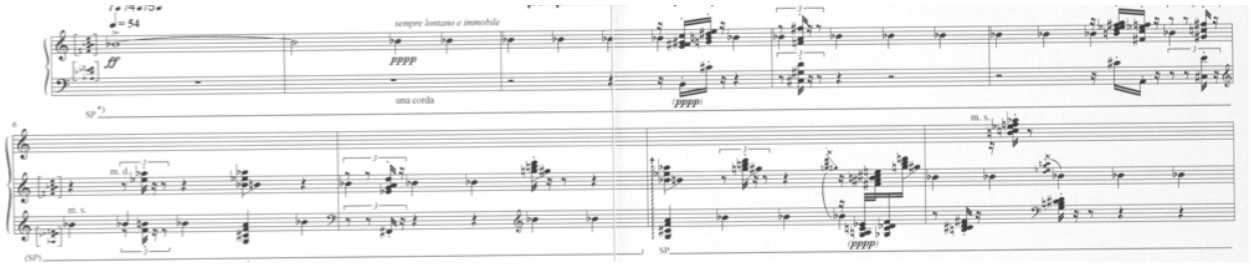

Figure 5.19: Berio, Sonata for Piano: first 9 measures, showing the constant repetition of the pitch B-flat.

It seems at first as though the Sonata for Piano is simply constructed using mirror-type phrases, where the central pitch B ♭ acts as a reflective surface against which other sounds are juxtaposed. In listening to the work, however, it becomes clear that the sonorities that enter in fits and spurts often make up circular motions. We can see this circular pattern of sonorities emerge even in the first phrase. Figure 5.20 shows mm. 3-7 of the piece, where the first new pitches outside of B ♭ enter. The arrows in the figure reveal that the first series of chords gesture upwards in an intensifying motion, the second set of chords provides a neighboring motion, and the third set of chords descends and slows down, acting to release tension. Thus, the sonata's

first phrase acts to set up both mirroring and circular phrase types—depending on the listener, she may be attending to one or both means of phrase formation at any given moment in time. These two interacting types of phrase formation may then influence the listener's understanding of how the central pitch B ♭ shapes the form of the work as a whole.

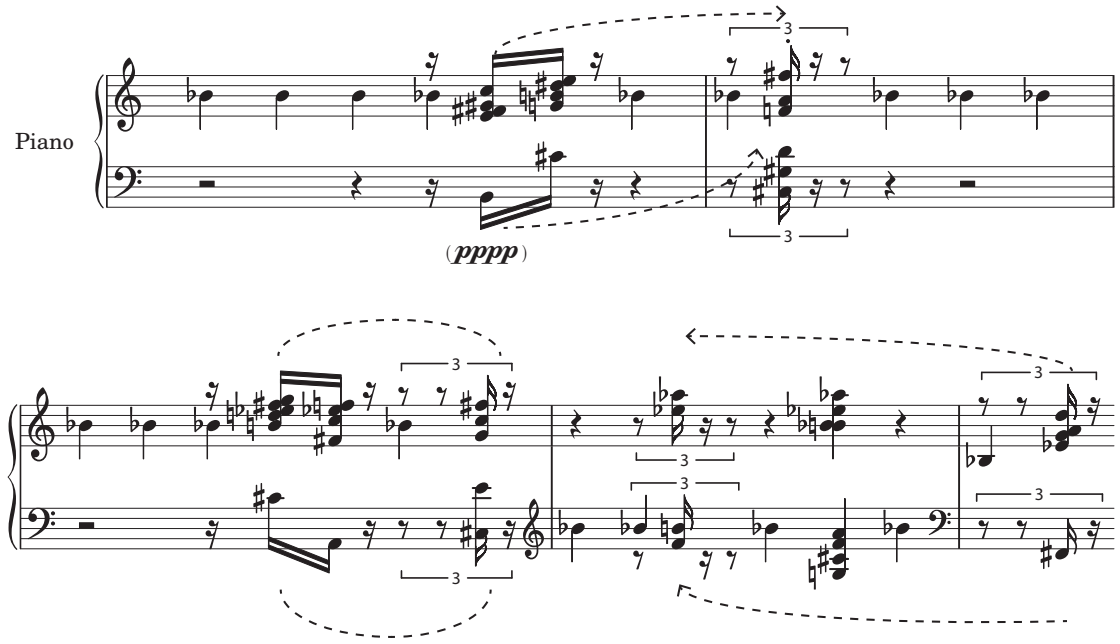

Figure 5.20: Berio, Sonata for Piano: mm. 3-7

Each of these different types of phrase construction—linear, circular, or mirrored—shapes the apprehension of form for the listener in its own way. By setting up a linear development of motives, Berio urges the listener to keep seeking newness and change, emphasizing formal divisions based on constant, gradual progress. In emphasizing circular phrase construction, Berio invites the listener to attend to points of convergence and departure. And by making use of inversional mirrors as a foundational aspect of phrase construction, Berio guides the listener to a spatial understanding of form, in which musical materials function in relation to a specific axis. Through attending to these different modes of phrase construction, we can come

to a more thorough understanding of other aspects of form in Berio's music: his means of articulating formal closure and opening (which varies based on the three types of phrase construction), and the relationships between phrases on a larger scale.

Chapter 6: Conclusion

György Ligeti's Bartók-esque first string quartet begins with a haunting upwards crawl played *sul tasto* and very quietly: the viola's chromatic ascending line is joined and overtaken by the cello and second violin before the first violin enters, without warning, with a chromatic neighbor-note melody (Figure 6.1 reproduces the work's first nineteen measures). Beneath the slightly off-kilter melody, the other three instruments continue their eternal (or perhaps infernal) climbing, until the melody is taken over by the viola and cello in counterpoint in m. 20 and the chromatic ascending line transfers to the two violins. As the work progresses, we hear the ascending chromatic line transform into a descending one—an unsurprising move given Ligeti's penchant for symmetrical constructions, as discussed by Jonathan Bernard[1]—but the chromatic crawl remains present in one form or another until the dramatic silence at m. 68 that precedes a sudden change in tempo and character (*Vivace, capriccioso*).

[1] Jonathan W. Bernard, "Inaudible Structures, Audible Music: Ligeti's Problem, and His Solution," *Music Analysis* 6, no. 3 (1987): 211-12.

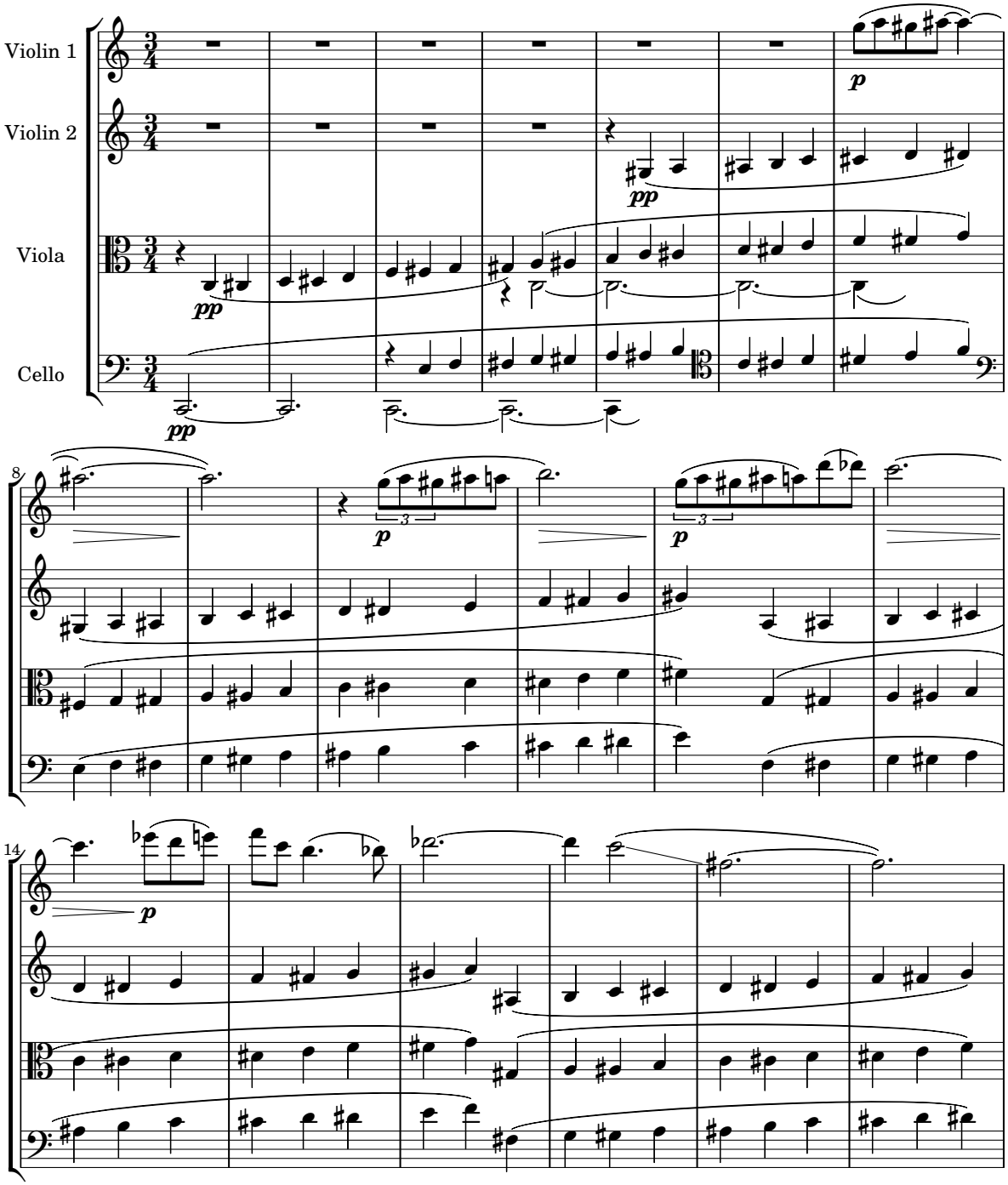

Figure 6.1: Ligeti, String Quartet No. 1, mm. 1-19

To return to a question I have asked throughout this dissertation: how might a relatively inexperienced listener—perhaps experienced with modernist music, but even one for whom this is a new repertoire—encountering this string quartet for the first or second time, make sense of the work's rather unhinged, destabilizing opening? The constant renewal of the wispy rising chromatic line, out of sync with the melody, makes it hard to hold on to any melody-accompaniment relationship. Instead, the most salient domain is the motivic variation in the first violin's melody, with its distinctive contour: an ascending whole step, descending half step, and ascending whole step, the last pitch of which is held for several beats. Figure 6.2 separates the first violin's melody from the chromatic ascending lines in the other instruments. The figure reveals a process of variation in which the first instantiation of the motive (or the basic idea) appears to begin again in m. 10; I have labeled it "b.i. repeated" to account for this feeling of renewal. After repeating the opening intervals, though, this repetition continues the established ascending chromatic pattern of the motive, before coming to rest on a shorter held note (B5) in m. 11.

In m. 12, the basic idea appears to begin again, but as I continue listening, I quickly realize that the idea has been varied sufficiently that it sounds more like a contrasting idea than a repetition of the basic idea. The descending chromatic line at the end of m. 12 seems to be the turning point here, and in the next unit, mm. 14-16, this descending gesture is expanded upon and confirmed as an independent unit. The phrase—and I think we can call it a phrase, now—closes with a descending glissando from C6 to F♯5, holding the final note until it fades away.

Thus far, my analysis of Ligeti's first string quartet appears very much in line with, say, my phrase analysis of Varèse's *Density 21.5*, from Chapter 1 of this dissertation. The reader may

be asking, indeed, why I am repeating myself with this final analysis, when I have discussed post-tonal phrase structure in great detail already, and through a great many different examples. But it is what happens next in the string quartet that interests me at the moment, after the final F♯5 of the first phrase fades away, leaving me, the listener, with expectations about the structure of the phrase to follow.

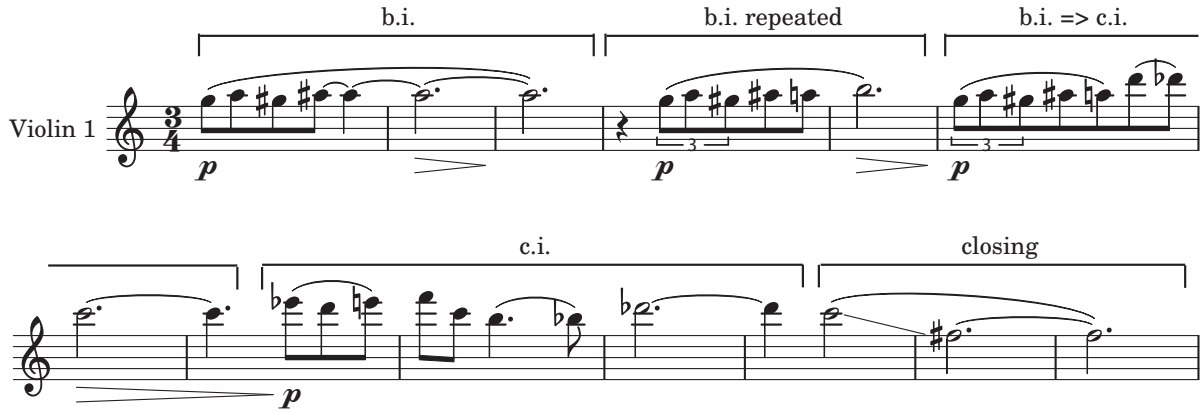

Figure 6.2: Ligeti, String Quartet No. 1, mm. 7-19 first violin only, showing phrase structure of the first violin melody

Figure 6.3 shows what happens next: the melody is transferred first to the viola, beginning on D3, which is imitated by the cello on B2 in inversion in the following measure. What Ligeti brings out at this moment is a sense of symmetry that was only latent in the first phrase, where symmetry was remarkable through its absence and the unsettling feeling of being off-balance. This asymmetry was created first by the eternally ascending chromatic scales that never lined up with the violin's (also asymmetrical) melody, and second by the asymmetrical phrase construction—the two possible interpretations of mm. 12-13, as either a basic idea or contrasting idea, cause an imbalance between the first and second half of the phrase. In writing the next phrase in imitation, inverted around an axis between C and C♯, Ligeti now turns the listener's attention towards a symmetrical—or mirror-based—type of phrase construction, of the

type discussed with respect to Berio's music in Chapter 5. This becomes a crucial marker for closure at the end of the first section, for example, when a long expanding wedge leads to closure on a perfect fifth (Figure 6.4).

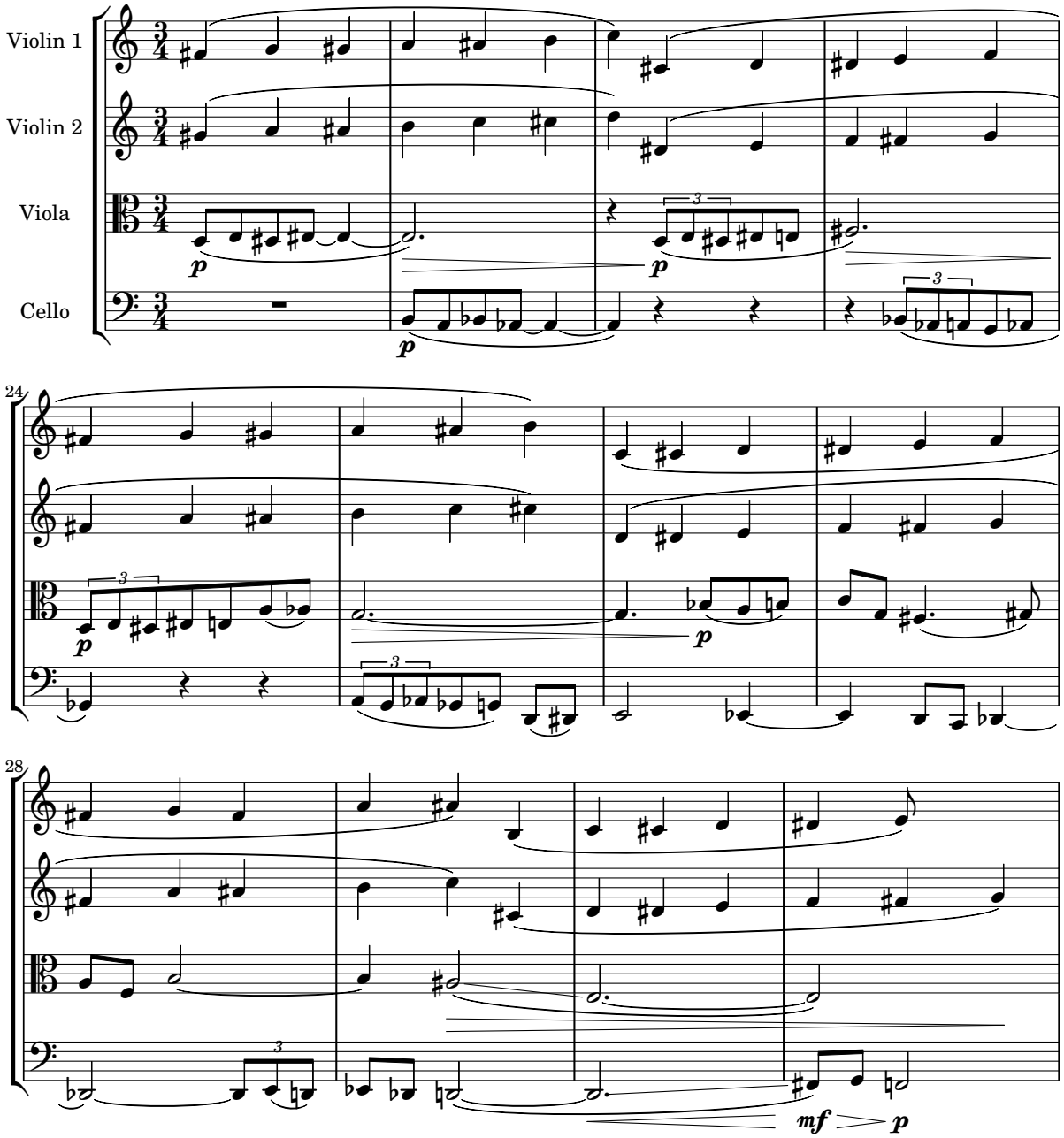

Figure 6.3: Ligeti, String Quartet No. 1, mm. 20-31

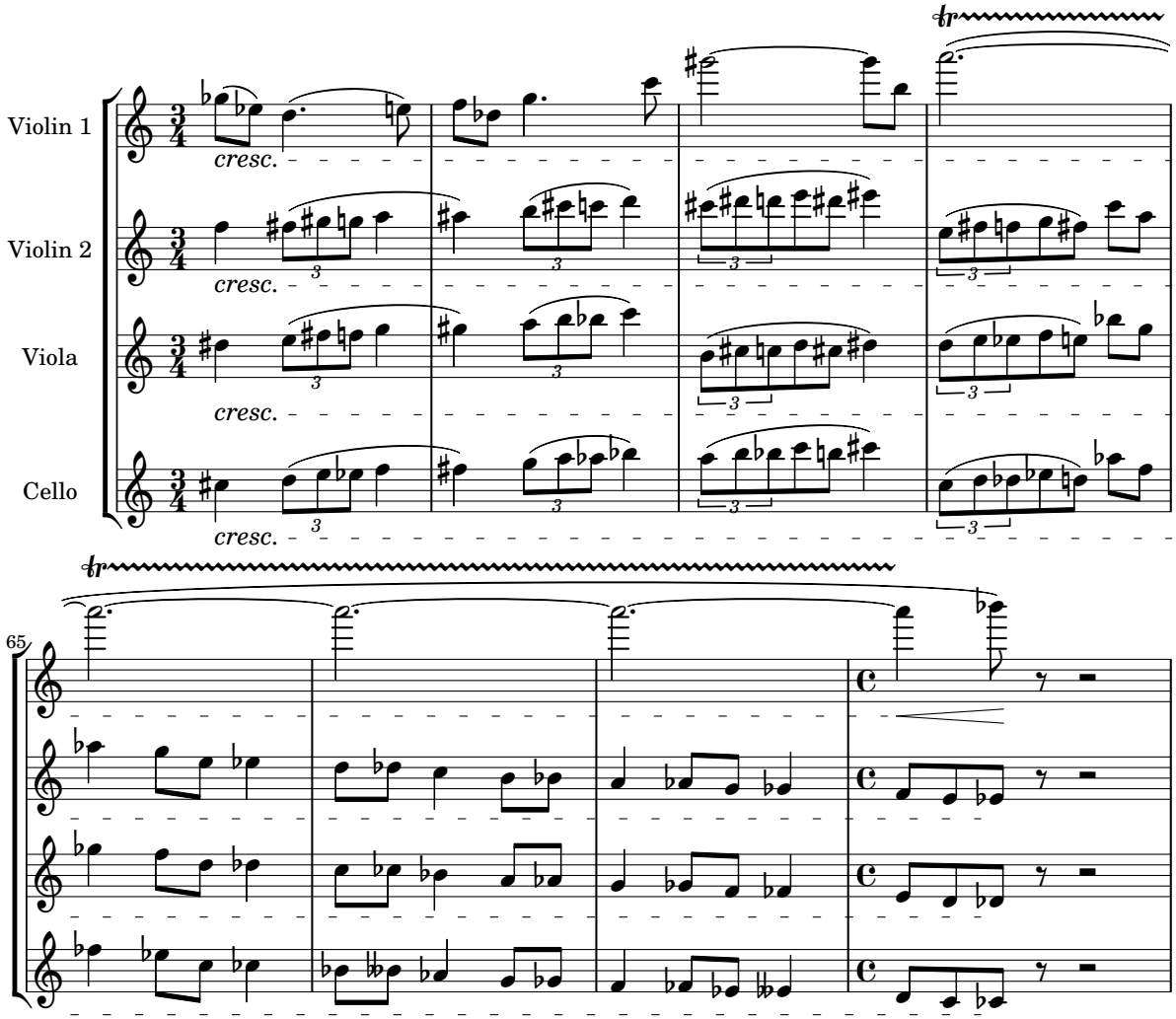

Figure 6.4: Ligeti, String Quartet No. 1, mm. 61-68

Later in this one-movement piece, the issue of mirror-based phrase construction and closure comes to a head once again. At Rehearsal I, a new, bitonal scherzo-like theme enters, marked *presto*. This theme, reproduced in Figure 6.5, has a relatively straightforward phrase structure: the basic idea (viola, mm. 243-44) is immediately repeated (bass, mm. 245-246), before a continuational phrase begins in m. 247, fragmenting the simple arpeggiated basic idea. This leads in mm. 254-55 to a bitonal cadence a semitone apart in the viola and bass. Any sense

of closure is dramatically undermined, however, by the repetition of the phrase, which begins in m. 254, played by the two violins.

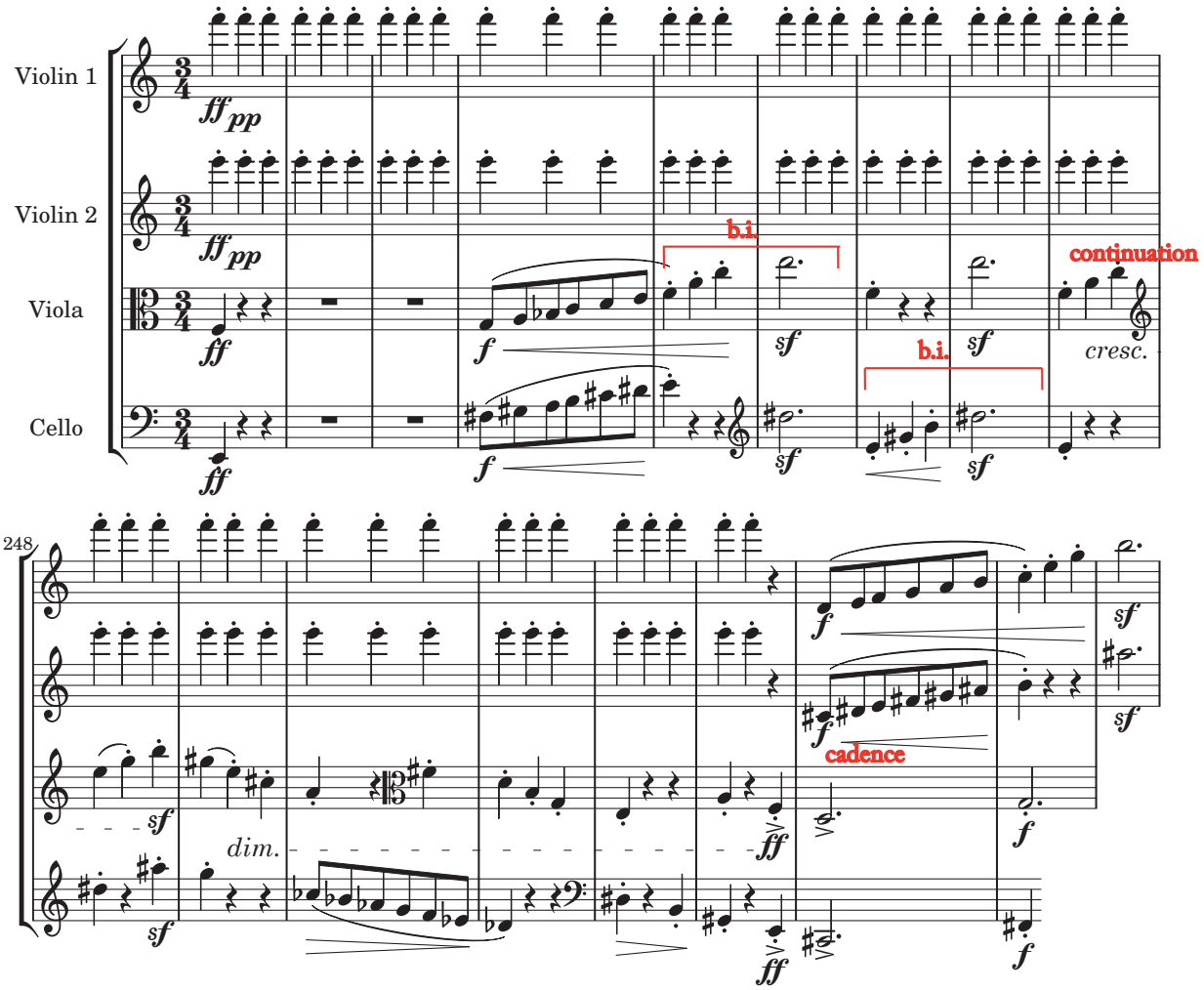

Figure 6.5: Ligeti, String Quartet No. 1, mm. 239-256

The scherzo material continues in its attempts to achieve closure from m. 276 forward by emphasizing mirror-based phrase structures and wedge-like progressions reminiscent of the one that ended the mirror-based phrase in figure 6.4. Each of these wedges ends, suddenly, in silence, before the next phrase begins. No sense of closure is achieved—despite the best efforts of the quartet, the listener remains frustrated, until in m. 340 onward, only fragments of the theme

remain, played over a soft, discomfiting quarter-tone trill in the cello. Then, in mm. 366-67: a tonal cadence in E major (figure 6.6)! Its placement here is humorous, borne as it is out of the frustration of the preceding failed attempts at closure, but the irony is that the cadence itself—whose prominent bass motion by perfect fifth is clearly related to liquidating material from earlier in the piece (mm. 93-94)—also acts to initiate the next section (figure 6.7).

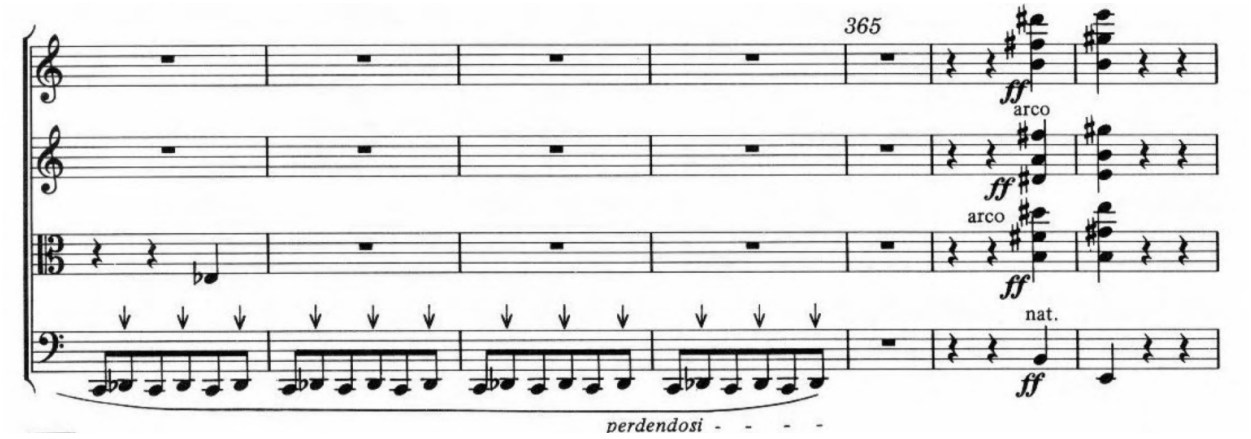

Figure 6.6: Ligeti, String Quartet No. 1, mm. 361-367

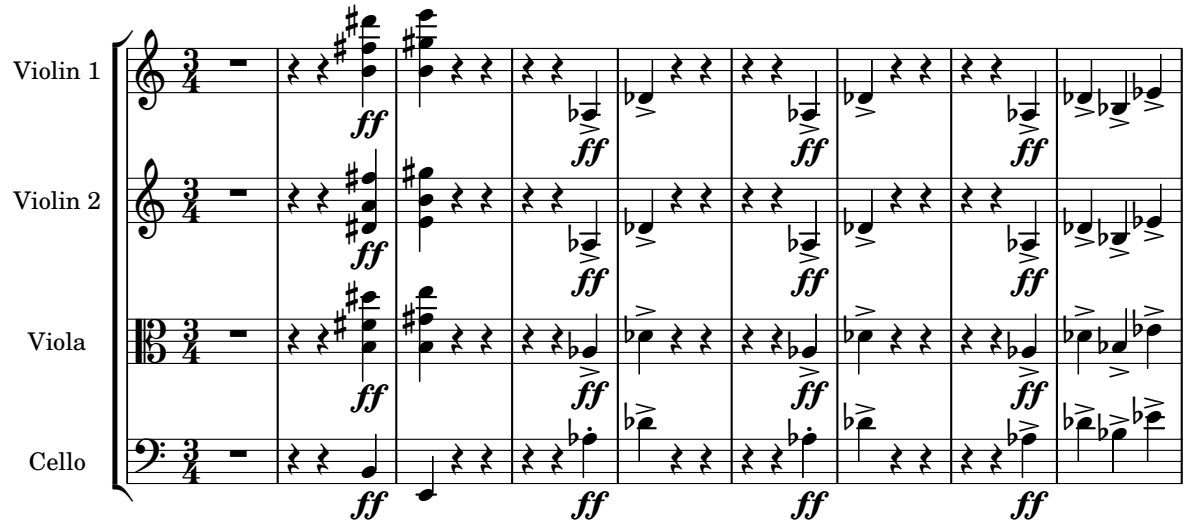

Figure 6.7: Ligeti, String Quartet No. 1, mm. 365-374

Just as in the opening of Schnittke's Viola Concerto, a focal point of Chapter 4, the tonal cadence here affords both closure (as an exhausted, last-ditch effort to close the preceding theme) and beginning. It is clear that the concepts of phrase structure, thematic design, and closure remain operative and useful for listeners of Ligeti's music, and much music of the late twentieth century. But what about music of earlier time periods? Might this listener-centered approach to formal functionality be of use when encountering works of the common-practice era?

In "The Time It Takes to Listen," Naomi Waltham-Smith uses the example of two trills and their relationship to musical closure to set out a deconstructionist theory of listening as a supplement to sound, or a "disjointed temporality that supplements that of music's sounding."[2] Waltham-Smith uses the example of a debate between Rameau and Rousseau over a trill in a phrase by Lully to argue "that the propensity for conceptual elisions around the cadence poses the risk of hearing cadences where there are none."[3] Indeed, as Waltham-Smith's Example 1 reveals (reproduced here as Figure 6.8, with the lowercase "t" beneath *puissance* representing the trill in question), there is no dominant to tonic harmonic progression in the Lully example, but for listeners (such as Rousseau), "so intimate is the connection between trill and cadence that the trill leads the ear to conjure up the progression it announces—even if it does not take place."[4]

[2] Naomi Waltham-Smith, "The Time It Takes to Listen," *Music Theory Spectrum* 39 (2017): 20.
[3] Ibid., 21.
[4] Ibid., 22.

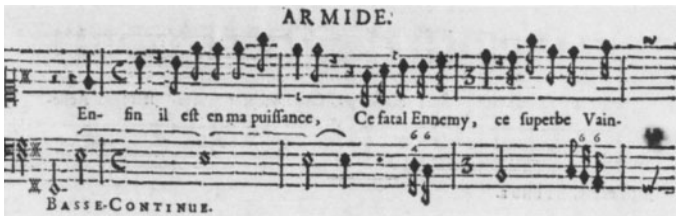

Figure 6.8: Waltham-Smith's Figure 1, showing Lully's "Enfin il est en ma puissance" from *Armide*, mm. 1-3

Waltham-Smith goes on to argue that the activity of listening—of forming expectations and anticipating what might have been—is always already inscribed in music of the common-practice period, so that the listener's cognitive processes are always anticipated.[5] But in this dissertation, I have often presented analyses that sometimes clash with what the composer may have musically "intended." I have done so in order to explicitly prioritize the multiplicity—the excess—of listener experience. Despite the constantly mutable nature of a listener's interpretation, the very act of her interpretation remains stable in relation to the ever-proliferating categories of musical genres in the late twentieth century.

In prioritizing the listener, I hope to have demonstrated the value of an analytical approach that treats listener experience itself as not only analytical, but in fact constitutive of the music's form. As Nicholas Cook has argued with respect to common-practice music, "form is defined by the listener's perceptions; it is the intentional object of the listening process."[6] More than that, I have argued throughout this dissertation that form, and more specifically formal functionality, is mutually defined by: a) the constellation of a listener's perceptions, past experiences, and projections; and b) by the affordances furnished by the musical parameters made

[5] But by whom? For Waltham-Smith, it is apparently "the music" itself that does the anticipating.
[6] Nicholas Cook, "Musical Form and the Listener," *The Journal of Aesthetics and Art Criticism* 46, no. 1 (1987): 24.

salient by the composer. This theorization of form involves a radical reconceptualization of formal function, and even of the idea of a musical work.

I have at times had to assume a mantle of naïveté in my analyses to get at this kind of listener-centered analysis, for while listener experience exists on a continuum, it also branches out. The way in which a listener may make connections and associations is decidedly messy and nonlinear, and her hearings and projections will change over time. Indeed, much of this dissertation has, at heart, been about time, and how a listener imbues the passage of time with meaning. Jonathan Kramer has proposed a postmodern conception of musical time that undergirds the one laid out in this dissertation:

> We should expect postmodern musical time to be created at least as much by listeners as by composers, to differ from one listener to another, and to be fragmented, discontinuous, nonlinear, and multiple. The notion of the multiplicity of musical time—that music can enable listeners to experience different senses of directionality, different temporal narratives, and/or different rates of motion, all *simultaneously*—is indeed postmodern.[7]

Kramer's notion that music enables listener experience appeals to me. In combination with my own theorizing of formal functionality as based on affordances, it suggests that through her encounter with a particular piece of music, and based on her particular expectations and experiences, a listener is able to shape the path of her musical understanding. Figure 6.9 provides a visualization of my theory of formal function, showing the listener and the musical object in dialogue at the moment of encounter.

[7] Jonathan Kramer, "Postmodern Concepts of Musical Time," *Indiana Theory Review* 17 (1996): 22.

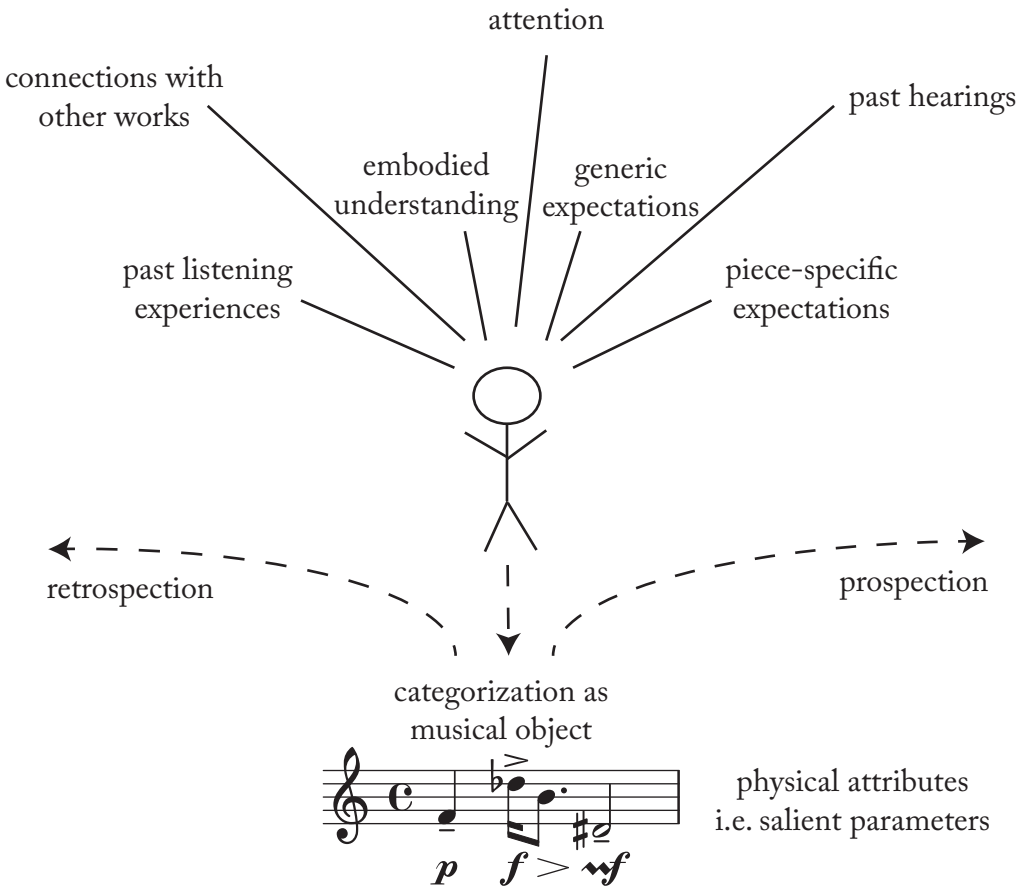

Figure 6.9: Diagram showing a listener's formal encounter with a work and the constellation of variables that influence her understanding of a specific (imagined) musical event

The rich, messy, *excessive* model of formal function shown in Figure 6.9 could indeed prove to be valuable for the analysis of earlier music. Whereas this analytical model offers the realm of post-tonal theory a means of accounting for continuity in listener experience over discontinuity in compositional scaffolding, however, it offers tonal theory a richer understanding of the multiplicity of affordances of particular musical objects—for example, a cadential trill. Just as the tonal cadences in Schnittke's music led to a rupture between cadential content and function, so too, for example, do the "initial cadences" that James Webster identifies at the

opening of the Adagio at the end of Haydn's "Farewell" Symphony (Figure 6.10).[8] In Caplin's analysis of the passage, he insists that the first of these units is *not* a cadence:

> These measures function as an initiating unit (a basic idea), to which measures 3–4 could be seen as effecting cadential closure (by means of an imperfect authentic cadence). To call the opening unit "a cadence" that is immediately followed by another "cadence" misses the opportunity of making finer experiential distinctions.

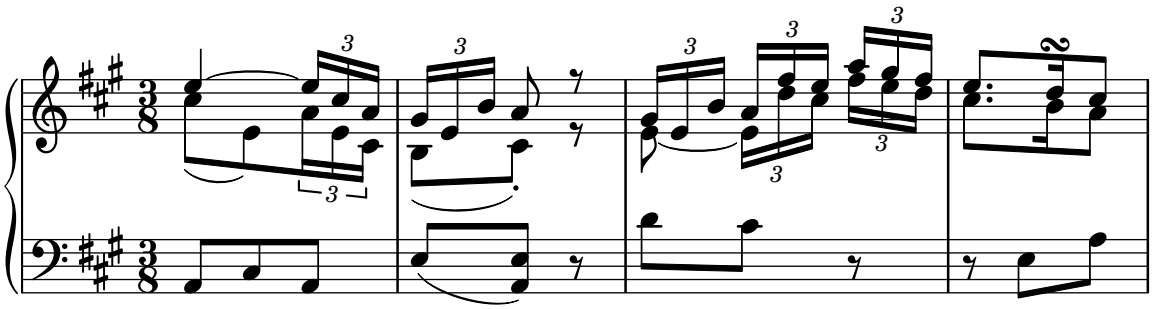

Figure 6.10: Haydn, Symphony No. 45 in F♯ Minor ("Farewell"), Adagio, mm. 1-14

I would like to argue, however, that rather than missing an opportunity for understanding musical experience, calling the opening unit a cadence in fact opens up a world of potential associations for the listener, the consequences of which may resonate throughout her experience of the rest of the symphony. In fact, the experience of these first two measures as cadential may even be heightened by the fact that the preceding Presto ends with a prolongation of the dominant and an anticipatory silence, leading the listener to form an expectation for closure. The cadential harmonic progression that opens the Adagio does not fulfill that expectation completely—since it takes place in the relative major, A—but it does, at the very least, provide a moment of formal uncertainty for the listener, and that uncertainty itself is valuable. Allowing

[8] James Webster, *Haydn's "Farewell" Symphony and the Idea of Classical Style: Through-Composition and Cyclic Integration in His Instrumental Music* (Cambridge: Cambridge University Press, 1991), 75.

oneself to experience this uncertainty—in all its formal messiness—and indeed, to account for it in an interpretation, in fact *provides* the analyst with opportunities, rather than curtailing them. Calling this moment in the Farewell Symphony a cadence points to its formal affordances, and thus to the complex network of beliefs and experiences with which a listener shapes the form of a musical work. By explicitly calling attention to the affordances of moments such as these, and by allowing the formal paths that we imagine to proliferate and flourish, we may come to a better understanding of what it means to hear formally—in post-tonal music and beyond.

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