Transformed Triadic Networks: Hearing Harmonic Closure in Prokofiev, Copland, and Poulenc

by

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Glossary

The following are a list of symbols and abbreviations used in this dissertation:

Lm2	Triad built a minor second below the tonic
Um2	Triad built a minor second above the tonic
LM2	Triad built a major second below the tonic
UM2	Triad built a major second above the tonic
LM3	Triad built a major third below the tonic
UM3	Triad built a major third above the tonic
[ ]	Set class. Represents the prime form for all pitch class sets that are related by a combination of transposition and/or inversion.
( )	Transposition class. Represents the prime form for all pitch class sets that are related by transposition.
{ }	Unordered collection of pitches or pitch classes.
< >	Ordered collection of pitches, pitch classes, intervals, or scale degrees
m.	Measure number
mm.	Measures

Abstract

This dissertation presents a methodology for hearing closing progressions in neo-tonal music—that is, music from the first part of the twentieth century that expands the tonal system in ways that are currently not well accounted for by received theories of tonal analysis. Neo-tonal composers display a diversity of types of progressions that indicate arrival on the tonic. In Chapter 1, I argue that these progressions are tonal despite their deviance from common practice, because tonality is not a closed system of interdependent elements, but a cluster of related concepts that can undergo transformation. I define closing progressions in terms of privileged root relations and idiomatic voice-leading patterns, and outline transformations of these features that frequently appear in neo-tonal works. The transformations include changing the privileged root relation from a fifth to a semitone, whole tone, or major third; and reversing the privileged root motion (creating a plagal as opposed to authentic system).

The next three chapters examine how these transformations create closing progressions in music by three neo-tonal composers. Chapter 2 shows that semitone-related triads create closure in select works by Sergei Prokofiev. Chapter 3 defines an "orientational axis" for the music of Aaron Copland, which is created through a duality between two different types of closing progression: one involves root motion

by ascending whole tone, the other root motion by fifth. Chapter 4 argues that Poulenc's late music often exploits the ambiguity of major-third related minor triads, which are able to provide closure or create transpositional sequences.

Chapter 5 shows that previous theories of twentieth-century tonality adumbrate aspects of the transformational system used in this dissertation. It argues that many neo-tonal pieces thematize alternate closing progressions and are best served by an analytical method that models them directly.

Chapter 1

Transformed Triadic Networks as a Model for Neo-Tonal Harmonic Closure

1. The Problem of Irregular Closure

Figure 1.1. Ludwig van Beethoven, Serenade for String Trio, op. 8, Scherzo (1796).

Figure 1.1 reproduces the first eight measures of the scherzo movement of Beethoven's Serenade for String Trio, op. 8, written in 1796. The excerpt provides an example of cadential progressions that are typical in the classical period. The theme uses an antecedent–consequent construction. The first phrase ends with a secondary arrival on V at m. 4: this arrival is preceded by its own dominant, so that the chord temporarily acts as tonic. The second phrase ends in measures 7 to 8 with a ii$^6_5$–V–I progression that reconfirms D major as the tonic. This final cadence serves formal, tonal, and prototypical functions. It signifies that the opening theme has reached its close. The entire excerpt can clearly be heard within the overarching key of D major; the final cadential progression confirms this impression. Finally, the cadence serves as a prototype for larger harmonic progressions stated over the theme. The two most important chords in the progression over measures 7–8 are the final two; namely, V and I. These two chords are also the goals of the first and second phrases. In an unapologetic display of musical unsubtlety, the cello part highlights the large-scale connection between these two chords by playing them loudly at the end of each phrase.

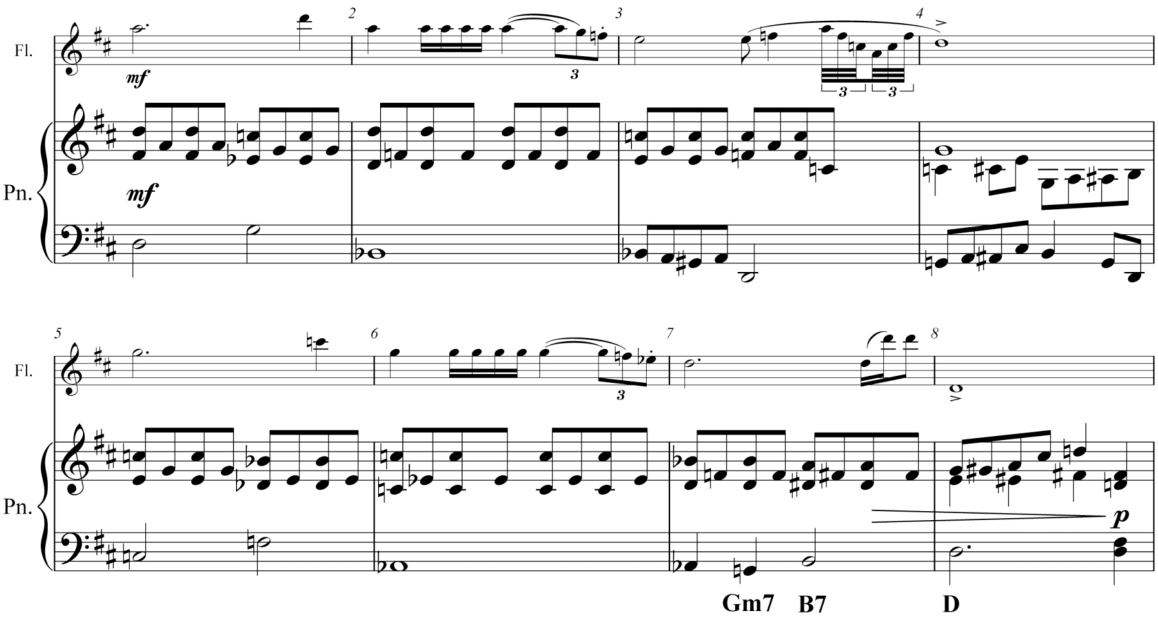

Figure 1.2. Prokofiev, Sonata for Flute (or Violin) and Piano, op. 94 (1943).

By contrast, consider Figure 1.2, which reproduces the first eight measures of the Sonata for Flute (or Violin) and Piano, op. 94, a work that Sergei Prokofiev wrote in 1943. The excerpt shares many features with the Beethoven string trio: it is in the same key and follows a nearly identical periodic phrase design. Measures 1–4 form an antecedent that ends with a secondary arrival on a non-tonic harmony; the second four measures form a consequent. The phrase sounds as if it is in D major: it begins and ends with a D-major triad, the melodic line traces the fifth and root of the same triad in the first two measures, and the melody ends on the root of the same triad. These musical features make it possible, even desirable, to hear a cadential progression over mm. 7–8 that affirms D major as the tonic. The progression, however, does not conform to common practice. It traces a G minor seventh, a B dominant seventh, and a D-major triad (which is embellished by several ascending chromatic passing notes). As a cadential progression, it violates the rules of syntax that informed our hearing of the Beethoven excerpt. If the music is "in D major," it is in an uncanny sort of D major, one that invokes and then defamiliarizes elements of the tonal system. Can we hear the progression over mm. 7–8 as a harmonic close, and if so, how must we redefine the concept of "closing progression"? What would this redefinition imply about tonality?

2. Definition and Historical Background of Neo-tonality

My dissertation offers a methodology for answering these two questions and examining closing progressions in twentieth-century music. I take closing progressions as a topical point of departure because they touch upon central issues underlying composers' efforts towards a renewed, twentieth-century tonality. Analysts and critics today often use the term "neo-tonal" to describe music by twentieth-century composers such as Sergei Rachmaninov, Sergei Prokofiev, Francis Poulenc, Aaron Copland, Paul Hindemith, and Stravinsky during his neo-classical period, which continues and finds new uses for elements of the tonal system.[1] An oft-told narrative about modernism

[1] *Grove's Dictionary of Music Online* [grovemusic.com; accessed 18 April 2010] uses the word "neo-tonal"

during the first half of the twentieth century describes how composers gradually overthrew systems of musical organization that were foundational to tonality; for example, Ernst Krenek's book *Music Here and Now* (1939) stated that serialism was the only possible teleological end of musical development, and René Leibowitz's *Schoenberg and His School* (1949) asserted that music was in a "historic moment" in which tonality would be suspended, just as it had abrogated the modal system around

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in descriptions of the style of thirteen different composers: Kari Rydman, Lorenzo Ferrero, António Pinho Vargas, Andrew P. MacDonald, Otto M. Zykan, Alavaro Cassuto, Mauricio Kagel, Gerard Victory, Tilo Medek, Philippe Boesmans, Priauix Rainier, Boris Porena, and Kurt Schwertsik. These composers were largely active after 1960, so that the term refers specifically to the revival of tonality after widespread use of serial techniques in the 1950s and 1960s. The word has also appeared in recent dissertations to describe music from the early twentieth century. In "Neighbor Spaces: A Theory of Harmonic Embellishment for Twentieth-Century Neotonal Music" (Ph.D. dissertation, Eastman University, 2006) and "Analyzing Tonal Embellishment in Post-Tonal Music," in Jack Boss and Bruce Quaglia, eds., *Musical Currents from the Left Coast* (Newcastle upon Tyne: Cambridge Scholar's Publishing, 2008), 155–173, Peter Silberman defines it as the use of both tonal and atonal compositional devices. Richard Hermann adopts a similar position in "Thoughts on Voice-leading and Set Theory in "Neo-Tonal" Works: The 'Hymne' from Stravinsky's *Sérénade en la*," *Theory and Practice* 12 (1987): 27–54. He points out that many analytical approaches to neo-tonal music in that decade attempt to fuse set-theoretic and Schenkerian approaches. In Hermann's estimation, neo-tonality is characterized by a "non-permutational pitch structure, a 'referential' pc [pitch class], a 'referential' set-class and 'home key' pcs."

Daniel Zimmerman reviews several definitions of the term "neo-tonality," and finally decides on a *negative* definition: that of avoidance of pitch-class sets that contain clusters of two or more semitones ("Families without Clusters in the Early Works of Sergei Prokofiev" [Ph.D. dissertation, University of Chicago, 2002]). Earlier writers, such as Arthur Berger, Elliott Antokoletz and Joseph Straus, use the term "centric" to describe many pieces that would now be called neo-tonal. The concept implies a narrower focus on the examine of devices, which do not necessarily have a relation to tonal practice, that privilege the status of a single pitch, pitch class, or pitch-class collection (Elliott Antokoletz, *The Music of Béla Bartók: A Study of Tonality and Progression in Twentieth-Century Music* [Berkeley: University of California Press, 1984]; and Joseph Straus, *Introduction to Post-Tonal Theory* [Upper Saddle River, NJ: Prentice Hall, 2000]). In practice, however, the concerns of writers speaking about centricity have a large degree of overlap with those of neo-tonality. This is the case with Joseph Straus's discussion of the topic, as well as Arthur Berger in his seminal article "Problems of Pitch Organization in Stravinsky," *Perspectives of New Music* 2, no. 1 (Autumn 1963): 11–42.

1600.[2] The term "neo-tonal" suggests a line of musical development that directly challenges this narrative, and indeed, many neo-tonal composers themselves articulated an aesthetic position in direct response to statements by practitioners of 12-note serialism. Naturally, they bristled at the charges of epigonism that were implicit in Krenek's and Leibowitz's writings, and asserted instead that tonality remained a viable system in which to compose and was in no way inimical to modernism.[3] Some composers took an even more extreme position, claiming that tonality is inexorably grounded in *any* musical system, and therefore every piece, *nolens volens*, contains a single tonic.[4] Paul

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[2] Ernst Krenek, *Music Here and Now* (New York: Norton, 1939); and René Leibowitz, trans. Dika Newlin, *Schoenberg and His School* (1949; reprint, New York: Da Capo, 1970), 74.

[3] Poulenc wrote his essay "In Defense of Banality" in response to Ernst Krenek's book *Music Here and Now*. Krenek suggests that 12-note serialism represented the only teleological end of musical development in the twentieth century. Needless to say, Poulenc objected to this notion, although it should be noted that he also deeply admired Second Viennese composers, especially Berg. Robert Orledge discusses the exchange between these composers in "Poulenc and Koechlin," in Buckland, Sidney and Myriam Chimènes, ed., *Francis Poulenc: Music, Art, and Literature* (Brookfield, VT: Ashgate, 1999), 9–37. Copland also responds to Krenek in a footnote in his book *Our New Music: Leading Composers in Europe and America* (New York: McGraw-Hill, 1941), 55. Copland responds to René Leibowitz's book on Schoenberg, which makes a similar claim about 12-note serialism, in a *New York Times Book Review* article "On A-Tonal [sic] Music" (27 November 1949). Copland's interviews with Vivian Perlis reveal a cooler attitude toward the Second Viennese School than that of Poulenc, and he singles out the "Weltschmerz-y" quality of Schoenberg's music as a sign of backwardness (*Composers' Voices from Ives to Ellington*, ed. and comp. Vivian Perlis and Libby Van Cleve [New Haven: Yale University Press, 2005], 311). Copland does, however, give Schoenberg his due attention in his book *The New Music 1900–1960.* Hindemith apparently was an advocate of Schoenberg in his early career, but criticized Schoenberg's serial technique because it constrained compositional invention and the ability to create form (David Neumeyer and Giselher Schubert, "Arnold Schoenberg and Paul Hindemith," *Journal of the Arnold Schoenberg Institute* 13, no. 1 [June 1990]: 3–46). Hindemith also makes an implicit attack on Schoenberg's concept of "emancipation of dissonance" in *The Craft of Musical Composition, Book I: Theory* (New York: Schott, 1942), since it is impossible, he believes, to create a set of pitches that do *not* relate to a tonal center.

[4] For examples of this "tonal inexorability" view, see Béla Bartók, "Harvard Lectures," in *Béla Bartók Essays*, selected and ed. Benjamin Suchoff (London: Faber, 1976), 354–392; and Paul Hindemith, *The Craft of Music Composition, Book I: Theory*, trans. Arthur Mendel (New York: Schott, 1942).

Hindemith demonstrated this belief quite dramatically when he subjected a twelve-tone work, Schoenberg's *Klavierstück* op. 33a, to his method of analysis in order to show how sequences of events are grouped around tonal centers.[5]

Although neo-tonal composers considered their writing to be in a tonal language, their music differs markedly from tonal music of the previous two centuries. How can we account for such differences? In *Introduction to Post-Tonal Theory,* Joseph Straus outlines one approach to answering this question. He defines tonality through six mutually reinforcing characteristics—key center, key relations, diatonic scales, the triad as a referential sonority, functional harmony, and rules of voice leading—and examines how these characteristics appear in twentieth-century post-tonal music, although they may do so "in nontraditional ways."[6] Many recent studies of neo-tonality flesh out Straus's concept: they explore how specific characteristics of tonality reappear, in transformed instantiation, in music from the twentieth century. Daniel Zimmerman suggests that neo-tonality can be defined as an avoidance of surface dissonance. This dissonance avoidance has parallels to the use of diatonic collections, triads, and careful dissonance treatment in earlier tonality. Zimmerman maps all possible non-dissonant collections by defining the scales that can be made with the rule that they do not contain any chromatic clusters, and he examines Prokofiev's strategies for using and creating

[5] Paul Hindemith, *The Craft of Music Composition: Book I: Theory*, Translated by Arthur Mendel (New York: Schott, 1942), 217–219.

[6] Joseph Straus, "Centricity, Referential Collections, and Triadic Post-Tonality," Chapter 4 in *Introduction to Post-Tonal Theory*, 3rd ed. (Upper Saddle River, New Jersey: Prentice Hall, 2005), 130.

transitions among these collections in his early compositions.[7] Daniel Harrison's study of overtonality provides expanded notions of consonance, suggesting that neo-tonal composers discovered a broader possible palette of sonorities that still contain the stability and consonance requisite for asserting a tonic function. Peter Silberman's theory of neighbor spaces provides a series of preference rules for defining a referential sonority for a passage, and models the relation between referential and embellishing sonorities.[8] Other elements of tonality, such as phrase design, also reappear in neo-tonal music. Avo Somer, for example, has examined how Debussy's late sonatas reference and then open classical theme types as described by William Caplin.[9] Since twentieth-century post-tonal music does not display all six of these characteristics, it is not tonal in Straus's estimation; instead, it has "a clear connection to common-practice tonality without actually being tonal, strictly speaking."[10]

Straus's approach, reasonable as it is, relies on the assertion that tonality is what linguist George Lakoff calls a "classical" category—that is, it is based on *necessary* and

[7] Daniel Zimmerman, "Families without Clusters in the Early Works of Sergei Prokofiev" (Ph.D. dissertation, University of Chicago, 2002), 2–4. The cluster is defined as any three notes separated by semitone; that is, set-class [012]. The collection-classes without clusters are octatonic, harmonic, acoustic, diatonic, hexatonic, and whole-tone. Several authors before Zimmerman have also explored the properties of these collections, including Dmitri Tymoczko and Jeff Pressing. Tymoczko places all of these scales into a network in "Scale Networks in Debussy," *Journal of Music Theory* 48, no. 2 (2004): 215-292.

[8] Peter Silberman, "Neighbor Spaces: A Theory of Harmonic Embellishment for Twentieth-Century Neotonal Music" (Ph.D. dissertation, Eastman University, 2006).

[9] Avo Somer, "Musical Syntax in the Sonatas of Debussy: Phrase Structure and Formal Function," *Music Theory Spectrum* 27, no. 1 (Spring 2005): 67–95.

[10] Joseph Straus, "Centricity, Referential Collections, and Triadic Post-Tonality," Chapter 4 in *Introduction to Post-Tonal Theory*, 3rd ed. (Upper Saddle River, New Jersey: Prentice Hall, 2005), 130.

sufficient conditions for inclusion.[11] Based on this assertion, to any extent that a work does not meet these conditions, it is unsuitable for tonal analysis. Other analysts echo this viewpoint. Richard Hermann, for example, advises analysts to avoid "the Siren's call luring many a commentator's ship to destruction upon the rock, 'common-practice' tonality."[12] Neil Minturn criticizes Salzer's Schenker-derived voice-leading reductions of Prokofiev because "the explanatory power of the [tonal] theory becomes diluted when its readings, in straining to accommodate music which is not traditionally tonal, contradict the theory's underlying premises."[13] In another writing, Straus does not deny that sometimes aspects of post-tonal music mimic tonal structures, but advocates that these aspects be placed in "a theoretical structure within which we can make meaningful analytical assertions about them," which he believes involve associations between pitch-class sets based on continuity within musical domains.[14] An adherent of these viewpoints, upon examining the first eight measures of Prokofiev's op. 94, shown in Figure 1.2, might explain that one hears m. 8 as closing simply because Prokofiev is imitating the outward *forms* of classical models that suggest cadence, without imitating their harmonic *content*. He or she would likely warn against using labels such as "cadence" or hearing tonal closure in the progression over mm. 7–8, since the progression departs from common-practice models.

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[11] George Lakoff, *Women, Fire, and Dangerous Things: What Categories Reveal about the Mind* (Chicago: University of Chicago Press, 1987), 9, 74–76.

[12] Richard Hermann, "Thoughts on Voice-leading and Set Theory in 'Neo-Tonal' Works," 27.

[13] Neil Minturn, *The Music of Sergei Prokofiev* (New Haven: Yale University Press, 1997), 23.

[14] Joseph Straus, "The Problem of Prolongation in Post-Tonal Music," *Journal of Music Theory* 31, no. 1 (Spring, 1987): 19.

Rather than adopting Straus's strict definition of tonality based on necessary and sufficient conditions, this dissertation develops a method based on the assumption that tonal features are *radial categories*. The radial category describes a way that the human mind tends to organize its world; it consists of two components: the first is a central subcategory defined by a cluster of converging cognitive models, the second is a collection of non-central extensions that act as variants. The variants cannot be predicted by a set of rules, but neither are they arbitrary. Instead, principles of *motivation* explain each. Ideally, the motivations are not defined *ad hoc*, but are instead supported by other instances in the category.[15] An example of the radial category, which Lakoff discusses at length, is the linguistic classifier *hon*, a Japanese word. In its central meaning, *hon* is used to classify long, thin objects. Motivations for creating variant meanings stem from image schema, metaphor, metonymy, and other cognitive processes. For example, metonymy motivates the use of *hon* when discussing fencing matches, which involves long, thin objects. An additional relation of metaphor—that is, mapping the structure of one schema onto another—allows *hon* to include other contests between two opponents, such as judo matches. The latter inclusion provides an example of "chaining," in which one non-central member is linked to other.[16] The presence of *two* simultaneous motivations strengthens the membership of a variant within the category. This is the case when *hon* is used to classify written communication. The metaphor "communication is sending" evokes the image schema of a long, thin path traced from the sender to the

[15] George Lakoff, *Women, Fire, and Dangerous Things*, 91.
[16] Ibid., 95.

receiver. At the same time, it refers to the fact that in ancient Japan, letters were written on scrolls that were long and thin when rolled up.[17]

This dissertation presents a method for identifying variant closing progressions. It creates an analytical model that allows a listener to say that a particular passage "sounds tonal," even though it may not conform exactly to principles of common-practice harmony and voice leading. The motivations for creating variant progressions include retaining the relational structure of the classical cadence but applying it to different chords. Variant progressions also frequently retain the functional orientation of specific scale degrees, further strengthening the ability of a progression to create harmonic closure. The following section describes the classical cadence and some of the musical structures that it invokes. It then defines transformations on the classical cadence to create variant progressions.

3. Classical Harmonic Closure

"Harmonic closure," for the purpose of this dissertation, describes when a chord progression establishes a section's key and confirms its tonic. In the common-practice period, harmonic closing progressions find their prototypical form in the cadential progression. Many twentieth-century theorists note the close relationship between the cadence and tonality; Schoenberg states, for example, that the cadence is defined by its melodic and harmonic ability to create tonality.[18] Several factors enable a cadential

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[17] Ibid., 107–108.

[18] Arnold Schoenberg, trans. Roy E. Carter, *Theory of Harmony [Harmonielehre]* (Vienna: Universal, 1911; reprint, Berkeley and Los Angeles: University of California Press, 1978), 82.

progression to establish the key, including the resolution of dissonance with the appearance of the tonic triad, a melodic arrival on $\hat{1}$, and conjunction with the conclusion of a formal section. In addition, a collection of *privileged relations* among chordal roots and *privileged voice-leading* in specific voices in a texture define a key.

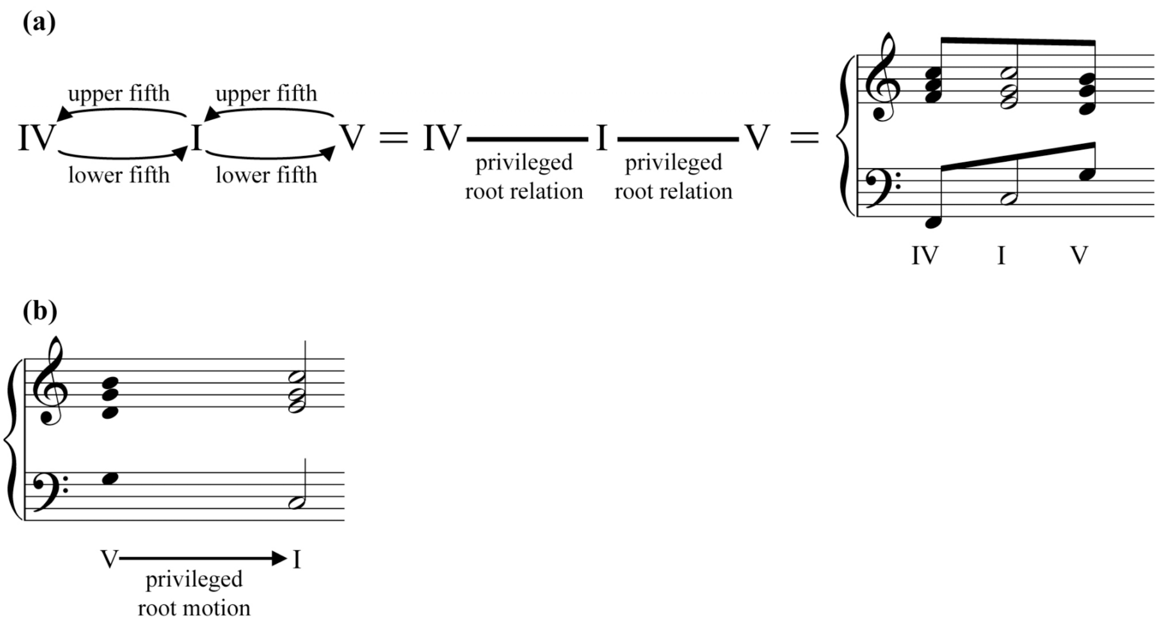

Figure 1.3. Privileged relations for common-practice closing progressions.

Figure 1.3 summarizes privileged root relations that provide the foundation for a cadential progression in common-practice harmony. It should be noted the network diagrams in Figure 1.3 are *non*-temporal. They should not be read left to right as if they were a series of musical events; rather, they represent a set of relations among elements within the tonal system that, in turn, enable us to understand progressions that occur over time. Figure 1.3a shows three different ways of representing the same set of relations. In the first diagram shown in Figure 1.3a, the I triad is shown to have the relation "upper fifth of" with the IV triad, while the IV triad has the relation of "lower fifth of" with the I triad. The same two relations hold between the I and V triads. The second diagram synthesizes the two relations “upper fifth of” and “lower fifth of” into a single *privileged root relation*. A privileged root relation occurs when one triad is the upper fifth of the other, and one triad is lower fifth of the other. This relation is reflexive; that is, if A is in privileged root relation with B, then B is in privileged root relation with A. The reflexive relation is shown by a solid line, rather than by an arrow. Finally, the third diagram in Figure 1.3a translates these relations into staff notation. A single beam between any two adjacent chords indicates that they stand in a privileged root relation. Figure 1.3b shows a non-reflexive (i.e., singly-directed) root relation, which I will call a “privileged root motion” that leads from one chord to another whose root is a fifth lower. Privileged root motion has the ability to create a sense of arrival, and, especially when combined with other musical factors that suggest arrival, it also creates closure. Both of these sets of relations play a crucial role in establishing harmonic closure in common practice tonality.

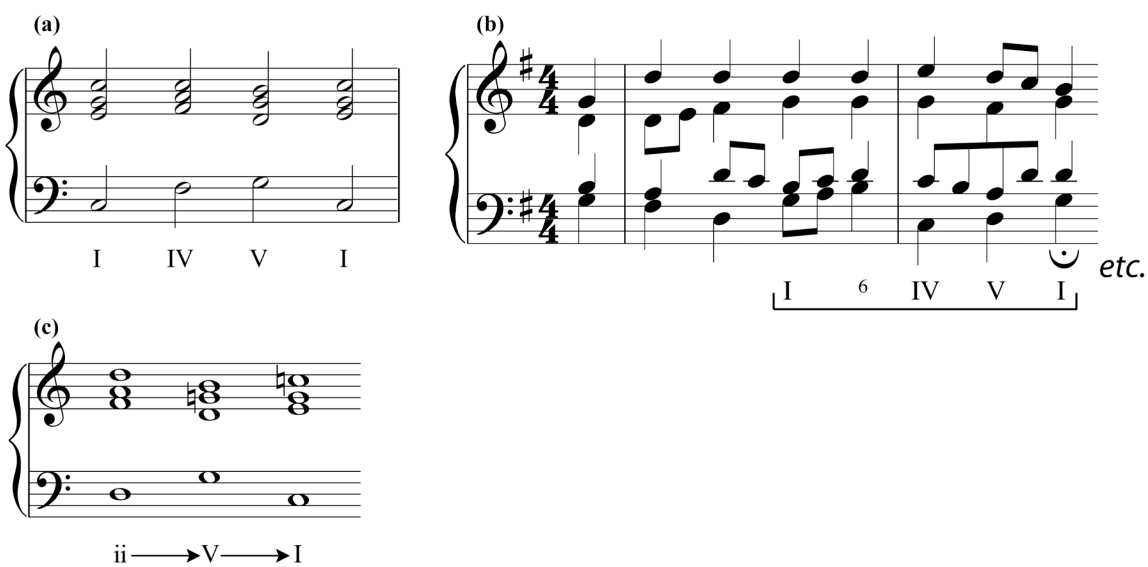

Figure 1.4. (a) Prototype for cadential progression. (b) Cadential progression in J.S. Bach, “Lobt Gott, ihr Christen, allzugleich” from BWV 151. (c) A derived cadential progression.

In Figure 1.4a these relations are expressed in time to form a prototypical cadential progression: I–IV–V–I. The initial tonic chord presents the key. When IV and V sound, they lack a privileged root relation. The tonic is the only chord that takes a simple relation to the other two. When it re-appears as the final chord it provides the sense of completing the network of chords. Some theorists also point out that IV leads from the tonic by privileged root motion and as such, acts as a temporary arrival and challenges the privileged status of the tonic. The final two chords, V–I, provide a motion to the tonic via a privileged root motion, reconfirming the sense of key. These relations, when they are expressed over time, enable us to hear a destabilization, preparation, and confirmation of the tonic triad. Figure 1.4b shows an example of such a progression at the end of the first phrase of J.S. Bach's chorale "Lobt Gott, ihr Christen, allzugleich" from BWV 151.

Common-practice harmony allows for several variant forms of the cadential progression shown in Figure 1.4a. Riemannian theory defines several transformational operations that can create chords that substitute for their prototypical counterparts. These create the many types of predominant chords available in common-practice harmony, such as ii, ii^{6}, or vi. An *incomplete* statement of the cycle can fulfill the same function as the whole, in a process akin to metonymic representation. The end of the first phrase of Beethoven's String Trio, op. 8, shown in Figure 1.1, provides an example. The ii chord replaces and is conflated with IV, creating ii$^{6}_{5}$, and the opening tonic is eliminated.

The progression shown in Figure 1.4c presents a more complex case for interpretation. Which is more significant to harmonic closure: the fact that ii is closely related to IV, or the fact that it leads to V by a privileged root motion? Theorists have made both interpretations—John Gabriel Miller has teased apart these interpretations by noting that ii has *kinship* with IV, but it has dominant-function *behavior* in its motion to V.[19] In the case of the former interpretation, many point out that we often hear only one primary "pre-dominant" chord in a progression, and previous chords tend to be heard as subordinate.[20] For example, in the progression I–IV–ii–V–I, we hear either the IV or ii, but not both, as the primary subdominant-functioning chord, with the other relegated to a subordinate role. This may be because IV–V–I provides the model for the closing progression and only admits to three different chords, so that derived versions can only admit to the same number of functions.

Figure 1.5 shows privileged *voice-leading structures* that also strengthen a progression's ability to define a key. Each diagram shows motion within two specific voices that is privileged in its key and has a form-defining quality. The voice-leading structure must be present for a progression to take this privileged quality; two notes connected by a double line (||) indicate that either note might be present in order for the privileged structure to occur. In the "perfect" voice-leading structure, the bass proceeds

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[19] John Gabriel Miller, "The Death and Resurrection of Function" (Ph.D. dissertation, Ohio State University, 2008), 38–44. Nicole Biamonte, in "Triadic Modal and Pentatonic Patterns in Rock Music," *Music Theory Spectrum* 32, no. 2 (Fall 2010), labels ii–V–I a "double authentic" progression, stressing its use of privileged root motion down by fifth. In discussing its inverse ♮VII–IV–I, she identifies *both* the privileged root motion and root relation as possible explanations for the progression. In one reading, she calls the progression "double plagal," privileging root motion up by fifth. In another reading, she interprets ♮VII as a substitute for V, stressing that the progression traverses three functions that are defined by a privileged root relation (98).

[20] Felix Salzer, *Structural Hearing: Tonal Coherence in Music*, 2nd ed (New York: Dover, 1962), 14–15.

from $\hat{5}$ to $\hat{1}$, while the soprano proceeds from either $\hat{2}$ or $\hat{7}$ to $\hat{1}$. This structure, of course, defines the conditions that must be met for a perfect authentic progression in classical harmony. In the "expanded" voice-leading structure, the bass line carries a longer sequence of scale degrees ($\hat{3}$–$\hat{4}$–$\hat{5}$–$\hat{1}$) that outlines the tonic triad and projects the same harmony over a larger time-frame. William Caplin points out that this voice leading forms the structure for an "expanded cadential progression," which frequently indicates a major structural close in the classical period. The expanded cadential progression must also fulfill harmonic requirements: it must take the form I^6–S–V–I, where S indicates IV or some related chord, such as ii^6 or ii^6_5, built on $\hat{4}$. These requirements guarantee that the progression traverses all four functions involved in the cadence seen in Figure 1.4a and presents the fullest possible statement of a key.[21]

[21] William Caplin, "The 'Expanded Cadential Progression': A Category for the Analysis of Classical Form," *Journal of Musicological Research* 7, no. 2 (1987): 215–257.

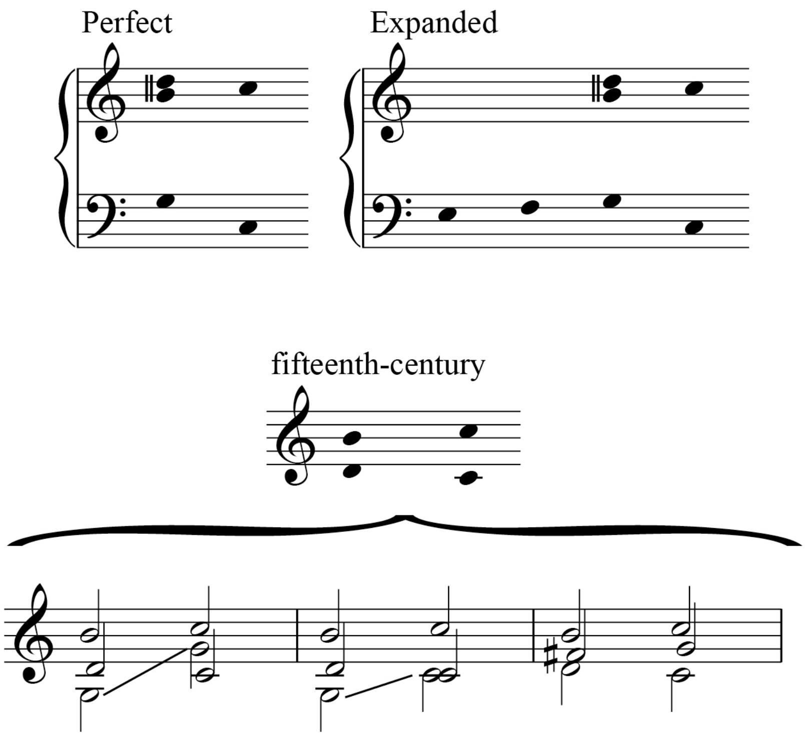

Figure 1.5. Privileged voice-leading structures.

In some musical styles privileged voice-leading structures play a *central* role in defining a key. Carl Dahlhaus points out that in fifteenth-century counterpoint, a cadence was defined by a progression from major sixth to octave between the tenor and an upper voice, as shown by the “fifteenth-century” voice leading structure in Figure 1.5. In three-voice textures, the structure permitted a number of different harmonizations, shown in the staff below. In the first, the contratenor leaps up by octave to the note that is a fifth above the tenor. In the second, the contratenor leaps up by fourth to create a unison with the tenor. In the last, the tenor is placed as the lowest voice in the texture, and the third voice moves in parallel fourths with the soprano, forming a so-called “double-leading-tone cadence.” Although the first two cadences resemble the V–I progression, it is the voice-leading structure, not the harmonic progression, that defines closure, since the "double-leading-tone cadence" existed alongside the other two throughout the century.[22]

4. Definition: Transformed Triadic Networks

Because "down by fifth" is the privileged root motion in common-practice tonality, a closing progression in the classical period must conclude with the progression V–I. By contrast, V–I is *not* the progression that confirms the key of D major in the Prokofiev excerpt shown in Figure 1.2. Hearing it as closing requires some alteration of the network of privileged relations that governed our hearing of common-practice tonality. Possible transformations of the triadic networks shown in Figure 1.3 include: (1) *reverse privileged root motion*, (2) *change privileged interval of root relation*, (3) *change privileged voice-leading structures,* (4) *add essential dissonance*, and (5) *elimination.*[23]

4.1. Reverse Privileged Root Motion

Reversal of privileged root motion inverts the primary interval of root motion: for example, it transforms a descending fifth into a descending fourth or ascending fifth. When enacted upon the common-practice network, this yields IV–I, rather than V–I, as

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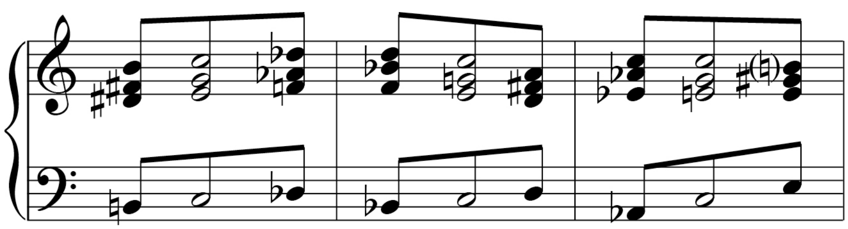
[22] Carl Dahlhaus, *Studies on the Origins of Harmonic Tonality*, trans. Robert O. Gjerdingen (Princeton: Princeton University Press, 1990), 92.

[23] David Lewin formalizes all possible transformations upon the system of the three basic harmonic functions of tonic, subdominant, and dominant in his article "A Formal Theory of Generalized Tonal Functions," *Journal of Music Theory* 26 (1982): 23–60. This work provides the foundation for my transformation of *change of privileged interval of root relation*. Lewin also defines other possible transformations on the system of tonal functions that are not germane to this chapter; the other transformations used in this dissertation represent my own contribution.

the primary closing progression. Many other analyses have examined pieces where IV–I appears to provide the most essential closure. Jeremy Day-O'Connell, for example, has created a Schenkerian-style reduction of Debussy's Prelude "La fille aux cheveux de lin" that outlines plagal cadential progressions, rather than authentic ones, at several structural levels. The cadences specifically use what O'Connell calls the "plagal leading-tone," defined by a soprano line that ascends from scale degree $\hat{6}$ to scale degree $\hat{8}$.[24]

4.2. Change Privileged Interval of Root Relation



Lm2 I Um2 LM2 I UM2 LM3 I UM3

Figure 1.6. Transformations of triadic network through operation *change privileged interval of relation*.

The operation *change privileged interval of relation* replaces the perfect fifth that generates common-practice cadential progressions with a minor second, major second, or major third. Figure 1.6 shows the triadic networks that result from this transformation. The white notehead, in each case, represents the tonic triad, and the other two triads relate

[24] Jeremy Day-O'Connell, "Debussy, Pentatonicism, and the Tonal Tradition," *Music Theory Spectrum* 31, no. 2 (Fall 2009): 225–261. Day-O'Connell labels scale degree $\hat{6}$ as the "plagal leading-tone" because it represents an ascending step along a pentatonic scale. Deborah Stein has studied the growing importance of the IV chord in late nineteenth-century music and, to cite examples, examined several songs by Hugo Wolf. Daniel Harrison's theory affords an equal status to both dominant and subdominant functions; as such it gives a IV–I progression and a V–I progression equal ability in establishing the tonic triad. However, Harrison cites few specific examples of this claim.

to the tonic by the given privileged relation.[25] In this dissertation, a chord from a transformed network will be symbolized by a "U" or "L," indicating upper or lower, followed by the interval between the root of the triad and the tonic. Hence, "UM3" is the triad built on the upper major third, and "Lm2" is the triad built on the lower minor second, and so forth. It should be noted that the "U" and "L" symbols are used *only* when these altered chords are heard as potentially creating harmonic closure; that is, when they imply a transformation of the common-practice triadic network. When such harmonic relations are created through other means, such as transpositional sequences, the labels will not be used. According to this notational system, IV and V could be defined as "LP5" and "UP5," respectively, but I will retain the Roman numeral labels "IV" and "V" for these two chords in order to show when composers employ common-practice progressions.

Theoretically, my network could dispense with the *reverse privileged root motion* transformation and instead substitute a privileged root relation with its inverse. For example, reversing the privileged root motion in a common-practice chord network could be achieved by changing the interval of root relation to a fourth, rather than a fifth. I shall keep the redundancy within my notational system, however, since it maintains the

[25] The repertory of possible cadential progressions, in turn, increases the number of possible backgrounds that a tonal composition might display. Many Schenkerian revisionists have undertaken their own projects of increasing the number of backgrounds; David Neumeyer summarizes many of their efforts in the article "Thematic Reading, Proto-Backgrounds, and Registral Transformations," *Music Theory Spectrum* 31, no. 2 (Fall 2009): 284–324. Neumeyer himself proposes increasing the number of possible backgrounds by reinterpreting Schenkerian theory through the lens of Shcheglov and Zholkovsky's theory of expressive poetics. The notes within a tonic triad form the non-expressive background of a tonal composition. Expressive transformations of LINE and N(eighbor) create a range of possible melodic backgrounds. These include the three *Urlinien* possible in Schenkerian theory as well as a number of other formations.

distinction between root relation and privileged root motion, both of which might be in operation in a cadential progression.[26]

Harmonic closure through root motion by minor second, major second, and major third has a conceptual origin in late nineteenth-century chromatic tonality. Many of these root motions were created during this period by chromatically altering diatonic progressions; using them to create closing progressions results from a process of recontextualization in which what was incidental becomes hierarchically central. The subsequent three chapters discuss the origin of each root motion in more detail. Since the alternate root motions can be shown to be substitutes for diatonic ones, some may argue that labeling them by their relation to common-practice functions such as dominant and subdominant would be more appropriate. I choose to use the transformed triadic networks for a number of reasons. First, an alternate root relation cannot be related consistently to a single function. Um2, for example, can suggest a subdominant function in some contexts and a dominant in others.[27] Second, many neo-tonal pieces thematize alternate types of root motion and are therefore best served by an analytical methodology that models them directly, without attempting to relate each instance to a specific common-practice progression. Part of the development of any language is to recontextualize existing vocabulary so that what was at the periphery is placed at the

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[26] John Rahn's comments might be valuable here. He points out that unlike in the realm of mathematics, the simplest possible explanation is not always the best in a music theory. Rather, the value of a theory is the way that its derivation sequence reveals the beauty of a musical structure ("Notes on Methodology in Music Theory," in *Music Inside Out: Going Too Far in Musical Essays* [Amsterdam: G + B Arts International: 2001], 77).

[27] See the subsection *"Daniel Harrison"* in Chapter 5.

center, and vice versa.[28] Many neo-tonal scores suggest hearing through the lens of such a contextual transformation rather than hearing IV and V as "really" operating in the background.[29]

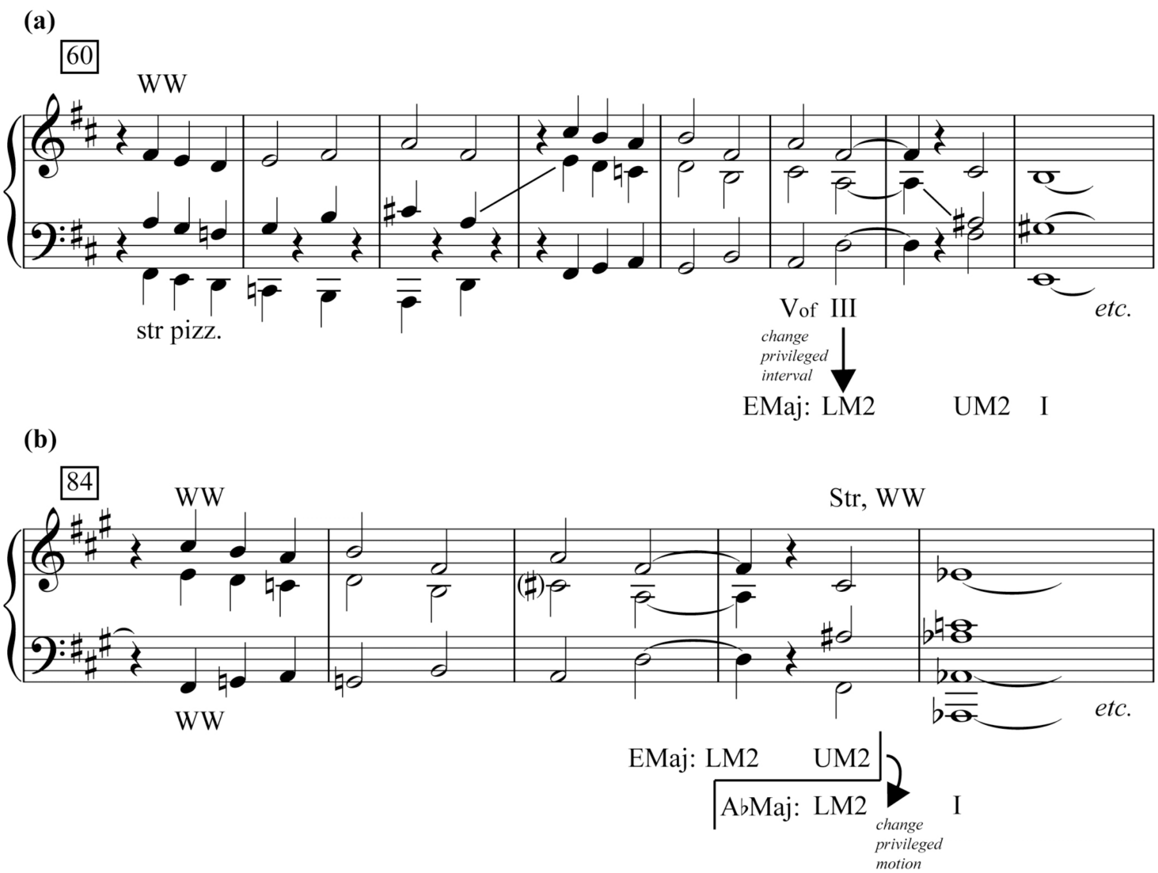

Figure 1.7. Copland, Third Symphony (1946), third movement, two excerpts.

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[28] In *Remaking the Past* (Cambridge, MA: Harvard University Press, 1990), Joseph Straus posits "centralization" and "marginalization" as two strategies that early twentieth-century composers used to reinterpret the tonal tradition. He attempts to define a "common practice" for all early twentieth-century composers, including both serialists and neo-classicists, based on their ambivalence toward and desire to nullify the influence of the music of the previous century (17).

[29] Charles J. Smith makes a similar argument in "The Functional Extravagance of Chromatic Chords," *Music Theory Spectrum* 8 (Spring 1986): 94–139. Although he classifies chromatic chords into tonic, dominant, and predominant categories, he gives them distinct Roman-numeral labels (such as "♭vi♭") in order to show that many compositions prolong them through surface embellishment, invert them, and add notes to create a full triadic sonority, effectively treating them as "the embodiment of a distinct, new chord" (120).

Figure 1.7 shows an example of a change of privileged interval of relation effected within a musical phrase. Both excerpts are drawn from the third movement of Copland's Third Symphony (1946). Figure 1.7a shows the final part of the first section, where wind instruments reprise a theme from the beginning of the movement. Its key is ambiguous, but since the movement began in B minor, this chord is most easily heard as the tonic. Five measures after rehearsal 60, the passage ends with a weak V of III to III progression. The placement of the chordal third in the soprano and the placement of the III triad on the third beat militate against hearing the progression as a cadence. This D-major chord marks a shift in the privileged root motion, and is reinterpreted as a LM2 chord in the key of E major. A full LM2–UM2–I progression follows. The final E-major chord is held for several measures and becomes the key of the interior theme. The opening of the interior theme also alludes to the major-second root relation: one measure before rehearsal 62 a solo oboe arpeggiates through a D-major triad, and a solo flute responds by arpeggiating through an E-major triad.

Figure 1.7b shows the final measures of the movement, which reprise the same theme shown in Figure 1.7a. At the end of the theme, a D-major triad proceeds to an F♯-major triad, as before. The F♯-major triad is then reinterpreted as the LM2 in the key of G♯ major, which is enharmonically respelled as A♭ major. The movement ends in this key, and this cadence provides a link to the fourth movement. Thus, the final cadence effects not only a local change of privileged interval of relation, but with respect to the analogous point earlier in the movement, a reversal of privileged *motion*. Because Copland establishes the importance of major-second-related triads early on, the final cadence is coherent with the other events in the movement, but the reversal also creates surprise. This surprise is appropriate to the discourse of the symphony, since it gives a sense of entering new territory and primes listeners for the famous fanfare theme that follows.

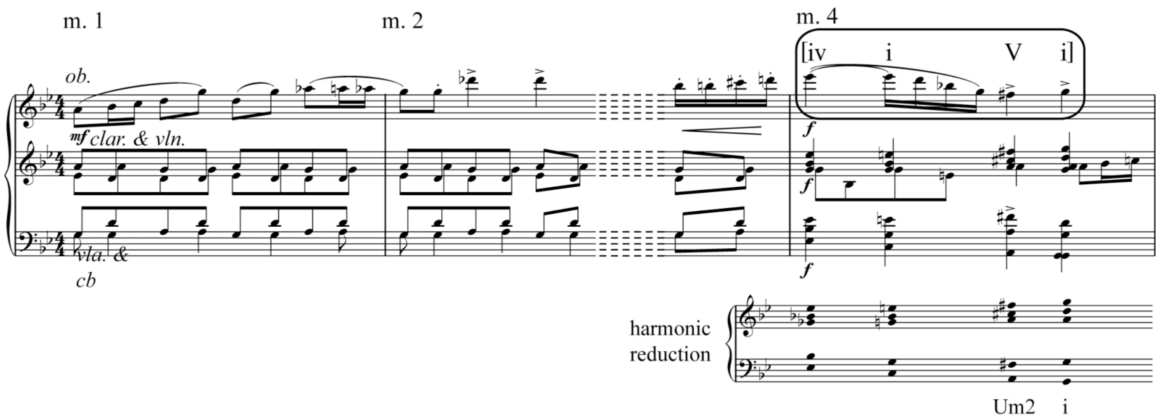


Figure 1.8. Prokofiev, Quintet, op. 39 (1924), opening and reduction.

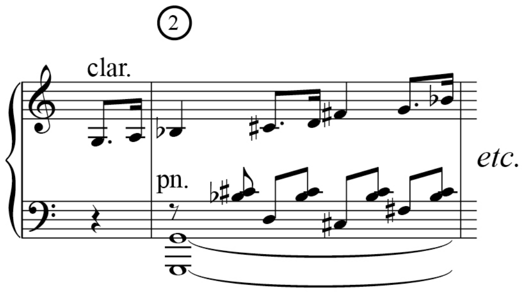
Figure 1.8 reproduces the first one and a half measures and the fourth measure of the first movement of Prokofiev's Quintet, op. 39 (1924), for oboe, clarinet, violin, viola, and double bass. This excerpt provides another example of a transformed privileged root relation and also displays an example of what I will call *collage voice leading*, a stylistic feature of some neo-tonal compositions that leads the listener to hear some passages as closing progressions. Collage voice leading describes instances where a single voice within a texture is reminiscent of a different system of tonal organization and thereby influences our perception of the function of the entire texture.[30] The excerpt in Figure 1.8

[30] The theory of *upper structures* in jazz also deals with stratified textures. According to Mark Levine's *The Jazz Piano Book*, (Petaluma, CA: Sher Music, 1989), an upper structure is a triad played in the right hand in a high register over a tritone in the left hand. The notes of the upper triad can be interpreted as extensions of the chord implied by the left hand part, but because of the registral placement they also give the impression of projecting a separate triad. Upper structures color the triad given in the left hand, but

stratifies into a melody with accompaniment texture: the oboe plays a wide-ranging melody in the highest register, while the other instruments create oscillating patterns within a constricted range that serve an accompanying function. At measure 4, the oboe plays a melody that is strictly from the key of G minor and suggests iv–i–V$^{\sharp}$–I, a common-practice cadential progression. The reminiscence of the cadence in the melodic line lends the sense of cadence to the other parts and helps to reinforce our impression that harmonic closure occurs at the end of measure 4, even though the lower parts belie the impression of common-practice tonality. The final two chords are an F♯-minor triad in first inversion and an altered tonic chord that contains G, A, and D.[31] Analysis of the rest of the movement, which occurs in the following chapter, reveals that chords built on upper and lower seconds consistently provide harmonic closure in lieu of dominant and subdominant chords. When an Lm2 first appears in this movement, the suggestion of common-practice closure in the melodic line reinforces its function.

should not be conceived as "polytonal" constructions (109–124). I am grateful to Ramon Satyendra for pointing out the similarities between collage voice leading and upper structures.

[31] The next section of this chapter will discuss such "altered chords" in greater detail.



Reduction

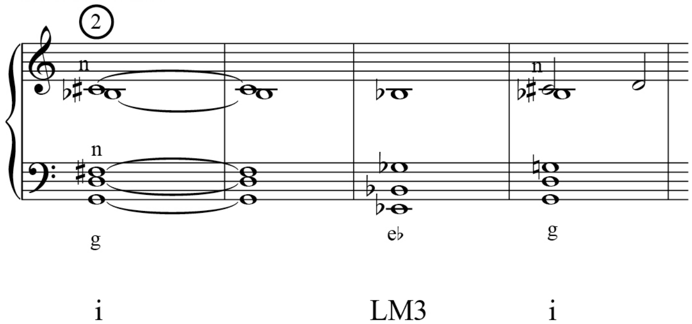


Figure 1.9. Poulenc, Sonata for Clarinet and Piano (1962), first movement, excerpt.

Figure 1.9 shows an excerpt from the first movement of Poulenc's Sonata for Clarinet and Piano (1962), and provides an example of transforming the privileged root relation into a major third. The excerpt reduces the presentation part of a sentential theme: the first two measures form a basic idea, while the next two form a varied repetition. The presentation prolongs the tonic triad, but the LM3 triad replaces the expected iv or V that common-practice tonality would supply.[32] The opening tonic contains two added chromatic neighbor notes—C♯ and F♯—marked with an "n" on the harmonic reduction underneath the score. The F♯ provides a common-tone connection to the G♭ in the following E♭-minor triad. Both neighbors resolve in the fourth measure,

[32] The presentation portion of a sentence does not have to outline a cadential progression. It can consist of an exact repetition of a basic idea, or a sequential repetition of the idea up a step. When the presentation does establish the tonic key, however, it nearly always uses a progression derived from the basic cadential progression, although chords may be placed in inversion to weaken the progression and provide greater forward momentum.

leaving a i–LM3-i progression at the background of the excerpt.[33]

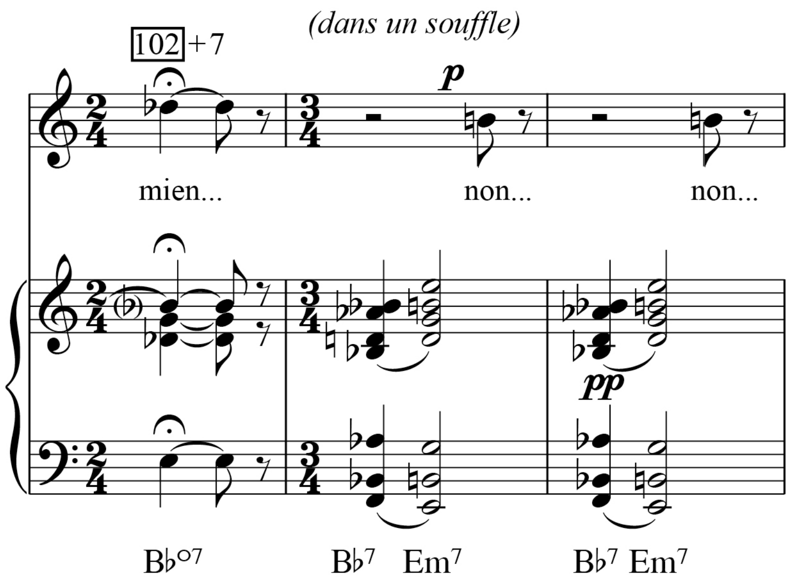


Figure 1.10. Poulenc, *La Voix Humaine* (1958), excerpt.

It is theoretically possible to define privileged root relations other than the minor or major second, major third, or perfect fifth, but the resulting progressions cannot be traced as easily to an origin in late chromatic tonality. Figure 1.10, an excerpt from Poulenc's opera *La Voix Humaine*, provides an interesting counterexample. In the excerpt shown, a tritone progression occurs at a formal location that potentially suggests closure. An identical progression also appears at four other points in the finale: rehearsal 105, 4 mm. after rehearsal 86, 10 mm. after rehearsal 80, and 1 measure after rehearsal 64. In the third measure of the above excerpt, a B♭ dominant-seventh chord in second inversion proceeds to a root-position E minor-seventh chord. The two thick chords

[33] This melody from the clarinet sonata also appears, in the key of A minor, near the end of *La Voix Humaine* at the upbeat to rehearsal 107, but it is set to a different harmonic accompaniment. Here, the lower voices follow a progression Am–E♭m$^{9}_{7}$–E$^{7}_{\substack{+5\\+/-3}}$–Am. That is, the progression nearly follows a conventional i–V–i progression, but the E dominant seventh has a raised fifth and both a lowered and raised third, and the previous chord is an E♭ minor ninth, which can be interpreted as a chromatic lower neighbor.

sounding in succession have the rhetorical effect of indicating a structural punctuation. The motion of the voices by semitone between the two chords, especially the descent in the bass from F to E, smoothes this juxtaposition of tritone-related chords. In addition, the progression occurs after a prolongation of an unstable fully diminished seventh chord, so that the E minor seventh chord sounds comparatively stable. The same is true of the other instances of this succession of chords. These factors lend the motion $B\flat^{4}_{3}$–Em^{7} the quality of a closing progression.

The singer's text at this moment also influences our hearing in the same way. After each progression she says, "non [no]..." This word indicates syntactic closure, as it is a response to an unheard question that the singer's former lover asks on the other end of the telephone line. Dramatically, it also marks a point of resolution, since after this response her text indicates that she has become resigned to losing her lover. The hypothetical tritone-based network has several curious features. Because a tritone makes an even division of the octave, an upper tritone is pitch-class equivalent to a lower tritone; therefore, there are only two chords in the network. As a result, it is impossible to define the tonic triad as the only chord that takes a simple relation to two others. In addition, privileged root motion becomes arbitrary, since ascending and descending tritones lead to the same pitch class.[34] Because this progression is unusual, and because the paratactic style of the opera makes it difficult to determine precisely where closing

[34] Another example of tritone-related chords at a location suggesting a closing progression occurs in "Happy Ending," the last movement of Copland's *Red Pony Suite* (1948). In the last three measures, the upper winds hold a C-major triad while the lower brass outline the progression A♭–D♭–G♭–C. This progression does not occur elsewhere in the movement and is rare in Copland's music.

progressions take place, I will refrain from discussing tritone-based networks in my dissertation. My dissertation will focus on the possible alterations of the privileged root relation to those shown in Figure 1.6.

4.3.1. Change of Privileged Voice-Leading Structure

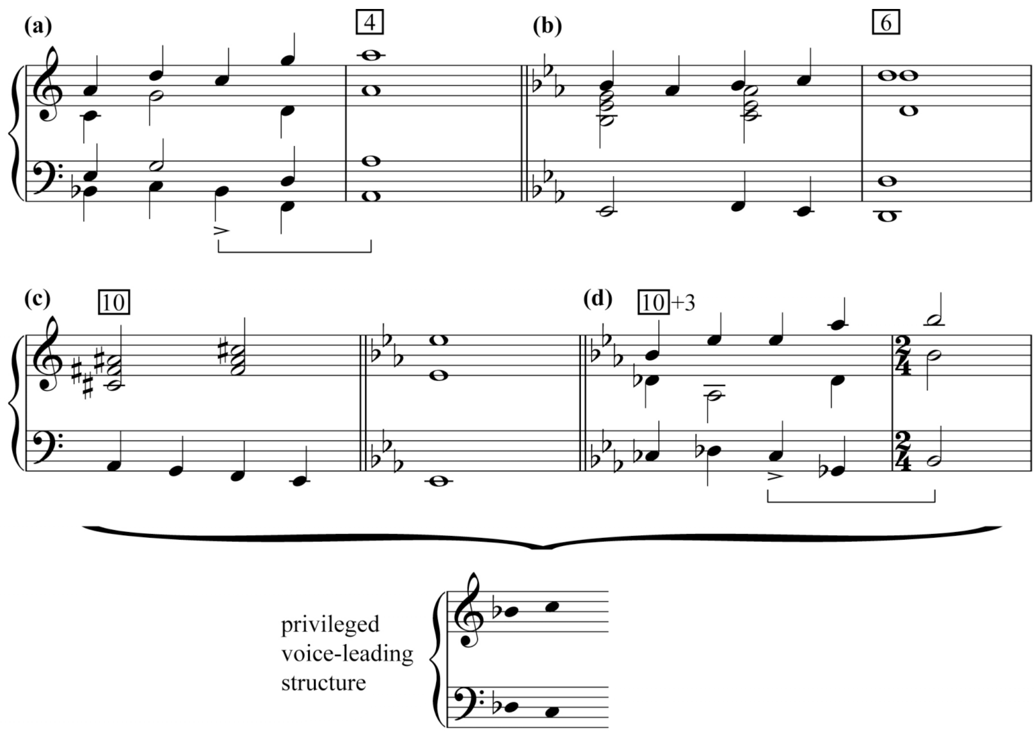


Figure 1.11. Four cadential progressions from Copland, Third Symphony, first movement.

Figure 1.11 provides an example of cadential progressions that are created through a *change of voice-leading structure*. Changed voice-leading structures often occur in tandem with changes in privileged interval of relation, but in the first movement of Copland's Third Symphony they are used in isolation, absent of privileged root relations, to create the four cadential progressions seen in Figure 1.11. The rehearsal numbers and measure numbers above the staff indicate where these progressions occur; the score eliminates octave doublings but otherwise reproduces exactly the pitches of the original score. All four cadential gestures arrive on a single pitch played in several octaves and mark significant formal boundaries. Each of the cadential progressions displays an identical outer-voice structure: the uppermost voice ascends by whole step to the arrival note, while the bass line descends by half step to the arrival note. This structure is shown underneath the four examples; it is identical to the structure that is used in a Phrygian cadence in classical harmony, except that it is contextually transformed to mark an arrival on a tonic, rather than a dominant, sonority. In examples (a) and (d), a bracket beneath the lower staff shows that the functioning bass note actually occurs on the third beat of the first measure, rather than the final beat. The scoring reinforces this hearing, since the functioning bass note is given an accent mark in both instances. The note on the fourth beat can be interpreted as a decorative skip; it results from the bass line imitating the melody, which has the same intervallic profile.

Unlike the outer voices, the content of the inner voices varies with each appearance. In (a), they combine with the outer voices to form a major triad with added sixth; in (b) they form a major triad in second inversion, in (c) they form a dominant seventh chord in third inversion, and in (d) they form a chord built from stacked fifths. A privileged *outer-voice* motion is evident in each of these gestures, but the inconsistency of the chordal content makes it difficult to define a privileged root motion. I am inclined to hear the Um2 with an added sixth, as shown in example (a) of Figure 1.11, as the prototypical progression. This accords with my perception that cadences (b) and (c) sound less complete than the others.

4.3.2. Mixed Progressions

It is also possible to create closing progressions that *mix* chords, either from the same or different triadic networks. The concept of mixing members of different chords has received a considerable amount of discussion in theoretical literature. Daniel Harrison defines *functional mixture*, a concept first proposed by theorist Hermann Erpf, as the presence within a single chord of elements from different functions, such as dominant and subdominant.[35] Kevin Swinden proposes a number of refinements to Harrison's theory and uses his model to describe late nineteenth-century progressions.[36] Felix Salzer also describes "double-function" chords, in which one voice takes a structural, and the other a prolonging function. Structural notes, for Salzer, are part of an *Ursatz* based on a background I–V–I progression, while prolonging notes are based on contrapuntal functions such as passing, neighboring, and embellishment.[37]

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[35] *Harmonic Function in Chromatic Music*, 60–65.

[36] Kevin J. Swinden, "When Functions Collide: Aspects of Plural Function in Chromatic Music," *Music Theory Spectrum* 27, no. 2 (Autumn, 2005): 249–282.

[37] Felix Salzer, *Structural Hearing: Tonal Coherence in Music*, 2nd ed. (New York: Dover, 1962), 160–162.

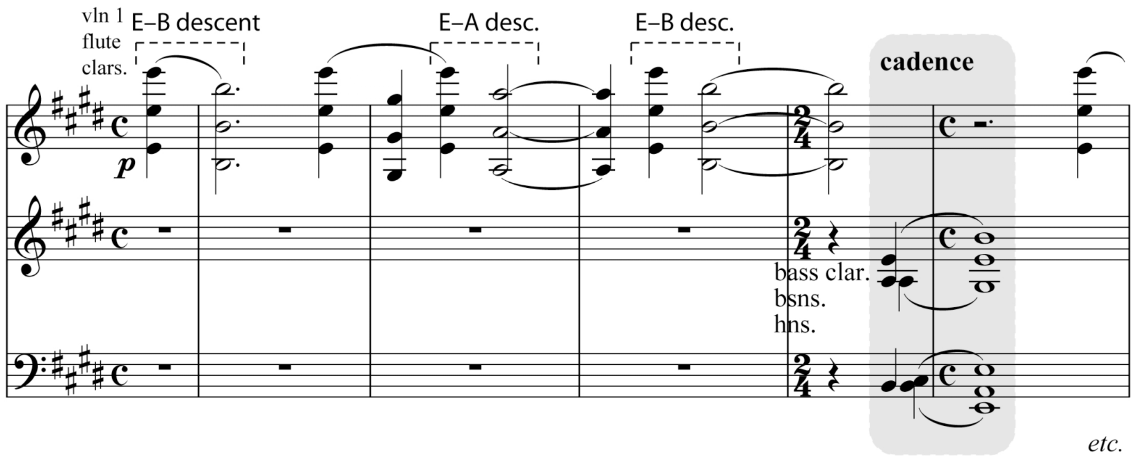

Figure 1.12. Mixed IV and V functions in Copland, Third Symphony (1946), mm. 1–5.

The opening of Copland's Third Symphony (1946), shown in Figure 1.12, provides an example of a chord that mixes IV and V. It opens with a prayer-like melody played by the first violins. After its first phrase, the horns, bassoons, and bass clarinet play a two-chord progression that recurs several times in the opening and final sections of the movement and creates a cadential punctuation.[38] This same progression closes the movement. The melodic line in mm. 1–3 thematizes the motion from the tonic note, E, to the root of VI and V. It begins by descending a fourth from E to B; later it descends from E to A, and then repeats the descent from E to B. The progression over mm. 4–5 combines and reverses these two motions to create an arrival back on the E: the lowest voice (played by the bass clarinet) descends from B2 to E2, and the soprano (played by the horn) ascends from A3 to E4. The soprano is accompanied by an upper parallel fifth. The final tonic chord itself has a mixed function, since the second lowest voice plays A,

[38] The similarity of the opening melody to a hymn strengthens the impression of frequent cadences. In *Aaron Copland* (New York: Oxford University Press, 1953), Arthur Berger suggests that by the 1940s, a "hymn" style had almost become a commonplace in American orchestral music, and was especially used in opening movements. Copland's symphony continues this tradition (76).

the root of IV. This note is played *pianissimo* by a bass clarinet and is nearly inaudible, but it provides a small amount of instability to the tonic, perhaps in order to show the need for further continuation.

It is also possible to mix functions from two *different* networks. In such cases, both networks usually play an important role elsewhere in the movement, and contextual factors will make clear the presence of a closing progression.

Figure 1.13. Mixed functions: (a) Prokofiev Sonata for Flute (or Violin) and Piano, op. 94, second movement, mm. 1–7.

(b) Harmonic reduction of cadential progression over mm. 6–7. (c) Reduction of linear progressions traced over mm. 1–7, showing large-scale arpeggiation of V and Um2.

Figure 1.13a, which reproduces mm. 1–7 of Prokofiev's Sonata for Flute (or Violin) and Piano, op. 94 (1943), provides an example of mixture between two different networks. A chord that combines V and the Um2 occurs in the final progression of the passage, and is also traced by the piano part's outer voices over a large portion of the excerpt. Measures 6–7 outline a harmonic arrival on A minor that creates a structural downbeat and prepares the flute's entrance. In measure 6 the right-hand part plays E and G♯, the root and third of the V triad, while the left-hand part makes a descending arpeggiation through a B♭-minor triad. Figure 1.13b verticalizes these notes to form a chord that combines the V and Um2 functions, both of which resolve to i in the following measure. Figure 1.13c reveals that a large-scale arpeggiation through this same mixed harmony occurs over mm. 1–6. The uppermost line of the right-hand part makes a chromatic ascent from E4 to G♯4, the same two notes that are played as a vertical dyad in measure 7. Lower major thirds accompany this part so that when it reaches its goal tone of G♯4 the lower accompaniment reaches E4, the root of V. Over mm. 1–6, the left-hand part arpeggiates through a B♭-minor triad. Two chromatic upper neighbors, marked with an "n" on Figure 1.13c, embellish this arpeggiation. Over mm. 1–2, the upper register of the left-hand part outlines B♮3–B♭3. In m. 5, it plays F♯3, a chromatic upper neighbor to F♮3. This upper neighbor tone is preceded by a C♯3, establishing the surface motive of an ascending perfect fourth, which also appears in the F3–B♭3 motion over mm. 1–2 and elsewhere in the movement. F♯3 resolves to F♮3 in m. 6, at which point the bass completes its descending arpeggiation over the next three beats.

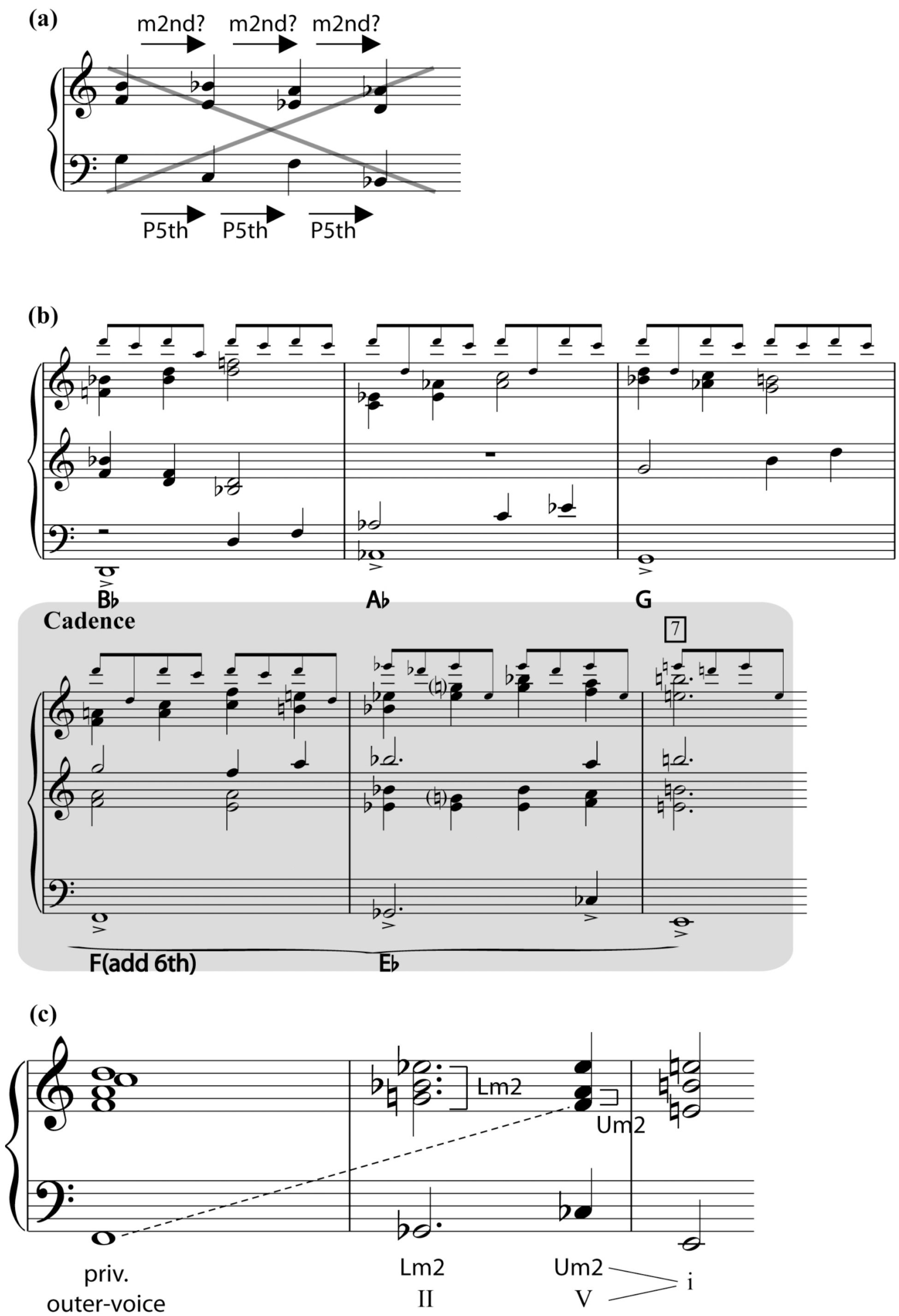

Figure 1.14. (a) Chromatic down-by-fifth sequence. (b) Copland, Third Symphony (1946), first movement, excerpt. (c) Harmonic reduction of cadential progression from 1 measure before rehearsal 7 to rehearsal 7.

In the Prokofiev excerpt shown in Figure 1.13, the lower voices use a minor-second-based network, while the upper voices use one drawn from common practice. It is possible to reverse the roles of the textural strata, so that the lower parts use a common-practice triadic network and the upper voices use a different one, but because listeners tend to refer to the bass when inferring chordal roots, strong contextual support must justify stratifying the texture in this manner. Figure 1.14a shows a relatively common tonal progression that does *not* provide contextual support for a mixed progression: a chromatic down-by-fifth sequence of dominant seventh chords. The privileged root motion down by fifth is evident in the bass line. Might one also hear the upper voices independently of the bass and say that they privilege root motion down by minor second? Without strong contextual support, this proposed hearing unnecessarily splits a simple texture into a complex one and provides no insight into the progression. By contrast, contextual support does favor hearing a mixed progression in the cadence at rehearsal 7 in Copland's Third symphony, reproduced in Figure 1.14b. This excerpt occurs in the midst of an agitated section that makes a *Fortspinnung* of a stentorian theme introduced by the brass instruments and arrives on an E/B dyad at rehearsal 7. It is possible to interpret the harmony on the last beat of this measure as V^7 in E minor with flatted fifth, if we respell C♭ and E♭ as B and D♯. Such an interpretation does not require hearing mixed functions, but it is problematic in that the chordal seventh resolves up rather than down and the final tonic lacks a third. The surrounding context suggests a different interpretation that explains these voice-leading oddities.

Figure 1.11 shows that the other cadences in this section of the symphony do not used fifth-based root relations, and instead rely on a privileged outer-voice-leading structure. Two measures before rehearsal 7 a cadence using the same structure is suggested. As shown in Figure 1.14c, the basses reach F and the uppermost line holds D, creating the outer-voice structure that could arrive on E. The chord that the entire texture forms is an F-major triad with an added sixth; the same chord was used as a cadential harmony at rehearsal 4 (see Figure 1.11a). In the following measure the bass part swerves away from this cadential formula and instead suggests a common-practice II–V–I progression. The bass part's F, however, is transferred to an upper voice, where it makes its expected resolution down by half step. This arrival marks the only point where privileged voice-leading structures, characteristic of the interior part of the movement, mix with the fifth-based progressions characteristic of its opening and ending. This mixture is especially appropriate since, in the excerpt that immediately follows, the opening theme and interior theme are combined in counterpoint.

An additional relation to the tonic is at work in the cadence. The letter analysis underneath the score in Figure 1.14b shows the chordal roots of the triad that the orchestra prolongs in each measure. Over the first four measures these roots follow a stepwise descent from B♭ to E♭, unfolding this interval. In the first three beats of the measure before rehearsal 7, they repeat the same interval by playing notes from the E♭-major triad, a minor second below the tonic. On the fourth beat they play F and A, suggesting a triad built on a half step above the tonic, and the E♭ is held over to create an added seventh. These two triads are related by minor second to the tonic, suggesting that Um2 and Lm2 relations are also in operation in the upper voices of the cadential progression. While this interpretation does not have as broad a contextual support, it is also plausible.

Mixed functions also raise the possibility of triads from different networks sounding *successively*. For example, could the progression i–UM3–V–i (as in A minor–C♯ minor–E major–A minor) create a convincing full cadential cycle? I will examine a few cases in Chapter 4.

4.4. Add Essential Dissonance and Other Types of Dissonance

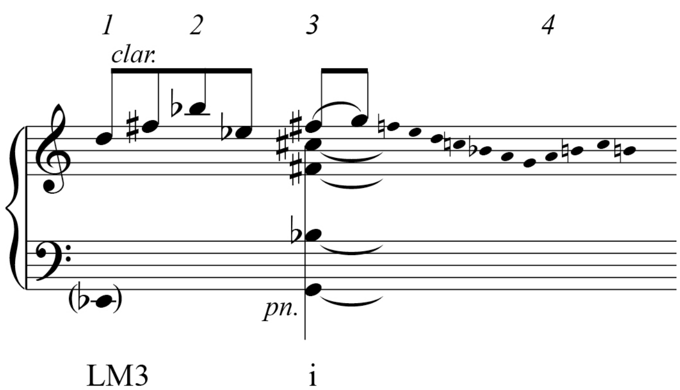

Figure 1.15. Poulenc, Sonata for Clarinet and Piano, second movement, analysis of mm. 1–4.

The transformation *add essential dissonance* provides another way of altering the triadic network that governs harmonic closure. Figure 1.15, which shows the opening of the second movement of Poulenc's Clarinet Sonata (1962), demonstrates the need for this transformation. In the first two measures the clarinet arpeggiates through an augmented triad from D to B♭ and then drops by fifth to E♭. In measure 3, the clarinet plays a trilling figure that moves between F♯ and G, and then descends through a G-minor scale. In measure 3 the piano plays a complex chord that has a low G in its bass as well as B♭, the third of the G-minor triad. The registral distribution of the chord and the clarinet's line prompt us to hear G minor as the tonic in measure 3, but such a hearing cannot account for the C♯ and F♯ that also appear in the piano chord.

The interpretation of another G-minor theme from the first movement of the sonata as a major-third-generated network, shown in Figure 1.8, primes one to hear the opening of the second movement in relation to that same network. Figure 1.15 reads the E♭, the final note of the opening two measures, as the root of a harmony built a major third below the tonic. This harmony then proceeds to G minor. This explanation accords a harmonic dynamism to mm. 1–3: it invests the G-minor harmony with the force of resolving a previous non-tonic chord, much like the tonic's first appearance in a classical-period movement with a non-tonic opening. The clarinet line also thematizes the major-third related triads, since it arpeggiates an augmented triad in its first three notes. Like the G-minor tonic, the opening LM3 also contains a note that our hearing cannot yet explain, since the opening E♭-minor triad has an added D. One cannot interpret these added notes as local neighbors, as in the excerpt from the first movement shown in Figure 1.8. The D, which is a dissonant seventh, remains unresolved and provides a common-note connection to the following G minor triad. The passage that immediately follows begins with a pure G-minor triad and proceeds with a progression that follows common practice, leaving the C♯ and F♯ putatively unresolved.

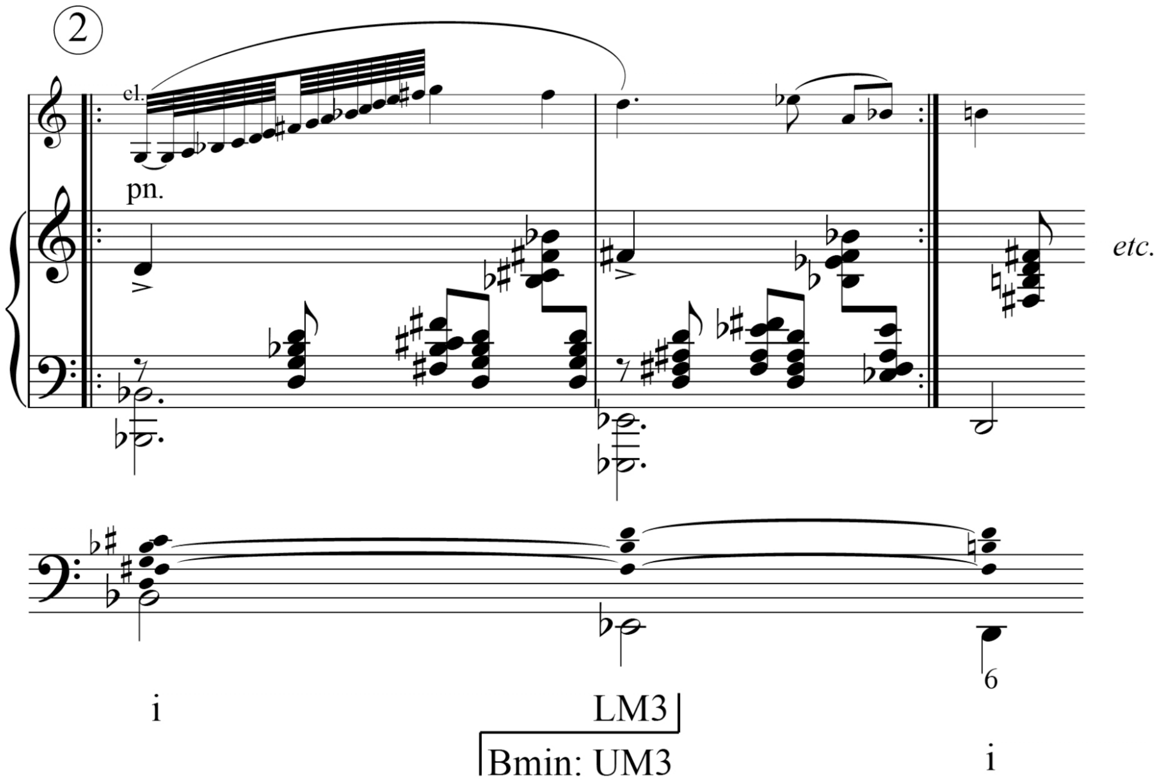

Figure 1.16. Poulenc, Sonata for Clarinet and Piano, second movement, rehearsal 2 to four measures after rehearsal 2.

Figure 1.16 shows that the second movement's transition section contains the same unresolved added notes. The piano and clarinet oscillate between i, which has added F♯ and C♯, and the LM3, which has an added D. The passage then moves to a B-minor triad (with no notes added) in first inversion, completing the cycle of major third-related triads. Since the following section is in B minor, the harmonic analysis interprets the progression as a "pivot-chord" modulation that reinterprets the E♭-minor chord as a UM3. A listener determined to interpret the dissonant notes as non-chord tones might hear the F♯ in the first chord as a long anticipation of the F♯ in the final chord. The C♯ is less easy to interpret, since it resolves up by step to D, an added seventh to the E♭-minor triad that is also dissonant.

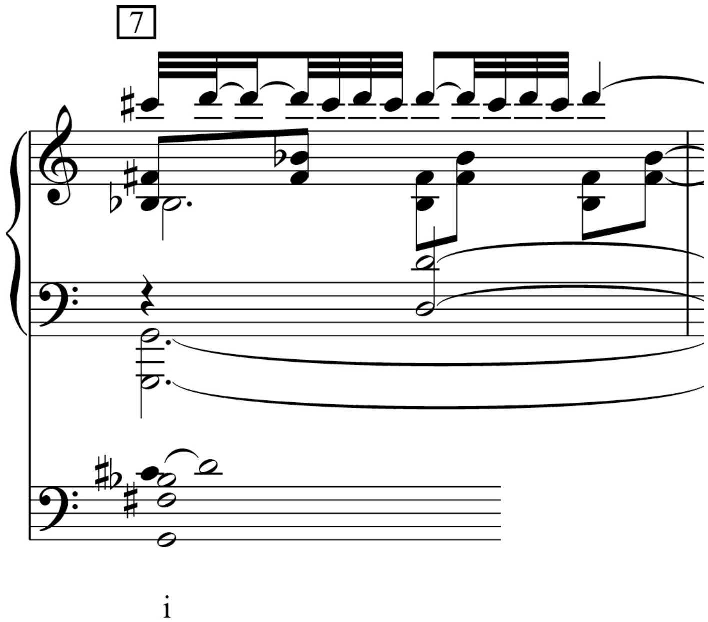

Figure 1.17. Poulenc, Sonata for Clarinet and Piano, second movement, rehearsal 7.

Figure 1.17 shows a measure from near the end of the movement, which also features a tonic triad with dissonant notes added. Before the final cadential progression, the clarinet plays a fragment from the main theme that oscillates between i and a major IV. At rehearsal 7, the clarinet and piano then play a stinging tonic triad with two added dissonant notes and hold it for two full measures. Here, the clarinet oscillates between C♯ and D, suggesting that at last the C♯ may have “resolved” up to the fifth of the tonic triad, as shown in the reduction underneath the score excerpt. The unresolved C♯s elsewhere in the movement indicate that it is also possible to hear both notes as members of the chord that the instruments are outlining. The next chord heard in the movement is a D-minor triad (i.e., minor v); it leads to a final cadential passage that leaves the dissonant F♯ unresolved.

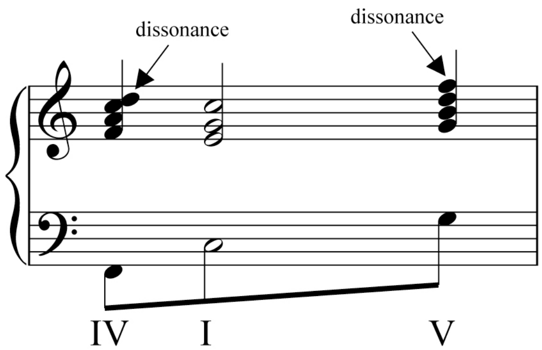

Figure 1.18. Added dissonant notes in common-practice triadic network.

Comparison with common-practice tonal theory, as before, provides a useful starting point for discussing neo-tonal dissonance. Figure 1.18 shows dissonant notes that are typically added to IV and V in common practice harmony. IV typically adds scale degree $\hat{2}$, an “added sixth,” while V typically adds scale degree $\hat{4}$, a chordal seventh. The Roman numeral system would label the first chord as ii^{6}_{5}, rather than “IV with added sixth,” but some theories interpret it in the latter way. This interpretation helps explain why “ii^{6}_{5}” frequently substitutes for IV in plagal IV–I progressions, and gives the chord a closer relation to the IV triad, which provides the prototypical expression of the subdominant function in dualist theories. Hugo Riemann labels these notes *characteristic dissonances*. These are notes added to each chord that serve to give each a unique intervallic profile (minor seventh in one case, dominant seventh in the other) and mark it for a particular function.[39] These dissonances also serve to signify the *conceptual* dissonance that a IV or V triad creates. Riemann claims that a tonic triad, because of its privileged status, is continuously present in a listener’s consciousness. IV or V therefore sounds in relationship to this unheard tonic and creates a cognitive

[39] Carl Dahlhaus, *Studies on the Origins of Harmonic Tonality*, trans. Robert O. Gjerdingen (Princeton: Princeton University Press, 1990), 39.

dissonance, even if the chord itself is not a dissonant construction. The characteristic dissonances make tangible the dissonance that these chords have within the triadic network.[40] Some theorists also point out that the dissonances are drawn from the chord of the opposite function, and therefore allow a single chord (such as V^7) to stand for both the dominant and subdominant functions.[41]

Schenkerian theory would locate the origin of these dissonant notes in melodic embellishment of a triadic framework. It states that a seventh can be to a suspension, neighboring motion, or voice that descends from an octave to a seventh in relation to the bass, forming a passing note.[42] These observations about seventh chords are certainly accurate, but they do not alter the possibility that a note that had its origin in one musical system might eventually, through repeated use and recontextualization, take a new meaning in a different musical system. For example, in later common practice, the chordal seventh often entered by leap and was treated with greater freedom, and V^7 could

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[40] Hugo Riemann, *Harmony Simplified; Or, The Theory of the Tonal Functions of Chords [Vereinfachte Harmonie]*, trans. H.W. Bewerunge (originally pub. 1893, second ed., London: Augener, 1895), 56–58. See also Dahlhaus, *Studies on the Origins of Harmonic Tonality*, trans. by Robert O. Gjerdingen (Princeton: Princeton University Press, 1990), 39.

[41] Moritz Hauptmann, *The Nature of Harmony and Meter [Die Natur der Harmonik und der Metrik: Zur Theorie der Musik]*, trans. and ed. by William Edward Heathcote (Orig. pub. Leipzig, 1853; English ed., London: S. Sonnenschein, 1888). Daniel Harrison, in *Harmonic Function in Chromatic Music*, also interprets the V^7 chord as an example of functional mixture between dominant and subdominant (65).

[42] Heinrich Schenker, *Free Composition [Der freie Satz]*, trans. and ed. Ernst Oster (Vienna: Universal, 1932; reprint, Hillsdale, NY: 1977), 63–64 (§176, §177). Edward Aldwell and Carl Schachter give a similar explanation of seventh chords in *Harmony and Voice Leading*, 3rd ed., Chapter 6, "I, V, and V^7" (Belmont, CA: Thomson, 2003). Recently, Yosef Goldenberg, in *Prolongation of Seventh Chords in Tonal Music* (Lewiston, NY: Edwin Mellon, 2008), attempts to combine Schenkerian analysis with other theoretical traditions that view the chordal seventh as an "essential dissonance"—that is, a legitimate but dissonant part of the chord (18). Goldenberg suggests that once V7 arrives, the seventh can be treated with some degree of independence (120).

undergo prolongation.[43] These two facts suggest that the seventh of a V^7 had, at some level, transcended its origin as a neighboring or passing note and become an essential part of the chord.

To be sure, it is also possible for dissonant notes to result from surface melodic embellishment so that they do not inhere in the underlying chordal framework. In this dissertation, these notes will be labeled *nonessential* dissonant notes. Nonessential dissonant notes include brief non-chord notes such as passing notes, suspensions, neighbor notes, and the like. In the first movement of Poulenc's Clarinet Sonata, analyzed in Figure 1.8, the C♯ and F♯ functioned as nonessential dissonances in the first movement but were converted into essential dissonances in the second.[44]

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[43] In *Free Composition*, 64 (§177), Schenker seems to take an ambivalent attitude toward prolonging seventh chords. He cites an example of a prolongation of V^7 that begin with a dissonant seventh, rather than with a consonance, from Beethoven's Sonata Op. 81a, 1st movement, mm. 66–85. According to Ernst Oster, in his unpublished notes Schenker labeled these "true seventh-progressions" that prolonged a dissonant harmony, but also calls these a "harmonic sin." By contrast, Yosef Goldernberg, in *Prolongation of Seventh Chords in Tonal Music*, proposes a revision of Schenkerian analysis that allows for a passage to prolong a seventh chord and allows an analyst to represent this prolongation in a voice-leading graph. Goldenberg points out that Schenker's theory allows seventh chords to occur at the deepest levels of structure, such as a V chord supporting a $\hat{4}$ within a Urlinie descending from $\hat{5}$, and that gaps within Schenker's theory of counterpoint admit to the possibility of prolonged dissonances (89, 26–29). Goldernberg then cites several examples of a series of harmonies that are subordinate to and prolong a dissonant chord.

[44] According to John William Mitchell's "History of Theories of Functional Harmonic Progressions" (Ph.D. dissertation, Indiana University, 1965), the distinction between essential and non-essential dissonance was proposed by Kirnberger, writing in the 18th century, and was taken up by several nineteenth-century theorists, including Moritz Hauptmann (93–94).

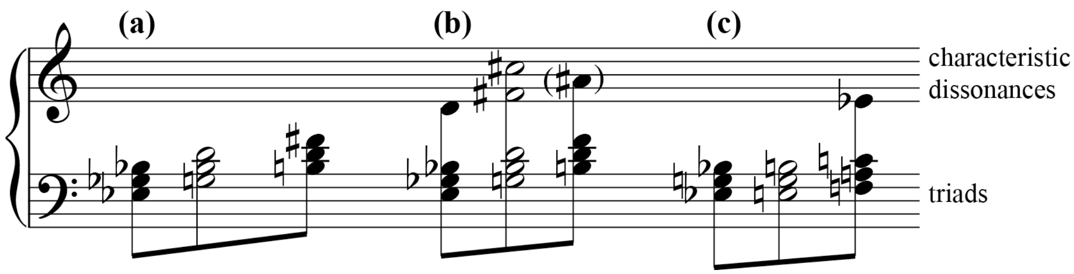

Figure 1.19. Triadic network with added characteristic dissonances for (a) Poulenc, Sonata for Clarinet and Piano (1962), first movement; (b) Poulenc, Clarinet Sonata, second movement; and (c) Copland, Third Symphony, cadential progression at rehearsal 7.

In tonal theory, characteristic dissonances are added sixths or sevenths. In neo-tonal music, by contrast, other added notes can assume the same status. Figures 1.19a and 1.19b show two triad networks for the excerpts from Poulenc's Clarinet Sonata analyzed earlier in this chapter. Triads are shown on the lower staff; added dissonant notes are shown on the upper staff. In Figure 1.19b, a major seventh is added to the LM3. The same note is also added to the UM3, though in the second movement of the Clarinet Sonata this chord does not actually sound in the key of G minor. Figure 1.19c shows the added dissonant notes in for the cadential progression from Copland's Third Symphony, analyzed in Figure 1.13. As in common-practice harmony, the characteristic dissonances are drawn from the chord of the opposite function and mark each triad with a unique intervallic content to clarify its function.

The network shown in Figure 1.19b also has two dissonant notes added to the *tonic* triad. In classical tonal theory, characteristic dissonances reflect the conceptual dissonance formed by the non-tonic triad. Of course, when such notes are added to a tonic triad they cannot take this extra symbolic value. Nor does one added note, the C♯, originate in any of the others in the network. The two notes do, however, mark a particular chord with tonic status. In the second movement of Poulenc's Clarinet Sonata, the C♯ consistently appears with a G minor tonic triad. When added dissonant notes serve to disambiguate the function of a chord, they will be labeled characteristic dissonances, even if this function is the tonic. In the second movement, the C♯ is especially important in adding asymmetry to the triadic network. Without it, both the tonic and LM3 would be identical chord constructions (i.e., minor triads with major sevenths), obscuring their identity. The C♯ is also the single non-hexatonic note in the network and may serve a function in disrupting the excessive symmetry that this collection offers. Many critical commentaries on music by neo-tonal composers point out characteristic dissonances that are frequently added to the tonic and serve as stylistic fingerprints for their composers' work. Keith Daniel points out that Poulenc's insistence on adding sevenths to *tonic* sonorities was a characteristic harmonic practice, one that Daniel traces to Gabriel Fauré. Benedict Taylor has also noted that a fourth note is frequently added to the tonic sonority in music from Dvorák's "American" period, creating a minor seventh sonority.[45] Neil Minturn claims that Prokofiev, by contrast, avoids notes that can be added through a process of stacked thirds, and instead favors those that lie a half step away from one of the triadic members. Olivier Messiaen singles out an added sixth and augmented fourth as particularly "natural" added notes and cites several examples of these added notes in his own compositions.[46]

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[45] Benedict Taylor, "Modal Four-Note Pitch Collections in the Music of Dvorak's American Period," *Music Theory Spectrum* 32, no. 1 (Spring 2010): 44–45.

[46] Keith Daniel, *Francis Poulenc: His Artistic Development and Musical Style* (Ann Arbor: UMI Research Press, 1982), 75–76; Neil Minturn*, The Music of Sergei Prokofiev*, 55; and Olivier Messiaen, *The*

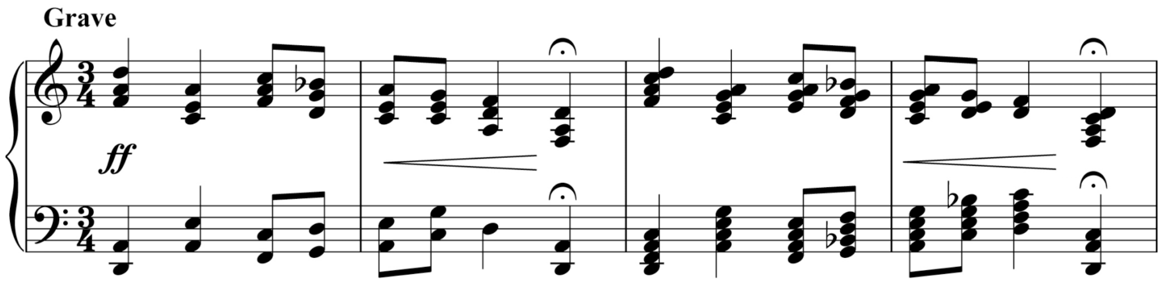

Figure 1.20. Béla Bartók, Bagatelle, op. 6, no. 4 (1908; rev. 1909).

Other essential dissonant notes, by contrast, add color and texture to a chord, but have no "marking" role found in a characteristic dissonance. For lack of a better term, these will be labeled "color notes." Felix Salzer's theory of modern tonality includes a concept that he calls "color chords," which are essentially triads with added color notes. He cites the opening of Bartók's Bagatelle, op. 6, no. 4, reproduced in Figure 1.20, as an example. In the first two measures, a phrase is played in parallel triads. In the next set of two measures, the phrase is repeated exactly, except that diatonic seventh chords replace each triad. Here it is pointless to speak of the added sevenths as dissonant notes that require resolution. The seventh chords move in the exact same parallel motion displayed in the first phrase, and each seventh chord proceeds to another without giving a sense of resolution to a consonant sonority. The sevenths in these two measures instead add color and texture to each triad.[47] Olivier Messiaen also describes "added notes" that change the

Technique of My Musical Language, Volume I: Text, trans. John Satterfield (Paris: Leduc, 1944; reprint, 1956), 47.

[47] Salzer, *Structural Hearing: Tonal Coherence in Music* (New York: Charles Boni, 1952; reprint, New York: Dover, 1962), 194–195, and example 418. Salzer uses the term "color chord" in a broader sense than I do in this dissertation, since he also cites instances where a non-tonic harmony replaces the tonic solely for the sake of harmonic color, as in the B-major triad substituting for the tonic G major in measure 6 of Beethoven's Piano Concerto no. 4, Op. 58.

“color” or “spice” of a chord but do not take a “particular expressive accent.” Messiaen traces these notes to the music of Debussy and speculates that they originate either from reclassified appoggiaturas or from the higher partials of the overtone series.[48] In neo-tonality color notes are often added to a tonic triad, which already has enough stability to absorb them and give them the same stable connotation, but they can also be added to non-tonic chords.

- *Essential dissonances*: Notes added to a chord that clarify or mark it with a particular function.
- *Non-essential dissonances*: Notes that result from a surface embellishment of a chordal framework through passing motion, neighboring motion, or rhythmic displacement, and have no influence on a chord’s function
- *Color notes*: Notes added to a chord to change its color but have no role in clarifying its function.

Figure 1.21. Summary of types of dissonance in neo-tonal music.

Figure 1.21 summarizes the three different types of dissonances introduced thus far in this discussion: non-essential dissonances, color notes, and essential dissonances. There can be a gray area between these types. When color notes are added, a listener might still *feel* their dissonance, even though the notes might structurally fulfill a role originally held by a consonant triad. The final chord of Poulenc’s choral piece *Stabat Mater* (1951) is a prime example. This chord is a major triad with an added minor seventh. In the context of the final three movements, this chord is understood to have a tonic function, but many listeners certainly feel the instability of this vertical sonority because of its association with V^7, which has a dominant function. I discuss this chord at

[48] Olivier Messiaen, *The Technique of My Musical Language*, 47.

length in Chapter 4. A triad might contain added notes that originally appear to be color notes but are later reinterpreted to function as dissonances. The ambiguity of the status of individual notes, far from limiting a theory, gives it the ability to be explicit about the expressive potential of individual notes within each context.

4.4.1. Other Theories of Neo-tonal Dissonance

My theory determines a note's level of dissonance based on its relation to the underlying harmonic structure. Paul Hindemith's theory of dissonance provides a useful comparison. Hindemith also views dissonance and consonance as two poles along a continuum of states, rather than two binary states, but his measure, unlike mine, is absolute and determined by a chord's intervallic content.[49] Daniel Harrison's theory of overtonality in early twentieth-century music also outlines a series of rules for adding notes to a chord without doing undue harm to its overall consonant status.[50] While absolute values of dissonance inform consonant and dissonant states within a key system, I argue that the key system also informs the *perceived* dissonant status of a note or interval. For example, in a series of diatonic 7–6 suspensions, each vertical seventh is perceived as equally dissonant, even though some are major and some are minor. Each instance must be interpreted with respect to its particular context, and a given context might even support hearing a *reversed* relation between dissonance and stability. For example, in the triadic network modeling the second movement of Poulenc's Clarinet

[49] Hindemith, *The Craft of Musical Composition, Book I: Theory* (New York: Schott, 1942), 57–86.
[50] See Daniel Harrison, *Pieces of Tradition*, forthcoming.

Sonata, shown above in Figure 1.19b, the tonic triad has both an added sharp fourth and major seventh. This makes it the *most* dissonant chord within the network, and the dissonance occurs not in spite of, but because of its tonic status. These added notes help listeners recognize the chord as a tonic at several key points throughout the movement, even if they do not have absolute pitch.

In regards to interpretation of dissonance, this theory of closure follows the example of Peter Silberman's theory of neighbor spaces. Silberman's theory selects a passage's "referential sonority," which is analogous to a tonic, and creates a map of all pitches that can neighbor members of this referential sonority. There are no restrictions on what can function as a referential sonority, but a series of "preference rules" indicate which collections of notes are most likely to function as one. The preference rules favor selecting the sonority that is the least dissonant in comparison to the other sonorities in a passage, but also favors selecting the sonority that conforms with common-practice harmonic conventions and occurs at structurally significant locations. As such, it allows chord constructions of greater dissonance to function as a referential sonority, given proper context.[51] This theory will, as a preference, prefer hearing a major or minor triad

[51] In "The Problem of Prolongation in 'Tonal' Music: Terminology, Perception, and Expressive Meaning," *Journal of Music Theory* 41, No. 1 (Spring 1997): 101–136, Steve Larson also argues that it is misleading to use consonance and dissonance as a fixed guide for creating prolongational reductions. There are cases where consonant chords prolong dissonant ones (106–107). Instead, he argues that the stability of a note or chord is the *result* of a prolongational hearing, rather than the cause of it (129). Listeners create prolongational hearings through considering several musical factors such as meter, harmonic rhythm, and melodic pattern (106), and referring to an abstract tonal hierarchy consisting of a series of alphabets (114). Larson does not examine closely enough the effect of contrapuntal relationships between voices on prolongational hearing, but otherwise I agree with his view that prolongation is a result of a balance of several musical factors, and is the cause, rather than the result, or stability.

as the tonic sonority in a passage, but it will add or alter notes within this tonic sonority if context warrants it.[52]

4.4.2. Essential Dissonance and Prolongation

The addition of essential dissonance and color notes into a harmonic system might initially appear to make the concept of Schenkerian *prolongation* problematic. Prolongation describes when a sonority governs a musical time-span even when it is not physically sounding, and allows for analytical reduction of a passage, a powerful tool for analysis. Describing prolongation is impossible, some theorists argue, if the basic chords in a passage have added dissonances. These chords violate Joseph Straus's fourth condition for prolongation, which requires a distinction between vertical and horizontal dimensions in a piece of music.[53] Straus states that the distinction between motion by step, which will always lead from a triadic note to a non-triadic note, and motion by leap,

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[52] See Peter Silberman, "Neighbor Spaces," 18–34. Peter Silberman proposes a series of "stability conditions" that determine the relative stability and instability of vertical sonorities. The most stable serves as the referential sonority for a passage. Stability conditions 1 and 4 afford greatest stability to those chords that have the lowest overall dissonance rating (using a rough heuristic determined by tallying half steps) and those that are involved in progressions that mimic tonal processes. Stability condition 2 gives greater stability to sonorities that occur more frequently, and occur at structurally significant moments. My discussion of whether the C♯ and F♯ are a part of the structural tonic triad essentially pits Silberman's stability conditions 1 and 4 against stability condition 2. Silberman's rules do not account for registral placement of pitches in determining stability, nor do they consider the passage's relation to the larger-scale organization of the work. These are two parameters that are crucial to my analysis. Nonetheless, as a series of "preference rules" that a listener brings to a passage, they provide a useful starting point for analysis.

[53] Joseph Straus, "The Problem of Prolongation in Post-Tonal Music," *Journal of Music Theory* 31, no. 1 (Spring, 1987): 5–7. Straus's other conditions of prolongation, which include a consonance/dissonance distinction, a hierarchy between scale steps, and a limited vocabulary of embellishing techniques, are arguably present in the system presented here.

which connects two triadic notes, is crucial for allowing horizontal expressions of a vertical harmony and for determining embellishing tones. Without such a distinction, an analysis will be unable to refer to normative embellishment patterns when interpreting a passage, and will be unable to make well-formed statements about the prolongational structure of a passage. Any statements one makes will be, in Straus's view, "in a strict sense[,] meaningless assertions."[54] Adding essential dissonances or color notes destroys this distinction, since the note added to a triad will always be separated from at least one of its members by step. It becomes impossible to determine whether a stepwise motion represents an "arpeggiation"—that is, motion between two harmonic notes—or a step.

Straus's fourth condition of prolongation has come under criticism. Steve Larson, for example, agrees with Straus that the difference between steps and leaps can provide information about deeper levels of prolongation, but then argues that Straus is incorrect in conflating embellishment and horizontalization of a harmony. The former is the function of an individual melodic voice within its larger musical context, while the latter is an emergent property of multiple analytical levels.[55] Oswald Jonas's introduction to Schenkerian theory, written in 1934, makes the same distinction as Larson between embellishment and horizontalization. Jonas devotes one chapter to "composing-out" (*Auskomponierung*) and another to prolongation, and nowhere suggests that these two musical processes are the same.[56] The former refers to the transformation of a vertical

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[54] Ibid., 8.

[55] Steve Larson, "The Problem of Prolongation in 'Tonal' Music," 130–131.

[56] Oswald Jonas, trans. and ed. John Rothgeb, *Introduction to the Theory of Heinrich Schenker [Einführung in Die Lehre Heinrich Schenkers]* (Orig. published 1932; English edition, New York: Longman, 1982),

sonority into a horizontal span, and allows for a musical passage to express a triad in time.[57] The latter refers to patterns of embellishment defined by rules of counterpoint.[58] Because the embellishing tones are under the control of more stable tones, they can be said to "prolong" them, but the same cannot be said for composing-out.

Yosef Goldenberg, who argues that Schenkerian analysis can show the prolongation of seventh chords, also recognizes that his theory blurs the step/leap distinction. He argues that Schenkerian theory itself does not always recognize this distinction in practice, and cites several examples of a leap to a dissonant tone and motion by step to another chord tone (which he calls "apparent passing tones") found within Schenkerian analyses.[59] He argues instead for looking at the context of deeper analytical levels in order to justify prolongations of non-triadic sonorities. Jazz theory follows the concept of added dissonance to its logical conclusion by nearly erasing the distinction between horizontal and vertical musical elements altogether, since it states that all scales are potentially statements of some extended tertian construction.[60]

Chapters 2 ("The Artistic Formation of the Chord") and 3 (Voice Leading and the Unfolding of the Triad"). I am grateful to Wayne Petty for directing me to this book.

[57] Ibid., 37–50.

[58] Ibid., 52–61. Jonas shows that Schenkerian theory unites horizontal unfolding and prolongation in the linear progression (*Auskomponierungszug*), which adds passing tones to the unfolding of a consonant inverval (Ibid., 62).

[59] Yosef Goldenberg, in *Prolongation of Seventh Chords in Tonal Music*, 26–35.

[60] Mark Levine, *The Jazz Piano Book* (Petaluma, CA: Sher Music, 1989). Levine explains the unity between scales and chords this way: "[D]rop your right hand [which is playing the upper three notes of a D minor thirteenth chord] an octave superimposing it over your left hand . . . Play all seven notes at the same time. You now see the seven notes of . . . the D Dorian mode. [J]azz musicians think of scales, or modes, when they improvise, because it's easier than thinking chords. . . . *The scale and the chord are, for the most part, two forms of the same thing*." (59–60, emphasis in original) Levine offers this scale/chord unity principle as a general guideline for contemporary jazz styles, even though he later explains a few exceptions, such as the presence of "avoid" notes that occur when specific scales occur over certain chords.

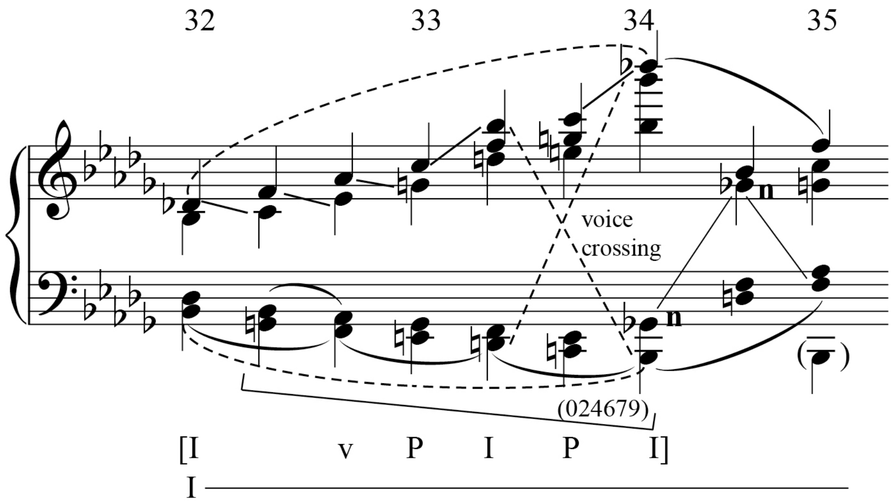

Figure 1.22. Aaron Copland, Piano Sonata (1941), first movement, reduction of mm. 32–35.

Like Goldenberg, I argue that listeners can understand when an individual voice is moving by step to a different chord even when the distinction between vertical sonorities and horizontal motion is blurred. The context of an individual work can establish a *particular* vertical sonority as relatively consonant or stable, and this sonority can be approached or left by stepwise motion, even if it contains seconds. Figure 1.22 provides an example; it shows a reduction of part of the transition section (mm. 32–35) from Copland's Piano Sonata (1941). The reduction omits some octave doublings and normalizes rhythm; otherwise it reproduces the notes of the score exactly. Over mm. 32–33, the upper two voices engage in a voice-leading pattern that resembles the Schenkerian technique of *reaching over*, defined by a resolution down by step in the uppermost voice combined with an upward transfer of register from an inner voice.[61] In the first chord in measure 32, a descent by step is evident in the uppermost line, indicated by a diagonal

[61] See Heinrich Schenker, *Free Composition*, 48–49 [§134].

arrow on the upper staff, while a new voice sprouts above the soprano simultaneously with its descent, indicated by the higher voice that is shown stems up.[62] The same voice-leading technique is repeated for the next three chords.

The second chord in the example, which consists of the pitches {G B♭ C F}, contains two seconds—between G and F and between B♭ and C—and is therefore dissonant. In common-practice harmony, a soprano descent in a reaching-over gesture resolves to a stable harmony, which is not provided by this chord. Within the context of the movement, by contrast, the chord is a tonic sonority with added dissonances. The same chord, voiced in the same way, appears at the end of the two opening tonic-defining phrases over mm. 1–4 and 4–8.[63] At the end of the phrase shown in Figure 1.22, the tonic chord is repeated with all three of its added essential dissonances: G, C, and A♭. This chord reaffirms that G and C can function as notes added to the tonic harmony. In the second chord, the soprano moves by step to a chord that context defines as privileged and tonic-functioning, even though it is not consonant. In this case of a reaching-over gesture, these attributes of the chord are sufficient to support the soprano descent. A harmonic analysis of the gesture is shown underneath the score: the first two chords state I, while the rest of the gesture consists of I, v, and passing chords (marked with a "P"). At m. 33, the soprano's descending step is inverted to become an ascending seventh, and over mm. 33–34 the soprano and bass engage in a voice exchange.

Because the movement contextually defines added dissonant notes, one is able to

[62] I am grateful to Ramon Satyendra for his characterization of reaching over as a "sprouting" of a new voice. This is opposed to a description of the transfer of register that Schenker uses in *Free Composition*.
[63] This work is discussed in more detail in Chapter 3 of this dissertation.

say that the passage over mm. 32–33 uses a reaching-over gesture, and that the passage, as a whole, projects the tonic harmony. The added dissonant notes *can*, however, limit what one might be able to say about other prolongational elements of the passage. Schenker states that reaching-over gestures frequently form either initial ascents or arpegiations. The uppermost line of the mm. 32–33 <D♭–F–A♭–C> resembles an ascending arpeggiation, but this resemblance does not automatically allow one to assert that this represents a horizontal statement of a harmony, because of the blurred distinction between horizontal and vertical created by the presence of added dissonances. One can say that the upper parts create a thrilling upward-sweeping gesture that connects D♭4 to D♭7, projects the tonic, and that most notes in the gesture are also notes of the tonic triad. This description is *sufficient* account of the prolongational attributes of the passage. Although the elements of tonality are presented in variant form, they are suitable to passage's harmonic goal.

Straus argues that a failure to meet all of the conditions for prolongation makes it impossible to undertake successive reductions to find deeper levels of tonal structure. In many cases, this statement is accurate. This dissertation focuses on foreground reductions, and on how pieces privilege specific types of progressions that indicate closure. At large time-scales, it is often the case that other types of musical relationships provide a better account of musical structure, such as formal functions, associative connections, or large-scale transpositional sequences. Even Straus's proposed method of analysis, which depends on associative relations between pitch-class sets, requires determining what foreground musical events are significant. My dissertation provides one way to do so.

4.4.3. Dissonance and Intervallic Analysis

The addition of essential dissonance creates an association between a chord's intervallic content and its relation to the tonic sonority. The addition of several types of dissonance also increases the harmonic richness of the musical surface, permitting a greater number of vertical configurations. The greater number of vertical possibilities is often mediated by intervallic consistency; therefore, analysis of the intervallic content of voices or vertical configurations is at times indicated. This dissertation will use set-class analytical configuration to show the relationship between different pitch collections. Parentheses are used to show *transposition classes*; that is, the set of all collections that are related by pitch-class transposition. Square brackets are used to show Fortean set-classes; that is, the set of all collections related by *both* pitch-class transposition and inversion. The transposition-class of a dominant-seventh chord is (0368), the transposition-class for a half-diminished seventh is (0258), and the set-class of both is [0258].

4.5. Elimination

The process of adding essential dissonance has an opposite. Transforming a triadic network by *elimination* consists in removing notes from the triads in the network, leaving dyads or single pitches. Daniel Mathers' examination of cadential gestures in Aaron Copland's *Short Symphony* (1932–1933; later rewritten to become the Sextet,

1937) contains an example of a network from which notes have been eliminated. The opening of the Sextet and Mathers' analysis are shown below in Figure 1.23.

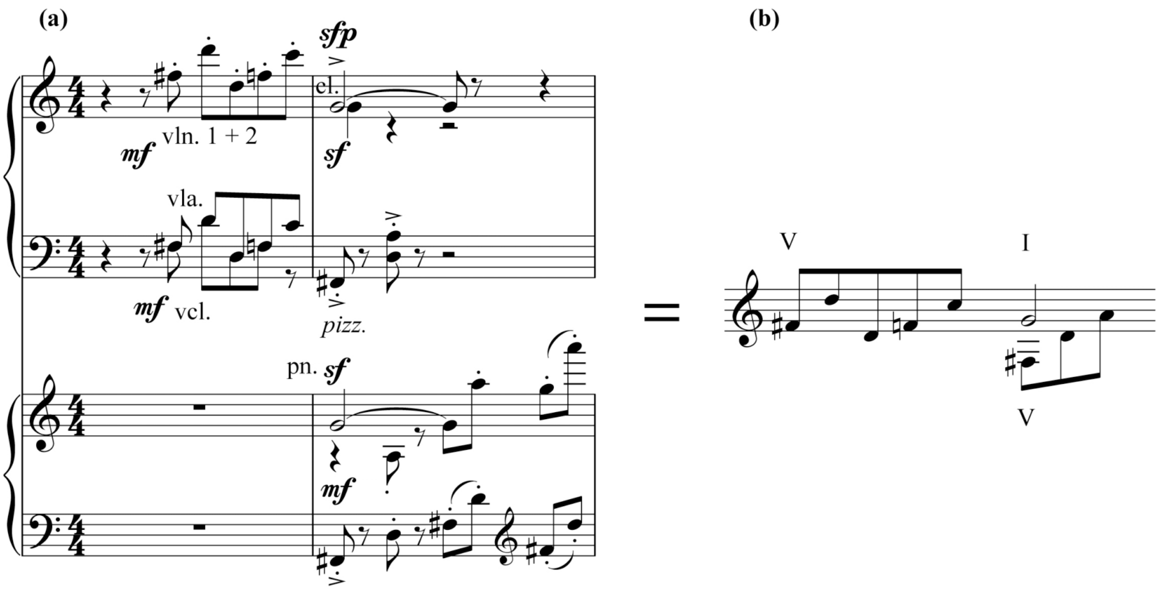

Figure 1.23. (a) Aaron Copland, Sextet (1937), opening. (b) reduction with Roman-numeral labels based on Daniel Mathers's analysis.

Mathers reads the opening gesture of the work as a variant on the V^7–I cadential progression. The first five notes outline a dominant seventh chord with both a raised and flatted leading tone, which then arrives on G, a single tonic note. This note, however, sounds simultaneously with an additional arpeggiation of the dominant triad; this simultaneity immediately undermines the sense of arrival and leads to further continuation.[64] The Sextet's scoring helps to support Mathers' hearing of an arrival on the pitch G: all instruments play and hold this note, making it the most salient event, while the pianist lightly arpeggiates through the notes of the dominant triad. At the same time, in Mathers' words, it "expresses the authentic cadence as a simultaneity,"

[64] Daniel Mathers, "Closure in the *Sextet* and *Short Symphony* by Aaron Copland: A Study Using Facsimiles and Printed Editions" (master's thesis, Florida State University, 1989), 31.

verticalizing the progression of notes that had just taken place over time.[65] The opening gesture also contains the scale degrees that, in smaller combinations, also fulfill a dominant function throughout the rest of the movement. These include $\{\hat{5}\ \hat{7}\}$, $\{\hat{5}\ \hat{7}\ \hat{4}\}$, and $\{\hat{5}\ \flat\hat{7}\ \hat{4}\}$.

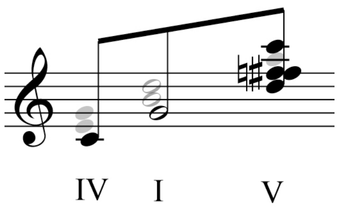

Figure 1.24. Eliminated network modeling opening of Copland's Sextet (1937).

Figure 1.24 translates Mather's analysis into a triadic network diagram. Notes that have been eliminated from the common-practice prototype are shown in light gray. The fifth is eliminated from V, and the third and fifth are eliminated from I and IV. In addition, both a minor third and seventh are added to the dominant. The tonic note, or the tonic note with its upper fifth, most frequently appears at the end of cadential gestures in the *Short Symphony*/Sextet; this justifies using an eliminated network to model its progressions. Other Copland compositions are notable for their complete *avoidance* of triads, or for their distillation of referential sonorities from three to one or two voices. These suggest more far-reaching transformations to the triadic networks that govern our hearing; Chapter 3 discusses such cases in greater detail.

[65] Ibid., 25.

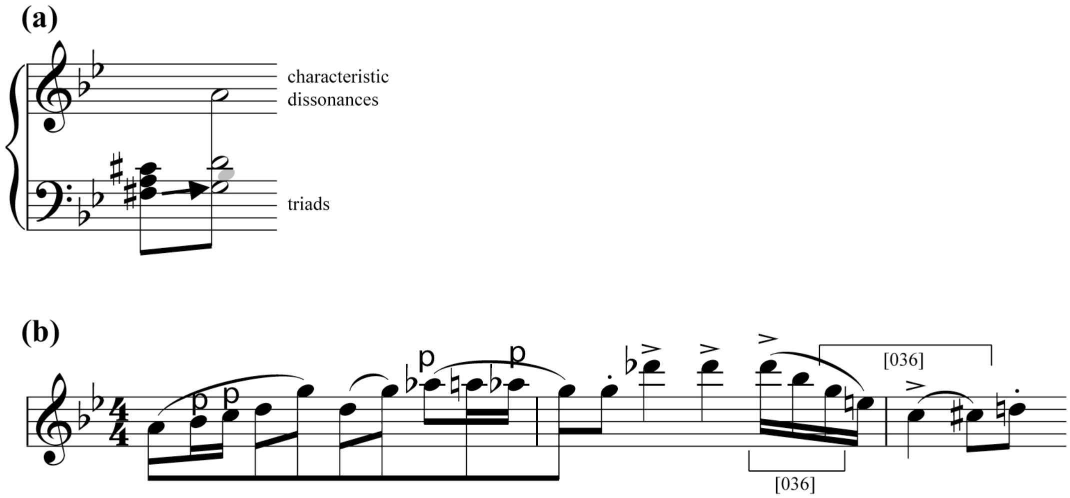

Figure 1.25. (a) Triadic network governing closing progression of Sergei Prokofiev's Quintet, op. 39, first movement (1924). (b) Quintet, op. 39, opening of oboe melody with analytical overlay.

Figure 1.25a shows the triadic network for the opening theme of the first movement of Prokofiev's Quintet, op. 39. A privileged motion from the Lm2 to the tonic triad defines harmonic closure; this governs our hearing of the cadential progression analyzed in Figure 1.7. The tonic triad itself has its third eliminated, and a ninth is added as a characteristic dissonance. This altered tonic sonority occurs at closing progressions throughout the movement. Figure 1.25b shows how this triadic network informs an interpretation of the oboe's opening melody. The long stems and added beam indicate notes of the tonic sonority. They show that the first note in the oboe's melody has a relatively stable, rather than unstable, status, and in the rest of the first measure the oboe makes an ascending arpeggiation through the tonic sonority, filled in with passing notes. In m. 2–3, the melody outlines two diminished triads (set class [036]). These instances are bracketed on the analytical diagram. Both triads contain G, a stable note, and two dissonant, embellishing notes. This motive is repeated in the bass line that appears at the cadential progression in the fourth measure of the excerpt: <E♭–C–A>.

5. Identifying Closing Progressions

The formal and harmonic context of a neo-tonal work will indicate where a listener might hear a closing progression. Closing progressions are indicated by reference to thematic archetypes, by melodic arrival on the tonic, and by breaking of harmonic pattern to indicate an arrival. Many neo-tonal works thematize specific types of root motion and voice-leading structures, so that later closing progressions reinforce those previously heard.

6. Non-privileged Root Motion

Identifying closing progressions enables a listener to perceive particular root relations and motion as privileged within a piece or section. Non-privileged root relations, by contrast, lack the ability to create harmonic closure. Their role is frequently to serve as a local neighboring function, or to form transpositional sequences whose purpose is to connect chords of greater structural importance. In this respect, they are harmonically "open" and lack the ability to define a tonic.

Figure 1.26. Prokofiev, *Peter and the Wolf* (1937), "Triumphant Procession."

Figure 1.26 shows a reduction of a section of the "Triumphant Procession" from Prokofiev's *Peter and the Wolf* (1937).[66] The excerpt contains several semitone-related triads, and while semitone-related triads do at times provide closure in Prokofiev's music (as shown in Figure 1.8), they do not do so here. The section begins at rehearsal 45 with a statement of the "Hunters' Theme." The accompaniment to this theme begins by oscillating between a C-major triad and a B-major triad in second inversion. (The resulting bass line is semitonally displaced from a classical "oom-pah" bass line alternating between scale degrees $\hat{1}$ and $\hat{5}$, an example of musical satire that Neil Minturn also observed in the March from the *Love of Three Oranges*.[67]) As the theme ends (one

[66] I am grateful to Ramon Satyendra for pointing this piece out to me.

[67] Neil Minturn, *The Music of Sergei Prokofiev*, 31.

measure before rehearsal 46), this harmonic oscillation breaks off, and the initial C-major triad is reinterpreted as a Neapolitan that tonicizes a B-major triad. This chord is interpreted as a dominant of E minor and leads to a reprise of the "Wolf's Theme" in that key at rehearsal 46. In summary, the half-step-related triads at the opening of the theme form a repeating pattern that breaks off as it reaches its conclusion and leads to a common-practice half cadence. The opening two chords, therefore, do not create closure in the key of C-major, but serve to extend the opening tonic harmony. I have therefore interpreted the B-major triad as a neighboring chord, analyzed as "N" in the reduction above.[68] At rehearsal 47, the "Hunters' Theme" is restated in the key of D♭ major. As in the previous statement, this initial tonic chord is decorated by a neighboring chord, and as this theme reaches its conclusion, the D♭-major triad is again reinterpreted as a Neapolitan that leads to a perfect authentic cadence in C major.

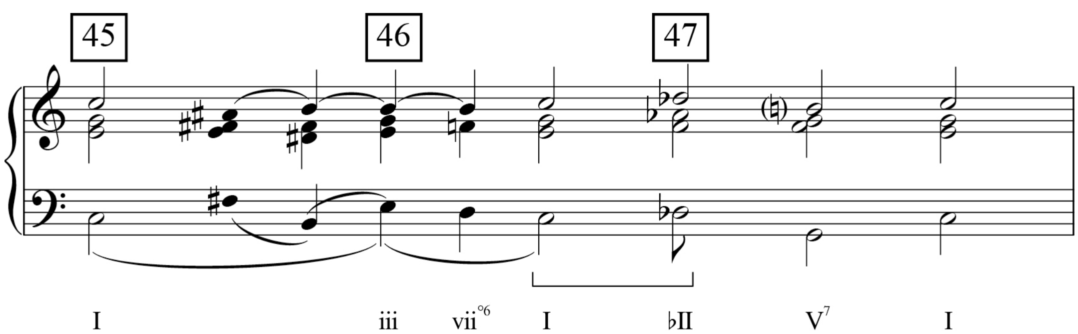

Figure 1.27. Prokofiev, *Peter and the Wolf* (1936), "Triumphant Procession," reduction.

Figure 1.27 eliminates the neighboring chords to show the background progression for the section, which fits comfortably within common practice. The

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[68] A more detailed analysis would also likely note the prevalence of chromatic lower neighbors in other themes from *Peter and the Wolf*, making it a recurring motif.

"Hunters' Theme" and "Wolf's Theme" form a motion from I to iii, and back to I via a passing vii^{o6}. The reprise of the "Hunters' Theme" represents a prolongation of ♭II, which then leads to a final cadence. The background contains another instance of a semitone relation between I and ♭II, bracketed in Figure 1.26, but again, it does not provide closure. In summary, the "Triumphant Procession" *thematizes* half-step related triads at several structural levels, but it does not *privilege* them at any level of structure. Instead, other types of root motion provide closure.

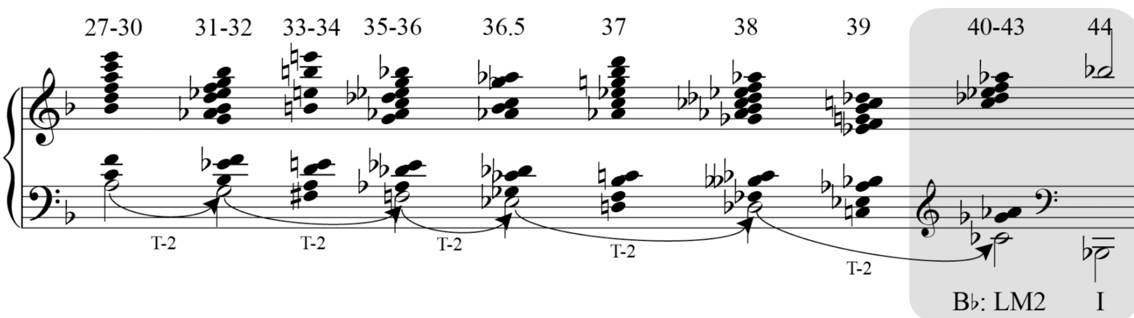

Figure 1.28. Copland, "Nature, the Gentlest Mother" (1950), reduction.

Figure 1.28, shown above, shows a reduction of a central section in Aaron Copland's song "Nature, the Gentlest Mother" from *Twelve Poems of Emily Dickinson*. (This song is analyzed in greater detail in Chapter 3.) This song privileges root motion down by fifth and up by whole tone as a means of creating harmonic closure. Over mm. 27–43, the piano part plays what is essentially a series of first-inversion triads; these are evident as the lowest three notes of each chord. The rest of the voices decorate each triad with a plethora of added color notes, giving each a pan-diatonic glow. The arrows labeled "T-2" show a transpositional sequence down by whole tone over this passage. At some points (namely mm. 33–34, m. 37, and m. 39), a semitone provides a chromatic connection between two whole-step related chords, but this does not erase the impression of the overwhelming whole-tone descent. Over mm. 40–43, the sequence breaks off with a statement of an A♭-minor triad in first inversion with several added notes. Determining the “root” of this chord is not an entirely clear-cut task, because it is voiced differently from the rest of the chords in the passage, but hearing the chord as a first-inversion triad is most plausible, since it continues the previous sequence. While the bass line continues to follow the pattern of descending whole tone, at least in pitch-class space, the triadic root is only a semitone below the previous B𝄫 from measure 38. In addition, the triad’s minor quality is a reversal of the major chords presented in the rest of the sequence. This break in pattern suggests motion toward a harmonic close, which is fulfilled in the following measure as the A♭-minor triad resolves to a pure B♭, indicating an LM2–I progression. This closing progression is also reinforced by a change in texture and dynamics over these measures. “Nature, the Gentlest Mother” uses *non-privileged* root motion by descending step to create a transpositional sequence and then breaks off this sequence with *privileged* root motion to indicate harmonic closure.

7. Potential Objections

These four transformations of the model for harmonic closure—*reverse privileged root motion*, *change privileged interval of root relation*, *add essential dissonance*, and *eliminate*, as well as the related *change of privileged voice-leading structure*—form the core concepts that inform the analyses in the subsequent discussion of three neo-tonal composers. Before proceeding, it is necessary to address potential objections to this approach. One such objection might question the value of transforming relations that are foundational to tonal progressions. The musical characteristics that create common-practice tonality are so thoroughly ingrained in our hearing, such an objection runs, that they provide a standard by which even unusual pieces should be evaluated. Heinrich Schenker, for example, claims that the V–I progression results from a background arpeggiation of the tonic triad, which itself is generated by the overtone series and as such is grounded in nature and inviolable.[69] Other theorists describe aspects of tonality as cognitive schemata that a member of a culture learns through years of exposure and conditioning, or which are a result of the natural cognitive processes of a human listener. As such, they are also nearly inviolable.

There are some situations in which these objections would be apropos. If we are describing a new style, we must use some norm against which to compare it. Those provided by existing theories of tonality are understood and accepted by the community of music theorists, and as such provide a foundation for further dialogue. In addition, many listeners likely tend to "default" toward hearing through the lens of common-practice tonality; as a result they would hear the examples cited earlier in this chapter as deviations. Listening according to this standard is likely one reason that critics often describe specific music by neo-tonal composers as "quirky" or raise the hackneyed term "wrong-note music."

Much of the music studied in this dissertation has already been subject to study according to common-practice tonal language. Such "tonal Procrustean bed" analyses,

[69] *Free Composition*, 10 (§1).

some of which will be discussed in subsequent chapters, often distort some of the most salient musical features of their objects of study. Much neo-tonal music largely conforms to common-practice conventions, but there are many moments that defy these conventions while still strongly giving listeners the impression that a passage is in a particular key. These moments create an uncanny tonality, one that uses the building blocks of common-practice tonality and defamiliarizes them by reorganizing the relations among its constituent members. This dissertation offers modes of listening that incorporate some of these uncanny moments. Jeremy Day-O'Connell, who undertook a similar project of hearing alternate cadential progressions in Debussy, provides an eloquent defense of his own methodology:

> . . .[A]n analysis of [Debussy's prelude] *La fille* [*aux cheveux de lin*] will prove most illuminating if theoretical assumptions themselves are altered in observance of the cadences that so thoroughly typify the piece. If rather than puzzling at the irregularities . . . we instead accept them as reasonable, then we will find ourselves in a position to discern structural connections that have eluded others.[70]

This dissertation, likewise, looks at which closing progressions actually occur in neo-tonal compositions, shows how compositions make directed motions toward them, and aims to provide greater insight into the structure of some neo-tonal compositions. Walter Everett undertakes a similar enterprise in his analysis of tonal systems in rock music, although he defines each system in terms of its deviation from the norm of common practice.[71]

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[70] Jeremy Day-O'Connell, "Debussy, Pentatonicism, and the Tonal Tradition," 248.

[71] Walter Everett, "Making Sense of Rock's Tonal Systems," *Music Theory Online* 10, no. 4 (December 2004). *http://mto.societymusictheory.org/issues/mto.04.10.4/mto.04.10.4.w_everett_frames.html*

Other critics might object to the "analytical promiscuity" of the transformed triadic networks. The networks might appear to permit so many alterations that nearly any succession of chords can be defined as a closing progression. It is certainly true that arbitrary application of transformed triadic networks will yield a meaningless analysis, and of course this is not the goal of this dissertation. The "looseness" of the system of transformed triadic networks is not necessarily a drawback to a musical theory. Ramon Satyendra claims that not all musical intuitions need to be modeled by an intervallic network, which has strict requirements of binary composition, simple transitivity, associativity, and identity and inverse operations. A *relational system*, which consists of objects and relations without the aforementioned requirements, can also effectively model many of our musical intuitions.[72]

The following three chapters examine specific root relations and voice-leading structures that characterize the music of three different neo-tonal composers. Each chapter shows how the altered closing progressions under discussion grow out of the tonal system of the nineteenth century and then explores the effect the closing progression has on neo-tonal structure. Chapter 2 examines how semitone-related triads create key-defining progressions in selected works by Sergei Prokofiev. Semitone-related triads result from an altered dominant function, or from recontextualization of a progression used to indicate dominant arrival. Chapter 3 examines closing progressions in the music of Aaron Copland, which uses voice-leading structures reminiscent of the

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[72] Ramon Satyendra, "Relational Systems in the Study of Networks and Generalized Intervals," *Indiana Theory Review* 23, no. 1–2 (Spring-Fall 2002): 146–148.

Aeolian mode, or an ascending whole-step root motion to indicate arrival on the tonic. These closing progressions often occur in tandem with common-practice cadential structures, and Copland's music cues orientational shifts between the two, creating a dichotomy between fifth-related tonics. Chapter 4 examines the late music of Francis Poulenc, in which the composer cultivated an increased interest in late nineteenth-century harmony. The chapter focuses on major-third related minor triads, a progression that frequently recurs in this period, and examines the tension between the ability of these triads to create closure and their tendency to create transpositional sequences. Finally, Chapter 5 surveys major theories of twentieth-century tonality and identifies aspects that overlap with the method used in this dissertation and imply the possibility of alternate root relations. It argues that neo-tonal pieces thematize these alternate closing progressions and are best served by an analytical system that models them directly.

Chapter 2

Semitone-generated Triadic Networks in the Music of Prokofiev

1. Introduction

"Wrong-note music" is a recurring appellation given to Prokofiev's compositions in critical discussion. This descriptor evokes a listening experience that is cognitively dissonated: it suggests that we are primed to hear through the norms of the tonal style, only to find that our interpretive powers fail us when we hear unusual events and sections that refuse to conform. Neil Minturn points out that portrayals of conflict between tonal convention and transgressive modernism in Prokofiev's music date as far back as to Israel Nestyev's 1946 biography of the composer, which states that Prokofiev often places diatonic melodies against dissonant harmonies.[1] Prokofiev's own observations on his compositional language, made in his 1941 autobiography, suggest that he saw no distinction between "right" and "wrong" notes—he was aware of the dichotomy between diatonicism and chromaticism in his compositions, but he did not map one onto conservatism and the other onto progressivism. The "American Overture" from 1928, he pointed out, was largely diatonic, and yet the public misunderstood it, because it failed to

[1] Neil Minturn, *The Music of Sergei Prokofiev* (New Haven: Yale University Press, 1997), 2–5. See also Israel Nestyev, *Prokofiev* (orig. pub. 1956; reprint, Stanford: Stanford University Press, 1960), 474–475.

recognize that he was searching for “new melodic designs.”[2] Nonetheless, the conflict between convention and deviation has persisted in critical discussions of Prokofiev’s music, and the drive to find theoretical models for his “wrong notes” remains strong, if we judge by the volume of ink expended on their explication.

Deborah Rifkin argues that most of Prokofiev’s chromatic shifts involve ascending chromatic passing notes or chromatic lower neighbors, which can be integrated into a diatonic structural background revealed through Schenkerian analysis.[3] She states that Prokofiev’s other “wrong” notes stem from specific types of motivic repetition—namely, those that involve functional or non-functional ordered successions of pitch classes.[4] These motives cut across structural levels in their appearance and therefore create unusual chromatic progressions that stretch the limit of diatonic functional harmony.[5] Neil Minturn states that violations of tonal expectations flag specific

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[2] Sergei Prokofiev, “Autobiography,” trans. Rose Prokofieva, orig. pub. 1956, reprinted in *Sergei Prokofiev: Soviet Diary 1927 and Other Writings*, trans. and ed. Oleg Prokofiev, assoc. ed. Christopher Palmer (Boston: Faber and Faber, 1991), 282–283. The longer quote reads:

> [A]fter the [1928] ‘American’ Overture Op. 42 [the musicians] preserved an awkward silence: they did not understand it. Neither did the public. What was the trouble? The themes were almost entirely diatonic and there was no complex development. I purposely dwell on this point because it was to affect a whole period of my work [in which he began using more diatonic themes], beginning roughly with that overture. I believe the trouble was this: having turned form the chaos of chromaticism toward diatonicism I had begun to search for new melodic designs. But novelty of design is something that does not strike the attention. The listener, unable to grasp it at once, will pass it by without noticing it. It is the same with a melody: if it follows a familiar pattern it will be easily understood, but will soon just as easily find its way into the waste-paper basket. ... If he [a listener] would bear in mind that music which the ear takes in at once is not necessarily good music (history teaches us that) and would give a little more serious attention to my ‘incomprehensible’ composition I am sure we could speedily understand one another.

[3] Deborah Rifkin, “A Theory of Motives for Prokofiev’s Music,” *Music Theory Spectrum* 26, no. 2 (Autumn 2004), 267.

[4] Ibid., 271–273. Functional pitch-class motives are those that have dominant or subdominant functional orientation, as defined by Daniel Harrison in *Harmonic Function in Chromatic Music* (Chicago: University of Chicago Press, 1994). Non-functional are detached from this voice leading.

[5] Ibid., 267.

foreground motives for attention, which can be related through Fortean set-class analysis.[6] Daniel Zimmerman's study of Prokofiev's early music also uncovers relations between set classes that occur at the musical surface, but rather than following Minturn's example and searching for a single structural set, he categorizes each set by its membership in one or more of six "collection-classes without clusters." A collection-class without clusters is the set class of a scale that does not contain two consecutive semitones. The diatonic scale is one example of this collection-class, for example, as is the octatonic scale. Any set class that does not contain consecutive semitones can be shown to be a subset at least one of these collection-classes.[7] Motion between these collection-classes provides an additional parameter of harmonic rhythm, and subsets of the collections often govern large-scale pitch organization, giving "rightness" to the notes that they lack within common-practice tonal language.[8]

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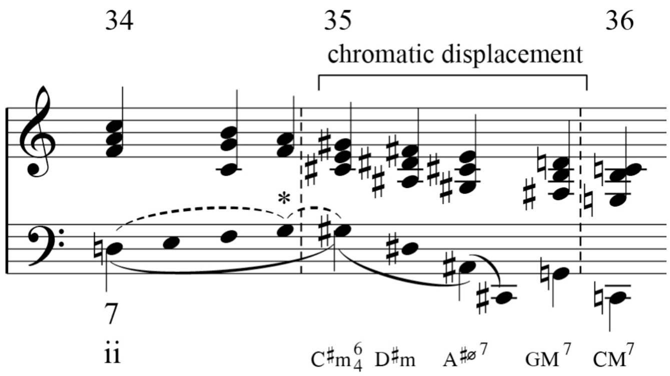
[6] Neil Minturn, *The Music of Sergei Prokofiev*, 58.

[7] Daniel Zimmerman, "Families without Clusters in the Early Works of Sergei Prokofiev" (Ph.D. dissertation, University of Chicago, 2002), 11–16. The six collection-classes without clusters are the diatonic, acoustic (a permutation of the ascending melodic minor scale), harmonic (i.e., the harmonic minor scale or its inversion the harmonic major), octatonic, hexatonic, and whole-tone collections. Dmitri Tymoczko introduces the concept of collections without clusters in "The Consecutive-Semitone Constraint on Scalar Structure: A Link Between Impressionism and Jazz," *Intégral* 11 (1997): 135–179.

[8] Daniel Zimmerman, "Families without Clusters," 140–160. Some of Zimmerman's analyses also show that a smaller set-class, such as the augmented triad, acts as the primary motive in the work and becomes the foundation for a number of scales without clusters. Such analyses identify what closely resembles what Neil Minturn describes as a "structural set," defined as a basic set-class motive that governs a Prokofiev composition.



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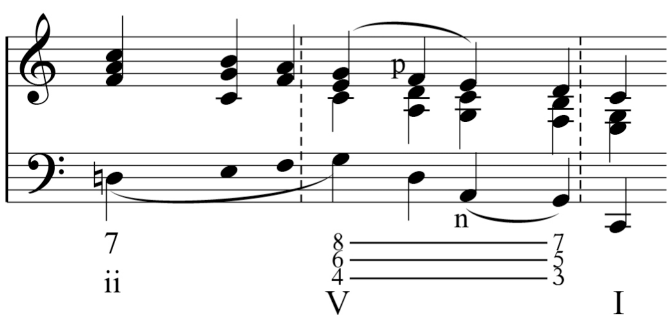


Figure 2.1. Prokofiev, Piano Sonata no. 6, op. 82 (1939–1940), mm. 34–35.

Richard Bass suggests that Prokofiev's "wrong notes" stem from the technique *chromatic displacement*—that is, a shift to a diatonic background a semitone higher or lower than the primary background used in the composition.[9] Measures 34–35 of the second movement of Prokofiev's Piano Sonata no. 6, op. 82 contain an example of a cadential progression that arguably features chromatic displacement. (Surprisingly, the excerpt does not appear in Bass's article, although he analyzes a similar instance of displacement of some notes from the fourth movement.)[10] An analytical reduction of this

[9] Richard Bass, "Prokofiev's Technique of Chromatic Displacement," *Music Analysis* 7, no. 2 (July 1988), 197–214. Gabe Fankhauser expands the concept of displacement to beyond a semitone in "Flat Primary Triads, Harmonic Refraction, and the Harmonic Idiom of Shostakovich and Prokofiev," in *Musical Currents from the Left Coast*, ed. Jack Boss and Bruce Quaglia (Middlesex: Cambridge Scholars Publishing, 2008), 202–215.

[10] Richard Bass, "Chromatic Displacement," 209.

passage is shown in Figure 2.1. The actual version is shown in the upper system: the melodic line makes a scalar descent from C5 to C4, and the harmonies accelerate at m. 35 and arrive on a C major seventh chord. Both of these contextual factors favor hearing a cadential progression at m. 36. The harmonies, however, do not conform to common practice. At m. 35, the expected dominant is replaced with a C♯-minor triad in second inversion. A D♯-minor triad, A♯ half–diminished seventh chord, and G major seventh chord follow. The melodic line contains two notes—G♯ and F♯—that are outside of the C-major scale.

The lower system shows a hypothetical original, diatonic version of this progression. Specific notes within this original are displaced up by semitone, creating the final version. There does not appear to be any consistent operation that transforms each original chord into the final chord. The SLIDE operation, which relates the C♯-minor six-four chord on the downbeat to the hypothetical C-major six-four chord, cannot be repeated for the other chords. Nor is there consistency with respect to which or how many notes are displaced. While the first chord shifts two notes upward, the D♯-minor triad shifts three, and the G major-seventh chord shifts only one; it is as if the pianist's fingers slipped and accidentally played some notes a semitone higher than they were supposed to be. In Bass's language, the shifted notes suggest a "shadow" diatonic structure that has been displaced. For a brief instance, at least, Prokofiev lives up to his reputation as a "wrong-note" composer. This chromatic-displacement hearing endows a paradoxical function to the G3 in the bass line in measure 34, marked with an asterisk. The dotted lines show D3 ascending to G3, the root of the V chord. In the diatonic original, this note acts as the endpoint of the passing motion from D. In the actual version, by contrast, this note is itself a passing note toward G♯3. Thus, the G3 is simultaneously a goal and a passing note. Such oxymoronic interpretations of individual notes frequently appear in readings that involve chromatic displacement.[11]

In this excerpt a preponderance of musical evidence establishes the cadential function of the progression. The technique of chromatic displacement serves a clearly embellishing role; it adds interest to but does not fundamentally alter the direction of the progression. The chromatically displaced cadential passage from Prokofiev's Piano Sonata no. 6 is also remarkable in that it is relatively *insignificant* to the larger form of the movement. It is an internal cadence within a larger model undergoing sequential repetition and does not otherwise play a role in the large-scale form.

A large amount of evidence cannot be found for chromatic displacement at deeper structural levels; instead, the theory serves as one possible filter through which to hear Prokofiev's progressions that are unusual from the standpoint of common-practice harmony. One drawback to this way of hearing is the obfuscation of harmonic rhythm and formal sections, a facet that Bass himself acknowledges.[12] For example, the beginning of the second movement of the Piano Sonata no. 8, op. 84, states a theme in D♭ major, modulates up by semitone, and then makes a varied restatement of the theme in D major.[13] In one respect, the second key represents a harmonic departure from the first; listeners clearly hear a transposition up by semitone. In another respect, the two thematic

[11] Ibid., 203.

[12] Ibid., 201–203.

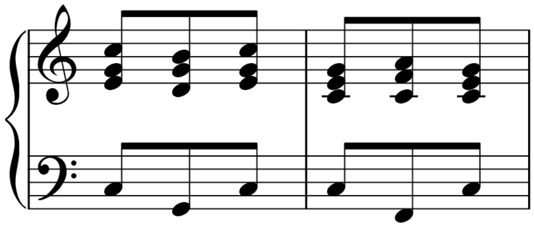
[13] Ibid., 208.

statements fulfill the same harmonic function—that of presenting the tonic—but do so in chromatically displaced structural backgrounds. In other words, the restatement of the theme in D major is a repetition. An event that simultaneously represents motion and repetition within the parameter of harmony makes formal analysis difficult. In addition, it raises questions about the limits of hearing displacement. If a melody modulates down by whole tone or up by minor third—common devices in Prokofiev's music (see the opening theme of the second movement of the Piano Sonata no. 6, op. 82 and the transition in the first movement of the Sonata, op. 84)—are the two keys close enough that they can be heard as "displaced" versions of one another? If the answer is that the intervals are too large to allow one to hear the two versions of the melody as somehow equivalent, then should it follow that a more discerning ear would similarly hear a palpable difference between two semitonally related keys?

A broader awareness of Prokofiev's harmonic style makes it possible to hear the cadence shown in Figure 2.1 differently, in a way that does not entail chromatic displacement. If the D♯-minor triad is in m. 35 interpreted as a passing chord, the first three chords in the same measure prolong a C♯-minor triad with added sixth. This triad is presented in second inversion, without its added sixth, at the beginning of the measure and it is presented in third inversion in the third chord. This triad's root is a semitone above the tonic, yielding this root progression over mm. 35–36: $\flat\hat{2}$–$\hat{5}$–$\hat{1}$. A progression of these scale degrees within the bass line is common in Prokofiev's music. It occurs at the end of the March, op. 3, no. 3, as well as in the second movement of the Sonata, op. 94, two pieces analyzed in this chapter. It also appears in the "March" from *Peter and* *the Wolf*, analyzed in Chapter 1, and in the final measure of "Reminiscences," the first movement of *Four Pieces*, op. 4.

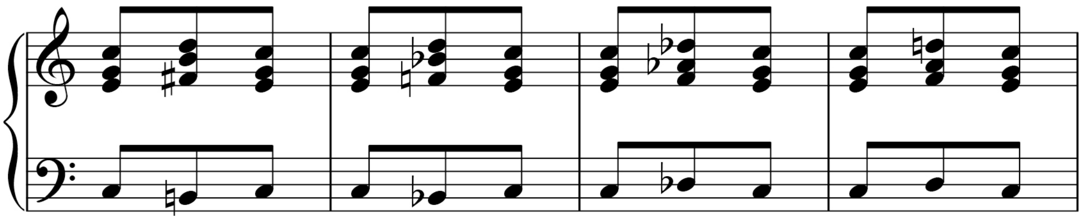
In this chapter I focus on semitonal shifts, like Richard Bass, but offer a different mode of hearing them. I argue that they sometimes result from a transformation of harmonic syntax so that root motion by semitone, as opposed to root motion by fifth, becomes the primary means of creating harmonic progression. This transformational view illuminates many structural features in Prokofiev's compositions that other theories strain to account for. Figure 2.2, shown below, enumerates two different classes of closing progressions. Class A contains progressions based on a fifth root-relation, yielding the V–I and IV–I progressions that are foundational to common-practice tonality. Class B contains altered closing progressions generated through root motion by semitone.

Class A. diatonic fifth-based cadences



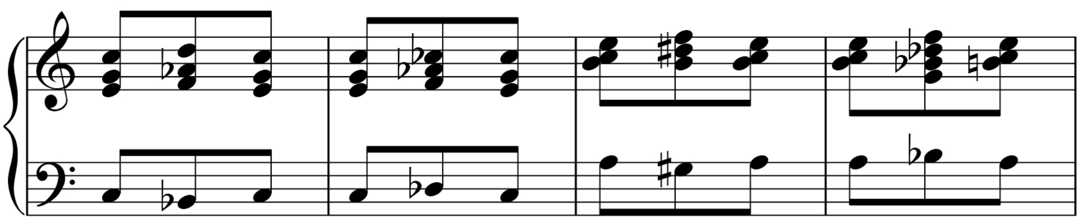
I V I I IV I

Class B. step-based cadences



I Lm2 I I LM2 I I Um2 I I UM2 I

Class B. variants on step-based cadences through adding essential dissonances



I LM2 [add 7th] I I Um2 [add 7th] I i Lm2 [add 7th] i i Um2 [add 6th] i

Figure 2.2. Two classes of closing progressions. Class A uses root motion by fifth. Class B uses root motion by semitone.

Several recent studies of harmonic progressions suggest that bass motion by semitone is particularly well suited to creating harmonic motion; some models of harmonic progression even afford it equal status with the perfect fifth in creating harmonic progressions.[14] Daniel Starr and Robert Morris include multiplication by 5 or 7

[14] Matthew Woolhouse provides one such model in "Modelling Tonal Attraction Between Adjacent Musical Elements," *Journal of New Music Research* 38, no. 4 (December 2009): 357–380. His theory posits a causal link between tonal attraction and interval-cycle proximity—that is, the more times an interval must be repeated before completing the equivalent of an octave (the so-called "interval cycle"), the greater proportional attraction between two pitch classes separated by that interval. This hypothesis implies

among the basic row operations. They state that it is a clearly audible transformation and frequently appears in jazz harmony, where bass motion by fifth is transformed into bass motion by semitone.[15] Stephen Brown also notes a close relationship between the fifth and semitone in the music of Shostakovich, another twentieth-century Russian composer, although Brown focuses on motivic and melodic construction and the large-scale completion of areas on a two-dimensional Cartesian space, as opposed to closing progressions.[16] Finally, Daniel Harrison's theory of harmonic function in chromatic music, although it privileges IV and V as prototypes of subdominant and dominant, allows root motion by semitone to express these two functions as well. Chapter 5 discusses in greater detail the relationship between Harrison's theory and the variant cadential progressions presented in this dissertation.[17]

In keeping with the overarching thesis of this dissertation, the analyses in this chapter show that Prokofiev's harmonic progressions often thematize the semitone

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that ic5 and ic1, which both have a cyclicity of 12, create the greatest attraction, followed by ic2, which has a cyclicity of 6. While interval-cycle proximity might appear to corroborate this chapter's thesis that root motion by semitone creates harmonic closure in some of Prokofiev's compositions, Woolhouse's attempts at verifying his theory have been problematic, and I therefore refrain from citing it to support my claims. Woolhouse's 2009 article describes an empirical study that shows that listeners rated a greater attraction between certain semitone-related chords, but in the same article he states that these same attractions may result from associations with idiomatic tonal progressions (370–373). Thus, his findings do not support incontrovertibly his thesis that interval-cycle proximity is independent of context or tonal style (357). In "On Woolhouse's Interval-Cycle Proximity Hypothesis," *Music Theory Spectrum* 32, no. 2 (Fall 2010), Ian Quinn points out that Woolhouse's 2010 study, which compares interval-cycle proximity to Krumhansl's probe-tone studies, represents a fallacious use of statistical correlation, since it does not draw randomly selected samples from a larger data set (177).

[15] Daniel Starr and Robert Morris, "A General Theory of Combinatoriality and the Aggregate (Part 1)," *Perspectives of New Music* 16, no. 1 (1977): 5.

[16] Stephen Brown, "Dual Interval Space in Twentieth-Century Music" (Ph.D. dissertation, Yale University, 1999), 80–88.

[17] See Chapter 5, subsection "*Daniel Harrison*."

relation, sometimes in ways that are difficult to trace unequivocally to a dominant or subdominant function. Therefore, the music is best served by an analytical system that models them directly. As described in Chapter 1, I use the labels "Um2" and "Lm2" to describe chords that are a semitone above or below the tonic and resolve to the tonic to create a key-defining progression. Variants of Class B in Figure 2.2 show cadential progressions that frequently occur in Prokofiev's music. They result from adding characteristic dissonant notes, the most common being added sixths and sevenths. It should be noted that the Um2 with an added sixth should not be thought of as a first-inversion half-diminished seventh chord; rather, the added note serves to mark the original triad with a non-tonic status.[18]

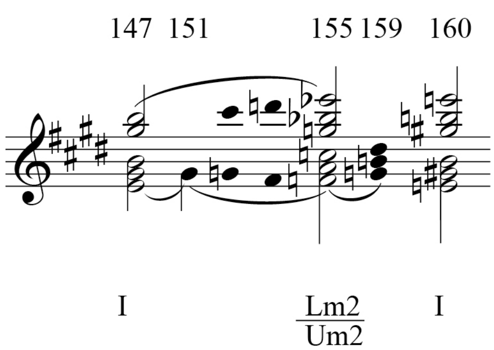

Figure 2.3. Prokofiev, Piano Sonata no. 6, second movement, reduction of final fourteen measures.

[18] For more information on characteristic dissonances, see Chapter 1. In *Harmony Simplified; Or, The Theory of the Tonal Functions of Chords* [*Vereinfachte Harmonielehre*], trans. H. W. Bewerunge (Orig. pub. 1893; reprint, London: Augener, 1895), Hugo Riemann defines characteristic dissonances as added notes that clarify the function of a dominant or subdominant chord and make aurally apparent the conceptual dissonance of these two triads caused by their non-tonic status (55–56). Recent writings also advocate using the label "added-sixth chord" when appropriate; they include Daniel Harrison's *Harmonic Function in Chromatic Music* and John Gabriel Miller's "The Death and Resurrection of Function" (Ph.D. dissertation, Ohio State University, 2009).

Figure 2.3 provides an example of semitone-related triads that appear at a formal location that connotes a point of cadence and harmonic closure. The second movement of Prokofiev's Piano Sonata no. 6 features a theme in the style of a wry march whose first eight measures make a harmonic motion from I to V in E major. No corresponding motion from V to I appears later to confirm this key; instead, the theme's harmonic thread unravels as it makes a series of modulations down by step, finally returning to E major via an up-by-fifths sequence. In the movement's final fourteen measures (reproduced in Figure 2.3), the piano first unfolds the E-major tonic triad by moving from root position to first inversion. At m. 151, the outer voices move in contrary motion to reach a complex chord at m. 155 that superimposes an E♭-major triad over an F-major triad. These two chords are a semitone above and below the tonic, and therefore the composite is analyzed as $\frac{\mathrm{Lm}\,2}{\mathrm{Um}\,2}$. These two chords resolve to the tonic triad at m. 160.[19] The left-hand part is decorated by escape tones at m. 159: all three voices move up by step to form a G-major triad, which then resolves to the E-major triad. Because the duration of the F major triad is several times that of the G-major triad, the G-major triad is clearly subordinate to the Um2 that precedes it. The context of the rest of the movement also supports hearing the F-major triad as more significant, since progressions from a chord with a root of F to an E-major triad also occur at the close of the movements' other major sections at mm. 70–79 and mm. 130–131.

The remainder of this chapter explores other cases in which we can hear

[19] A similar chord appears at the end of the development section in the finale of Sonata no. 7, which Prokofiev wrote around the same time.

semitone-related triads as creating harmonic closure and discusses the ramifications that these hearings have for large-scale voice leading. It is divided into two sections. The first explores semitone-related triads that result from the chromatic alteration of a V^7 chord by transposing the bass note by semitone. This “dominant-functioning” semitone related triad appears occasionally in nineteenth-century music, and is explored to a greater degree in several of Prokofiev’s pieces, including the “March,” op. 3, no. 3, and the *Quintet*, op. 39. The second section explores semitone-related triads that arise from recontextualization of progressions that are used to indicate arrival on the V triad. They include semitone-related triads that function as dominant preparation, as well as semitone-related triads whose voice leading resembles that of a dominant preparation chord, but which function to create an arrival on the tonic harmony. These chords figure into the harmonic structure of the “Gavotte” from *Four Pieces*, op. 32, and the first two movements of the Sonata for Flute (or Violin) and Piano, op. 94.

2. Semitone-related Triads as Altered Dominant Chords

Schubert, String Trio D. 471

Schubert, String Quintet, D. 956, 4th movement

Figure 2.4. Two examples of semitone-related triads providing closure in excerpts by Franz Schubert.

Prokofiev's use of semitone-related chords to create harmonic closure builds on the nineteenth-century precedent of creating altered dominant chords. Two early examples of dominant-functioning chords created through “tritone substitution,” which changes the characteristic bass motion from fifth to semitone, are shown in Figure 2.4.[20] The first example shows the final seven measures from Schubert’s one-movement String Trio, D. 471. After a perfect authentic cadential progression, the trio plays a brief codetta that alternates between the B♭ tonic and a chord (highlighted on the score at m. 3) that is enharmonically equivalent to a C♭ dominant seventh. The upper two parts suggest dominant to tonic motion: the violin outlines the fifth and root of the tonic triad, and then outlines $\flat\hat{6}$ and the leading tone, suggesting vii^{o7}; the viola, meanwhile, alternates between the root and third of the tonic triad and $\hat{4}$ and $\hat{7}$, the two tendency tones of the dominant seventh chord. The cello, by contrast, alternates between $\hat{1}$ and $\flat\hat{2}$. The highlighted chord resembles in both its spelling and voice leading the “German $^{6}_{5}$ chord” but suggests a dominant function.

The second excerpt from in Figure 2.4 is drawn from the final nine measures of the finale movement of Schubert’s String Quintet, D. 956 (op. 163). As in the codetta of the String Trio, a chord built on $\flat\hat{2}$, highlighted in the example, occurs within a codetta that follows a perfect authentic cadence. The chord’s spelling resembles the “French sixth” sonority, but—as before—it strongly suggests a dominant.[21] Precedents for

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[20] The term “tritone substitution” was originally used in jazz harmony, and involves replacing a dominant seventh chord with one that is transposed by tritone. Mark Levine discusses this chord in *The Jazz Piano Book* (Petaluma, CA: Sher Music, 1989), 37–40.

[21] These two examples from Schubert are labeled “augmented-sixth chords” in traditional tonal theory, since they contain the characteristic resolution of augmented sixth to octave. In “Augmented-Sixth Chords vs. Tritone Substitutes,” *Music Theory Online* 14, no. 2 (June 2008), Nicole Biamonte reasonably argues that augmented-sixth chords resolving to a tonic are *distinct* from tritone-substitution chords, which involve a change of root motion, due to their voice-leading patterns and potential for enharmonic reinterpretation.

replacing dominant triads with those separated by tritone also occur in music from Prokofiev's own Russian forebears: the opening of the "Coronation Scene" of Mussorgsky's *Boris Gudunov*, for example, alternates between dominant seventh chords with roots on A♭ and D.

(a)

Figure 2.5. Excerpts from Prokofiev, "March" from *Four Pieces,* op. 3 (1908/1911), showing exchange between fifth and semitone.

Whereas the two Schubert examples feature a fifth–semitone alternation for singular, local harmonic effects, Prokofiev's "March" from *Four Pieces*, op. 3 (1908/1911) uses this transformation multiple times at different levels of structure.[22] Figure 2.5 shows that the musical surface of the work's opening periodic phrase uses that

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Nonetheless, the two chords are highly similar, and Prokofiev's development of the model of dominant-functioning augmented-sixth comes to resemble a change of root motion.

[22] I am grateful to Ramon Satyendra for bringing this piece to my attention. The chronology of the march's composition and first performance is somewhat complicated. Although the published version of the march lists 1908 as the date of composition, Prokofiev in fact wrote only the original version this year. In 1911, he revised the march by increasing the amount of surface dissonance. The first piece from the op. 3 set ("Tale") received its premiere in 1908, and Prokofiev premiered the entire op. 3 set, including the march, at an Evening of Contemporary Music concert in St. Petersburg in 1911, where he also gave the Russian premiere of Schoenberg's *Klavierstücke*, op. 11. The following sources give more information on the genesis of *Four Pieces*, op. 3: Harlow Robinson, *Sergei Prokofiev: A Biography* (New York: Viking, 1987), 78, 541; Anthony Phillips, trans., *Sergey Prokofiev Diaries: 1907–1914 Prodigious Youth* (London: Faber and Faber, 2006), 214–215; Dmitry Feofanov, ed., "Introduction," in *Sergei Prokofiev: Shorter Piano Works* (New York: Dover, 1992).

alternation by fifth and semitone thematically. Measure 1 marks the beginning of the opening antecedent phrase: both the bass and right-hand parts descend by semitone each beat, creating a sequence of parallel minor seventh chords. Measure 5 marks the beginning of the consequent phrase. Its right-hand part is identical, save for a transposition up by octave and thickening of chords. The left-hand part, by contrast, replaces motion by descending semitone with motion by ascending fourth. Because two ascending fourths are equivalent to a descending whole tone in pitch-class space, the endpoint of this altered bass line is identical: both bass lines reach B♭ on the first beat of the following measure.

Alternation between fifth and semitone also occurs within deeper voice-leading patterns. Figure 2.6 shows three pairs of closing progressions that occur at the middleground in the march. The left column shows three closing progressions that involve fifth-motion in the bass. The first contains a dominant seventh chord with added minor ninth, represented by transposition class (02369).[23] The other progressions use a chromatically altered dominant seventh, enharmonically equivalent to a French sixth (0268), and an augmented triad (048).[24] The right-hand column shows the progressions that result when the first chord undergoes pitch-class transposition by tritone, creating

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[23] A transposition-class is the set of all pitch-class collections that are related by pitch-class transposition. For further discussion of the use of transposition-classes in the discussion of neo-tonality, see Chapter 1.

[24] These dominant-functioning chords are subsets of scales that evenly divide the octave, and exemplify Daniel Zimmerman's observation, in "Families without Clusters," that Prokofiev experimented with various non-consecutive-semitone scales in his early music. James Baker, in *The Music of Alexander Scriabin* (New Haven: Yale University Press, 1986), labels transposition-class (0268) the "dual dominant" (4), because it can function as $V^{7}_{\flat 5}$ in two different tritone-related keys. He also notes that prolongation of this sonority through repeated transposition by even-numbered intervals creates a dominant prolongation (41–42).

various types of Um2 chords. In the first two cases, the pitches of the right-hand part remain identical, allowing them to retain their functional orientation.[25] In the third case, the pitches in the right-hand part are different but nonetheless sound closely related because they are a subset of the same whole-tone collection. I will use the term *change bass interval* to indicate the use of a dominant-functioning chord from the opposite column.

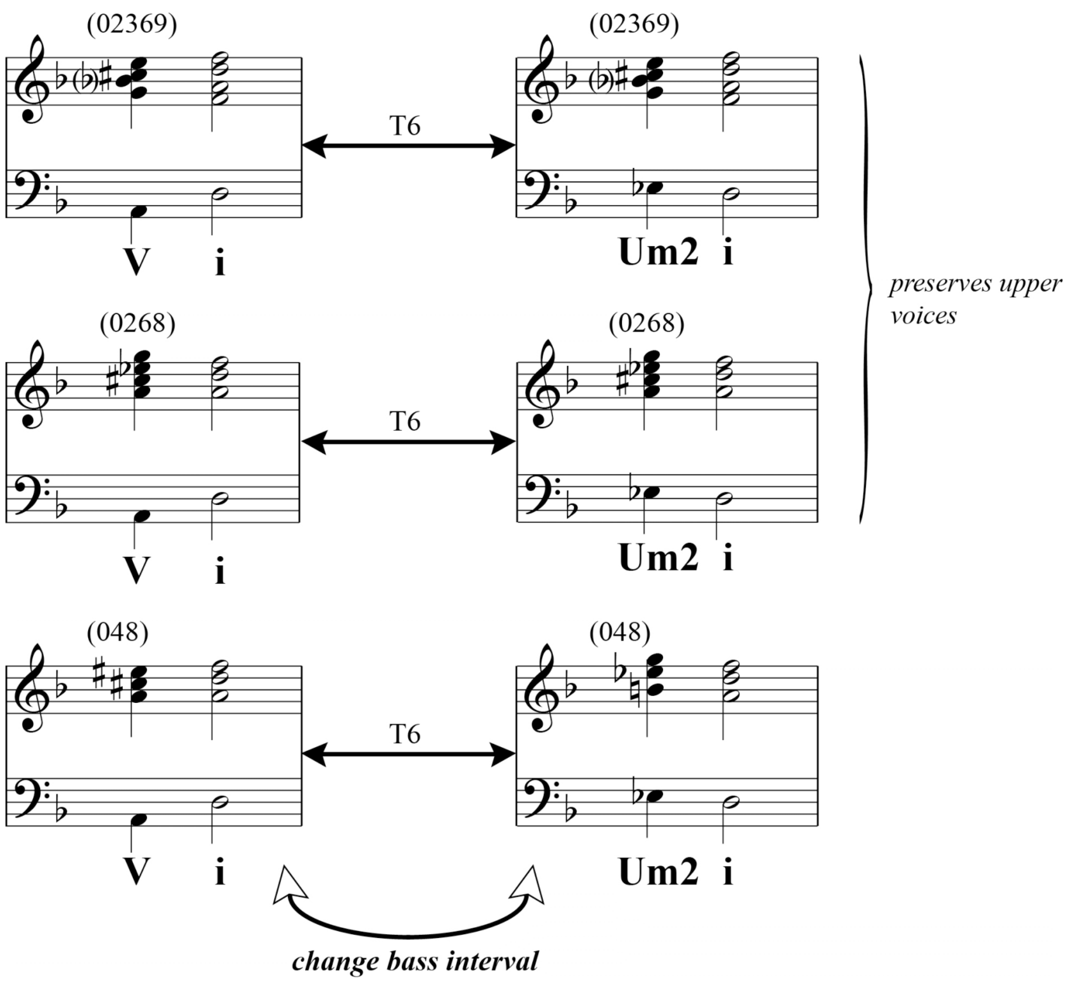

Figure 2.6. Model closing progressions in Prokofiev, "March."

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[25] The pitch-class invariance is due to the symmetry under T6 of (0268) and the symmetry under T6 of the subset (0369) within (02369).

One listening solely to the march's melodic design would surmise that it is in a small ternary form: the first eight measures form an antecedent and consequent phrase-pair, the following eight measures are a contrasting middle section, and the final four measures present a modified version of the consequent phrase.[26] A cadential progression is strongly expected at the end of each of these sections. Hearing the privileged root interval as a semitone instead of a fifth allows these moments to be perceived as cadences, despite constantly shifting chromatic lines.

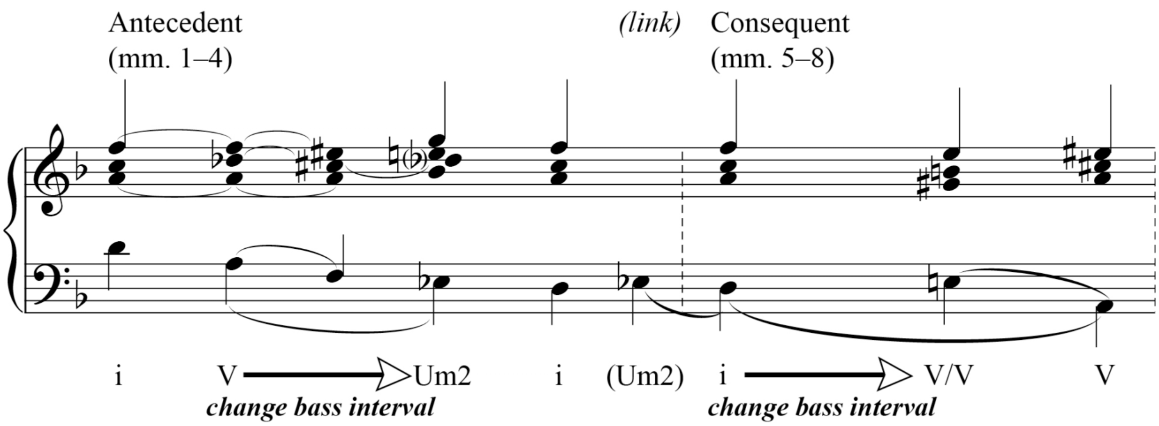

Figure 2.7. Prokofiev "March," middleground voice leading for mm. 1–8, showing changes of bass interval.

Figure 2.7 shows changes of bass interval that occur over the middleground voice leading of the opening period. The antecedent begins with a motion from tonic to dominant, which transforms into a Um2 that closes the phrase with a descent by semitone to the tonic. At the end of the antecedent, the bass repeats the pitch E-flat, which again

[26] My formal terminology in this discussion, as well as in the rest of the chapter, is derived from William Caplin's *Classic Form* (New York: Oxford University Press, 1998). For information on the "small ternary," see 71–81. Caplin does not distinguish between the so-called "rounded binary" and "small ternary" forms.

represents Um2, to provide a link to the consequent. The consequent phrase changes the bass interval back to perfect fifth to conclude with a tonicization of V via an applied V.

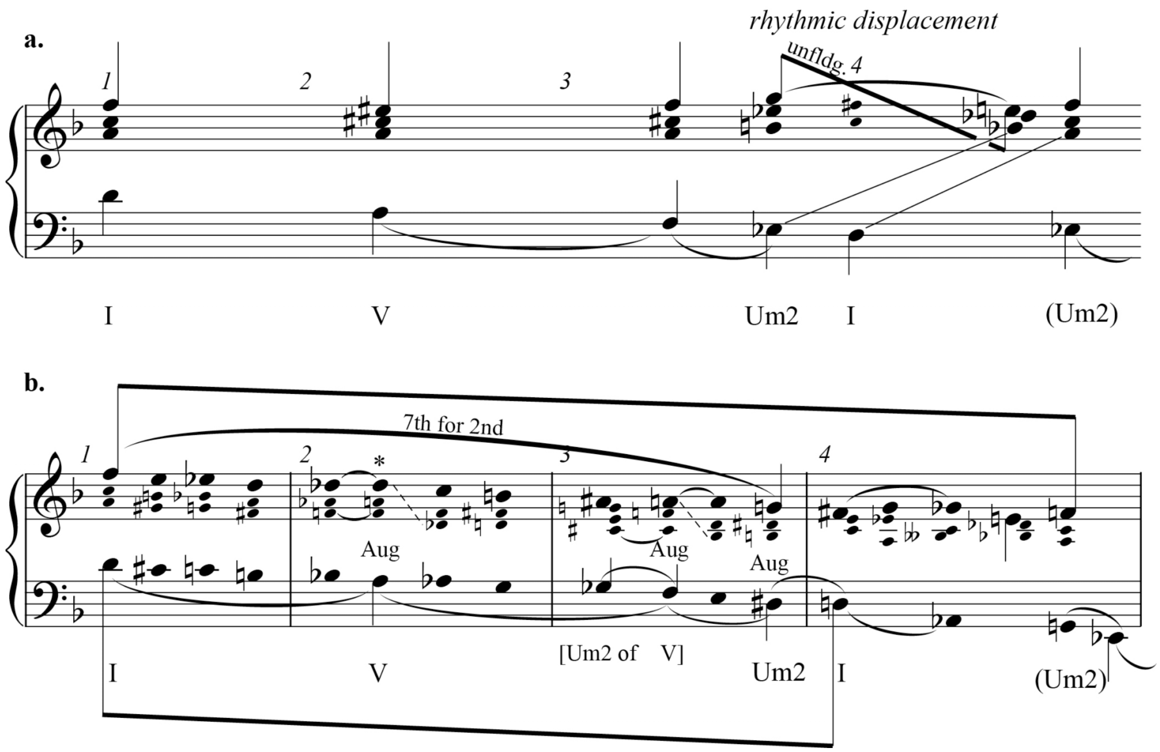

Figure 2.8. Prokofiev, "March," two levels of voice-leading reduction of mm. 1–4.

Figure 2.8 shows two levels of reduction of the antecedent phrase; they reveal the voice-leading transformations that lead from the middleground i–Um2–i to the foreground. Figure 2.8a shows that over mm. 1 and 2, the phrase proceeds from the tonic to an augmented-triad version of V. At m. 3 the pianist prolongs the same augmented triad through arpeggiation, and then transforms it into an augmented triad built on E♭, functioning as Um2. Rhythmic displacement decorates the final closing progression over mm. 3 and 4. On the downbeat of m. 4, the bass resolves to the tonic while the upper voices continue to unfold through a Um2-functioning harmony. When the upper voices resolve to the tonic, the bass plays E♭, providing a link to the following measure. Figure 2.8b reproduces all of the pitches of the excerpt, excluding surface embellishments, and normalizes them to a single register. At the musical surface, the outer voices embellish the deeper-level structural intervals through inversion and chromatic passing motion: the ascending second in the uppermost voice becomes a descending seventh, and both parts fill in their voice-leading structure with chromatic passing notes.

The foreground diagram in Figure 2.8b alludes to a conventional design in common-practice tonality, that of the rule of the octave, a model harmonization of a complete ascending or descending scale in the bass line that establishes a key and codifies cadential harmonies in a tonal system. Both hands descend through an octave in Prokofiev's march: the right-hand part leads from an F5 in m. 1, harmonized with an F-major triad, to an F4 on the third beat of m. 4, also harmonized with an F-major triad; the left-hand part leads from D3 in m. 1 to D2 on the downbeat of m. 4. The two lines do not complete their octaves simultaneously; this is the result of a delay in the chromatic descent in the right-hand part, marked with an asterisk (*) above the staff. Immediately after this right-hand delay, the D♭5 from the uppermost line is transferred to the lowest voice in the right hand, where it makes an ascending chromatic motion to the next structural chord at m. 3. A dotted line shows this transfer of register. A similar transfer occurs on the third beat of m. 3: the A4 in the uppermost voice is transferred to B♭3 in the following beat, and this line makes a chromatic ascent to C4 on the downbeat of m. 4. These two ascending chromatic lines counterpoint the descents in the uppermost line.

A “classical” rule of the octave harmonization typically gives root-position triads on $\hat{1}$ and $\hat{5}$, indicating that these notes divide the scale.[27] The other scale tones are harmonized with less stable $\substack{6\\3}$ or $\substack{4\\3}$ chords, indicating a subsidiary role. Schenkerian analysis of scalar descents through an octave in the bass line makes a similar division: Schenker’s analysis of the opening of Bach’s Prelude 1 from the *Well-Tempered Clavier*, for example, divides the bass into a fourth-descent from $\hat{8}$ to $\hat{5}$ followed by a fifth-descent from $\hat{5}$ to $\hat{1}$.[28] In Prokofiev’s march, consonant support likewise gives indications as to which chords are harmonically significant. The bass notes A, F, and D♯ are harmonized with augmented triads, the only non-seventh-chords that appear in the phrase. The F-augmented triad in m. 3 is immediately preceded by the enharmonic equivalent of a G♭ “dominant minor ninth”; that is, a G♭-major triad with an added minor seventh and minor ninth above the bass. This chord acts as a temporary “applied” Um2 that leads to the F, and reproduces the intervallic content of the penultimate chord at the phrase’s middleground level. In m. 4, the bass part arpeggiates through an E♭/G dyad; these two notes are representative of the Um2 applied to D and prepare the next octave descent beginning on this note.

[27] Ludwig Holtmeier, “Heinichen, Rameau, and the Italian Thoroughbass Tradition,” *Journal of Music Theory* 51, no. 1 (Spring 2007): 11–14.

[28] Heinrich Schenker, *Five Graphic Music Analyses [Fünf Urlinie-Tafeln]* (Vienna: Universal, 1932; reprint with a new introduction by Felix Salzer, Mineola, New York: Dover, 1969), 36–37.

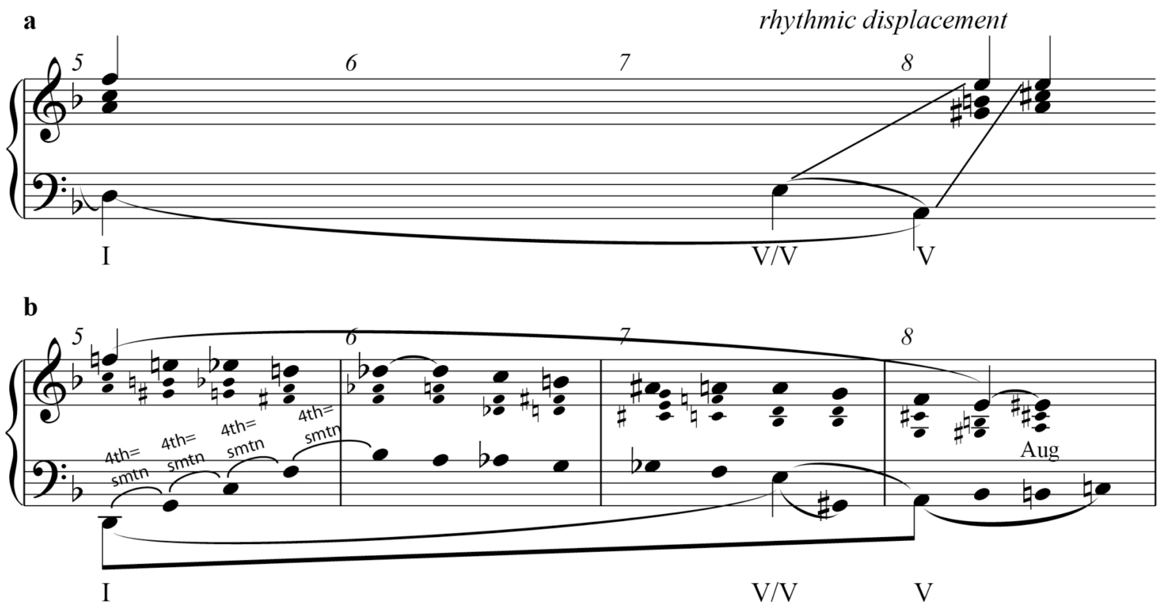

Figure 2.9. Prokofiev, "March," two levels of voice-leading reduction of mm. 5–8.

Figure 2.9 shows the rhythmic displacement and inversions that take place in the consequent phrase. At the outset of the phrase, the descending chromatic motion in the bass line is replaced with motion by ascending fourth; these substitutions are marked on the graph with a slur and the text "4th=smtn." In m. 7, the bass line breaks off its descent to leap from E to G♯, the root and third of a V of V harmony. The G♯ then resolves to A, the root of V. The progression from V/V to V also appears in the upper voices, although, as in the first phrase, the two parts are rhythmically displaced.

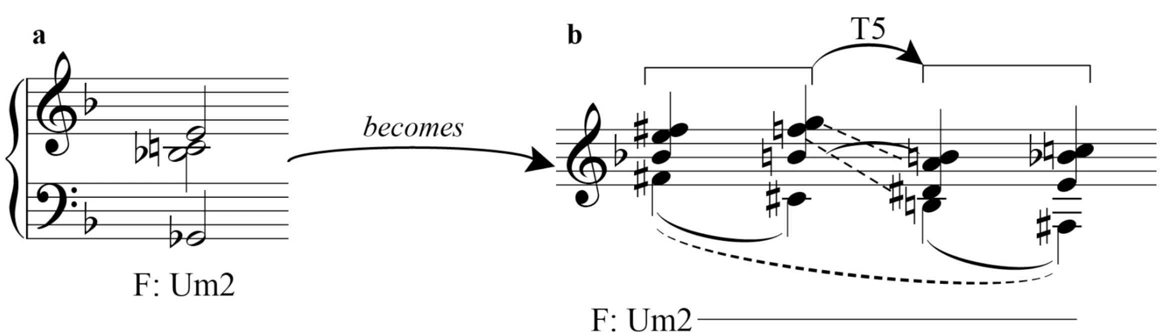

Figure 2.10. Prokofiev, "March," background of contrasting middle (mm. 9–16).

The first two phrases shifted our focus from fifth to semitone and back to fifth as the primary interval of bass motion. The contrasting middle (mm. 9–16) reverses this process by re-establishing minor-second relations to the tonic triad. William Caplin points out that the formal function of the contrasting middle is frequently to "stand on the dominant"—that is, prolong a V or V^7.[29] Figure 2.10a shows that in Prokofiev's march, the contrasting middle prolongs a Um2, in its "French sixth" version, on the bass note G♭. Because its root is a semitone above F, it points toward the final tonic of the march. Figure 2.10b shows that this chord occurs as the first and last sonority of a sequence: two fourth-motions in the bass are themselves transposed by perfect fourth; they yield F♯ as the boundary tones of the entire progression. (The two halves of the bass line also display symmetry by retrograde inversion around their boundary tone, providing an example of the increased interest in transpositional symmetry in the early twentieth century, as noted by Robert Morgan.[30])

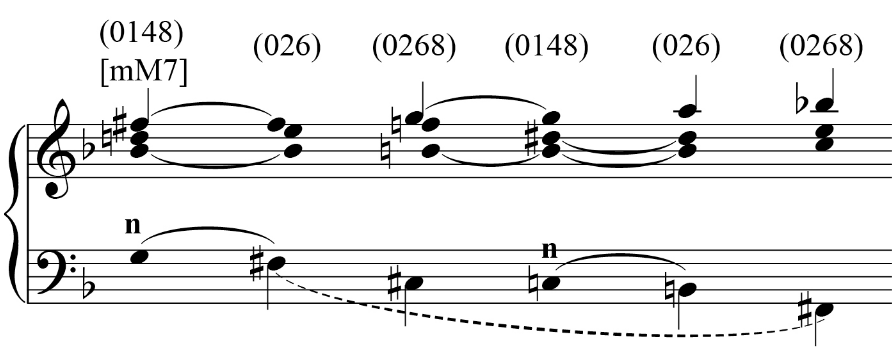

Figure 2.11. Prokofiev, "March," background of contrasting middle (mm. 9–16) with more voice-leading detail.

[29] William Caplin, *Classical Form*, 75.

[30] Robert Morgan, "Symmetrical Form and Common-Practice Tonality," *Music Theory Spectrum* 20, no. 1 (1998): 27–28.

Figure 2.11 shows how the transpositional sequence is further embellished by two neighboring chords. Their bass notes are marked with a bold "n" on Figure 2.11. The first occurs as the first chord in the progression; it is an example of (0148)—that is, a "minor chord with a major seventh." The same neighboring chord appears at the beginning of the second half of the progression over the bass note C♮. The neighbor chords create a bass line that contains only motion by descending fourth or minor second, the two intervals thematized in the opening.

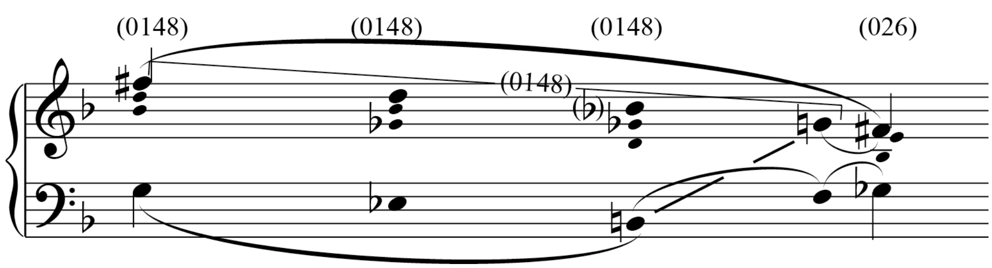

Figure 2.12. Prokofiev, "March," prolongation of neighboring chord over mm. 9–12.

Assigning similar functions to chords with similar intervallic content, a principle at work in the first section, motivates the prolongational strategy used in the contrasting middle. Figure 2.12 shows how the neighboring chord, the first chord that appears in Fig. 2.11, is prolonged over mm. 9 to 12. Both the right-hand parts and the bass line arpeggiate through an augmented triad—the same harmony that appears in the top three pitches of the neighboring chord—and maintain the (0148) sonority with each chord.[31]

[31] David Forrest suggests that completion of sets that make an equal division of the octave is a prolongational strategy in the music of Benjamin Britten. While arpeggiation through an augmented triad suggests a similar function, we should note that it does not actually cycle through an entire octave, and association of chords with similar intervallic content can also be shown to motivate the progression. See "Prolongation in the Choral Music of Benjamin Britten," *Music Theory Spectrum* 32, no. 1 (Spring 2010): 1–25.

At the end of the prolongation, the bass line leaps to F, a local lower neighbor to G♭, and the uppermost line leaps to G, an upper neighbor to the same pitch class. The note in the uppermost line creates another instance of the (0148) sonority in the right-hand part, which is also bracketed in the reduction.

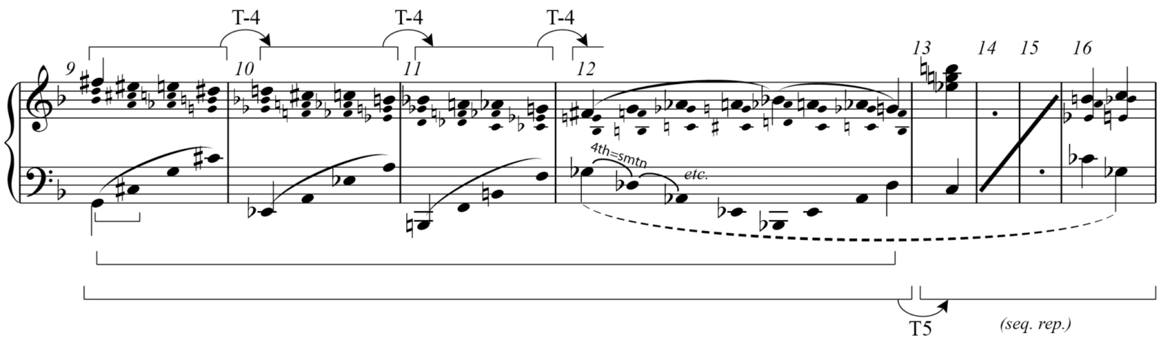

Figure 2.13. Prokofiev, "March," foreground reduction of mm. 9–12.

Figure 2.13 shows a foreground reduction of the entire contrasting middle section. As in the first section, chromatic passing motion fills in intervals of greater structural importance over mm. 9–11. They are combined with arpeggiation by tritone in the bass part, which creates (in the language of Deborah Rifkin) a non-functional pitch class motivic repetition: the first two notes in the bass line (G and C♯) are enharmonically equivalent to the bass's first note in m. 9 and last note in m. 12. This four-measure span forms the sequential model at the next level of structure.[32] Two brackets underneath the staff show this motivic repetition. Chromatic passing motion continues in m. 12, where a sequence of ascending and descending semitones in the right-hand part connects the first chord in the measure (the G♭ French sixth) to the last (the D♭ French sixth). This right-hand sequence is combined with descending and ascending fourths in the left hand so that

[32] Deborah Rifkin, "A Theory of Motives for Prokofiev's Music," 267.

the entire pattern highlights the close relationship between fourths and semitones established in the march's first section.

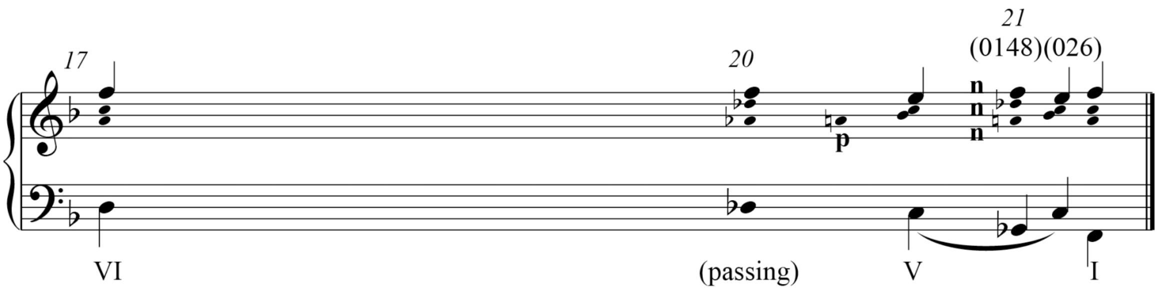

Figure 2.14. Prokofiev, "March," middleground voice leading in mm. 17–21.

The final phrase of the march interprets its initial D minor seventh chord as dominant preparation and ends with a cadential progression in F major. Figure 2.14 shows the middleground voice leading of the final phrase. In m. 20, a chromatic passing chord fills in the motion to the dominant. On the downbeat of m. 21, the piano plays a minor-major seventh chord, the same sonority that appeared in the contrasting middle section. This chord is also the highest that appears in the entire march and is the climax of the final phrase. As in the contrasting middle, this sonority serves a neighboring function and leads to a cadential chord. Unlike the earlier neighboring chord, the neighboring motion appears in the upper voices, rather than in the bass line. The bass note G♭ could be viewed as the root of a Neapolitan, giving the chord a function of dominant preparation. On the other hand, one could interpret the G♭ as an alternate bass note for the dominant chord, so that the G♭ to C motion is an arpeggiation, fusing the V and Um2 chords. Metric considerations support the latter reading, since the G♭ falls on a strong beat.

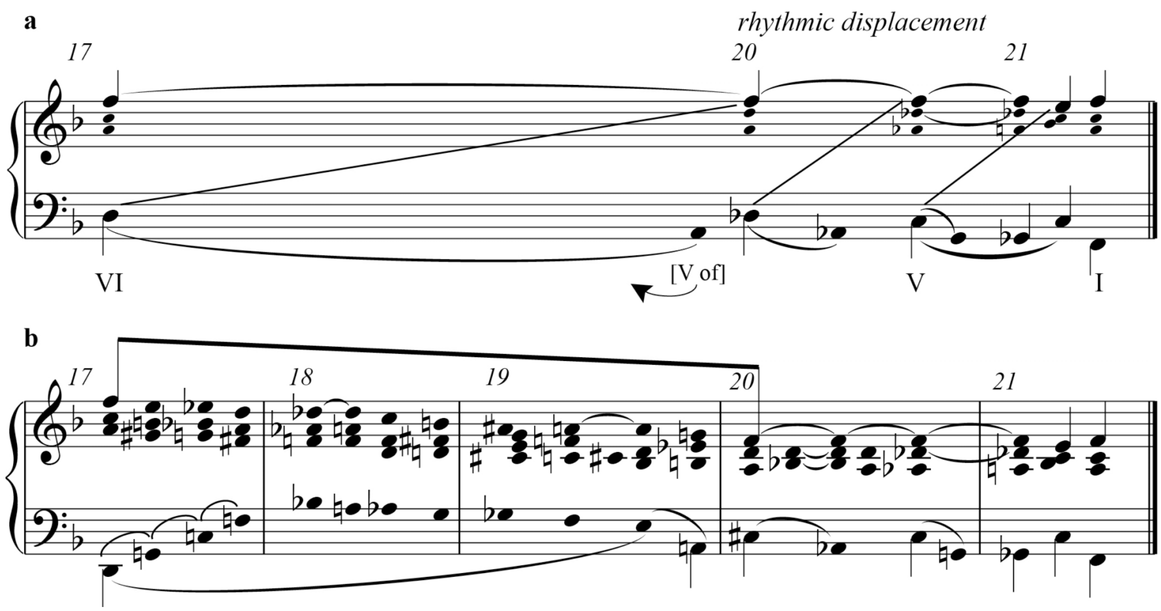

Figure 2.15. Prokofiev, "March," middleground and foreground voice leading in mm. 17–21.

Figure 2.15 shows that, as in the first phrase, rhythmic displacement combined with chromatic passing motion embellishes the middleground structure. Over mm. 17 to 19, a back-relating V prolongs the initial D-minor harmony. Diagonal lines in Figure 2.15a show rhythmic displacement that occurs within the chromatic passing chord and V^7 in mm. 20 and 21.

By contrast, the march's final pair of chords—a bald V^7–I in F major—are not obfuscated by any rhythmic displacement or added dissonance. They appear to sweep away hastily any ambiguity over which type of root motion is privileged, a feature that the rest of the march had cultivated so carefully. There is a great deal of humor in the final two chords (many people I know laughed when they first heard the march's conclusion), as if they represented heroes who arrived too late to the scene, incognizant of all that has transpired in the meantime. These two chords recapture the key of F major but are also striking, ironically enough, because of their tonal normalcy, and are out of step (no pun intended) with the rest of the march. We could posit broader expressive interpretation, such as "normal is the new weird." Such humorous interpretations depend on recognizing the transformations of harmonic syntax effected over the rest of the movement.

Another reading of Prokofiev that invests closing potential into semitone-related triads is offered, strangely enough, by Neil Minturn, an advocate of Fortean analysis, but he proposes the reading in order to reject it. His analysis of the fourth movement of Prokofiev's Quintet op. 39 for oboe, clarinet, violin, viola, and contrabass assigns a "tonic," "neighboring," and "dominant" function to the three trichords contained in the viola arpeggiation that occurs at the movement's opening. What Minturn calls the "dominant" contains a semitone upper neighbor to the tonic in its bass and $\flat\hat{7}$ it its uppermost voice; in this chapter's terminology it would be labeled Um2 with added major sixth. Continuing to trace these functions over the course of the movement, Minturn argues, provides little analytical insight. The bass plays dyads that contradict the function of the viola's arpeggiations, and the oboe's melody is likewise dissonant with the underlying functions suggested by the viola. One could hear each chord as a mix of several functions, but Minturn claims that this reading raises the question of when functions become so mixed as to be meaningless. He instead proposes analyzing the oboe melody and its accompanying chords according to set-class analysis.[33]

Exploring the tonal implications of the movement would not assist Minturn in

[33] Neil Minturn, *The Music of Sergei Prokofiev*, 36–38.

highlighting the structural features he wishes to discuss. Still, in my opinion, he is too quick to reject them entirely. The movement can easily be heard as if it is in C minor, and the other notes derive their tension from their non-tonic status and dissonant relation to the tonic note. Prokofiev's placement of each instrumental line into a distinct registral space further helps the listener to differentiate them and determine their relation to the tonal center.

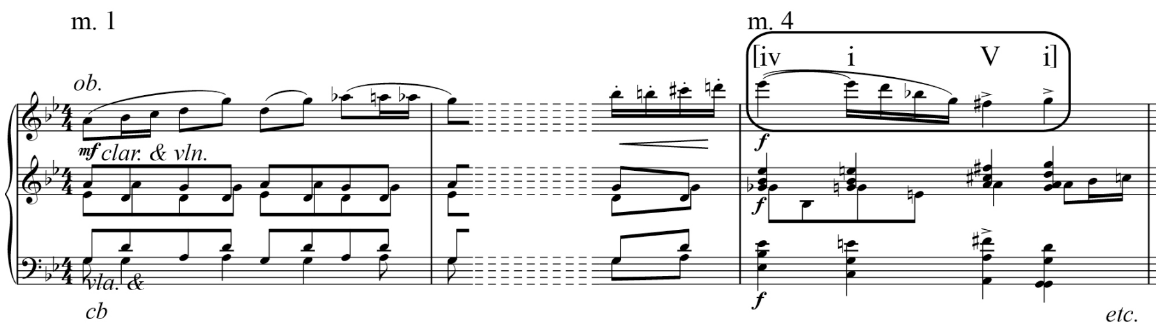

Figure 2.16. Prokofiev, Quintet, op. 39 (1924), first movement, reduction of mm. 1–4.

In addition, many of the other movements in the Quintet *do* feature half-step motion at a structural close, the element Minturn deems missing in the fourth. The first movement, for example, begins with a melody in the oboe accompanied by oscillating patterns in the other instruments. The first one and a half measures are shown on the left side of Figure 2.16; the fourth measure is shown on the right side. The clarinet, violin, and viola each play four-note patterns that contain the G–D dyad with an added neighbor note, while the bass oscillates between G and its upper neighbor, A. The resulting pattern establishes G as the tonal center, despite a mild amount of constant surface dissonance. The oboe's melody is largely drawn from the G minor scale, with the added chromatic notes A♭ and D♭. The A♭ can be read as a chromatic passing note between G and A, and the D♭ remains unresolved until the upbeat to m. 4, when it ascends to D♮. In m. 4, the oboe plays a melodic fragment that, considered in isolation, suggests a common-practice progression iv–i–V–i and reinforces that a cadence takes place. The melodic fragment and its tonal implications are enclosed in a rounded box in Figure 2.16. The melodic fragment begins with a $\flat\hat{6}$–$\hat{5}$ motion, which is a common descant voice for a iv–i progression. It then arpeggiates through the tonic triad and concludes with a $\sharp\hat{7}$–$\hat{1}$ progression, suggesting the V–i cadence. The tonal implications of the oboe's stream of musical activity reinforce the sense of a cadential progression created by the entire ensemble. In an example of "collage voice leading," a voice-leading technique described in Chapter 1, the accompanying parts integrate the melody into a variant closing progression, as shown below in Figure 2.17.

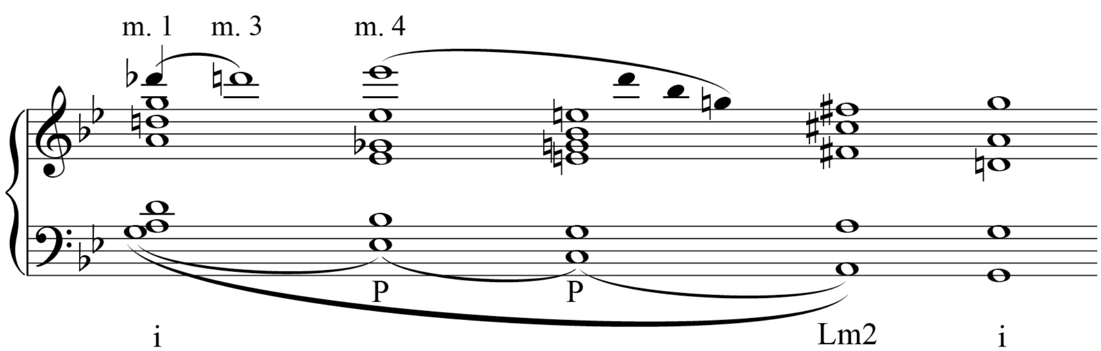

Figure 2.17. Prokofiev, Quintet, reduction of cadential progression at m. 4.

Figure 2.17 shows a harmonic reduction of the opening four measures. They start with a prolonged G-minor triad with eliminated third and added A. In m. 4, the bass descends by thirds to reach A, which supports an F♯-minor triad in first inversion, functioning as an Lm2. The F♯ in the uppermost voice provides a semitone connection to the tonic note, while the bass line moves to the tonic by contrary motion.[34] This progression resembles the "double-leading-note" cadences that frequently appeared in 14th-century polyphony.[35]

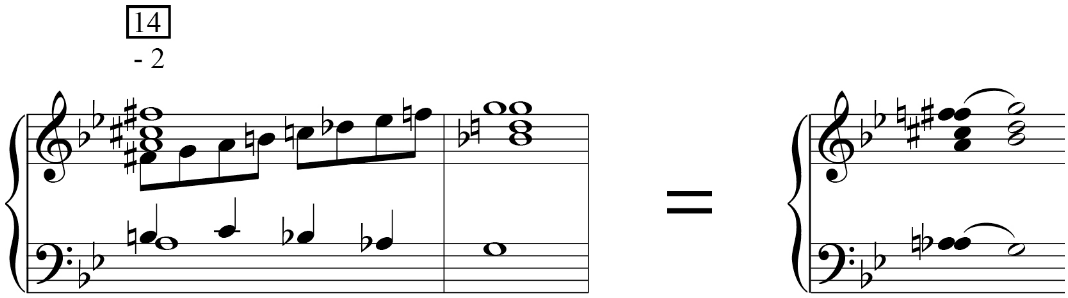

Figure 2.18. Prokofiev, Quintet, cadential progression one measure before rehearsal 14.

Another contrary-motion cadence occurs at the end of the first variation in the first movement; this passage occurs two measures before rehearsal 14 and is shown in Figure 2.18. In this progression, both the lower semitone neighbor and whole-step lower neighbor to the tonic sound simultaneously. The upper semitone neighbor to the tonic, likewise, is paired with the whole-step upper neighbor. That is, the cadence features both upward and downward chromatic leading notes to the tonic triad, and it simultaneously uses chromatically displaced pitch classes as substitutes for each leading tone. These two

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[34] Some analysts might posit an implied bass note of D underneath the F♯ minor triad, and treat the C♯ in the second-highest voice as a surface chromatic passing tone, which would transform the final cadence into a V–i progression. In "A Theory of Motives for Prokofiev's Music," Deborah Rifkin takes an approach along these lines in her analysis of the third movement of the Sonata op. 94 for Flute (or Violin) and Piano. In the middle of the first phrase, the flute and piano shift from F major to F♯ minor. Rifkin reads the bass F♯ as a modally mixed third of the D minor harmony that follows and interprets the C♯ as a chromatic passing note (265–267).

[35] For a discussion of the double leading-tone cadence, see Carl Dahlhaus, *Studies on the Origin of Harmonic Tonality*, trans. Robert O. Gjerdingen (Princeton: Princeton University Press, 1990), 71–77. A similar cadence appears in the rondo theme in the fourth movement of Prokofiev's Piano Sonata no. 6 in A, op. 82 (measures 8–9): the first phrase ends with a IV^6–V^6_4–I progression. As in the Quintet, the outer voices reach the tonic by contrary motion.

semitones intensify the contrary stepwise motion to the tonic note, and it is this voice-leading motion that provides essential closure.

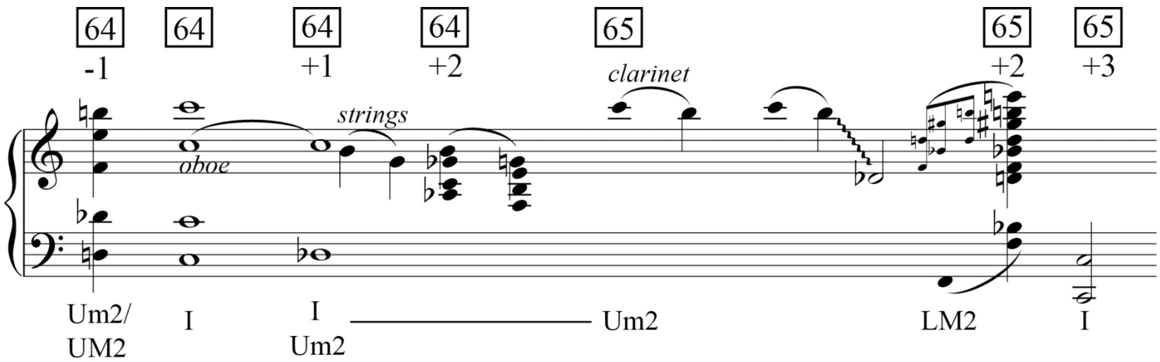

Figure 2.19. Prokofiev, Quintet, fifth movement, reduction of conclusion.

A similar cadential progression combining semitone- and whole-tone-related neighbors to the tonic occurs at conclusion of the Quintet's fifth movement, which is reduced in Figure 2.19. Before rehearsal 64, all five instruments play fast runs to create a frenzy of activity. They conclude one measure before rehearsal 64 on the first chord shown in the figure, labeled Um2/UM2. D3 and D♭4, which the two lowest voices play, are a semitone and whole tone above C, the tonic. E and F are major thirds above these two notes. B5, which occurs in the highest voice, functions as an added seventh and provides a semitone lower neighbor to C. A C played in octaves by all instruments follows at rehearsal 64 and resolves each of the neighboring notes in its respective register. The oboe holds C, the tonic, but its stability is quickly undermined one measure later when the clarinet plays a D♭3, the root of the Um2, so that the passage following rehearsal 64 mixes the I and Um2 functions. The string instruments oscillate between two chords that both contain B, the same added note above D♭ that appeared one measure before rehearsal 64. At rehearsal 65, a clarinet run cuts off the other instruments and outlines the same Um2 chord that appeared one measures after rehearsal 64. The run begins with neighboring figure that prolongs B5, and leads to a descending run that reaches D♭4, the root of the Um2. All instruments then arpeggiate through a thick chord that combines a B♭-major triad in the lower voices with an E-major triad in the upper voices. The root of the B♭ triad is a whole-tone lower than the tonic and is therefore the last note neighboring the tonic by step that had not yet appeared in the passage. The chord proceeds to a C played in octaves. This note can be heard as a resolution of the previous chord, even though the progression does not feature a direct melodic motion from B♭ to the tonic note. Thus, in the final two chords, the cadential chords involving stepwise motion to the tonic, which appeared one measure before rehearsal 14 and at rehearsal 64, are abstracted into a harmonic relation between a chord and its resolution into a single note.

3. Semitone-related Triads as Recontextualized Dominant Preparation

The examples in the previous section showed how Um2 and Lm2 could be traced conceptually to alterations of the dominant harmony. In the following section I explore "secondary" semitone-related triads; that is, semitone-related triads that effect an arrival on some harmony other than the tonic, such as the dominant. In addition, I explore the flip side of this issue; namely, how Um2 and Lm2 triads result from recontextualization of progressions that are used to effect a dominant arrival.

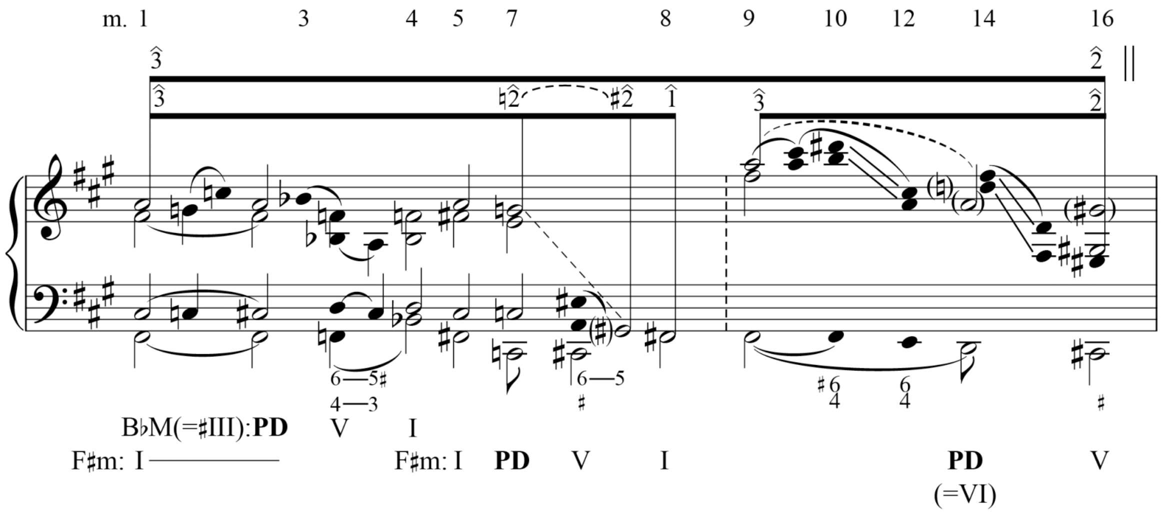

Figure 2.20. Prokofiev, "Gavotte" from *Four Pieces*, op. 32 (1918), middleground reduction.

The "Gavotte" from *Four Pieces*, op. 32 (1918), features several instances of "secondary" semitone-related triads that create dominant arrival. A middleground reduction of the first sixteen measures of the piece is shown in Figure 2.20. This excerpt represents the first two parts of a small ternary: mm. 1–8 are an antecedent–consequent pair, while mm. 9–16 (which are repeated) form a contrasting middle that leads to an interrupting V. Cadential progressions occur at m. 4, m. 8, and m. 16; in each, a semitone-related triad, labeled with a bold "PD" for "predominant," leads to the cadential V. When considered in sequence, the three predominants provide a "reverse genealogy" of secondary semitone-related chords: the last fits comfortably within common practice, the first two do not but can be derived from it. The predominant chord at m. 14 can be heard as VI. The second predominant chord at m. 7 is a C-major triad, which is a semitone below V. It follows common practice insofar as it employs the enharmonic equivalent of a raised $\hat{4}$ as its bass note, a note that also appears at the bottom of many common-practice predominants (such as vii^{o7} of V). In addition, the uppermost voice of this chord has a lowered $\hat{2}$, which suggests the ♭II (or Neapolitan) harmony. As in many middlegrounds that involve this chord, the lowered $\hat{2}$ is "corrected" with the resolution to V.[36] A dotted line in the reduction connects the lowered and natural $\hat{2}$; the latter note occurs in a lower register and is embellished by an upper neighbor. The first predominant, the F♯-minor triad that occurs at m. 2, is a semitone above the dominant to which it leads and allows a brief modulation from F♯ minor to B♭ major. It is possible to hear the triad as a modally mixed submediant, although there are few, if any, instances of this harmony in common practice. The lack of precedent is likely due to the fact that the triad's third is enharmonically equivalent to the leading tone, and the common-tone connection prevents a strong progression from predominant to dominant. The gavotte sidesteps this issue by embellishing the V with a cadential $^6_4$ progression, giving a sense of progression to the dominant harmony. Other theories might note a progression between hexatonic poles in the motion from the F♯-minor triad to the B♭-major $^6_4$, or they might identify a "slide" operation in the motion from the predominant to V.[37] However, analyzing semitone-related triads, rather than a specific voice-leading operation, reveals elements that are constant in the movement.

A semitone-related predominant also appears in the opening theme of Prokofiev's

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[36] A useful discussion of ♭II appears in Allen Cadwallader and David Gagné, *Analysis of Tonal Music: A Schenkerian Approach*, 3rd edition (New York: Oxford University Press, 2011), 158–159.

[37] Neil Minturn notes the importance of the SLIDE operation (which he labels a "triadic flip") in Prokofiev's music in *The Music of Sergei Prokofiev*, 57. In "Families without Clusters in the Early Works of Sergei Prokofiev," Zimmerman notes that the hexatonic collection frequently appears in Prokofiev's Etudes op. 2, nos. 1 and 2, and he states that the second etude establishes a close relationship between the SLIDE operation and hexatonicism (140–148).

Piano Concerto no. 2, first movement. In m. 8 the theme, which is in G minor, briefly tonicizes C♯ minor. This C♯-minor triad then leads to V^7. Richard Bass reads the C♯-minor triad as a chromatically displaced iv, but the context of the gavotte suggests that the C♯-minor triad can itself provide predominant function through semitone root relation without treating it as a transformed diatonic triad. In addition, Bass's analysis neglects the bass line over mm. 7–8, played by the orchestra. The bass line traces a down-by-fifth motion ending on C♯ <E♭=D♯–G♯–C♯>, which suggests that this pitch, rather than C♮, is the intermediate harmonic goal of the phrase.[38]

Semitone-related triads also play a secondary function in the first movement of the Sonata for Flute and Piano op. 94 (later adapted for violin and piano), written in 1943. Large-scale inversional relationships occur between several key-defining progressions in this movement; these progressions place IV and V in conflict as cadential harmonies.

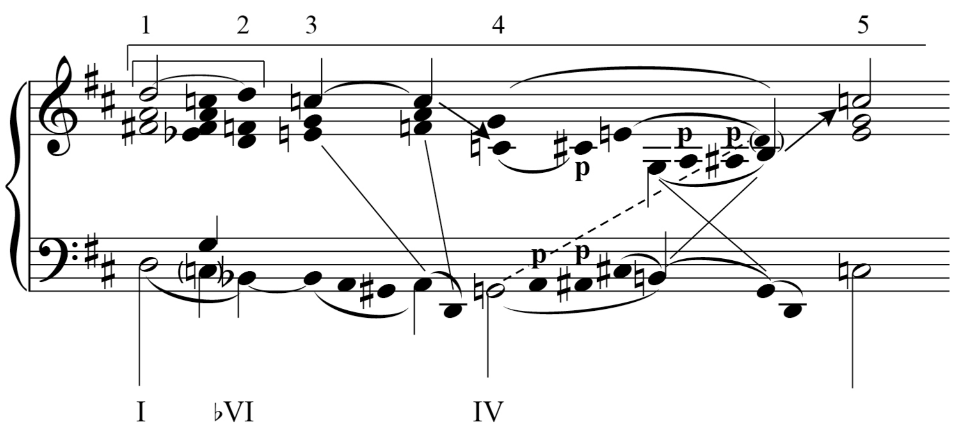

Figure 2.21. Prokofiev, Sonata for Flute (or Violin) and Piano, op. 94 (1943), first movement, voice-leading reduction of mm. 1–5.

The opening eight measures, which form a period, compose out a <D–C♮–D>

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[38] Richard Bass, "Chromatic Displacement," 211–213.

motive that occurs in the uppermost line in the piano over the first two measures. The piano part of the antecedent phrase (mm. 1–4) is reduced in Figure 2.21. An unusual chord supports the melody's C♮; the right-hand part forms a fully diminished seventh of ♭VI, and resolves to this chord on the downbeat of m. 2. The left-hand part, by contrast, leaps from the $\hat{1}$ to $\hat{4}$ in the first measure. Because the rest of the bass line descends by step, a C is strongly implied underneath this G, so that the entire harmony can be heard as a passing chord. At the musical surface, the leap from D to G and then to B♭ in the first three chords outline a minor iv triad, underscoring the emphasis on the subdominant that occurs in the first theme. The bass line continues its stepwise descent over mm. 2–4 to reach IV at m. 4. The C5 from the previous chord is transferred down by octave on the downbeat of m. 4 to form a fourth with the bass. Rather than functioning as a suspension that resolves down by step, the C begins an *ascending* chromatic line that resolves to D4 at the end of the measure. A dotted line connects the bass note on the downbeat with the resolution of the ascending line, and the chromatic passing notes are marked with a bold "p" on the reduction. Ascending chromatic passing notes also appear in other musical voices and are marked with a "p" on the reduction. IV is reinterpreted as V of C major, the key in which the consequent phrase begins at m. 5. The first note of the antecedent phrase and the first note of the consequent phrase create a large-scale motion from D5 to C♮5, repeating the first half of the D–C♮–D motive that appeared in the first measure. An incomplete square bracket shows this repetition.

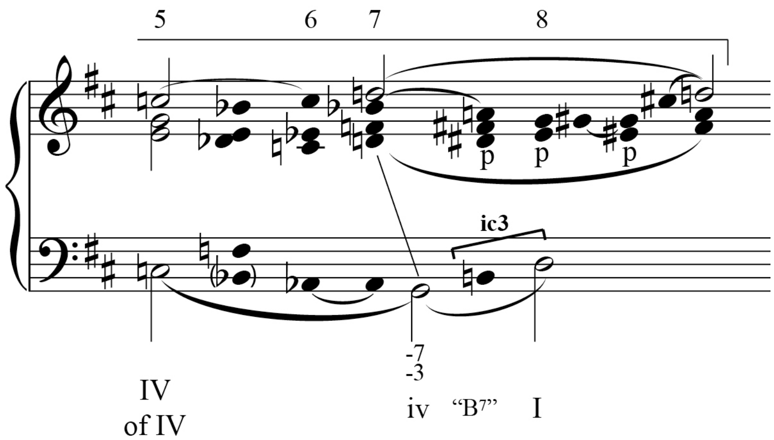

Figure 2.22. Prokofiev, Sonata for Flute (or Violin) and Piano, first movement, voice-leading reduction of mm. 5–8.

Measures 5–8, which form the consequent phrase, are reduced in Figure 2.22. The phrase begins with a sequential repetition of the antecedent phrase, beginning in C major. The ending of the phrase is altered at m. 7, where the G minor seventh chord, functioning as iv, leads to the D major tonic. The motion from iv to I at the end of the phrase is embellished by several chromatic passing notes, as in the end of the antecedent phrase. In addition, the bass motion is subdivided by an arppegiation through a major IV triad, "correcting" the arpeggiation through the minor iv triad that occurred over mm. 1–2. This combination of chromatic passing notes and a bass arpeggiation creates a B dominant seventh chord on the second half of measure seven, labeled as a "B^7" (within quotation marks) on the above reduction. This dominant seventh chord sonority has the appearance of a harmony but does not fulfill its function: it results from a decoration of the iv–I progression through ascending chromatic passing notes. It does not take a direct relation to the tonic triad, and the iv–I progression provides closure to the phrase. Nonetheless, at the musical surface, the B dominant seventh resolves directly to a D major triad, and this progression forms an instance of ic3-related triads, which are thematized in the following development section. This interval is bracketed in the above analysis. The consequent phrase also effects a large-scale motion from C♮5 to D5 in its uppermost line, completing the <D–C♮–D> motive outlined over the entire period.

The theme privileges root motion up by fifth, rather than root motion down by fifth, as a means of defining the tonic. The final progression is iv–I, rather than V–I; in addition, the C-major triad at the beginning of the consequent phrase leads to the subdominant by ascending fifth. The entire theme, therefore, inverts the common-practice progression I–II$^{\sharp}$[=V of V]–V–I to become I–♮VII [=IV of IV]–IV–I.

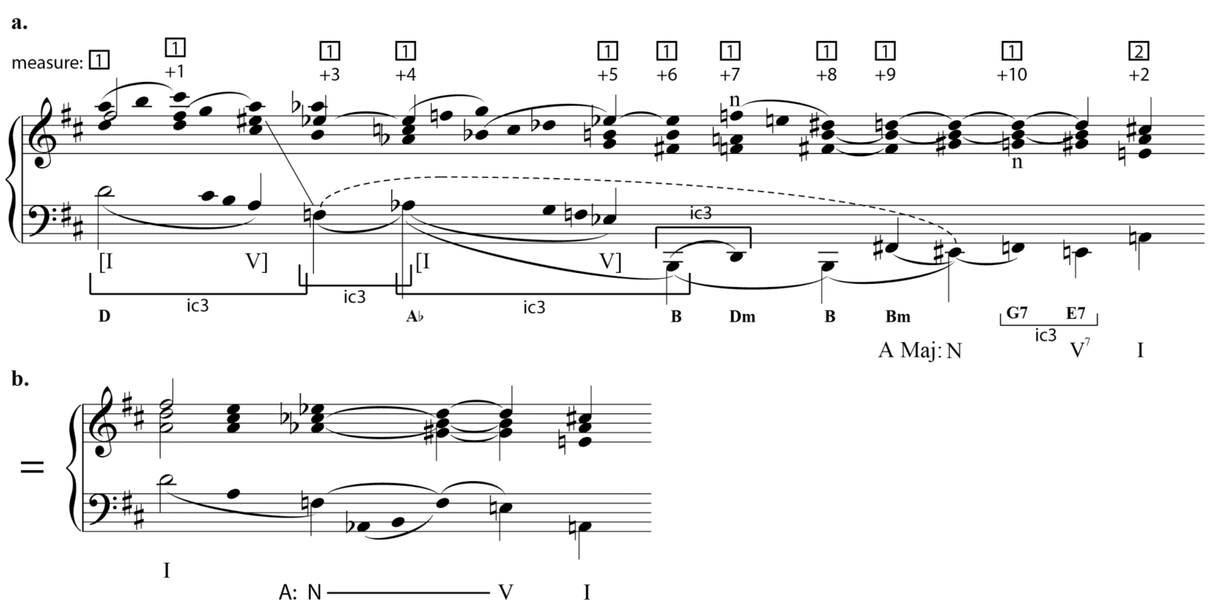

Figure 2.23. a. Prokofiev, Sonata for Flute (or Violin) and Piano, first movement, voice-leading reduction of transition section. b. Second-level reduction.

The transition section further explores the root relation of ic3 by creating a large chain of pitch-class transpositions by this interval to prolong a neighboring chord. The transition effects a change of key from D to A major, as well as a change from a "plagal" to “authentic” system: V comes to replace IV as the primary chord that provides harmonic closure. Figure 2.23a provides a voice-leading reduction and analysis of the section. The section begins at rehearsal 1 with a I–V motion in the key of D major; the Roman-numeral analysis is shown in brackets underneath the bass line. Three measures after rehearsal 1, V resolves irregularly to an F half diminished seventh chord, which functions as a mixed chromatic neighboring/passing chord to V^7 in the key of A major. A sequence that highlights root relation by ic3 delays the resolution of this neighboring chord. Four measures after rehearsal 1, the chord moves by smooth voice leading to an A♭-major triad. Another I–V progression tonicizes the A♭ triad, and the passage continues with a series of transient modulations through minor-third-related keys—B major, D minor, B major, and B minor. Bold letters underneath indicate the roots of major or minor triads that the bass notes support, and transpositions by ic3 are bracketed underneath the bass line. The minor-third sequence leads from the initial F half-diminished seventh chord to an E♯ fully diminished seventh chord that occurs nine measures after rehearsal 1. The dotted slur in the lower staff of the above reduction shows a large-scale, enharmonically equivalent relation between the two chords. (Therefore, like the motion from the B dominant seventh chord to the D-major triad at the end of the primary theme, the minor-third-related triads provide surface decoration without a change in harmonic function.) The E♯ that appears nine measures after rehearsal 1, respelled as F, acts as a chromatic upper neighbor to E and effects an arrival on V in the key of A major, the final goal of the transition. Ten measures after rehearsal 1, a root relation of ic3 is repeated a final time as the neighboring fully diminished seventh chord resolves to V: an inner voice descends from G♯ to G♮, forming a G major-minor seventh sonority, which then resolves to V^7. Although the bass does not move by ic3, the relation between the roots of these two chords—G and E—recalls the transient modulations featured previously in the section.

The large-scale tonal trajectory of the transition section is shown in Figure 2.23b. The F half-diminished seventh chord that appears four measures after rehearsal 1 has greater structural significance than the A♭-major triad that appears in the following measure, even though the latter falls on a strong beat and initially appears to initiate a sequential repetition of the transitional theme. A large portion of the transition prolongs this F half-diminished seventh, which has a mixed neighboring and passing function. The bass note F serves as an upper neighbor to E, the dominant of A. The upper-voice E♭5 provides a chromatic passing note to D, the chordal seventh of V^7 in A major. The transient modulations that occur over the section, represented by the slurred arpeggiation in the bass line, serve to delay the resolution this harmony. The transition's background harmonic progression inverts the progression that opened the primary theme: I–♮VII[=IV of IV]–IV becomes I–$II^{\sharp}$[=V of V]–V. This inversion of root motion signals a shift in priority from IV to V.

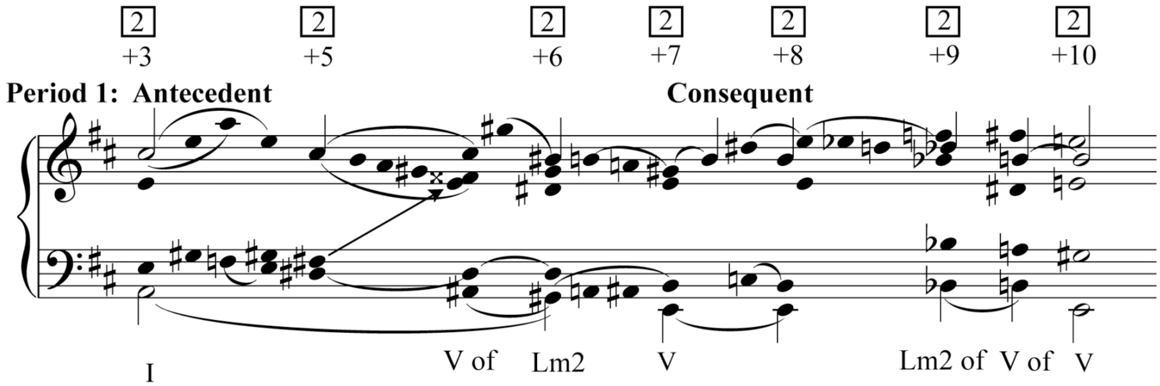

Figure 2.24. Prokofiev, Sonata for Flute (or Violin) and Piano, first movement, voice-leading reduction of first half of secondary theme.

V is used to effect harmonic closure in the secondary theme, but Lm2 and Um2 appear at foreground levels. The entire theme is a double period, and the first period, which ends with a tonicized V, is reduced in Figure 2.24. The antecedent phrase ends with a brief tonicization of G♯ major, the Lm2, six measures after rehearsal 2. A predominant-functioning Lm2, similar to those used in the Gavotte, the third movement of *Four Pieces*, op. 32, appears at the end of the consequent phrase. Nine measures after rehearsal 2, a B♭-minor triad leads to a B dominant seventh.

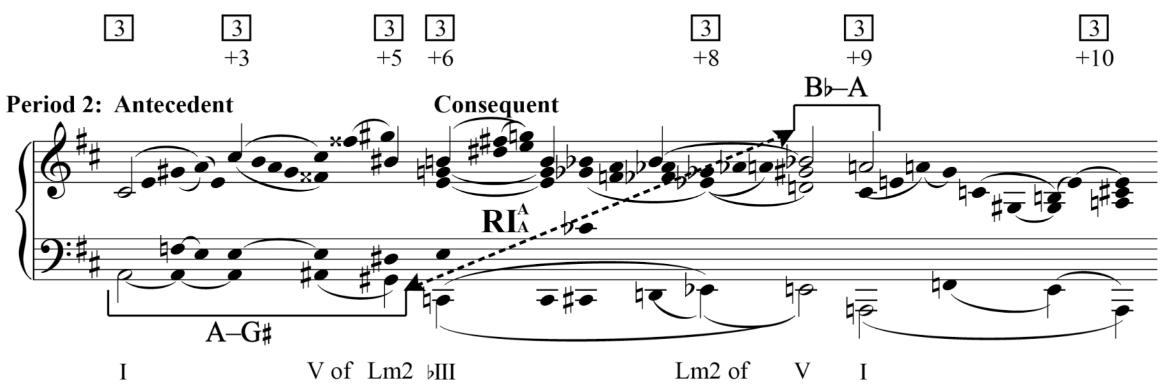

Figure 2.25. Prokofiev, Sonata for Flute (or Violin) and Piano, first movement, voice-leading reduction of second half of secondary theme.

Figure 2.25 shows a voice-leading graph of the second period. The second antecedent is identical to the first, but the consequent phrase is adjusted to outline a ♭III–V–I progression. V, which appears eight measures after rehearsal 3, contains a lowered fifth (B♭) in its highest register, which resolves to A. This succession is a retrograde inversion, around the tonic note A, of the bass motion A–G♯ effected over the antecedent phrase. A dotted line connecting two brackets in the above reduction shows this relationship. An inversional relationship also occurs between the antecedent and consequent phrase: in the antecedent phrase, the G♯-major triad six measures after rehearsal 2 moves to an E-major triad in the following measure, showing a relationship of T8. In the corresponding passage in the consequent phrase (five measures after rehearsal 3 to six measures after rehearsal 3), the G♯-major triad leads to a C-major triad, inverting this relationship. The B♭ in this chord suggests the Um2's function, providing a link between the background structure of the second theme, which is based on a common-practice I–V–I, and the Lm2 chords that appear at the musical surface.

The primary and secondary themes present not only two conflicting keys but also two conflicting means of producing harmonic closure: the first privileges root motion up by fifth, the second down by fifth. The recapitulation transposes the secondary theme material to D major, making an uncomplicated affirmation of D major as the tonic. The conflict between two closing progressions, by contrast, receives no easy resolution. Since the recapitulation ends with the secondary theme, it initially appears to establish the primacy of the progression V–I in producing large-scale closure, but the coda calls this priority into question.

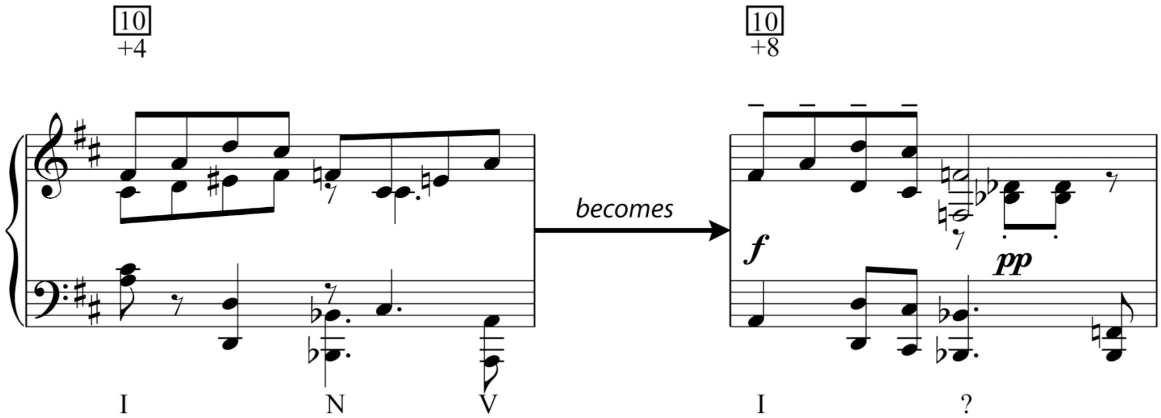

Figure 2.26. Prokofiev, Sonata for Flute (or Violin) and Piano, first movement, transformation of figure from codetta into coda.

The secondary theme ends with a codetta that begins four measures after rehearsal 10. The beginning of the codetta is shown on the left side of Figure 2.26. It alternates between I and V, and decorates V with two chromatic neighbor notes: B♭ neighbors A, and F♮ neighbors E. Eight measures after rehearsal 10, the codetta swerves away from the original version presented in the exposition, leading to the coda.[39] C♯, the third of V, is enharmonically respelled as D♭, and when combined with the two chromatic neighbors it forms a B♭-minor triad. Effectively, the pianist becomes "frozen" on a collection of neighbor notes whose function has now become ambiguous. The pianist stays in this harmonic no-man's-land of B♭ minor for two measures—a comparatively long time given the active harmonic rhythm of the preceding section—and heightens anticipation for clarifying events.

[39] For a discussion of the distinction between codetta and coda, see William Caplin, *Classical Form*, 179–191.

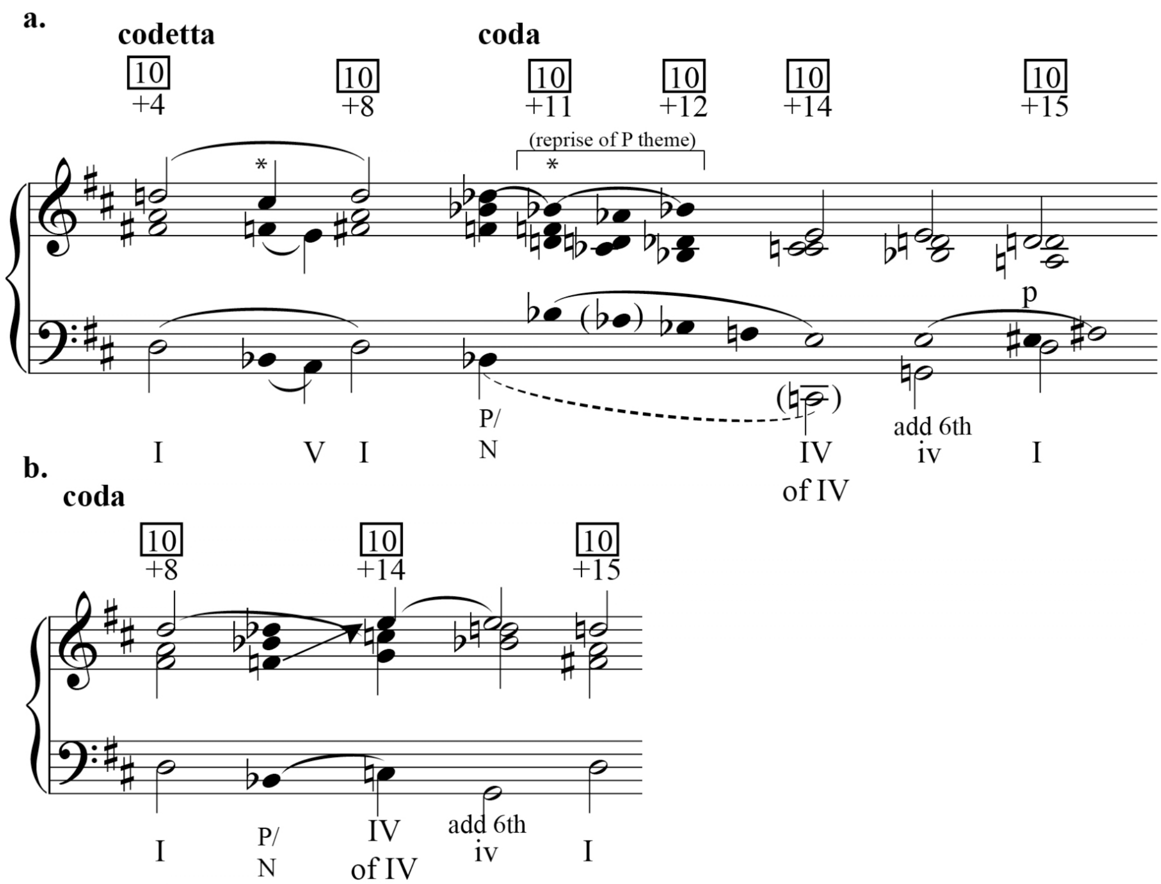

Figure 2.27. Prokofiev, Sonata for Flute (or Violin) and Piano, first movement. a. Voice-leading reduction of codetta and coda. b. Further voice-leading reduction of coda.

A reduction of the codetta and coda is shown in Figure 2.27a. After the B♭-minor harmony, the duet briefly recalls the incipit of the primary theme in the key of B♭ major; this passage is bracketed in Figure 2.27a. The progression ♮VII[=IV of IV]–iv–I follows in the key of D major fourteen measures after rehearsal 10; it is the same progression that concluded the initial primary theme, but it is elongated in time, and iv is colored by an added sixth rather than an added seventh. The approach to the final I is also decorated by an ascending chromatic passing note, recalling the conclusion of the primary theme.

The two B♭-minor sonorities that occur in the codetta and coda are marked with asterisks [*] in Figure 2.27a. Although they are enharmonically equivalent, they serve a different voice-leading function. The B♭-minor triad in the codetta serves as a local neighboring function. The second triad appearing in the coda, by contrast, functions as a large-scale combined passing and neighboring chord. This function is more clearly revealed by leaving out the brief recall of the primary theme eleven measures after rehearsal 10, which is parenthetical to the motion toward a closing progression that the coda undertakes. This further reduction yields the voice-leading diagram shown in Figure 2.27b. The upper voice makes a chromatic passing motion from D down to the inner-voice C, and the alto makes an ascending passing motion from A to C. The tenor makes a chromatic passing motion from F♯ to E, and its resolution is displaced by an octave (shown by an arrow) to become the new soprano voice. The bass leaps to the lower neighbor B♭, which also resolves to C. The triad also introduces the pitch B♭, which is the third of the minor iv triad, thereby smoothing the connection to the final iv–I progression that closes the coda section.

Sonata theory generally affords greater structural weight to the end of the second theme in the recapitulation. It relegates the coda to express what amounts to a musical afterthought or recall a theme that had previously been suppressed. Neither practice necessarily changes the tonal structure of the moment.[40] (Some of Beethoven's codas, to

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[40] For current views on the coda in sonata form, see William Caplin, *Classical Form*, Chapter 12, and James Hepokoski and Warren Darcy*, Elements of Sonata Theory* (New York: Oxford University Press, 2006), 281–292. Hepokoski and Darcy's concept of "thematic rotation" is particularly appropriate to the first movement of Prokofiev's sonata (283–284). Rotation describes the practice of revisiting in the development and recapitulation the themes from the exposition in the order in which they appear, with some substitutions or deletions possible. With its brief recall of the primary theme, Prokofiev's coda suggests the beginning of an additional thematic rotation before it runs out of energy. This impression is

be sure, create a sense of final apotheosis or release, or they provide a large-scale resolution that was deferred in the recapitulation, but Prokofiev's brief and subdued coda clearly does not fall into the same category.)[41] Nonetheless, if this coda is an afterthought, it is one that can prompt listeners to rethink the relative harmonic priority of the preceding events. Whether the coda's final progression provides essential closure to the movement or is ancillary to the V–I at the end of the secondary theme remains ambiguous.

In the second movement of the Sonata, op. 94, for Flute (or Violin) and Piano (1943), semitone-related triads create arrival on the tonic, not dominant, harmony, but their voice leading more closely resembles that used by predominants. Stated in another way, the movement suggests another conceptual origin for Lm2 and Um2: that of recontextualized dominant arrival.

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strengthened by the clearly rotational structure of the development, which twice cycles through the primary and secondary themes. The development also adds a new theme at its opening, which along with the transition theme provides counterpoint throughout.

[41] See Hepokoski and Darcy, *Elements of Sonata Theory*, 286–287.

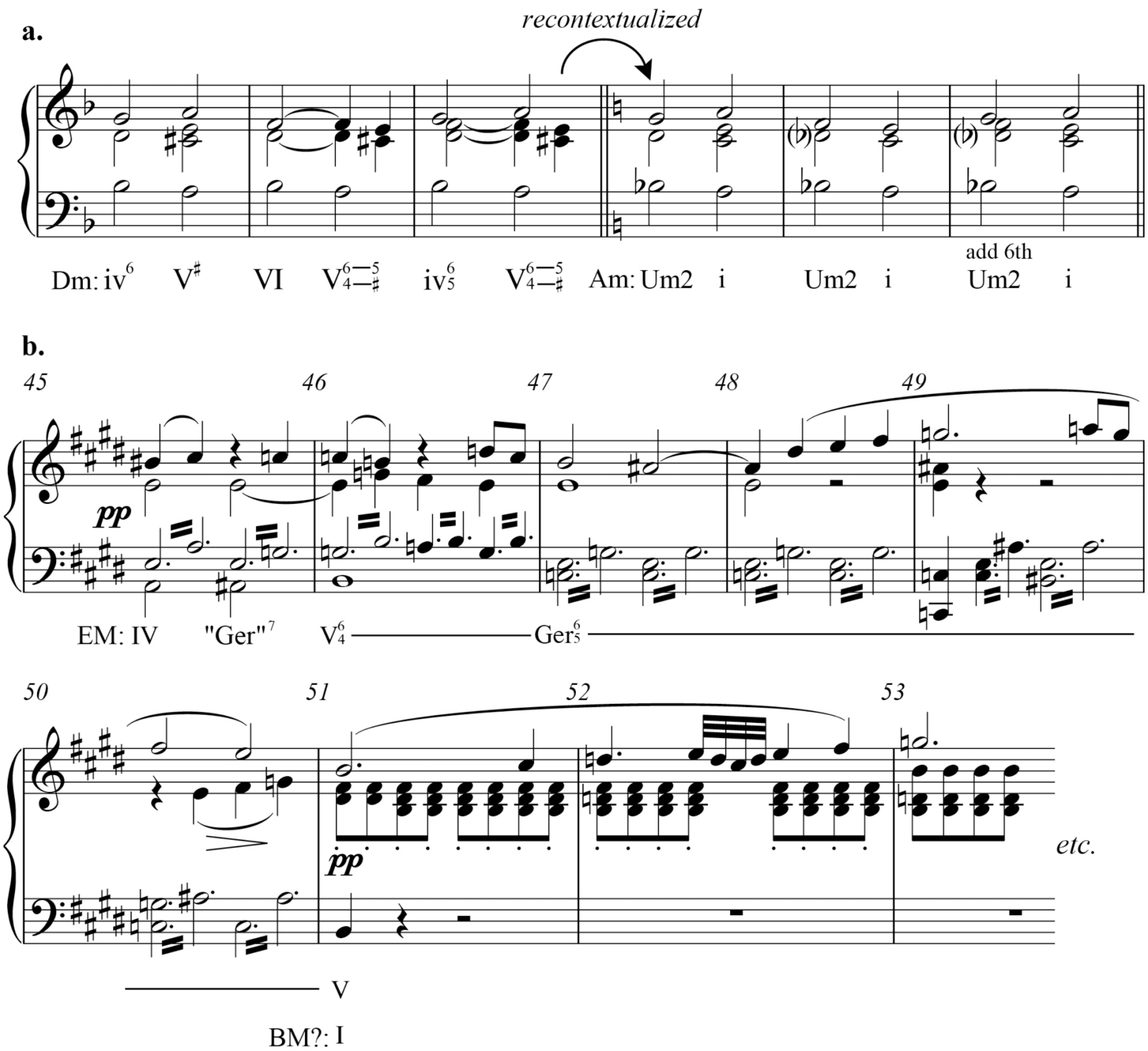

Figure 2.28. a. Recontextualized dominant arrival. b. Dominant arrival recontextualized as tonic arrival in Bruckner, Symphony no. 7, first movement (1885).

Figure 2.28a shows how a recontextualized dominant arrival might be achieved. The first three progressions are half cadences that involve bass motion by descending semitone. The third chord features an "added sixth" dissonance that is characteristic of predominant chords. The recontextualized progressions reinterpret these voice-leading patterns, which originally indicated dominant arrival, to indicate tonic arrival. As with transformed dominant chords, the nineteenth century provides precedents for this reinterpretation. Figure 2.28b shows mm. 45–53 from the first movement of Bruckner's Seventh Symphony (1885); the excerpt shows the end of the primary theme area and the beginning of the transition. Measures 45–50 suggest an approach to a dominant arrival. The orchestra plays IV on the downbeat of m. 45; over mm. 45–47, the outer voices undergo a chromatically inflected voice exchange (through a passing $^6_4$) to transform the IV into a German $^6_5$. Thus, a function of dominant preparation is indicated. In m. 51, the orchestra does indeed arrive on a dominant harmony, but a new tune in the key of B proceeds immediately, suggesting that V is reinterpreted as a tonic. In the following measure, the third of this chord is lowered to form a minor triad, which further negates a dominant interpretation. The rest of the transition contains several chromatic sequences that suggest several fleeting keys, but nowhere is E major suggested, nor does the B-major triad further suggest dominant function. Instead, a chromatic up-by-fifths progression prepares a German $^6_5$ in B major and leads to a dominant arrival in that key at m. 103, firmly securing it as tonic. There is some measure of ambiguity as to where the transition reaches the key of B major, but the section certainly makes it possible to interpret tonic function at m. 51, and to hear a confirmation of this interpretation 52 measures later.

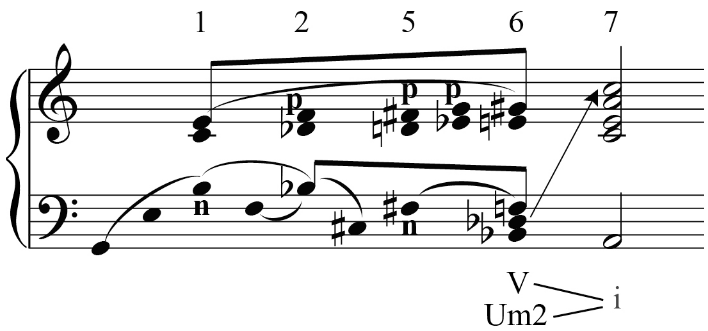

Figure 2.29. Prokofiev, Sonata for Flute (or Violin) and Piano, second movement, reduction of mm. 1–7.

The six-measure piano introduction of the second movement of Prokofiev's Sonata, op. 94, second movement, is reduced in Figure 2.29. It provides an upbeat gesture that establishes the key of A minor and prepares for the entrance of the flute or violin. It also establishes, at the outset of the movement, the ability of the Um2 to create harmonic closure. At m. 6, the final measure of the introduction, the left hand of the piano arpeggiates through a B♭-minor triad, while the right hand plays E and G♯, the root and third of the V triad in A minor. The chord combines a common-practice V with an Um2. The previous six measures also prolong the mixed V/Um2 triad. The uppermost line fills in the E–G♯ dyad via ascending chromatic passing motion. The lower part outlines B♭ and F, the root and fifth of Um2; each of these notes is embellished by a chromatic upper neighbor, marked with a bold "n" on the Figure.[42] The bass line also arpeggiates through the same triad in m. 2, anticipating its restatement four measures later.

[42] For different reading of this seven-measure introduction, see Neil Minturn, *The Music of Sergei Prokofiev*, 145–148. Minturn notes that the first sonority forms set-class [015], a structural set that is the subset of other significant sets that occur in the passage and throughout the movement, including [0145] and [0148].

First Scherzo Theme		
Measures	*Formal Function*	*Harmonic motion*
	Sentence 1 (antecedent 1)	
7–8	basic idea	A minor
9–10	basic idea repeated	A minor
11–14	continuation 1 leading to arrival on V	i to V in A minor
	Sentence 2 (consequent 1)	
15–16	basic idea	C major
17–18	basic idea repeated	C major
19–27	continuation 2	A♭ major to D♭ minor
27–33	piano ostinato based on continuation	D♭ minor
	Sentence 3 (antecedent 2)	
34–35	basic idea	D minor
36–37	basic idea repeated	D minor
38–41	continuation leading to arrival on V	i to V in D minor
	Sentence 4 (consequent 2)	
42–43	basic idea	F major
44–45	basic idea repeated	F major
46–57	continuation 2	V^6 in D minor
58–74	modified piano ostinato	D minor
75–83	continuation 3	D♭ major to B♭ minor to A major

Figure 2.30. Formal outline of Prokofiev, Sonata for Flute (or Violin) and Piano, second movement, first scherzo theme.

The first section of the movement features two different scherzo themes placed in ABA' form. A formal analysis of the first scherzo theme, which begins at m. 7, is shown in Figure 2.30. It strings together four sentential phrases, which together form a double period: the first pair of sentences form the first antecedent and consequent, and the second pair forms the second antecedent and consequent. The two antecedents are identical save for the local tonic: the first is in A minor, the second in D minor. The consequent sentences, by contrast, feature different continuation sections. Continuation 1, which occurs over mm. 11–14 at the end of the antecedent 1 sentence, is the most tightly organized: it is initiated by rhythmic fragmentation of the three-note motive that opens the scherzo theme, its duration is an even four measures, and it concludes with an arrival on V. Continuation 2, which occurs over mm. 19–27, begins with a shift from C major to A♭ major that jars the theme out of the realm of A minor. As befits its formal function, it employs an acceleration of the bass line in the piano's left hand and is harmonically unstable. It fails to lead to a common-practice cadence, however; instead, it "freezes" over mm. 27–33, where the piano plays an ostinato pattern that outlines a D♭-minor triad. These measures are no longer continuational in function, because of their rhythmic and harmonic stasis, nor do they fulfill the function of dominant prolongation that is the frequent role of such post-continuation appendages. The formal function of the fourth and final sentence is even more ambiguous. Its continuation (mm. 46–57) is identical to that of the second phrase, except that its conclusion is adjusted to reach an arrival on D minor, the local tonic, which is prolonged by an ostinato over mm. 58–74. This ostinato then ends with another jarring harmonic shift to D♭ major, which initiates yet a third continuation that concludes with an arrival on A major, the parallel key of the original tonic.[43]

[43] For a more detailed analysis of rhythmic acceleration in the section, see Neil Minturn's "rebarring" of this passage based on melodic grouping in *The Music of Sergei Prokofiev*, 150–151.

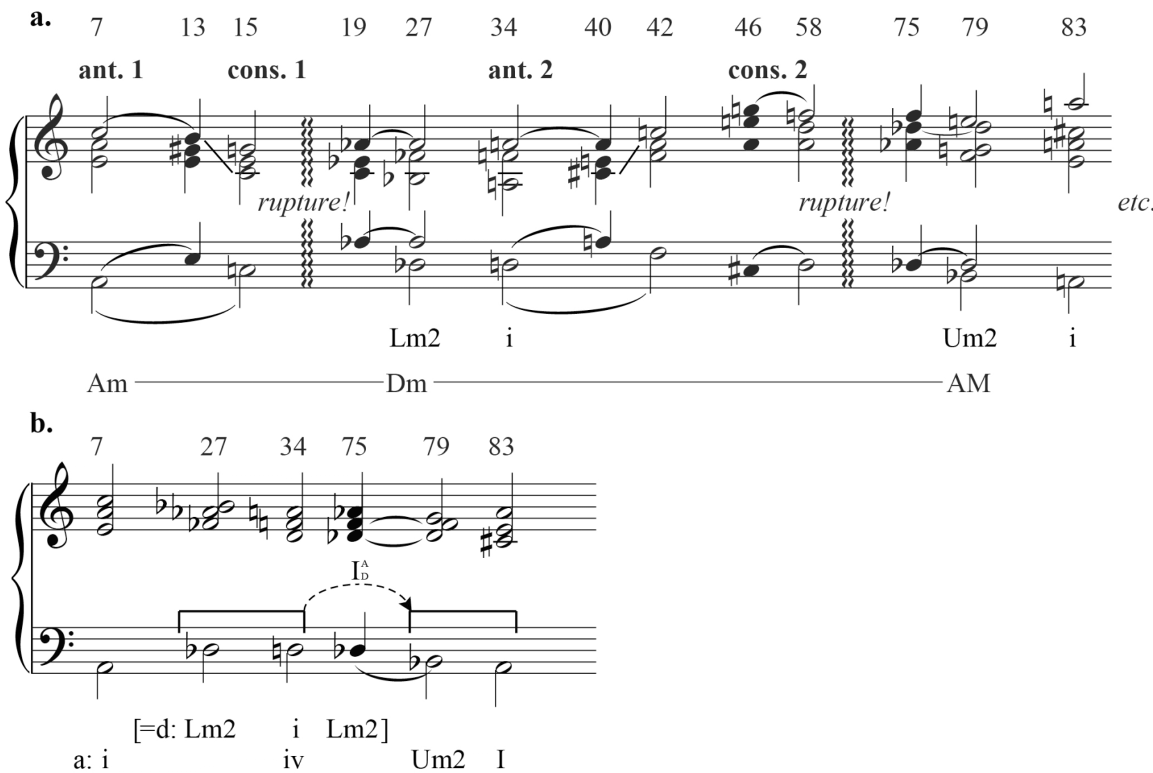

Figure 2.31. Harmonic outline for Sonata for Flute (or Violin) and Piano, second movement, first scherzo theme.

Figure 2.31a shows a harmonic reduction of the same scherzo theme. The two harmonically jarring moments in the theme—the shift from C to A♭ major in the second sentence and the shift from D to D♭ major in the fourth sentence—are marked as harmonic “ruptures” in the reduction. At these moments the theme appears to contradict temporarily the common-practice framework that it initially proposed. The analysis underneath the bottom staff shows that these ruptures can be heard as representing a change of bass interval—the theme shifts from fifth to semitone as the means of establishing local tonics. The shift to A♭ at m. 19 initiates an unfolding of a D♭-minor triad, functioning as an Lm2 in D minor, over mm. 19–27. The later chromatic shift at m. 75 leads to an unfolding of a Um2 in the key of A major. As in the six-measure introduction, this Um2 chord is accompanied by E♮, the root of V. Figure 2.31b provides a deeper-level reduction of the first scherzo theme. It moves between A and D minor, and if III is excluded, the bass line is symmetrical by inversion around the two main tonal centers used in the section: the motion from D♭ to D inverts into the motion from B♭ to A.[44]

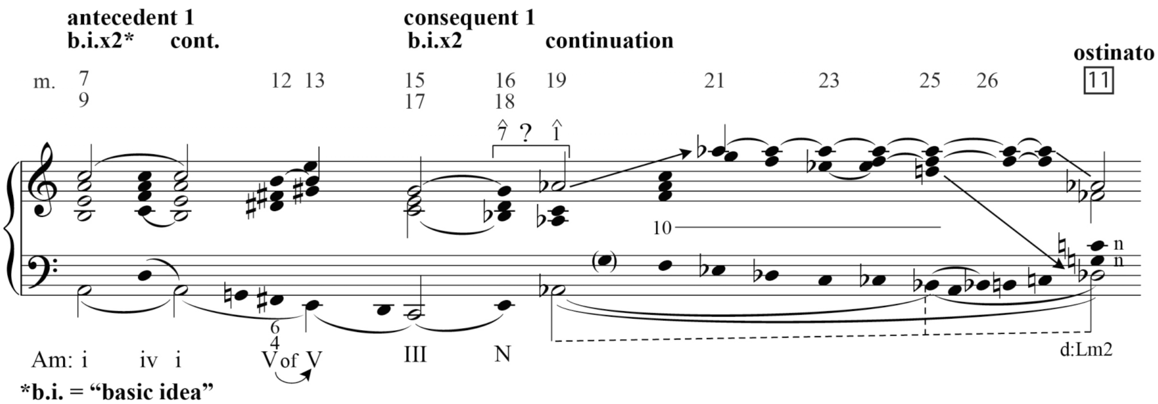

Figure 2.32. Sonata for Flute (or Violin) and Piano, second movement, reduction of first antecedent and consequent phrases.

Figure 2.32 shows a more detailed reduction of the first antecedent and consequent sentences. Measures 7–10 form the presentation: the basic idea, which acts as the central motive for the movement, is accompanied by a i–iv–i progression that provides an initial confirmation of the tonic harmony. Over the continuation (mm. 11–14), the bass line descends by step to an applied dominant that leads to a half cadence at

[44] The roots of these triads form set-class [0145], a superset of [015], and therefore my analysis of the background tonal structure can be shown to intersect with Neil Minturn’s analysis, given in *The Music of Sergei Prokofiev*, of the role of [015] and its supersets in this movement (145–148). Minturn alludes to a possible connection when he identifies [015] in the “tonal areas” of D, D♭, and A over measures 58–83. We differ in our assessment of the tonal significance of each of these tonal areas (as I read the area of D♭ as part of an expansion of the Um2). Moreover, his analysis relates the tonal areas to the *following* section, rather than the opening of the scherzo, which requires him to read the end of the Scherzo 2 theme as in D♭, even though a G♭-major triad is being prolonged in the section.

m. 13. The opening of the consequent sentence transposes the antecedent's basic idea to C major, the mediant. An E half-diminished seventh chord serves to prolong this harmony and replaces iv found in the previous phrase. The chord has a mixed function: the bass arpeggiates to the third of the C-major triad, while the upper voices provide two whole-tone lower neighbors to its root and third. At m. 19, this neighboring chord proceeds to an A♭–major triad. A prominent G to A♭ appears in the uppermost voice over mm. 18–19, suggesting a leading-tone resolution. This tentative sense of dominant resolution creates temporary formal ambiguity: is the section beginning at m. 19 an arrival, or does it mark the start of an unstable transition?

The A♭-major chord initiates a sequence of parallel tenths that arrives on a D♭-minor chord at rehearsal 11, quickly confirming the latter interpretation. The pitch-class A♭ is mentally retained throughout the transition, since it initially receives consonant support and is repeated in the uppermost register as a cover tone. Rather than proceeding directly to the goal note of D♭, the bass line continues to a B♭2 in m. 25. The B♭ then descends to an A♮, but several musical factors suggest that this note can be read as an embellishing lower neighbor. It falls on a weak beat, and it forms an eleventh, rather than a tenth, with the descent in the right hand. The dotted beams in the figure show that the most prominent notes in the bass line arpeggiates through A♭, B♭, and D♭, three notes of the D♭-minor triad with an added B♭. This chord functions as a Lm2 in D minor, and the added sixth provides a characteristic dissonance that clarifies its role.

At rehearsal 11, the piano plays an ostinato pattern that holds the Lm2 harmony for six measures and takes a function similar to "standing on the dominant" in classical-period phrase design. The pitches C4 and G3, which are also part of the ostinato pattern, are interpreted as octave-displaced neighbor notes and are therefore represented by black noteheads.

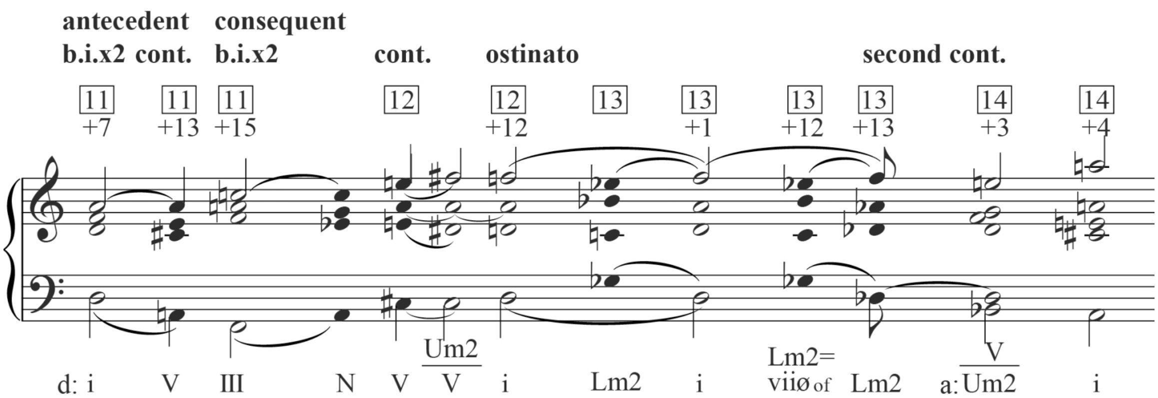

Figure 2.33. Sonata for Flute (or Violin) and Piano, second movement, reduction of second antecedent and consequent phrases.

Figure 2.33 shows a reduction of the second antecedent and consequent phrases. For its first twelve measures (up to rehearsal 12), the passage is an exact transposition of the opening antecedent and consequent. The bass line of continuation 2, which begins at rehearsal 12, is initially an exact transposition of the analogous passage in the first consequent, since it begins a semitone below the initial tonic. This note is reharmonized, however, to support V^6 in D minor, and over the following continuation this chord is transformed into a complex chord that combines elements of V and the Um2.

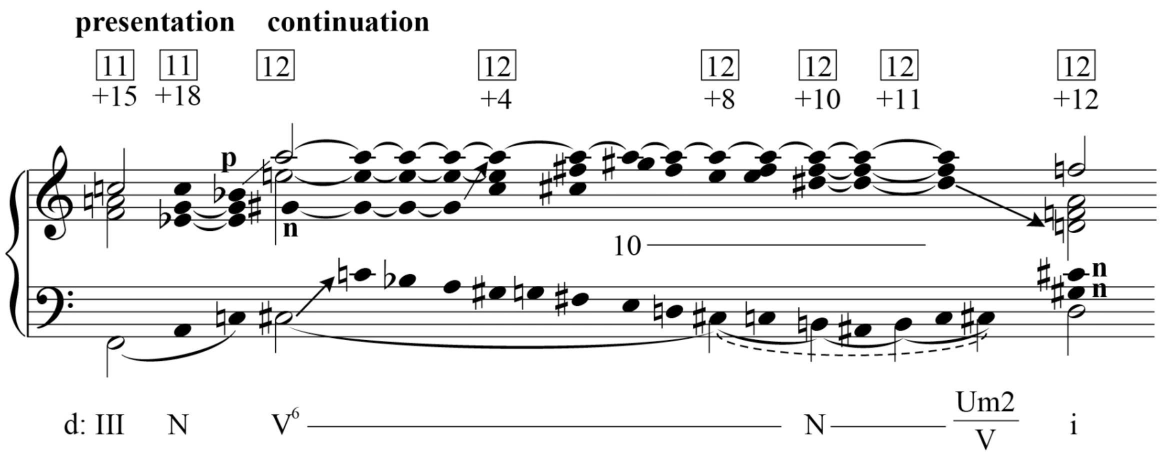

Figure 2.34. Sonata for Flute (or Violin) and Piano, second movement, reduction of continuation 2.

Figure 2.34 gives a more detailed analysis of the second continuation at rehearsal 12. As before, it begins with a descending line in the bass part that is accompanied by parallel tenths in the descant, while A5 is retained as a cover tone. An inner voice plays G♯4 at the beginning of the section, but since it resolves to A four measures after rehearsal 12 it can be heard as a local chromatic neighbor. Eight measures after rehearsal 12, the bass line reaches C♯3, completing the prolongation of V^6. In the following two measures, the bass descends by two semitones to B; since its line then ascends back to C♯, this B can be interpreted as a lower neighbor. As the bass line re-ascends to C♯3 eleven measures after rehearsal 12, the upper voices retain D♯ and F♯, two members of the Um2, which neighbors the notes of the D minor triad by semitone, giving the final chord a mixed V/Um2 function.

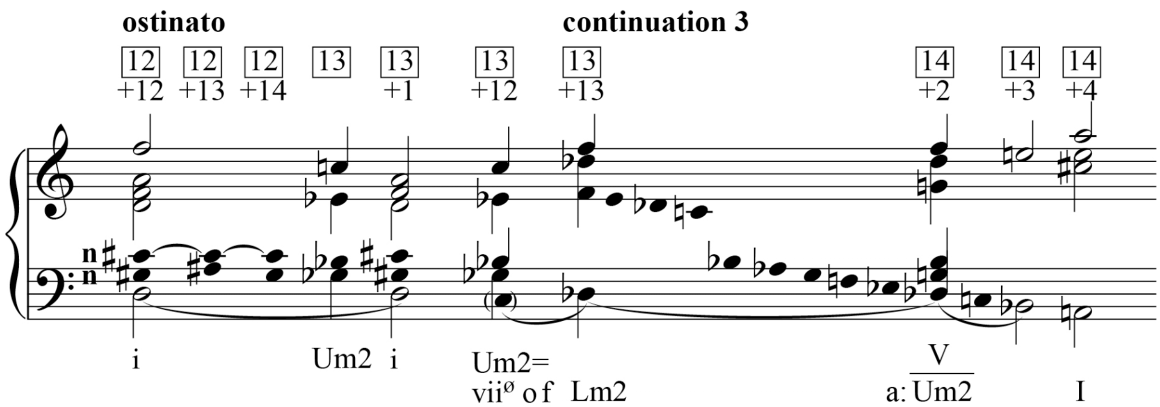

Figure 2.35. Sonata for Flute (or Violin) and Piano, second movement, reduction of ostinato and continuation 3.

Figure 2.35 provides a more detailed reduction of the ostinato and third continuation. After arriving on D minor twelve measures after rehearsal 12, the two instruments repeat and develop the ostinato theme, which now prolongs D minor, the local tonic. A neighboring Um2, which contains notes of the E♭-minor triad with added sixth in first inversion, embellishes the D minor tonic several times within the section; it first appears at rehearsal 13. Thirteen measures after rehearsal 13, this neighboring chord is reinterpreted as vii^{ø7} of D♭, allowing for an unexpected shift to this triad. Continuation 3 then subsumes the D♭ into a prolongation of the Um2 with added sixth in the original key of A.

Three measures after rehearsal 13, the uppermost line descends from F to E♮, giving the chord a mixed function that combines characteristics of the Um2 and the common-practice V. At rehearsal 14, this chord resolves to A major; this resolution overlaps with the opening of the second scherzo theme.

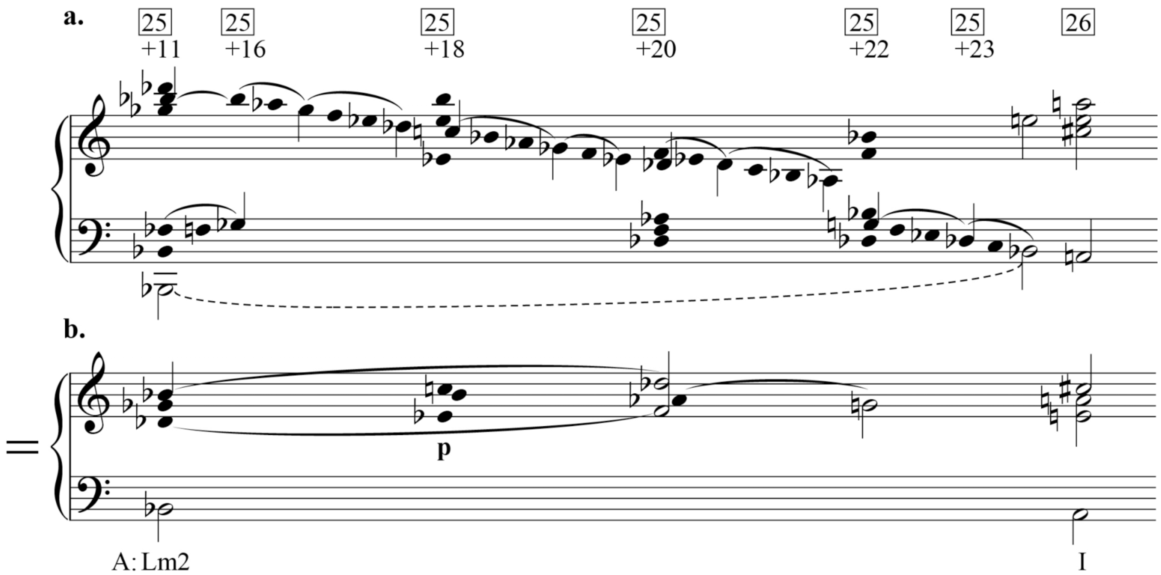

Figure 2.36. Sonata for Flute (or Violin) and Piano, second movement, conclusion of second appearance of scherzo 2 theme.

The Um2 also provides closure to the second scherzo theme. In its initial appearance, this theme begins in A major but ends on a first-inversion G♭-major triad that proceeds directly to a restatement of the first scherzo theme in D minor. This ending forestalls tonal closure and gives the impression that the theme is “cut short.” When the second scherzo theme reappears later in the piece, the G♭-major triad converts into a mixed-function Um2/V, the same chord that appeared in the introduction to the movement. When this chord resolves, it affords closure to the theme that was lacking in its first appearance.

Figure 2.36a reduces the conclusion of the second scherzo theme. The conclusion features a descending scalar passage similar to the scalar descent from the continuation 3 analyzed above in Figure 2.35. The descending scale implies an arpeggiation, as shown by the stems on the upper staff. Every two measures (that is, every six notes) the piano and violin (or flute) punctuate the line with a vertical chord that reinforces the arpeggiation of the following six-note span. The implied progression is reduced and normalized in register in Figure 2.36b. Because the descending scale changes chords every six notes, it forms a series of descending sevenths, which are normalized to ascending steps, from 11 measures after rehearsal 25 to 20 measures after rehearsal 25. These ascending steps appear in the uppermost part in Figure 2.35b as a melodic line that ascends from B♭ to D♭. An inner voice accompanies this line at a lower sixth to ascend from D♭ to F. The two voices therefore unfold a B♭-minor triad, the Um2. After this unfolding, another inner voice descends to G♮, creating an "added sixth," the characteristic dissonance that has appeared several other times in the movement. One beat before rehearsal 26, the soloist enters on E♮, the root of V, in the highest register. At rehearsal 26, this mixed V/Um2 chord resolves to a major-mode tonic triad.

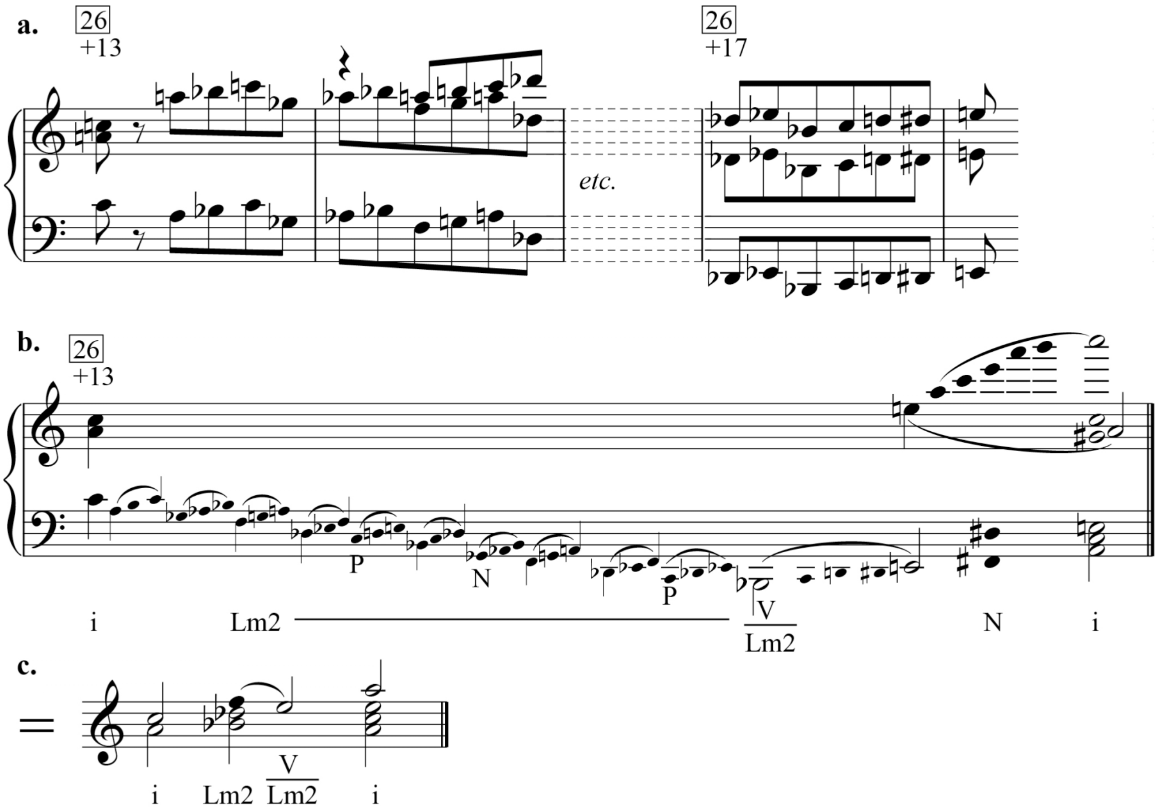

Figure 2.37. Sonata for Flute (or Violin) and Piano, second movement, final virtuosic passage.

The coda section that follows this harmonic arrival also restates the V/Um2–i progression, confirming its centrality to the movement. Thirteen measures after rehearsal 26, the solo instrument and piano both play a frenetic, tumbling figure, excerpted in Figure 2.37a. Figure 2.37b provides a reduction of the passage. Chord notes have stems, while notes with a passing or neighbor function are shown in black noteheads. After arpeggiating through the root and third of i, the figure makes a large-scale descending arpeggiation through B♭ minor, the Um2. The figure then ascends from B♭ to E, interpreted as a motion from bass to an upper voice.[45] After this chord, the soloist

[45] It is also possible to interpret the ending as moving from a root-position ♭II to V. I believe that my interpretation, however, is more confluent with how B♭ functions throughout the rest of the movement.

arpeggiates through an A-minor triad, while the pianist plays the notes F♯ and D♯. These two notes, along with the root and third of i, form a common-tone diminished seventh (which also appeared earlier in the coda) and take a local neighboring function. The movement's final virtuosic run, in conclusion, outlines the same Um2–i progression that opened the movement; Figure 2.37c shows this background progression.

In this second movement of the Sonata for Flute (or Violin) and Piano, op. 94, Prokofiev's places his modern harmonic idiom in dialogue with theme-types he inherited from the classical idiom. The opening scherzo theme employs continuation sections whose expanded length and unusual chromatic harmonies violate classical-period expectation. By adopting a transformed understanding of harmonic closure, one suggested by the movement's first seven measures, we can hear how classical-period expectation of formal completion is, in fact, fulfilled. Unlike the March, op. 3, no. 3, in which a common-practice cadence provided a humorous conclusion to a highly chromatic movement, the scherzo ends with a virtuosic presentation of a chromatic progression to establish the final tonic. The final cadence is truly, not ironically, heroic, as it expands the scope of tonality.

4. Conclusion

After chapter 1 defined transformations on the root relations that create common-practice harmonic closure, this chapter showed that one of these transformations—changing to root motion by semitone—creates a group of variant cadential progressions that play a role in compositions by Prokofiev that span his career. Several motivations can be identified for Prokofiev's semitonal progressions; they include the precedent of dominant-functioning augmented-sixth chords seen in nineteenth-century tonality, double leading-tone voice-leading paradigms, and the scale degree tendencies of predominant chords. Identifying harmonic potential in these semitone-related triads gives new insight into chromatic passages that challenge traditional modes of tonal analysis.

Chapter 3

Aaron Copland's Fragile Tonal Orientations

1. Introduction: The Orientational Axis

In music by Prokofiev analyzed in the previous chapter, the inclusion of altered closing progressions and added notes enriches the means of establishing the tonic, but it does not generally leave the tonic of a particular movement in doubt. By contrast, the tonic in many of Aaron Copland's compositions *is* in doubt. His closing progressions are tonally fragile and often point to two possible tonics, each related to the other by perfect fifth. In this chapter I define an *orientational axis*, based on two conflicting privileged root motions, as a category for describing this key structure.

In its prototypical form, the orientational axis consists of a single harmony that participates in two different types of closing progressions. The first type privileges root motion by ascending whole tone; the second privileges root motion by fifth. The orientational axis typically results in a conflict between two fifth-related tonics, since the privileged root motion of each progression points to a different goal. Surface musical cues prompt listeners to hear either one progression or the other as closing within a passage; as a result, pieces using an orientational axis are characterized by shifts between types of privileged root motion. Finally, the pitches used in the two types of closing progressions provide germinal motives that play a significant constructive role throughout the movement.

The orientational axis provides a means for discussing the conflict between fifth-related keys that is sometimes identified in critical discussions of Copland's compositions. For example, Howard Pollack's comments on *Quiet City* (1940) imply that its final note can be heard as either a tonic or dominant.[1] In addition, Pollack states that the second movement of the Violin Sonata (1943) "suggests shifting tonal centers in the turn of one or another note."[2] He does not specify which tonal centers these turns suggest, but he is most likely referring to the ambiguity between D and A in the first section of the movement. The piano's melodic line comes to rest on A and is placed against an A pedal in the bass, while a few measures later the violin enters on D. Wilfrid Mellers identifies a conflict between the Ionian and Mixolydian modes, whose final notes are separated by fifth, in "Nature, the Gentlest Mother" (1950) from *Twelve Poems of Emily Dickinson*.[3] Finally, Stanley Kleppinger identifies a conflict between fifth-related tonics in several of Copland's works from the 1940s. His method for identifying the tonic involves looking examining the diatonic collection used, attending to surface-level perceptual salience, attending common-practice progressions, and assuming correlation between large-scale tonal structure and surface motives.[4] While many of Kleppinger's

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[1] Howard Pollack, *Aaron Copland: The Life and Work of an Uncommon Man* (New York: Henry Holt and Company, 1999), 332.
[2] Ibid., 384.
[3] "Copland, Dickinson, and the Noise in the Pool at Noon," *Tempo*, New Series, 214, American Music Issue (October 2000): 8.
[4] Stanley V. Kleppinger, "Tonal Coherence in Copland's Music of the 1940s" (Ph.D. dissertation, Indiana University, 2006).

observations are highly insightful, his *a priori* assumption of a correlation between motive and tonal centers at times skews his perception of tonal centers. In addition, he does not focus on alternate closing progressions in Copland's music, which provide additional insight into how the conflict between fifth-related tonics is created.

The orientational axis resembles Joseph Straus's concept of the "tonal axis," a pitch construction that often occurs in the music of Igor Stravinsky. It is likely that Stravinsky's pitch language influenced Copland's, but I argue that it is best to maintain a distinction between the two types of axes. Straus defines the tonal axis as a single harmony that consists of two overlapping major or minor triads; its spelling is equivalent to a minor or major seventh chord. The axis functions as a referential sonority—that is, it occurs prominently as a discrete harmony, especially at cadence points. In addition, it suggests a conflict between its two constituent triads, since each asserts its own identity as tonic.[5] The tonal axis likely has its origin in the double tonic complex found in nineteenth-century music, but in this earlier repertory chords built from the combination of two tonics tend to appear only at the musical surface at non-cadential points.[6] By contrast, the tonal axis functions as a referential sonority and goal harmony.[7]

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[5] Joseph Straus, "A Theory of Harmony and Voice-leading in the Music of Igor Stravinsky" (Ph.D. dissertation, Yale University, 1981), 154–155. See also Joseph Straus, "Stravinsky's Tonal Axis," *Journal of Music Theory* 26, no. 2 (Autumn, 1982): 261–290. Stephen Brown uses the tonal axis to analyze third-modulations in "Axis Tonality and Submediant in the Music of Shostakovich," *Music Theory Online* 15, no. 2 (June, 2009), *http://www.mtosmt.org/issues/mto.09.15.2/mto.09.15.2.brown.html.* Sigrun B. Heinzelmann has used the concept to analyze Ravel's Piano Trio and String Quartet ("Ravel's Tonal Axis," presentation at the American Musicological Society/Society for Music Theory joint annual meeting, 7 November 2010, Indianapolis).

[6] Robert Bailey introduced the concept of the double tonic complex in "An Analytical Study of the Sketches and Drafts," from *Richard Wagner: Prelude and Transfiguration from* Tristan and Isolde*, Authoritative Scores* (New York: Norton, 1985), 113–146. Bailey notes that the first two statements of the

Figure 3.1. Example of a "tonal axis." a. Tonal axis for Stravinsky, *Dumbarton Oaks* Concerto (1938), third movement. b. Reduction of beginning of third movement, showing vertical instances of tonal axis. c. Final chord of movement.

"Tristan Chord" can either point to A minor or C major, and finds several large-scale arpeggiations of the second Tristan Chord within prominent melodic lines in the opening and end of the work. Harald Krebs identifies examples of a double tonic complex in two Schubert songs in "Some Early Examples of Tonal Pairing: Schubert's 'Meeres Stille' and 'Der Wanderer,'" in William Kinderman and Harald Krebs, eds., *The Second Practice of Nineteenth-century Tonality* (Lincoln: University of Nebraska Press, 1996), 17–33. Krebs lists these characteristics of a double tonic: juxtaposition of musical fragments implying two tonics in succession, exploitation of ambiguous and common harmonic functions, superimposition of lines in two different keys, and instances of the conflation of two tonics in a single sonority. The instances of the conflated tonics he identifies in the Schubert songs occur within the phrase and as a result of surface decoration.

[7] Joseph Straus, "A Theory of Harmony and Voice-leading in the Music of Igor Stravinsky," 164–166. Straus notes that Mahler's *Das Lied von der Erde* might represent a "transitional" example that has features of both the tonal axis and double-tonic complex. The movement progresses from A minor to C major over its five movements, and concludes with a C-major triad with an added sixth.

Figure 3.1 provides an example of the tonal axis used in the third movement of Stravinsky's *Dumbarton Oaks* Concerto (1938); the analysis is adapted from Straus.[8] Figure 3.1a shows the pitches of the movement's tonal axis: it combines an E♭-major and G-minor triad. This chord sounds repeatedly at the opening of the movement, which is reduced in Figure 3.1b. The upper parts play a G-minor triad; two neighboring chords embellish it in measure 4. The 'celli and basses each play a three-note pattern that includes the pitch G: the upper part contains G, F and E♭, while the lower part includes G and its upper and lower neighbors A♭ and F. Each time the lower part plays G, the upper part plays E♭, creating a vertical statement of the tonal axis in mm. 2–4; the instances are enclosed in dotted boxes on the figure. Because most of the musical ensemble is playing the upper part and because the bass part is centered on G, the G-minor triad most strongly asserts itself as central, but the presence of E♭ weakens its tonicity somewhat. The tonal axis also sounds at the end of the movement, and by this point, the tonal balance shifts toward hearing the E♭-major triad as central. Figure 3.1c shows the movement's final chord. A long section in E♭ major precedes this ending, and the brass instruments, which are loudest in the ensemble, play the pitch E♭ within the final chord. These two factors highlight the centricity of E♭ through context and sheer volume. Other parts, by contrast, play notes of the G-minor triad, and the basses play G, somewhat weakening the centricity of E♭.

[8] Ibid., 265–267.

Daniel Mathers uses the term "tonal axis" to describe the tonal conflict in Copland's *Short Symphony* (1933).[9] I argue that this label is misleading, because there are discrepancies between what constitutes a tonal axis and the kind of tonal conflict displayed in Copland's compositions. In pieces by Copland, the two tonics are separated by fifth, rather than by third, and they are *not* normally combined to create a referential vertical sonority. The instances where his music does superimpose two fifth-related triads are relatively rare and, upon closer inspection, do not always imply a conflict between the triad's two implied tonics. The first movement of the *Short Symphony* might appear to offer an exception, since, as Mathers points out, in the second measure the tonic G and the dominant triad's root and third sound together as a simultaneity.[10] This exception is not a true example of a tonal axis, however, since the two keys in conflict in the movement are not G and D, but G and C.

Stanley Kleppinger also identifies superimposed fifth-related triads in two of Copland's pieces from the 1940s and argues that they suggest a tonal conflict, much in the manner of a tonal axis. While these chords are certainly thematic in the works that he cites, whether they imply a deep-rooted tonal conflict remains open to question. For example, Kleppinger states that a "polychord" appears frequently in the first two sections of *Appalachian Spring* (1944).[11] This chord plays a significant role in the ballet—the strings present it near the outset, underscoring its importance—and consists of a first-

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[9] Daniel Mathers, "Closure in the Sextet and Short Symphony by Aaron Copland: A Study Using Facsimiles and Printed Editions" (master's thesis, The Florida State University, 1989), 56–57.
[10] Daniel Mathers, "Closure in the Sextet," 25.
[11] Stanley Kleppinger, "Tonal Coherence in Copland's Music of the 1940s," 63–70.

inversion triad underneath a second-inversion triad whose root is a fifth higher. In its first appearance, for example, the chord is <C♯4 E4 A4 B4 E5 G♯5>. The concepts of added dissonance and privileged root motion, both presented in Chapter 1 of this dissertation, illuminate how this polychord can imply more than one tonic. When its pitches are held, it represents a single tonic harmony with added seventh and ninth; when it is divided into two separate harmonies, it outlines a IV–I progression, suggesting a privileged root motion up by fifth.[12] The use of "plagal" cadences elsewhere in the ballet provides contextual support for the latter interpretation (see rehearsal 33 and 4 mm. before rehearsal 67 in the ballet suite). The polychord appears at a variety of transposition levels in the first two sections of the ballet and fulfills *either* one or the other function, but never both simultaneously.[13] In addition, the introduction and first half of the following Allegro are both clearly in A major. In other words, the polychord

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[12] Stanley Kleppinger treats the chord as a blend of I and V, and its transposition down by fifth, which also appears in the introduction, as a blend of IV and I, arguing that the initial presentation encourages listeners to blur the members of the polychord into a single harmony whenever it appears ("Tonal Coherence in Copland's Music of the 1940s," 66). This is one possible hearing of the composition, but details of scoring in the introduction differentiate the two tonal functions of the polychord I describe above. When the polychord has an "expanded tonic" function, all of its notes sustain. When it is transposed down by fifth, the lower voices, which play IV, drop out upon the onset of I in the upper voices, suggesting a progression between the two chords. This observation can be verified by examining rehearsal 2 to rehearsal 4 of the ballet suite.

[13] There is, arguably, one exception to this observation. Stanley Kleppinger, in "Tonal Coherence of Copland's Music," points out that 3 mm. before rehearsal 12, in the ballet suite, the polychord first suggests IV–I in F major, and is then restated over an arpeggiated B♭-major triad, suggesting the key of B♭ major (58). This instance occurs in a transitional passage and does not influence the larger structure of the passage.

blends, chameleon-like, into multiple tonal contexts, but it does not create deep-rooted tonal conflict.[14]

a. Tonal Axis **b. Orientational Axis**

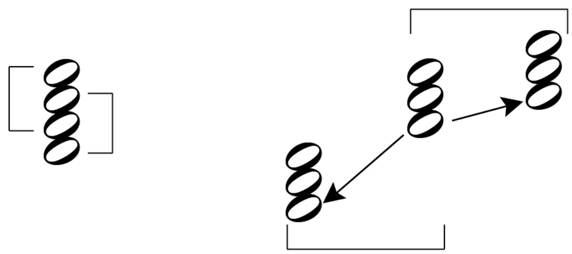

Figure 3.2. Comparison of Tonal Axis and Orientational Axis.

Figure 3.2 shows a schematic diagram of the two types of axes for the purpose of comparison. In a tonal axis, a single harmony is heard as containing two possible tonic triads; they are bracketed in Figure 3.2a. In an orientational axis, a single triad participates in one of two possible privileged root motions, as shown in Figure 3.2b.

The pitches of an orientational axis provide motives that generate much of the musical material of a movement or passage through repetition and operations such as transposition and inversion.[15] Because Copland often favors textures that display tight motivic coherence among all parts, he often *distills* closing progressions by reducing the number of chords and eliminating notes.[16] Daniel Mathers shows one example of a distillation in the first movement of Copland's *Short Symphony* (1933). The opening

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[14] The other work that superimposes fifth-related triads is the first movement of the Sonata for Violin and Piano. Space does not permit an extended critique of Kleppinger's analysis of this work, but this chord has a tonic function that is confirmed, as in *Appalachian Spring*, by a IV–I progression. A related stylistic feature that Kleppinger identifies, which appears in some of the works analyzed in this chapter, is the strong emphasis of the upper fifth of the tonic triad (Ibid., 272).

[15] Daniel Mathers, "Closure in the *Short Symphony* and *Sextet*," 41.

[16] For more on elimination, see the subsection "*Elimination*" under Chapter 1.

gesture, <F♯4–D5–D4–F♮4–C5–G4>, can be parsed into two separate chords. The first five notes outline a dominant seventh chord in the key of G without a fifth and with both a raised and lowered third. The final note, a single G, represents an unharmonized tonic note.[17] The distilled progressions often have the additional advantage of lacking information that might clearly point toward one tonic or another, heightening the ambiguity of the orientational axis.

The following sections examine pieces that display some or all of the features of an orientational axis. I first examine two short orchestral pieces that display a conflict between two fifth-related keys. In both pieces the final close asserts a tonic that differs from what is primarily asserted throughout the rest of the movement. Because each progression gives the impression of being imposed onto the movement's ending and is not integrated into the rest of its construction, I call the examples "proto-orientational axes." I next examine three movements that display some, but not all, of the orientational axis's features. *Lento Molto* (1928) involves ascending motion by whole tone as a means of establishing the tonic as well as a duality between fifth-related keys. The "Corral Nocturne" from *Rodeo* (1942) involves two different closing progressions that create a duality between two tonics, but the two progressions do not involve a single harmony. The first movement of the Piano Sonata (1941) also involves two different closing progressions, but they are oriented toward the same tonic. Because the pieces integrate the axis's features throughout their construction, they qualify for inclusion in the category of the orientational axis, even though they do not use all its features. Finally, I analyze

[17] Daniel Mathers, "Closure in the Sextet," 31.

"Nature, the Gentlest Mother," the first song from *Twelve Poems of Emily Dickinson* (1950). This song includes all the features of an orientational axis and arguably represents a summation of Copland's use of the structure.

2. Proto-Orientational Axes

Proto-orientational axes occur in movements that end unexpectedly on a chord that is a fifth higher or lower than the main tonic used in the movement or section. An example occurs in the second movement of Virgil Thomson's *Symphony on a Hymn Tune* (1928). In the first and last sections of this movement the orchestra plays fragments of a hymn tune in D major, while an unaccompanied, repeated A recurs as an interruption. Near the end of the movement, the brass instruments repeat a D major triad. This chord putatively sounds conclusive, but it leads immediately to a four-measure conclusion that consists of the woodwinds again repeating an unaccompanied A. (The oboes double the A a perfect fifth higher but blend so closely with the lower note that they sound more like an addition to its timbre than an actual different pitch.) The final section clearly suggests the key of D major through its use of a D-major scale and its final chord, but the final four measures belie this interpretation by asserting A as the tonic. The ending is unusual from the standpoint of tonal harmony, but it is not completely surprising, since it follows the schema of interruption by repeated A's established at the movement's outset.

Copland's short orchestral essay *Letter from Home* (1944) also has an unusual ending. Measures 105–119 project the key of C major: the melody uses pitches from the C-major scale, and it is accompanied by a bass part that outlines a descending scale from

$\hat{5}$ to $\hat{1}$ in this key. The orchestra plays a IV^7–V–I progression two times in the key of C major over measures mm. 117–119. The strings then hold a C-major triad while the wind instruments recall the first theme in the same key, suggesting an extension of the tonic after a final perfect authentic cadence. In the last three measures, however, the strings play an E♭-major triad followed by an F-major triad underneath a long-held C in the high woodwinds. This conclusion asserts F as the tonic. The final two chords suggest an LM2–I progression, but motion to the tonic by ascending whole step does not appear elsewhere. Thus, the transformation of privileged root relation, not to mention the change in tonic, gives the impression of a last-minute change of course. Quick changes of key are not unprecedented in this work, which modulates frequently, but one in the last three measures violates the normative expectation that the conclusion of a work will prolong the tonic.

If, as Daniel Harrison claims, several rhetorical devices can assert a tonic, the two examples cited place these devices in conflict.[18] The harmony appearing in formally significant locations and the relative length of sections in that key assert one tonic. The conclusion asserts a different one. The concluding gestures are at formally marked locations and have a strong tonic-defining power, despite their brevity, and therefore are able to rival the tonic assertion in the rest of the movement. Other Copland compositions feature a similar conflict between keys, but it does not arise simply from a surprise close;

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[18] Daniel Harrison, *Harmonic Function in Chromatic Music* (Chicago: University of Chicago Press, 1994), 73–90.

instead, it is more deeply integrated into the keys explored throughout the movement. The following section analyzes three examples.

3. Near Orientational Axes

a. *privileged voice-leading structure*

b. *possible origins for structure*

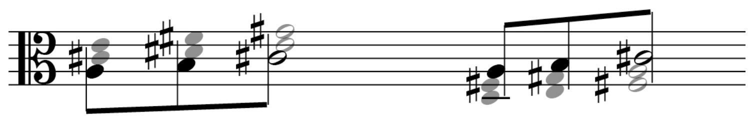

Figure 3.3. a. Privileged voice-leading structure for Copland, "Lento Molto" (1928). b. Possible origins of voice-leading structure.

"Lento Molto" from *Two Pieces for String Quartet* (1928) creates an orientational axis by establishing two possible interpretations of its highly distilled closing progression. As shown in Figure 3.3a, it consists of a privileged voice-leading structure of a single line that makes a whole-step ascent through a major third from A3 to C♯4. The structure also occurs in a variant version in which the first two notes are transposed down by octave, creating <A2–B2–C♯4>. The structure can be extrapolated to two hypothetical origins, shown in Figure 3.3b. Both involve a motion through three different triads and privilege root motion by ascending whole tone. They are recognizable in rock music as examples of an "Aeolian" cadence, expressed in Roman numerals as ♮VI–♮VII–i (or I).[19] Daniel Mathers' analysis also shows that the same progression provides

[19] For a discussion of this progression, see Allan Moore, "The So-Called 'Flattened Seventh' in Rock," *Popular Music* 14, no. 2 (May 1995): 191–192; and Nicole Biamonte, "Triadic Modal and Pentatonic Patterns in Rock Music," *Music Theory Spectrum* 43, no. 2 (Fall 2010): 101–104. Biamonte states that the

harmonic closure in the middle section of the first movement of Copland's *Sextet*, although he does not note the importance of the first chord in the progression, and he treats the ♮VII as a substitute for V.[20] In both of the possible origins shown in Figure 3.3b above, notes are eliminated from each triad to create the progression in a single voice. The work treats the privileged voice-leading structure alternately as a progression of triadic roots and a progression of triadic fifths, creating ambiguity between two fifth-related keys. At the end of the work, the added voices are stripped away and the voice-leading structure itself sounds in isolation, emerging as the prime agent in providing closure. From a standpoint of common-practice harmony this pitch organization violates notions of tonal unity, but it is not unprecedented. In the fifteenth and sixteenth centuries, the tenor, rather than the bass, was generally regarded as the referential voice for a polyphonic composition, and as such governed cadential progressions.[21] Copland may have also found a more recent precedent in Igor Stravinsky: Pieter van den Toorn has identified passages in his music where registral placement, rather than tonal progressions, provided a means of asserting a central pitch in a passage. For example, the quotation of the "Russian Easter Hymn" in Tableau 1 of *Petrushka* (rehearsal 5) is

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progression has a strong connotation of cadence and can be interpreted as an expansion of the "modal subtonic" cadence "♭VII–I" or as a transformation of the "IV–V–I" cadence by transposing the first two chords by third. The term "Aeolian cadence" was used most famously by William Mann, who used it to describe a chord progression in John Lennon's "Not a Second Time," much to Lennon's bafflement.

[20] Daniel Mathers, "Closure in the Sextet," 31, 69–70.

[21] Carl Dahlhaus, *Studies on the Origins of Harmonic Tonality*, trans. Robert O. Gjerdingen (Princeton, New Jersey: Princeton University Press, 1990), 95. The change from tenor to bass as referential voice took place in theoretical writings from the sixteenth century, although the writers still recognized the tenor as the primary representative of a polyphonic composition's mode.

centered on G5, and this pitch is treated as both the fifth of a C-major triad and the root of a G-minor triad.[22]

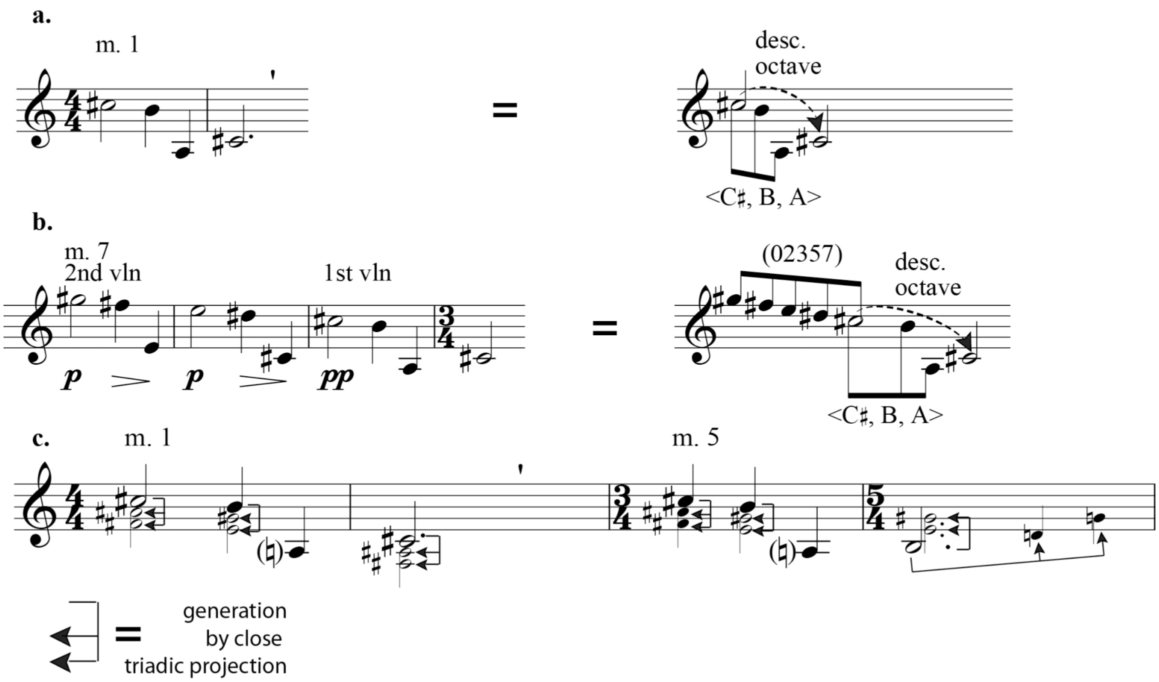

Figure 3.4. Copland, "Lento Molto." a. Repetition of pitches of voice-leading structure in opening gesture. b. Introduction of secondary (02357) motive. c. Generation of other pitches through "close triadic projection."

The pitch-class content of the privileged voice-leading structure {A B C♯} also generates much of the rest of work's musical material. This is evident in the analytical reductions of excerpts from the first ten measures, shown above in Figure 3.4. Figure 3.4a shows a four-note "motto theme," which is first stated by violin 1 and recurs frequently. It is characterized by an intervallic profile of motion down by whole step, down by major ninth, and up by major third (represented by the contour series <-2, -14, +4>), and it establishes a motive of a descending octave from its first to last note, shown

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[22] Pieter van den Toorn, *The Music of Igor Stravinsky* (New Haven: Yale University Press, 1983), 81.

by a dotted arrow.[23] The motto is built from the same pitch classes as the privileged voice-leading structure but reverses their order to form <C♯–B–A>. Figure 3.4b shows that in mm. 7–10, a principal line is passed between the second and first violins. It can be identified as the only part in the string quartet that is ornamented with quarter-note descending major 9ths. The first part of the line introduces a secondary pentachord (02357), which like the first statement of the motto concludes on the pitch C♯.

Figure 3.4c shows that the melody is accompanied by major triads moving in parallel motion. For the purpose of this analysis, such an accompaniment will be labeled *close triadic projection*.[24] Close triadic projection occurs when two other notes are added to a principal melodic tone to generate a triad in close position. In m. 1, the added voices suggest a i–LM2–I progression (or i–♮VII–I), but this harmonic suggestion is thwarted in m. 6. At this point, the motto is adjusted to end on B rather than C♯. This note is accompanied by an E-major triad, suggesting an incomplete harmonic progression I–LM2. Another voice then initiates an arpeggiation of a G-major triad, which treats the melodic B as a triadic third and clouds one's hearing of the second chord as LM2. Since harmonic implications are not consistently fulfilled, they can be interpreted as surface ephemera; what remains constant is the technique of triadic projection.

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[23] Because it traces an octave descent as a whole and contains several descending melodic intervals, it takes a melancholy tone. The opening of Copland's *Vitebsk* for piano trio, written the same year, also uses a series of descending melodic intervals, and takes a similar anguished, melancholy character.

[24] Daniel Harrison's theory outlined in *Harmonic Function in Chromatic Music* (Chicago: University of Chicago Press, 1994) provides a role for the type of treatment to a melodic line shown here. He suggests that "specific accompaniments," that is, non-functioning voices that are a fixed distance away from a functioning voice—is one means of adding harmonic richness to a texture (106–108).

Figure 3.5. Possible accompaniments to melodic note B3 via triadic projection.

In *Lento Molto*, the projected notes nearly always form a major triad, allowing three possible colorations of a melodic note, shown in Figure 3.5. In mm. 1–5, the melodic notes use the first type of projection. At m. 6, a melodic B is harmonized with an E-major triad and is followed by an arpeggiation of a G-major triad, displaying the other two types. The projection of major triads from a melody that moves through two whole steps results in frequent "cross-relations," for example, a clash between the melody's A♮3 in the last beat of m. 1 and A♯3 that is the third of an F♯-major triad on the downbeat of m. 2. (The A♮ has the tinge of a "blue note," perhaps showing *Lento Molto*'s relation to Copland's previous jazz-style works.[25]) The clash between adjacent melodic tones and projected triadic notes provides the source for much of the chromaticism in the movement.

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[25] For example, the opening section of "Ukulele Serenade" (1926) for violin and piano features an F-major triad inflected by a G♯. The major/minor third clash also reappears in some of Copland's later works, demonstrating that his output represents a gradual accumulation of techniques, rather than a strict division into stylistic periods. For example, Stanley V. Kleppinger, in "Tonal Coherence in Copland's Music of the 1940s," identifies a major/minor third clash in sections from the first movement of Copland's Sonata for Violin and Piano (1944), and argues that the same clash is presented in the large-scale key structures of the first and last movements (156–157, 172–173, 196–197).

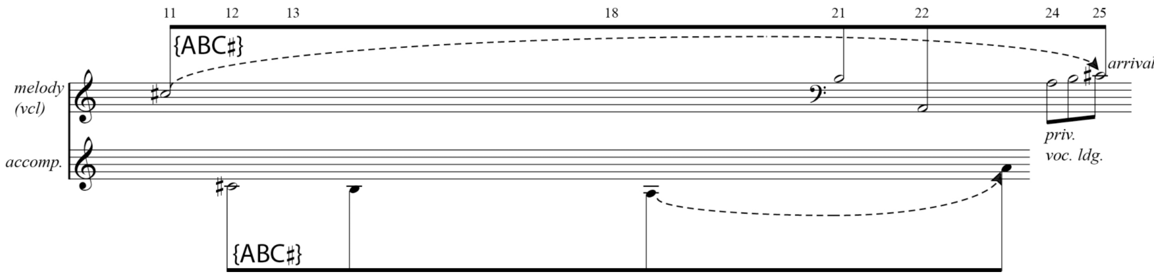


Figure 3.6. Copland, "Lento Molto," Large-scale set completion in melodic line and accompaniment over mm. 11–25.

The same motives that appear in mm. 1–9 generate a two-voice framework over mm. 10–25. Figure 3.6 shows a reduction of the section: the upper staff shows a skeletal outline of the melody, played by the cello, while the lower staff shows the outline of the accompaniment, played by the other strings. The melody makes a large-scale completion of a variant of the motto. As in the motto's first appearance, it makes an octave descent from C♯5 to C♯4. The middle two notes, however, are displaced down by octave; this creates the contour series <-14, -14, +12> and highlights the descending major ninth that characterizes the motto. The lower beams on the upper staff show that over mm. 24–25, the melodic line states the privileged voice-leading structure to create an arrival on C♯4; this arrival coincides with the large-scale statement of the motto. The accompaniment uses the first three pitch classes of the motto, and then displaces the final note up by octave, an inversion of the descending octave found in the cello part.

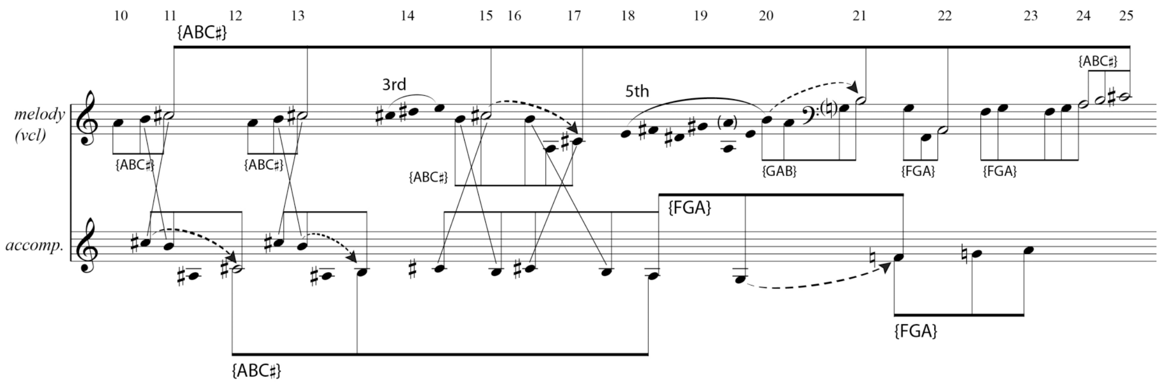


Figure 3.7. Copland, "Lento Molto," nested motivic completion over mm. 10–25.

Figure 3.7 adds detail to the initial reduction: the black noteheads on the upper staff show notes that move in faster rhythms and embellish the skeletal outline of each part. The embellishing notes make several small-scale statements of the trichord (024), the same set-class as the privileged voice-leading structure: these statements are beamed in the above reduction. The melodic line opens with several statements of {A B C♯} over mm. 10–13. In m. 14, the trichord is transposed up a diatonic third to {C♯ D♯ E}; because the C♯ is the common tone in both trichords it retains a central status. In mm. 15–17, the melodic line restates the motto exactly. In mm. 18–20, the melodic line traces through a diatonic scale to create an ascending fifth, inverting the (02357) descent in the opening. The penultimate pitch of the scale, A, is displaced down by octave to become A3. The melody ascends two fifths to reach the final note, B4, in its original register. The relation between the displaced note and the final one is an ascending major ninth, an inversion of the descending major ninth found in the motto theme. Over mm. 20–22, the melody restates two transposed versions of the motto; the intervals of transposition are identical to the first two intervals in the motto's contour series. At m. 21, the motto is transposed down by whole step to become <B4–A4–G3–B3>, highlighting the pitch B3. In m. 22, the melody transposes the last three notes of the motto down by minor ninth (forming <G3–F2–A2>) and highlights A2. The final notes of the statements of the motto theme, shown in open noteheads, are <C♯–B–A>, a retrograde of the pitches of the privileged voice-leading structure. Over mm. 22–24, the melodic line is built from the pitches {F G A}, a transposition down by major third from the original pitch material. The A within this pitch-class collection provides the one common note with the melody's original collection {A B C♯}. Over mm. 24–25, the melodic line uses this pitch class to pivot back to this collection and state the privileged voice-leading structure to create an arrival on C♯4. A double beam indicates the pivot, and the open noteheads show the use of the privileged structure.

The accompaniment is built from the same motives, but it states them in a way that provides counterpoint to the melodic line. Over mm. 10–13, the accompaniment nearly restates the motto theme: it is identical to the opening except that the penultimate note is raised to become A♯3. This pitch clashes with the A♮ in the melody, much like clash created by the cross-relation in the statement of the motto theme at m. 1. Over mm. 13–18, the line states an {A B C♯} motive and stays within a narrow range. The melodic and accompanimental lines are also arranged to highlight contrary motion: the crossed lines in the analysis above show that where the melody plays C♯, the accompaniment plays B, and vice versa. Over mm. 18–23, the accompaniment makes two statements of the pitch-class collection {F G A}, a transposition down by major third of the original. Its line is displaced up by octave in m. 21, as shown by the ascending dotted arrow. This displacement provides contrary motion to the descending octave displacements in the melodic line.

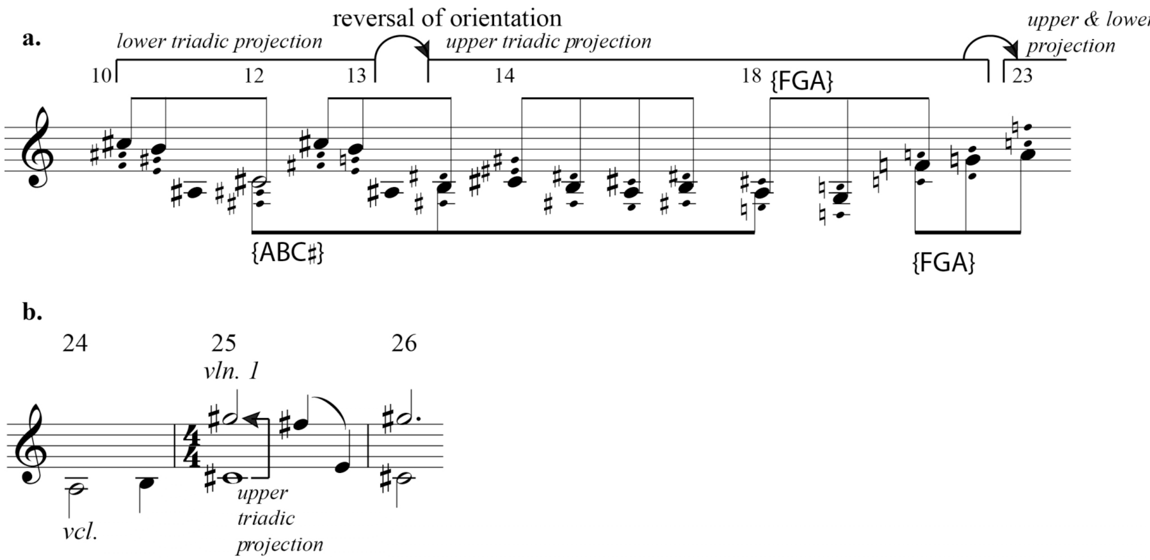


Figure 3.8. Copland, "Lento Molto," triadic projection in accompanimental part, mm. 10–26.

The other two accompanimental parts are created by close triadic projection from the main accompanimental line. The main line can be identified throughout the passage through its restatement of the motto over m. 10–13, and through staying in a relatively narrow range over mm. 13–23. Figure 3.8a above shows the accompanying line in large noteheads and the two projected notes in small noteheads. At the end of m. 13, when the accompaniment restates the motto, its ending is adjusted. As in m. 6, its final pitch is B rather than C♯, but this pitch no longer supports an E-major triad. Instead, it supports a B-major triad, and for most of the remainder of the passage, the accompaniment's line serves as the "root" of its projected triads rather than the fifth. An arrow above the reduction shows where this change in orientation takes place. In m. 23, a shift in orientation occurs yet again, and the accompaniment completes its cycle through all three types of projections used in the movement: it becomes the third, rather than the root or fifth, of a projected triad. The cello's arrival on C♯4 in m. 25 is accompanied by upper fifth, rather than lower fifth, as shown in Figure 3.8b, suggesting that like the accompanying parts, it has reversed its orientation.

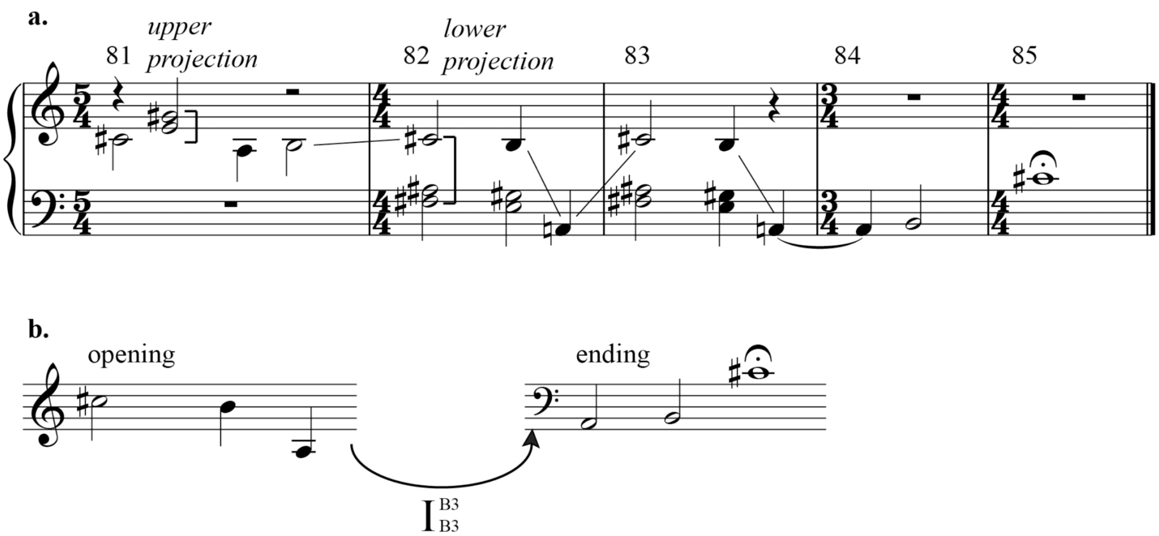


Figure 3.9. Copland, "Lento Molto," analysis of ending.

The final few measures, shown in Figure 3.9a above, use both upper and lower projection to the melodic line. In m. 81, C♯4 is accompanied by an upper third and fifth to form a C♯-minor triad. In the second half of the measure and on the downbeat of m. 82, the principal line traces the privileged voice-leading structure; when C♯4 returns it is accompanied by a lower third and fifth, creating an F♯-major triad. On the last beat of m. 83, the projected voices fall away, leaving only the melodic line, which again presents the privileged voice-leading structure over the final two measures, concluding on a single pitch, C♯4. The first two pitches of the privileged voice-leading structure (A and B) are transposed down by octave; as a result, the final three notes of the piece form an inversion in pitch space around B3 of the opening figure. This relationship is shown in Figure 3.9b above.

It is possible to assign harmonic implications to the final melodic line. The surrounding context suggests a Mixolydian mode inflected with A♮. The E and G♯ in m. 81 might be mentally retained and combine with the B in the second half of the measure; this forms an E-major triad in second inversion. This chord then resolves to an F♯-major triad, suggesting a LM2–I progression. Other factors militate against making this interpretation. The B3 is, in fact, unaccompanied, and the use of the solo cello to articulate the final closing gesture recalls m. 25, which used upper triadic projection. The voice-leading structure A2–B2–C♯4 is what emerges as privileged at the movement's conclusion. Whether the C♯4 acts as chordal fifth or root is not revealed; instead, the movement's conclusion invites listeners to hear how a single voice can provide a closing sonority and hold *both* conflicting tonics within its potential harmonization. The cello's final unaccompanied C♯4 has connotations of bareness, solitude, and severity, but it also has the power to unify the other events in the first and final sections. The solitary voice of declamation suggests associations with Copland's "prophetic" manner of writing, described by Howard Pollack.[26] Analyzing privileged voice-leading structures shows that such a conclusion follows logically from the gestures made throughout.

[26] Howard Pollack, "Copland and the Prophetic Voice," in Carol Oja and Judith Tick, eds., *Aaron Copland and His World* (Princeton: Princeton University Press, 2005), 1–14.

a. **b.**

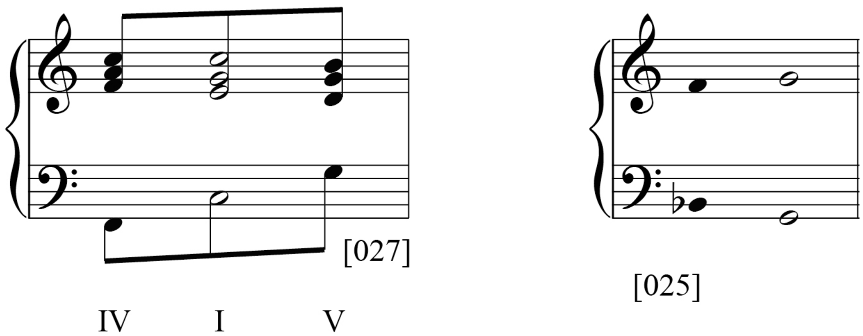


Figure 3.10. Networks governing closing progressions in Copland, "Corral Nocturne" from *Rodeo* (1942).

The orientational axis encompasses *both* sides of Copland's stylistic dichotomy—his earlier "modernist" works as well as his populist and "Americana" works. The following analysis of the "Corral Nocturne," a movement from *Rodeo* (1942), demonstrates the wide applicability of the method. Like *Lento Molto*, the "Corral Nocturne" features a conflict between two fifth-related tonics. The two tonics are established by two different triadic networks; one is based on a privileged root relation, the other on a privileged voice-leading structure. The first, shown in Figure 3.10a, is a common-practice network centered on C: I is in a privileged relation with IV and V. The second, shown in Figure 3.10b, is centered on G, and uses a privileged voice-leading structure that involves a descending minor third to the tonic in the bass and an ascending whole step to the tonic in the soprano. The ascending whole step, also seen in *Lento Molto*, is characteristic of Copland's style. If root-position triads harmonized the bass line, a root relation of minor third would be suggested. The "Corral Nocturne," however, exploits the voice-leading potential of the closing progression shown in Figure 3.10b, rather than its root relation. Its defining characteristic is arrival on an octave via outer-voice contrary motion, a feature that Copland also uses in his closing progressions from central section of the first movement of his Third Symphony (see Figure 1.11). The voice-leading structure of the "Corral Nocturne" can also be heard as representing stepwise motion to the tonic along a pentatonic (02479), rather than diatonic, scale. Pentatonic motives pervade the movement, making such a hearing plausible. The two networks shown in Figure 3.10 contain prominent pentatonic subsets: the bass line of the common-practice network forms set-class [027], while the pitches of the voice-leading structure form set-class [025].[27]

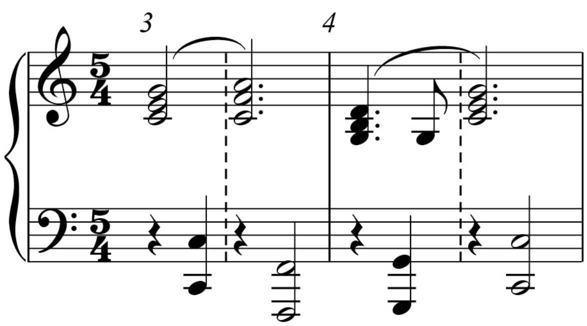


Figure 3.11. Copland, "Corral Nocturne," reduction of mm. 3–4.

Changing from one network orientation to the other is achieved through gradually weakening the power of the V–I progression to create closure and through highlighting pentatonic subsets at the musical surface in the outer voices, making it possible for a listener to hear a descending minor third in the bass as a scalar step. This process begins in the two-measure introduction and two-measure refrain that follows, even though at first hearing the two excerpts could not suggest more banal tonal progressions. Measures

[27] Copland's *Quiet City* (1940) also features several motives that are pentatonic subsets; this work may be his most extensive exploration of the pentatonic collection. For a pitch-space analysis of *Quiet City* based on pentatonic collections and semitonal shifts, see David Heetderks, "A Tonal Revolution in Fifths and Semitones: Aaron Copland's *Quiet City*," *Music Theory Online* (forthcoming as of 2011).

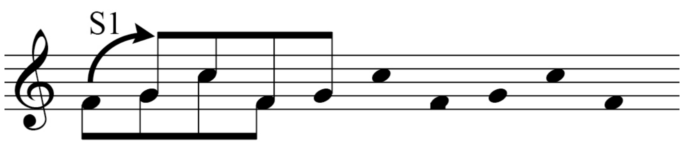
1–2 prolong V in the key of C major, while the following refrain repeats "I–IV–V–I" in the key of C major, as shown in the reduction in Figure 3.11. From the standpoint of common practice, however, the progression contains a few loose threads that, when gently tugged, show that the tonal cloth from which the movement is cut may unravel. In m. 4, the uppermost line leaps from G3 to G4 while the bass leaps from G2 to C3, violating normative tonal voice leading through flagrant direct fifths.[28] The direct fifths avoid a stepwise motion to the tonic note in the soprano voice; this weakens the key-defining ability of the progression and creates a *melodic* focus on the pitch G4 as the first and final note of the refrain, drawing listeners' attention to the activity centered on this pitch class.

The two inner voices can be heard as close triadic projections from the uppermost line; reducing the passage by removing these voices yields a two-voice framework consisting of the bass and uppermost line. As in *Lento Molto*, the framework is created through repetition and manipulation of a basic motive—specifically [027], the same motive that appears in the bass line of the triadic network shown in Figure 3.10a. Figure 3.12a shows one type of manipulation of this motive. It repeatedly cycles through the three members of [027] as if they are stuck on a broken record, creating a repeating series. Each four-note unit in a given measure is a four-note segment from the series, and one unit can be transformed into another by moving to a different starting position. The operation S (for "Shift") indicates a shift in starting position; for example, "S1" indicates

[28] Voice leading "violations" are not unprecedented in Copland's music—parallel fifths occur several times in the "Saturday Night Waltz" from the same work, and carry connotations of folk music or an improvising band.

"start one note later on the series." Figure 3.12b above shows the pitch content of the outer voices in the introduction (mm. 1–2) and refrain (mm. 3–4).

a.



b.

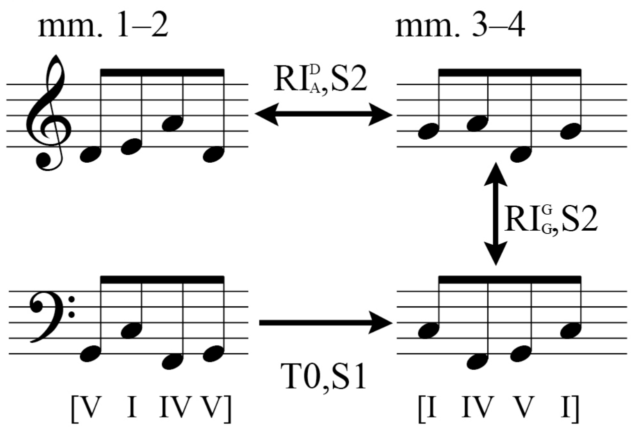


Figure 3.12. Copland, "Corral Nocturne," relations between three-note sets in opening refrain.

The Roman numerals underneath the staff indicate the triads that sound, while the arrows in the staff shows that the melodic cells relate by a combination of transposition or retrograde inversion and shifting. The two cells in the uppermost part relate by a retrograde inversion that exchanges the lowest and highest notes, allowing the line to retain the same ambitus, combined with an S2 operation (i.e., a shift by two positions). This relationship is symmetrical, as indicated by the double-headed arrow. The cells that comprise the bass and melodic line in mm. 3–4 are related by inversion around G, the only pitch class that the two parts share and which forms the focus of the melodic line, combined with another S2. In addition, the pitch classes of the outer voices in mm. 3–4 form the pentatonic collection {G A C D F}.

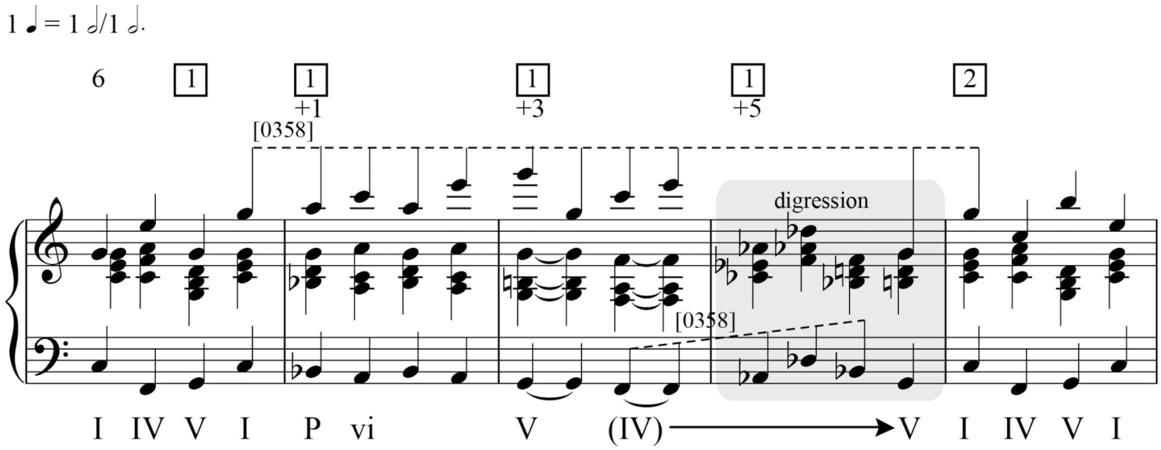


Figure 3.13. Copland, "Corral Nocturne," rhythmic reduction of m. 6 to rehearsal 2.

The "Corral Nocturne" divides into four strains, each of which begins by repeating the two-measure refrain excerpted in Figure 3.11. Figure 3.13 shows a rhythmic reduction of the conclusion of the first strain with a Roman-numeral and motivic analysis. The passage alternates between 5/4 and 4/4 time signatures but maintains a harmonic rhythm of two chords per measure; therefore, each quarter note represents either a half note or dotted half note. After repeated statements of the pitches {C F G}, the bass line changes course one measure after rehearsal 1; this break in pattern creates a motion to a cadence. Like the refrain, the cadential passage groups into two-measure hypermeasures, and the harmonic goal of each measure is placed on the fourth beat. At m. 6, a new melodic line, shown with stems up on the upper staff, appears above the refrain's chord progression. It is characterized by ascending leaps and traces through the pitch classes {A C E G}, an instance of set-class [0358], another pentatonic subset. A dotted beam connects notes that are drawn from this set. The set-class contains two instances of set-class [025], thematized by the privileged voice-leading structure. Like the refrain, the line maintains its focus on pitch-class G. It begins on G4 and makes a series of ascending leaps that reach G5 at rehearsal 1. It then makes another series of upward leaps in a higher register to reach G6 two measures after rehearsal 1. The bass line, in counterpoint to the soprano, descends by step. Two measures after rehearsal 1, it reaches A2 to create vi, which acts as a substitute for IV and provides dominant preparation. Three measures after rehearsal 1, it descends to G2, the root of V, which is embellished by a neighboring IV in the second half of the hypermeasure.

Five measures after rehearsal 1, the brass instruments insert a harmonic digression that delays the resolution of the neighboring IV back to V. This digression is shaded in Figure 3.13. Save for the last note, the digression's bass line uses the pitches from another [0358] set class, imitating the harmony outlined by the ascending leaps in the soprano line. Since root-position triads accompany the bass line, the minor-third motion gives the passage an octatonic flavor, in contrast to the diatonicism of the refrain.[29]

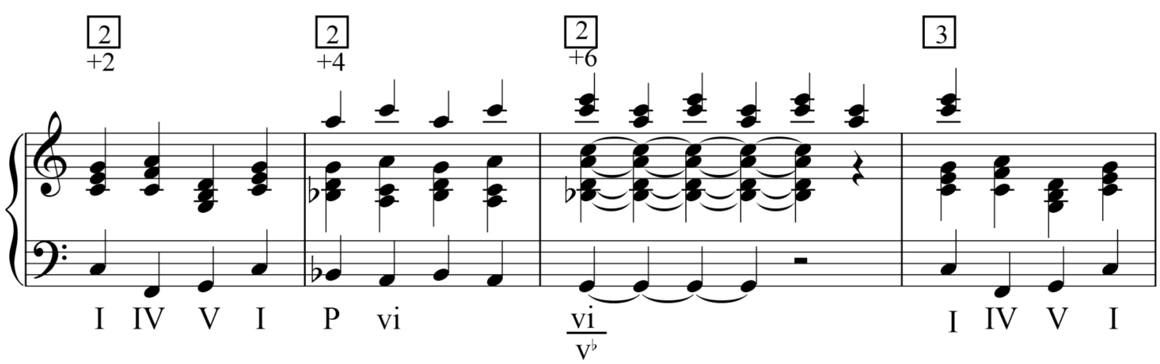


Figure 3.14. Copland, "Corral Nocturne," rhythmic reduction of two measures after rehearsal 2 to rehearsal 3.

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[29] Octatonicism was, in fact, a recurring feature of Copland's compositions from ca. 1923–1925 (Howard Pollack, *Aaron Copland*, 80).

The second strain weakens V as a closing chord. Its final section is reduced in Figure 3.14. As in the first strain, a stepwise bass descent, combined with contrary motion by leap in the soprano, signals the onset of the conclusion of the section. Six measures after rehearsal 2, the bass lines stops at G2, creating a minor triad with the lower voices, while the upper voices continue to arpeggiate through an A-minor triad. The two superimposed triads are labeled as $\frac{\text{vi}}{\text{v}\flat}$ in the rhythmic reduction. It remains an open question whether the notes of vi are added "color notes" to the minor v, or whether the chord shows a mixed function, combining a dominant in the bass with a chord that neighbors the tonic in the upper voice. The minor v triad contains B♭; this note resolves to the tonic by ascending whole step, a characteristic of the privileged voice-leading structure. The departure from common-practice harmony is mirrored by a breakdown in hypermeter: the strain adds an extra two beats one measure before rehearsal 3, increasing the tension before the refrain resumes.

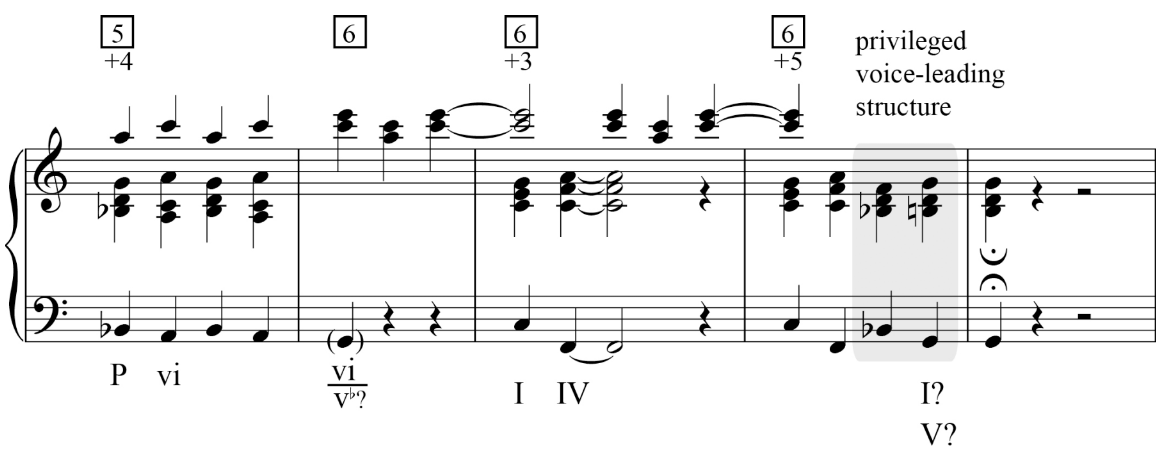

Figure 3.15. Copland, "Corral Nocturne," rhythmic reduction of four measures after rehearsal 5 to ending.

The movement's ending, reduced in Figure 3.15, reconfigures the chords used previously to suggest a shift in privileged voice-leading structure. It begins by fragmenting elements previously found in the movement. At rehearsal 6, the cadential arrival is missing a bass note. A G2 is implied as the conclusion of the bass line's descent, suggesting another mixed "$\frac{\text{vi}}{\text{v}\flat}$" chord, but because G2 does not actually sound this harmonic interpretation is not incontrovertible. Three measures after rehearsal 6, the orchestra restates only the first two chords of the refrain. The orchestra begins a restatement of the refrain five measures after rehearsal 6, but changes the final two chords to end on a G-major triad. Since the movement establishes the pattern of placing the harmonic goal on the fourth beat of each hypermeasure, the G-major triad, by association, sounds as a harmonic goal of the final statement of the refrain. Its repetition on the following large-scale downbeat confirms its status as the goal of the movement. The resolution to the G-major triad also contains the triadic root in its soprano, in contrast to the previous continuation sections, and recalls the melodic focus on G shown in the first strain.

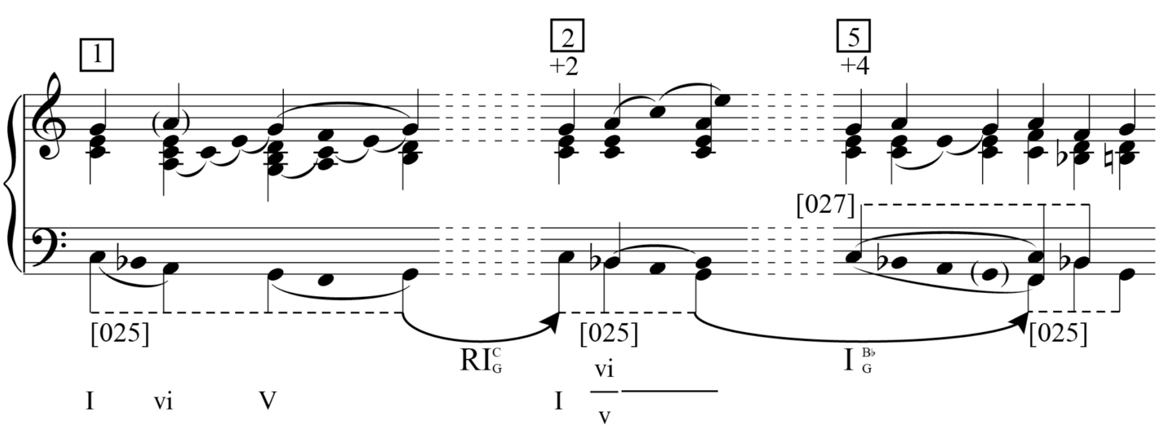

Figure 3.16. Copland, "Corral Nocturne," comparison of closing progressions.

The G-major triad could be heard as V, so that the movement ends on a half cadence. One could also posit a more radical hearing in which the tonal structure of the movement, like the awkward cowgirl that the ballet portrays, refuses to fit into established norms.[30] In this hearing, the final G-major chord is the new tonic. This interpretation is based on a change from a common-practice network to a privileged voice-leading structure that involves a whole-step motion to the tonic combined with bass motion to G by step along a pentatonic scale. The metric placement of G major strengthens its status as a tonic, as does the fact that throughout the movement, the soprano line remains focused on G, and features of the common-practice cadential progression are systematically weakened.

Figure 3.16 provides a deeper-level voice-leading reduction of the closing progressions used in the first, second, and fourth strains. The reduction shows stepwise motion around G4 in the uppermost line. Ascending arpeggiations, which trace an A minor seventh chord or one of its triadic subsets, connect an inner voice to the soprano in the first and third cadential progressions, an example of motion from an inner voice in Schenkerian analysis. In the second cadence, they lead from the soprano to an octave-displaced inner voice. The first cadence concludes on V in the key of C major. The second combines a minor v and vi, establishing a lowered leading tone, a characteristic of the privileged voice-leading structure. The second cadence also transforms the primary pitches in the bass line, which are connected by a dotted beam. In the first strain, B♭ is a

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[30] For an extended reading of *Rodeo* as a study in gender construction and a celebration of the right to assert individuality in the face of societal norms, see Elizabeth Bergman Crist, *Music for the Common Man: Aaron Copland During the Depression and War* (New York: Oxford University Press, 2005), 137–142.

passing tone, creating the background line <C–A–G>. In the second strain, B♭ is a chordal third, while A is a passing tone, creating <C–B♭–G>. As in the transformation of the melodic line over mm. 1–4, the second bass line is a retrograde inversion of the first; the inversion exchanges C and G, allowing the line to stay within the same ambitus. A curved arrow on Figure 3.16 shows this relation. The primary pitches in the second cadence are drawn from the same pentatonic collection that characterizes the final cadence. The prolonged pitches in the bass line's third strain overlap a statement of [027] with one of [025]; these two set classes are both thematic in the work. The pitches of the final [025] statement are an inversion of the primary pitches from the second strain; the inversion retains B♭ and G and adds the pitch F, another member of the same pentatonic collection. A curved arrow on Figure 3.16 shows this inversional relation. Whether the final G-major triad represents a dominant or a new tonic depends on listeners' orientation; the concluding measures contain enough ambiguity to allow either interpretation.

Many critics note a shift toward a more populist style in Copland's output beginning with *El Salón México* from 1936. The analysis of the "Corral Nocturne", written eight years after this supposed division point, suggests that the change in style did not halt Copland's exploration of new potential in the tonal system.[31] By the same token, Elizabeth Crist suggests that a single *political* orientation also encompasses Copland's works from the early 1930s, which have a more dissonant musical surface, and those

[31] In *Aaron Copland* (New York: Oxford University Press, 1953), Arthur Berger also recognizes that while it is useful to divide Copland's music into different "periods," many elements that remain constant in his musical language (38–40).

from his later "populist" period: both sides of his compositional personality reflect his involvement in socialist and progressive politics.[32] Whether the evolution in Copland's style was directly caused by the change in socialist policy, or whether it was caused by other factors, such as a desire to reach more listeners, remains unclear. In either case, the previous two analyses show traits that span both his pre-populist and populist periods.

The Piano Sonata (1941) was written around the same time as *Rodeo*, but when it was first performed, several critics and musicians viewed its style as a combination of his populist manner with a more "serious" method of composition.[33] (They also, with some relief, interpreted the work as an indication that their so-called dean of American music had not "sold out" and become solely a composer of film scores.)[34] Biographers propagate the same interpretation; they note that the Sonata is one of a handful of pieces that Copland wrote over 1940–1945 that combine the consonant surface of his "populist" works with the structural rigor and aesthetic of absolute music characteristic of his works

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[32] Elizabeth Crist, *Music for the Common Man*, 19, 31–33. Crist cites as evidence a 1934 performance of his Piano Variations, one of the capstones of his so-called "modernist" period, at the Pierre Degeyter Club, an organization of left-leaning professional musicians. Charles Seeger, in a review, hailed the work as an illustration of the spirit of communist revolution. Though other critics did not make a similarly tendentious political reading of the work, they did suggest that it relates to the economically difficult time in which it was written. Crist also notes that Copland's incorporation of folk tunes roughly coincides with the formation in 1935 of the Popular Front, a Comintern strategy of greater cooperation with other leftist movements in order to achieve shared goals, which reversed the official stance by advocating the use of national folklore.

[33] The Piano Sonata has an eventful compositional history. According to Arthur Berger's *Aaron Copland*, Copland began composing it in 1939 after receiving a commission from Clifford Odets, but sketches for the work date from as early as 1935, when he was working on *El Salón México*. One reason it took him a long time to complete the work was that a suitcase containing his drafts was stolen and never recovered, requiring him to re-write the work from memory (32).

[34] Howard Pollack, *Aaron Copland*, 354–355. Pollack disputes the characterization of the Piano Sonata as "populist/modern," but he does note that several critics and musicians at the time believed it was accurate.

from the 1920s and early 1930s.[35] Copland himself sanctions viewing the Sonata as combining popular and abstract elements when he describes the work as "somewhere between the [Piano] Variations and *Our Town*."[36]

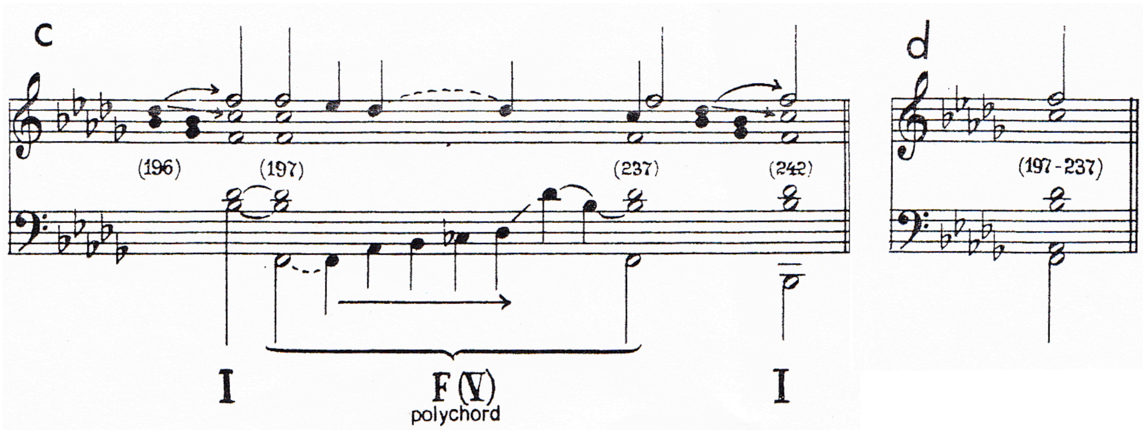

Figure 3.17. Felix Salzer's analysis of Copland, Piano Sonata (1941), first movement, mm. 196–242. (Reproduced with permission of Dover Publications, Inc.)

As befits the sonata genre, the first movement dramatically highlights the achievement of harmonic closure in the primary and secondary key areas. Felix Salzer, who considered the Piano Sonata a significant enough work to warrant a graphic analysis of the first movement's entire recapitulation (mm. 196–242), provides one explanation for how harmonic closure is achieved in the first movement.[37] His analysis of the middleground level is shown in Figure 3.17c above: it shows a large-scale I–V–I cadential progression prolonged over the entire section. The progression is embellished by so-called "polychords," a term he invents (with apologies for its clumsiness) to

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[35] See, for example, Arthur Berger, *Aaron Copland*, 32; and Neil Butterworth, *The Music of Aaron Copland* (London: Toccata Press, 1985), 84.

[36] Aaron Copland with Vivian Perlis, *Copland 1900–1942* (New York: St. Martin's/Marek: 1984), 332.

[37] Felix Salzer, *Structural Hearing, Supplemental Volume: Musical Examples* (New York: Charles Boni, 1952; reprint, New York: Dover, 1962), 186–187 (Figure 416).

describe the superimposition of two different triads.[38] The first polychord appears in white noteheads at m. 196; it contains the notes of a B♭-minor triad in its lower parts and the notes from an F-minor triad in its upper parts. At m. 197 a low F is added to this chord. In Salzer's reading, the lower voices tend to dominate and determine the function of the harmony. Thus, the tonic is prolonged at m. 196, the dominant at m. 197. Over mm. 197–237, the parts unfold another polychord combining the B♭- and F-minor triads, a verticalization of which is shown in Salzer's Figure 3.17d above. This prolonged chord functions as V and resolves to I in the final measure of the reduction.

Salzer's analysis is likely influenced by his previous discussion of the first movement of Copland's Suite from *Our Town*, which begins with a G-major triad arpeggiated in the upper parts over a C-major triad in the lower parts. The upper voices can be heard as an added chordal seventh and ninth, preserving the principle of third-based harmony. This allows the lowest voice to be heard as the chordal root and also determine the function of the triad. In a later excerpt of *Our Town* (m. 23), I is superimposed over ♭VI. The lower triad again determines the function, and its bass can be interpreted as the root of a sonority created by stacked thirds. Contrapuntal considerations explain the following polychords (mm. 23–25), since they result from passing motion that prolongs the resolution from ♭VI to V.[39]

Salzer's interpretation of the polychord in the Piano Sonata, by contrast, is problematic. Although F is the lowest note in the texture, B♭ remains a fifth lower in

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[38] Felix Salzer, *Structural Hearing: Tonal Coherence in Music*, 2nd ed. (New York: Charles Boni, 1952; reprint, New York: Dover, 1962), 192–193.

[39] Felix Salzer, *Structural Hearing, Supplemental Volume: Musical Examples*, 178–179 (Figure 412).

pitch-class space, and also asserts itself as root. The polychord cannot be easily reduced to a third-based vertical sonority, as in his other examples. Labeling the B♭ and D♭ an added eleventh and thirteenth, in absence of other added thirds, is inconsistent with his earlier readings. In addition, his reading gives no explanation of the C♭ passing note in the bass line in figure 3.17c, which does not appear in the B♭-minor scale.

The analysis that follows is offered as a refinement of Salzer's; it identifies many of the same structural elements but reinterprets their function based on examination of the larger context of both the exposition and recapitulation. Figure 3.18 shows the networks that govern a revised hearing of the first movement of the Piano Sonata. As in the "Corral Nocturne," the work alternates between two types of closing progressions, shown in Figure 3.18a. Unlike the other pieces that use an orientational axis, the two progressions are directed toward the same tonic. The first progression involves a minor v that resolves to the tonic. Although the key signature indicates B♭ minor, the tonic triad often has a raised third, indicated by the accidental in parentheses. The second network involves an "LM2"—that is, a triad built on a root a whole-step lower than the tonic—that resolves to the tonic. The LM2 consistently has a lowered third: like v, it is a minor triad. Its lowered third prevents it from being heard as an incomplete F minor seventh chord with a missing root; in addition, it leads to the tonic by descending semitone (C♭–B♭), imitating the leading-tone motion of $\hat{7}$.[40]

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[40] In *Harmonic Function in Chromatic Music*, Daniel Harrison notes that ♭$\hat{2}$, because it creates semitone motion to the tonic note, is closely related to the dominant leading tone, and that in the later nineteenth century it played an increasingly significant role in tonal harmony. He cites several pieces that contain ♭$\hat{2}$ in their bass; the LM2 from the Piano Sonata is remarkable since the scale degree is the triad's third. The

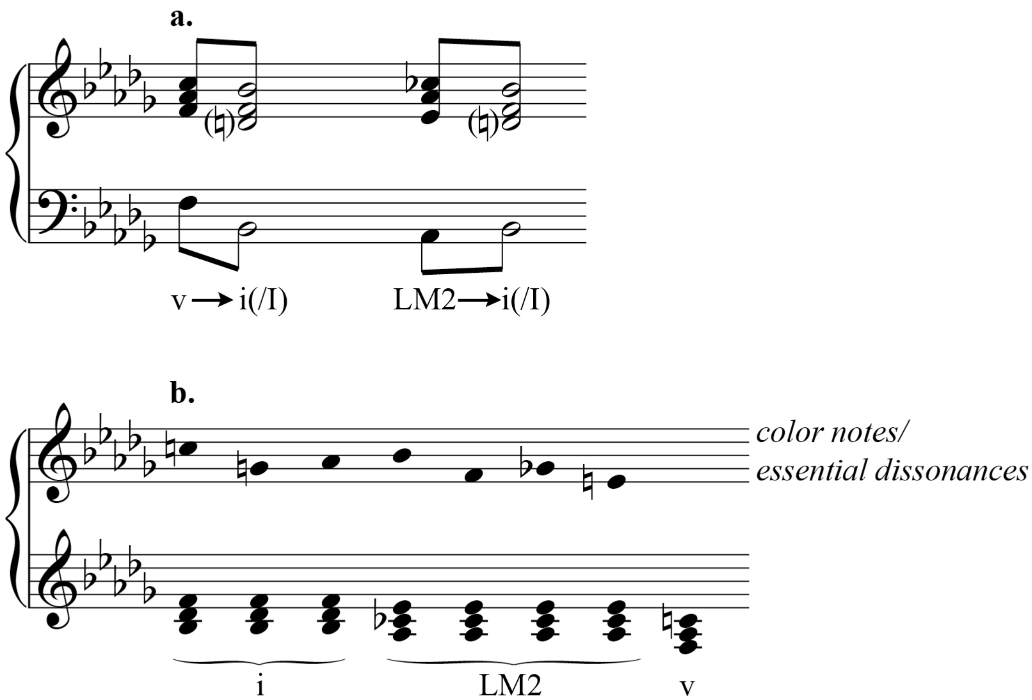

Figure 3.18. Closing progressions and added notes used in Copland's Piano Sonata.

Figure 3.18b above shows that a number of notes can be added to the tonic and LM2. They add harmonic richness and allow significant motives to be repeated vertically and horizontally as the work proceeds. A few added notes belong to only one class of harmony: E♮ and G♭ are solely associated with the LM2, and the note C is also strongly associated with the tonic harmony even though it also occurs in V. These notes serve as "essential dissonances"; they mark a chord with one and only one function. Among the essential dissonances, the pitch E♮ is unique because it neighbors a member of the triad by a semitone, giving the LM2 a distinct harmonic profile. The v triad also takes a unique profile in that it *lacks* any added notes. These three chords—tonic, v, and the LM2—form much of the harmonic vocabulary of the sonata; the impoverishment of harmonic syntax

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minor LM2 chord is, in fact, an inversion around the tonic of the V triad. For a more detailed discussion of Harrison's theory, see Chapter 5 of this dissertation.

is more than compensated by the rich motivic associations of individual voices and the energy created by the piano's irregular rhythms and widely-spaced chords.

a.

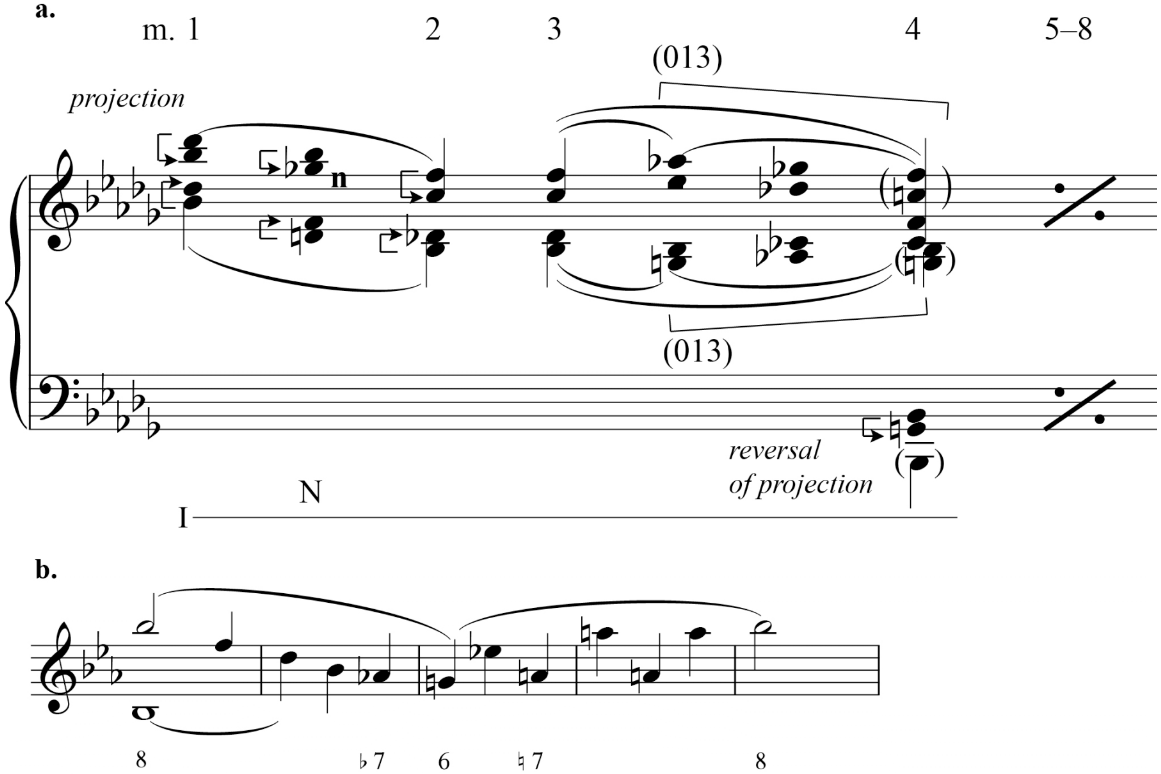

Figure 3.19. a. Voice-leading reduction of Copland, Piano Sonata, first movement, mm. 1–8. b. Example of boundary-play gesture from Beethoven, Symphony no. 3, first movement (adapted from Schenker's *Free Composition*).[41]

The opening eight measures of the sonata, which are reduced in Figure 3.19a, demonstrate the interaction between motivic association and added notes. The reduction omits some upper octave doublings for ease of reading; otherwise it reproduces the pitches of the piano part exactly. Measures 1 and 2 form a gesture that recurs throughout the movement. The outer voices each arpeggiate through notes of the tonic triad: the bass line plays <B♭–D♮–B♭>, moving between root and third of a major tonic triad; the soprano

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[41] Heinrich Schenker, trans. and ed. Ernst Oster, *Free Composition, Supplement: Musical Examples* (Vienna: Universal, 1935; reprint, New York: Longman, 1979), Figure 124, 1b.

line plays <D♭–B♭–F>, arpeggiating through a minor tonic triad. The inner voices can be heard as a result of intervallic projection, shown by the arrows in the diagram. The bass voice projects a voice that remains a minor third above, and this interval remains constant for the first three chords. The soprano, by contrast, projects a lower minor third, and then gradually increases this interval by semitone: in the second chord its added note is a major third below, and in the third it is a perfect fourth below. The change in projection size results in a change in function of the second chord: the G♭ in the alto part is a neighboring note, giving the second chord a mixed tonic and neighboring function. This note resolves to F in the soprano part of the following chord. The other accompanying notes function either as members of the tonic triad or as essential dissonances.

In mm. 3 and 4 the outer voices embellish B♭ and F, the root and fifth of the tonic triad, by leaping a minor third away in contrary motion and returning via stepwise motion, through the (013) motive, to their original pitches. The upper voice decorates F by leaping up to A♭ and making a stepwise descent; the bass decorates B♭ in a similar manner. The final pitches of this gesture, which occur on the downbeat of m. 4, are displaced down by octave, but the implied notes are shown in parentheses. Although the second and third chords are dissonant, the tonic harmony is prolonged throughout the gesture because both parts leap to a note that can potentially act as an added note. In addition, the outer voices create a *melodic* embellishment pattern that prolongs the root and fifth of the tonic triad; it resembles the Schenkerian foreground technique of *boundary play*. Figure 3.19b above shows an example of boundary play in the first movement of Beethoven's Third Symphony for purpose of comparison (the graph is adapted from Schenker's *Free Composition*, Figure 124, 1b). In the Beethoven excerpt, the upper voice embellishes its tone B♭ by moving down by step to A♭ and G, and up by step through A♮ back to B♭. (The first appearance of B♭ and A♮ are coupled in two different octaves.) In Schenkerian theory, boundary play decorates a melodic tone without changing the harmony undergoing prolongation.[42] The opening of Copland's Piano Sonata suggests a similar interpretation of a single prolonged harmony. Except for the last chord, the outer voices maintain the exact interval of projection found in the tonic chord in m. 2. The bass projects an upper third, while the soprano projects a lower perfect fourth. The bass part reversals its interval of projection on the downbeat of m. 4: it projects a *lower* minor third, as opposed to an *upper* minor third. This change from upper to lower projection recalls the change from lower to upper triadic projection seen in *Lento Molto*. The G♮ that results from the lower projection can also be heard as an added color note, meaning an implied bass-note B♭ is sustained through the passage.

This implied bass note sounds literally in the second half of the primary theme, which is reduced in Figure 3.20. In mm. 11–14 the soprano outlines the trichord <D♭–C♭–B♭> while the bass plays a neighboring pattern <F2–G2–F2> around F2. In m. 14, the left-hand part plays a low B♭, firmly establishing the sonority as a tonic. The same note

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[42] Heinrich Schenker, trans. and ed. Ernst Oster, *Free Composition [Der Freie Satz]* (Vienna: Universal, 1935; reprint, New York: Longman, 1977), 103–104, §260. The example from Beethoven's *Eroica* symphony is particularly interesting in that the lower G is not part of the V triad undergoing prolongation. Frank Samarotto suggests that boundary play is an example of melodic impulses that run counter to deeper-level harmonic and contrapuntal structures ("'Plays of Opposing Motion': Contra-Structural Melodic Impulses in Voice-leading Analysis," *Music Theory Online* 15, no. 2 [June 2009], *http://mto.societymusictheory.org/issues/ mto.09.15.2/mto.09.15.2.samarotto.html*).

can be extrapolated to be in operation for the space of all three chords, as shown by the note enclosed in parentheses at m. 11. The A♭2 above the bass part can be heard as an added note.

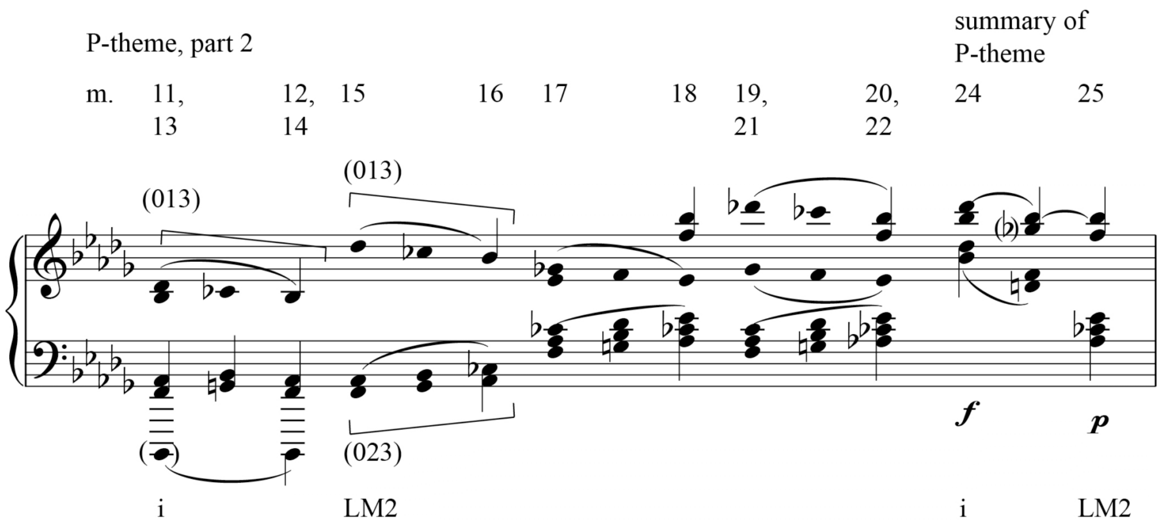

Figure 3.20. Copland, Piano Sonata, reduction of mm. 11–25.

The rest of the primary theme develops the same motivic material as the opening but uses a shift in the bass part to suggest a change from the tonic to the LM2 function; thus, the tonic and LM2 comprise the entire harmonic vocabulary of the theme. Over mm. 15–22, the outer voices make several statements of the trichord (013) or its inversion (023) in contrary motion, developing the boundary-play gesture presented at m. 3. In mm. 15–16, the bass line outlines an (023) chord, the inversion of the soprano line, and ends on A♭, signaling a shift to the LM2. The soprano line repeats the same three-note line <D♭–C♭–B♭> that appeared at m. 11. This line was originally associated with the tonic harmony, but the changing context created by the lower voices re-interprets the B♭ as an added ninth. Measures 17–22 continue the expansion of the LM2 through varied repetitions of the same progression over several octaves. Over mm. 24–25, the piano reviews the harmonic journey undertaken over the entire primary theme: it states the first two chords of the introduction and then repeats the LM2 as it is voiced in m. 22. The dynamics reinforce the measures' retrospective nature. The first two chords, associated with the primary theme, are marked *forte marcato*, the same dynamic as the opening, while the LM2 is marked *subito piano*, the same dynamic level that ends the theme.

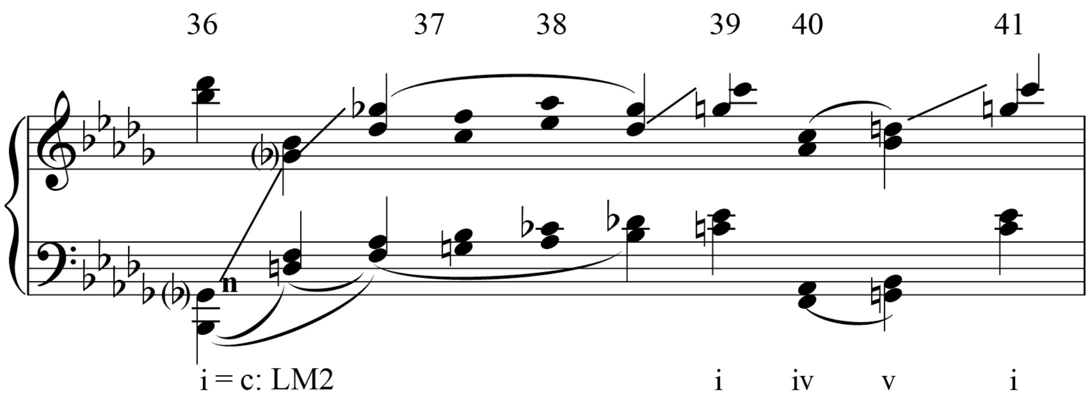

Figure 3.21. Copland, Piano Sonata, reduction of mm. 36–41.

The transition opens by reinterpreting the tonic as LM2 in order to make a temporary modulation to the key of C.[43] After prolonging the tonic B♭, the transition restates the opening gesture and adjusts the ending to create a modulation to C minor, as shown in Figure 3.21. The passage contains several novel combinations of pitches that present challenges to harmonic grouping, but the large-scale goals can be determined by examining the characteristic melodic embellishment figures traced by the outer voices. In m. 36, the bass arpeggiates through the tonic triad. At the same time, the upper line begins another tonic arpeggiation but replaces the final F with G♭, an upper neighbor transferred from an inner voice. The pitch G♭ is then reinterpreted as an essential

[43] For a discussion of the first part of the transition, see Figure 1.22 from Chapter 1.

dissonance added to an LM2 in C minor. Over the next four chords, the upper voice plays a neighboring pattern around this same pitch, while the bass line ascends from F to B♭, connecting the fifth and root of a B♭ triad. The entire passage from mm. 37–38 is therefore interpreted as outlining an LM2 in the key of C, which resolves to the tonic in m. 39. In m. 40 the pianist confirms C minor through repeated iv–v progressions in this key, signaling a temporary shift to the other (fifth-based) triadic network that the movement employs.

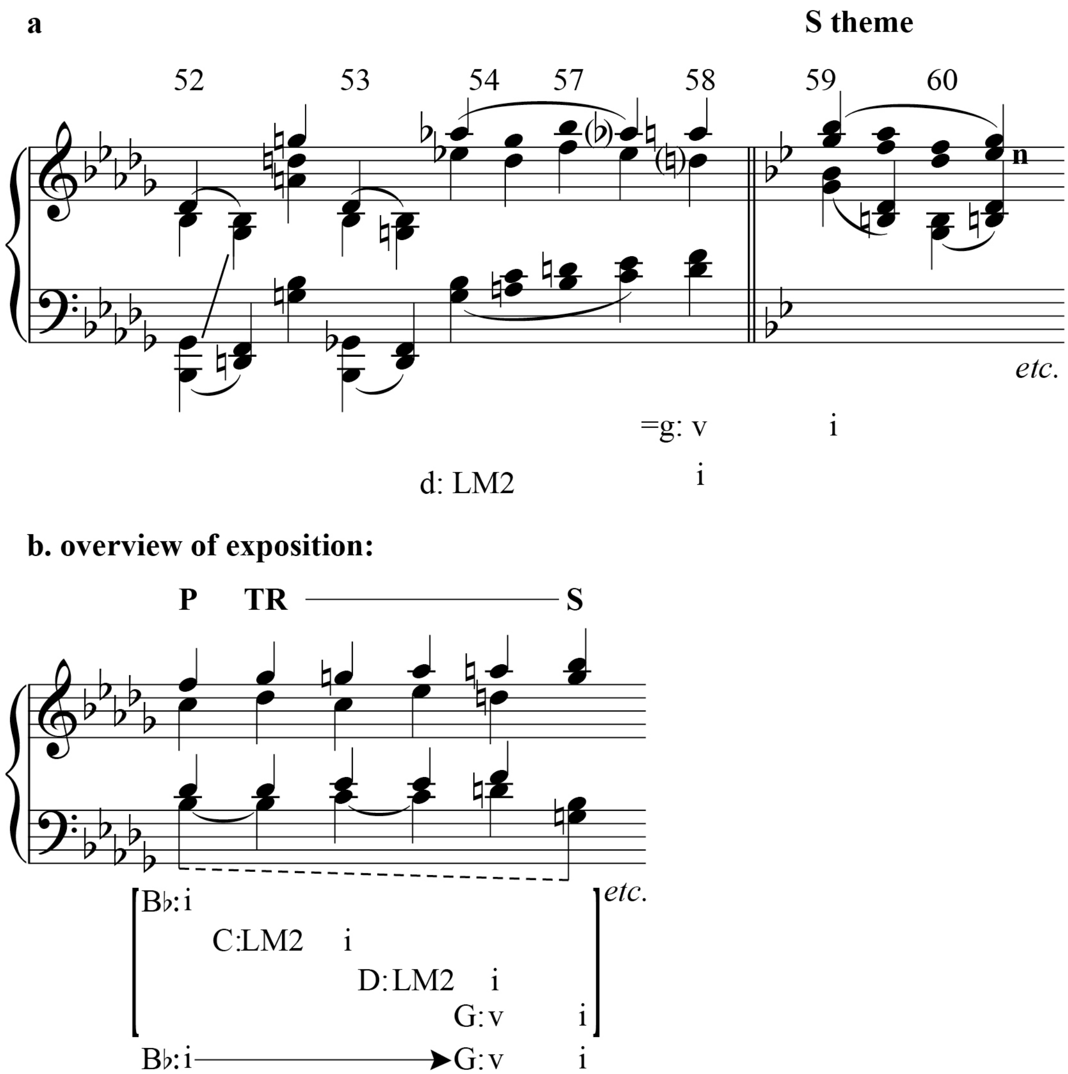

Figure 3.22. Copland, Piano Sonata. a. Reduction of end of transition and beginning of secondary theme. b. Overview of primary theme, transition, and beginning of secondary theme.

Over mm. 54–57, as shown in Figure 3.22a, the same progression is used to modulate from C to D minor. A change of network orientation allows the D-minor tonic triad to be reinterpreted as v in G minor, the initial key of the secondary theme area, which begins at m. 59. (Although the secondary theme distinguishes itself from the primary theme by its lyrical melody, its harmonic content is very similar. The lower two parts move in parallel minor thirds and imply an alternation between the tonic triad's major and minor third, as in the opening gesture.[44] The melody also features E♭, the semitone neighbor above the fifth of the tonic triad, marked with a bold "**n**" on the reduction.) Figure 3.22b above provides an overview of the exposition. A series of reinterpretations of the tonic as LM2 creates modulations to C and D minor; these are shown in brackets in the analysis beneath the score. The deeper-level motion is shown on the bottom row: the modulations trace an ascending sequence of ascending whole tones that connects the initial B♭-minor triad to D minor, which functions as v in the key of G minor. The dotted line on the exposition's reduction shows that the relationship between the initial tonic note and the tonic of the beginning of the secondary theme is a minor third, the same interval of projection used in the bass part in m. 4.

The key structure and main motives presented in the exposition provide crucial information for interpreting the recapitulation, which has a greater degree of harmonic multivalence. As in many sonata movements, the recapitulation does not simply restate the exposition with the necessary transpositions to end in the original key; rather, it

[44] In *Aaron Copland*, Howard Pollack also notes the close relationship between primary and secondary themes and mixture of mode in the first movement of the Piano Sonata (356).

significantly recomposes much of the exposition's music, resulting in systemic re-organizations of the movement's motives. One of the most significant changes occurs in the secondary theme, which is drastically shortened and appears in the key of D♭, rather than the tonic B♭. This motion by minor third inverts the motion from B♭ to G undertaken in the exposition. The two keys of G and D♭ also repeat the projection of upper and lower minor thirds from B♭ seen in the opening gesture of the piece in mm. 2 and 4 (see Figure 3.19). The conclusion of the movement reinterprets the secondary theme's D♭-major triad as a third, fifth, and an added seventh to the tonic harmony; the prevalent use of color notes throughout the movement allows for this shift in perspective.

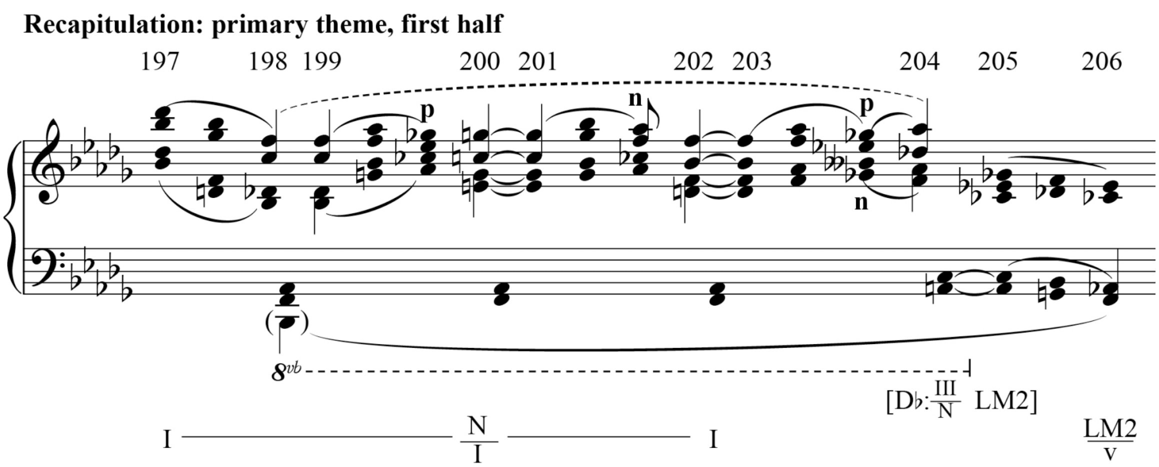

Figure 3.23. Copland, Piano Sonata, reduction of mm. 197–206.

The first half of the primary theme, reduced in Figure 3.24, adumbrates the entire recapitulation's harmonic structure: the section briefly suggests a motion to D♭-major and then folds the D♭-major triad back into the tonic harmony. The recapitulation begins by restating the opening gesture; immediately afterward the left-hand part hammers out the dyad F/A♭ in a very low register. The same dyad recurs two more times. The intrusion of these two low pitches into the section alludes to the practice of recapitulating the primary theme over a dominant pedal, common in the late nineteenth century. The pedal creates ambiguity over which harmony is prolonged in the section: the upper voices suggest the tonic, while the bass suggests the dominant. Most often the upper voices eventually move to the dominant triad, enabling a retrospective reinterpretation of the entire section as a cadential $^{6}_{4}$ progression.[45] Thus, a tonic $^{6}_{4}$ recapitulation often has the *connotation* of a tonic harmony, but the larger *function* of a dominant one.

Copland's recapitulation does not so easily allow this hearing, because the bass note changes before a resolution to V occurs, and also because the cadential $^{6}_{4}$ progression appears nowhere else in the movement. William Rothstein states that $^{6}_{4}$ chords built over $\hat{5}$ can occasionally represent either a I or V harmony without the intervention of any other chords.[46] An example of the former, in his view, is a tonic $^{6}_{4}$ that appears in m. 17 of Chopin's Étude in E major, op. 10, no. 3. This chord appears immediately after a French sixth, and therefore initially suggests a dominant harmony. The same chord initiates a descending 5–6 (i.e., a descending-thirds) sequence, within which it moves through V and eventually reaches a root-position I. Because the rules of functional harmony are normally suspended in a sequence, its initial $^{6}_{4}$ chord must be

[45] For a discussion of the ambiguity of tonic $^{6}_{4}$ chords, see Peter H. Smith, "Structural Tonic or Apparent Tonic?: Parametric Conflict, Temporal Perspective, and a Continuum of Articulative Possibilities," *Journal of Music Theory* 39, no. 2 (Autumn 1995): 245–283.

[46] William Rothstein, *Phrase Rhythm in Tonal Music* (New York: Schirmer, 1989), 224. I am grateful to Mitch Ohriner for pointing out this example to me. For another discussion of the function of "I^{6}_{4}" chords, see Edward Aldwell and Carl Schachter, *Harmony and Voice Leading*, 3rd ed. (Belmont, CA: Thomson, 2003), 323–324. Aldwell and Schachter cite examples of both a dominant- and tonic-functioning $^{6}_{4}$; their example of the latter is the last chord of "Eusebius" from Schumann's *Carnaval*.

reinterpreted as a tonic-functioning.[47] The context provided by the first movement of the Piano Sonata's exposition also allows for a tonic interpretation of the harmony that appears at its recapitulation, even though it contains $\hat{5}$ in its bass. In mm. 11–14, the upper voices prolong I over a dominant bass note, and at the end of the passage an even lower tonic bass note appeared to confirm the tonic harmony and indicate that it can be heard to be "in operation" throughout. In a similar manner, an implied note of B♭, enclosed in parentheses, can be heard throughout the first part of the recapitulation. This hearing is consistent with the continual enrichment of the tonic harmony by added notes and registral expansion displayed in the exposition. It inverts the relation between connotation and structure typically provided by a tonic $^6_4$ recapitulation: it lends the *local* connotation of a dominant, but the larger function of a tonic! Nonetheless, it is also possible to hear the opening of the recapitulation as a large-scale prolongation of the dominant, as suggested by Salzer's interpretation shown in Figure 3.17. The tension between hearing the opening of the recapitulation as dominant-functioning and hearing it as tonic-functioning creates a tension between fifth-related chords reminiscent of the tension between fifth-related tonics described elsewhere in this chapter. Thus, Copland succeeds in manipulating elements of sonata form to reflect his broader stylistic concerns.

After restating the opening gesture, the upper parts make several alterations to the original theme; these create a large-scale neighboring motion followed by a brief suggestion of D♭ major. The bold letters above the upper staff in Figure 3.24 show the

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[47] William Rothstein, *Phrase Rhythm in Tonal Music*, 225. Schenker, by contrast, reads the tonic $^6_4$ as dominant-functioning, although he does not include the sequential pattern in his graphic analysis (*Free Composition*, *Supplemental Volume: Musical Examples*, Figure 153, 3).

functional reinterpretations created by these alterations. Over mm. 199–200, the boundary-play gesture F–A♭–G♭ does not resolve back as expected to F, but moves up by semitone to G♮, an upper neighbor. This requires a reinterpretation of the function of each note in the gesture: G♭ becomes a chromatic passing tone that leads to G♮. The uppermost voice repeats the boundary-play gesture at m. 201; its final pitch, A♭, becomes an "escape tone" that embellishes the resolution from G to F. Over mm. 203–204, the uppermost line repeats the boundary-play gesture and resolves to A♭ supported by a D♭-major triad in first inversion. This motion reinterprets the previous G♭ as a passing note, and the lower three voices as neighbor notes. The motion to the D♭-major triad briefly suggests a modulation to this key. Immediately after it appears, the bass part plays the dyad A♮/C, which is a major third higher than the F/A♭ dyad stated previously. The A♮ can be heard as an added dissonant neighbor to the D♭-major triad; it is analogous to the G♭ neighboring note that was frequently added to the B♭ triad in the exposition. The chord therefore has a mixed tonic and neighboring function in the key of D♭; this is shown in the bracketed $\frac{\mathrm{I}}{\mathrm{N}}$ in the analytical reduction. The next chord at m. 205 (a C♭-major triad) functions as an LM2 in the key of D♭ major, continuing the temporary suggestion of this key.

Over the rest of m. 205 and in m. 206, the temporary suggestion of D♭ major evaporates as both parts descend by two steps. The final chord of the excerpt contains the root and third of V in its lower two voices, and the LM2 in its upper three voices. As such, it has a mixed function that combines both chords.

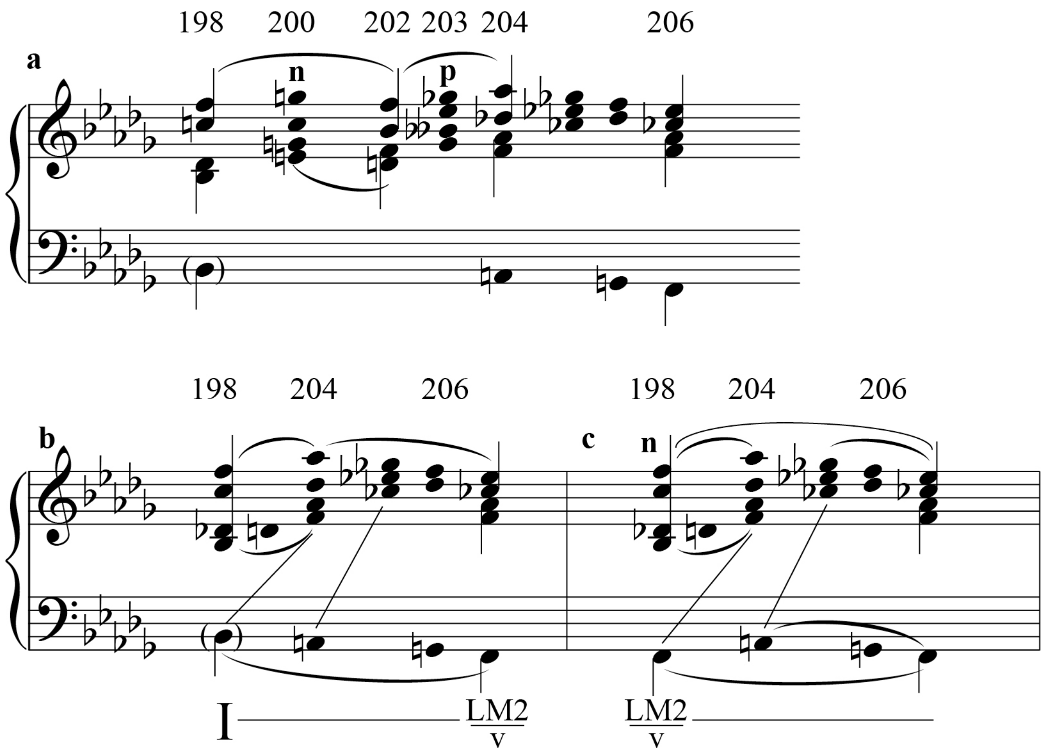

Figure 3.24. Copland, Piano Sonata. a. Reduction of mm. 198–206. b–c. Two possible second-level reductions and harmonic groupings of mm. 198–206.

Figure 3.24a provides another level of reduction of mm. 198–206. In the upper staff, a large-scale neighboring motion occurs over mm. 198–202. The neighboring chord connects the B♭-minor triad with added C in m. 198 to the B♭-major triad in first inversion in m. 202. In m. 204, the upper voices ascend by third to the notes of a D♭-major triad in first inversion, while the bass begins a stepwise descent. In m. 205, the upper voices join with the bass descent, and all parts reach a $\frac{\text{LM2}}{\text{v}}$ at m. 206. Figures 3.24b and 3.24c provide a further voice-leading reduction and give two possible harmonic groupings. They each eliminate the neighboring and passing motion at m. 200 and 203, revealing that the D♭-major triad at m. 204 forms an upward consonant skip from the initial B♭-minor triad. Since the notes of the D♭ triad can act as color notes added to B♭-minor (see mm. 12 and 14, reduced in Figure 3.20), the upward skip, at a structural background, is reinterpreted as a motion toward additional members of the tonic harmony. A diagonal line from the initial tonic note to the D♭-major triad shows that the two belong together conceptually. Likewise, a diagonal line from the bass A♮ to the following chord shows that these two parts belong together at a deeper structural level. Figure 3.24b interprets the exposition in light of the implied bass note B♭. The A♮ and G provide passing motion to the goal tone of F; they are harmonized by upper sevenths. Figure 3.24c gives an alternate reading that follows Salzer's suggestion of hearing a dominant prolongation over the outset of the recapitulation. In this hearing, the B♭-minor triad in the upper voices is a collection of upper neighbor notes that resolve in m. 206. Simultaneously with the upper voices' composed-out resolution, the bass line embellishes its pitch with an upper third. Thus the boundary-play gesture, which was denied at the foreground level because of the alterations to the upper parts, reasserts itself at a deeper structural level.

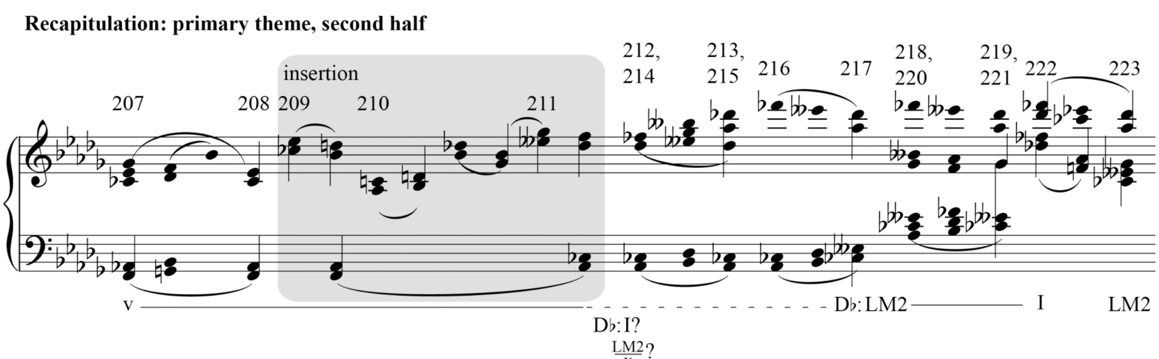

Figure 3.25. Copland, Piano Sonata, reduction of mm. 207–223, showing insertion.

The rest of the recapitulation explores, on a larger scale, the same process of surface modulation to D♭ followed by reinterpretation of the D♭-major triad as upper pitches of a B♭ tonic harmony. The primary theme's second half, reduced in Figure 3.25, inserts new music over mm. 209–211 (enclosed in a gray box in the reduction) to create a modulation to D♭. In the insertion, the right hand plays a series of neighboring gestures that ends with the third D♭/F, while the left hand transposes the F/A♭ dyad up by minor third. The rest of the theme is transposed up by minor third from its appearance in the exposition (with some octave displacements). At m. 217, the bass part ascends by third to reach the LM2 in D♭, unambiguously asserting this key.

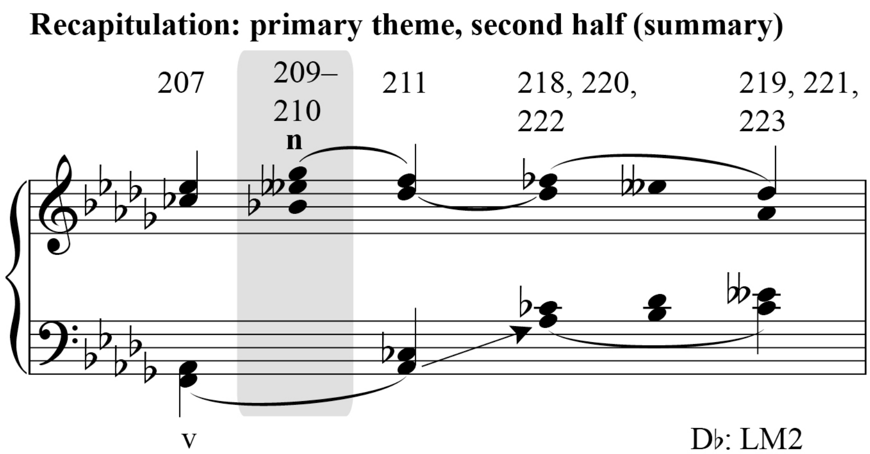

Figure 3.26. Copland, Piano Sonata, large-scale reduction of second half of primary theme.

A further reduction of the second half of the primary theme, shown in Figure 3.26, clarifies the voice leading that the section employs. At m. 210, the neighboring patterns in the right hand are verticalized to form an augmented triad, which resolves to the D♭/F dyad at m. 211. The uppermost voice is lowered to F♭ and then descends by third over mm. 218–223 to reach the added ninth to the LM2 in the key of D♭. The bass line first ascends by third to A♭; whether this represents an upper third of the v triad in B♭-major or a motion to D♭ major remains ambiguous. In either case, this note is transferred up by octave and becomes part of a third-ascent that also concludes on the

LM2. The recapitulation eliminates the transition section, so that the LM2, rather than minor v, leads to the secondary theme.

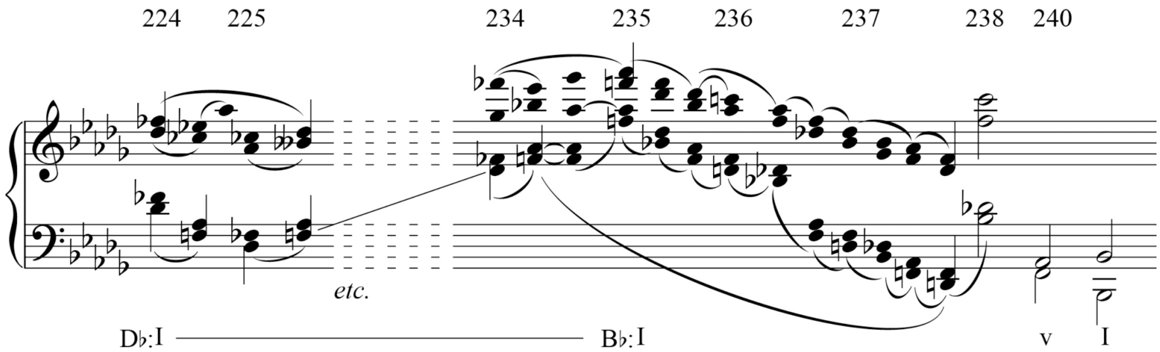

Figure 3.27. Copland, Piano Sonata, reduction of beginning of secondary theme (mm. 224–225) and conclusion (mm. 234–240).

The secondary theme's beginning and ending are reduced in Figure 3.27. The theme begins at m. 224 in the key of D♭ major, and it concludes at m. 235 with a descending arpeggiation in both hands. The slurs in the reduction show that the arpeggiation's uppermost line outlines a D♭-major triad, while the bass line outlines a B♭-minor triad. As in the opening eight measures, the bass line projects a voice a minor third above and therefore alternates between implying B♭ major and B♭ minor. Over the course of the arpeggiation, B♭ gradually re-asserts itself as the root of the chord undergoing prolongation, and at m. 238, the piano restates a B♭-minor triad with added ninth, the same chord that appeared in m. 2. At m. 240, a two-voice progression that implies v–I succinctly provides closure for the entire movement.

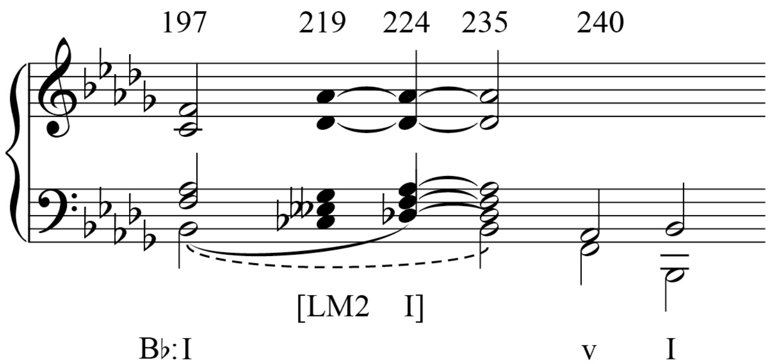

Figure 3.28. Copland, Piano Sonata, reduction of conclusion (mm. 197–240).

Figure 3.28 shows a reduction of the entire recapitulation. It begins by prolonging the B♭ tonic, and over mm. 219–224, the section makes a surface modulation to D♭ major via an LM2 in that key. Globally, the LM2 has a passing function that connects B♭ and D♭ in the bass line; the bass line outlines another instance of the (013) trichord featured in the opening measures. At m. 235, the D♭-major triad is reinterpreted as the upper third and fifth, and an added seventh, of the B♭ tonic. There is no need, in other words, to "re-establish" B♭-minor after the passage in D♭. The movement's basic harmonies are expanded to the point where it can reveal, at the end of the work, that the D♭ had been a part of the B♭ tonic the entire time. The closing v–I gesture confirms the key of B♭ and ends the movement. The recapitulation, in summary, reorganizes several elements presented in the exposition, including modulation by minor third and extension of a triad by added color notes.

The Piano Sonata uses two elements of the orientational axis; it alternates between using v and the LM2. The two chords allow him to compose out motives at large time-scales and expand the pitch and registral space of the tonic harmony. The movement contains moments of harmonic ambiguity, such as the tension between tonic and dominant function at the recapitulation, but ultimately directs all chords toward a single tonic pitch. The use of a single tonic may have been influenced by Copland's choice to write in a traditional sonata form, which dramatizes the achievement of closure in a primary key. In Copland's view, this form is fundamental to large-scale composition and remained relevant to music of his time:

> [The sonata] is just as much alive today as it was during the period of its first development. The logic of the form as it was practiced in the early days, plus its malleability in the hands of later composers, accounts, no doubt, for its continuous hold on the imagination of musical creators for the past 150 years or more.[48]

4. A Complete Orientational Axis

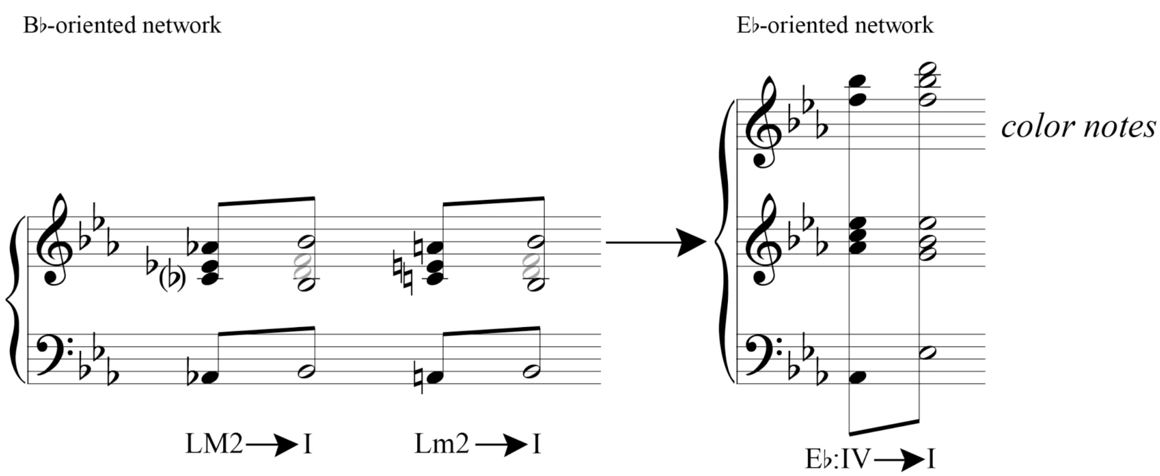

Figure 3.29. Closing progressions used in Copland, "Nature, the Gentlest Mother" from *Twelve Poems of Emily Dickinson* (1950).

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[48] Aaron Copland, *What to Listen for in Music* (New York: McGraw-Hill, 1939; reprint, New York: Mentor, 1953), 176–177. For a discussion of Copland's earlier uses of sonata form, see Elizabeth Crist, "Aaron Copland's Third Symphony (1946): Context, Composition, and Consequence" (Ph.D. dissertation, Yale University, 2000), 24–25.

The previous section examined three pieces that each used some elements of an orientational axis in order to achieve a specific expressive aim. “Nature, the Gentlest Mother,” the first song of *Twelve Poems of Emily Dickinson* (1950), uses all of the axis’s elements: it shifts between two different tonics and uses a different closing progression to establish each.

The particular tonic note of “Nature” is a matter of debate. Larry Starr states that the entire song is in E♭ major, while Stan Kleppinger, Robert Daugherty, and Wilfrid Mellers hear an ambiguity between E♭ and B♭ as pitch centers. Daugherty and Mellers characterize this ambiguity as a tension between E♭ major and B♭ Mixolydian.[49] My analysis follows the majority viewpoint in identifying a tension between two tonics: figure 3.29 shows the two triadic networks that the song uses. The first, labeled the “B♭-oriented network,” uses step-related triads to confirm the tonic. The prototypical form of the key-defining progression in this network, which is consistent with Mellers and Daugherty’s “Mixolydian” characterization, consists of an A♭-major triad resolving to a B♭-major triad, or LM2–I. The song also uses two variants of this progression. In one variant, the third of the LM2 is lowered, providing a semitone connection to the tonic note, as in the Piano Sonata (see Figure 3.18). In the other variant, a minor second replaces the major second as interval of root motion, yielding an Lm2–I progression. In the B♭-oriented network, the tonic sonority frequently eliminates its third and fifth,

[49] Larry Starr, *The Dickinson Songs of Aaron Copland* (Hillsdale, New York: Pendragon, 2002), 35; Stanley Kleppinger, “Tonal Coherence in Copland’s Music of the 1940s,” 247–249; Robert Michael Daugherty, “An Analysis of Aaron Copland’s ‘Twelve Poems of Emily Dickinson’” (D.M.A. dissertation, Ohio State University, 1980), 35; and Wilfrid Mellers, “Copland, Dickinson, and the Noise in the Pool at Noon,” *Tempo*, New Series, 214, American Music Issue (October 2000): 8.

leaving a single pitch. The motion from the LM2 or Lm2 to I is a privileged root motion in the network, indicated by the arrow on the diagram. The second network, labeled the "E♭-oriented network," uses the privileged root motion from IV to I to establish the tonic.[50] Color notes are added to each of these chords, shown in the uppermost staff. IV frequently has an added sixth or ninth, while the tonic triad frequently has an added ninth and eleventh. The dissonances added to both triads are drawn from the notes of V, but there is little musical evidence to support bestowing a dominant function on them.

The song prompts listeners to shift from a B♭- to an E♭-oriented network in one of two ways: an A♭-major triad can change its function from LM2 to IV, or the B♭ tonic note itself, when sounding in isolation, can be reinterpreted as the upper fifth of a E♭-major tonic triad.

[50] The same progression is privileged in Copland's song "The Promise of Living" from *The Tender Land*. In fact, other than a brief passage of passing chords, "The Promise of Living" restricts itself to using the progression IV–I or its variant ii–I, and avoids the V triad entirely. In "J.S. Bach's Mixolydian Chorale Harmonizations," *Music Theory Spectrum* 15, no. 2 (Autumn, 1993): 144–172, Lori Burns surveys several theorists from the eighteenth century and concludes that IV–I is the characteristic progression of the Mixolydian mode. She examines the role of this IV–I progression in harmonic closes in J.S. Bach's chorale harmonizations (BWV 314 and 91). There is no evidence, as far as I know, for the specific influence of Bach's chorales on Copland's harmonic language, but they do suggest a way in which Mellers may have been more accurate than he realized when he described the song as "Mixolydian."

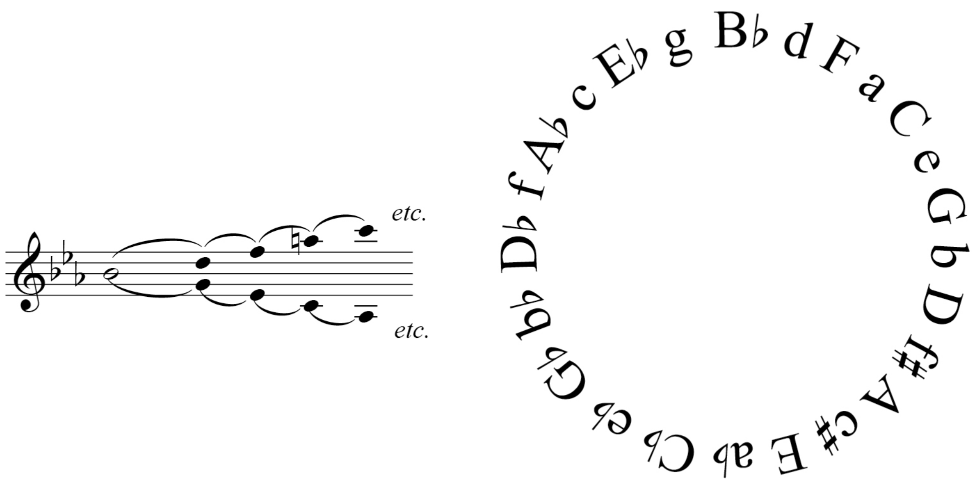

Figure 3.30. Copland, "Nature, the Gentlest Mother," alternating M3/m3 motive.

The song also features a pattern of pitches that influences how chords are presented and how the triadic networks interact. In its prototypical form, the pattern is defined by a series of alternating major and minor thirds proceeding either up or down from a central B♭4, as shown on the left in Figure 3.30. The voice and piano present the pattern in this form when the voice enters at m. 8 with the first line of text: "Nature, the gentlest mother, impatient of no child." The pattern also influences the relationship between the pitch-class content of different sections or chords. The right side of Figure 3.30 abstracts its prototypical form by realizing it in modulo 12 pitch-class space. It is an example of what Edward Gollin calls a *multi-aggregate interval cycle*, which he defines as a series built from two or more ordered generating intervals; the series states the chromatic aggregate more than once before repeating itself.[51] Upper and lower case letters show the two different intervals that generate the arrangement of pitches: notes that are a major third above the note to their left are in lower case, while notes that are a

[51] Edward Gollin, "Multi-Aggregate Cycles and Multi-Aggregate Serial Techniques in the Music of Béla Bartók," *Music Theory Spectrum* 29, no. 2 (Fall 2007): 143–176.

minor third above the note to their left are in upper case. A group of seven adjacent notes forms a diatonic collection.[52]

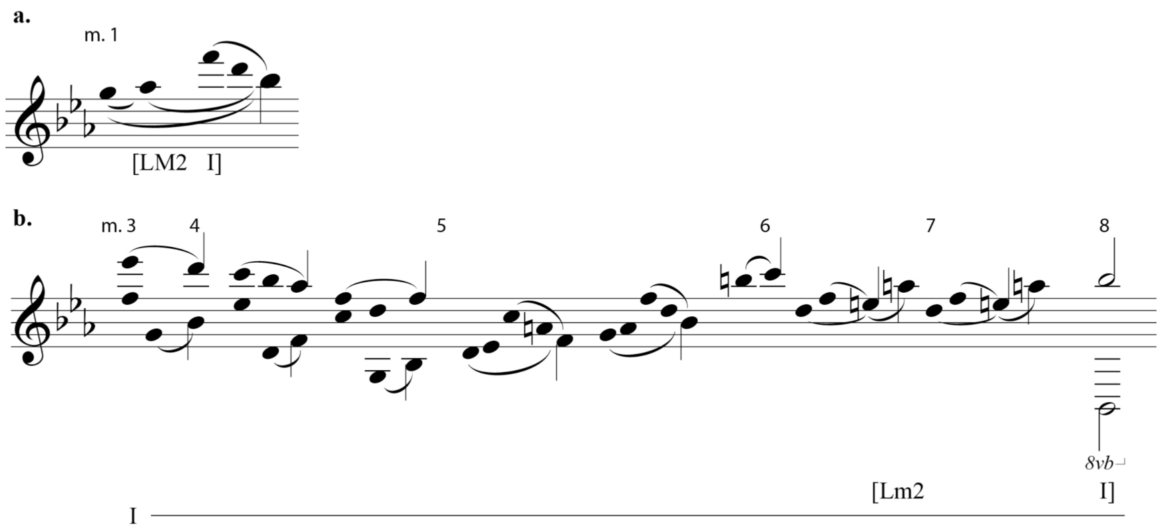

Figure 3.31. Copland, "Nature, the Gentlest Mother." a. Reduction of m. 1. b. Reduction of mm. 3–8.

The pattern of thirds emanating from a focal B♭ is established in the piano's opening birdcall-like gesture, reduced in Figure 3.31a above. The gesture consists of a stepwise motion from G5, a lower third, to a focal B♭5, indicated by the lower slurs, and an embellishment of B♭ by two upper thirds, indicated by the upper slurs. The line's initial stepwise motion also creates motion to B♭ by ascending whole tone, suggesting an LM2–I progression, shown in brackets underneath the score reduction. Figure 3.31b provides a reduction of the rest of the introduction (mm. 3–8). Notes that are of relatively long duration in the passage are given stems. Over mm. 3–5, the stemmed notes unfold the B♭/F dyad, representing the tonic and its upper fifth, over two octaves. In mm. 3–4,

[52] A seven-note subset of the M3/m3 cycle resembles the arrangement of pitches that Moritz Hauptmann used to define a key system in *The Nature of Harmony and Meter*, trans. and ed. by William Edward Heathcote (orig. pub. Leipzig, 1853; reprint, London, S. Sonnenschein, 1888).

the lower part embellishes the notes B♭4, F4, and B♭3 by lower third, shown by slurs, while the upper voices play upper tenths to these notes. At m. 5, the piano repeats and transposes the birdcall motive; its final notes restate F4 and B♭4. Over mm. 6–8, the piano plays an assortment of new birdcall-like gestures that emphasizes the notes A♮, C, and E♮, as shown by the stemmed notes in the reduction. Because the B♭/F dyad still sounds throughout the passage, these pitches can be interpreted as an added seventh, ninth, and eleventh to the B♭ tonic sonority, exemplifying "color notes," a type of dissonance described in Chapter 1. A half-step connection from A♮5 to B♭5 is also evident in the uppermost register over mm. 7–8, which suggests that the upper voices can also be heard as outlining an Lm2. The collection {A♮ C E♮} is functionally ambiguous over mm. 6–7—that is, it is unclear whether its notes are best heard as tonic or non-tonic functioning—but, as will be shown in Figure 3.33, it is related to the following section with regards to the pattern of alternating thirds defined in Figure 3.30. At m. 8, the piano restates the tonic pitch in a "tolling bell" gesture consisting of two pitches separated by four octaves, resolving any previous harmonic instability.

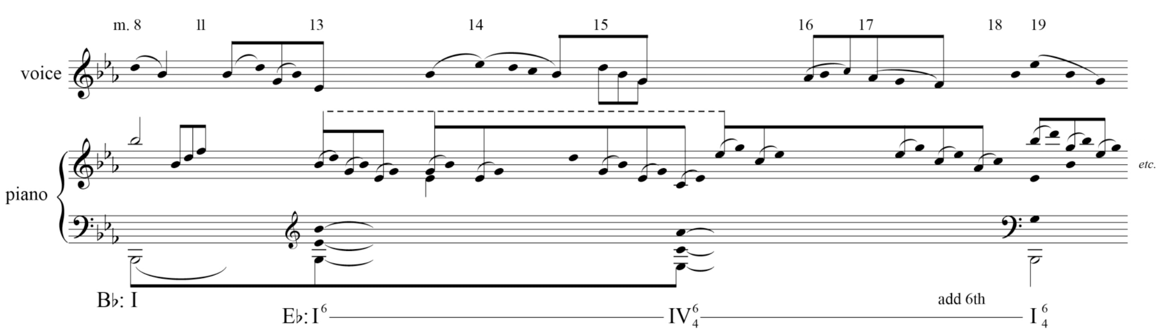

Figure 3.32. Copland, "Nature, the Gentlest Mother," reduction of mm. 8–19, showing intersection between motivic completion and common-practice harmonic implications.

Figure 3.32 shows a reduction of the vocal and piano parts in mm. 8–19. Much of the passage elaborates on the theme of alternating major and minor thirds from a focal B♭. Segments of this interval series are connected by beams. Over mm. 8–11, the vocal line alternates between B♭4 and its upper third, while the right hand of the piano arpeggiates from B♭ through D and F. These upward arpeggiations reverse in m. 11: the voice returns to its initial B♭4 and sings through a series of descending thirds. The piano's right hand imitates the descending-third series in m. 13. The reversal in direction gradually unfolds an E♭-major triad, and shifts listeners' focus from B♭ to E♭ as tonal center. The shift in tonic does not give the effect of a reinterpretation of the former as a dominant that then resolves to tonic, because the two tonic notes are different in nature. The B♭ tonic is represented primarily by a single pitch, while the E♭ tonic is consistently represented by triads. A B♭-major triad does occur in the piano part over mm. 8–11, but it is wispy in comparison to the long-held B♭ that sounds throughout. In addition, a $\hat{7}$–$\hat{1}$ leading-tone resolution, characteristic of a V–I progression, is lacking in the texture. The shift to an E♭ tonic has the effect of a reinterpretation of the previous tonic note as an upper fifth, similar to the reinterpretation of a focal pitch that occurred in *Lento Molto* (see, for example, Figure 3.8). The B♭-major triad that the piano arpeggiates in m. 8 can likewise be reinterpreted as a collection of added color notes; the piano's descending-third pattern that begins at m. 13 supports this hearing, since each note is also embellished by an upper third, including D.

The series of descending major and minor thirds continues through the rest of the section up to m. 18. In the upbeat to m. 14, the piano's right hand leaps to G♭4 and plays a figure that outlines two descending thirds. In m. 15, the piano's right-hand part leaps to E♭5 and plays another figure that outlines two descending thirds. A dotted beam connecting notes of the pianist's right hand shows that each time it leaps up to initiate a new series of descending thirds, its first note of the new series is a third lower than the first note of the preceding one; the larger-scale sequence spells out B♭–G–E♭, another segment from the descending-third series. Beams on the lower staff show that the bass part outlines the same segment from the series, but more slowly than the right-hand part. The arpeggiated patterns outline I–IV–I, as shown in the Roman numeral analysis beneath the score. At m. 17, the soprano descends to F; this becomes an added note to IV, and is also the final note within the descending series of thirds presented in the section. At m. 19, IV resolves to an E♭-major triad, reconfirming this key. The chord, however, coincides with a restatement of the tolling B♭ bells. This places the triad in second inversion, weakening its stability, and raises the possibility that the B♭-oriented network may re-assert itself.

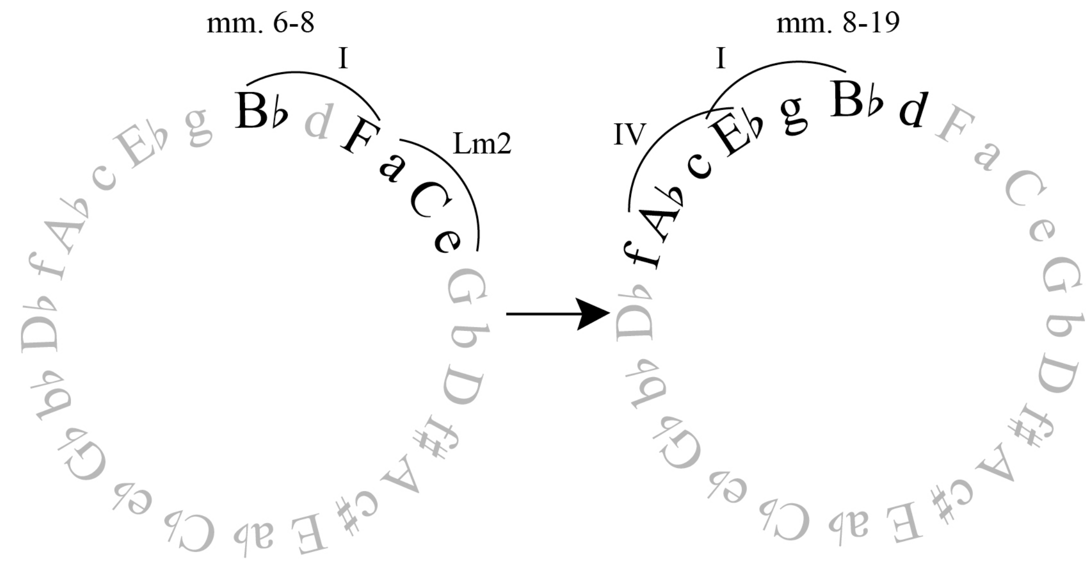

Figure 3.33. Copland, "Nature, the Gentlest Mother," large-scale completion of M3/m3 motive over mm. 6–19.

Figure 3.33 shows that the first two sections state a larger pattern of ascending and descending thirds in pitch class space. Measures 6–8, which present a B♭/F dyad followed by an A-minor triad, occupy the first six notes of the "clockwise" side of the cycle, except for D. I and the Lm2, the two chords used in the passage, occupy adjacent segments on the cycle. The descending arpeggiations that begin from B♭ in m. 11 occupy the first six notes of the "counterclockwise" side of the cycle. I and IV in the key of E♭, the two principal chords used in the passage, occupy two overlapping segments. The two remaining pitch classes in the cycle, D and F, function as added color notes to I and IV, respectively. The leftmost pitch on the cycle, F♮, is also the final note in the soprano's melody over mm. 17–18.

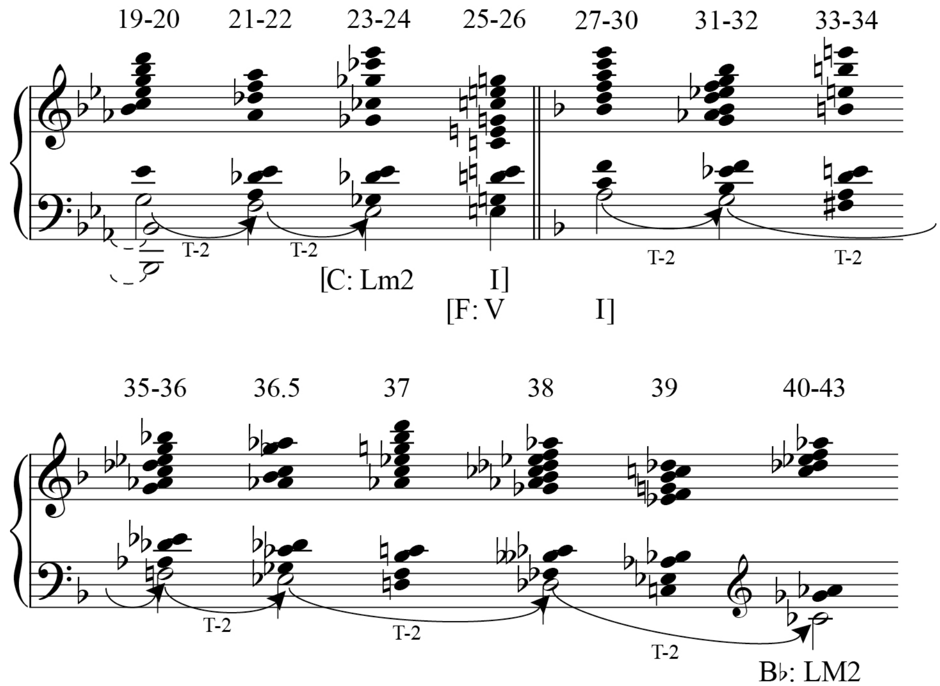

Figure 3.34. Copland, "Nature, the Gentlest Mother," reduction of mm. 19–43.

The middle section of the song, reduced in Figure 3.34, forms a large-scale sequence of transpositions down by whole step.[53] After its bass line makes a complete statement of the whole-tone collection, the section concludes by re-orienting the work toward B♭. The passage begins in E♭ at m. 19. As the low B♭s presented at m. 19 fade, the G3 in a higher register emerges as the bass note, forming a triad in first inversion. The next two harmonies, which occur over mm. 21–22 and 23–24, follow a series of parallel first-inversion triads; each is a whole step lower than the previous. The upper parts in the piano add several color notes to each of these triads, stated through birdcalls reminiscent of the opening and other rapid figures. Their pitches are verticalized in the

[53] This sequence is also discussed in Chapter 1. Because it proceeds by descending, rather than ascending, whole step, it does not represent privileged root motion.

reduction above. The variety of melodic profiles achieved provides an apt representation of the diversity of life cared for by nature described in the poem's text:

> In forest and the hill
> By traveller be heard,
> Restraining rampant squirrel
> Or too impetuous bird.
>
> . . .
>
> Her voice among the aisles
> Incite the timid prayer
> Of the minutest cricket,
> The most unworthy flower.

In mm. 23–26, the transpositional sequence is broken as a first-inversion C♭-major triad proceeds to a first-inversion C-major triad. The harmonic analysis beneath the reduction shows transient modulations through C and F major indicated by the break in sequence. Larry Starr suggests that the F-major section marks the start of the "B" section of the song, which he reads as a large-scale ternary form.[54] While the introduction of new melodic motives in the vocal part does suggest the onset of a new section, the F-major triad at m. 27 also fits within the pattern of whole-step related triads begun at m. 19. Thus, the overall effect of the sectional boundary presented over mm. 25–26 is to provide a brief delay in an otherwise unrelenting sequential descent that spans both sections. The form, in other words, shows discrepancies between its harmonic and thematic boundaries.[55] In the second half of the passage, several chromatic passing

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[54] Larry Starr, *The Dickinson Songs of Aaron Copland*, 56–57.

[55] Peter H. Smith labels such discrepancies "dimensional counterpoint" in *Expressive Forms in Brahms's Instrumental Music: Structure and Expression in His* Werther *Quartet* (Bloomington: Indiana University Press, 2005), 31–65.

chords subdivide members of the sequence; these occur in the second half of m. 36 and m. 39 and are shown in black noteheads. The sequence ends at m. 40 with a thick chord that has C♭ in its bass. The harmonic context of the passage suggests that the chord is most easily heard as a first-inversion A♭-minor triad—that is, an LM2—with several added notes.

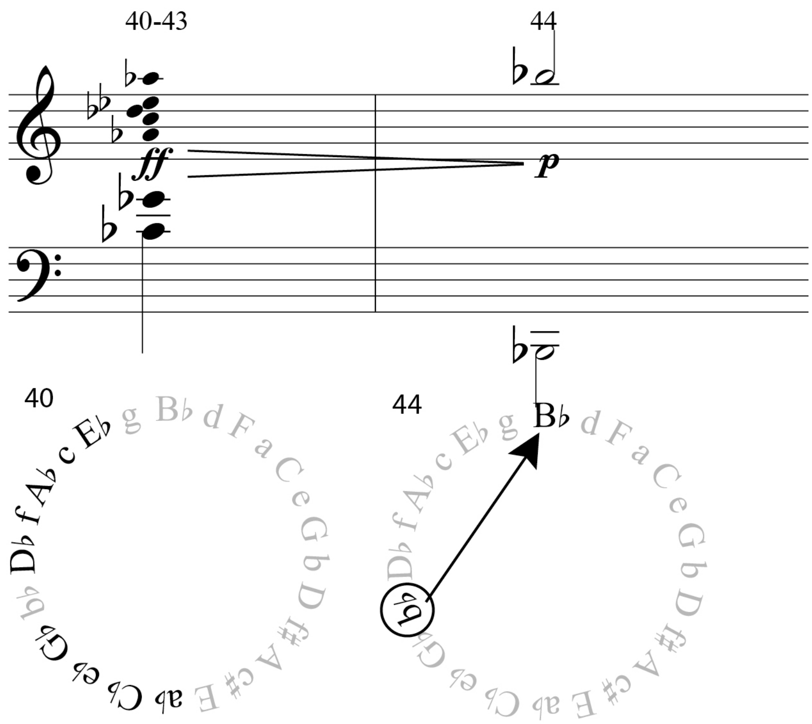

Figure 3.35. Copland, "Nature, the Gentlest Mother," reduction and motivic analysis of climactic passage.

Unlike nearly all of the vertical sonorities that appear in the song, the notes added to the LM2 at m. 40 are *not* drawn from a single diatonic collection. They create a vivid and unique color and easily lend themselves expressive interpretation. One might infer, for example, that a single diatonic collection is no longer large enough to contain either the diversity of creatures cared for by nature or the poet's sense of wonder.[56]

Figure 3.35 shows how the added notes interact with the motive of alternating major and minor thirds established at the opening. The entire chord occupies a wide region of notes around a focal pitch b♭ on the multi-aggregate cycle. Over mm. 6–19, each side of the cycle is filled alternately; the chord at m. 40, by contrast, verticalizes the process to occupy both sides simultaneously. The focal pitch itself, crucially, is missing from the chord in m. 40. It reappears in m. 44 through another statement of the "tolling bell" motto, thus completing the region within the multi-aggregate cycle. The B♭ occupies a different location in the multi-aggregate cycle, but thanks to equal temperament, when it appears it is reinterpreted as the top note on the cycle, allowing for the following passage to return to the pitch collections that were characteristic of the opening.

The conclusion of "Nature, the Gentlest Mother" re-establishes E♭ as the tonic and, in a single measure, summarizes the shifts in orientation that occurred throughout the song. Figure 3.36 shows a reduction and analysis. In mm. 60 and 62, the piano plays E♭ and A♭ major triads in first inversion, suggesting the beginning of a I–IV–I progression that will affirm E♭ as the tonic. Before this progression can be completed, the piano plays a final tolling B♭ in m. 64, while the voice sings D and B♭. This measure is highlighted in

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[56] In "Copland, Dickinson, and the Noise in the Pool at Noon," Wilfrid Mellers makes an intertextual interpretation of the passage: since the chord has a trill in both hands, he finds a connection to similar "multiple trills that may be seraphic" in the late piano music of Beethoven (9). Most likely he is referring to the final variation in the last movement of Op. 109.

the above reduction: for its duration, the harmonic grouping of the passage is ambiguous. It is possible to reinterpret the previous IV as an LM2, which then resolves to a B♭ tonic; the previous appearances of the B♭ also make it possible to interpret it as the upper fifth of a triad that has not yet been fully presented. From one viewpoint the B♭ is final, and from another it is incomplete: this contradiction gives the effect of temporarily annulling any sense of tension and release and thus suspending harmonic motion. The voice sings the word “silence” at this point—the full line is “Her golden finger on her lip / Wills silence everywhere”—and the deadlock between the two triadic networks indeed suggests a temporary point of absolute stillness.

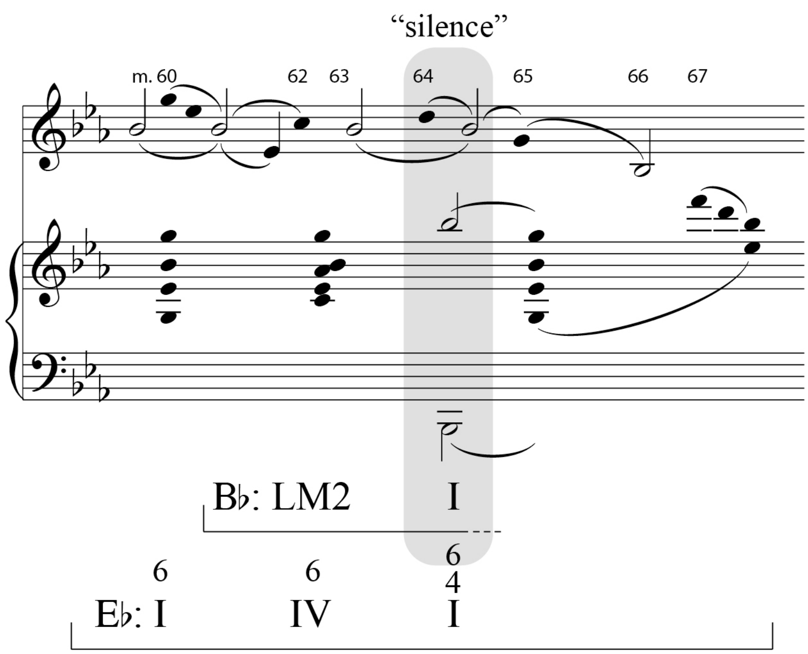

Figure 3.36. Copland, “Nature, the Gentlest Mother,” reduction and analysis of conclusion (mm. 60–67).

In m. 65 this ambiguity gives way to a statement of an E♭-major triad, cuing listeners to re-orient their focus to the E♭-oriented network. The ambiguity of the previous measure is not entirely banished, however: B♭ remains the lowest note in the piano texture, which weakens the stability of the tonic triad. The final four measures of the song also recall the motive of alternating major and minor thirds from the central pitch of B♭. The voice part is exclusively build from B♭, the focal pitch, and D and G, its upper and lower third, while the piano's E♭- and B♭-major triads are built from the focal pitch and two lower or upper thirds.

"Nature, the Gentlest Mother," written during the same year Copland began using what was for him a new technique of twelve-note serialism, represents a summation of his use of the orientational axis. The two closing progressions in this song are fully integrated into its motivic construction, and the song invites listeners to shift their orientation from one progression to another, creating a dialectic between two different tonics. This dialectic goes beyond mere changes in key. Each tonic privileges its own system of pitch relationships and organizes the other events in the movement differently. Describing the directional tonality of Chopin's Ballade no. 2, op. 38, Kevin Korsyn states that "because the second key asserts a genuine resistance to the authority of the first, tonality is stratified rather than limited to a single plane. . . . A tension remains between [the two tonics], so that otherness and difference are acknowledged."[57] A similar tension occurs in "Nature, the Gentlest Mother," and the song also acknowledges difference: the hymn-like passages of text setting, combined with modernist construction, highlights the gap between Dickinson's century and Copland's. Unlike Chopin's ballade, the shifts

[57] Kevin Korsyn, "Directional Tonality and Intertextuality: Brahms's Quintet op. 88 and Chopin's Ballade op. 38," in *The Second Practice of Nineteenth-Century Tonality*, ed. William Kinderman and Harald Krebs (Lincoln: University of Nebraska Press, 1996), 59–60.

between the two tonics are subtle and gentle, much like Nature personified in the poem's text.

5. Conclusion

Chapter 1 defined changes in privileged root motion and voice-leading structures as a means of creating variant closing progressions. In Copland's music, these progressions are often used to create a duality between two fifth-related tonics. The tonal tension that results, however, does not so much result from tonal assertiveness, but a fragility of tonal orientation: the closing progressions are stripped down to the point where they easily yield to the influence of another tonic.

Chapter 4

Open or Closed? Functional Ambiguity in Poulenc's Major-third Cycles of Minor Triads

1. Introduction

In a 1942 letter to musicologist André Schaeffner, Poulenc stated that he wanted to make a place for music that "uses other people's chords."[1] It was not a coincidence that he was concerned about his legacy at this time: the two had discussed a book project, and the idea likely put Poulenc in a self-reflective mood. In addition, Schoenberg's twelve-tone serial technique had increased in notoriety in the previous decade. While Poulenc was interested in Schoenberg's music, he likely believed that if it gained hegemonic influence he was in danger of being perceived as stylistically irrelevant, leading him to justify his musical aesthetic in part out of instinct for self-preservation.[2] He made similar aesthetic justification in an earlier article from 1935 entitled "Eloge de la banalité [In praise of banality]." In this article, he praised composers who "assembled

[1] The full quote reads:

> I am well aware that I am not the kind of musician who makes harmonic innovations, like Igor, Ravel, or Debussy, but I do think there is a place for *new* music that is content with using other people's chords. Was this not the case with Mozart and with Schubert? And in any case, with time, the personality of my harmonic style will become evident.

Source: letter, Francis Poulenc to André Schaeffner, Noizay, 1942. From *Francis Poulenc: Selected Correspondence 1915–1963*, trans. and ed. Sidney Buckland (London: Victor Gollancz, Ltd., 1991), 130.

[2] Poulenc made a few small experiments with 12-note serialism in a handful of pieces, *Thème variée* (1951) for piano and *Elégie* (1957) for horn and piano, but these works are not representative of his larger output.

already known elements in a new order . . . [such as] Haydn, Schubert, Liszt, and above all, Mozart." He then repudiated newness for its own sake:

> . . . To be frightened of the *déjà entendu* [already heard] is most often a proof of impotence. For a long time now I have made it my cause to treat unusual harmonies and common cadences the same way . . . I extol banality . . . if it is intentional, keenly felt, full-blooded, and not a mere proof of deficiency.[3]

Poulenc's comments to Schaeffner represent a staking out of aesthetic turf: he wished to be remembered for the expressive potential that he drew out of the combination of musical traditions, including tonality, and innovative harmony. This chapter will explore one of these means of expression that frequently appeared in his post-1936 work, namely, *functional ambiguity*, defined as the ability of a chord or note to take several possible meanings within a progression.

Poulenc's self-description as a composer who "uses other people's chords" is in some respects overly self-deprecating: Keith Daniel's detailed analysis of Poulenc's style shows that the composer had characteristic ways of voicing harmonies and adding melodic embellishment that were his alone.[4] In other respects, it is accurate: Poulenc's basic harmonic language was triadic, after all, and his knack for musical pastiche allowed

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[3] Poulenc's article originally appeared in *Présence* 3, no. 8 (October 1935): 125–127. The passages are quoted from Robert Orledge, "Poulenc and Koechlin: 58 Lessons and a Friendship," in *Francis Poulenc: Music, Art and Literature*, ed. Sidney Buckland and Myriam Chimènes (Brookfield, VT: Ashgate, 1999), 32–33.

[4] Keith Daniel, *Francis Poulenc: His Artistic Development and Musical Style* (Ann Arbor, MI: UMI Research Press, 1982), 77–91.

him to express himself through reference to other styles. Jane Fulcher suggests that the eighteenth century was not a foreign "other" for Poulenc, but was instead part of his own identity. She suggests that his fusion of past musical forms and gestures with modern techniques and elements of popular music allowed him to explore conflicting facets of his own identity. (In the 1920s and 1930s, these conflicts included his alignment with a socially liberal group *Les Six* versus his upper-bourgeois background, societal heteronormativity versus his homosexuality, and his alignment with Cocteau's pro-French aesthetic versus his friendship with the Second Viennese composers.[5])

In 1936, three events in Poulenc's life allowed his musical ideas to coalesce around a new set of expressive and political values. The first was his disaffection with the new Popular Front government, leading to a cooling of his relationship with *Les Six*, a turn toward private patronage, and an alignment with other composers who expressed conservative republican values. The second was his rediscovery of the Catholic faith from his childhood during his trip to the shrine at Rocamadour, which he undertook in response to the news of the death of his friend Pierre-Octave Ferroud.[6] The third was his discovery of surrealist poetry, whose rich and sensuous imagery led to a new romantically tinged style in his composition.[7] This year also roughly marks a point where Poulenc's style arguably reached its maturity. Keith Daniel argues that by this

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[5] Jane Fulcher, *The Composer as Intellectual: Music and Ideology in France 1914–1940* (New York: Oxford University Press, 2005), 188–191.

[6] Poulenc describes this trip in detail in an interview with Claude Rostand. It is quoted in Carl B. Schmidt, *Entrancing Muse: A Documented Biography of Francis Poulenc, His Artistic Development and Musical Style* (Hillsdale, New York: Pendragon, 2001), 231–232.

[7] Jane Fulcher, *The Composer as Intellectual*, 259–261 and 264–265.

time, Poulenc's use of dissonance became more "serious" and autonomous, and was no longer of the "wrong-note" type that could easily be detached from a conventional tonal structure.[8] A "romantic coloring" also began to be in evidence in his music at this time, characterized superficially by more sustained lyricism and an increased use of romantic devices such as rolled chords, *tempo rubato*, and compound meter.[9] Major-third cycles of triads, redolent of romanticism, became a recurring device in several of his compositions.

Two types of functional ambiguity recur frequently in music from this stylistic period. The first concerns whether a note is an *essential* or *non-essential* dissonance. Essential and non-essential dissonances were discussed in Chapter 1 of this dissertation. A non-essential dissonance results from surface embellishment of a chordal framework through passing motion, neighboring motion, or rhythmic displacement, yet has no influence on a chord's function, while an essential dissonance is added to the chord to mark it with a particular function.[10] Poulenc's mature music often finds subtle means of cuing transformations in the status of particular notes. For example, the pitch-classes C♯ and F♯ were transformed from non-essential to essential dissonance in the Clarinet Sonata, as described in Chapter 1 of this dissertation. The second type of ambiguity concerns whether a major-third root relation is privileged or not; that is, whether it is *key-defining*, or whether it serves some other function, such as dominant preparation or

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[8] Ibid., 89.
[9] Keith Daniel, *Francis Poulenc: His Artistic Development and Musical Style* (Ann Arbor, MI: UMI Research Press, 1982), 97–98.
[10] See Chapter 1, Figure 1.21 ff.

forming part of a sequence.

This second type of ambiguity will be a focal issue in the following three sections. The first identifies how major-third related triads are typically placed into sequences in Poulenc's music and examines two examples. The second discusses how major-third related triads can also be involved in key-defining progressions. It then examines two songs where major-third progressions serve *both* a sequential and key-defining function. The third argues that in the first and final movements of Poulenc's *Stabat Mater*, a single progression simultaneously projects closure and non-closure. In addition, the last three movements create ambiguity about the function of a note added to the tonic triad.

2. Sequential Major-third Progressions

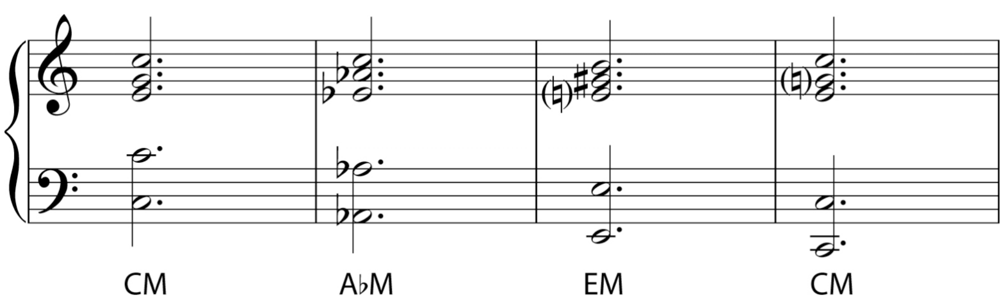

Figure 4.1. Progression of ic4-related triads.

Many studies of nineteenth-century tonality stress the sequential nature of progressions of ic4-related triads, such as the one shown in Figure 4.1. Gregory Proctor's theory of chromatic tonality, for example, removes the progression from diatonic harmony and instead locates a chromatic operation—symmetrical division—that governs the succession of chords. Symmetrical division represents a break with a diatonic structural background, although it often refers to some deeper diatonic source.[11] Richard Cohn's "maximally smooth" hexatonic cycle also models the progression; this system is born out of the observation that there is a small group of set classes that can move to transposed or inverted versions of themselves via parsimonious voice leading. The diatonic and pentatonic collections are two members of this elite club, as are the major or minor triad (set class [037]) and its complement.[12] A full cycle through set class [037] (equivalent to repeated application of the L and P neo-Riemannian operations), yields a hexatonic system of six triads.[13] Cohn's theory shows how the progression traverses through the hexatonic cycle; as such it locates its musical function primarily within its voice leading, rather than within harmonic function.

James Baker's analysis of Franz Liszt's late piano works traces arpeggiations through augmented triads at middleground structural levels. The arpeggiations bear a strong resemblance to those uncovered by Schenkerian analysis, with the distinction that they prolong a dissonant harmony that makes an equal division of the octave.[14] The

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[11] Gregory Proctor, "Technical Bases of Nineteenth-Century Chromatic Tonality: A Study in Chromaticism" (Ph.D. dissertation, Princeton University, 1978), 149–158. Closely related to symmetrical division is the "transposition" operation, which resembles the symmetrical division but involves all parts moving in parallel motion, rather than in counterpoint (159–170). Proctor points out that Schenker himself analyzed a symmetrical division by major thirds through an octave in his analysis of the development section of Beethoven's *Appassionata* Sonata, op. 59, first movement.

[12] Richard Cohn, "Maximally Smooth Cycles, Hexatonic Systems, and the Analysis of Late-Romantic Triadic Progressions," *Music Analysis* 15, no. 1 (March 1996): 15–17. "Maximal smoothness" between two pitch-class sets is defined formally as fulfilling the condition that the sets are of the same cardinality, and the intersection of the two sets is a member of set-class [01]. In other words, moving from one pitch-class set to the other can be achieved by displacing only one member by semitone.

[13] Richard Cohn, "Maximally Smooth Cycles," 17.

[14] James Baker, "The Limits of Tonality in Late Liszt," *Journal of Music Theory* 34: 2 (Autumn 1990): 145–173.

registral distribution of the notes of the augmented triad, combined with the surrounding context, often allow a single member to assert itself as a functional root, giving the arpeggiation a prolongational function, most often of the dominant harmony.[15] In Baker's analyses, triads separated by major third do not themselves create a harmonic progression, although they can be shown to prolong a deeper-level harmony that does. In a similar manner, David Forrest argues that completion of interval cycles that complete the octave is a means of prolongation in post-tonal music.[16]

[15] Ibid. "En rêve," for example, arpeggiates through an augmented dominant chord during a phrase interpolation (146–147); the first Trauer-Gondel begins with an extended downward arpeggiation through the C augmented triad, which is repeated a whole step lower, and then resolves to F, confirming its original dominant function. In "Third-Relations as Structural Elements in Book II of Liszt's *Années de Pèlerinage* and Three Later Works" (Ph.D. dissertation, University of Michigan, 1984), Howard Cinnamon also uncovers several examples of middleground bass arpeggiation by major thirds. He labels the examples as instances of Proctor's "equal-octave division" operation, and also states that when the arpeggiations do not follow the simple transposition operation, they allow for the establishment of tonal hierarchy among their elements (155). The examples of major-third arpeggiations that Cinnamon cites nearly all show prolongation of the tonic harmony (158–187).

[16] David Forrest, "Prolongation in the Choral Music of Benjamin Britten," *Music Theory Spectrum* 32, no. 1 (Spring 2010): 1–25.

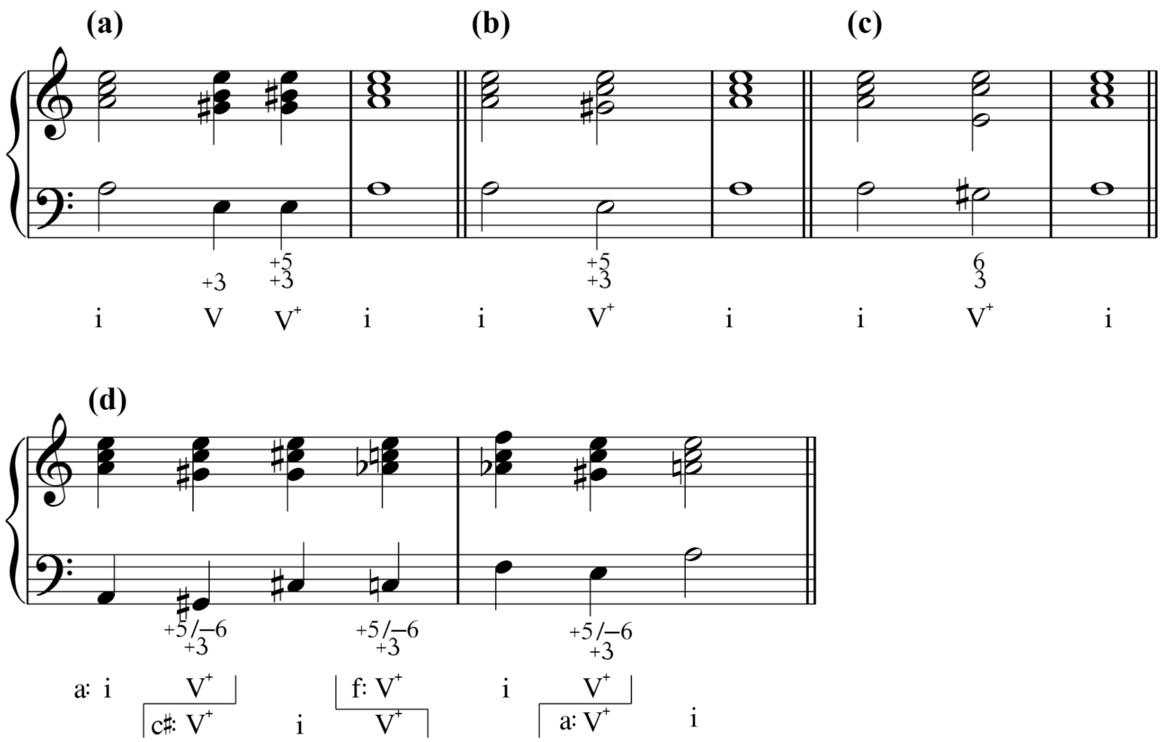

Figure 4.2. Conceptual origin of major-third sequence.

Poulenc's music often uses major-third related triads to create chromatic sequences that are embedded into other harmonic progressions. A common source of major-third progressions of minor triads in Poulenc's music is the modulating sequence, whose conceptual origin is shown in Figure 4.2. Characteristic chords in Poulenc's harmonic vocabulary make the sequence possible; they even make it facile. Chromatically altered dominants that are subsets of the whole-tone collection frequently occur in his music; parts (a) through (c) of Figure 4.2 show how they are generated. In common practice harmony, the fifth of a dominant triad can be raised to form a chromatic passing note, as shown at (a). In (b), the chromatic passing note supplants the original diatonic note, forming an augmented dominant triad. Finally, in (c), the chordal seventh and chromatically lowered fifth are also added to form a whole-tone subset.[17] Because the augmented triad is ambiguous as to its root, it can easily resolve to a minor triad whose root lies a major third away, creating the sequence shown at (d). The manifold resolutions of the dominant-functioning augmented triad provide an example of the triad's *Mehrdeutigkeit* or "plural meanings," a feature noted by several theorists from the late eighteenth and early nineteenth century.[18] Nineteenth-century composers, beginning with Liszt, were especially interested in the potential of an augmented triad within a tonal context, so that Poulenc's use of the major-third modulating sequence is redolent of romantic-period tonality.[19] Unlike romantic-period composers, Poulenc favors the minor-key version of the sequence, which creates voice leading that is particularly smooth—maximally so, according to Cohn's definition.

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[17] The whole-tone collection frequently has a dominant function. Schoenberg was one of the first theorists to note this harmonic tendency.

[18] Abbé Georg Joseph Vogler is cited as the first theorist to identify this feature of the augmented triad. He uses the term *Mehrdeutigkeit* in an essay from 1780. In *Handbuch zur Harmonielehre und für den Generalbass nach den Grundsätzen der Mannheimer Tonschule* (Prague: 1802), he describes two types; the first involves enharmonic reinterpretation of augmented, diminished, and augmented sixth chords, while the second involves diatonic modulation. Discussions of Vogler can be found in Janna Saslaw, "Gottfried Weber and Multiple Meaning," *Theoria* 5 (1990–1991): 76–77; and Robert W. Wason, *Viennese Harmonic Theory from Albrechtsberger to Schenker and Schoenberg* (Ann Arbor: UMI Research Press, 1982), 14–15. I am grateful to Haley Beverburg Reale for pointing out to me Vogler's research into the augmented triad. Gottfried Weber discusses the same type of *Mehrdeutigkeit* in *Versuch einer geordneten Theorie der Tonsetzkunt* (1817) and extends the concept beyond harmony (Janna Saslaw, "Gottfried Weber and Multiple Meaning," 74–89). According to R. Larry Todd, Carl Weitzmann was the first theorist to create an augmented triad built on $\flat\hat{6}$ in major, as well as $\hat{3}$ in minor, and showed how the triad could resolve to a greater variety of keys ("Franz Liszt, Carl Friedrich Weitzmann, and the Augmented Triad," in William Kinderman and Harald Krebs, eds., *The Second Practice of Harmonic Tonality* [Lincoln: University of Nebraska Press, 1996], 153–173).

[19] R. Larry Todd, "The 'Unwelcome Guest' Regaled: Franz Liszt and the Augmented Triad," *19th-Century Music* 12, no. 2 (Autumn, 1988): 93–115.

- "Tu vois le feu du soir" (1938), mm. 50–58 [in descending form]
- "De tous les printemps du monde . . ." from *Figure Humaine* (1943), reh. 1–5 [different strategies used for modulation]
- "Montparnasse," mm. 13–18 (1945) [in descending form]
- Sonata for Violoncello and Piano (1948), second movement [in descending form]
- *Stabat Mater* (1950–1951):
  –"Stabat Mater Dolorosa," rehearsal 1 to rehearsal 3
  –"Quis Est Homo," five measures after rehearsal 25 to one measure after rehearsal 26
  –"Vidit suum," three measures after rehearsal 30 to rehearsal 31, and conclusion of movement
- Sonata for Two Pianos (1953), first movement, rehearsal 5 to rehearsal 7
- *Le travail du peintre* (1956):
  –"Pablo Picasso"
  –"Juan Gris"
- Improvisation no. 13 (1958)
- *Gloria*, "Domine Deus, Agnus Dei," three measures to two measures before rehearsal 36 (1961) [two keys only]
- Oboe Sonata, third movement (1962)

Figure 4.3. Examples of sequential modulation through major-third related minor keys.

The major-third modulating sequence shown in Figure 4.2d appears in many of Poulenc's compositions; Figure 4.3 provides a list of examples. The opening of the Improvisation no. 13 (1958) for solo piano is characteristic. The sequence in this movement is incorporated into a diatonic structure, but the movement *thematizes* major-third related minor triads at several levels of hierarchy, giving the sequence significant expressive and motivic weight, even though it disappears in background levels.

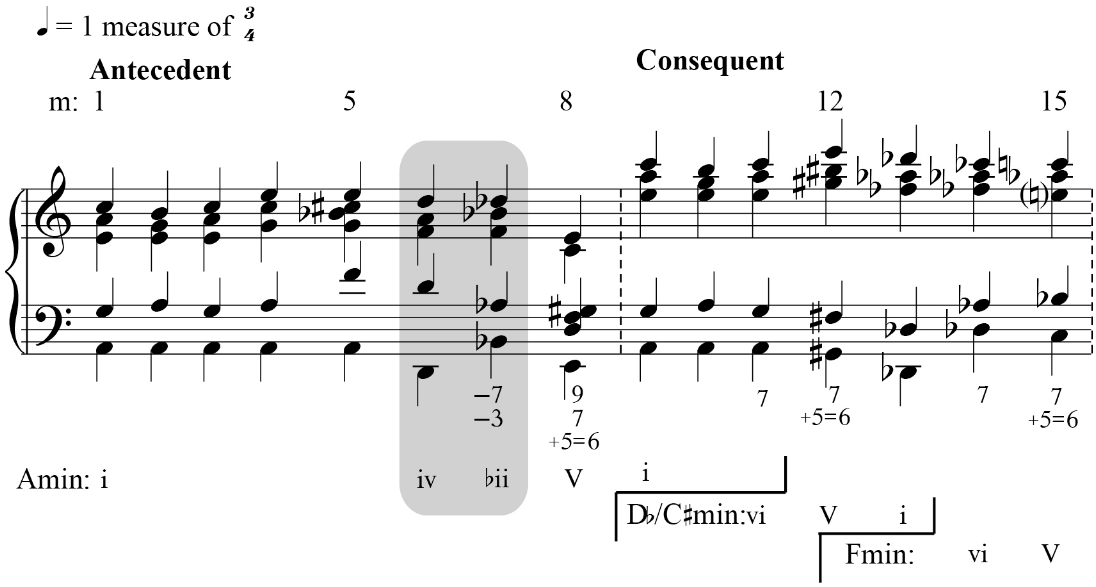

Figure 4.4. Poulenc, Improvisation no. 13 (1958), rythmic reduction of mm. 1–15.

A rhythmic reduction of the first fifteen measures is shown in Figure 4.4. Since the improvisation maintains a harmonic rhythm of one chord change per measure nearly throughout, each measure is represented as a quarter note. Although the piece contains several rich harmonies, they can all be explained as extended tertian constructions. The harmonic analysis employs a modified figured bass notation: the Arabic numerals indicate intervals above the bass note. The + and – signs indicate raising or lowering a particular interval *within the context of the current key*. (This analytical notation is more practical and informative in a musical language that modulates frequently, and it quickly reveals similarities between altered members of chords in different keys.[20])

The passage divides into an antecedent and modulating consequent phrase. The antecedent phrase leads from iv to a chromatically altered "Neapolitan" ♭ii in m. 7. The

[20] This notational system is an adaptation of one used by Richard B. Bobbitt in his stylistic study of *Les Six* composers. Bobbitt outlines this system in "The Harmonic Idiom in the Works of 'Les Six'" (Ph.D. dissertation, Boston University Graduate School, 1963), 9–14.

minor Neapolitan is the first example of a modally flipped version of a common-practice chord that serves as dominant preparation, a recurring conceit in the work. In addition, it creates a direct progression from D minor to B♭ minor (highlighted in Figure 4.4), representing the first succession of major-third related minor triads. The dominant-functioning ninth chord that follows has a raised fifth (B♯) that is respelled as C to become a sixth above the bass note; this is indicated in the figured-bass analysis as "+5=6."

The consequent phrase begins identically to the antecedent (with the exception that the right hand is an octave higher), and then spirals into a series of sequential modulations that leads to another half cadence, forestalling a sense of formal or tonal closure. The first modulation moves from A minor to C♯ minor. The unusual chords introduced in the antecedent allow for a smooth transition between these keys. In m. 11, the tonic A minor is reinterpreted as minor vi, the modally flipped version of major VI, in the key of C♯ minor. This chord leads another dominant with raised fifth in m. 12. The minor vi shares two common notes with the altered dominant—C, which is subsequently reinterpreted as a B♯, and E—which creates a highly smooth progression, in spite of the far-reaching modulation it achieves. (The use of a minor chord as a pivot proves crucial in this regard, since the A minor contains C, which has a common-note connection to the dominant of the new key, rather than C♯.) An identical harmonic pivot leads from the key of C♯ minor to F minor in mm. 14–15.

The interior theme of the Improvisation is in the relative major and uses new melodic material, but its harmonic progressions make several allusions to those used in the work's opening section. It creates a dominant arrival in the key of C major via a German $^6_5$ (m. 37), repeating the $\flat\hat{6}$–$\hat{5}$ bass motion that allowed many of the modulations in the first section. It then converts the C-major tonic triad into another German $^6_5$ to create a dominant arrival in the key of E major (m. 39), which is reinterpreted as V in the following retransition section. These two progressions create major-third relations between the initial C-major triad and augmented-sixth chord built on A♭ in m. 37, and between the initial triad and E-major triad that begins the retransition. These chords fulfill different functions and do not all operate at the same levels of tonal hierarchy, but at the surface they create another cycle of major thirds.[21]

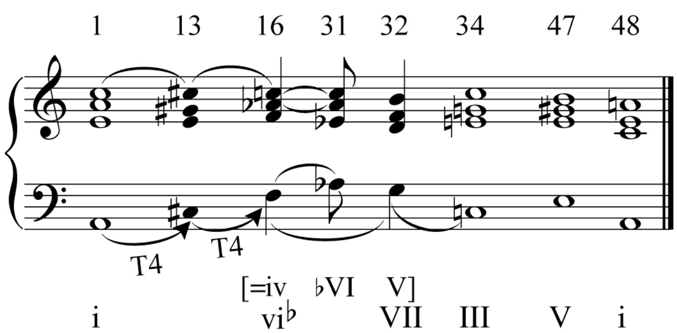

Figure 4.5. Poulenc, Improvisation no. 13, background reduction.

Figure 4.5 shows a background sketch of the entire work. The sequential modulations here reduce to two T4 operations (that is, pitch-class transposition up four semitones), which effectively create passing motion to connect the opening A-minor triad

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[21] Matthew Bribitzer-Stull uses the term "event-stream" to describe associations between events at the musical surface in "The A♭-C-E Complex: The Origin and Function of Chromatic Major Third Collections in Nineteenth-Century Music," *Music Theory Spectrum* 28, no. 2 (Fall 2006): 167–190. The repetition of [048] can also be represented as a non-functional pitch-class motive, as defined in Deborah Rifkin's "A Theory of Motives for Prokofiev's Music," *Music Theory Spectrum* 26, no. 2 (Autumn, 2004): 271–273.

to the F-minor triad at m. 16, another modally flipped submediant. This harmony is then recruited into a modulation to III, which acts as the intermediary goal in a larger-scale I–III–V bass arpeggiation.

"Juan Gris," the fourth song from Poulenc's 1956 song cycle *Le travail du peintre*, also makes a series of sequential modulations through A, C♯, and F minor; unlike the Improvisation no. 13, the series is not integrated into a diatonic structural background.[22] A harmonic reduction is shown in Figure 4.6. The first modulation is achieved at m. 9. The bass descends by half step from the tonic to the leading tone, while the upper voices form a chromatically inflected dominant triad that is a subset of the whole tone collection. This chord is reinterpreted as a root-position dominant in C♯ minor. The following three modulations at mm. 12, 19, and 25 are all achieved through chromatically inflecting the tonic triad to become a German $^{6}_{5}$ chord in the new key. The progression from German $^{6}_{5}$ to V is given slight variation at each appearance: the V is missing a third at m. 15, and the German $^{6}_{5}$ has an added ninth at m. 19. This variety in surface detail helps compensate for the relentlessly sequential nature of the song. The melodic material follows a ternary ABA form, as shown by the letters above the score in

[22] Poulenc said of this song, "I have a liking for this song. . . . [It is] serious and poignantly melancholy. The pedal plays a key role here." (Francis Poulenc, *Diary of My Songs [Journal de mes mélodies]*, trans. Winifred Radford [London: Victor Gollancz, 1989], 103). Many of the examples discussed in this chapter feature a slow tempo and wide-spaced piano sonorities that make extensive use of the pedal. Others are also given titles that suggest a specifically melancholy aspect, such as "Deploration." It may be that modulation through major-third related minor keys, which first appeared in his mid-career, began to carry specific topical associations of melancholy or grief in his late music. In "Individualism and Accessibility: The Moderate Mainstream," in *The Cambridge History of Twentieth-Century Music*, ed. Nicholas Cook and Anthony Pople (Cambridge: Cambridge University Press, 2004), 374, Arnold Whittall also claims that "the topos of lament looms large" in Poulenc's post-war music.

Figure 4.6. The first and last keys are given slight emphasis through their own relatively weak internal cadential progressions. The initial key of A minor receives a diatonic iv-v-i progression, without a raised leading tone, over mm. 5–7. The final key of C♯ minor receives a iv–vii^{o7}–i progression over a tonic pedal in mm. 30–34. The ABA form with internal cadential progressions gives the appearance of formal completion to the song, but the harmonic organization is far from complete and self-contained.[23] The modulations follow a chromatic sequence of pitch-class transpositions up by ic4, and the dotted lines at the beginning and end of the song in the above diagram suggest that the cycle has no theoretical starting or stopping point. In theory, it extends indefinitely.[24]

[23] Poulenc also used an ABA form in order to highlight rhythmic similarities between specific lines of Éluard's poem. In *Diary of My Songs*, he points out the similarity between the lines "De jour merci, de nuit prends garde" and "Deux fois le jour, deux fois la nuit." These two lines are set to the same melodic line and mark the beginning of each A section. He also points out the similarity between "Table guitare et verre vide" and "Table devait se soutenir," two lines which receive identical melodic lines characteristic of the B section (102–103).

[24] Charles Rosen, *The Romantic Generation* (Cambridge, MA: Harvard University Press, 1995), 41–112.

Figure 4.6. Poulenc, "Juan Gris" (1956), harmonic reduction.

In suggesting both openness and closure, this song evokes the romantic concept of the "fragment," a formal ideal that suggests both completion and being torn from a larger whole and influenced early romantic song cycles and collections. As a composer of song cycles and devotee of Schumann and other romantic composers, Poulenc was likely influenced by this concept, although he found his own means of indicating openness and closure.[25]

In the two examples cited, progression by major third is *non*-privileged; that is, it does not create harmonic closure. Other progressions in Poulenc's music, by contrast, suggest a transformation of harmonic syntax so that major-third relations, rather than fifth relations, become the means of creating a harmonic progression. As such, they have the potential to create harmonic closure. The following section examines a handful of cases.

3. Privileged Major-third Relations

Some theorists, in contradistinction to those discussed in the previous section, identify a *key-defining* potential within the CM–A♭M–EM–CM progression shown in Figure 4.1. Hugo Riemann was one of the first to do so at length; in *Vereinfachte Harmonielehre* from 1895, he describes major-third progressions that result from successions from transformed subdominant and dominant chords to tonic chords. As an example, he cites "minor subdominant to tonic relative"—in the key of C major, this progression would be represented as F minor to A minor.[26] Because these two chords are understood in terms of the subdominant and tonic functions, they represent a harmonic progression. Riemann then makes a more radical suggestion that major thirds can

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[25] In an interview with Claude Rostand, Poulenc states that Schumann's song cycles had a significant influence on him (Carl B. Schmidt, *Entrancing Muse*, 236).

[26] Hugo Riemann*, Harmony Simplified; Or, The Theory of the Tonal Functions of Chords [Vereinfachte Harmonielehre]*, trans. H.W. Bewerunge (Originally pub. 1893; second ed., London: Augener, 1895), 164–165.

replace fifths as a generator of the three basic chords in a key system. In common-practice tonality, the three basic functions are created by the tonic and the two triads that are a perfect fifth higher and lower than it. The fifth, since it is the first non-octave interval in the overtone series and is one of the generating intervals of the triad itself, is the most obvious candidate for the generating interval of this triadic system. Yet, it need not be the only generating interval. Riemann believed that the major third, which with the fifth formed the triad, was the only other directly intelligible interval.[27] This interval is therefore the next most obvious candidate for generating a system of basic triads; thus, the root-progression "E–C" can fulfill the same function as "G–C" progression in establishing C as a center.[28] This claim builds on a similar brief and suggestive statement in his definition of "tonality" in *Musik-Lexikon*, originally published in 1882. In this earlier work, Riemann states that tonality is the "special meaning" that chords possess in relation to the tonic. As an example, he shows a progression of major-third-related major triads that resembles I–IV–I–V–I: CM–A♭M–CM–EM–CM.[29] Riemann states that the C-

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[27] Ibid., 5. By "directly intelligible," Riemann means that all other intervals are understood through a combination of fifths and thirds. Note that his theory does *not* recognize the minor third as a generating interval of minor triads. In his dualist system, a minor triad is formed by building a major third and perfect fifth *below* a generating note. The minor third between the root and third is a by-product, and not an origin, of this generation.

[28] Ibid., 164–165. A longer quote reads:

> But in another sense the third-steps require greater attention. Namely if—considered purely harmonically without having regard to the scales—the plain-fifth clang [i.e., V] is nothing more than the nearest related partial note of the tonic clang, detached…and rendered independent as representative of its own clang, the idea suggests itself of rendering the third-note independent in the same fashion, separating it from the clang or the tonic and confronting it with the latter as the bearer of its own clang; then a kind of dominant significance will attach to the third-clang of the major tonic, . . . and the contra-third clang may also lay claim to a kind of under-dominant significance. . . .

[29] For more on Riemann's view of the cadence, see the section "*Hugo Riemann*" in Chapter 5.

major triad prevails as the tonal center in this progression since the other chords are understood in relation to it.[30] In *Vereinfachte Harmonielehre*, Riemann qualifies his assertion about major-third progressions by stating that because listeners tend to hear in relation to the diatonic scale, the major-third progression will therefore never be *as* strong as the fifth-progression, but he does not deny its key-defining potential.[31]

Recent studies of late nineteenth-century tonality have followed Riemann's example and expanded the system of harmonic syntax to include major-third related triads so that the progression shown in Figure 4.1 can be heard as defining a key. Daniel Harrison discusses a similar progression in Franz Liszt's Piano Concerto; he interprets each individual chord in terms of its display of three harmonic functions that he considers foundational to tonality: tonic, dominant, and subdominant.[32] Although these functions are prototypically represented by the diatonic triads I, V, and IV, in the nineteenth century they become liberated from their origin and acquired the ability to inhere in chromatic chords. In the motion from a C-major to an A♭-major triad, the descending semitone E–E♭ and ascending semitone G–A♭ are characteristic voice leading motions for

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[30] Hugo Riemann, *Musik-Lexikon*, ed. Alfred Einstein (Berlin: Max Hesses Verlag 1919), s.v. "Tonalität." For further discussion of Riemann's progression, see Avo Somer, "Chromatic Third-Relations and Tonal Structure in the Songs of Debussy," *Music Theory Spectrum* 17, no. 2 (Autumn 1995), 215–217; and David Kopp, *Chromatic Transformations in Nineteenth-Century Music* (Cambridge Press: 2003), 80.

[31] David Kopp, *Chromatic Transformations in Nineteenth-Century Music*, 165–167.

[32] Daniel Harrison, *Harmonic Function in Nineteenth-Century Music* (Chicago: University of Chicago Press, 1994), 49–51. Harrison defines as an "agent" the third of the tonic, dominant, and subdominant triads. Because they each belong to only one triad, they are unique in their function. Harrison links the agents with the mode and direction that is characteristic to each function, so that the prototypical resolution of dominant agent is $\hat{7}$–$\hat{1}$, and that of the subdominant agent is $\flat\hat{6}$–$\hat{5}$.

the subdominant and dominant "agents," respectively.[33] This interpretation gives the first chord a mixed function that contains characteristics of both the dominant and subdominant triads, both of which discharge into a tonic in the following chord.[34]

David Kopp's theory of nineteenth-century chromatic transformations asserts that resorting to common practice functions of tonic, dominant, and subdominant to explain such a progression is misguided. He proposes a *fourth* function, chromatic mediant, to describe passages such as the one shown in Figure 4.1.[35] Chromatic mediants became increasingly common in the late nineteenth century and occur between any two triads of the same mode whose roots are separated by a third and which require chromatic alteration.[36] Kopp takes pains to point out that his system of transformations does *not* require that all chords relate to a single tonic.[37] Nonetheless, some of his analyses do uncover this feature in musical compositions. In his analysis of the second theme from last movement of Ernest Chausson's Piano Trio (1881), for example, he notes that the

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[33] The agent of a triad is equivalent to the chordal third. See Daniel Harrison, *Harmonic Function in Nineteenth-Century Music,* 45.

[34] Daniel Harrison, "Nonconformist Notions of Nineteenth-Century Enharmonicism," *Music Analysis* 21, no. 2 (2002): 121–124. The new chord embodies yet another mixed subdominant/dominant function, which discharges to the next chord, and so forth. Harrison's interpretation requires an "enharmonic exchange" to occur at each chord change. As an example, the G♯ in the third chord is reinterpreted as an A♭ as it becomes a subdominant agent that discharges into the fourth. This enharmonic respelling converts some of the consonant triads into highly dissonant constructs. Harrison's discussion also brings up "cumulative analysis," which traces the gradual buildup of this mixed dominant and subdominant function that is released in the final C major chord, and notes that the ability to take either a global, cumulative view, or to attend to details of moment-to-moment voice leading, Harrison argues, is part of the aesthetic pleasure of listening to late nineteenth-century music. Discussion of these aspects of his theory are beyond the scope of the present study.

[35] David Kopp, *Chromatic Transformations in Nineteenth-Century Music* (Cambridge Press: 2003), 3–4.

[36] Ibid., chapter 2.

[37] Ibid., 165–191.

work presents an upper and lower major-third mediant to a C-major tonic. The theme asserts C major because, as in the progression from Riemann's *Musik-Lexikon*, this chord appears in between statements of the two mediants. The cycle, therefore, resembles a cadential progression using I, IV, and V. Understanding the two mediant triads (A♭ major and E major) in relation to the tonic also allows a listener to perceive the qualitative difference between two salient semitone motions that occur in the uppermost voice. The first, G–A♭, involves motion to a lower mediant, while the second, G–G♯, involves motion to an upper mediant. This distinction, which Kopp deems essential to the theme, would be lost if the triads were treated as part of a chromatic sequence.[38]

Composers in the nineteenth century particularly favored the major-third mediants, exemplified in Figure 4.1, because each member of the cycle could take a single relation to a tonic chord, imitating the three-chord dominant/subdominant system in diatonic tonality.[39] Cycles of minor triads, which Poulenc favors, arguably show an even *closer* relation when they occur within cycles of major thirds.[40]

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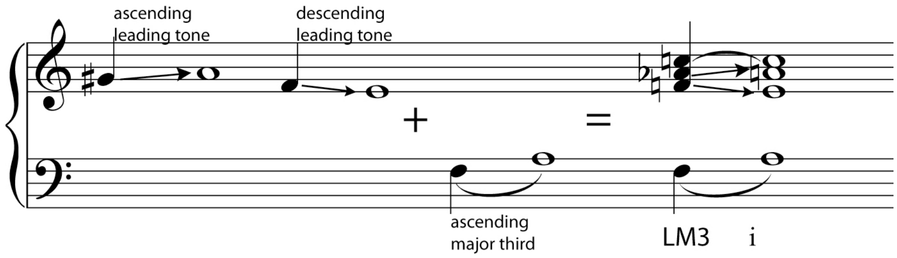
[38] Ibid., 224–226.

[39] Ibid., 206–207. Cycles of minor-third related triads were much less common, and when they did occur, they often involved only two members. Minor-third related triads were slightly more common with dominant seventh chords, by contrast, since these afforded more common notes.

[40] David Kopp deals only sparingly with mediant-related minor triads; his only extensive discussion is of the opening of the first movement of Smetana's String Quartet. *Chromatic Transformations*, 213–214.

a.



b.

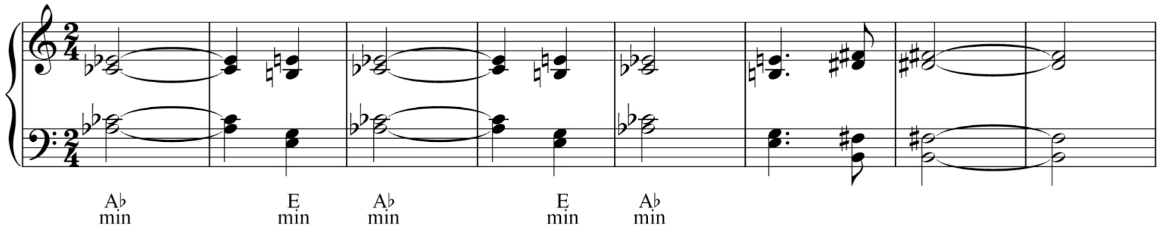


Figure 4.7. a. LM3–i progression. b. Richard Wagner, "Tarnhelm" motive from *Das Rheingold* (1863).

Figure 4.7a analyzes the constituent voice-leading motions in an ascending-third progression from an F-minor to an A-minor triad. The pitch successions F to E and A♭ (respelled as G♯) to A♮ imitate the ♭$\hat{6}$–$\hat{5}$ and ♯$\hat{7}$–$\hat{1}$ voice leading found in a vii^{o7} or V^{-9} that resolves to i. These two pitches, according to dualist theory, express the quintessential leading-note motion for the dominant and subdominant function.[41] The same voice leading appears in a descending-third progression of major triads, but in the minor version, the two leading notes comprise the root and third of the first triad, members that play a more important role in defining its quality. The fifth of the first triad is held as a common note to become the third of the following. In the bass voice, the root ascends by major third, substituting for a fifth motion. The ascending-third minor triad progression also appears in pieces from the nineteenth century, and it is quite possible that these precedents influenced Poulenc's chordal vocabulary. One example is the "Tarnhelm"

[41] Daniel Harrison, *Harmonic Function in Chromatic Music*, Chapter 1.

motive from Wagner's *Das Rheingold*, shown in Figure 4.7b. In this motive, an A♭-minor triad is prolonged by an embellishing E-minor triad. Kevin Swinden argues that in these nineteenth-century examples, the bass line $\flat\hat{6}$–$\hat{1}$ is *characterizing* in that it can express only one possible function: that of subdominant to tonic. He therefore reads a mixed function: the chord uses subdominant motion in the bass but dominant motion in the upper voices, abbreviated as S^D.[42]

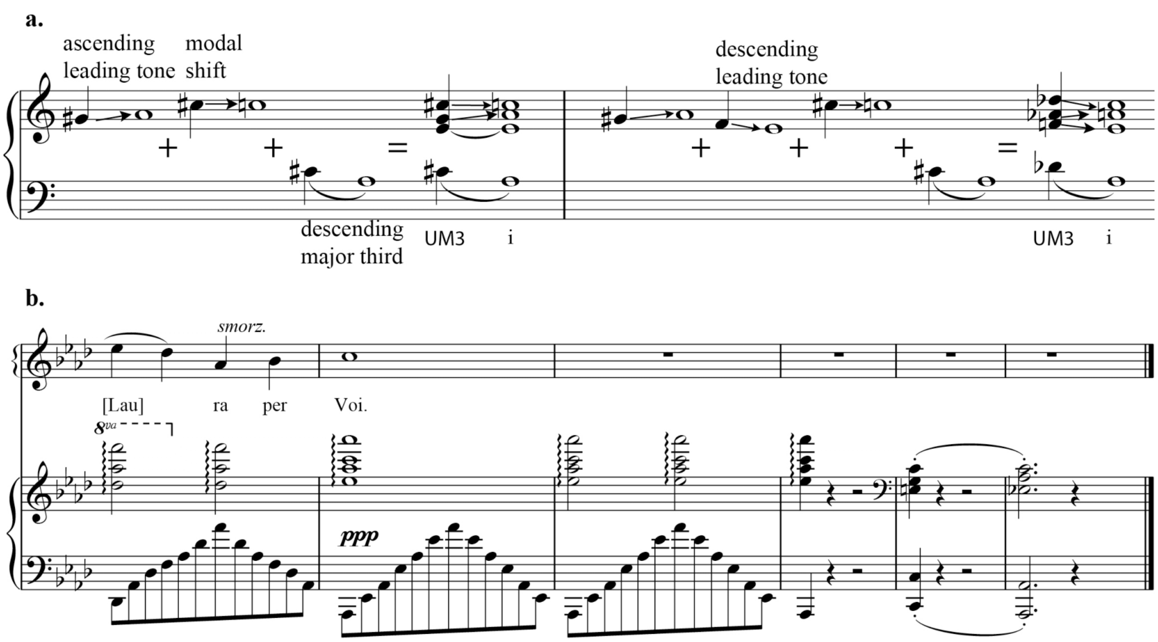


Figure 4.8. a. UM3–i progression. b. Franz Liszt, conclusion of "Pace non trovo," the first song from *Three Petrarch Sonnets*, S. 270 (1842–1846).

Figure 4.8a shows the voice-leading components of the descending-third

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[42] Kevin Swinden, "When Functions Collide: Aspects of Plural Function in Chromatic Music," *Music Theory Spectrum* 27, no. 2 (Autumn, 2005): 266. Swinden's theory builds on Daniel Harrison's theory of harmonic function in chromatic music, but unlike Harrison, he believes that V^7 and vii^{o7} can express unambiguous dominant function. His justification for this claim is that the notes in these chords can be located on the "dominant" side of an unconfirmed *Tonnetz* that repeats some pitch classes. Thus, scale degrees $\hat{4}$ and $\flat\hat{6}$ can express either a dominant or subdominant function, depending on their context.

progression.[43] The fifth of the first triad acts as an ascending leading note. The third is held to become the fifth of the following triad. The root anticipates the third of the following triad, albeit with the incorrect mode, so that with respect to the second triad, the progression effects a "modal shift" from raised to lowered third. Finally, the bass descends by major third, which substitutes for fifth motion. The right side of Figure 4.8a shows a *major* triad built a major third above the tonic. This triad offers both ascending and descending leading notes and therefore creates a stronger progression toward the tonic. Figure 4.8b shows an example of a major-mode version of the progression in the conclusion of Liszt's setting of the Petrarch sonnet "Pace non trovo." In the final two measures, a C-major triad leads directly to an A♭-major triad, and leading-tone resolutions can be traced in the two inner voices. R. Larry Todd notes that the penultimate chord recalls an F♭ augmented triad, functioning as V^{+}/vi, that appeared earlier in the song. While this may be true, it does not efface the cadential effect of the final gesture.[44]

Progressions by descending third, while less common, are not absent in Poulenc's

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[43] The functional collision model suggests that the lower-third minor triad can serve as a prolonging chord, but does not grant the same ability to an upper-third minor triad. This is because an upper-major-third cannot create a characterizing bass line. A LM3 to tonic progression occurs in Poulenc's music with greater frequency, but the following analyses will show that its counterpart, the descending-third progression, is not entirely absent.

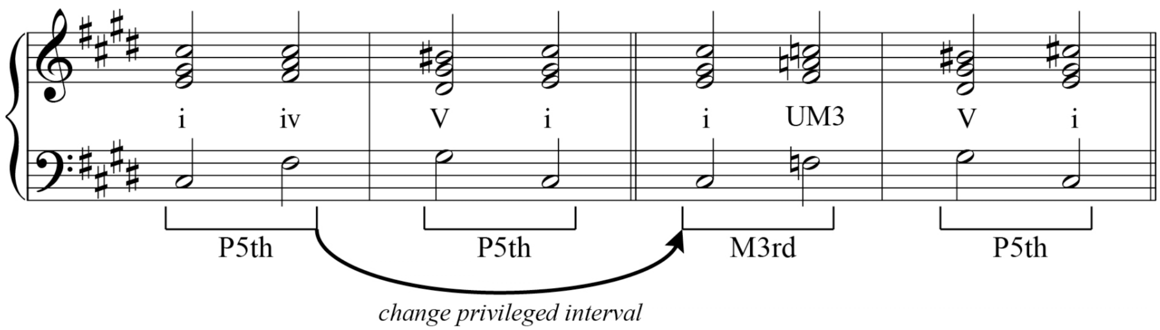
[44] R. Larry Todd, "The 'Unwelcome Guest' Regaled," 98. Todd notes that Liszt made three more versions of the sonnet setting and adjusted the ending as part of his recomposition process. The penultimate chord in S. 161 is an augmented triad whose bass note is a major third below the tonic, reminiscent of the LM3 chord described above. S. 270 ends ambiguously with a single melodic line that comes to rest on G♯, and Todd argues that the context of the setting allows listeners to hear it as a third of I or a fifth of an augmented triad.

music, and they frequently appear in conjunction with ascending-third progressions. In other words, his music *thematizes* the major-third root relation, and does so in ways that would be distorted by labeling each triad in relation to a dominant or subdominant prototype. In addition, the descending-third progression cannot be described in terms of a characterizing bass line. This chapter therefore uses the labels LM3 and UM3, indicating the relation of each triad to the tonic and sidestepping the issue of how these chords might be derived from dominant or subdominant prototypes.

Poulenc uses major-third related triads within parts of a phrase that establish the tonic harmony, such as the presentation portion of a sentence. Although a presentation does not require a cadential progression, it typically uses fifth-related triads to do so; for example, many presentations outline a subsidiary I–V–I progression.[45] The use of UM3 and LM3 chords in this portion of a phrase therefore suggests a change of privileged bass interval from fifth to major third. The first chapter of this dissertation pointed out key-defining progressions in the first two movements of the Clarinet Sonata that used major-third-related triads to establish the tonic (see Figures 1.9, 1.15, 1.16, and 1.17 from Chapter 1).

[45] William Caplin, *Classical Form* (New York: Oxford University Press, 1998), 37–39.

a.



b.

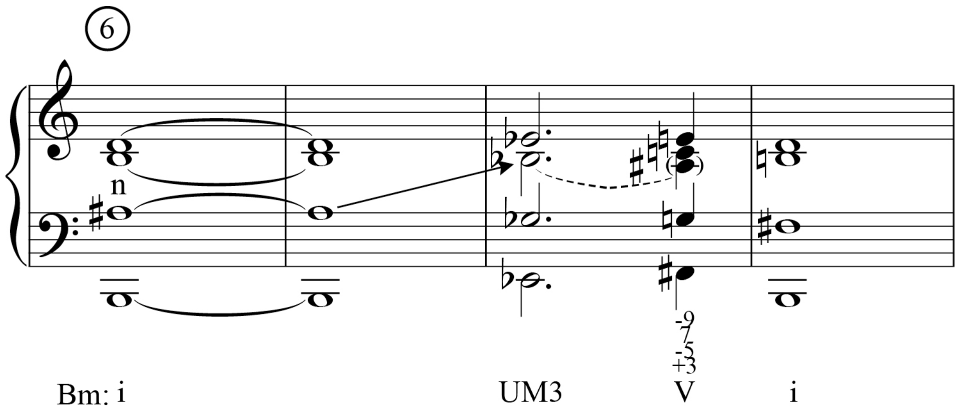


Figure 4.9. a. Cadential model, and transformed model created through change of bass interval. b. Harmonic reduction from Poulenc, Sonata for Clarinet and Piano (1962), first movement.

Major-third relations also occur through partial alteration of a common-practice cadential progression. Figure 4.9a shows two different cadential progressions in C♯ minor. The first privileges the root relation of a perfect fifth and the root motion down by fifth, yielding i–iv–V–I. The function of these two relationships is discussed in detail in Chapter 1.[46] When the entire progression has sounded, the tonic chord emerges as the only triad that has a privileged relation to the others: it is the dominant of iv and has a dominant of V. Because common practice privileges root motion down by fifth, the progression also creates a process of destabilization of the tonic triad—by treating it as

[46] See Chapter 1, Section 3 ("*Classical Harmonic Closure*").

dominant of iv—followed by reconfirmation of the tonic triad—through a down-by-fifth progression. The second cadential progression results from a transformation of the first by changing *one* of the privileged bass intervals, creating a i–UM3–V–i. This progression has some characteristics in common with the first: it features exactly three unique triads, and the first pair of chords destabilizes the tonic, while the second pair reconfirms it. Figure 4.9b shows a harmonic reduction of a passage from Poulenc's Clarinet Sonata and provides an example of the progression shown in Figure 4.9a. In the first version of this passage (discussed in Chapter 1; see Figure 1.9), an LM3, rather than a UM3, appears after the initial tonic. This chord moves directly back to i, creating a key-defining progression. In the restatement of the theme shown in Figure 4.9b, the second chord is a major third *higher* than the tonic. (As in the earlier example, the initial tonic has an added neighbor note that is held to become a member of the following triad.) The UM3 then resolves to V. The apparent C-major triad over an F♯ bass can be interpreted as a result of an added seventh, minor ninth, and lowered fifth, which are all common dominant alterations in Poulenc's harmonic vocabulary. In addition, the alto voice's B♭ is held over to become an implied leading tone in the following V.

Mixture also provides a means for interpreting the E♭-minor triad in Figure 4.9b.[47] A mediant often divides the space between i and V. Normally it is drawn from the diatonic scale, so that a D-major triad would divide the space between I and V in the key of B minor. The E♭-minor triad could be explained as the enharmonic equivalent of D♯

[47] See, for example, Edward Aldwell and Carl Schachter, *Harmony and Voice Leading*, 3rd ed. (Belmont, CA: Thomson, 2003), Chapter 16, "III and VII."

minor, drawn from the parallel mode. While explaining the triad as a modally mixed third-divider is plausible in the progression given in Figure 4.9b, the broader harmonic context of the Sonata suggests that major thirds can be treated as their own class of root relation. As shown in analyses of excerpts from this work in Chapter 1, several sections in the second movement also use major-third related minor triads. Moreover, similar UM3–V–I progressions also appear elsewhere in Poulenc's music and include additional contextual information that favors hearing the UM3 as a variant of iv.

Figure 4.10. a–b. Voice-leading reduction of Poulenc, Piano Concerto (1949), first movement, theme. c. reduction of theme, mm. 6–8.

Figure 4.10 shows a reduction of one passage that favors interpreting a UM3 as variant of iv. The first theme of the first movement of Poulenc's Piano Concerto (1949) opens with a tonic expansion over its first six measures, which results from an outer-voice exchange, as shown in Figure 4.10a. A cadential progression follows over mm. 7–8; it begins with an F-major triad with added seventh in lieu of a more common predominant. Two factors proscribe hearing this triad as a "third-divider." First, the E in the bass line at m. 6 already provides a diatonic division between $\hat{1}$ and $\hat{5}$, rendering an additional division superfluous.[48] Second, the placement of a i^6 in the sixth measure of the phrase is reminiscent of the "expanded cadential progression," which frequently serves to close a section in classical-period music.[49] The stylistic associations of the expanded cadential progression heighten the expectation for a predominant chord to occur next, a function not fulfilled by mediant chords, which tend to sound like

[48] In *Technical Bases of Nineteenth-Century Chromatic Tonality*, Gregory Proctor points out one "double division" of the fifth that might appear to provide a counterexample. Both the diatonic and chromatic divisions occur in the contrasting middle section of the Scherzo movement of Schubert's Piano Sonata in B major, op. 147. The first part of the section is in the key of ♭III. An enharmonic reinterpretation of vii^{o7}/V leads to a brief tonicization of B minor, or ♮III. The B-minor harmony, however, only appears in first inversion and immediately resolves to V^7. Its function, therefore, is not as a *Stufe* operating in the background, but a local contrapuntal expansion of the dominant, as in $V^{6–7}$. Schubert's piece, therefore, does not provide a precedent for reading a "double division" in the theme from the Piano Concerto (136–137). A clearer example of a phrase that uses both diatonic and chromatic division of the third can be found in the interior theme of Rachmaninov's *Etude-Tableau* in D, op. 39, no. 9. The first phrase of this G-major theme tonicizes iii and then ♭III in the space of two measures (mm. 42–43). (The descending semitone sequence of applied V^7 chords alludes to similar devices in Chopin.) Unlike the Poulenc example, Rachmaninov then leads to V via iv, placing both mediant triads in a subsidiary role. I learned of the Rachmaninov example from Nicole DiPaolo, "Marching to the Beat of a Different Drum: Metrical Irregularity in Rachmaninoff's 'March' Etude-Tableau in D, op. 39 no.9," presentation delivered at the Conversations 2011 Interdisciplinary Music Conference, 5 February 2011, The University of Michigan.
[49] William Caplin, "The 'Expanded Cadential Progression': A Category for the Analysis of Classical Form," *Journal of Musicological Research* 7, no. 2 (1987): 215–257. See also Chapter 1.

extensions of the initial tonic harmony. Therefore, the F-major triad is read as a UM3, a substitute for the expected iv within the structural cadential progression.[50]

Figure 4.12b shows a more detailed reduction of the theme. A subsidiary ♮II–V^7–i^6 progression over mm. 4–6 embellishes the initial tonic expansion. After this progression, the uppermost voice continues its descending arpeggiation to couple the initial E5 with a lower E4. The rest of the primary melodic line resolves in this lower register. The cadential V lacks $\hat{2}$; the reduction shows that it is displaced by an embellishing escape tone. Figure 4.12c provides a score reduction of mm. 6–8 of the theme. The piano's melodic line, shown on the upper staff, further underscores the connection between major-third related triads, since it consists of an arpeggiation of a C♯-minor triad in m. 6 followed by an arpeggiation of an A-minor triad in m. 7.

"Tu vois le feu du soir" (You see the fire of the evening), the first song from Poulenc's 1938 cycle of Éluard settings entitled *Miroirs brûlants* (Burning Mirrors), concludes with a UM3–V^{-9}–i progression in the key of C♯ minor very similar to the cadential progression from the Piano Concerto. The song's final section leads to this cadence via a major-third transpositional sequence that connects an initial tonic triad to the UM3. Thus, root motion by major third plays *both* a sequential and harmonic function in the progression.

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[50] A close affinity between the major UM3 and the minor iv triad, a standard predominant, can also be shown by using the SLIDE transformation. David Kopp suggested using the SLIDE transformation to generate the ♭II chord in a similar manner. Other Poulenc progressions, however, do not permit this interpretation. A statement of a theme in the first movement of the *Clarinet Sonata*, for example, uses the i–UM3–V^9_7–I progression, but the UM3 is a minor triad with a major seventh added (see rehearsal 6), rather than a major triad.

Figure 4.11. Poulenc, "Tu vois le feu du soir" (1938), reduction of conclusion.

Figure 4.13a provides a reduction of the last nine measures of the song (mm. 50–58). The passage begins with a tonic C♯-major triad (respelled as D♭ major), and over mm. 50–57 the bass line proceeds through a sequence of pitch-class transpositions down by four semitones. The bass line supports a major triad at m. 50 and a major seventh chord at mm. 53 and 57. The final chord, an F major seventh, functions as UM3 and leads to a V^{-9}_{7}–i progression. Eliminating the transpositional sequences yields a i–UM3–V^{-9}_{7}–i progression over the entire section. The use of root motion by major third to create *both* closing and sequential progressions adds ambiguity to the final cadence. The dotted arrow underneath the staff in Figure 4.13a suggests that the final motion to C♯ major could also be perceived as the last statement within a transpositional sequence, creating a different means of emphasizing the tonal center of C♯.[51] Because the V^7 is the only root-position dominant that resolves to a root-position triad, the hearing in Figure 4.11a is most preferred, but this does not negate the possibility of others. Figure 4.11b adds detail to the progression in Figure 4.11a. Over mm. 52–53, a deceptive resolution of V^7 in the key of C♯-minor leads to the A major seventh chord, and over mm. 53–57, a descending sequence leads from the A major seventh to F major seventh chord.

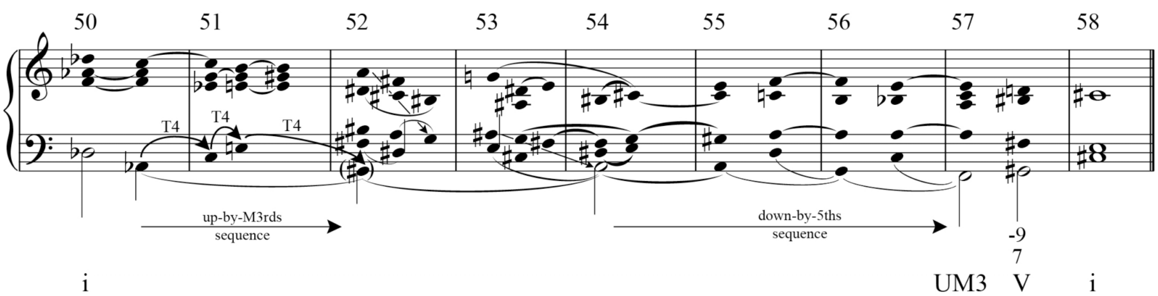

Figure 4.12. Poulenc, "Tu vois le feu du soir," foreground reduction of conclusion.

Figure 4.12 shows that at the musical surface, a handful of additional sequences provide passing motion between the harmonic pillars shown in Figure 4.11b. Over mm. 50–51, a sequence of major-third-related triads occurs. At m. 50, the bass descends from D♭ to A♭, the root of V^7. The "tenor" voice holds its note to create a $^6_3$ triad over this bass note; the sixth can be perceived as a suspension. In m. 51, the bass line is transposed up two times by major third and supports root-position minor triads (the second of which is subsequently converted to a major triad). It is difficult to assign functions to these chords. The two chords in m. 50 and the first chord in m. 51 are diatonic to the key of A♭

[51] One could claim, for example, that the pitch C♯ is prolonged throughout the entire passage through an augmented-triad arpeggiation, or that major-third related triads replace fifth-related triads at the middleground level in order to provide closure to the phrase.

major or F minor, but do not create a strong harmonic progression, and the following E-minor triad wrenches the phrase out of this key. The harmonies are best interpreted as surface phenomena within a transpositional sequence in the bass line. At m. 52, the bass is transposed down a minor sixth, equivalent to an ascending major third, to reach its original pitch class G♯. Arrows labeled with T4, or a pitch-class transposition by 4, connect members of the transpositional sequence that occurs over the passage. In m. 52, a neighboring fully-diminished seventh chord in the upper voices embellishes a G♯ dominant seventh; a diagonal arrow from the A4, the first note in the uppermost line, shows its implied resolution to G♯ at the end of the measure. This T4 sequence, therefore, delays the 6–5 resolution within a V^7 harmony in the key of C♯.

Over mm. 53–54 a similar neighboring fully-diminished seventh embellishes an A dominant seventh, which marks a deceptive resolution of the previous V^7 chord.[52] The chord is enharmonically equivalent to a German $^6_5$, and could have a neighboring function in the key of C♯, but in m. 55, it is converted into an A major seventh, suggesting a reinterpretation as a local tonic. In mm. 55–57, a descending-fifth sequence, which contains various types of seventh chords, connects the A major seventh with the F major seventh chord. This chord prepares a V^{-9}_{7}–i cadence in C♯ minor.

Keith Daniel states that Poulenc’s rapid modulations “rarely appear to be architectonically designed,” and that there is “no apparent pattern to the tonal motion”; instead, he describes Poulenc’s key structure in Henri Hell’s words, as a “game of

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[52] (The two-measure passage exclusively uses notes from a six-note octatonic subset, and marks an example of Poulenc’s occasional use of octatonicism.)

modulations."[53] In the conclusion of "Tu vois le feu du soir," by contrast, there is a goal of the rapidly shifting keys; it is the cadential progression that occurs in the final two measures. Nonetheless, the nested transpositional sequences and ephemeral modulations over mm. 50–56 create one of Poulenc's most colorful musical surfaces, one that lacks a clear sense of tonal foothold until the final two chords.[54] The effect of listening to the coda, which nearly overwhelms tonal comprehensibility through an abundance of tonal shifts, is similar to the effect of hearing the text of the poem, which describes in detail the act of observing a vast summer scene inflamed by the light of a sunset, using metaphors that stretch the limit of understanding. Descriptions of "immaculate brothers" with "intermingled shadows in a wilderness of blood," of doubles "sacrificed one to another," or of the sea placed within the sky are evocative, and they give the reader a pure encounter with image and the sound of words. The poem concludes with the lines

> and one of them veiled by her clarity who allures you
> secretly makes you see the world without yourself.[55]

The alluring woman described in the last line offers an experience of erasing the addressee's awareness of him- or herself. This self-forgetting that the poem *describes* in

[53] Keith Daniel, *Francis Poulenc*, 85–86.

[54] Poulenc asserted the significance of the final page of this song: "[A]n enumerative poem calls for an unchanging flow of movement. This long song (four minutes), where not a single semiquaver disturbs the flow, was to be saved from monotony by the subtlety of the writing for the piano and the simplicity of the vocal line. . . . A *coda* of one page gives to the whole its human significance." Francis Poulenc, *Diary of My Songs [Journal de mes mélodies]*, trans. Winifred Radford (London, Victor Gollancz, 1989), 47.

[55] "Et l'une sa clarté la voile qui t'entraîne / Te fait secrément voir le monde sans toi."

its conclusion is analogous to the self-forgetting that the rest of the poem *effects* through its surrealist-tinged text, which overwhelms readers' capacity for comprehension. Ironically, while the text reaches its conclusion of self-loss, the musical setting reaches a self-*finding* by achieving a closing progression in its tonal center.[56] Perhaps this progression, with its unambiguous C♯-minor tonic, removes the musical setting from the subjective selfhood of the person addressed in the poem. Instead it depicts objectivity and clarity that, paradoxically, veils the woman described in the last two lines.

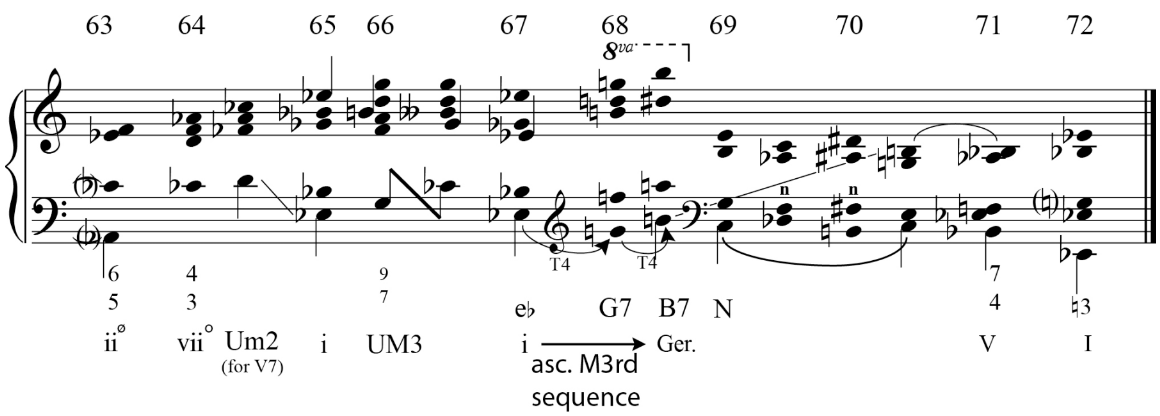

Figure 4.13. Poulenc, "Montparnasse" (1941–1945), conclusion.

The harmonically rich conclusion of the song "Montparnasse," much like the conclusion of "Tu vois le feu du soir," uses major-third related triads for both sequential and tonic-prolonging purposes. The ending is a veritable catalogue of techniques for

[56] The relationship between the descriptions in the first part of the poem and the description of the female in the final two lines is a recurring theme in Éluard's work: many of his poems depict the female lover as an intermediary between the poet and the rest of the world. For more on this aspect of his poetry, and for a discussion of the aesthetic affinities he shared with Poulenc, despite their differing political and religious views, see Sidney Buckland, "'The Coherence of Opposites': Éluard, Poulenc, and the Poems of *Tel jour telle nuit*," in *Francis Poulenc: Music, Art, and Literature*, ed. Sidney Buckland and Myriam Chimènes (Brookfield, VT: Ashgate, 1999), 145–177.

creating altered closing progressions, including substituting root motion by semitone for root motion by fifth, as well as adding color notes. Figure 4.13 provides a reduction. The final phrase begins at m. 63 with a ii$^{ø}{}^{6}_{5}$ in the key of E♭ minor, which functions as dominant preparation. Rather than moving to V^7 as expected, the chord first resolves to a neighboring vii$^{o}{}^{4}_{3}$, which lowers its third to form a Um2, creating a clear case of "tritone substitution."[57] The Um2 resolves in m. 65.

As part of the post-cadential tonic confirmation, the piano plays a i–UM3–i progression over mm. 65–67. The UM3 has an added minor seventh and ninth, and in the second half of the measure its third, B♮, is enharmonically respelled as C♭ in order to emphasize its leading-tone connection to B♭ in the following chord. The voice part in these measures is shown in beamed notes on the upper staff; it sings a descending augmented triad to counterpoint the ascending-third root motion used in the progression. Over mm. 67–68, the piano's bass line imitates the vocal part by playing an ascending augmented triad <E♭, G, B>, but rather than creating another tonic prolongation, this bass line accompanies a transpositional sequence that leads from the E♭-minor tonic to a B dominant seventh chord in m. 69, which functions as a German $^{6}_{5}$. (The passage provides an apt text painting of Apollinaire's image of a young man's eyes that are so large that they "float like balloons"—the piano ascends to its highest register, and during the passage it is playing a transpositional sequence and therefore sounds unfettered from a tonal center.) Over mm. 69–70, a C major seventh neighboring chord delays the

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[57] See Chapter 2, "*Um2 chords as altered dominants*."

resolution of the German $^6_5$ to V^7; this chord itself is embellished through a double-neighbor pattern. The final V^7 has a fourth above the bass, rather than the expected third. There is not enough context to determine whether this note represents an unresolved suspension or a color note to add further harmonic variety to the passage.

The examples in this section demonstrate that both the UM3 and LM3 take part in key-defining progressions in Poulenc's music. In some cases, the progressions are embellished by major-third transpositional sequences, so that the root relation of a major third takes a multiplicity of functions within a single span of music. The following section examines a work that maximizes the functional ambiguity of a *single* major-third progression—that is, the progression suggests both closure and non-closure at the same time. The section will also discuss how this ambiguous progression engages the nineteenth-century form of the *fragment*, which Poulenc absorbed through his love of the song cycles of Schumann.[58] Poulenc does not simply imitate earlier forms, however: the form becomes filtered through his unique harmonic language and his own very personal expressive aims.

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[58] In an interview with Claude Rostand, Poulenc states that Schumann's song cycles had a significant influence on him. Carl B. Schmidt, *Entrancing Muse*, 236.

4. Ambiguous Major-third Relations

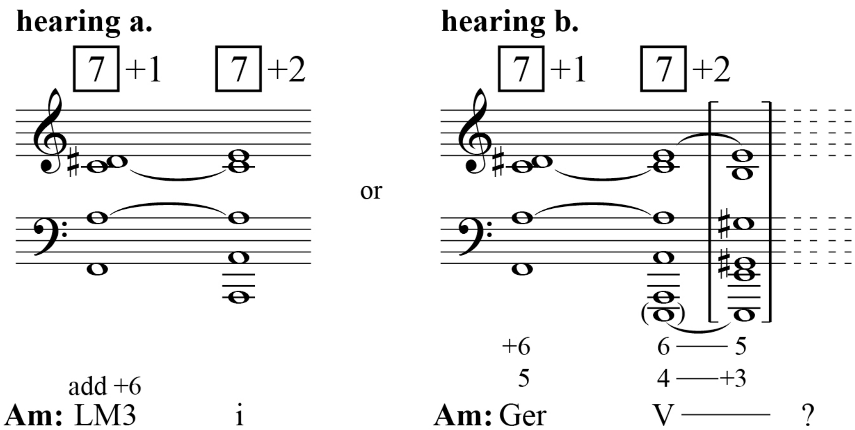

Figure 4.14. Two interpretations of ending of Poulenc, *Stabat Mater* (1950), I. "Stabat mater dolorosa."

Figure 4.14 shows the final two chords that appear in "Stabat mater dolorosa," the first movement of Poulenc's setting of *Stabat Mater* for chorus and orchestra, written in 1950. At the conclusion of the movement, an F-major triad with added D♯ proceeds to an A-minor triad. Two possible hearings of the progression are shown. In hearing **a**, the first chord functions as an LM3 that resolves directly to an A-minor tonic triad. The chord has an added D♯, which is a raised sixth above the bass note, that connects by semitone to E, the fifth of i. In hearing **b**, the first chord functions as a German $^{6}_{5}$, creating an expectation for a resolution to the dominant. An implied bass-note E is heard underneath the A-minor triad, creating a cadential $^{6}_{4}$ with an implied resolution to a root-position V, enclosed in brackets.[59] Even with the implied resolution, hearing **b** is

[59] David Kopp examines a handful of examples of "German sixth" chords resolving directly to the tonic harmony in Schubert and Schumann and asserts that context favors hearing a direct resolution of a chromatic mediant, rather than a resolution to a dominant that is elided. See *Chromatic Transformations in Nineteenth-Century Music,* 200–202.

unfinished, since it leaves unstated some eventual motion from V to i. Hearing **a** implies that the movement transforms the privileged interval of root-relation away from common-practice harmony; hearing **b** suggests that the movement begins a common-practice progression that never reaches its conclusion.

Perceiving both hearings simultaneously allows one to understand the movement as both complete in itself and torn from a larger whole. The same progression that suggests closure simultaneously suggests its opposite. These two features are essential to the romantic-period *fragment*, a concept that Frederick Schlegel coined in order to describe a new aesthetic in literary and poetic circles in the early nineteenth century. The fragment presents a self-contained entity to audience members while it also allows them to imagine possible continuations, creating an effect that continues after the work is completed. Charles Rosen argues that the fragment influenced song cycles and collections of short instrumental movements later in the century, and it was especially prevalent in the romantic period because it highlights the uneasy relation between the self-contained language of music and its embeddedness in a more chaotic world of human nature, an issue of concern during the time.[60] Poulenc's setting of the *Stabat Mater* text as a cycle of twelve short movements of contrasting character recalls the formal design of his song cycles.[61] By his own admission, Schumann inspired Poulenc's

[60] Charles Rosen, *The Romantic Generation*, 41–112. Ramon Satyendra discusses the concept of the romantic fragment in relation to Franz Liszt's piano music in "Liszt's Open Structures and the Romantic Fragment," *Music Theory Spectrum* 19, no. 2 (Autumn, 1997): 184–205.

[61] Keith W. Daniel, "Poulenc's Choral Works with Orchestra," in *Francis Poulenc: Music, Art and Literature*, ed. Sidney Buckland and Myriam Chimènes (Brookfield, VT: Ashgate, 1999), 55.

forays into this genre, opening the possibility of the influence of the aesthetic of the fragment into his choral work.[62]

Hearing the final progression of "Stabat mater dolorosa" as closed, represented by hearing **a** in Figure 4.14, requires a more dramatic shift in harmonic orientation; at two marked formal locations the movement inserts unusual harmonies that make this shift plausible. The first occurs at the movement's opening; the second occurs in its climax two measures before rehearsal 7.

In the first eight measures, the orchestra plays an introduction that presents the possibility of transforming a closing progression within a musical phrase. Figures 4.15a and 4.15b provide a reduction. As shown in Figure 4.15a, the passage begins with a harmonic motion from i at m. 1 to a minor-mode v at m. 4. At m. 5, the minor v is expanded by inversion. At m. 7, it is transformed into a chromatic chord that contains B♭, a semitone above the tonic, in its bass, and G♯, the standard leading tone, in its soprano. The chord is an example of a Um2 that is closely related to the dominant harmony, as discussed in Chapter 2.[63] It contains D and G♯, the two leading tones of V^7, but substitutes bass motion by descending semitone for bass motion by descending fifth. The chord is created through a chromatically inflected voice exchange indicated by the dotted lines in the reduction: the outer voices exchange and chromatically inflect their respective pitches to create two notes separated from the tonic by semitone.

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[62] In an interview with Claude Rostand, Poulenc states that Schumann's song cycles had a significant influence on him. Carl B. Schmidt, *Entrancing Muse*, 236.

[63] See Chapter 2, subsection "*2. Semitone-related Triads as Altered Dominant Chords*."

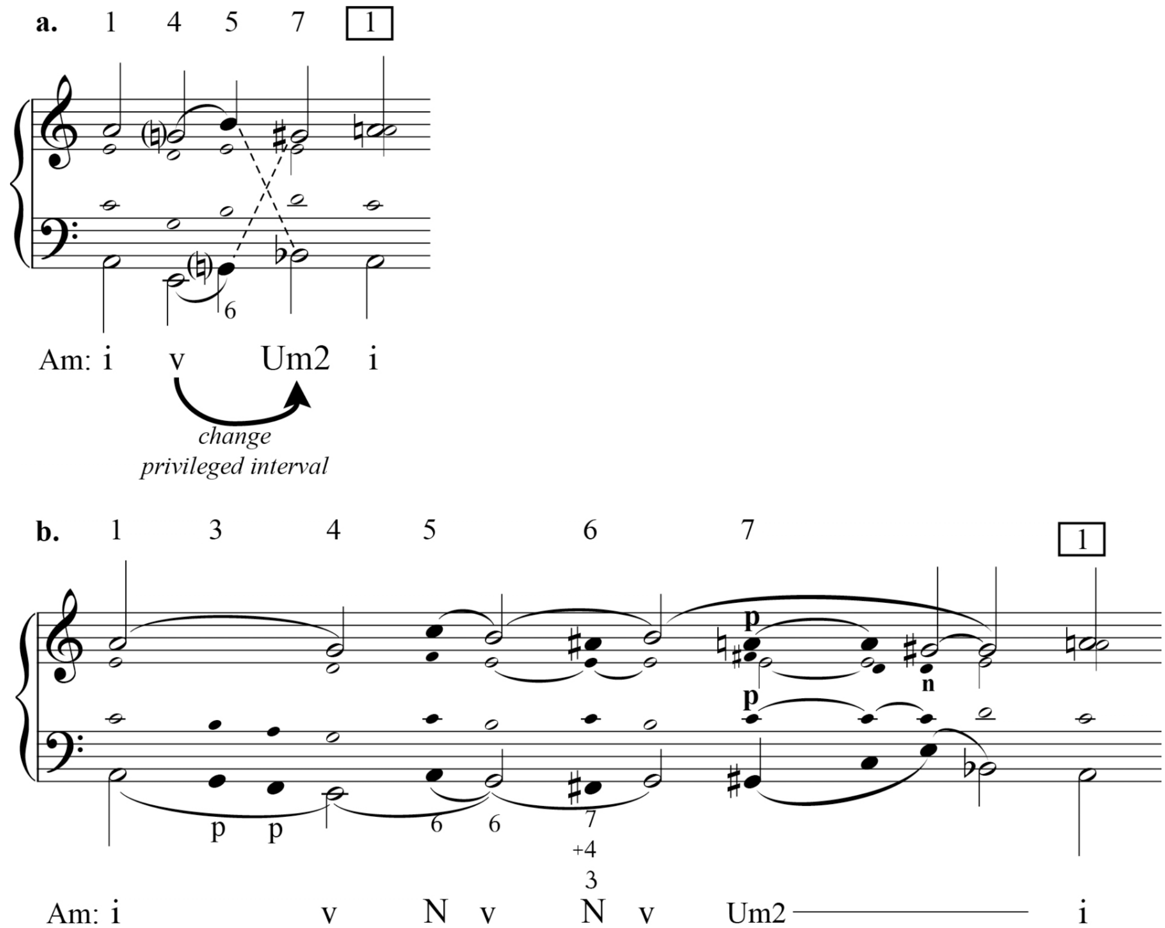

Figure 4.15. Reduction of Poulenc, "Stabat mater dolorosa," mm. 1–8.

The embellishment of this background structure, shown in Figure 4.15b, helps to smooth the transition between the diatonicism of the opening minor dominant and the chromaticism of the final Um2. For its first five measures, the movement is purely diatonic, suggesting the Aeolian mode. The first two measures connect i to v via a bass passing motion, while a neighboring chord (marked with an "N" on the reduction) embellishes the v^6 in m. 5. The modality, parallel thirds in the lower voices in m. 3, and parallel fifths in m. 5 evoke an archaic, "rough-hewn" style that is reminiscent of *Litanies à la Vierge Noire*, the religious work that Poulenc wrote in response to his spiritual awakening in 1936.[64] In m. 6, a new neighboring chord, which contains the chromatic notes F♯ and A♯, embellishes the same v^6 chord. Its function is identical to the neighboring chord that appeared at the beginning of m. 5, but the chord also introduces pitch classes from outside the A Aeolian scale, and thus marks a shift to a different harmonic palette. This new palette is reminiscent of Poulenc's lush, romantically influenced compositional style, so that the change in harmonies suggests a change in stylistic association from ancient to modern. The juxtaposition of the two styles could be said to reflect the dual motivations that led Poulenc to compose the work: a wish to express his Catholic faith in a language that is grounded in tradition, and a wish to respond to the present-day loss of a friend, the painter Christian Bérard.[65]

The neighboring chord at m. 6 is an example of transposition-class (0268), or the "French sixth" sonority. By introducing the chromatic palette, it renders less surprising the Um2 chord, which is in the same transposition class. Over mm. 7–8, two voices make a passing motion to connect v with the Um2. These two passing tones, which fall on a strong beat, occur in the soprano and tenor voices and are marked with a bold "p" on Figure 4.15b. The bass part at m. 7 is first inflected from G to G♯. It then arpeggiates up to C to provide consonant support for the tenor's passing note, and its final two notes, E and B♭, form an arpeggiation through members of the Um2.

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[64] Jane Fulcher, *The Composer as Intellectual*, 261–264. Fulcher reads these stylistic traits as pregnant with political meaning, since Catholic values and valorization of peasant life represented resistance to the leftist ideas of the current Popular Front government.

[65] Carl B. Schmidt, *Entrancing Muse: A Documented Biography of Francis Poulenc, His Artistic Development and Musical Style* (Hillsdale, New York: Pendragon, 2001), 361–363.

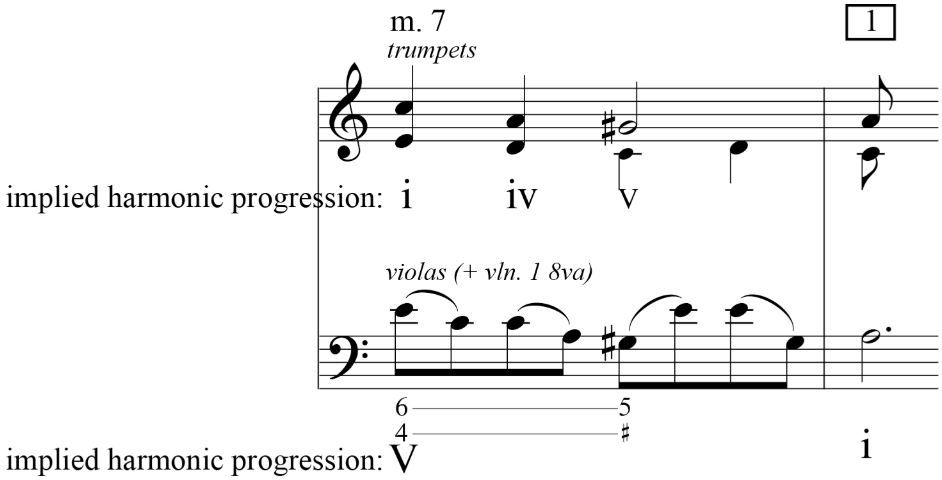

Figure 4.16. Two instrumental parts in Poulenc, "Stabat mater dolorosa," m. 7 to rehearsal 1.

Two of the individual instrumental parts help to reinforce that a cadential progression occurs from m. 7 to rehearsal 1. They do so through "collage voice leading," a technique described in Chapter 1, wherein a relatively salient individual part strongly suggests a common-practice cadential progression, even though a different progression actually appears in the rest of the voices.[66] The parts are shown in Figure 4.16. The violas (doubled at the octave by the first violins), shown on the lower staff, imply a cadential $^{6}_{4}$ progression; the trumpets, shown on the upper staff, imply i–iv–V. The two parts reinforce that a cadence takes place over the two measures, even though when combined with the other voices they create an Um2–i progression.

[66] "Collage voice leading" is discussed in Chapter 1, subsection "*6. Change Privileged Interval of Root Relation*."

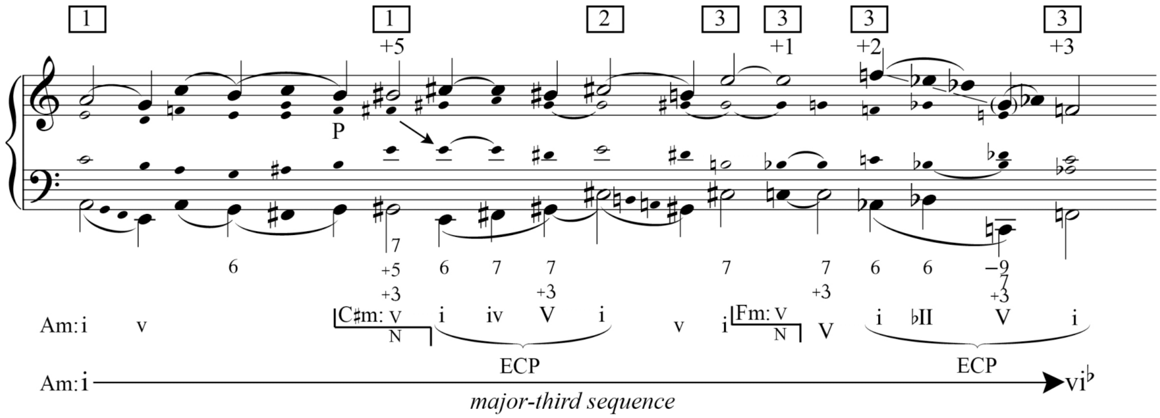

Figure 4.17. Poulenc, "Stabat mater dolorosa," reduction of rehearsal 1 to rehearsal 3.

Figure 4.17 provides a reduction of the following section (from rehearsal 1 to three measures after rehearsal 3). The Um2 chord does not reappear, but a neighboring chord that is a member of transposition-class (0248) recurs frequently and allows for a series of sequential modulations up by major third. This transposition class is closely related to that of the Um2, since both are whole-tone subsets and the two share three notes in common. Five measures after rehearsal 1, a neighboring chord is reinterpreted as an altered V in the key of C♯ minor that has a raised fifth and added seventh. A brief expanded cadential progression, which is enclosed in a curly bracket in Figure 4.17, confirms this key. One measure after rehearsal 3, a similar reinterpretation of a neighboring chord leads to the key of F minor. The lower row of analysis shows the deeper-level harmonic progression that occurs over the section. The modulations create a transpositional sequence that leads from i to a minor-mode vi, the same structure that occurs in the first sixteen measures of the Improvisation no. 13 for solo piano (see Figure 4.4). As in the improvisation, the use of a dominant that is a superset of the augmented triad allows for smooth modulation by major third.

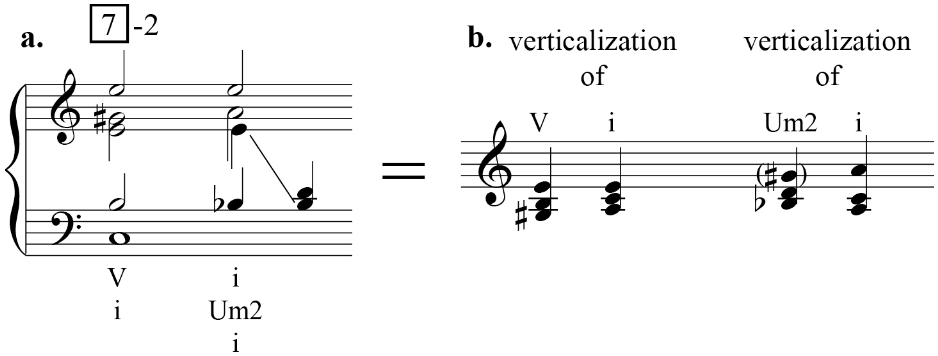

Figure 4.18. Poulenc, "Stabat mater dolorosa," reduction of choral parts in climactic passage.

At rehearsal 5, the chorus and orchestra reprise the music from rehearsal 1. Rather than restating the modulating sequence, they lead to a new climactic passage that reintroduces the Um2 that appeared in the opening. Figure 4.18a reduces the choral parts in the climactic passage, which begins two measures before rehearsal 7. Both chorus and orchestra are given a *forte* mark in this measure, the only such occurrence in the movement. The chorus oscillates between two chords; each mixes two different triads. In the first half of the measure, the basses hold C, the tonic's third, while the upper voices hold notes of the dominant triad. In the second half of the measure, the upper three voices resolve to members of the tonic triad, while the remaining two inner voices sing B♭ and D, the root and third of the Um2. The reduction in Figure 4.18b shows that the first chord verticalizes V and its resolution to i, while the second verticalizes the Um2 and its resolution.

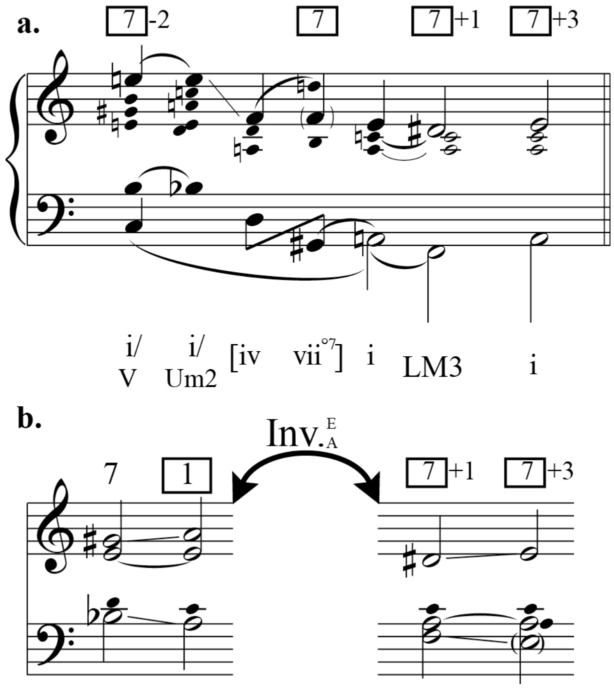

Figure 4.19. a. Poulenc, "Stabat mater dolorosa," reduction of two measures before rehearsal 7 to conclusion. b. Comparison of opening with final cadence.

The conclusion of the movement is reduced in Figure 4.19a. No V–I cadence appears after the climactic chord two measures before rehearsal 7. Instead, the chorus proceeds from the tonic, which is embellished by a neighboring vii$^{\circ7}$, to an LM3 one measure after rehearsal 7. This LM3 then resolves to i. Figure 4.19b compares the initial Um2–i progression with the LM3–i progression that concludes the movement. The first involves a descending semitonal motion to the tonic in the bass, a sustained fifth, and an ascending semitonal motion to the tonic in an upper voice; these three voice-leading motions are shown in half notes. The second progression involves an ascending semitone to the fifth of the tonic triad in the uppermost voice, a sustained root, and an implied descending semitonal motion to the fifth; again, half notes show these motions. The two sets of voice-leading motions are inversions of each other through exchange of the root and fifth of the tonic triad; the curved arrow above the staff shows this relationship. Because of this inversional relationship, the two progressions contain closely related altered scale degrees that played a role in late nineteenth-century harmony, namely, $\flat\hat{2}$ and $\sharp\hat{4}$. Daniel Harrison calls them the "subdominant ambassador to the dominant" and "dominant ambassador to the subdominant," respectively.[67] They provide exact contrary motion to either the dominant or subdominant leading tone, and each has the same tone of resolution to the leading tone that it mirrors.[68] The final progression, in summary, is closely related to the Um2 cadence that began the piece, and represents Poulenc's personalized appropriation of romantic-period harmony. In addition, the recollection of the Um2 at the movement's close prepares listeners to hear the final progression as closing.

[67] Daniel Harrison, *Harmonic Function in Chromatic Music*, 115–117.

[68] In other words, $\flat\hat{2}$ moves in contrary motion with $\hat{7}$ toward $\hat{1}$, the goal of the dominant leading tone, and $\sharp\hat{4}$ moves in contrary motion with $\flat\hat{6}$ toward $\hat{5}$, the goal of the subdominant leading tone. See also the subsection "*Daniel Harrison*" in Chapter 5 of this dissertation.

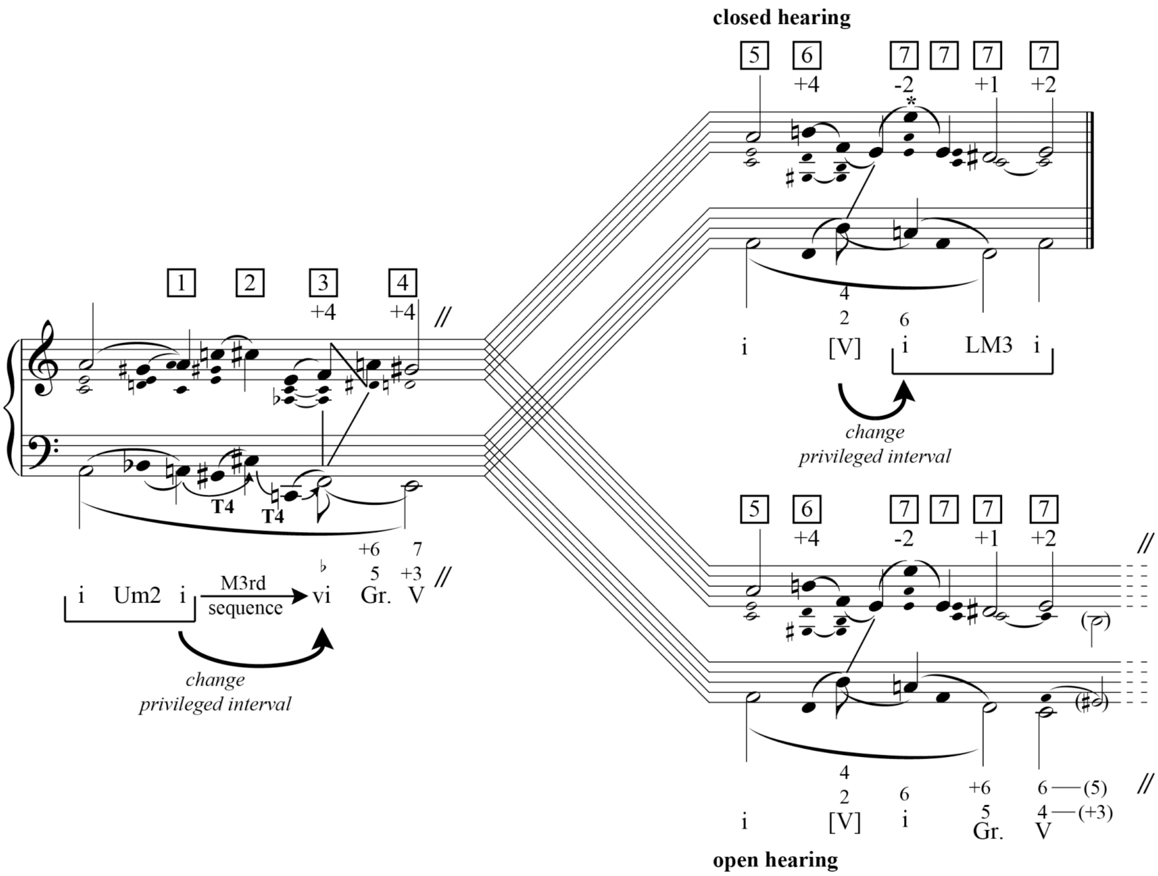

Figure 4.20. Poulenc, "Stabat mater dolorosa," middleground reduction, showing two different hearings of conclusion.

Figure 4.20 provides a voice-leading overview of the entire movement. The left half of the figure shows the first section, while the right half of the figure shows two possible hearings of the second section. The first section begins with a i–Um2–i progression that presents the tonic, and follows with a transpositional sequence that leads to vi$^{\flat}$. This chord is converted into a German $^{6}_{5}$ and leads to an arrival on V^7 four measures after rehearsal 4. Because the opening theme is restated in the immediately following passage, the first half of the movement resembles a Schenkerian interruption form, indicated by the double dashes ("//") above and below the score. The second half of the movement can be heard as either open or closed. In the "closed" hearing, shown on the upper set of staves, the common-practice harmonic structure undergoes transformation in the last four measures, and an LM3–i closes the movement. The hearing presents an incomplete common-practice harmonic progression (i–V over rehearsal 1 to rehearsal 4) framed by altered, but complete, harmonic progressions (i–Um2–i and i–LM3–i). (This hearing leaves an inner harmonic motion that remains incomplete, since the half cadence at rehearsal 4 is never resolved through a common-practice authentic one. Thus, the tension between openness and closure is even present in the putatively "closed" hearing.) The "open" hearing, shown on the bottom staff, interprets two interrupted harmonic motions over the entire movement. It has the advantage of consistent interpretation of the German $^6_5$, but it comes at the cost of ignoring the chromatic chords that appeared at marked locations. When we consider the two hearings simultaneously, we are able to perceive the movement as *both* open and closed, as yearning for a conclusion that is never realized, and as finding, through an unexpected transformation, that the conclusion is provided.

X. "Fac ut portem"

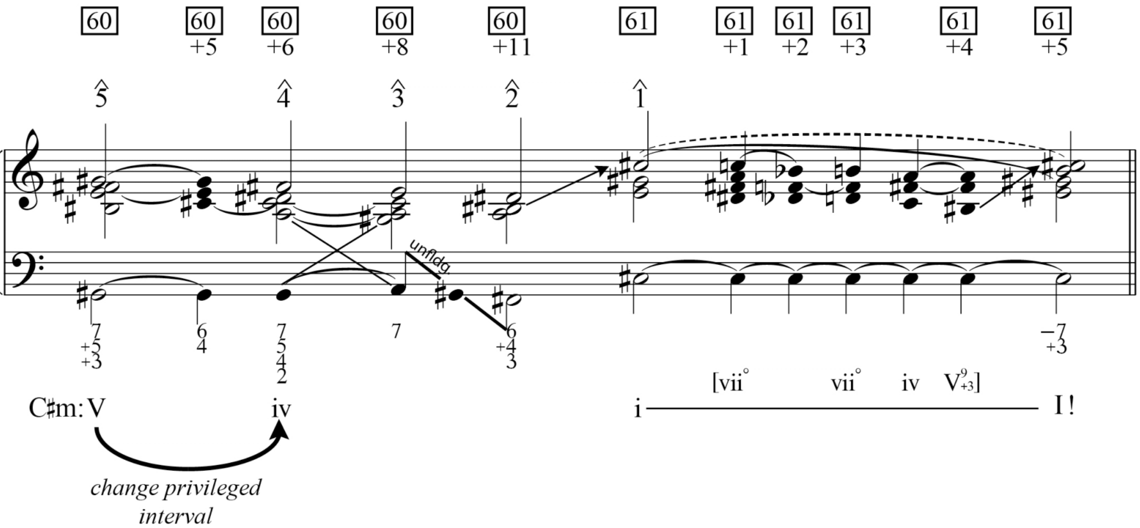

Figure 4.21. Poulenc, "Fac ut portem," foreground reduction of conclusion.

The aesthetic of the fragment—that is, of a simultaneous presentation of completion and its opposite—is inflated in the endings of the last three movements, so that the entire cycle can be heard both as closed and part of a larger whole. These movements use not only changes in root progressions, but also changes in the consonant or dissonant status of individual notes. The first transformation occurs at the end of the tenth movement, which is reduced in Figure 4.21. The movement ends with a long bass pedal on $\hat{5}$ that resolves unexpectedly up by step to $\hat{6}$ eight measures after rehearsal 60; an unfolding of a subdominant chord follows. Eleven measures after rehearsal 60, the chord is inflected to become a fully-diminished seventh, but because $\hat{4}$ remains in the bass and resolves by leap to $\hat{1}$, the subdominant orientation is retained. The end of the movement, therefore, makes a marked change in privileged root motion from down by fifth to up by fifth. After arriving on the tonic at rehearsal 61, a common-practice cadential progression (iv–V–I) sounds over the tonic pedal to confirm the key. The final tonic chord, however, is major and has an added minor seventh—that is, it sounds like a dominant seventh chord, while the previous cadential progression strongly indicates a tonic function. The added seventh therefore functions as a "color note," a note that is added to the triad but does not change its function.

Poulenc may have received the idea of a tonic-functioning major-minor seventh chord from jazz, a style with which he was familiar thanks to his friendship in the 1920s with Darius Milhaud and the musician Jean Wiéner.[69] This particular dissonance added to the tonic triad is not unprecedented, since a handful of other Poulenc songs end with the same chord. "Bonne journée," the first song of the 1935–1936 cycle *Telle Jour, Telle Nuit*, ends with a C-major chord with added minor seventh. This earlier instance is unlike "Fac ut portem" in that it occurs near the beginning of the cycle; one could argue that the added seventh destabilizes the tonic in order to provide impetus for continuation. This added seventh may also be a conscious allusion to the final chord of the first song of Schumann's *Dichterliebe*. The device also appears in song cycles that postdate *Stabat Mater*: "Nuage," the second song of *Deux Mélodies* (1956) ends with a major-minor seventh chord, and the cycle *La courte paille* (1960) ends each of its major-mode songs with a major-minor seventh chord, nearly turning the harmony into a cliché.[70]

[69] Nancy Perloff, "Art and the Everyday: The Impact of Parisian Popular Entertainment on Satie, Milhaud, Poulenc, and Auric," Ph.D. dissertation (University of Michigan, 1986), 148–153. Keith Daniel also discusses tonic-functioning seventh chords in Poulenc's music in *Francis Poulenc: His Artistic Development and Musical Style,* 89–91

[70] The major-mode songs from this cycle are "Le sommeil," "Ba, be, bi, bo, bu," and "Lune d'avril."

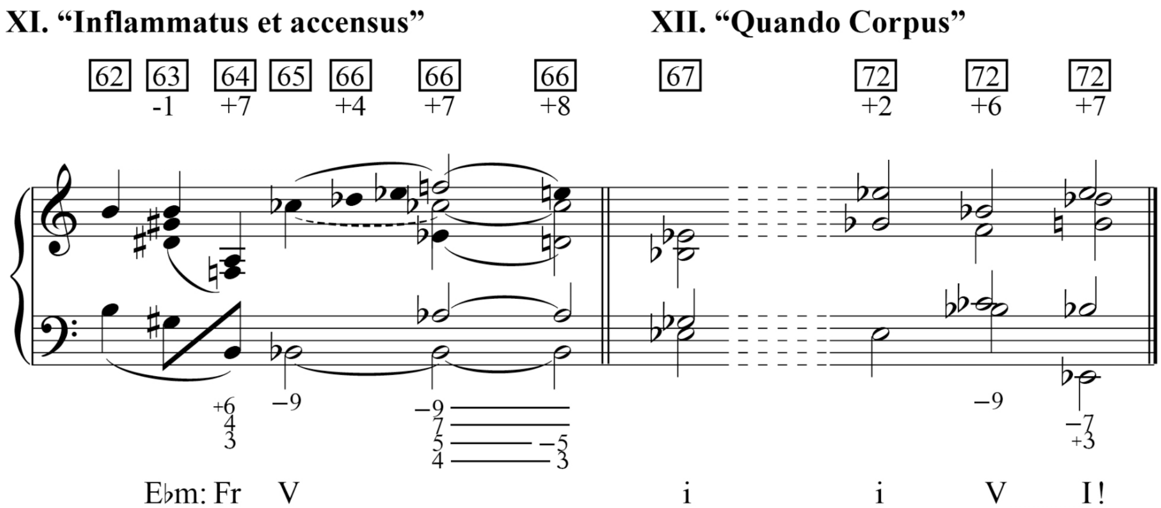

Figure 4.22. Poulenc, "Inflammatus et accensus" and "Quando corpus," summary of harmonic motion.

In *Stabat Mater*, by contrast, the endings of the last three movements are far from cliché; instead, they give the impression of the composer himself willfully imposing a transformation of what is considered stable in order to serve an expressive end.[71] Figure 4.22 summarizes the harmonic motion of the final two movements. Movement XI, "Inflammatus et accensus," is transitional. The beginning of the movement unfolds a French sixth, which leads to a dominant arrival at the movement's close. The dominant chord is heavily inflected, since it contains a minor ninth, lowered fifth, and suspended fourth. Unlike the previous movement, the dominant-sounding chord that concludes the movement also functions like one—it prepares the key of the final movement, "Quando Corpus." At the conclusion of this movement, a dominant with added minor ninth

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[71] In "Theorizing Musical Meaning," *Music Theory Spectrum* 23, no. 2 (Fall 2001), Nicholas Cook states that theories of musical meaning should allow for an expressive purpose to create a breakdown or incompleteness within musical structure, thus opening up space for an intrusion of meaning form words or some other media (190–191). The major-minor sevenths that conclude the ending movements in *Stabat Mater* might provide a case study for such a relationship.

appears six measures after rehearsal 72, recalling the added note that occurred at the end of the previous movement. This chord resolves directly to a tonic with added minor seventh. The previous two movements prepare listeners to accept the final chord as tonic-functioning; nonetheless, the dominant-seventh sonority still carries *psychological* connotations of non-closure and dominantness.

In *Stabat Mater*, Poulenc creates interplay between cues for closure and cues for non-closure. Although this interplay recalls the fragment from the romantic period, Poulenc filters the form through his own twentieth-century expressive aims and harmonic language. The elements of closure and non-closure involve clashes between musical styles—individual movements reference Renaissance polyphony, late romantic harmony, and jazz within short spaces of time—and transformations in what we hear as a closing progression. Several interpretations are possible when the work's fragmentary musical structure is combined with the Latin poem's text. For example, the musical setting of the final "Amen," which concludes a prayer to be united with Christ, could be interpreted both as a mark of closure and an indication that the prayer is yet to be realized.

5. Conclusion

Poulenc's music displays a wide variety of key-defining and closing progressions, due in part to his assimilation of a broad array of stylistic influences. Some toe the line of common-practice tonality; others make use of added dissonance or transformed root motions. Major-third related triads, in particular, recur frequently in his music in a number of guises: they create transpositional sequences, key-defining progressions, dominant preparation, and closing progressions. In some of Poulenc's finest pieces, this root relation takes multiple functions, sometimes within the same phrase or progression. These functions create a musical persona that is ambiguous and self-contradictory, appropriate for a composer who explores conflicting aspects of his own identity. Poulenc's closing progressions reveal a complex and unique voice, even through this voice speaks with "other people's chords."

Chapter 5

Origins and Overlap

1. Introduction

The previous three chapters employ a method of analyzing neo-tonal music that uncovers chromatic operations such as transposition and motivic repetition and, most significantly, expands Roman-numeral analysis and voice-leading reductions through the addition of variant closing progressions. These variant progressions are created through transforming privileged root-relationships or voice-leading structures, and by adding essential dissonances to chords. My use of these progressions as a category for analysis synthesizes of ideas from theorists from the late nineteenth and twentieth centuries who explored the expansion of tonality. How a passage achieved harmonic closure was one of these theorists' central concerns: they offered several explanations of what progressions could establish a key and how these progressions did so. This chapter shows how previous theories implicitly rely on notions of privileged root relations and root motion, as well as how these theories adumbrate how these two musical parameters might be transformed. At the same time, since my system re-synthesizes these ideas to form a mode of hearing that uncovers musical features unavailable to earlier theories, this chapter will highlight points of difference between earlier theories and my own.

2. Hugo Riemann

Theories of harmonic closure in the first part of the twentieth century draw from dualist theories of the late nineteenth century, such as those by Hugo Riemann. Riemann placed the cadential progression as a central feature of his theories, since he believed that in this progression the principles that generate harmonic closure receive their prototypical form.

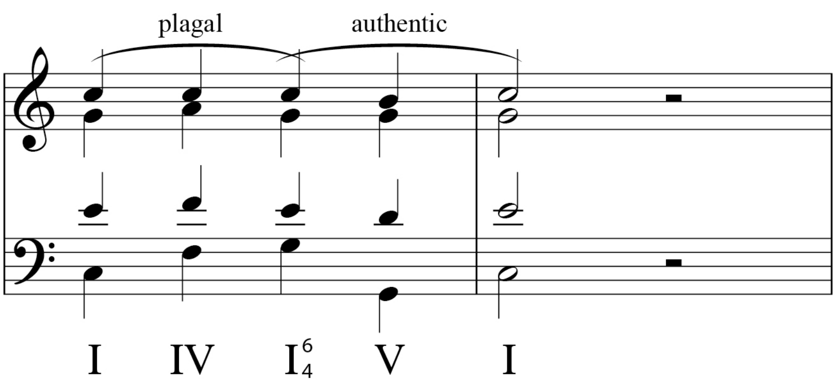

Figure 5.1. Cadence discussed in Riemann's "Musical Logic" (1872).

The concepts of both privileged root *relation* of a perfect fifth and privileged root *motion* down by fifth are outlined in Riemann's 1872 treatise *Musikalische Logik* (Musical Logic). This treatise defines the fundamental cadence as the progression I–IV–I^6_4–V–I, shown in Figure 5.1. Riemann considers this cadence to be a combination of two simpler ones: the "plagal" I–IV–I and the "authentic" I–V–I. (In this early essay Riemann considers I^6_4 a representative of the tonic rather than the dominant; he would later revise this view.)[1] Each cadence gives the tonic a different status. The IV–I motion tends to

[1] Hugo Riemann, *Harmony Simplified [Vereinfachte Harmonielehre]; Or, The Theory of the Tonal Functions of Chords*, trans. H.W. Bewerunge (Originally pub. 1893; English trans., London: Augener, 1895), 22. The idea that the cadential $^6_4$ is a representative of the tonic, rather than the dominant, was common at the time and lasted into the twentieth century. Arnold Schoenberg, for example, discusses the

sound "*mager und kalt* [lean and cold]," because the IV harmony "momentarily challenges" the tonic status of I.[2] In his article "Über Tonalität," he further explains that this is because the root of I is an upper partial of IV:

> C [I in C major] is an overtone of F; this brings about a completely new relationship. . . . C is thereby reawakened in our "memory," but not as a fundamental tone . . . it itself appears as a slave in the retinue of another tone [i.e., it is an upper partial of IV] . . . it is made uncertain by the F.[3]

The final portion of the cadence, V–I, reconfirms the tonic status of I. Its root motion down by fifth gives the impression of return to a generating fundamental tone, and its third (the leading tone) connects to the root by semitone, giving a decisive character to the progression to the final I.[4] Thus, Riemann's system privileges root motion down by fifth, because it represents a motion from the overtone to a fundamental.[5] In his later writings, Riemann places less importance on the appearance of

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pros and cons of hearing this chord as tonic or dominant in *Theory of Harmony [Harmonielehre]*, trans. Roy E. Carter (Berkeley: University of California Press, 1978), 143.

[2] Hugo Riemann, *Musikalische Logik. Hauptzüge der physiologischen und psychologischen Begründung unseres Musiksystems* (Leipzig: C.F. Kahnt, 1873), 51–52.

[3] Mark P. McCune, "Hugo Riemann's '*Über Tonalität*': A Translation," *Theoria* 1 (1985): 145.

[4] Hugo Riemann, *Musikalische Logik*, 52. The fact that the root of the V triad is an upper partial of I is of course pivotal in many theories of tonal harmony. According to Rameau, in the V–I cadence, the fifth seems to "return to its source," since it is included in the upper partials of I, or since it results from the mathematical division of the octave. Carl Dahlhaus discusses this aspect of Rameau's theory in *Studies on the Origins of Harmonic Tonality*, trans. Robert O. Gjerdingen (Princeton: Princeton University Press, 1990), 39.

[5] Privileged root motion was also present in several earlier theories of tonality, of which Riemann was likely aware. These include that of Charles Simon Catel, whose teachings were incorporated by the French Conservatory in 1802 and therefore enjoyed wide currency, and that of Simon Sechter. For a discussion of this feature of tonal theory, see John William Mitchell, "History of Theories of Harmonic Progressions" (Ph.D. dissertation, Indiana University, 1965), 92–100.

I_4^6 within the cadential progression, and attributes the tonic-challenging and tonic-confirming functions to the IV and V triads themselves.[6]

In the same treatise, Riemann discusses another way in which the full cadence confirms the tonic triad; his second explanation relies on non-directed privileged root *relation*, as opposed to directed privileged root *motion*. After I, IV, and V have all sounded, it becomes apparent that I is the only triad that stands in a single relation to the others: it *is* the dominant of IV and *has* a dominant of V. The presentation of all three triads, therefore, confirms the tonic's special position as the only member that is part of both sides of an analogy involving all three chords: I's relation to IV is equivalent to V's relation to I, or I's relation to V is equivalent to IV's relation to I.[7] The successive presentation of chords in this model provides the events within a cadence the same states of tonal instability and stability, but suggests different means through which these states are perceived.[8]

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[6] Kevin Mooney, "Hugo Riemann's Debut as a Music Theorist," *Journal of Music Theory* 44, no. 1 (Spring 2000): 84–85.

[7] This second method builds on the concept of the tonic as relational axis of inversion proposed by Moritz Hauptmann, who was Riemann's most immediate intellectual predecessor. Hauptmann outlines this concept in *On the Nature of Harmony and Meter [Die Natur der Harmonik und der Metrik: Zur Theorie der Musik],* trans. and ed. by William Edward Heathcote (orig. pub. Leipzig, 1853; London: S. Sonnenschein, 1888), 5–13. He deems the I, IV, and V triads as an "outward" expression of the relations of unity, opposition, and union found within the three members of a triad. In *Harmonic Function in Chromatic Music* (Chicago: University of Chicago Press, 1994), Daniel Harrison points out that Hauptmann's generation of IV and V through a duality between an active *having* a dominant and a passive *being* a dominant represents an evolutionary step from Rameau's system, which built triads entirely from overtones and therefore had to consider the subdominant triad the first fundamental (226–228).

[8] Mooney, "Hugo Riemann's Debut as a Music Theorist," 84–85. This model requires that all three triads be held in the mind simultaneously, and requires a higher-order processing in order to relate them. In "Über Tonalität," (1872) Riemann touches on the critical role memory plays in listening to music (McCune, "Hugo Riemann's '*Über Tonalität*,'" 137–139).

"Musical Logic" presents three ideas that Riemann and others developed in later writings. The first two combine *both* root relation and root motion and their role in harmonic progression. The third is a conceptual model of a cadential progression that consists of presentation, destabilization, and re-confirmation of the tonic triad. In "Musical Logic," Riemann uses the labels *thesis*, *antithesis*, and *synthesis* for these three primary events.[9] Although he later abandoned using dialectical language, the model influenced his later discussions.[10]

Riemann's *Vereinfachte Harmonielehre* (*Harmony Simplified*), written in 1893, uses a similar model of the cadence described in "Musical Logic" and shows how it can be instantiated in other chord progressions. His discussion of cadences in this work is more diffuse than in "Musical Logic," since (as with his discussion of the meaning of *function*), he uses the term *cadence* in multiple senses. It can refer both to a specific event that occurs within a musical composition and to an abstract progression that provides a means of understanding the tendencies of chords.

Insight from category theory can illuminate how *cadence* can be used in both a specific and general sense, as well as how specific closing progressions can admit of

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[9] See *Musikalische Logik*, 52–53. Riemann states:

> I see in this occurrence of the tonic after the subdominant the *antithesis* . . . which opposes the thesis of the first occurrence, and which in its synthesis through the dominant again finds the tonic. The shape of this cadence is the prototype of all musical form. This so-called cadence has three especially prominent moments, which we intend to name dialectically: thesis, antithesis, and synthesis. [my translation]

[10] The dialectical model did not only influence Riemann's view of chord progressions. In "Tonal Function and Metrical Accent: A Historical Perspective," *Music Theory Spectrum* 5 (Spring 1983): 9–13, William Caplin points out that Riemann also speculated about the relationship between harmony and large-scale meter and phrasing in his treatises *Musikalische Syntaxis (Musical Syntax)* from 1877 and *Musikalische Dynamik und Agogik (Musical Dynamic and Agogic)* from 1884.

transformation. The cadential progression represents both a "most normal" and a "basic-level" means of establishing a key. The most-normal member of a category is the one that members of a culture most commonly cite as an example, and which provides a prototype for the whole category. Lakoff cites a "robin" as the most-normal example of a bird. Other members, such as ostriches or penguins, are considered "less normal" instances of the category because of their relation to the prototype of the robin, although this feature in no way diminishes their membership. In a similar manner, in Riemann's view, other progressions can be viewed as variant cadential progressions, but they are interpreted as less normal ones.

The basic level of a category is the level of abstraction that corresponds with one's bodily interactions with one's environment. As an example, Lakoff states that one would most likely call an object in one's pocket a "quarter." Only in extraordinary circumstances would one refer to the object in a higher level of abstraction. Most people would be puzzled if someone said, "I have a liquid monetary asset in my pocket," even if this statement were true. Likewise, one would not normally use a greater level of specificity, such as "a 2003 quarter commemorating the state of Montana." *Quarter* represents the basic-level description of a category because it corresponds with a single bodily action related to that category, such as placing it in a vending machine or handing it to a cashier.[11] The cadential progression, likewise, is a basic-level closing progression, but also allows for more general and more specific understandings. The potential for a

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[11] For more on prototype theory, see George Lakoff, *Women, Fire, and Dangerous Things: What Categories Reveal about the Mind* (Princeton: Princeton University Press, 1990), 31–34, 46.

general instantiation is evident when Riemann states that although a cadence is not an entire piece, it provides a "type" or "model" (*Typus)* for harmonic development.[12]

In *Harmony Simplified*, Riemann abandons the use of dialectical language to describe the cadence, instead framing the process of confirming the key in terms of destabilization and reconfirmation of the tonic. The book characterizes progressions and relations between triads through transformations that Riemann had defined in his earlier treatise *Skizze einer neuen Methode der Harmonielehre* (1880). These transformations are defined by the relation between the chords' generating "prime tones" (defined as the root of a major triad, or fifth of a minor triad) and whether the mode of second triad stays the same (*Schritt*) or changes (*Wechsel*).

Privileged root relations and privileged root motion are both assumed in the description of the cadence in *Harmony Simplified*. The privileged relation of perfect fifth defines the three fundamental triads, which are labeled T, D, and S in major, and oT, oD, and oS in minor. A privileged root motion determines their order. Motion from the tonic to its "plain-fifth," represented by the progression T–D or oT–oS, is the most "natural," since it represents a progression to a partial of second order—that is, the prime of the second chord is contained within the first. The reverse progression from a tonic to its contra-fifth—T–S or oT–oD—is a forcible "pressing back" beyond the starting point of harmonic relations. Presupposing an awareness of the tonic, the contra-fifth step causes suspense and the necessity for marked forward motion, because it represents a gesture contrary to the natural inclination of a key. The contra-fifth chord does not generally lead

[12] Hugo Riemann, *Harmony Simplified*, 45.

directly to the tonic, because this facile solution to the conflict previously introduced would be unsatisfying. Instead, the plain-fifth chord usually follows, and leads to the tonic. The return *from* a plain fifth to the tonic (D–T or oS–oT) is identical in its exteriors to a motion from the tonic to the contra-fifth (T–S or oT–oD). In the context of a four-chord progression, however, it has the opposite effect and meaning, since it represents a return to the original chord and the generating prime tone. To use Riemann's metaphor, "[t]he contra-fifth clang [chord] is the stretched bow which slings the arrow beyond the mark [i.e., to the plain-fifth and finally to the tonic]."[13]

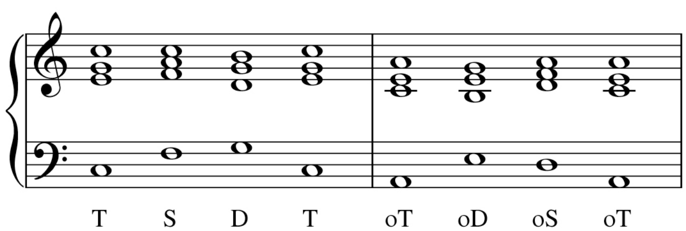

Figure 5.2. Cadential Progressions from Hugo Riemann's *Harmony Simplified* (1893).

The process of destabilization and return to generating prime yields the two progressions shown in Figure 5.2. Riemann says of them: "The resulting T–S–D–T and oT–oD–oS–oT, or the so-called complete (bilateral) cadences, are therefore quite essentially representative/typical [*typisch*] for harmonic motion."[14] This assertion is clearly at odds with musical practice: it assumes that i–v–iv–i is the representative cadential progression for minor keys, while any cursory analysis of minor-key pieces

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[13] Ibid., 28–29.

[14] My translation. Hugo Riemann, *Vereinfachte Harmonielehre*, Zweite Auflage (Orig. pub. 1893; London: Augener, 1903), 30. "Die Folgen T–S–D–T und oT–oD–oS–oT sind daher recht eigentlich typische für die Harmoniebewegung, sogenannte vollständige (zweiseitige) Kadenzen."

from common-practice literature shows that their cadences end with V♯–i.[15]

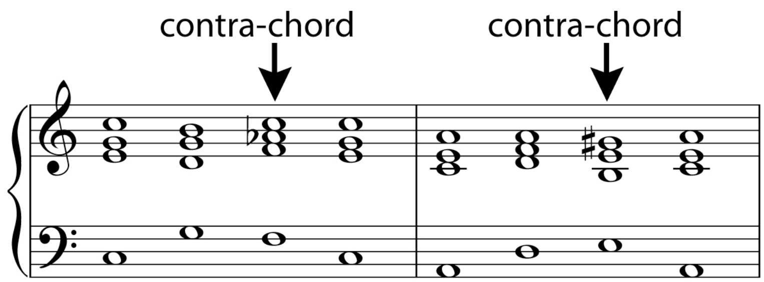

Figure 5.3. Cadence by contrary combination from Riemann's *Harmony Simplified*.

Riemann accommodates the V♯–i progression in minor (and, as an ancillary bonus, the opening progression of Felix Mendelssohn's *Midsummer Night's Dream* Overture) by defining a variant on the bilateral cadences through what he calls "contrary combination." As shown in Figure 5.3, contrary combination is achieved by placing the "contra-chord," which has the same prime note but opposite mode of the tonic, after the plain-fifth chord. The second example in Figure 5.3 yields a familiar common-practice cadential progression in A minor. He stresses that one need not consider the F-minor triad in the first example a substitute for an F-major triad. Instead, the progression uses a plain-fifth chord from the parallel major and minor modes. In other words, the cadence is a combination of two simple authentic cadences in parallel keys (I–V–I and i–iv–i), and

[15] Riemann's unusual conclusion about minor-key cadential progressions stems from his initial premise that the minor triad is the conceptual dual of the major triad. In *Harmonic Function in Chromatic Music* (Chicago: University of Chicago Press, 1994), Daniel Harrison argues that he clung to it in part to attempt to "redeem" minor and present it as equal to major, a goal made more urgent by Helmholtz's claim in 1867 that minor was a "colored" or "inferior" version of major (242). Discussions of dualist theory from the twentieth century also note its close involvement in the debate over the status of minor. Two examples are Otto Ortmann, "The Fallacy of Harmonic Dualism," *The Musical Quarterly* 10, no. 3 (July 1924): 369–383; and Dale Jorgenson, "A Résumé of Harmonic Dualism," *Music and Letters* 44, no. 1 (January 1963): 31–42.

should not be thought of as a bilateral cadence.[16] Riemann does not deny that the effect of these contrary-combination cadences strongly resembles that of bilateral cadences, but he argues that this similarity stems from the fact that it follows a similar model of dynamic increase and decrease in tension over time. That is, it follows the cadence's *conceptual* model, but relies on a different set of relations between prime notes. The tension in a cadence by contrary combination stems not from the destabilization of the tonic by undermining its status as generator of the other notes in the system, but through destabilization of its mode. The contra-chord creates ambiguity over whether the tonic is in the major or minor mode, and this ambiguity can resolve itself only when the tonic in the correct mode concludes the progression.

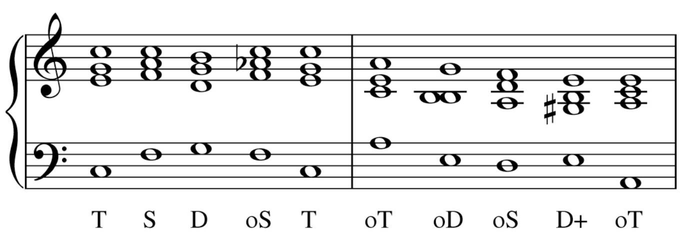

Figure 5.4. Extended versions of cadences by contrary combination.

This schema also explains why the contra-chord appears second-to-last: so that the greatest tension will occur before the final motion to the tonic. In addition, the contra-chord and tonic share the same prime note, so that when it appears it represents a "decided return to the starting point." All that remains is to "turn about the prime" as the pivot (and center of inversion).[17] Placing the contra-chord earlier would create a premature tonic arrival. Given this reasoning, an appropriate combination of the bilateral

[16] Hugo Riemann, *Harmony Simplified*, 45.
[17] Ibid., 45.

and contra-fifth cadences is shown above in Figure 5.4.

Many would argue that Riemann's insistence on not labeling the contrary-combination cadence as a bilateral cadence is a hair-splitting, if not silly, distinction. Carl Dahlhaus criticized Riemann for his convoluted explanations, and suggested that he would have done his theory a service if he jettisoned his commitment to harmonic dualism.[18] Nonetheless, Riemann deemed it necessary to maintain the distinction between bilateral and contrary-combination cadences in order to preserve the notion that minor triads are generated from their fifth. His discussion of the contrary-combination cadence shows how a variant progression can derive from the bilateral prototype. Other transformations of the prototype result from substituting or adding transformed versions of one or more harmonies in the progression. The most common transformations are the relative [*Parallel*] and leading-tone change [*Leittonswechsel*], which each allow a triad to undergo an alteration while retaining its role within the ongoing progression.[19]

Because the definition of the cadence becomes so broad as to operate at different levels of abstraction, Riemann uses a different term, "close" (*Schluss*), to describe the conclusion of a specific section, a definition that some theorists had previously attached to the term *cadence*. A full close is defined as the satisfactory entry of the tonic that allows for "cessation without the desire of continuation." The cadential progressions, as previously defined, play a role in helping to make a close sound final, but so do metrical

[18] Carl Dahlhaus, *Studies on the Origins of Harmonic Tonality,* 55–57.

[19] Thus, in Riemann's theory, the progression "I–vi^6–IV–ii^6–V–iii^6–I" is also a cadence, since each of the inserted chords is an alteration of the primary chord that precedes it. Note that Riemann uses the label *Parallel* to describe the *Terzwechsel*, which American theorists would call the relative.

factors. In Riemann's words, a full close occurs "at the end of a cadence [that is, at the end of a cadential progression described above] that takes place at a point possessing rhythmical cadential power in a higher degree."[20] In other words, it occurs where a cadential progression coincides with a large-scale downbeat.

This definition of a close encompasses standard classical cadential formulae such as V–I or V^7–I, but can include others. Riemann proposes that progressions such as iv–i, $\text{ii}^{ø6}_{5}$–i, iv–I, or V♯–i, can also serve as closes; he sees no need to distinguish so-called authentic and plagal closes.[21] These expanded definitions draw from the transformation of the harmonies in the cadential cycle through substitute chords or contrary combination defined previously.

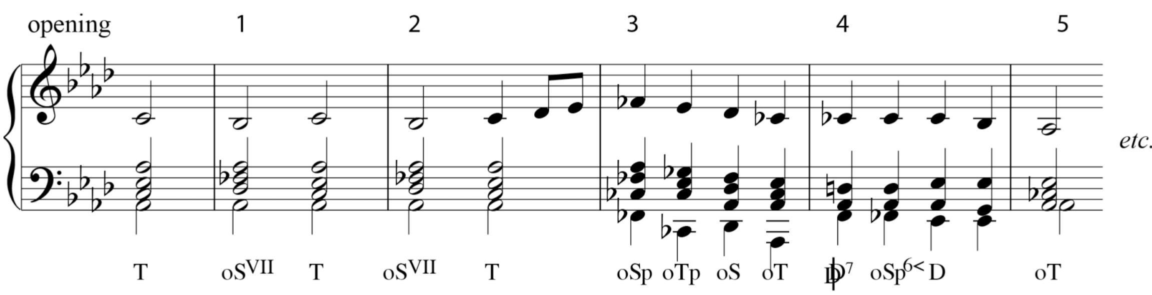

Figure 5.5. Antonín Dvorák, Piano Trio in F minor, op. 65 (1883), opening of third movement.

Musical practice supports Riemann's assertion that, at least in the later nineteenth century, several progressions can qualify as closing. This assertion opens up the possibility of transformed root relations providing a closing function, given the proper

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[20] Hugo Riemann, *Harmony Simplified*, 95. The notion of "rhythmic cadential power" assumes an analogy between the tonic triad and hypermetric downbeat. According to William Caplin's "Tonal Function and Metrical Accent: A Historical Perspective" (10), Riemann previously discussed this concept in the 1877 treatise *Musikalische Syntaxis (Musical Syntax)*.

[21] Ibid., 95–96.

musical context. Riemann does not analyze any pieces from the repertory in *Harmony Simplified*, but the opening and conclusion of the slow movement from Dvorák's Piano Trio in F minor, Op. 65 (1883) provides an example of a harmonic close that departs from common practice. Figure 5.5 shows a rhythmic reduction of the opening, along with an analysis using Riemann's notational system. In mm. 1 and 2, the piano alternates between the tonic and the minor subdominant with added characteristic dissonance. The "VII" suffix after the minor subdominant symbol on the downbeat of m. 1 indicates an added note that is a seventh below the prime, which is the fifth of a minor triad (in other words, it interprets the chord as a D♭-minor triad with an added B♭). Reading the triad as an enhanced subdominant, rather than an inverted $ii^{ø7}$, highlights the "plagal" effect of the first two measures.[22]

The use of the minor subdominant creates ambiguity as to the mode of the passage. Confusion about the mode is heightened in m. 3, where two more subdominant-functioning chords proceed to tonic-functioning chords; this time both are in minor mode. The first oS and oT chords have a suffix "p." This indicates the use of a *Parallel* (read: relative) substitute. That is, the first chord is heard as a "relative of the minor subdominant," the second as "relative of the minor tonic." The last four chords of the excerpt also arrive on the minor-key version of the tonic chord through a variant of the contrary-combination cadence: oSp^{VI}–D–oT. The $oSp^{6<}$, which would be labeled a

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[22] Riemann believed that the "characteristic dissonance" added to a subdominant chord was a sixth above its root, rather than a fifth (*Harmony Simplified*, 56). John Gabriel Miller, in "The Death and Resurrection of Function" (Ph.D. dissertation, Ohio State University, 2008), also argues for interpreting some dissonant constructs as added-sixth chords (101).

"German sixth" in contemporary theory, is heard as the relative of the minor subdominant with an added dissonance that is a raised sixth above the root. The first chord in m. 4 is analyzed with two overlaid D's [Ɖ], indicating the dominant of the dominant. The Arabic numeral 7 indicates a seventh added above the prime, and the vertical line through the D indicates a suppressed root. According to Riemann's theory, the progression over mm. 4–5 creates a small-scale destabilization and confirmation that matches the large-scale modal destabilization created by moving from the major to minor tonic.

Figure 5.6. Dvorák, piano trio in F minor, conclusion of third movement.

The movement's final measures, reduced in Figure 5.6, recapture the original key and mode. Measures 92 through 94 effect a motion from tonic to dominant with added seventh. In the second chord in m. 92, the "(D)" in front of the added oTp indicates that the chord is the dominant of the minor tonic parallel (that is, C♭ major). Measures 96 to 102 state several versions of a minor subdominant moving to the tonic triad. The Riemannian analytical notation outlines the precise relation of each minor-subdominant variant to its prototype. The “<“ sign in front of the symbol underneath the second chord in m. 96 indicates that the note a fifth from the prime is raised—what would be called the L transformation in neo-Riemannian terminology. Therefore, this chord is the “L of the minor subdominant with added seventh.” Although the chord could be interpreted multiple ways, the bass motion from A♭ to D♭ strongly suggests a motion from tonic to subdominant. The G♭-minor chord on the third beat of mm. 97 and 99 can be interpreted in two possible ways. Two overlaid oS signs in the lower row show an interpretation of the chord as minor subdominant of the minor subdominant. The upper row shows my preferred interpretation as an L-transformation of the minor subdominant (that is, an A-major triad) with an added sixth and omitted fifth.[23] This latter reading shows the connection of this chord to the other transformations of the minor subdominant found in the passage. The analysis offers a similar interpretation of the G♭ minor seventh chord on the third beats of mm. 99, 100, and 101, except for that the fifth is no longer omitted in the final two instances. Although the G♭-minor triad differs by only one semitone from the G♭-major triad of m. 92, beat 3, its relation to the tonic is quite different. The first triad is a dominant of C♭, while the second is a transformed version of the subdominant. An additional two S–T motions drawn from the major mode conclude the movement over mm. 102–104, sounding like major-mode echoes of the previous oS-T rather than an onset of a new cadential cycle. These chords underscore the subdominant orientation of the second half of the ending.

[23] Note that the characteristic dissonance of a major subdominant is an added sixth (Hugo Riemann, *Harmony Simplified*, 55–56).

The analysis in Figure 5.6 shows that the movement's conclusion is based on a modified version of Riemann's contrary-combination cadence: an additional tonic is inserted into the sequence T–D–oS–T to become T–D–T–oS–T. This final cadence resolves the modal ambiguity created by the opening of the piece, fulfilling the function of a contrary-combination cadence as Riemann described it. The analysis also shows that a chord's relationship to the cadential prototype depends on context, and that many root relations can be heard as projecting a oS–T closing progression. For example, the chord on the second beat of m. 96 has a root a semitone above the tonic, and the chord on the second beat of m. 99 has a root a whole tone below. Thus, Riemann's theory allows for an *effective* transformation of which root relations can confirm the tonic. Riemann himself was aware of this aspect of his theory, as evidenced by his exploration of the ramifications of his theory for major-third root relations. Chapter 5 discussed these implications in greater detail.

3. Arnold Schoenberg

Schoenberg's discussion of the cadence in *Theory of Harmony* (1911; rev. 1921) serves two ends. The first is to devise a system that explains common-practice harmony, and the second is to identify potential paths of evolution within this system that point to both modern tonality and incipient atonality. In order to achieve his first end, he draws on ideas from several previous theorists. One idea that appears in his writings, which does not appear in Riemann's, is "fundamental progressions," a classification of root motions based on their strength or key-defining ability.[24] Like Riemann, Schoenberg views the cadence as a process of destabilization and subsequent restoration of the tonic triad, treats the tonic as the central axis of inversion within a system of relation by upper and lower fifth, and appeals to a notion of privileged root motion. The cadential progression serves to re-establish the status of the tonic and eliminate any confusion about which note is the tonic pitch.[25] Since a tone tends to lose itself in the tone a fifth lower—that is, sound like its upper partial—a cadence that expresses closure in C major must cancel F major. It does so through the pitch B natural. A number of chords can

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[24] Fundamental progressions establish relations of natural succession and substitution among the triads in a key, and weight each relation in its ability to confirm a key. Simon Sechter's *Stufentheorie* provides an example. Sechter states that triads create a key by two factors: firstly, they are built from the notes of the same diatonic scale that defines the key; secondly, they are put into a set of relations defined by bass motion of descending fifth, as in I–IV–vii^{o}–iii–vi–ii–V–I. Sechter qualifies each relation so that that V–I is the "most decisive," ii–V is less so, vi–ii is less so, and so forth. By invoking Rameau's concept of "imagined dissonance," Sechter argues that other common chord successions are transformed versions of a down-by-fifth progression. A root progression up by step, such as I–ii, reduces to a fifth progression through treating the first member as a fragment of a seventh chord; that is, by calling I a "vi^{7} with no root." A root progression down by step, such as vi–V, reduces to a fifth-progression through treating the first member as a fragment of an incomplete 9th chord. Chords can also take "double meaning." For example, in a progression I–IV–V–I, I–IV is the first succession, while the second succession is characterized as ii$^{7/(\text{no root})}$–V. The second harmony acts both as IV and ii^{7}. A definition of fundamental progressions can be found in Carl Dahlhaus, *Studies on the Origins of Harmonic Tonality*, 33–36; and John William Mitchell, "History of Theories of Harmonic Progressions," 92–100. The concept of privileged root relations defined by a fundamental progression still holds some currency, and appears in theory textbooks. For example, Chapter 7 from Stefan Kostka and Dorothy Payne's *Tonal Harmony,* 5th ed. (Boston: McGraw-Hill, 2004) explains some common harmonic successions by relating them to a network based on root motion of descending fifth and third-related equivalencies.

[25] Arnold Schoenberg, *Theory of Harmony [Harmonielehre]*, trans. Roy E. Carter (Berkeley and Los Angeles: University of California Press, 1978), 129. Schoenberg allows that in a short musical passage, a key could be defined by the single appearance of the tonic chord, or by a I–V–I progression, since this uses the strongest possible root progression. A single melodic line can also establish a key, since Schoenberg believes that melody has its origins in harmonic generation from the fundamental tone (*Theory of Harmony*, 130–131).

include this pitch, but V is the most preferred, because its root seeks to become the fifth of I. In longer passages, there will also be progressions that point toward the dominant, and therefore the dominant must also be eliminated as a potential key. In C major, the pitch F natural serves this purpose, which suggests either IV, ii, or vii^{o} as a precadential chord.[26] IV is the best option because it provides the sharpest antithesis to V, and its relation to I is the inverse of that of V.[27] IV–V–I is the preferred form for cadences since IV to V cancels the natural drift toward the subdominant, and concludes with root motion down by fifth, which is the most natural progression.[28]

Schoenberg classifies cadences into several types; his most basic criteria is whether the progressions follow IV–V–I, ii–V–I, or vi–V–I, which qualify them for the label of an authentic cadential progression.[29] Schoenberg does not go as far as Riemann in granting plagal cadences equal status with authentic cadences, but states that while the authentic cadence is the most complete type of close, other closes, such as plagal ones, can be used for contrast. If the final two harmonies are altered in some way (put into inversion, for example), the cadence is classified as imperfect.

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[26] Schoenberg notes that vii^{o6} was frequently used at cadence points in the early Renaissance. In C major, this chord would contain both f natural and b natural, the tones that cancel both the dominant and subdominant. He speculates that perhaps by subduing more than one triad the tonic is able to assert greater power, and therefore composers came to prefer the succession IV–V–I (*Theory of Harmony*, 132).

[27] Arnold Schoenberg, *Theory of Harmony*, 132. Schoenberg also states that the progression from IV to V already contains ii within itself, since it is an abbreviation of IV–(ii)–V.

[28] Ibid., 132. Schoenberg also states that V–IV implies an abbreviated V–(I)–IV–I, and this repeated tonic chord weakens the progression. The implied I harmony that is “skipped over” is based on a theory of fundamental progressions.

[29] Technically, the progression vi–V–I is not as strong as the other two in Schoenberg’s theory, since vi does not lead to V by a fundamental progression, nor does it create an analogous relationship with I to that between V and I. He adds the progression to this group for lack of a better place in which it might be categorized.

Schoenberg's discussion of the cadence accords with common practice. The principle of *imitation*, a recurring theme in his book, allows him to achieve his second end of explaining modern harmony and paving the way for atonality.[30] Imitation allows a harmony that closely resembles another to substitute for it, or it allows a harmony in one context to imitate the function of another that it closely resembles. The Neapolitan sixth substituting for ii^{o6} provides an example of the former; an enharmonic reinterpretation of a German six-five as a V^7 provides an example of the latter. Imitation allows a vastly increased number of harmonic progressions to occur within his system. This aspect of his theory has a clear effect closure in twentieth-century tonality: he states that there are likely *other* harmonic means "whose capacity for forming cadences, or, far more, for admitting them, is just as great as that of IV, ii, V, and I."[31] Cadences may in fact no longer be necessary, Schoenberg states, since a work that is full of vagrant harmonies (i.e., those that can function in a multiplicity of keys) calls into question the necessity of fortifying a single key.[32]

4. Alfredo Casella

Alfredo Casella's *L'evoluzione della musica a traverso la storia della cadenza perfetta (The Evolution of Music throughout the History of the Perfect Cadence)*, written

[30] Arnold Schoenberg, *Theory of Harmony*, 27.
[31] Ibid., 133.
[32] Ibid., 133–134.

in 1924, gives an early example of analyses of cadences in twentieth-century music.[33] Casella's purpose for writing his book is to show how modern music displays an increasingly evolved harmonic language.[34] Evolution is indicated, in his view, by chords that contain a greater number of pitch classes and show non-diatonic pitch collections.[35] In this respect Casella was consistent with a trend among many theorists in the first part of the twentieth century: David Bernstein points out that even theorists from the time who were principally concerned with voice leading were inclined to extend the range of simultaneities that could be considered chords. Stephen Peles points out that Schoenberg took this principle to its ontological conclusion by stating that so-called "non-harmonic tones [*harmoniefremde Töne*]" do not exist, an assertion that led to a vituperative debate with Schenker.[36] To trace the development of harmony, Casella focuses on chords that summarize "the principal characteristic features of the wonderful modern tonal system"—that is, those that appear in a perfect cadence.[37] He defines as a cadence any progression that is a variation on the fundamental bass progression IV–V–I. The bulk of

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[33] Alfredo Casella, *L'evoluzione della musica a traverso la storia della cadenza perfetta [The Evolution of Music throughout the History of the Perfect Cadence]*, 2nd ed., trans. with additional notes and examples selected by Dr. Edmund Rubbra (orig. pub. 1924; London: Chester, 1964).

[34] Casella believed that harmony, not melody or rhythm, was the most essential element in music, because its origin lies in a physical phenomenon, namely the "the resonance of bodies"—that is, the overtone series (*The Evolution of Music,* v). He states: "To sum up:—*harmony* is 'music' in the absolute sense of the term; a chord is a sound-value of an essentially and exclusively musical order" (vi, emphasis in original). Casella argues that the modern era, beginning with the nineteenth century, is characterized by a discovery of harmony, and that it was therefore the most evolved musical era (vii).

[35] Casella, *The Evolution of Music*, 7–8.

[36] David W. Bernstein, "Georg Capellen's Theory of Reduction: Radical Harmonic Theory at the Turn of the Twentieth Century," *Journal of Music Theory* 37, no. 1 (Spring 1993): 85–116; and Stephen Peles, "'*Was Gleichzeitig Klingt*': The Schoenberg–Schenker Dispute and the Incompleteness of Music Theory," *Music Theory Spectrum* 32, No 2 (Fall 2010): 165–166.

[37] Casella, *The Evolution of Music*, vi.

Casella's book consists of musical excerpts drawn from a span of six centuries, all of which end with what he deems a perfect cadence. The value of Casella's analyses is significantly undermined by confirmation bias—that is, the tendency to select only the data that support his own claims. In addition, by restricting himself to examples that suggest a IV–V–I pattern in their bass line, he arguably gives an incomplete portrayal of harmonic progressions in his day. Nonetheless, his examples demonstrate the increased use of altered scale degrees and added notes within cadential harmonies, foreshadowing transformations used in this dissertation.

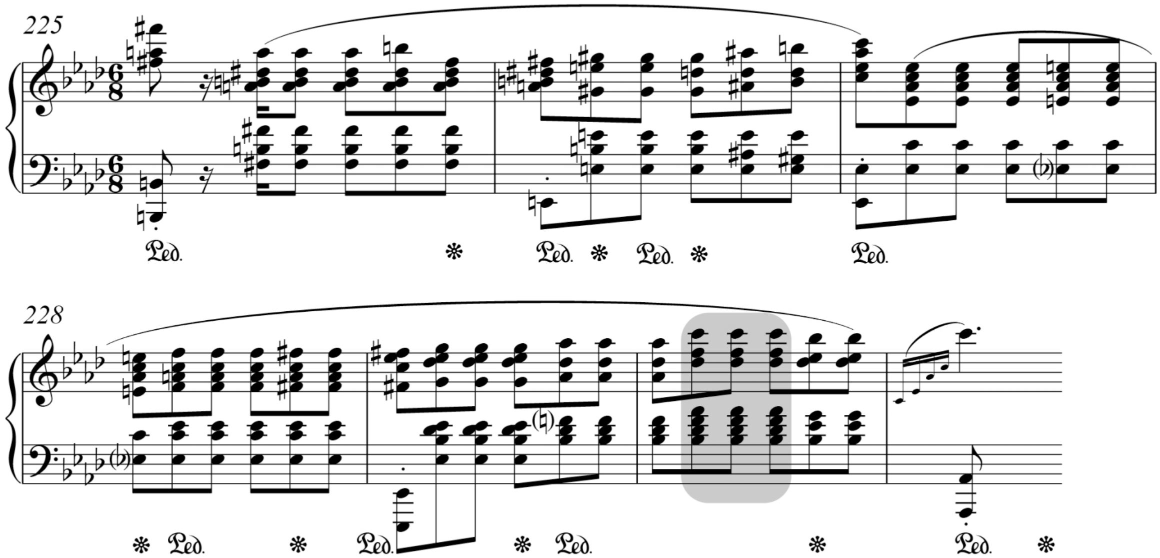

Figure 5.7. Measures 225–231 of Chopin's Ballade no. 3 in A♭-major (1841), with Casella's identification of "dominant eleventh" in shaded portion.

Casella's eagerness to identify increased harmonic complexity leads him to interpret some chords in a way that few present-day theorists would. For example, he shows the existence of ninth and eleventh chords with a cadential progression from Chopin's A♭-major Ballade (1841), shown in Figure 5.7. The notes of the chord on the second eighth in m. 230 (shaded in the score) form a "very modern" dominant eleventh.[38] (Curiously, Casella does not note the "thirteenth" in the upper part of the right hand.) While one could argue that the twentieth century witnessed the emergence of seventh, ninth, and eleventh chords as self-standing, relatively stable entities, citing Chopin's A♭ Ballade as an earlier instantiation of one of these entities is not entirely convincing. Although the ninth and eleventh are introduced by leap, they clearly resolve to members of V^7 during the following beat and are therefore easily heard as upper neighbors. To be sure, stable eleventh chords may have had a *precedent* in the introduction of an eleventh by figuration, which the Chopin example provides, but the contextual support for hearing them as stable only appears in later styles.

Casella's aim is surer when he identifies trends in modern harmony. Many of his examples show how alterations can be made to a dominant-functioning harmony without destroying its ability to create harmonic closure. In examples from Modest Mussorgsky (*Boris Gudonov*, Act I) and Erik Satie (Sarabande no. 2), Casella identifies the use of a lowered leading tone in a dominant chord. He dubs each leading tone an example of the "Hypodorian [ipodorico]" or "Hypophrygian [ipofrigio]" mode; today they would be called Aeolian and Mixolydian.[39] In mm. 61–66 from Claude Debussy's "Soirée dans Grenade" from *Estampes* (1903), Casella notes that a theme built from the whole-tone scale is stated over the bass $\hat{5}$. In m. 67, the bass moves to $\hat{1}$ while the upper voices state a major triad. The whole-tone collection therefore takes a dominant function, and the

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[38] Ibid., 26. Note that the piano's sostenuto pedal would be held after the low E♭ in the fifth measure of the excerpt, so that it still acts as the bass note.

[39] Ibid., 37, 49.

contrast of mode and harmonic color between the collection above the dominant bass note and the following tonic major triad heightens the sense of forward motion and resolution.[40]

Figure 5.8. Casella’s identification of an “altered tonic” harmony from Béla Bartók’s *Ten Easy Piano Pieces* (1908). a. Excerpt from work. b. Casella’s analysis

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[40] Ibid., 55. These progressions occur at the close of relatively self-contained sections, and bear a striking resemblance to classical cadences. But cadences do not necessarily play as important a role in defining the form of Debussy’s music. They do not always appear at the end of a piece, and some pieces do not use them at all. In *Tonality–Atonality–Pantonality: A Study of Some Trends in Twentieth Century Music* (London: Rockliff, 1958), Rudolph Réti notes that a descending-fifth motion might serve merely a local structural function, one that quotes “the pitches of the dominant–tonic progression, rather than their harmonic idea.” He cites as an example Debussy’s “Reflets dans l’eau” (59–66).

After identifying musical examples that alter dominant-functioning chords through added notes, Casella identifies progressions in which notes are added to the tonic triad. He interprets the excerpt from Bartók's *Ten Easy Piano Pieces* (1908), shown in Figure 5.8a, as an arpeggiation through two complex harmonies, which he reduces in his analysis on the two staves, reproduced in Figure 5.8b. The two harmonies, he states, are in the relation of a "simple harmonic formula."[41] The Roman numerals attached to different collection of notes are my own addition to Casella's reduction. Whether this "harmonic formula" refers to the relation between V^7 and I or VI and I is unclear, but his beaming suggests that he conceives of the passage as a VI–I progression in B major combined with V^7 harmony that is suspended into the following chord. The V^7 in the upper voices does not resolve—only the chordal seventh drops by third to the fifth—and instead the notes sound simultaneously with the tonic harmony to form a seventh and ninth. Casella likely includes this passage in his book because it involves three triads typically involved in a cadential progression—VI, V^7, and I—but it should be noted that, because V^7 does not resolve, its function potentially changes. The notes could be conceived as added color given to both VI and I, while it is the VI to I motion that gives harmonic closure in the progression.

5. Vincent Persichetti and Leon Dallin

Vincent Persichetti's *Twentieth-Century Harmony*, written in 1961, is a hybrid between a theory book and compositional manual, and describes several techniques used

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[41] Ibid., 60.

by composers in the early twentieth century, with a view toward defining a common practice for this period.[42] In order to provide evidence for the widespread use of the techniques described, he refers the reader to several musical scores at the end of each section, which generally prove to be apt illustrations.[43] His techniques do not form a closed, coherent system, nor does he seem particularly concerned with forming one; rather, his book catalogues compositional practices, as he understands them, of his contemporaries.

Persichetti's definition of cadence focus on the specific musical events that create closure: "an organization of melody, harmony, and rhythm that gives a connotation of rest and serves to close a section or a piece."[44] When he is identifying precisely which musical elements connote harmonic closure, he implicitly relies on the prototype of a V^7–I progression in common-practice tonal music, treating this progression as a bundle of related concepts that involve resolution of dissonance, characteristic root motion, and melodic motion to a point of rest. Altering or reversing some or all of these characteristics allow for new types of progressions to be generated.

Persichetti argues that by simply obliterating all voices but one, or by obliterating all voices and leaving only a percussion note of indefinite pitch, a composer can create a convincing cadence.[45] This effect is stronger when it is "verified rhythmically"—that is,

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[42] Vincent Persichetti, *Twentieth-Century Harmony: Creative Aspects and Practice* (New York: Norton, 1961), 9–10.
[43] The examples are listed on pages 210–211. His list of "characteristic cadences" includes works by Boulez (!), Chávez, Copland, Imbrie, Maderna, Poulenc, Schoenberg, Schuller, Togni, Usmanbas, Vlad, and Weber.
[44] Persichetti, *Twentieth-Century Harmony*, 206.
[45] Ibid., 208.

when the event coincides with a large-scale downbeat. His example of the conclusion (from rehearsal 107 to the end) of Carlos Chávez's *Sinfonía india* (1935–1936) illustrates his argument.[46] The work's melodic and rhythmic features mimic aspects of tonal phrase models, even though harmonic progressions that suggest closure are absent. The woodwinds play a melody that recurs every four measures of 6/8; it has an ABA'B structure, establishing a hypermeter of four measures that divides into two equal smaller units. When the winds repeat the melody a third time, they play only its first two measures, and in the second half they repeat a single pitch. The gradual obliteration of melodic material resembles the process of liquidation that occurs in the continuation section of a sentence and signals an impending cadence. The obliteration of all pitches except a single one represents a motion from relative dissonance to relative consonance, mimicking the same process seen in a V^7–I progression. All instruments are cut off by a hit played by all of the percussionists, which also occurs on a hypermetric downbeat.

Persichetti's theory of cadential closure is also informed by the expansion of rules of harmonic syntax, a process that foreshadows the change of privileged interval of root relation described in Chapter 1 of this dissertation. He suggests that that the normal cycle of fifths can be transformed by using a different interval of generation, such as a second or third, creating a new system of chordal successions.[47] In a "perfect" cadence, the root

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[46] Ibid., *210.*

[47] Ibid., 66–68. Persichetti argues that deceptive cadences give the impression of a "harmonic slant" because they end with a root motion that does not come from the basic generating cycle. In standard tonality, the standard root motion is by fifth, and so motion by step (as in V to vi) indicates a harmonic slant. If a work established root motion by step as normative, then, according to Persichetti, motion by fifth would be deceptive.

progresses by one step along the cycle of the generating interval, or one "scale step," to the tonic. He also alludes to the possibility of a system of syntax that involves three different chordal functions resembling the tonic, subdominant, and dominant: "Usually three basic chords are needed to produce a feeling of tonality: one built upon a scale step above the tonic, one below the tonic, and the tonic itself."[48] His examples from the literature, however, do not contain instances this latter concept. Persichetti also states that the final cadence may find that a prominent subject in a different key has made a bid for a new tonality, causing a cadence of two or more simultaneous keys.[49]

Figure 5.9. Copland, *Music for the Theatre* (1925), beginning of fourth movement, reduction and analysis.

Persichetti cites as a characteristic cadence the end of "Burlesque," the fourth movement from Aaron Copland's *Music for the Theatre* (1925), and this passage provides a useful illustration of both an altered interval of generation and a cadence of simultaneous keys.[50] My reading of the opening of the movement is shown in reduction in Figure 5.9. The first three measures contain a musical gesture that suggests a cadence.

[48] Ibid., 248.
[49] Ibid., 206.
[50] Ibid., 210.

Assuming enharmonic equivalence, the third through seventh notes outline a descending major scale from $\hat{5}$ to $\hat{1}$ in D♭ major, and the final four notes move in even rhythms to conclude on a downbeat. In the following measure, the bass line cancels any suggestion of closure in the key of D♭ with its low B♭, which reinterprets the D♭ as a third. In addition, its first interval is a tritone, which further adds harmonic ambiguity. The bass line divides into two separate streams: each traces one of the trichords used in the opening melodic gesture. The placement of the gesture at the beginning of the movement, as well as the immediate recontextualization by the bass line, proscribes hearing it as an actual harmonic close. The opening is, in essence, a musical pun: much like the finale of Haydn's string quartet in D major, op. 76, no. 5, the work begins with a virtual ending.[51]

Figure 5.10. Copland, *Music for the Theatre*, conclusion of fourth movement with root-progression analysis.

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[51] In *Elements of Sonata Theory* (New York: Oxford University Press, 2006), James Hepokoski and Warren Darcy identify the "paradoxical use of closing formulas to begin a piece" (66) as an uncommon but nonetheless viable option for opening a primary theme in a sonata form. The gesture has a witty effect and is characteristic of Haydn, but also appears in Mozart and Beethoven (66–68). Other examples include Haydn's Quartet in C, op. 74, no. 1, first movement; Quartet in G, op. 33, no. 5, first movement; Quartet in D, op. 50, no. 6, first movement; and the primary theme of the first movement of the Symphony no. 94 in G ("Surprise").

My reading of the conclusion of the movement is shown in Figure 5.10. The conclusion harmonizes the opening melodic figure in a way that suggests an alternate interval of generation. The winds repeat the opening melodic gesture, while the strings and piano add three accompanimental chords. The bass line traces <F–G–A>, the same (024) trichord established as thematic at the opening, creating an altered interval of bass motion: it arrives on A by step rather than by fifth (this bass line is, of course, reminiscent of the "Aeolian" cadences discussed in Chapter 3). The roots of each triad can be determined by disregarding the melodic line. They are shown on the lower staff, and create the progression <F–E–B♭/A>. The final <E–B♭> progression suggests a change in generating interval from fifth to tritone and reverses the <B♭–E> tritone found at the opening, creating an arrival on a B♭-minor triad. The bass note A simultaneously asserts its status as a root in the final chord because the uppermost line in the winds arpeggiates through an A major triad in the last three notes of the excerpt. Thus, the harmonic and melodic motion established in the opening allows for a cadential gesture that indicates two keys at the same time: B♭ minor and A major. The melodic gesture that concludes on D♭ unifies both of these keys, since it can be heard as the third of either tonic harmony.

The movement's ending reinforces Persichetti's assertion that a cadence can end on any type of harmony, whether it is tertian or whether it is built using another method, and that progressions can establish their own laws of syntax. Persichetti also speaks of the need to balance consonance and dissonance in a passage. Normally, the final cadential chord is, relative to its neighbors, the least dissonant, as in tonal cadences. In other cases, the relation between the two is reversed, so that dissonance is the "norm" and consonance resolves to it.[52] The cadential progression in the example by Copland provides an example of this latter case, since the final chord, which combines two triads separated by semitone, is the most dissonant in the passage.

Practical goals also motivate Leon Dallin's *Techniques of Twentieth Century Composition*, written in 1957 and revised twice thereafter. Dallin introduces readers to compositional techniques from the late romantic period to the recent past in order to encourage student composition. Like Persichetti, Dallin believes a common practice can be identified for the twentieth century. He states that earlier styles have the advantage of a canon that has withstood the test of time, and while "[n]o such advantages exist for new music . . . between the old and the new lies a body of twentieth-century music which can be analyzed and described in its relationship to traditional practices."[53]

Dallin devotes a chapter to cadences in his book, and in describing the expansions to the cadential progression in the twentieth century he cites examples of "modified dominants," "modified tonics," and "linear cadences." His examples of modified dominants include V chords with lowered thirds and unusual added notes that appear in works by Béla Bartók.[54] He also cites two instances of cadences that involve root motion other than perfect fifth. In the conclusion of Roy Harris's Symphony no. 3 (1938), an

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[52] Ibid., 195.
[53] Leon Dallin, *Techniques of Twentieth Century Composition: A Guide to the Materials of Modern Music,* 3rd ed. (orig. pub. 1957; Dubuque, Iowa: Brown Company Publishers, 1974), 2.
[54] Ibid., 138–139.

F/C♯ dyad proceeds to a G-minor triad; Dallin labels the dyad "[t]he interval of a perfect fifth on the leading tone."[55] A cadential progression in Bartók's Piano Concerto no. 3 (1945) involves root motion by ascending whole tone from a "D7 chord with an unresolved 4-3 suspension" to an E-major tonic triad.[56] The following section cites examples of altered tonics that appear in Shostakovich, Stravinsky, Prokofiev, and Bartók; modifications to the tonic include adding a sixth, second, or seventh, or concluding on a triad with both a major and minor third.[57] The section on "linear cadences" identifies examples where motion of individual voices is of primary importance.[58]

Because he is concerned with describing broad features of a style through several brief examples, Dallin does not explore the ramifications that his cadential progressions have for the larger structure of the compositions he cites, nor does he explore whether a work thematizes specific types of root motion or added dissonance. These are, of course, issues that this dissertation addresses. Nonetheless, his discussion provides an early example of an identification of alternate root motions at cadence points in neo-tonal music.

6. Paul Hindemith

A more rigorous and positivistic method for describing tonality is found in Paul

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[55] Ibid., 139.
[56] Ibid., 139.
[57] Ibid., 140–141.
[58] Ibid., 142.

Hindemith's *Unterweisung im Tonsatz (The Craft of Musical Composition)*, written in 1937. This work describes the cadence as the most concentrated expression of principles of harmonic succession, which derive from acoustics. Hindemith effectively regards the progression IV–V–I as the prototypical cadence, but he devises a different explanation for its conceptual origin than the one forwarded by dualist theorists. Nonetheless, his theory allows for addition of essential dissonances to cadential chords, and for pieces to contextually define alternate root relations.

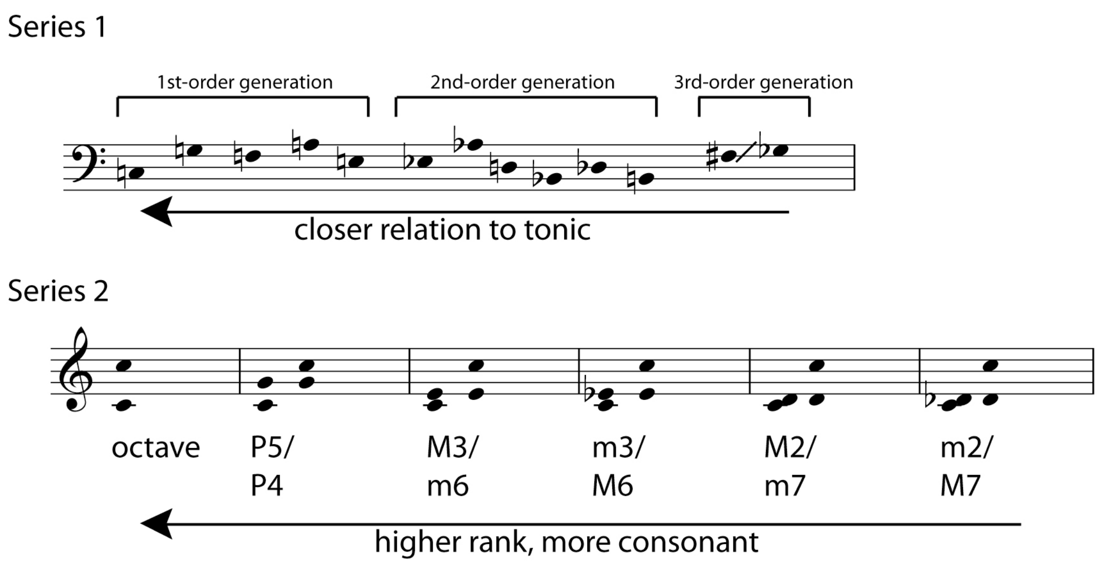

Figure 5.11. Two series from Paul Hindemith's *The Craft of Musical Composition* (1937).

Fundamental to Hindemith's system are a series of pitches and a series of interval classes, shown in Figure 5.11. "Series 1" defines the relative proximity of each of the twelve pitch-classes to the tonic. The proximity is defined through a process of successive generation of each pitch-class from a "progenitor" tone (equivalent to the tonic) that involves finding overtones, and then by dividing vibration-numbers of each overtone successively by the order-numbers of the preceding tones in the series. In effect, this defines both undertones and overtones to the tonic pitch as part of the key system. Unlike in dualistic harmonic theories, members of the overtone series take conceptual priority and a closer relation to the tonic, because these pitches must appear first before they can serve as divisors for the later members.[59] Like other theorists, Hindemith stops his process of generation at the 7th partial, and to generate the rest of the twelve chromatic notes, he relies on "second" or "third"-order generation, which involves taking overtones of overtones, or undertones of undertones. The resulting series provides a system of tonality that includes all twelve pitch classes and does not rely on a background diatonic scale. Although Hindemith, like his dualist forebears, uses both "undertones" and "overtones" to generate notes within a key, he does not position the tonic triad as the central member within a network of triads defined by a privileged root relation. Instead, the system serves as an absolute measure of privileged root motion that guides *all* chord progressions.

"Series 2" ranks each of the intervals in terms of their relative consonance or dissonance, based on their location, or the location of their inversion, within the overtone series. The one interval excepted is the tritone, which is ambiguous and has a unique musical effect. Series 2 is also used to rank chords according to their relative consonance

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[59] Paul Hindemith, *The Craft of Musical Composition: Book I: Theory [Unterweisung im Tonsatz*, I: *Theoretischer Teil]*, trans. Arthur Mendel (Orig. pub. 1937; New York: Schott, 1942), 32–48. Daniel Harrison, in *Pieces of Tradition* (forthcoming as of 2011), points out that Hindemith breaks his own rules by giving A conceptual priority over E in his system. Hindemith may have made this exception because modulation to the "relative minor" is more common than to the mediant, and because A appears more often as a predominant harmony in the cadence.

or dissonance, and this information informs harmonic "fluctuation"; that is, the relative change in the level of consonance or dissonance of several chords in succession. Harmonic successions are, in summary, characterized by their outer-voice framework, their harmonic fluctuation, and the strength of their root progressions as determined by their rank within Series 2.[60] Hindemith's ranking of consonance creates a *graduated,* rather than *binary*, scale of consonance and dissonance, and he boasts that it allows an analyst to consider as chord members notes that were once perceived as suspensions, appoggiaturas, and the like.[61] His theory, therefore, allows for the addition of essential dissonances and color notes. Later in his treatise, Hindemith states that dissonance can also result from local embellishment—that is, it can be non-essential. That he does not clarify when a dissonant note should be considered essential or non-essential represents a lacuna in his theory, but in the analyses cited here the identity of non-essential dissonances is fairly self-evident.

The cadence appears when an "intensely goal-directed motion" is valuable for a composition, and it is the most concentrated expression of the principles of harmonic succession. Hindemith suggests that the ideal cadence in C major involves a root-progression F–G–C, since this involves the roots that are most closely related to the tonic, according to Series 1, and because it resolves to the tonic via root motion by fifth, the highest-ranked interval in Series 2. In addition, when two chords in succession show an oblique tritone, even between separate voices, this creates a dissonance that must be

[60] Paul Hindemith, *Craft of Musical Composition*, 113–125.
[61] Ibid., 106.

resolved.[62] This occurs in the motion from the F major to the G major triad, which the C major triad then resolves. Other progressions are weaker either because they do not involve root motion by fifth to the tonic, or because they feature roots that are less closely related to the tonic.

Where Series 1 and 2 conflict, Series 2 defers to Series 1 in matters of relative cadential strength, so that IV–V–I, for example, provides a stronger cadence than ii–V–I.[63] Cadences that do not end with V–I are weaker still, since the penultimate chord is further removed from the tonic. Usually, at least three chords are necessary to define a key, unless the penultimate chord contains a tritone, in which case two will suffice, since the final chord will effect a resolution of this interval.[64]

Hindemith believed that the cadence expresses harmonic principles that are grounded in natural acoustics, but also believed that in practice individual pieces can define their own characteristic cadential patterns that deviate from this "universal" norm. In other words, the cadence has its origin in acoustics, but within a musical style it becomes a *cognitive* concept that admits to greater manipulation. This view is also apparent from his discussion of intonation: he takes the natural overtone series as its starting point of pitch, but asserts that cognitive assessment of relations between pitches provides the foundation of the tonal system.[65] Hindemith's analyses, which appear at the

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[62] Ibid., 123.
[63] Ibid. 137–139.
[64] Ibid., 136–137. Thus, a root succession C–F–D is heard to create an arrival on D, and not on F, even though the perfect fourth is a higher-ranking interval.
[65] Ibid., 93–94. This view is shown in his assertion of equivalence of enharmonic intervals. The human ear, he argues, relates all intervals in terms to the simplest proportions on the interval series, even if the actual intonation deviates from it slightly.

end of his treatise, show this acceptance of variant cadential progressions.

A crucial feature of cadences for Hindemith is the resolution to a relatively consonant sonority.[66] This is demonstrated in his brief analyses that appear at the end of his treatise.

Figure 5.12. Excerpt from Guillaume de Machaut, "Il m'est avis," with Hindemith's root-progression analysis shown on lower staff.

Motion between dissonance and consonance is crucial to cadential activity in Machaut's ballade "Il m'est avis." One cadence, excerpted in Figure 5.12, occurs at m. 8, and involves an arrival on the F/C dyad. The cadence is indicated by a "double leading-tone" progression characteristic of fourteenth-century polyphony.[67] The root progression of the last four chords over mm. 6 to 8 is G–F–E–F.[68] This is not a particularly strong progression in Hindemith's system, since the G and E are a whole tone and semitone

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[66] I am grateful to Daniel Harrison for sharing this observation in a discussion.

[67] This involves a motion from major sixth to octave between the lowest and highest voice, and the motion of an inner voice up by half step to the upper fifth of the dyad. See Carl Dahlhaus, *Studies on the Origin of Harmonic Tonality*, 92.

[68] In keeping with the rigor of his harmonic theory, Hindemith devises a strict algorithm for determining a chordal root. It is determined by finding the strongest interval according to series 2, excluding the octave. If there are two instances of an interval, choose the lower one. The intervals between *every* member of the chord must be considered, not only those that are adjacent (*Craft of Musical Composition*, 97).

from the tonic, which are the last two intervals on Series 2.[69] The harmonic texture consists almost entirely of triads, so there is not a pronounced harmonic fluctuation, but Hindemith points out that the ballade has many striking examples of local non-chord tones, which serve to elevate the level of surface dissonance at strategic points. Two dissonances are marked with an asterisk in the above excerpt. In m. 7, beat 2, a suspension occurs in the second voice, creating a second with the bass part. On beat 3, the two upper voices create neighbor tones that create motion in parallel ninths, an even greater level of dissonance. These resolve into a pure octave on the downbeat of the following measure. This dissonance level simulates harmonic fluctuation that occurs in chord progressions in later styles, and the motion from dissonance immediately to pure consonance helps reinforce the sense of arrival at m. 8.

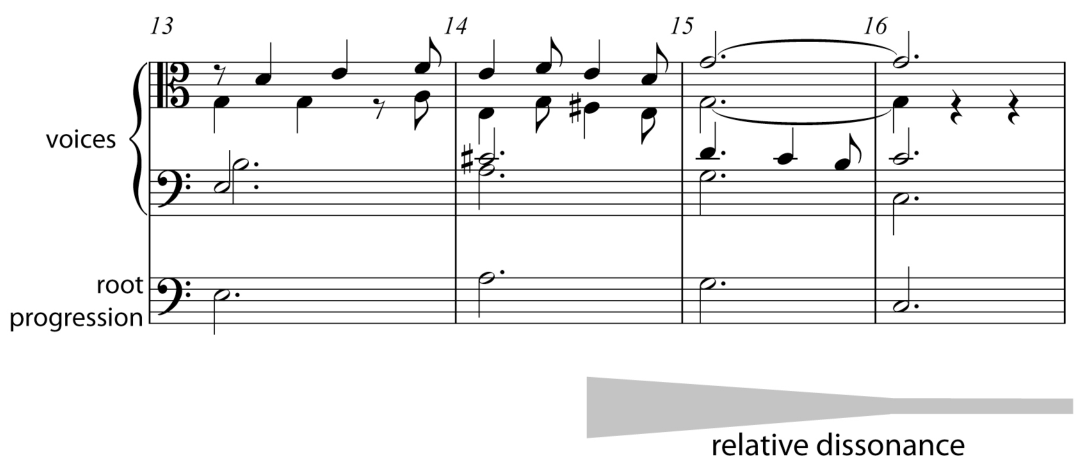

Figure 5.13. Machaut, "Il m'est avis," excerpt, with Hindemith's root-progression analysis shown on lower staff.

The second cadence, shown above in Figure 5.13, involves a stronger harmonic progression to the tonic via root motion A–G–C. Measure 14 features two voices moving

[69] Paul Hindemith, *Craft of Musical Composition*, 121–122.

in parallel 7ths, while m. 15 features a passing tone in the second-lowest voice. This represents a gradual motion from relatively high dissonance at m. 14 to relatively low dissonance at m. 16, another way of arranging simulated harmonic fluctuation to create a cadence.

Hindemith's analysis of an excerpt (mm. 9–16) from his own symphony *Mathis der Maler* (1934) shows how only two chords can achieve a cadence, provided that the first contains a tritone. The chordal roots from mm. 9 to 13 outline a fully diminished seventh chord {E♭ F♯ A C}, a harmony that he classifies in group VI, which is characterized by chords with ambiguous root that contain a tritone.[70] On the third beat of m. 13, a C diminished triad moves to a B/F♯ dyad. Hindemith states, "[This] broken chord of group VI results in a gentle but very noticeable cadencing toward the B of mm. 13–16."[71]

As Hindemith shows, the B/F♯ dyad at m. 13 marks the final point of the cadential progression for two reasons. First, the dyad represents the proper resolution of the C-diminished triad's "guide tone," which exists for all chords containing the tritone. The guide tone is defined as the tone belonging to one of the tritones in the chord that forms the strongest interval with the root, as measured by the list of intervals in Series 2. If the

[70] In *The Craft of Musical Composition*, Hindemith classifies chords into one of six groups. Except for the last two, the groups are arranged in an order of increasing dissonance, and even groups are distinguished by the fact that they contain a tritone. Group I contains major and minor triads, group II contains chords with one major second or minor seventh and a tritone (that is, dominant or half diminished sevenths), group III contains chords made of major seconds and minor sevenths that do not contain a tritone, and group IV contains chords that include minor seconds. Groups V and VI contain chords that are ambiguous as to root. Since even-numbered groups contain tritones, Hindemith places the chord of fourths and an augmented triad in group V, and diminished triads and seventh chords in group VI (101–104).

[71] Paul Hindemith, *Craft of Musical Composition*, 222–223.

only tritone in the chord is formed with the chord's root, then the non-root tone is the guide tone.[72] Over mm. 10–12, the orchestra proceeds through a series of rich harmonies, some of which cannot be reduced to triads. An inner voice holds C4 throughout the passage, and this note persists as the guide-tone for all chords. In m. 12, the guide-tone is held to become a member of the following chord, which marks a failure of resolution. By contrast, in m. 13, the guide tone, F♯, resolves to the root of the following chord by perfect fourth, a strong interval according to Series 2.[73] Second, the work thematizes the fully diminished seventh chord, through its progression of chordal roots over mm. 9–13. The same chord is presented vertically at m. 13, representing a summary of the previous phrase, so that its resolution marks a large-scale close to the entire passage. This second reason marks an instance of a work establishing its own characteristic cadential patterns. The fact that each harmony unfolds gradually might contribute to what Hindemith labels the "gentle" and "restful" quality of the cadential progression. While Hindemith's theoretical system provides a universal and context-independent account for the origin of tonality, his analytical applications show a flexibility and sensitivity to stylistic traits that allow several variant progressions to function as a cadence.

7. Roger Sessions and Newell Gene Savage

In the final chapter of his book *Harmonic Practice* from 1951, Roger Sessions recognized that music of his day had to devise new means of achieving closure and

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[72] Ibid., 104–105. Hindemith also addresses how to interpret ambiguous cases, as when members of a tritone within a chord form intervals of equal strength with the root.

[73] For a discussion of guide-tone resolution, see Paul Hindemith, *Craft of Musical Composition*, 127.

confirming the tonality of a passage, creating what he called a "problem of the cadence" and "problem of tonality."[74] The problem is confounded by the fact that the previous century witnessed a greater emphasis on polyphonic writing, governed by the control of "dissonantal tension" and the identity of each individual melodic voice. As a result, the concept of a "chord" or triadic root had become severely compromised: "*the 'chord' as a valid concept, as an entity, has, in this type of progression, once more ceased to exist, much as it may be said not to have existed in the pretonal technique* [emphasis in original]."[75]

Sessions does not deny that configurations of chords can suggest specific tonal areas, or that sections can project a sense of closure, but how they do so is individual to each work. Music theory in his own time, Sessions believed, was not yet able to generalize broader principles of tonality: "The composers of today are still furnishing the data, so to speak, on which such formulations must necessarily be based."[76] Sessions's statements made elsewhere, including in the book *The American Composer Speaks* and in an interview with Edward Cone, express the same viewpoint.[77]

Newell Gene Savage takes up Sessions' point and attempts to develop a method of analysis in which a work's internal structural processes indicate motion toward points of cadential arrival. Because the processes are potentially unique with each new work, his theory of cadence relies on no prototypes, but instead classifies events based on their

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[74] Roger Sessions, *Harmonic Practice* (New York: Harcourt, Brace and Co., 1951), 402.
[75] Ibid., 400.
[76] Ibid., 403.
[77] Newell Gene Savage, "Structure and Cadence in the Music of Wallingford Riegger" (Ph.D. dissertation, Stanford University, 1972), 9–12.

formal function of precadence, cadence, and postcadence.[78] The most significant function of the precadence is to establish a structural goal. The goal itself can be established by a number of musical factors, including melody, macro-rhythm, harmony, and musical patterning, while achievement of the goal itself often attracts cadential activity.[79] Savage's theory concerns itself more with the cadence's ability to articulate structure than with its ability to create harmonic closure. Nonetheless, his dissertation remains one an early example of an attempt to address works in the neo-tonal style, and stresses the importance of context-specific definitions of cadential activity.

8. Felix Salzer

Later theorists also recognized the expansion of tonality in the twentieth century, and devised other methods of analysis for identifying harmonic closure in the new body of tonal music. Felix Salzer's *Structural Hearing* from 1952 recognized a new tonality emerging in his century with "major and new structural possibilities" made possible through the influence of Hindemith, Bartók, and Stravinsky.[80] Salzer believed that the tools of Schenkerian analysis were key to understanding the structure of tonal music from any century: "Within the last fifteen years I have become completely convinced … that his [Schenker's] ideas apply to widely diverse styles of music and that the broad conception underlying his approach is not confined to any limited period of music

[78] Ibid., 59–63.
[79] Ibid., 82–86.
[80] Felix Salzer, *Structural Hearing: Tonal Coherence in Music* (New York: Charles Boni, 1952; reprint, New York: Dover, 1962), 6–7.

history."[81]

Salzer's method rests on a distinction between *structural* chords, which are part of the harmonic framework of a passage, and *prolongational* chords, which result from counterpoint and prolong or connect structural chords. Both privileged root relation and privileged root motion define the structural chords. The primary harmonic structure is I–V–I, and derives from the privileged root motion of down by perfect fifth, which represents the first interval on the overtone series returning to the fundamental. An intermediary harmony can also appear between the initial I and V; here Salzer admits a second privileged root relation of a third, which is the second interval to appear on the overtone series. This yields the progression I–iii–V–I. Salzer also effectively admits a privileged root *relation* (in addition to a privileged root *motion*) by admitting an intermediary chord that has a relation by perfect fifth to I or V. This yields the harmonic-structural progressions I–IV–V–I and I–ii–V–I.[82] (Because vi does not fit within this system of relations, Salzer labels it a "secondary" intermediary function, and states that it results from imitation and inversion of the motion up by third from I to iii.)[83]

Salzer's theory would at first appear to afford only the V–I progression with the potential for tonal closure, but it effectively admits several more progressions at the structural background through the process of "functional mixture." This occurs when either a harmonic progression serves a prolonging function, as in a Schenkerian transfer of the fundamental structure to a lower level, or when a contrapuntal chord occurs at the

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[81] Ibid., xvi.

[82] Ibid., 88–89.

[83] Ibid., 90.

deepest level of structure in a composition. Salzer labels these latter chords "CS" or "contrapuntal-structural."[84] In his analyses they most often serve a large-scale neighboring function, creating root motion by step at the deepest level, or an "embellishing" function, creating root motion by third.[85] Thus, his theory effectively allows all intervallic relations to be present at the structural background, although they have a different conceptual origin and therefore receive a different label.

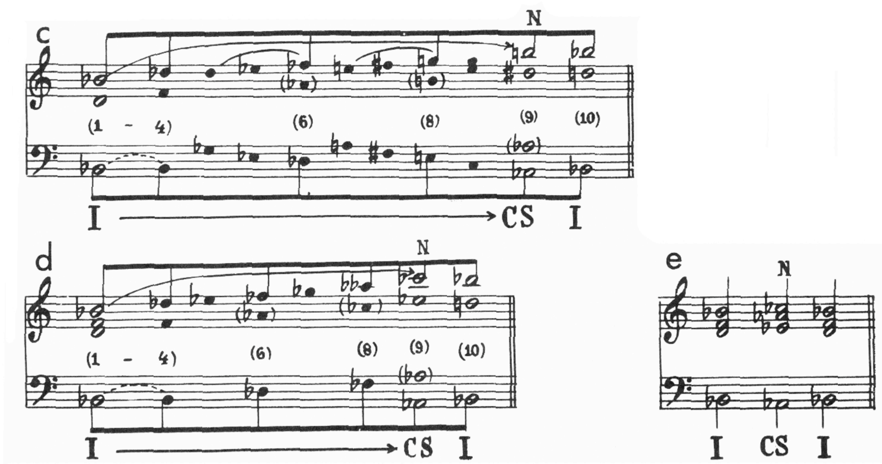

Figure 5.14. Felix Salzer's analysis of Hindemith, Piano Sonata no. 3 (1936), from *Structural Hearing, Figure X.* (reproduced with permission of Dover Publications, Inc.)

Salzer's analysis of the opening phrase (mm. 1–10) of Hindemith's Piano Sonata no. 3 (1936) shows one example of a deep-level contrapuntal-structural chord that replaces a V triad. The three highest levels of his analysis are reproduced in Figure 5.14.[86] Figure 5.14c shows that the bass line and melody over mm. 1–8 make a sequential repetition of a three-note figure that is transposed up twice by minor third.

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[84] Ibid., 160–169.

[85] Ibid., 148–161.

[86] Felix Salzer, *Structural Hearing, Volume II: Musical Examples*, 6–7.

Over mm. 8–9, the bass line descends through two major thirds from E to A♭, while the melodic line ascends from G to B♮. The notes connected by beam show a single pattern of ascending thirds in both voices. The bass line ascends from B♭ to <D♭3–E3–A♭2>. The final iteration of this pattern, <E3–A♭2>, is inverted and filled in by its own sequence of major thirds. The soprano part ascends through its own series of thirds <B♭4–D♭5–F♭5–G5–B5>. Figure 5.14d shows a further reduction of the phrase. The three-note figures that appear as part of the sequential repetition at mm. 4 and 6 are eliminated, as is the cycle of major thirds at m. 9. This reveals a sequence of ascending thirds that invert and subdivide the stepwise motion from B♭ to A♭. Finally, Figure 5.14e eliminates the motion by thirds entirely and normalizes the register of the chords to reveal the progression in operation at the deepest structural level. It involves motion from the tonic to a minor triad whose root is a major second below, followed by motion back to the tonic triad.[87]

Joseph Straus criticizes Salzer's analyses for failing to recognize the conditions that are necessary to make meaningful statements about prolongation, citing inconsistencies in Salzer's analysis of the opening of Stravinsky's *Symphony in Three Movements* (1942–1945). Straus points out that Salzer identifies structural tones that are harmonized by instances of [0148] and [0236]. Both of these set classes are subsets of the "polychord" putatively prolonged in the passage, which overlays a D♭-major triad atop a G-major triad.[88] According to Straus, even if these two set-classes were

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[87] Felix Salzer, *Structural Hearing*, 27.
[88] For more on polychords in Salzer, see Figure 3.17 ff. in Chapter 3.

considered consonant—a generous assumption, based on their dissonant harmonic content—Salzer's reading contradicts itself in a later passage, where the same structural tones are supported by a different set class, while an instance of [0148] serves a passing function. Straus notes that "Salzer's determination of structural pitches . . . seems not to depend upon a consistent distinction of consonance and dissonance or a clearly articulated notion of harmonic support."[89] Without a distinction between consonance and dissonance, Straus argues, assertions about prolongation are meaningless.[90]

Chapter 1 speaks in greater detail about the limitations of making assertions about prolongation in neo-tonal music.[91] While Straus's objections to Salzer's reading of Stravinsky are justifiable, they do not apply as easily to his reduction of the phrase from Hindemith's piano sonata shown in Figure 5.14. In this analysis, consistent criteria of consonance and dissonance do, in fact, inform his reduction. Major or minor triads support the melodic notes retained at deeper levels. In addition, the melodic line over mm. 1–8 makes a sequential repetition of its figure, providing support for showing the sequential pattern in the middleground. Salzer's choice to place the A♭-minor triad at m. 9 at the deepest structural level accords with the fact that this triad occurs where a break in sequence and motion toward hypermetric downbeat suggest a cadence. In addition, this chord supports $\flat\hat{2}$, whose descent to $\hat{1}$ provides melodic closure. At least at the level of a musical phrase, Salzer's description of the tonal aspects of Hindemith's sonata is

[89] Joseph Straus, "The Problem of Prolongation in Post-Tonal Music," *Journal of Music Theory* 31, no. 1 (Spring 1987): 10–12.
[90] Ibid., 2–4.
[91] See Chapter 1, subsection 4.4.2, "*Essential dissonance and prolongation.*"

accurate and insightful. His reduction can be essentially described as a series of nested transpositional sequences leading to a cadential progression involving stepwise root motion.

Analyses that have uncovered deep-level step-related chords have also appeared in this dissertation, and there is much overlap between Salzer's ideas and my own. Where we differ is in how the A♭-minor triad in m. 9 is labeled. Salzer's label of "contrapuntal-structural" relegates the chord to a purely contrapuntal function, one that is equivalent to the passing third cycles that occur in the surface-level analyses. I would argue instead for using a label that shows how the A♭-minor triad fulfills many of the same functions as a V triad. The triad occurs precisely where classical phrase models lead us to expect V. It provides a structural pillar and creates a process of destabilization followed by confirmation of the tonic triad. In addition, the chord can be shown to have an origin in harmonic practice, such as through a harmonization of the lowered leading tone or a recontextualization of a iv$^{♭}$–V progression. This quibble over labeling is more than a mere semantic argument, since it affects our understanding of the A♭-minor triad, and will direct our attention to other musical details at other structural levels.

9. David Lewin

Investigations of the expansion of the tonal system in the nineteenth century overlap with the transformational model of closing progressions presented in this dissertation. David Lewin's analysis (2006) of the cadences in Robert Schumann's setting of "*Anfangs wollt' ich*" is one such investigation. The first phrase of the song closes with a perfect authentic cadential progression in D minor, and the final chord of this cadence is the only root-position D-minor triad with $\hat{1}$ in the soprano that occurs in the song. In the second phrase, the vocal line drops from D to C (which is emphasized through its own authentic cadential progression), and the C initiates a stepwise descent to A. A major triad supports this final note. It is possible to hear this final chord as a half cadence that matches the syntactic structure of the final line of Heine's poem, which ends with a question. Lewin argues, however, that despite its interrogative ending, the poem does present a resolution to the dilemma described in its first half. This resolution finds a musical counterpart in a *Phrygian* cadence that closes the second phrase of the song. Faced with two phrases that end with cadences that putatively originate in different styles, Lewin's only recourse is to posit a "morphing hypertext" that transforms the Aeolian system of the song's first half into the Phrygian system of its second.[92] The Phrygian system privileges bass motion by step, as opposed to bass motion by fifth, at its structural background; specifically, it combines with the upper descending $\natural\hat{3}$–$\flat\hat{2}$–$\hat{1}$ structural line an ascending bass motion $\natural\hat{6}$–$\natural\hat{7}$–$\hat{1}$.[93] Lewin bases his alternate backgrounds on the research of Lori Burns, who in 1993 used German modal theory from the seventeenth and eighteenth centuries to create alternate structural backgrounds for J.S. Bach's Mixolydian chorales.[94] Lewin's analysis adumbrates many of the techniques

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[92] David Lewin, "R. Schumann's *Anfangs wollt' ich*: A Study in Phrygian and Modern Minor," in *Studies in Music with Text* (New York: Oxford University Press, 2006), 161–168.

[93] Ibid., 165.

[94] Lori Burns, "J.S. Bach's Mixolydian Chorale Harmonizations," *Music Theory Spectrum* 15, no. 2 (Autumn 1993): 144–172; and "Modal Identity and Irregular Endings in Two Chorale Harmonizations by J.S. Bach," *Journal of Music Theory* 38, no. 1 (Spring 1994): 43–77.

presented in this dissertation, such as the characterization of closing progressions through alternate voice-leading structures.[95] Lewin goes a step beyond Burns in positing the "transforming hypertext"—that is, by suggesting that a transformation from one privileged voice-leading structure to another can occur within a single composition. The suggestion of transformation in Heine's poem provides hermeneutical support for Lewin's creation of a hypertext in Schumann's song; Lewin urges for analytical integrity when using the same technique in future studies.

10. Daniel Harrison

Daniel Harrison's *Harmonic Function in Chromatic Music* (1994) developed a theory for tonal music of the late nineteenth and early twentieth centuries, but many of its precepts carry forward to the continued development of the tonal system in the later twentieth century and foreshadow techniques described in this dissertation. Harrison views tonality as a balance between tonic, subdominant, and dominant functions, which are expressed prototypically by the I, IV, and V triads. This system upholds the perfect fifth as the only possible privileged interval, or, in Harrison's words, the "fundamental principle of harmonic organization," but this does not mean that alternate configurations of pitches involving different root relations are unable to express harmonic function.[96]

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[95] Burns' own research, which partly provided the inspiration for Lewin, is significant in light of the present study: "[Maintaining modal integrity] demands an analytical system which does not rely upon the single interpretation of the harmonic relation, as, for example, the fifth relation, but which rather allows for a multiplicity of harmonic and melodic relations." ("J.S. Bach's Mixolydian Chorale Harmonizations," 152).

[96] Daniel Harrison, *Harmonic Function in Chromatic Music* (Chicago, University of Chicago Press, 1994), 45.

Harrison views function as a product of a chord's constituent scale degrees, rather than its "root," allowing for multiple variant progressions to create authentic or plagal cadential progressions.

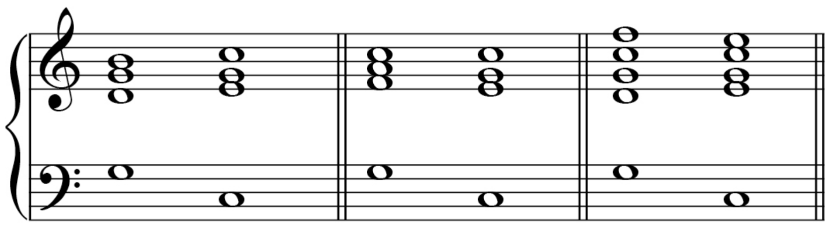

Figure 5.15. "Authentic" cadential progressions listed in Daniel Harrison's *Harmonic Function in Chromatic Music* (1994).

One way of generating variant progressions is placing the functional "base" (that is, $\hat{1}$, $\hat{4}$, or $\hat{5}$) in the lowest voice, which normally gives the chord the power to express the base's function, regardless of the content of the upper voices. The progressions listed above in Figure 5.15 (which are drawn from Example 2.1 in Harrison's book) are all authentic cadences in the key of C major insofar as the first chord expresses an essential sense of the "dominant" attitude, however clouded the dominant may be by the content of the upper voices.[97] Harrison provides the examples to show how a chord can express a function without requiring that an analyst determine its "root"—indeed, determining the root in the latter examples would prove nearly impossible. This theory allows for transformations through adding essential dissonances and color notes, as defined in Chapter 1.

Harrison's reconceptualization of function also allows other root relations to express a dominant- or subdominant-to-tonic progression. Alternate root relations arise

[97] Ibid., 48.

through the process of creating *specific accompaniments*, a technique that results from extrapolating voice-leading features of functional prototypes. A *specific accompaniment* is a projection from a voice that has greater functional agency—that is, it is an added voice that lies a set interval from one of greater importance. It imitates the original voice in either exact parallel or exact contrary motion.[98] Specific accompaniments permit, for example, a fifth to be projected from the dominant leading tone ($\sharp\hat{7}$), creating a triad built on a note a semitone below the tonic.

Two specific accompaniments, represented by $\flat\hat{2}$ and $\sharp\hat{4}$, play such a significant role in chromatic music that they have acquired, in Harrison's words, "a degree of independence and functional significance."[99] Each is closely related to the agents of the dominant and subdominant chords (that is, $\flat\hat{6}$ and $\sharp\hat{7}$). $\flat\hat{2}$ is the contrary-motion accompaniment of $\sharp\hat{7}$, and like $\sharp\hat{7}$ it resolves onto $\hat{1}$; at the same time, it is the parallel accompaniment of $\flat\hat{6}$. In other words, $\flat\hat{2}$ imitates the dominant in the scale degree to which it resolves, but imitates the subdominant in its direction of resolution. The obverse is true of $\sharp\hat{4}$.[100] Harrison cites several examples of cadential progressions that involve $\flat\hat{2}$ resolving to the tonic note.[101] Although Harrison does not state so explicitly, the theory implies that thematizing parallel specific accompaniments from *both* $\flat\hat{2}$ and $\sharp\hat{7}$ would establish a privileged root relation of minor second.

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[98] Ibid., 106–108. Harrison also defines "generic" accompaniments, but they are not germane to the present discussion.

[99] Ibid., 115.

[100] Ibid., 115–117.

[101] Ibid., 117–120. The examples are drawn from Max Reger's *Straf mich nicht in deinem Zorn*, Op. 40, no. 2, mm. 1–2; Busoni's Clarinet Concertino, Op. 48, reh. 11; and Hans Pfitzner's String Quartet in C# minor, Op. 36, mm. 67–74.

Harrison's theory, therefore, effectively allows various triads separated by step from the tonic to take on the power to create harmonic closure. In the case of a triad built on $\flat\hat{2}$, there is ambiguity over whether the chord carries a dominant or subdominant function. My method argues the triads built a step above or below the tonic can be treated as their own separate entities, obviating the need to determine their precise relation to common-practice chords.

11. Gregory Proctor and John Gabriel Miller

In his 2008 dissertation, John Gabriel Miller systematizes the theory of harmonic function into a strict classification system for chord progressions. He notes that there are several aspects of the term *function*; among them are chord *behavior* and chord *province.*[102] The former indicates how each chord resolves to the following; the latter indicates how successions of chords are grouped around their most hierarchically important member to form larger T–S–D–T patterns.[103] Miller's theory of chord behavior draws from an unpublished paper by Gregory Proctor, which uses Harrison's ideas as a starting point to create a rigorous and generalizable model.

Proctor defines function in terms of a chord's voice-leading and root-movement possibilities, as shown in Figure 5.16. Progressions that feature *upper* neighbor motion from a hierarchically lower- to a hierarchically higher-status chord display an S–T

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[102] John Gabriel Miller, "The Death and Resurrection of Function" (Ph.D. dissertation, Ohio State University 2008), ii.

[103] Ibid., 40–49. The other two aspects of function, in Miller's system, are *kinship* (the extent to which a chord shares scale degrees with functional prototypes) and *quality* (which identifies major-minor seventh chords as dominant and minor added-sixth chords as subdominant).

function. Progressions that display *lower* neighbor motion in a similar manner display a D–T function. Adding characteristic dissonances yields two new possible chord progressions, as shown on the last two progressions in Figure 5.16. Chord function adheres regardless of clef or accidentals, and larger patterns generating harmonic closure are generated through a nesting notation system where highest-status chord in each time-span defines the function of the whole span. A direct S–D progression is not possible in Proctor's theory, but it can occur between boundaries at higher hierarchical levels as a result of chord grouping.[104]

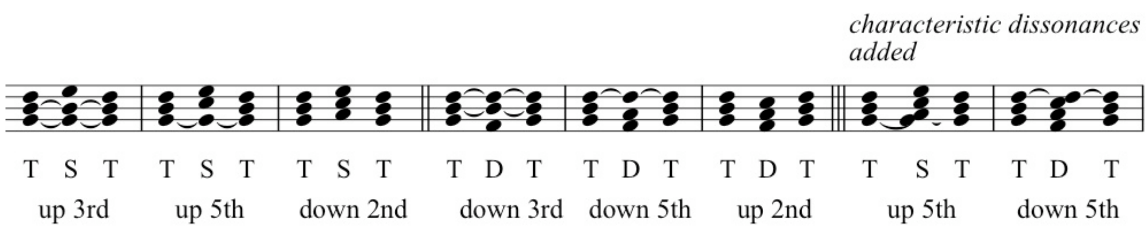

Figure 5.16. Gregory Proctor's generalized theory of harmonic function. (reproduced with the permission of Dr. Gregory Proctor)

Unlike Proctor, Miller does not believe that third-related harmonies can display functional behavior, but he classifies all root movements up or down by step and up or down by fourth as exhibiting either dominant or subdominant behavior. (Miller also believes that root motion down by step in fact expresses dominant function, since if it expressed a subdominant function it would indicate an improper resolution of its characteristic dissonance.)[105] Thus, root motion by step and up by fourth display

[104] Gregory Proctor, "Harmonic Function and Voice Leading," unpublished paper; as described in Miller, "The Death and Resurrection of Function," 25–29.
[105] John Gabriel Miller, "The Death and Resurrection of Function," 96–111.

dominant functional behavior, and root motion down by fourth displays subdominant functional behavior.

Figure 5.17. Sample progressions with functional behavior and domain analysis.

The admission of progressions not based on a privileged relationship of a perfect fifth, as well as the admission of chords involving accidentals, allows several types of progressions to show functional behavior in a passage and, thanks to larger grouping, create harmonic closure. Two examples of alternate cadential progressions (composed by the author) are shown in Figure 5.17. The first row of analysis underneath the score shows a behavior analysis; that is, it shows the subdominant-like or dominant-like behavior between adjacent chords. The analysis of the second measure of the first example shows that behavioral analyses can overlap. The second row of analysis shows the functional "domain"; that is, a time-span reduction that ascribes the highest-value hierarchical chord to the entire span.[106] The two progressions reveal T–S–D–T patterns within root motion by semitone or whole tone, effectively demonstrating the possibility of changing the privileged interval of root relation.

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[106] Miller and Proctor's grouping of chords resembles the hierarchical process of "time-span reduction," as proposed by Fred Lerdahl and Ray Jackendoff in *A Generative Theory of Tonal Music* (Cambridge: MIT Press, 1983), 124–145.

While my theory overlaps with Proctor and Miller's functional theory in several respects, there are also some crucial differences. Miller relates root motion up and down by step both to dominant behavior, while my dissertation separates these two root motions. The two motions belong to a similar family by virtue of sharing the same root interval, but several neo-tonal compositions highlight the distinction between the two and the change in orientation required to hear one as opposed to the other. Examples include the third movement of Copland's *Third Symphony* (analyzed in Chapter 1) and the scherzo movement of Prokofiev's sonata, Op. 94 (analyzed in Chaper 2). In addition, my analytical model allows for reversal of privileged interval of root motion, allowing for a T–S–T or T–D–S–T model of harmonic closure, while functional domain analysis relies on the norm of T–S–D–T in order ascribe function to each time-span.

12. Summary

Several theories from the late nineteenth and twentieth centuries overlap with aspects of the methodology presented in this dissertation. Theories of harmonic function allow dominant and subdominant function to inhere in progressions that do not involve root motion by fifth, allowing alternate root relations to provide harmonic closure. Alternate root relations and voice-leading structures are also seen in extensions of Schenkerian theory proposed by Felix Salzer and David Lewin. Studies of twentieth-century harmony show how chords can be enriched through added dissonance, and how these added notes can both intensify the motion between dissonance and consonance that is characteristic of cadential activity and mark chords with specific status.

The methodology presented in this dissertation differs from previous methodologies in that it does not *require* that harmonic closure originate in root motion by fifth. Many neo-tonal pieces thematize alternate types of root relation and are best served by an analytical system that models them directly. Viewing third-progressions and step-progressions as a result of transformations of the privileged root interval is more than a conceptual distinction. It presents a new way of perceiving closure, expanding the bounds of what it means to hear music as tonal and drawing our attention to details that would not otherwise be apparent.

Conclusion

The previous five chapters identify a recurring feature in a many neo-tonal pieces: the use of new root-relationships and voice-leading patterns as a means of establishing a key. The methodology for identifying root relationships that are privileged within a work or section amounts to a way of hearing how musical events point toward a particular tonic and provides a tool for an analyst to characterize a composer's style. While it is possible in theory to privilege any type of root relationship, root motion by semitone and whole tone appears frequently in neo-tonal closing progressions and seems particularly well suited to defining a key and allows composers to explore pitch relationships not afforded by common-practice cadential progressions.

The analyses presented in the previous chapters suggest several possible avenues of further study. The dissertation focused on a handful of root motions: ascending major second, ascending and descending semitones, and ascending and descending major thirds. Further study might examine how these motions fit into a compositional space of all progressions between triads and triads with added notes in order to gain insight into why composers may have emphasized particular root relationships. The thematization of non-common-practice root relationships might also be supplemented with a statistical analysis tabulating the frequency of chord-progression type in a specific work or composer's *oeuvre*. This type of analysis would be limited because it does not take into account the hierarchical importance or formal markedness of each progression, but it would show how a privileged root-relation compares with the root-relationship profile of an entire work.

In addition, this dissertation has briefly discussed neo-tonal closing progressions that cannot be easily analyzed in terms of triads. Additional studies should examine such progressions in greater detail and determine whether they can be traced to a conceptual origin in a triadic progression. Finally, this dissertation advocates for a contextually based definition of essential dissonances, non-essential dissonances, and color notes. It does not explore the limitations of how one might reasonably hear a dissonant note as essential or non-essential, nor the relationship between the perceived status of a note and its absolute consonance and dissonance. Exploring these questions may be necessary for discussing neo-tonal music that uses highly dissonant vertical sonorities, such as Prokofiev and Copland's music from the 1920s.

Judging by the volume of recent articles and dissertations, neo-tonality has emerged as a viable area of theoretical and analytical scrutiny. Examining how one can hear alternate privileged root relationships and voice-leading structures provides a useful addition to the discussion of this style.

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