Enharmonic Paradoxes in Classical, Neoclassical, and Popular Music

by

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To my husband

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Abstract

This dissertation explores the role of enharmonicism as a boundary point between diatonicism and chromaticism through the analysis of pieces from different time periods and genres. *Enharmonic paradoxes* are defined as moments when certain pitch classes are spelled one way to relate diatonically back to a previous key and another way to relate diatonically forward to a new key, which is usually not diatonically related to the first. Though a pitch that is reinterpreted enharmonically can have *both* a diatonic approach and resolution, its presence forces a shift into chromatic space. Such moments reveal the radically chromatic potential of the diatonic system of tonality, an issue explored throughout the dissertation.

The first movement of Beethoven's Piano Sonata in F minor, op. 57 ("Appassionata") is used as a case study to examine previous analytical approaches to enharmonicism, each of which either privileges the diatonic or the chromatic. The current study, instead, strives to emphasize the interplay between the two in the analysis of enharmonic paradoxes.

A method for determining the exact moment of an enharmonic paradox and explaining its origins is presented in this study. Through the analyses of the first movement of Beethoven's "Appassionata," Fiona Apple's "Extraordinary Machine," the second movement of Poulenc's Piano Concerto, and C.P.E. Bach's Fantasy in C major,

Wotquenne 59/6, the dissertation explores how common harmonic characteristics emerge that may be associated with enharmonic paradoxes: mode mixture, semitonal and chromatic mediant relationships, and the weakening of tonic through competition with rival keys. Thus, enharmonicism is shown to arise from both diatonic and chromatic sources.

The dissertation concludes with a systematic examination of the enharmonically paradoxical pitches available between any given pair of major and minor keys. This final chapter opens a door to further research into enharmonicism for an even wider range of pieces than is represented in the current study.

Chapter 1: The Problem of Enharmonic Paradoxes

One of the most mind-bending problems facing the analyst of chromatic music is the multiplicity of interpretations for pitch classes that undergo enharmonic respellings. A single pitch class in one moment in time can belong to multiple diatonic spaces simultaneously, owing to the abstract existence of another space, the twelve-note chromatic. Enharmonicism seems to spring from the purely chromatic system, but the pitches in question usually arise and resolve diatonically, although in different, often remotely related keys. Many pieces that have attracted scholarly attention are those that straddle the border between diatonicism and chromaticism, many of which contain enharmonic shifts that coincide with chromatic events such as symmetrical divisions of the octave, remote modulations, and roving tonality.

Before delving into analysis of this repertoire, I will carefully consider the problems facing the analyst and their implications. First, there are different types of enharmonicism. Some enharmonic respellings are inconsequential, but others indicate a shift toward the twelve-note chromatic system. Second, it is crucial to clarify the reasons why a new study of enharmonicism is worthwhile. The chromatic consequences of enharmonicism create a particular challenge for the analyst—is it more fruitful to interpret enharmonic events through a completely chromatic lens, or are they better

understood as extensions of diatonicism within a monotonal context? Either method, on its own, misses something about this music, in which the diatonic and chromatic are interwoven.

Finally, testing the benefits and limitations of previous methods for dealing with enharmonicism, by applying them to a problematic excerpt, can bring the relevant analytical problems into focus and serve as a guide toward a better solution. Perhaps it is possible to combine diatonic and chromatic approaches into a method that will help to strengthen understanding of this repertoire as well as diatonicism in general. An in-depth study of enharmonic paradoxes, then, could lead to a new perspective, one that embraces a larger canon and clarifies the dependence of the chromatic features upon the diatonic tonal system they appear to oppose.

1. Enharmonicism

Enharmonic respelling, in the simplest case, occurs for the sake of notational convenience. For example, if a piece in E♭ minor modulates to the submediant, often B major will appear instead of C♭ major simply to make reading easier for the performer. In this case, the difference between the two spellings is trivial, and the modulation is understood to be diatonic. In other cases, however, an enharmonic respelling changes the function of the pitch or pitches in question. A clear explanation of the difference between simple enharmonic notational equivalence and true enharmonic tonal equivalence can be found in the chapter titled “The Chromatic Scale as Background” in Gregory Proctor’s

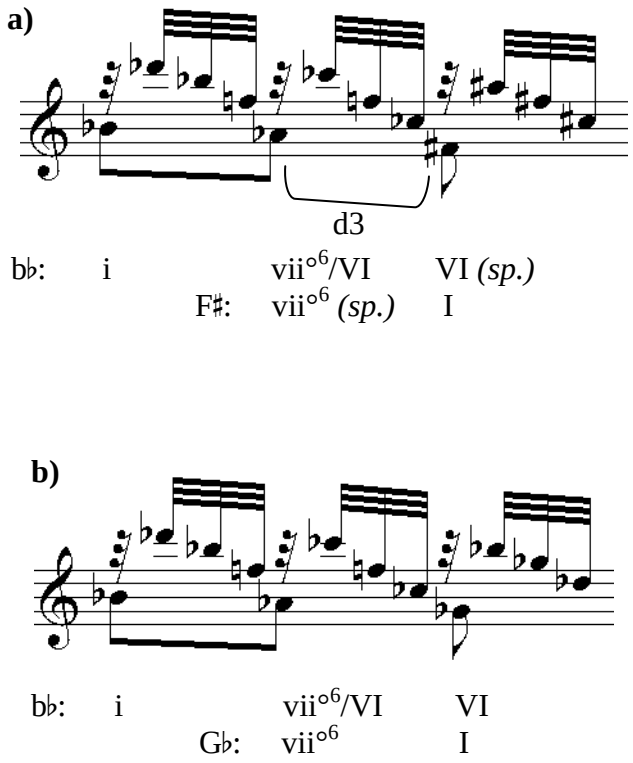
1978 dissertation. Enharmonic tonal equivalence "gradually comes to the fore in the 19th century" and is greatly responsible for "the transformation of the diatonic tonal system into the chromatic tonal system," according to Proctor.[1]

The multiple diatonic contexts for a given pitch class allow for a chord to be reinterpreted and to thus lead somewhere new; for example, the composer could reinterpret a diminished-seventh chord in multiple ways or reinterpret a dominant seventh chord as a German augmented-sixth chord.[2] In such cases of enharmonic tonal equivalence, there is a moment when a pitch calls for one spelling and interpretation to make diatonic sense with the preceding music, but another to fit with what follows. These moments are paradoxical, because the pitch has both identities at once, and the accumulation of such moments often leads to non-diatonic events such as equal divisions of the octave and remote modulations.

The following example from C.P.E. Bach's Fantasy in C major, Wq 59/6 (H. 284),[3] illustrates the phenomenon of the enharmonic paradox. In this passage, there are modulations from B♭ minor to F♯ major, and then to G minor. Without the score, the listener might hear the move to F♯ major that follows the B♭ minor as i to VI in B♭ minor (or even iii to I in F♯ major), so the F♯ can be respelled as G♭. This assumes that one might hear relationships between successive harmonies as fitting an expected diatonic framework and prefer to interpret this section as a diatonic move of i to VI, or iii to I—

[1] Gregory Proctor, "Technical Bases of Nineteenth-Century Chromatic Tonality: A Study in Chromaticism" (Princeton University, 1978): 132.
[2] Equal temperament makes this possible, since it assumes division of the octave into twelve equal parts rather than filling in the octave with ratios of the just intonation system.
[3] In this dissertation, I will be using the Wotquenne numbering system (abbreviated "Wq") when referring to C.P.E. Bach's works.

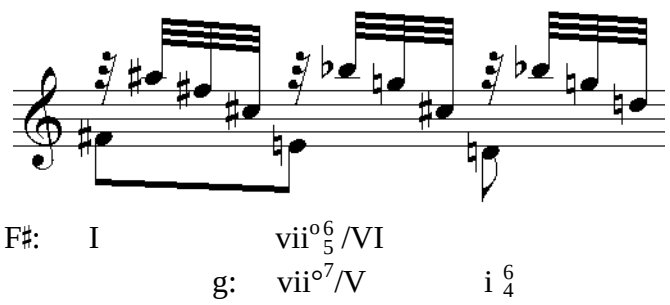
not i to #V. This respelling also makes the voice leading smoother in the bass line during the three transition chords by avoiding a diminished third. The respelling makes sense both harmonically and melodically. The original presentation of the chords is in Example 1.1, part a), and the respelling is in b).[4]



Example 1.1 C.P.E. Bach, Fantasy in C major, Wq 59/6, enharmonic respelling

Unfortunately, this respelling to G♭ major causes problems with the voice leading in the transition to G minor. The following, Example 1.2, is an exact transcription of the three chords in question, directly from the score:

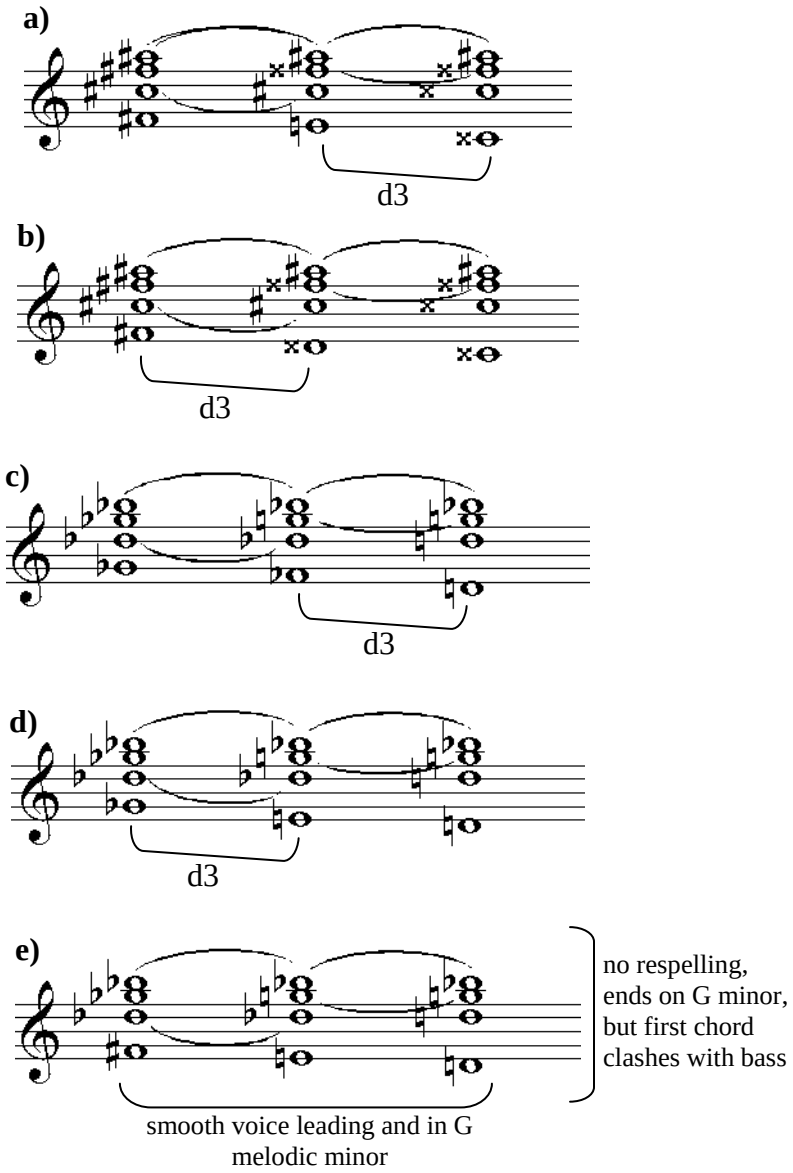
[4] For ease of reading, all figures and examples will use uppercase letters for major and lowercase letters for minor chords and keys. The abbreviation *(sp.)* means that the pitches match the Roman numerals, but the spelling may be different.



Example 1.2 C.P.E. Bach, Fantasy in C major, Wq 59/6, enharmonic paradox

In order to fit with the previous B♭-minor harmony (as its submediant) and to have smooth voice leading, the F♯-major chord can be conceptualized as G♭ major. Another option is for B♭ minor to be respelled as A♯ minor. Regardless of which option is taken, for the diatonic relationship between the two to be accurately reflected, the pair must be spelled as either A♯ and F♯ or B♭ and G♭. On the one hand, the F♯ spelling makes sense here because the pitch F♯ in the lower voice of the example above gives diatonic voice leading from F♯ to E to D. On the other hand, because the next key area is G minor, G♭ major makes sense because it already contains the note B♭, which is $\hat{3}$ in both keys. These chords bring up a paradox—it is impossible to avoid enharmonic equivalence and to preserve triadic spellings without creating awkward, non-diatonic leaps of a diminished third in the lowest voice (see Example 1.3). In a) and b), the first chord is left as F♯ and the following chords proceed without enharmonic equivalence and with triadic spelling. Because the second chord, a diminished-seventh chord, can be spelled various ways, two different spellings are shown for the bass pitch between a) and b), both of which lead to a diminished third in the bass at some point. Parts c) and d) follow the same procedure, but with the initial chord spelled as G♭. The slurs show common tones

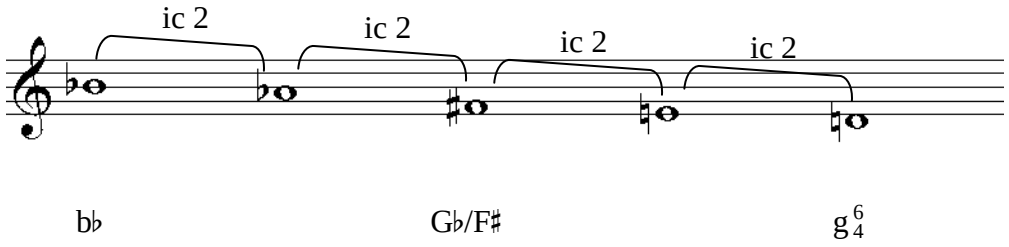
with spelling unchanged. Finally, part e) shows a diatonic bass line and triadic spelling, but there is a clash between the spelling of the first bass note and triad. Pitch-class 6 can be interpreted as both F♯ and G♭ within just this three-chord span, making an enharmonic paradox.



Example 1.3 C.P.E. Bach, Fantasy in C major, Wq 59/6, multiple spelling possibilities for the enharmonically paradoxical excerpt

The most striking aspect of this particular paradox is not that a pitch class changes spelling and function at one point, but rather that the pitch suggests one spelling before that moment and two spellings after it, even within the same chord.

The lowest voice of this section symmetrically divides a minor sixth (see Example 1.4 below), which cannot be easily reconciled in seven-note diatonic space.[5] Locally, pitch-class 6 must be interpreted diatonically as G♭ after the B♭ minor, and then it must be both F♯ and G♭ in the transition to G minor.



Example 1.4 C.P.E. Bach, Fantasy in C major, Wq 59/6, symmetrical division surrounding the enharmonic paradox

2. The Consequences of Enharmonicism for Tonality

With enharmonic tonal equivalence, a piece can have diatonic relationships moment-to-moment but can be structurally chromatic over larger spans of time. Such music exploits the interplay between the seven-note diatonic and the twelve-note chromatic systems, and this relationship comes to the fore when one is faced with the

[5] The fact that C.P.E. Bach himself placed the highest significance on the bass line, and demonstrated making a free fantasy by elaborating a figured-bass plan, makes this use of chromatic intervals in the bass part even more noteworthy.

consequences of enharmonicism. At the point of an enharmonic paradox, a certain pitch can relate diatonically back to the previous key and diatonically forward to the following key, but the two keys do not necessarily relate diatonically to each other. A pitch that is reinterpreted enharmonically can be both reached and resolved diatonically, yet its presence forces a shift into chromatic space. Sometimes these shifts can become defining moments in a work, destroying any sense of monotonality. Such moments bring up the possibility that there is something fundamental about diatonic tonality that has the potential to cause its own destruction, an idea that will be explored throughout this dissertation.[6] Charles Smith notes the importance of connecting the diatonic and chromatic, claiming that the "space traversed by chromatic music, no matter how complex, is always viewed through diatonic collections with their provocatively asymmetrical functions, rather than through the symmetrical, and therefore functionally neutral, chromatic scale."[7] Thomas Noll emphasizes that understanding enharmonicism is the key to a possible reconciliation between the diatonic and chromatic systems:

> We cannot estimate the difference between traditional diatonic theory and twelve-tone-based reformulations as long as we cannot estimate the importance of enharmonic paradoxes. … An affinity between two weak ideas does not automatically create a strong one. I guess we need a concrete new idea in order to be able to study enharmonic paradoxes productively.[8]

In this dissertation, I propose that since the music in question has both diatonic and chromatic features, analysts might best emphasize the interplay between the diatonic

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[6] A self-destructive view of tonality is put forth in sources such as René Leibowitz, *Schoenberg and His School*, trans. Dika Newlin (New York: Philosophical Library, 1949): 23, and Eric Salzman, *Twentieth-Century Music: An Introduction* (Englewood Cliffs, NJ: Prentice-Hall, 1967): 32.
[7] Charles Smith, "The Functional Extravagance of Chromatic Chords," *Music Theory Spectrum* 8 (Spring, 1986): 109.
[8] Thomas Noll, "Dialogue Concerning the Three Chief Tone Systems: the Diatonic, the Triadic, and the Chromatic" (Online Manuscript, 2006): 5.

and chromatic rather than defaulting to a purely diatonic or a completely chromatic view. As we shall see, a solely chromatic perspective ignores the often prominent diatonic relationships in such music by assuming enharmonic equivalence and reducing everything to twelve pitch-classes. Conversely, a diatonic perspective that uses only the ratios of just intonation and does not assume enharmonic equivalence leads to a complicated, infinite Riemannian *Tonnetz*[9] that does not accurately reflect the reality of composers' frequent use of enharmonicism and our ears' inability to distinguish between just and equal temperament. In other words, few listeners would perceive the goal chord of a cycle of, for example, major thirds as being distinct from the starting chord. Thus, one method is inaccurate and the other is impractical, and there are problems with both, which shall be demonstrated below.

From a Schenkerian perspective, chromaticism can be explained as a local aberration of the diatonic system, such that there is no need for a fundamentally chromatic approach. Matthew Brown explains that Schenker "derived a fully chromatic tonal system from the tonic triad" using the concept of *Stufe* and the principles of mixture, fifth relations, and tonicization to relate all the diatonic and chromatic triads to the tonic.[10] In Brown's view, this means that Schenkerian analysis can account for all chromaticism and that a separate method for analyzing highly chromatic music is unnecessary. However, when dealing with the music of late nineteenth-century composers, such as Wagner, Schenker complains not that the music is too chromatic, but

[9] As described in Hugo Riemann, *Harmony Simplified*, (London, 1895).
[10] Matthew Brown, "The Diatonic and Chromatic in Schenker's 'Theory of Harmonic Relations,'" *Journal of Music Theory* 30/1 (Spring, 1986): 2–3.

instead that the *Stufen* are too obscure at deep levels.[11] Charles Smith points out problems with reducing chromaticism to a diatonic background, saying that "linear theory by definition represents all music as if it were diatonic at the core; chromaticisms, even the most extensive, are inevitably viewed as decorative" and that this approach "can neither define nor exploit any real functional roles for chromatic pitches," downplaying the importance of chromatic events.[12] This suggests that Schenkerian analysis *cannot* deal fairly with all chromatic events even in music with many diatonic features.

Through his analysis of Chopin's Etude in F major, op. 25, no. 3, Felix Salzer attempts to demonstrate that Schenkerian analysis *can* cope with chromaticism. He complains that "[f]or too long a time we have been satisfied with descriptive statements about the... so-called harmonic boldness of such passages, without coming to grips with the essential problem—their function and meaning within the tonal organism of the entire work."[13] Because Salzer wants to argue for the monotonality of the work, he illustrates how the B-major section within this piece in F major can be interpreted as a prolongation of the dominant. Although brilliant in some respects, Salzer's reduction of the entire B-major section to a mere passing moment is problematic, because this passage is marked as significant due to its length and that it is a transposition of the main theme. Perhaps, then, this Chopin piece may not be considered tonal from a Schenkerian perspective.

Neo-Riemannian theorists, on the other hand, adopt a chromatic system limited to twelve pitch-classes. While Riemann's theory uses just intonation to create "pure" ratios

[11] Ibid., 25.
[12] Smith, "Functional Extravagance," 106.
[13] Felix Salzer, "Chopin's Etude in F major, Op. 25, No.3: The Scope of Tonality," *The Music Forum* 3 (1973): 281.

in the perfect fifths and major thirds (generating an infinite number of pitches in his table of tonal relations), neo-Riemannian theory asserts equal temperament and enharmonic as well as octave equivalence to create a simpler model of a pitch space with twelve elements.[14]

In fact, in his "Reimag(in)ing Riemann," Brian Hyer seeks to "obliterat[e] the distinction between the diatonic and the chromatic."[15] As a consequence, Hyer and other neo-Riemannian theorists, such as Jack Douthett and Peter Steinbach, transform Riemann's fundamentally diatonic system into a twelve-note chromatic system. Douthett and Steinbach also assume enharmonic equivalence and admit that they will "focus on graphs that are essentially independent of diatonic influence."[16] Although they are dealing with composers whose music has many diatonic features, such as Brahms, Schubert, and Wagner, diatonic aspects of the music are not taken into account. Because their philosophy overlooks diatonic relationships, the interesting interplay between the diatonic and chromatic at work in much of this repertoire can be missed.

Similarly, Richard Cohn's hexatonic systems,[17] which attempt to solve some of the difficulties arising from equal division and enharmonicism, assume enharmonic equivalence.[18] When analyzing Schubert's music, Cohn separates it into distinctly chromatic and distinctly diatonic parts. He even compares the music to Creole, with the

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[14] This changes a planar model of pitch space into a torus-shaped one.
[15] Brian Hyer, "Reimag(in)ing Riemann," *Journal of Music Theory* 39/1 (Spring, 1995): 135.
[16] Jack Douthett and Peter Steinbach, "Parsimonious Graphs: A Study in Parsimony, Contextual Transformations, and Modes of Limited Transposition," *Journal of Music Theory* 42/2 (Autumn, 1998): 244.
[17] Richard Cohn, "Maximally Smooth Cycles, Hexatonic Systems, and the Analysis of Late-Romantic Triadic Progressions," *Music Analysis* 15/1 (March, 1996): 9–40.
[18] Richard Cohn, "As Wonderful as Star Clusters: Instruments for Gazing at Tonality in Schubert," *19th-Century Music* 22/3 (Spring, 1999): 216.

parts from a familiar language representing the diatonic, and the rest that some perceive as "gibberish" representing another language. This separation acknowledges that there are both diatonic and chromatic features of the music, but, again, the interplay between the two is not the focus.

There are some scholars who have attempted to show the interaction between, or even duality of, the diatonic and chromatic.[19] Raphael Atlas gives several analyses of the opening of Mozart's Fantasy in C minor, some showing local relationships using what he terms "successive hearing" and others showing large-scale events in "background hearing." He demonstrates how one can perceive the same note as having multiple spellings, although not simultaneously; the note could have one spelling consistent with the local environment and another with respect to the overall tonic. Atlas claims that the different perspectives "taken individually ... are all deficient," because each one cannot reflect "the listener's immensely rich and complex experience of this passage." He concludes that, although valid, the different readings are "mutually contradictory" and "enharmonically distinct."[20] I agree with Atlas' claims that the different perspectives taken individually are insufficient to explain the passages in question, but I hope to avoid a conclusion that different readings, although each valid, are mutually contradictory.

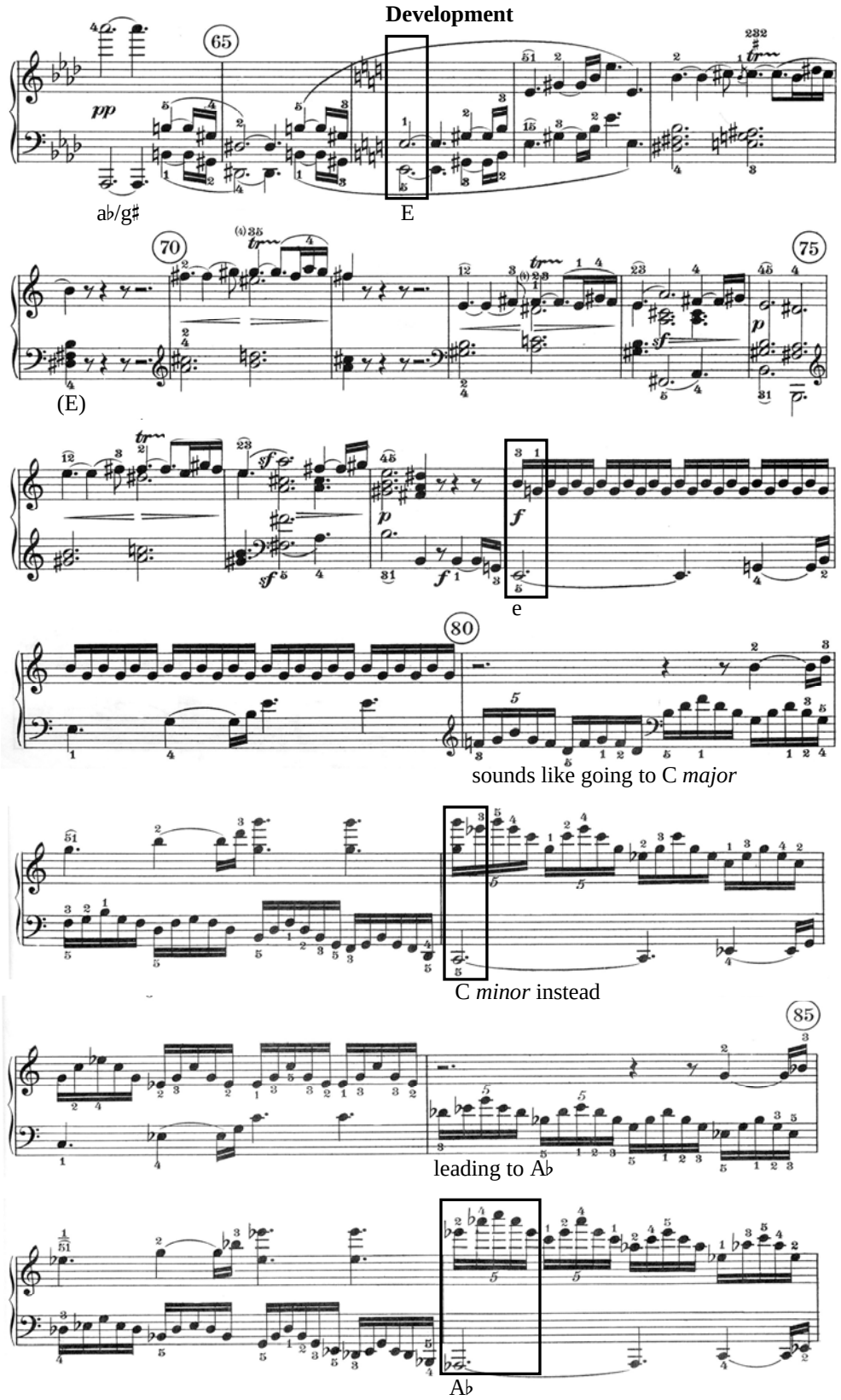
On the basis of chord vocabulary, most educated listeners would consider music such as Mozart's Fantasy in C minor to be tonal, but, upon closer examination of the

[19] Steven Rings, in *Tonality and Transformation* (New York: Oxford University Press, 2011), and Julian Hook, in "Spelled Heptachords" in *Mathematics and Computation in Music* (Berlin: Springer, 2011), deal with enharmonicism mathematically, showing multiple possible identities for pitch classes and relationships in diatonic and chromatic space simultaneously.
[20] Raphael Atlas, "Coherence vs. Disunity: The Opening Section of Mozart's Fantasy, K.475," *Indiana Theory Review* 7/1 (1986): 36.

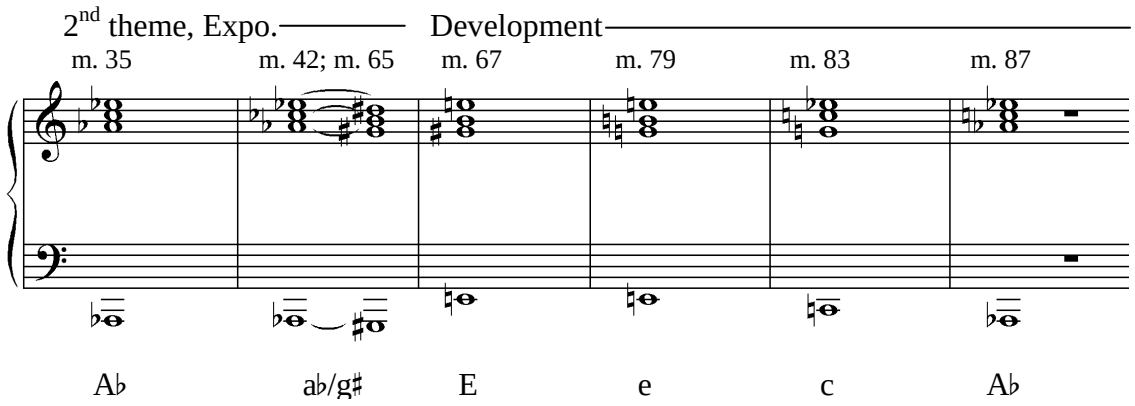
score and the large-scale structure, many such pieces are difficult to analyze within a monotonal framework. I am seeking to develop a method that acknowledges that the listener hears moment-to-moment diatonic connections and that recognizes that these moments do not necessarily combine into a purely diatonic or monotonal big picture. By developing analytical methods that are sensitive to temporality, I strive instead to demonstrate that different available readings coexist and inform rather than contradict each other.

3. Critique of Previous Methods

The enharmonic paradoxes in the frequently studied first movement of Beethoven's Piano Sonata in F minor, op. 57 (the "Appassionata") make it an excellent piece for demonstrating problems with many existing approaches. The excerpt under discussion begins in the second theme area (m. 35) and continues into the first half of the development section (m. 87). The first half of the development is shown in Example 1.5, with tonicized key areas labeled and points of arrival shown in rectangles. Example 1.6 below is a summary of the key areas from the second theme group of the exposition through the first half of the development section, using the spelling from the score.



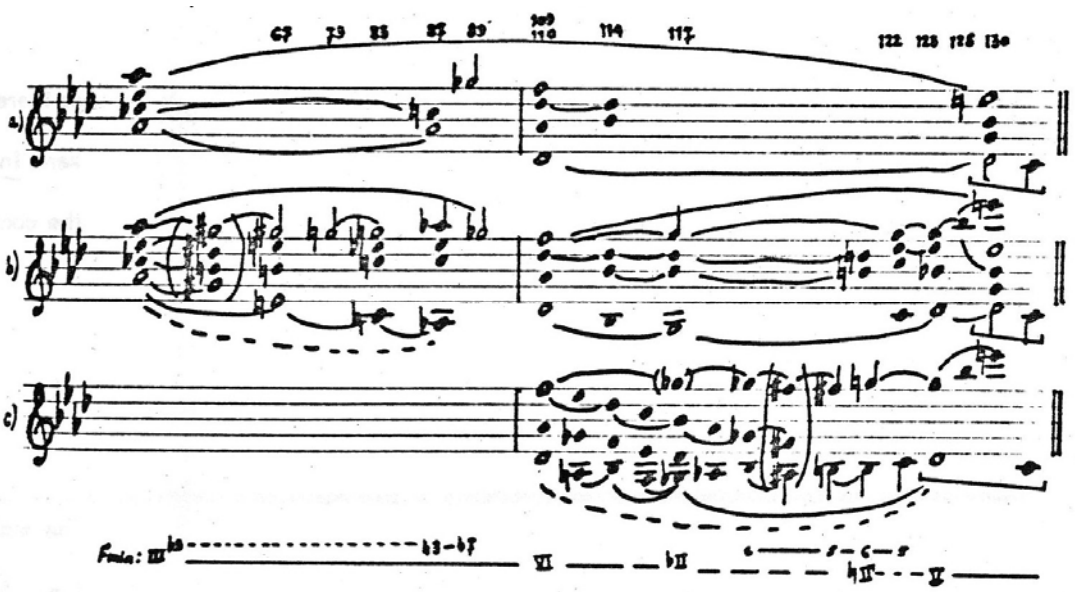
Example 1.5 Beethoven, Piano Sonata in F minor, op. 57, first movement, first half of the development section



Example 1.6 Beethoven, Piano Sonata in F minor, op. 57, first movement, summary of tonicized keys from end of exposition through first half of development section

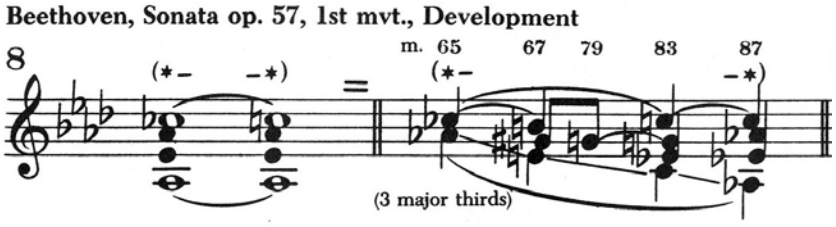
An investigation of the above bass line reveals the primary problem with analyzing this section diatonically—the symmetrical division of the A♭ octave. Heinrich Schenker acknowledges this symmetrical division in his sketch of the development section in *Der Tonwille* (see Example 1.7). Schenker clearly shows the two halves of the development, with the first half consisting of this equal division and the second half beginning with VI (D♭) and continuing with a more standard progression to ♭II, II, and V for the retransition back to F minor for the recapitulation.[21]

[21] Heinrich Schenker, *Der Tonwille*, v. 2, issue 7, ed. William Drabkin and trans. Ian Bent, et al (New York: Oxford University Press, 2004): 46. This graph also found in Gregory Proctor, "Technical Bases," 171.



Example 1.7 Schenker's interpretation, in *Der Tonwille*, of the development section of Beethoven's Piano Sonata in F minor, op. 57, first movement

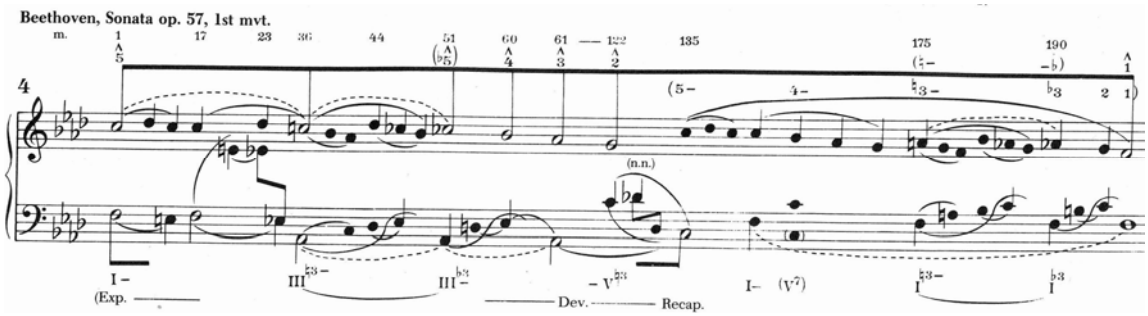
Several years later, in *Free Composition*, Schenker again presents this symmetrical division (Example 1.8), boldly labeling the progression as "three major thirds."[22] He views the first half of the development section as a prolongation of A♭ in the bass, with the intervening harmonies serving to change the C♭ (from A♭ minor) back into C♮ (from A♭ major), such that A♭ becomes the dominant of the upcoming D♭ major.



Example 1.8 Schenker's interpretation, in *Free Composition*, of the first half of the development section of Beethoven's Piano Sonata in F minor, op. 57, first movement

[22] Heinrich Schenker, *Free Composition (Der freie Satz)*, vol. 3 of *New Musical Theories and Fantasies*. Trans. and ed. Ernst Oster (New York: Longman, 1979): Fig. 114, 8.

In his deep middleground graph shown in Example 1.9, Schenker reduces the entire development section to a prolonged A♭ followed by the retransition on the dominant, skipping the important arrival on D♭.[23] When discussing this graph (specifically the development section), Schenker explains why he subordinates the other harmonies to these two main harmonies. He asserts that the main purpose of a development section is motivic development, with the key constantly changing in the process. He claims that "[n]one of these assignments, rooted as they are in the 'motivic' concept, are pertinent for the development section" and that the development's "only obligation, according to the structural division, is to complete the motion to $\hat{2}$ over $V^{\#3}$."[24] This downplays the impact of the big arrival of D♭ in m. 109 with the return of second theme material, one of the most significant moments in the movement.

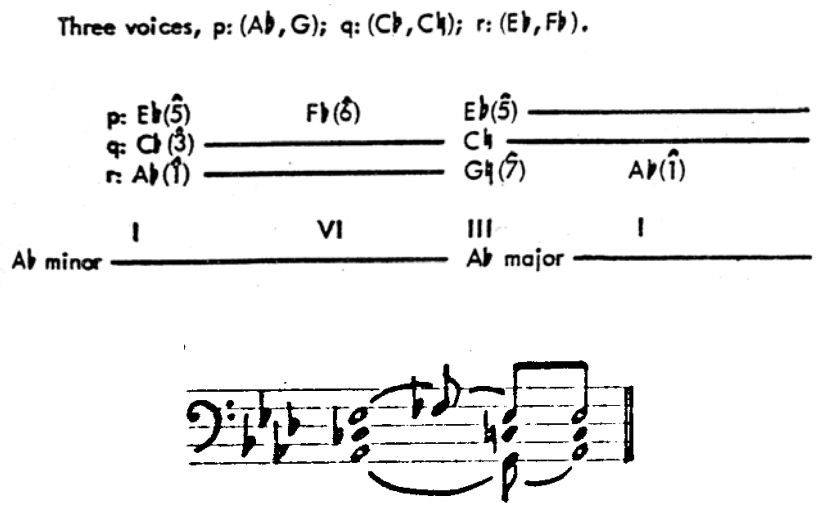


Example 1.9 Schenker's interpretation, in *Free Composition*, of the middleground of Beethoven's Piano Sonata in F minor, op. 57, first movement

Gregory Proctor, in his *Technical Bases of Nineteenth-century Chromatic Tonality*, takes issue with this very segment of music. Rather than disregarding the

[23] Heinrich Schenker, *Free Composition (Der freie Satz)*, v.3 of *New Musical Theories and Fantasies*, trans. and ed. by Ernst Oster (New York: Longman, 1979): Fig. 154, 4.
[24] Ibid., 136.

symmetrical division of the octave, which is essentially non-diatonic, he attempts to reinterpret it diatonically. Proctor's diatonic reinterpretation of the first half of the development section is shown below in Example 1.10.[25] He traces the movement of each voice through the section, a task made easier by the mostly parsimonious voice-leading between successive chords. The graph below is normalized to show this smooth voice-leading. He then enharmonically respells the E as an F♭, calling it a long-range upper neighbor to the E♭ before it (in A♭ minor) and after it (in C minor). This allows for a diatonic view of the passage.



Example 1.10 Proctor's diatonic reinterpretation of the first half of the development section of Beethoven's Piano Sonata in F minor, op. 57, first movement

One aspect of the music that is not accurately reflected above is the relative durations of the harmonies in the development section.[26] The above reading omits E

[25] Ibid., 174.
[26] In *Theory of Suspensions* (Princeton, NJ: Princeton University Press, 1971), Arthur Komar attempts to create hierarchical levels, similar to Schenker's work, using a theory combining pitch and meter. In Komar's theory, events with longer durations often have an elevated prolongational status.

major-minor, the tonal center with the second-longest duration in the entire development (behind the important lead-up to and arrival on D♭ discussed earlier). Example 1.11 details the durations of the key areas (in number of measures) in the context of the entire development section.

Theme 1 material					**Theme 2 material**					**Retransition**		
a♭/g♯	E/e	c	A♭	lead-up to D♭	D♭	b♭	G♭	b	C	$e^{\circ 7}$	$e^{\circ 7}$/C	C
2	14	4	4	20	4	4	2	2	2	9	2	2

Example 1.11 Beethoven, Piano Sonata in F minor, op. 57, first movement, durations of tonicized key areas in the first half of the development section

The coherence of Proctor's diatonic reduction hinges on the fact that the pitch G appears simultaneously with the C-minor harmony in m. 83. He explains that the F♭ as a large-scale neighbor "returns to E♭ at the same moment that C♭, generated by mixture within A♭, becomes C and the G arises to fill out the C minor chord."[27] However, the G has already appeared in m. 79 as part of the E-minor harmony, a harmony whose arrival is emphasized dynamically (with *forte*), contextually (with a strong statement of the first theme after many E-major fragments of it), and modally (by returning to the mode of the original presentation of the theme); refer back to Example 1.5. Shifting the G later to arrive with C minor would overlook these musical factors. On the other hand, if a correction is made and the G is shifted in Proctor's graph to occur with the F♭, an additional problem arises. There cannot be a diatonic, triadic chord with both F♭ and G

[27] Proctor, "Technical Bases," 173.

contained in it. For triadic spelling, either the G should be respelled as A𝄫, which causes the upcoming C-minor harmony to call for the spelling D𝄫, which is not in the key of F minor anymore,[28] or the F♭ must be spelled as an E, which is problematic because it does not reflect the neighboring relationship with the surrounding E♭.[29]

The issue of enharmonic spelling is crucial to Proctor; in fact, a central point in his dissertation is the assertion that distinguishing diatonic tonality from chromatic tonality is both more difficult and more important than distinguishing chromatic tonality from non-tonality. One of the most insightful observations that Proctor makes is that "the great fissure in modern Western music is not necessarily the oft-noted one surrounding the beginning of the twentieth century but is rather much farther back into the 'common practice era.' The loss of the triad as structural is perhaps less formidable than is the substitution of the twelve-note equally-tempered scale for the diatonic complex."[30] The issue of enharmonic equivalence and its resulting symmetrical divisions of the octave, which he positions as the harbingers of chromatic tonality, is extremely important to Proctor.

"Symmetrical Divisions" is, in fact, the title of one of Proctor's chapters, in which he describes its effects on tonality. For Proctor, chromatic tonality "is marked by the use of some non-diatonically-derived complex at relatively foreground levels, even where the more remote levels of structure are focused by diatonicism."[31] Proctor's description, in

[28] Daniel Harrison, as explained in Part VII in "Nonconformist Notions of Nineteenth-Century Enharmonicism," *Music Analysis* 21/2 (2002): 115–60, would consider D𝄫 minor to be notationally impossible and conventionally useless.
[29] Proctor makes a distinction between displacements and chromatic upper-neighbor notes in "Technical Bases," 139–43.
[30] Ibid., 156.
[31] Proctor, "Technical Bases," 155–56.

my view, applies to the Beethoven excerpt—the progression of harmonies and the equal division of the octave in the bass is non-diatonically-derived, but according to both Schenker's and Proctor's interpretations, the background prolongs III (A♭), a diatonic result. This places the excerpt into Proctor's chromatic category.

Proctor, however, attempts to bring the Beethoven passage into the fully diatonic realm. He admits that "the chord pattern resulting from this complex of arpeggiation and displacement is atypical of classical tonality," but that the "adduction of the passage to the classical tonal system does not obliterate the real association of triads connected by major third; it merely justifies the specific components on other grounds than that association alone."[32] A successful reduction of the section to diatonic tonality through respelling, combined with the diatonic result of a prolongation of III, would have placed the section squarely into Proctor's definition of diatonic tonality, as opposed to chromatic, but problems with such a reduction have been demonstrated. The fact that this passage is ambiguous and resists classification is yet more evidence that music with such features has both chromaticism and diatonicism at work and that the interplay between the two needs further study.

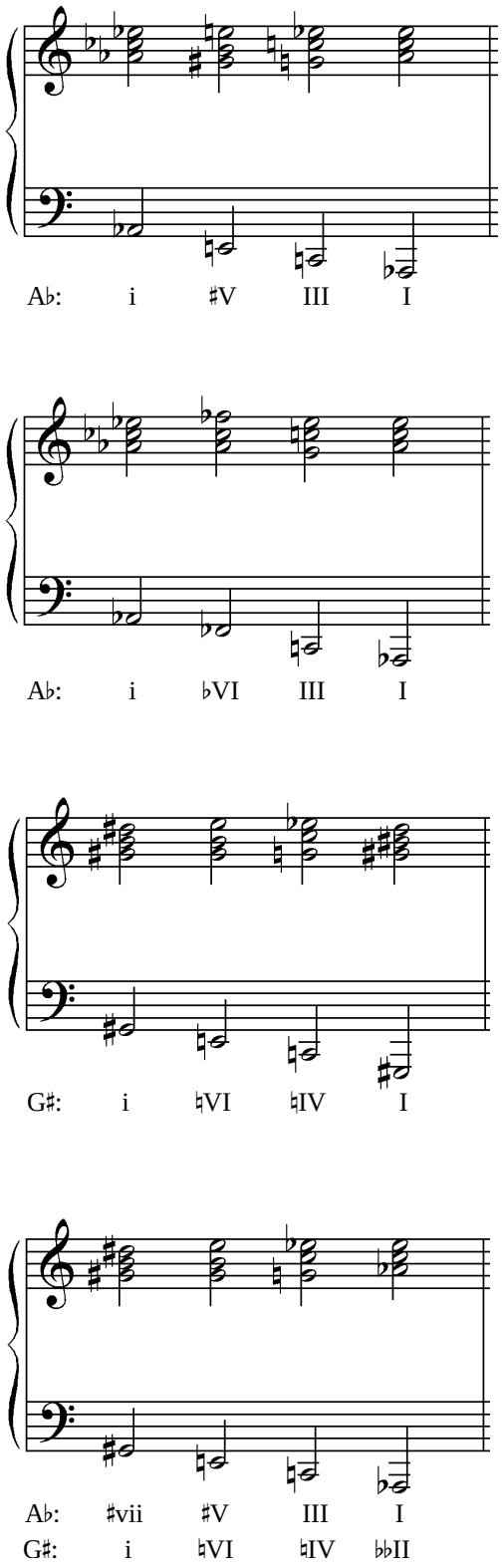
Whereas the analytical methods discussed above give priority to diatonic elements of the music, others focus more on chromatic features. The nearly parsimonious voice leading in the development section discussed above suggests that the passage may lend itself well to an analysis based on the techniques outlined in Richard Cohn's "Maximally

[32] Gregory Proctor, "Technical Bases," 175.

Smooth Cycles, Hexatonic Systems, and the Analysis of Late-Romantic Triadic Progressions."[33]

Cohn claims that "symmetrical division of the chromatic twelve cannot also be a symmetrical division of the diatonic seven without engaging in some enharmonic sleight-of-hand."[34] This is directly relevant to the "Appassionata" because of the symmetrical division of the octave by major third and the consequent problems with enharmonic spelling discussed above. Cohn specifically refers to the division by major third in one voice, with the other voices moving relatively smoothly while tonicizing each bass note, and illustrates many ways to interpret and spell the resulting chords.[35] I transposed his example to begin on a bass note relevant to our segment, A♭, in Example 1.12.

[33] This approach was also noted as a possibility by Matthew Bribitzer-Stull in "The A♭—C—E Complex: The Origin and Function of Chromatic Major Third Collections in Nineteenth-Century Music," *Music Theory Spectrum* 28 (2006): 179.
[34] Richard Cohn, "Maximally Smooth Cycles, Hexatonic Systems, and the Analysis of Late-Romantic Triadic Progressions," *Music Analysis* 15/1 (March, 1996): 11.
[35] Ibid., 10.

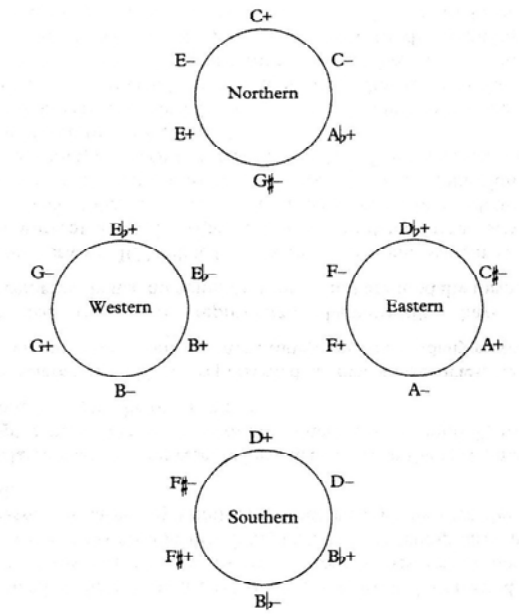


Example 1.12 Richard Cohn's possible spellings for equal divisions of the octave, transposed to represent the first half of the development section of Beethoven's Piano Sonata in F minor, op. 57, first movement

There are yet more spellings of the above chords not shown that could provide further evidence of how problematic this section is to notate diatonically. Cohn points out that either the bass line can span a diatonic octave *or* can descend by diatonic intervals. Spanning the diatonic octave leads to one of the intervals being spelled as a diminished fourth, but spelling all the intervals as major thirds results in beginning and ending on enharmonically respelled octaves. In the Beethoven score, the A♭ minor is respelled as G♯ minor at the beginning of the cycle in mm. 65–66, allowing the bass to descend by major thirds but forcing the endpoints of the cycle to conflict enharmonically. This spelling most closely resembles that of the fourth group in Example 1.12 above.

Because of the difficulties involved in trying to establish a diatonic connection between such groups of chords, Cohn came up with an alternative system that can show another kind of connection. He defines a maximally smooth cycle as a group of harmonies with at least four elements, the first and last being the same and the others being distinct, with the chords being consonant triads with set-class consistency (set-class 3-11), and with the transitions between chords being maximally smooth, meaning only one voice moves and it is by semitone. There is but one exception to these rules in the Beethoven passage, which will be explained below. Because the cycle eventually returns to the initial triad, it can be represented as circular, with only six changes by semitone to complete the cycle. Each cycle contains a total of six pitches (assuming enharmonic equivalence), and thus there are four distinct cycles possible with the twenty-four major and minor triads (see Example 1.13 below).[36]

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



Example 1.13 Richard Cohn's hexatonic cycles

The triads in the first half of the development section of the first movement of the "Appassionata" (Example 1.6) all belong to Cohn's "Northern" hexatonic system. Cohn defines a special kind of transposition as "the mapping of triads through a hexatonic system" that can be "conceived as a set of clockwise clicks by a pointer at the center of one of the cyclic representations." T_1, therefore, is a move from a triad to one adjacent to it on the circle, T_2 is two moves along the circle, and so on.[37] Moves between hexatonic systems are also possible but not relevant for the purposes of this study.

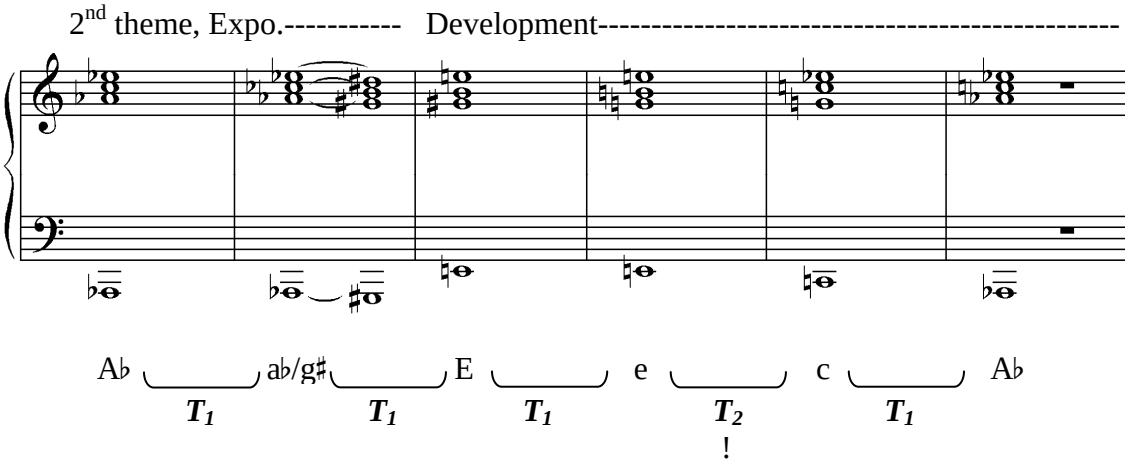
Cohn poses and attempts to answer the following question: "Under what circumstances will we wish to gaze at a composition through a hexatonic lens?"[38] He suggests a chronological constraint of 1875 or after, but he also points out that a strict chronological barrier could hinder musical understanding. He gives several examples of

[37] Richard Cohn, "Maximally Smooth Cycles," 19–20.
[38] Ibid., 31.

older pieces that use some aspects of hexatonic systems, including fourteenth-century songs and the music of Bach, Mozart, Haydn, Schubert, and even Beethoven, thereby tracing the rise of the full use of the hexatonic to earlier roots. According to Cohn, other characteristics that make a piece suitable for hexatonic analysis include the "consistent use of consonant triads, incremental voice-leading, [and] common tone preservation," all of which are features of the passage in question.[39] Using Cohn's guidelines, I will attempt to show how the Beethoven could be viewed under the "hexatonic lens."

Because the first half of the development section of the "Appassionata" has characteristics appropriate for Cohn's method, I have provided an analysis using a hexatonic system (Example 1.14). This progression begins and ends with the same chord (if the key area of the second theme of the exposition is included), A♭ major—one requirement for a maximally smooth cycle. Transpositions along the "Northern" hexatonic are indicated between the chords; only one of the transpositions is bigger than T_1, namely, the T_2 between E minor and C minor. This is the only exception to the rules for a maximally smooth cycle, which require that only one voice moves by semitone between chords.

[39] Richard Cohn, "Maximally Smooth Cycles," 31.



Example 1.14 Beethoven, Piano Sonata in F minor, op. 57, first movement, hexatonic analysis of the first half of the development section

This exception to the rules coincides with a moment that breaks with diatonic chord vocabulary. The chord that is missing in the hexatonic cycle, C major, is actually anticipated by the appearance of the E minor (iii) to G dominant seventh (V^7) in mm. 79–82. Modal expectations are thwarted by the arrival of C minor in m. 83. There are thus two reasons that the C minor is surprising—one is a "skipped" chord in the chromatic space of the hexatonic system, and the other is a deviation from an expected functional resolution in diatonic space. The remaining puzzle is, then, why the expected C major is omitted in the cycle. Perhaps the most likely answer comes from the conventions of sonata form. C major is the dominant that should arrive in the retransition at the end of the development section, so its absence allows the piece to reserve it for the moment when it can fulfill its formal role. If C major had appeared in m. 83, the astute listener might have expected an early return of the recapitulation, or the impact of the later arrival of the long-anticipated dominant harmony might have been diminished. This gives a

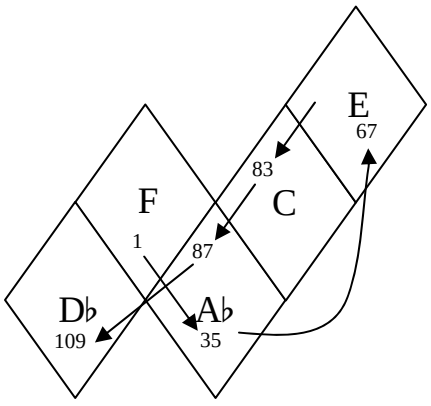
reason for the interruption of the maximally smooth cycle, one that is grounded in the traditional tonal priority of preserving the function of the retransition.

Cohn's hexatonic system, which does not distinguish between enharmonic equivalents, can trace the movement of voices between the harmonies from the second theme area through the first half of the development section of the first movement of Beethoven's Piano Sonata op. 57. The semitonal motion that is featured so prominently here, as well as frequent retention of common tones, allows this section to be viewed through the "hexatonic lens." Although the remainder of the sonata can be interpreted diatonically with fewer problems, Cohn allows for interpreting just one section hexatonically and others diatonically. He says that "hexatonic elements might infiltrate compositions that otherwise operate according to the principles of diatonic tonality" and that we should "limit the application to elements of those compositions that fail the standard test of diatonic coherence."[40] He also suggests that "the hexatonic model is likely to achieve the broadest scope and deepest insight into nineteenth-century music if used not in isolation from standard diatonic models, but rather in conjunction with them."[41] Therefore, according to Cohn, it would be perfectly acceptable to analyze this one section hexatonically and the rest of the sonata diatonically.

Analyzing in this manner would only show the chromatic aspects of this passage before returning to the diatonic for the rest of the piece. This would overlook the moment-to-moment diatonic mediant relationships that dominate the development section.

[40] Richard Cohn, "Maximally Smooth Cycles," 32.
[41] Ibid., 33.

Another approach that resists reduction to a diatonic background is Daniel Harrison's "partially-conformed" *Tonnetz*.[42] Tracing the path of tonicized keys treats the music as a journey rather than a prolongation, a perspective that works especially well for a development section moving through many key areas. Another feature of this music that would be served well by this interpretation, which does not make a distinction between major and minor, is that both the A♭ and E appear in both major and minor forms (see Example 1.15—numbers are measures of arrival). As in the hexatonic system, however, this diagram does not represent diatonic connections between temporally adjacent harmonies. Because "the pitch-classes within the lozenges [diamonds in the below diagram] represent the tonics of (major or minor) keys," the relationships of the triads themselves and the non-root voices are treated as less important.[43] For example, moving from C major to E minor is diatonically more straightforward—closely-related keys—than moving from C minor to E major, and this distinction would not be portrayed by the diagram.



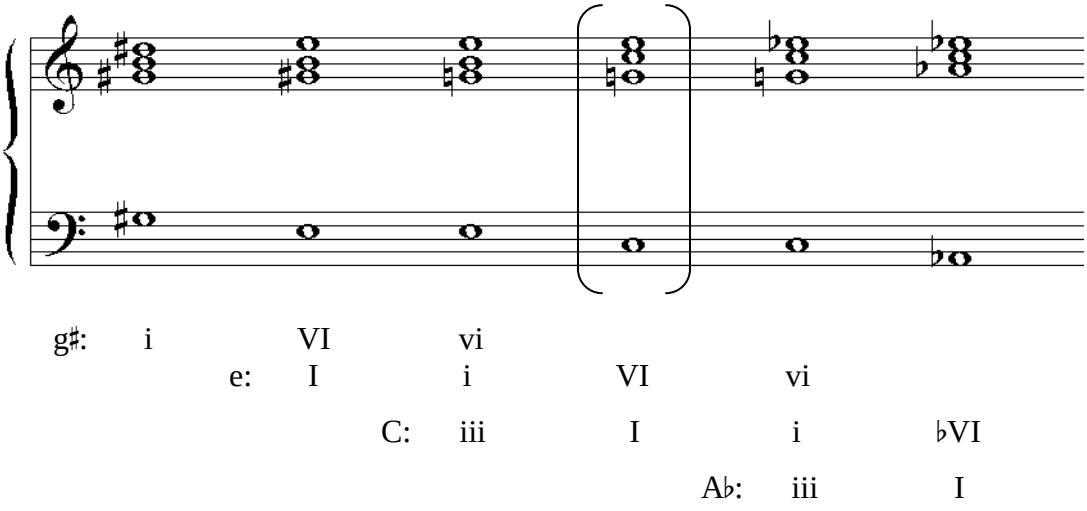
Example 1.15 Beethoven, Piano Sonata in F minor, op. 57, first movement, interpretation of first half of development section using Daniel Harrison's partially-conformed *Tonnetz*

[42] Daniel Harrison, "Nonconformist Notions," 128.
[43] Ibid., 136.

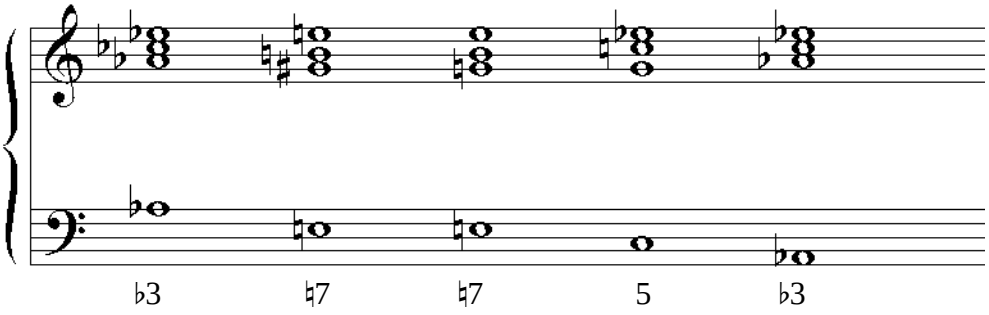
Another promising tactic for analyzing the Beethoven excerpt is to proceed as in Raphael Atlas's study of the opening of Mozart's Fantasy in C minor, K.475, as detailed earlier.[44] Atlas manages to illustrate several possible diatonic connections between harmonies in his first three readings by respelling or reinterpreting chords—he calls this "successive hearing." He admits that there are some enharmonic issues that arise from his readings, but he attempts to explain the composer's choice of spelling in his fourth reading, the "background hearing." Atlas acknowledges that "the linear connection between successive harmonies is virtually ignored" in this reading, which relates the roots of the chords to the main key of the piece, C minor, and its parallel C major.[45] This fourth reading, like Harrison's diagram above, focuses on just the roots of the harmonies and not their qualities, raising questions about his view of the excerpt's overall unity. His first three readings, however, are successful at explaining moment-to-moment diatonic connections. An Atlas-style analysis of the Beethoven might look something like Example 1.16 (brackets indicate an elision):

[44] Raphael Atlas, "Coherence vs. Disunity: The Opening Section of Mozart's Fantasy, K.475," *Indiana Theory Review* 7/1 (1986): 23–37.
[45] Ibid., 35.

a) "Successive" Hearing



b) "Background" Hearing



(roots' relationship to tonic F)

Example 1.16 Beethoven, Piano Sonata in F minor, op. 57, first movement, interpretation of the first half of the development section using Raphael Atlas' "successive" and "background" hearing

I think that the "successive" hearing above successfully describes moment-to-moment connections that a listener might perceive, including the elision, shown in brackets. The listener expects to hear C major there instead of C minor because of the E minor that precedes it, so perhaps the listener mentally inserts the C major. This hearing also reflects that each key area is tonicized and becomes the listener's focus until the next

transition to a new area promotes hearing a diatonic connection between the two. The "background" hearing is more problematic, because it is unlikely that a listener would be aware of the relationships between the roots and the overall tonic of F, especially if the quality of the chords is not important for this interpretation.

4. Conclusion

In my opinion, the approaches of Schenker, Proctor, Cohn, Harrison, and Atlas are all successful at explaining some aspects of passages such as this one from Beethoven but neglect others as a consequence. The prolongation of III proposed by Schenker provides a diatonic purpose for the equal division, but downplays the importance of the upcoming arrival on D♭ in the deeper middleground. Proctor's respelling of the E as F♭ points out the moment-to-moment connection that the listener may hear when the modulation is first made (from i to VI), but when the next harmony appears, the listener may forget the first connection and focus on the relation between the second and third—and so on. Plus, the prominent E minor, which would have created a paradox in his respelling, is not taken into consideration. Cohn's hexatonic system successfully matches the parsimonious voice leading of the excerpt and reflects the surprise of the arrival on C minor, but it does not account for diatonic submediant and mediant relationships between harmonies. Additionally, the diatonic and chromatic interpretations are used one at a time for different segments of music, which does not give a unified view of the entire piece. Harrison's *Tonnetz* mappings do not distinguish between major and minor triads,

ignoring upper voices, and Atlas' "background" hearing does the same; both methods consequently do not depict diatonic relationships between harmonies.

Now that the limitations of prior methods have been investigated, a new solution to the problem of enharmonicism that overcomes these limitations can be sought. In Chapter 2, I will explore the importance of unity and narrative to enharmonic analysis and propose a method that strives to combine diatonic and chromatic perspectives. Subsequent chapters will explore the applicability of this methodology to a wide range of music: popular music, with a 2005 song by Fiona Apple; neoclassical music, with a movement from Poulenc's Piano Concerto of 1949; and a free fantasia from 1784 by Carl Philipp Emanuel Bach.

Chapter 2: A New Methodology

The discussion of enharmonicism presented in Chapter 1 showed ways in which Beethoven's Piano Sonata op. 57 lies on the boundary between diatonicism and chromaticism. This chapter pursues ideas that shaped my own method of interpreting such enharmonicism, beginning with the importance of connecting analytical decisions on the small scale with larger-scale aspects of a piece and its overall narrative. I then discuss how enharmonicism, and chromaticism in general, may be analyzed in terms of mode mixture, a move that opens the door for the consideration of remote modulation and harmonic ambiguity. Harmonic ambiguity can become so widespread as to suggest multiple tonics vying for prominence in a piece, even when the music locally displays diatonic patterning.

I next present a new methodology for analyzing pieces with enharmonic paradoxes, taking into account the effect they have on the diatonic and chromatic features of the music. I demonstrate this methodology by offering a solution to the problems introduced in Chapter 1 through a reading of the same piece, the first movement of Beethoven's Piano Sonata op. 57.

This chapter concludes with a discussion of what kinds of musical works are best served by such a methodology and with a justification for including pieces in this dissertation from disparate styles, genres, and time periods. The time period most often

associated with studies of enharmonicism and chromaticism is the nineteenth century, but these harmonic phenomena are not tied to a single style or period; they can be found in music as wide-ranging as eighteenth-century free fantasies, nineteenth-century tone poems, twentieth-century Neo-Classical music, twentieth- and twenty-first-century popular music—and perhaps others.

1. Narrative and Unity

As a matter of method, in cases of enharmonic ambiguity, I propose that an analyst may first pinpoint the location of the enharmonic paradox and then choose how the pitches in question may be interpreted; often these enharmonic choices can be made easier by relating pitches to a characteristic feature of the piece being analyzed. Connections between moments on the small scale and the larger structure of the work can reveal a hidden tonal narrative in much the same way as the reflection of surface, foreground events in deeper middleground levels of a piece does in Schenkerian analysis.[1]

A good illustration of how enharmonic decisions can be made based on contextual and large-scale features is David Lewin's analysis of Wagner's *Parsifal*.[2] Lewin proposes a shift in analytical perspective when the diatonic system of *Stufen* begins to

[1] This makes an assumption that such pieces tend to be unified or organic, based on the fact that composers of tonal or tonal-sounding works use the common tonal language as a point of departure and a foundation for an overall plan for a work.

[2] David Lewin, "Amfortas's Prayer to Titurel and the Role of D in *Parsifal*: The Tonal Spaces of the Drama and the Enharmonic C♭/B," *19th-Century Music* 7/3, Essays for Joseph Kerman (Apr. 3, 1984): 336–49.

unravel and a Riemannian system becomes more useful. He pinpoints crucial dramatic and musical events that call for this change in perspective, claiming that the exact moment the enharmonic shift from C♭ to B occurs is during the kiss in Act II, in Klingsor's magic castle. The castle itself serves as the border between the world of Act I (*Stufen* – C♭ relates back to A♭) and the world of magic and miracle (chromatic – becomes B to relate to D) and is thus a dramatically significant moment for the enharmonic shift to occur. In *Stufen* space in Act I, some of the music is written in D for notational convenience but is really in E♭♭ (to relate to A♭ and C♭). When Parsifal seizes the spear in Act II, the music has passed over the enharmonic seam, represented by the castle, and is legitimately in D. When the music returns to *Stufen* space in Act III, the identity of E♭♭/D is in question, but Lewin claims that it should be notated as D. He justifies his choice of spelling by pointing out an earlier use of D as a substitute for the subdominant D♭ (in the home key of A♭) and a chain of plagal cadences involving D and D♭. In this way, he explains many of the enharmonic ambiguities of the work.

Lewin gives both dramatic and musical reasons for the switch from a diatonic to a chromatic perspective, and he uses both diatonic and chromatic factors to inform his decisions about enharmonic spellings at pivotal moments in the opera. He successfully demonstrates the interplay of the diatonic and chromatic, which, as put forth in Chapter 1, is crucial for understanding music that straddles the boundary between the two.

Lewin's technique is ingenious for dealing with opera; the length of these works allows the composer sufficient time to develop smaller ideas and make connections between them, and the dramatic plot provides a narrative backbone on which to build a

unified musical structure. This renders the overall plan of the work comprehensible, making the search for relationships between the parts and the whole manageable. My goal is to take the idea of a unified narrative from Lewin's approach but apply it to shorter works, with or without text, that lack an overall dramatic structure as a guide. Instead of relying on dramatic plot, I will focus on harmonic features and contextual characteristics to justify my enharmonic decisions and construct a compelling narrative.

2. The Role of Mixture

In addition to providing a narrative, I also strive to include both diatonic and chromatic considerations, as discussed in Chapter 1. The connection between the two is strikingly evident in cases of mode mixture, as the combination of the parallel major and minor modes inherently nudges the diatonic system closer to chromatic territory. In *Theory of Harmony*, Arnold Schoenberg describes the paring-down of the seven church modes into just two, major and minor, and further argues that major and minor will also eventually be fused. He claims that if our forebears who believed in the perfection of the church modes were "shown the future: that five of their seven would be dropped—just as the future is being shown here: that the remaining two will eventually be one—then they would have argued against such a possibility just as our contemporaries do."[3] Near the end of the book, Schoenberg discusses how the transformation from twelve major and twelve minor keys into twelve chromatic keys will take place. Several points in his

[3] Arnold Schoenberg, *Theory of Harmony*, trans. Roy E. Carter (Berkeley: University of California Press, 1978): 96.

theory reference the joining of major and minor, such as when the "mutual imitation of cadences allows the major to incorporate everything from the major-like church modes and the minor everything from the minor-like modes, and later allows major and minor to approach one another so closely that they resemble one another from beginning to end."[4] According to Schoenberg, the key to moving between diatonic and chromatic space is exploiting the parallel major-minor system. He was not the first to recognize the chromatic consequences of mode mixture, however.

Treating parallel keys as interchangeable can facilitate modulations to keys several steps away on the circle of fifths. Georg Vogler, whose *Stufen* theory and system of contextual reduction may have influenced Heinrich Schenker[5] and whose Roman numeral system is still in use today,[6] shows how modulation to several keys is made possible by utilizing the parallel minor key. In his *Tonwissenschaft und Tonsezkunst* of 1776, he declares that a piece should only modulate to closely related keys to preserve unity; for example, a piece in C major may have temporary moves to A minor, F major, D minor, G major, or E minor. As a virtuoso organ player, however, he admits the value in being able to improvise a transition between two pieces in distantly related keys.[7] Subsequently, he outlines how such modulations are possible, first from C major and then from C minor, including enharmonic modulations.[8] On several occasions, he invokes the

[4] Schoenberg, *Theory of Harmony*, 388.
[5] Robert Morgan, "Schenker and the Theoretical Tradition: The Concept of Musical Reduction," *College Music Symposium* 18/1 (Spring, 1978): 88.
[6] Floyd and Margaret Grave, *In Praise of Harmony: The Teachings of Abbé Georg Joseph Vogler* (Lincoln: University of Nebraska Press, 1987): 22–23.
[7] Georg Joseph Vogler, *Tonwissenschaft und Tonsezkunst* (Hildesheim, New York: G. Olms, 1970, Facsimile of Mannheim 1776 edition): 71–72.
[8] Ibid., 73–84.

use of the parallel key if it is more closely related to the destination key. A few years later, in his essay "Summe der Harmonik" from *Betrachtungen der Mannheimer Tonschule*, the chapter on modulation combines the major and minor key from the very start—the opening words of the section are "[v]om harten und weichen C in alle andere Tonarten," or "from C major and minor to all other tonalities."[9]

In his later *Handbuch zur Harmonielehre für den Generalbass* of 1802, Vogler includes a section on *Mehrdeutigkeit*, or "multiple meaning," before discussing modulation.[10] The second type involves diatonic pivot chords, such as reinterpreting ii in C major as iv in A minor, but the first type involves the enharmonic respelling of intervals. For example, because both G♯ and A♭ are represented by a single key on the keyboard, the distance between F and G♯ can be measured as an augmented second or a minor third.[11] On the following page, he explains that the origins of this type of *Mehrdeutigkeit* are from cadences in the minor mode, specifically the borrowing of the leading tone from major:

> The combination of notes that are so foreign to each other has no other cause than in cadences in the minor tonality, because there are no augmented and diminished intervals conceivable anywhere else. Consequently, the business of the Multiple Meaning of the first kind is immediately exhausted as soon as we know the origin of the diminished seventh and third and the augmented fifth. [12]

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[9] All translations are by the author unless otherwise noted. Georg Joseph Vogler, *Betrachtungen der Mannheimer Tonschule*, (Hildesheim, New York: Georg Oms Verlag, 1974, Facsimile of Mannheim 1780-81 edition): 28–40.

[10] Georg Joseph Vogler, *Handbuch zur Harmonielehre für den Generalbass*, (Prag: In Kommission bei K. Barth, 1802): 101–10.

[11] Ibid., 101.

[12] Vogler, *Handbuch*, 102. "Die Zusammenstellung von Tönen, die einander so fremd sind, hat keinen andern Grund als in den Schlußfallen der weichen Tonart; so wie keine übermäßigen oder verminderten Tonverbindungen andern denkbar sind. Folglich ist das Geschäft der Mehrdeutigkeit ersterer Gattung ... gleich erschöpft, sobald wir die Entstehung der verminderten Siebenten, verminderten Dritten und übermäßigen Fünften kennen."

The habitual raising of the leading tone in the minor mode, an example of combining major and minor, results in the creation of the intervals such as the augmented second, augmented fifth, and diminished seventh. This, in turn, leads to the formation of symmetrical harmonies such as the fully-diminished seventh chord and the augmented triad, raising questions of enharmonic spelling and delving into chromatic space. For example, if one builds a seventh chord on the raised leading tone in the minor mode, an augmented second or diminished seventh is created between the leading tone and $\flat\hat{6}$. The resulting vii^{o7} chord equally divides the octave into "minor thirds" and can be enharmonically respelled to lead to one of four major-minor keys. Similarly, the rare III^{+} arises due to the combination of $\flat\hat{3}$, $\hat{5}$, and the raised leading tone in minor. The resulting augmented triad equally divides the octave into "major thirds" and can thus be enharmonically respelled to fit into three different minor keys.

One of Vogler's successors, Gottfried Weber, was influenced by the idea of *Mehrdeutigkeit* and modified the Roman numeral notation to more closely match what is used today, namely, the upper-case for major, lower-case for minor, and the degree sign to indicate diminished triads.[13] In his chart of key relations, Weber considers the subdominant, dominant, and both the relative *and* parallel keys to be related to the tonic in the first degree.[14] The first three differ from the tonic by only one scale member each,

[13] Gottfried Weber, *Versuch einer geordneten Theorie der Tonsetzkunst* (Mainz: B. Schott's Söhne, 1830-1832), §52 and §151.

[14] By contrast, according to Johann Philipp Kirnberger, a modulation to the parallel minor is on the second level of distant modulations. From *The Art of Strict Musical Composition*, trans. by David Beach and Jurgen Thym (New Haven: Yale University Press, 1982): 139.

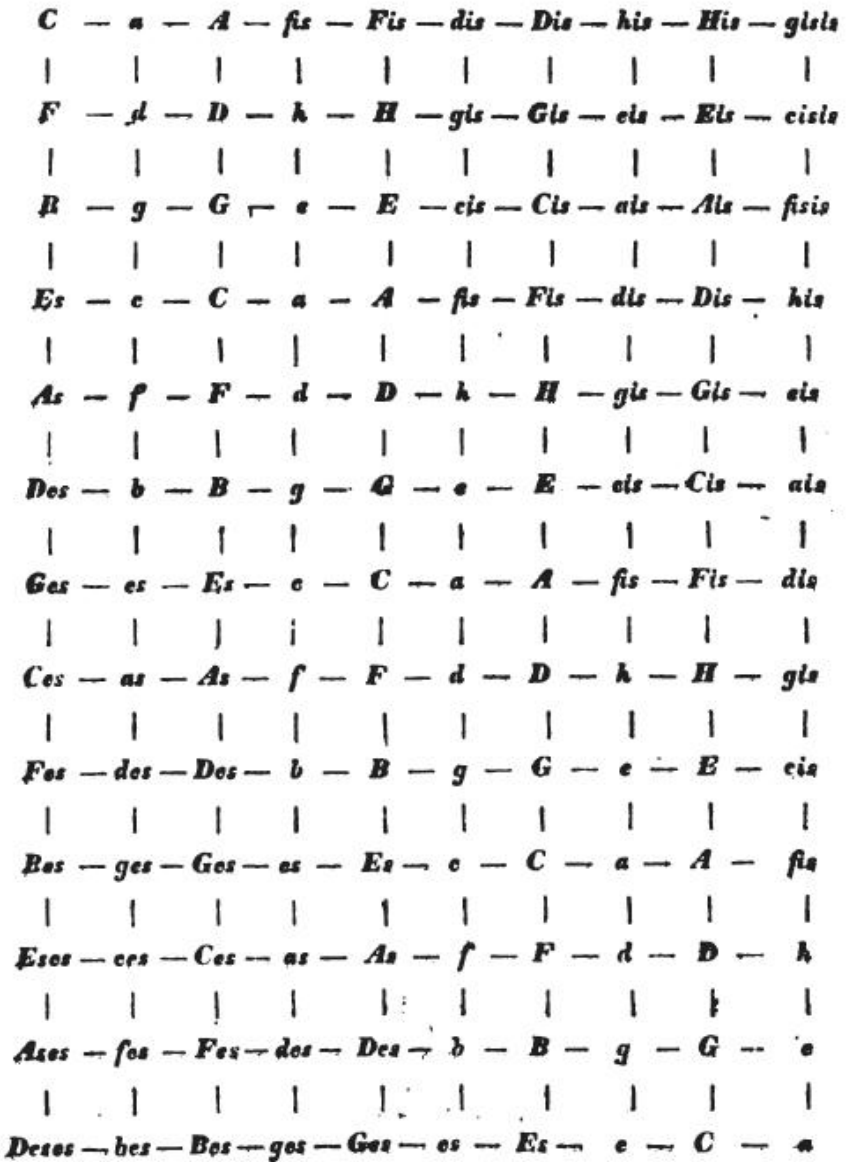
but the parallel key differs by two, assuming a raised leading tone. His explanation for why the parallel key can still be considered closely related is as follows:

> Indeed, the scale of C major differs from the C minor scale by more than one note … on the other hand, they also have even too much in common with each other. For the tonic note of C major is the same as for that of C minor; therefore, both keys revolve around one and the same midpoint, the principal tone C … On the fifth scale degree of both tonalities resides the very same harmony: namely, in C major as well as in C minor, the harmonies G and G^7. The similarity is thus so great that it almost ceases to be just similarity and almost crosses over into identity. [15]

As in Vogler's theory, the raised leading tone in minor and the resulting major V chord is part of what allows parallel keys to substitute for each other, along with sharing the same tonic pitch. Weber's chart of relations, shown in Example 2.1, plots the circle of fifths on the vertical axis and a "circle of thirds" along the horizontal axis.[16] The first-degree relationship of parallel keys leads to some problems, however. Many second-degree relationships are duplicated in the third-degree, and some relationships in the same degree are further away on the circle of fifths than others. Notice, for example, that C major is related to D major in both the second and third degree—D major is two moves up from C major, through G major, but is two moves across and one down through several other pathways.

[15] Weber, *Versuch*, §165. "Zwar ist die *C*-dur-Leiter in mehr als einem Tone von der *c*-moll-Scale verschieden … allein von einer anderen Seite haben sie doch auch gar zu Vieles mit einander gemein. Denn die tonische Note von *C*-dur ist auch die von *c*-moll; und so drehen sich beide Tonarten um einen und denselben Mittelpunct, um den Hauptton *C* … Auf der fünften Stufe beider Tonarten wohnen sogar dieselben Harmonieen: nämlich in *C*-dur sowohl, als in *c*-moll, die Harmonieen G und G^7. Die Aehnlichkeit ist demnach so gross, dass sie fast aufhört, blose Aehnlichkeit zu sein, und beinah in Selbigkeit (Identität) übergeht[.]"

[16] Gottfried Weber, *Versuch*, §180.



Example 2.1 Gottfried Weber's table of key relationships

Heinrich Schenker considers the relationship between parallel major and minor to be even closer than Weber does. In *Harmony*, Schenker, like Schoenberg, discusses the incorporation of the church modes into major and minor. He illustrates how different

combinations of major and minor scales, with $\hat{3}$, $\hat{6}$, and $\hat{7}$ taken from either major or minor, lead to six distinct modes, including the Dorian and Mixolydian.[17] Later in the same chapter, he explains that the Phrygian mode can arise in minor for motivic purposes and to avoid the diminished quality of the supertonic chord, but he declares the Lydian mode to be "Unusable as Ever."[18] More importantly, he not only considers the major and minor to be closely related, as Weber suggested, but also actually treats them as nearly identical. Schenker posits that "any composition moves in a major-minor system. A composition in C, for example, should be understood as in C major-minor … for a pure C major, without any C minor ingredient, or, vice versa, a pure C minor, without any C major component, hardly ever occurs in reality."[19]

Schenker later shows how this combination of parallel keys can lead to the "tonicalization [sic]" of many keys built on the resulting scale-steps. He suggests that "to gain all possible scale-steps, we subject the C major diatonic system, first of all, to the process of combining it with the C minor one. If, furthermore, we include the Phrygian II step … we obtain the following scale-steps," showing steps on C, D♭, D, E♭, E, F, G, A♭, A, B♭, and B for what he terms "simulated keys."[20] He admits still further possibilities by pointing out that "each simulated key, in turn, obviously could be penetrated by the principle of combining major and minor, which, as we know, constitutes an ever present

[17] Heinrich Schenker, *Harmony*, ed. Oswald Jonas, trans. Elisabeth Mann Borgese (Chicago: University of Chicago Press, 1954): §40–41.
[18] Ibid., §50–51.
[19] Ibid., §40.
[20] The keys are deemed simulated, because Schenker would not consider moves to those keys as genuine modulations, but rather as temporary tonicizations that would be interpreted as part of a diatonic background.

compositional method."[21] This means that, from C major-minor, one could reach almost any other major or minor key by using mode mixture and equating parallel keys, opening a world of possibilities for chromaticism from a diatonic source.[22]

3. Multiple Tonics

Robert Bailey agrees with this combination of the parallel major and minor, especially in the chromatic music of the late-nineteenth century. He notes that "[a]n immediately apparent principle of later nineteenth-century German tonal construction is modal mixture, the use of both the major and minor inflections of a given key" and that if "we want to identify the tonality of large sections, or that of whole pieces or movements, it is best simply to refer to the key by itself and to avoid specifying mode, precisely because the 'chromatic' or mixed major-minor mode is so often utilized."[23] According to Bailey, then, major and minor have become completely interchangeable by this period.[24] His analysis of the Prelude to *Tristan und Isolde* gives ample evidence for an interpretation using not just one major-minor system as its tonic, but two major-minor systems that are related as relative minor and major. He boldly states that the "new

[21] Heinrich Schenker, *Harmony*, §160.
[22] A notable exception is G♭ or F♯. Further discussion of this can be found in Matthew Brown, Douglas Dempster, and Dave Headlam, "The ♯IV(♭V) Hypothesis: Testing the Limits of Schenker's Theory of Tonality," *Music Theory Spectrum* 19/2 (Autumn 1997): 155–83 and Matthew Brown, "The Diatonic and the Chromatic in Schenker's 'Theory of Harmonic Relations,'" *Journal of Music Theory* 30/1 (Spring 1986): 1–33.
[23] Robert Bailey, "An Analytical Study of the Sketches and Drafts," in *Prelude; And, Transfiguration: From Tristan and Isolde*, 1st ed. (New York: Norton, 1985): 116.
[24]This puts him at odds with Hugo Riemann, Alfred Lorenz, and Ernst Kurth, who "continue to insist upon the independence of major and minor keys." Ibid., 116 (footnote 4).

feature in *Tristan* with the most far-reaching consequences for large-scale organization is the pairing together of two tonalities a minor [third] apart in such a way as to form a 'double-tonic complex,'" which "may well have grown out of the traditional close relationship between A minor and C major."[25] This music, then, cannot be considered monotonal anymore, despite the diatonic origins of the chromaticism in parallel or relative major and minor relationships.

Bailey's analysis brings Vogler's idea of *Mehrdeutigkeit*, discussed earlier, back to the fore. In Vogler's examples, *Mehrdeutigkeit* extended at most to only a few chords at a time, but in the chromatic music that Bailey analyzes, more than just a few chords can have multiple interpretations, with tonal ambiguity encompassing whole sections or pieces. These kinds of ambiguity are acknowledged by Schoenberg, who, in his chapter on modulation in *Theory of Harmony*, explains the purpose of different types of digressions from the tonic. In one type of digression, "[f]rom the outset the tonic does not appear unequivocally, it is not definitive; rather it admits the rivalry of other tonics alongside it. The tonality is kept, so to speak, suspended, and the victory can then go to one of the rivals, although not necessarily."[26] As with Bailey's idea, this offers the possibility of having more than one tonic at a time.

Multiple meaning also appears in Charles Smith's "The Functional Extravagance of Chromatic Chords," which attempts to combine linear and functional styles of analysis. When determining the functions of chords in chromatic passages, he notes:

[25] Robert Bailey, "An Analytical Study," 121.
[26] Arnold Schoenberg, *Theory of Harmony*, 153.

> [I]t is seldom possible … to find any one key with respect to which we can make straightforward functional sense of all of its chords. Therefore our desire to fit chromatic chords into a functional scheme usually necessitates the invocation of several keys … the more complex the passage, the more complex the array of overlapping and interlocking functional ascriptions will be.[27]

Thus, several tonics may be in control of a single passage. After demonstrating that there are at least three interpretations of the opening bars of the Prelude to *Tristan und Isolde*, Smith ends his article by claiming that "[i]t is, more than any other harmonic feature, the functional extravagance of chromatic music that intrigues us."[28] *Mehrdeutigkeit* and ambiguity, then, are hallmarks of chromaticism and need to be further explored.

Many theorists since Bailey have also wrestled with pieces that seem to have more than one tonality. *The Second Practice of Nineteenth Century Tonality*, a collection of articles compiled and edited by William Kinderman and Harald Krebs, presents a diversity of examples on the subject.[29] Krebs himself explores "tonal pairing" in two Schubert songs, "Der Wanderer" and "Meeres Stille," the first of which alternates between C♯ minor and E major, relative major-minor pairs like in the *Tristan* Prelude. He explains that the "basis for this large-scale dualism is the capacity of each of the two tonics to function as a subordinate harmony within the other; the E-major triad can be the mediant of the key of C-sharp minor as well as the tonic of E major, and C-sharp minor can be the submediant of E major as well as the tonic of C-sharp minor."[30] Krebs claims that "Meeres Stille," by contrast, has two tonics that are more distantly related, C major

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[27] Charles Smith, "Functional Extravagance," 115.
[28] Ibid., 139.
[29] William Kinderman and Harald Krebs, eds., *The Second Practice of Nineteenth-Century Tonality* (Lincoln: University of Nebraska Press, 1996).
[30] Harald Krebs, "Some Early Examples of Tonal Pairing: Schubert's 'Meeres Stille' and 'Der Wanderer,'" in *The Second Practice of Nineteenth-Century Tonality* ed. William Kinderman and Harald Krebs (Lincoln: University of Nebraska Press, 1996): 17–33.

and E major. After comparing two versions of the same song, he argues that the second version weakens the tonic C major, promoting E major to an equal status as contender for primary tonic.[31]

In the same collection by Kinderman and Krebs, Jim Samson discusses the directional tonality of Chopin's Ballade no. 2, op. 38, which starts in F major and concludes in A minor. Specifically, he notes the influence of improvisation and pieces in "free" style on the compositions of Chopin.[32] According to Samson, the "two-key scheme was not an enormous step in style for Chopin. Indeed, as intimated earlier, such schemes were not at all uncommon in the repertory of the brilliant style."[33] Improvisation was also Vogler's justification for remote modulations, as mentioned above, and this issue will be further addressed in my analysis of a free fantasia in Chapter 5.

Kevin Korsyn explores whether the directional tonality of Chopin's Second Ballade may have influenced the second movement of Brahms's Quintet op. 88.[34] He notes that the two pieces have similar structures and tonal plans, though there are important differences as to how each composer treats the relationship between the two key centers. Korsyn points out that "whereas Chopin gradually phases out F major, Brahms allows A major to assert its claims without undermining C♯ [major-minor]," and that "Chopin reverses the hierarchy between primary and secondary tonalities" while

[31] Krebs, "Some Early Examples of Tonal Pairing," 23–30.
[32] Jim Samson, "Chopin's Alternatives to Monotonality," in *The Second Practice of Nineteenth-Century Tonality* ed. William Kinderman and Harald Krebs (Lincoln: University of Nebraska Press, 1996): 34–44.
[33] Ibid., 39.
[34] 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): 45–83.

"Brahms, on the other hand, by allowing C♯ [major-minor] to remain an important key in the last section, leaves the respective hierarchical positions of his two keys in question."[35] The comparison of these two pieces underscores the kind of tonal ambiguity found in nineteenth-century music and how pieces in different styles or periods might have different styles of and reasons for multiple tonics.

So far, the multiple tonics in these examples have been pairs of keys related by third, and most of them relative keys. Several of the remaining articles in *The Second Practice of Nineteenth-Century Tonality* discuss the possibility of more distant relationships. Patrick McCreless talks about juxtapositions of semitone-related keys,[36] William Benjamin extends the parallel relationship to include other modes besides major and minor (and some of the secondary keys he lists for Bruckner's Eighth Symphony are not closely related),[37] and R. Larry Todd presents not two, but three principal tonalities for Liszt's "Faust," a work that outlines an augmented triad (A♭, C, and E).[38] Christopher Lewis's analysis of Schoenberg's song "Traumleben" includes a double-tonic complex between keys a semitone apart.[39] From these studies, it seems that the possibilities for key relationships involved in multiple tonics are unlimited, provided that there is contextual justification.

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[35] Kevin Korsyn, "Directional Tonality," 76–78.
[36] Patrick McCreless, "An Evolutionary Perspective on Nineteenth-Century Semitonal Relations," in *The Second Practice of Nineteenth-Century Tonality* ed. William Kinderman and Harald Krebs (Lincoln: University of Nebraska Press, 1996): 87–113.
[37] William E. Benjamin, "Tonal Dualism in Bruckner's Eighth Symphony," in *The Second Practice of Nineteenth-Century Tonality* ed. William Kinderman and Harald Krebs (Lincoln: University of Nebraska Press, 1996): 238–39.
[38] R. Larry Todd, "Franz Liszt, Carl Friedrich Wietzmann, and the Augmented Triad," in *The Second Practice of Nineteenth-Century Tonality* ed. William Kinderman and Harald Krebs (Lincoln: University of Nebraska Press, 1996): 153–177.
[39] Christopher Lewis, "Mirrors and Metaphors: Reflections on Schoenberg and Nineteenth-Century Tonality," *19th Century Music* 11/1, Special Issue: Resolutions II (Summer 1987): 26–42.

4. Methodology

As demonstrated in the C.P.E. Bach excerpt in Chapter 1 (Example 1.3), enharmonic paradoxes often arise simultaneously with remote modulation. Remote modulation can also be accomplished through the enharmonic respelling of augmented triads, diminished seventh chords, and augmented-sixth chords, which have origins in the mixture of major and minor scales, as Vogler illustrated. Vogler, Weber, and Schenker showed that substituting parallel keys can enable modulation to keys several steps away on the circle of fifths. Thus, enharmonic respelling can correspond with remote modulations, and remote modulations can correspond with enharmonic spelling ambiguity, both of which are facilitated by mode mixture. Because mode mixture can lead to a shift from diatonic to chromatic space, my analyses will distinguish major from minor by representing tonicized key areas not just as a tonic pitch, but as tonic triads.

On the large scale, entire pieces, or large sections thereof, can often be thought of in terms of parallel major-minor complexes, as Schenker, Schoenberg, and Bailey posited. Pieces with much chromaticism, harmonic ambiguity, and remote key relations might thematize a competition between a primary major-minor complex and a secondary one (or ones), or even between two or more equal rivals. Many examples of multiple keys vying for tonic status were demonstrated by Bailey, Krebs, Samson, Korsyn, McCreless, Benjamin, Todd, and Lewis. This type of overall harmonic narrative might be constructed by connecting large-scale, structural events with salient small-scale characteristics, such as emphasized pitch classes, enharmonic seams, prominent motives,

frequently used modulatory devices, or prevalent mode mixture.[40] Deciding what tonic(s) represent the whole piece, as well as what keys are local tonics, then, depends upon contextual factors.

This section is a step-by-step guide to my methodology for analyzing pieces with enharmonic paradoxes that reconsiders the development section of the first movement of Beethoven's Piano Sonata F minor, op. 57 (the "Appassionata"), which was discussed in Chapter 1.[41]

a. Locating the Enharmonic Paradox

The first step in my analyses is to locate enharmonic paradoxes, which may be signaled by symmetrical divisions of the octave, remote modulations through enharmonic respelling, or changes in function of a specific pitch class. I then determine the specific moment for which the pitch or pitches can be heard as changing function based on contextual clues, much as Lewin does in his analysis of *Parsifal* described earlier.[42] In all cases, this method involves figuring out a point of origin for the enharmonic paradox

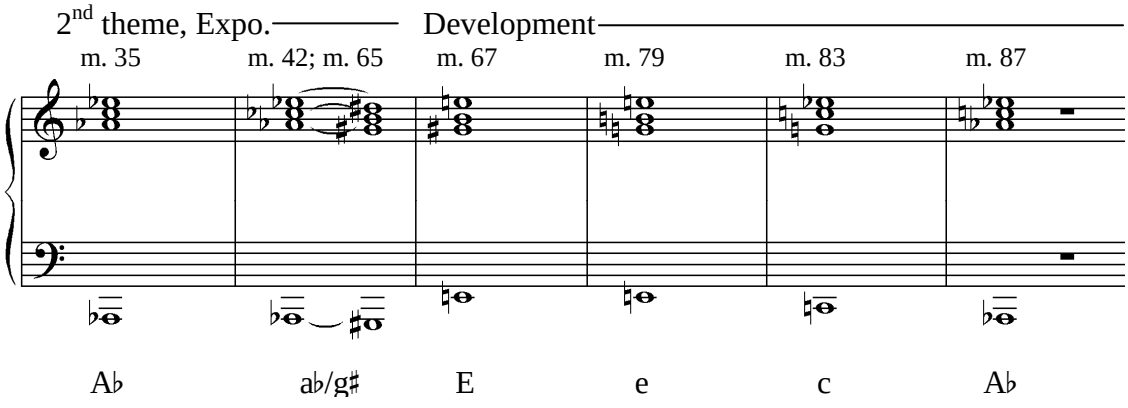
[40] Textual or dramatic factors can also play a role, although my study will focus mainly on musical characteristics of the pieces in question.

[41] The two paradoxes in this Beethoven sonata discussed in this chapter were pointed out by Donald Francis Tovey in *A Companion to Beethoven's Pianoforte Sonatas*, (London: The Associated Board of the Royal Schools of Music, 1931), as also noted by Eric Wen in "E-quadruple flat: Tovey's Whimsy," *Zeitschrift der Gesellschaft für Musiktheorie* 8/1 (2011), http://www.gmth.de/zeitschrift/artikel/612.aspx.

[42] David Lewin, "Amfortas's Prayer to Titurel and the Role of D in *Parsifal*: The Tonal Spaces of the Drama and the Enharmonic Cb/B," *19th-Century Music* 7/3, Essays for Joseph Kerman (Apr.3, 1984): 336–49.

as well as its relationship with the local tonicized keys. These local keys may then turn out to be part of a larger major-minor key complex.

The harmonies from the end of the exposition to the middle of the development section in the first movement of Beethoven's "Appassionata" equally divide the octave A♭ by major third (see Example 2.2 below, reproduced from Chapter 1). Although the score notates the enharmonic change as occurring between the two sections, when A♭ minor becomes G♯ minor, it could have occurred at any point along the cycle of major thirds. Each step along the way is related to the previous key as its submedient, so the spelling of each root could be as a major third lower than the previous one (E could be F♭, the C could be D♭♭, and so forth). The score spells the tonic triads of the keys in their most notationally simple forms, but this does not reflect the enharmonic tonal equivalence that necessarily occurs in equal divisions.

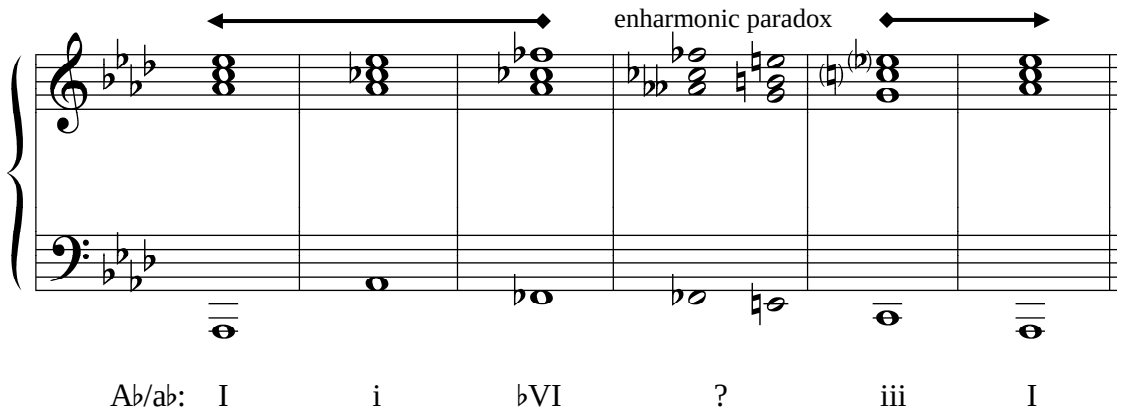


Example 2.2 Beethoven, Piano Sonata in F minor, op. 57, first movement, summary of tonicized keys from the end of exposition through the first half of development section (same as Example 1.6)

The precise location of the enharmonic paradox may be pinpointed by examining the context of the section in question. Because the piece is built on a diatonic foundation

and is in sonata form, the A♭ has significant structural importance. Minor-key pieces in sonata form follow a large-scale pattern of tonic to relative major in the exposition (A♭ in the case of the Beethoven), more remote keys in the development leading to the dominant for the retransition, and a return to tonic for the recapitulation. Consequently, I agree with the Schenkerian interpretation of the passage as prolonging A♭. A♭ returns at a notable place in the development section as dominant preceding the big arrival of the second theme in D♭ major, confirming its large-scale importance. Additionally, the A♭ that returns in mm. 105–108, just before D♭, brings back the original bass register as a reminder of the original A♭ from the end of the exposition, making diatonic prolongation a reasonable interpretation.

The enharmonic shift can be located by examining which tonicized keys are related diatonically to the prevailing key or the tonic—A♭ major-minor in this case. As evidenced by Example 2.3 below, it is clear that E major, respelled as F♭ major, can be related to the previous key of A♭ minor as its submediant. The C minor can be interpreted as the mediant preceding A♭ major. This only leaves one key that has no diatonic connections to the prevailing A♭: E minor. Once G, or A♭♭, is introduced, an enharmonic paradox presents itself; this is the same pitch that was controversial in Proctor's diatonic reinterpretation of the passage, shown in Chapter 1. G is the correct spelling for the leading tone in A♭ major or minor, but G cannot be part of a triad with F♭ and C♭. The enharmonic paradox, then, deals with the pitches E/F♭, G/A♭♭, and B/C♭.



Example 2.3 Beethoven, Piano Sonata in F minor, op. 57, first movement, location of the enharmonic paradox in the first half of development section

b. Fitting the Enharmonic Paradox into the Narrative of the Work

As noted in Chapter 1, there is a danger of downplaying the importance of chromatic moments, such as enharmonic paradoxes, if everything is reduced to a diatonic background. A crucial next step, therefore, is to locate the role of the enharmonic paradox in the narrative of the whole work. There may be foreshadowing or consequences of the enharmonic paradox throughout a piece, such as the emphasis on particular pitch classes by registral placement or distinctive timbre. It is also possible that the paradoxes are a result of specific key relations that are thematized; for example, there may be a tendency to modulate to the minor subdominant in several different keys or a proclivity for introducing a key parallel to the one expected.

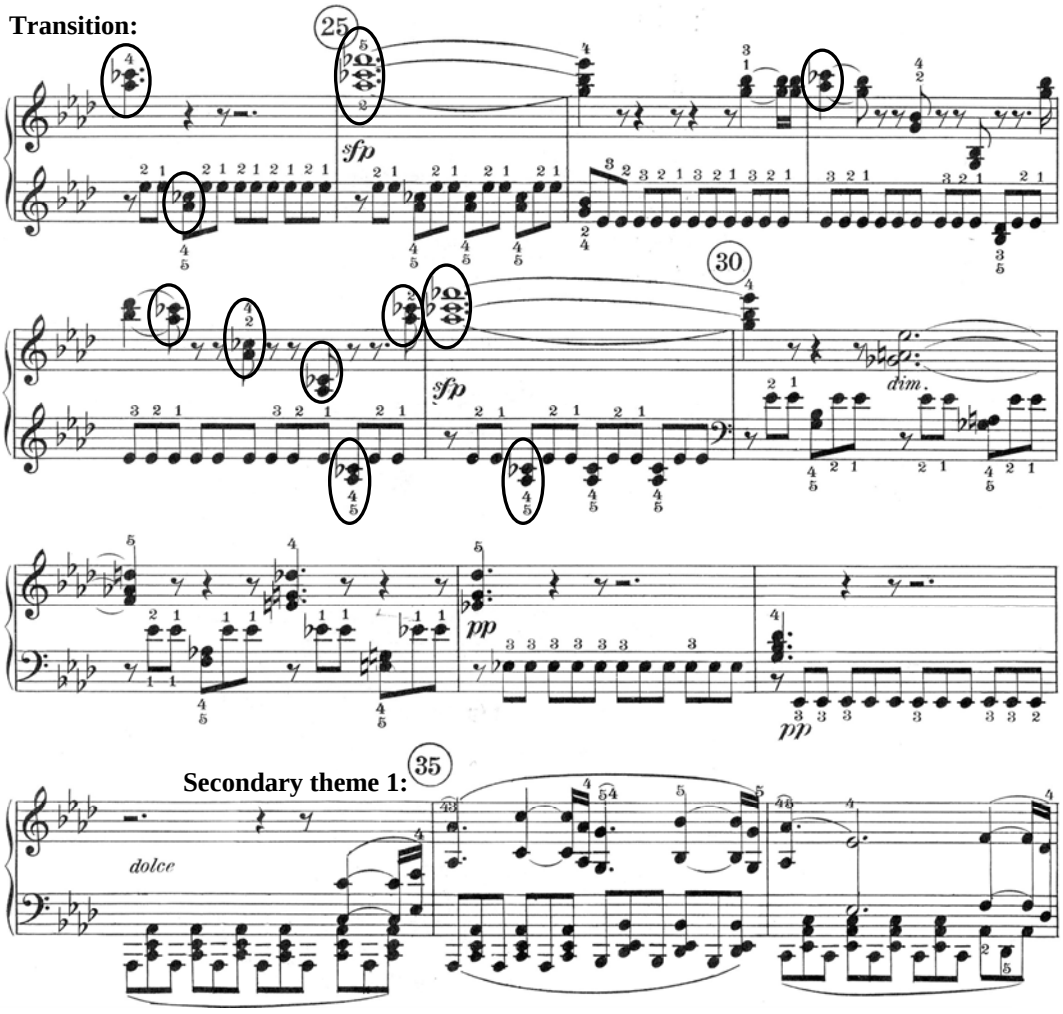
In the Beethoven, I have already noted that the arrival of E minor in the development section is emphasized on the surface by dynamics and the return of the primary theme. Additionally, I have now shown that E minor is a pivotal part of the

movement because of the enharmonic paradox and consequent shift into chromatic space. I will now delve into the deeper connections that this enharmonic paradox has with characteristics of the rest of the sonata, namely, frequent mode mixture and an emphasis on semitones.

One striking feature of Beethoven's Piano Sonata op. 57 is that it constantly shifts between parallel chords, major to minor and vice versa, challenging the listener's expectations of which key will arrive or continue. Because the E minor itself emerged from mode mixture following E major, exploring this phenomenon is necessary to understanding the context of this enharmonic paradox in the larger narrative of the piece. Two of the notes involved in the enharmonic paradox, C♭ and F♭, are first introduced in the transition to the second theme of the exposition, when mixture with A♭ minor begins. The other paradoxical note, G, is diatonic in the key of A♭ major and is the borrowed, raised seventh scale degree in A♭ minor. Just as Vogler and others warned, the raised leading tone produces enharmonic ambiguity, because the augmented second created between ♭$\hat{6}$ and ♮$\hat{7}$ sounds the same as a minor third. This equivalence raises the possibility of building chords that sound triadic from scale degrees that are not triadically related. This enharmonic paradox, therefore, may be thought of in terms of the mixture of major and minor modes.

Mode mixture begins as early as the transition to the second theme group in the exposition, mm. 25–35, shown with the borrowed notes in ovals in Example 2.4 below. The transition employs the common technique of "standing on the dominant" of the following key, which is usually the relative major in minor-key sonatas. In this

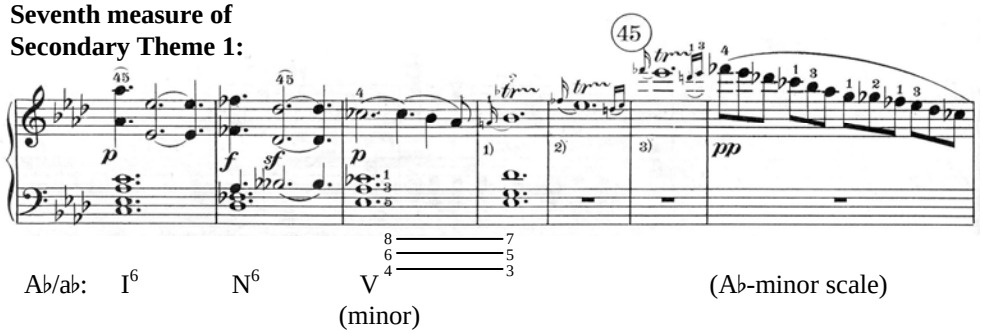
movement, there is a pedal E♭ that will lead to A♭ major with the arrival of the second theme. Instead of presenting notes of the A♭-*major* scale during the transition, Beethoven uses the A♭-*minor* scale, including the lowered C♭ and F♭, continuing the minor mode from the first theme. When the second theme group arrives in m. 35, the surprise of the major mode creates a stark contrast between this more cheerful melody and the brooding first theme. The contrasting of two themes is consistent with the conventions of sonata form.



Example 2.4 Beethoven, Piano Sonata in F minor, op. 57, first movement, mm. 25–37, mode mixture in the transition section of the exposition

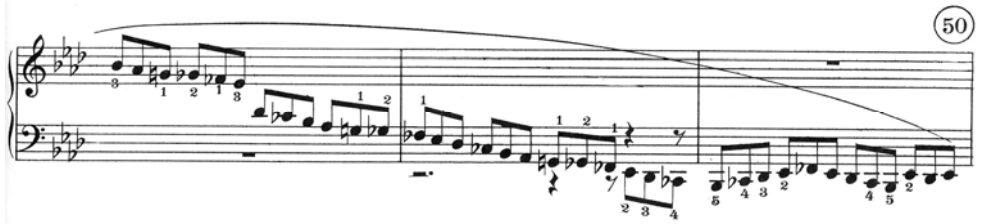
The listener only gets a brief taste of A♭ major, however; only seven measures into the second theme group, the C♭ and F♭ return in mm. 42–43, along with the Neapolitan $\flat\hat{2}$ (B♭♭), to banish the major mode for the rest of the exposition. Consequently, most of the secondary theme group does not appear in a key closely related to the tonic—A♭ minor has three more flats in its key signature than F minor, far more distant than its parallel key, the relative major. Example 2.5 a) begins with the shift into the minor mode and continues through the beginning of the next theme of the second theme group. Example 2.5 b) includes part of the last theme of the second group leading to the development section.

a) **Seventh measure of Secondary Theme 1:**

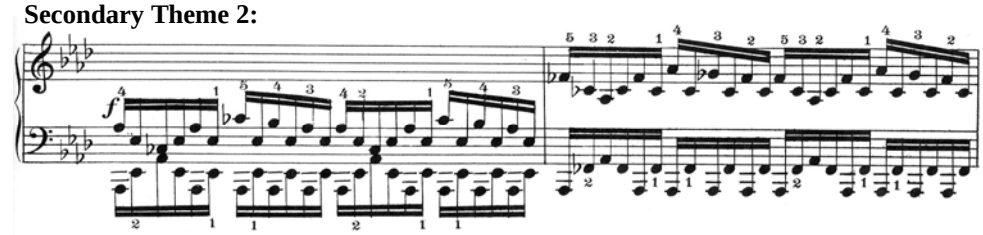


A♭/a♭: I^6 N^6 V$^4_3$ (A♭-minor scale)

(minor)

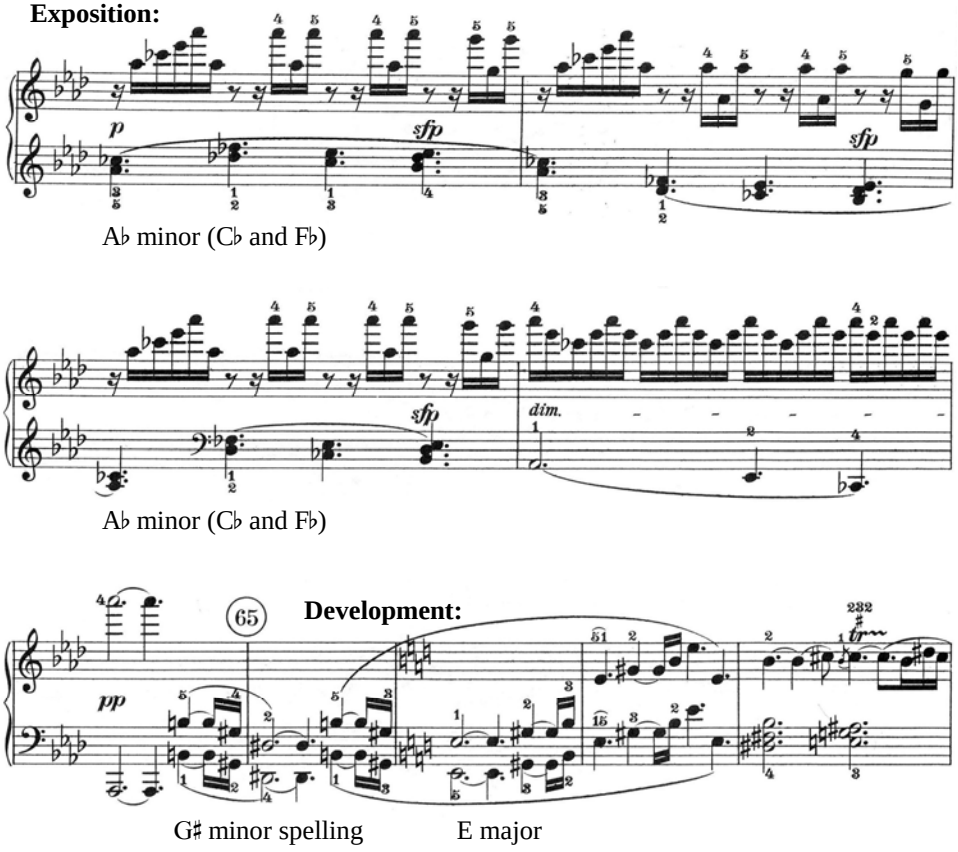


Secondary Theme 2:



A♭/a♭: i VI^6

b) **Closing theme of Exposition:**



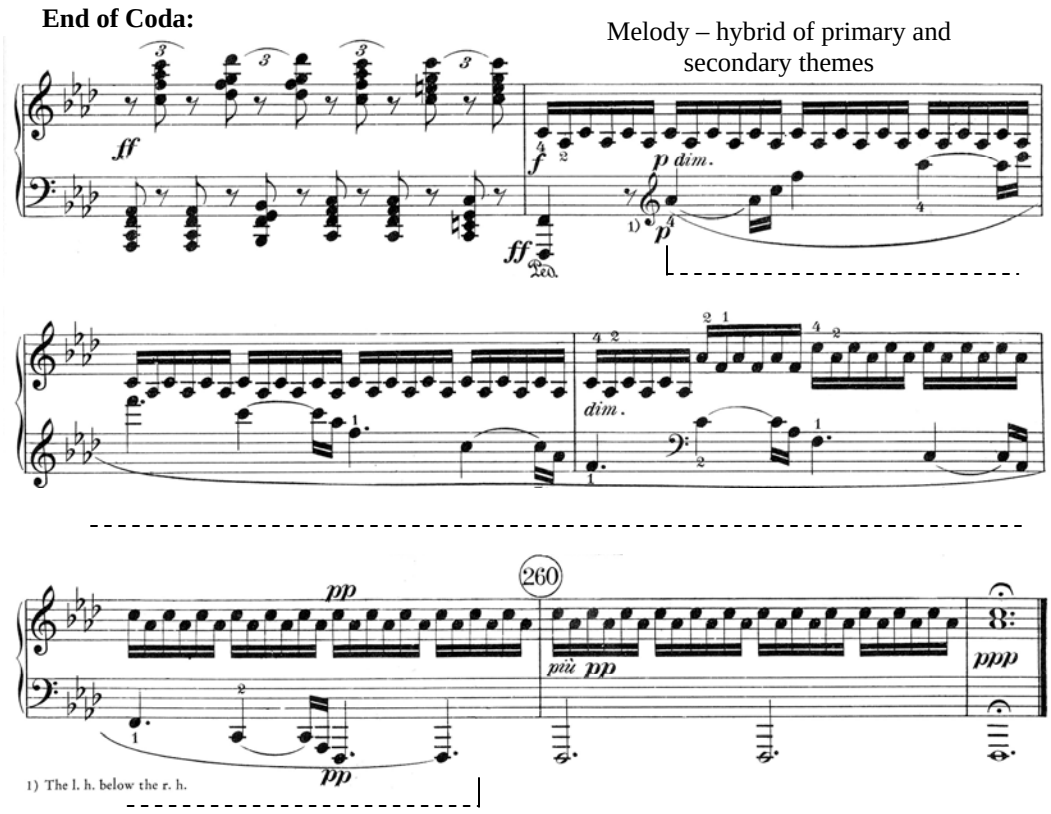
Example 2.5 Beethoven, Piano Sonata in F minor, op. 57, first movement, mode mixture in the secondary themes of the exposition: a) mm. 41–52; b) mm. 61–69

The development section also thwarts modal expectations. The first appearance of material from the primary theme in the development reverses its mode to major, specifically E major (refer back to Example 1.5 in Chapter 1). The enharmonic paradox on E minor directly follows its parallel major. The arrival of C minor in m. 83 after this E minor also breaks several patterns anticipating the arrival of its parallel, C major, as noted in the hexatonic analysis in Chapter 1 on pages 21–28. The major-mode secondary theme material appears in both major and minor modes during the development: D♭ major at m. 109, B♭ minor at m. 113, and G♭ major at m. 117.

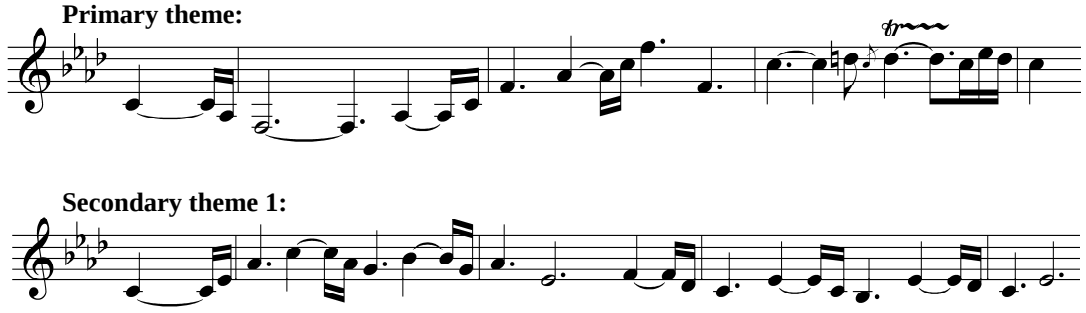
In the transition section of the exposition, the borrowing of pitches from the parallel minor mode of the upcoming key is unexpected, because the second theme group is should be in the relative major, according to convention. At the corresponding place in the recapitulation, however, the use of the minor scale degrees over the dominant pedal *is* expected, because the secondary theme group should follow in F minor, the tonic key. This time, the use of the minor mode in the transition is followed by a surprising turn to the parallel major for the second theme. Many minor-key sonatas invoke the parallel major in the second theme of the recapitulation, but what makes the "Appassionata" unusual is that in both the exposition and recapitulation, the transition forecasts the arrival of the opposing mode so that the arrival of the major is more shocking. As in the exposition, the mode soon changes back to minor, and all subsequent themes in the second theme group appear in F minor.

The coda, like the development, also presents statements of the first secondary theme in both modes. The first presentation, in m. 210, is in D♭ major, the same key as in its first appearance in the development section. The final time, the theme returns in the tonic minor mode, F minor, in m. 239. Placing the final appearance of the main secondary theme in the minor mode resolves the modal tension that had been building around this melody as it had alternated between major and minor throughout the movement. Although it began its life as an ascending, joyful, major-mode melody, in sharp contrast to the descending, foreboding, minor-mode opening theme, the melody's identity is called into question in both the development and coda. By the end of the coda, through rhythmic similarities, the same starting pitch-class, the emphasis on arpeggios,

and now the sharing of the minor mode, the two themes are fused into one in the final gesture of the movement, shown in Example 2.6. A direct comparison of the two melodies appears in Example 2.7.

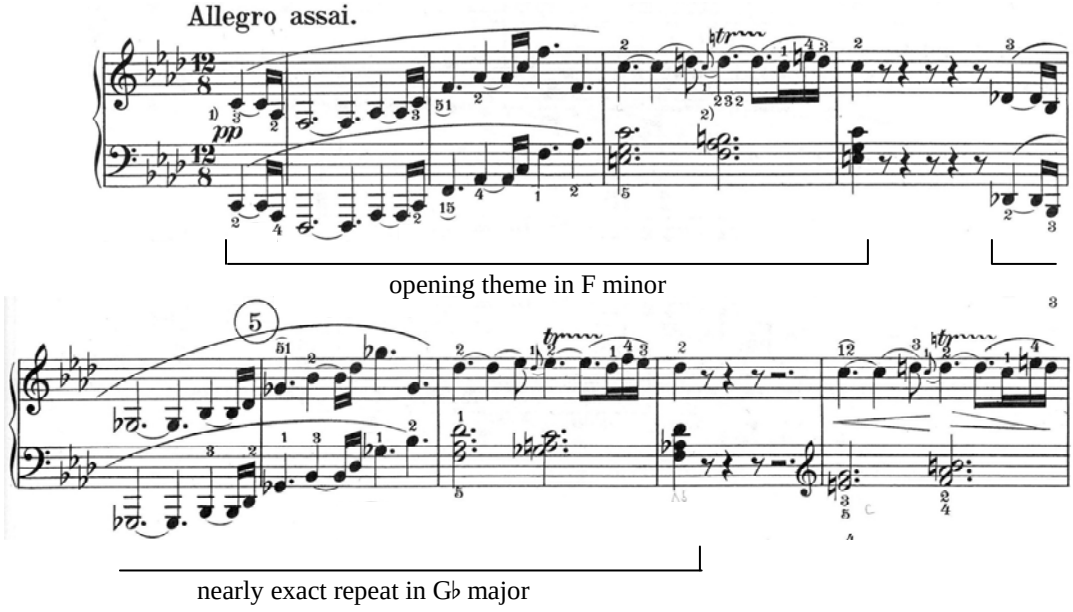


Example 2.6 Beethoven, Piano Sonata in F minor, op. 57, first movement, mm. 256–262, hybrid melody at end of coda



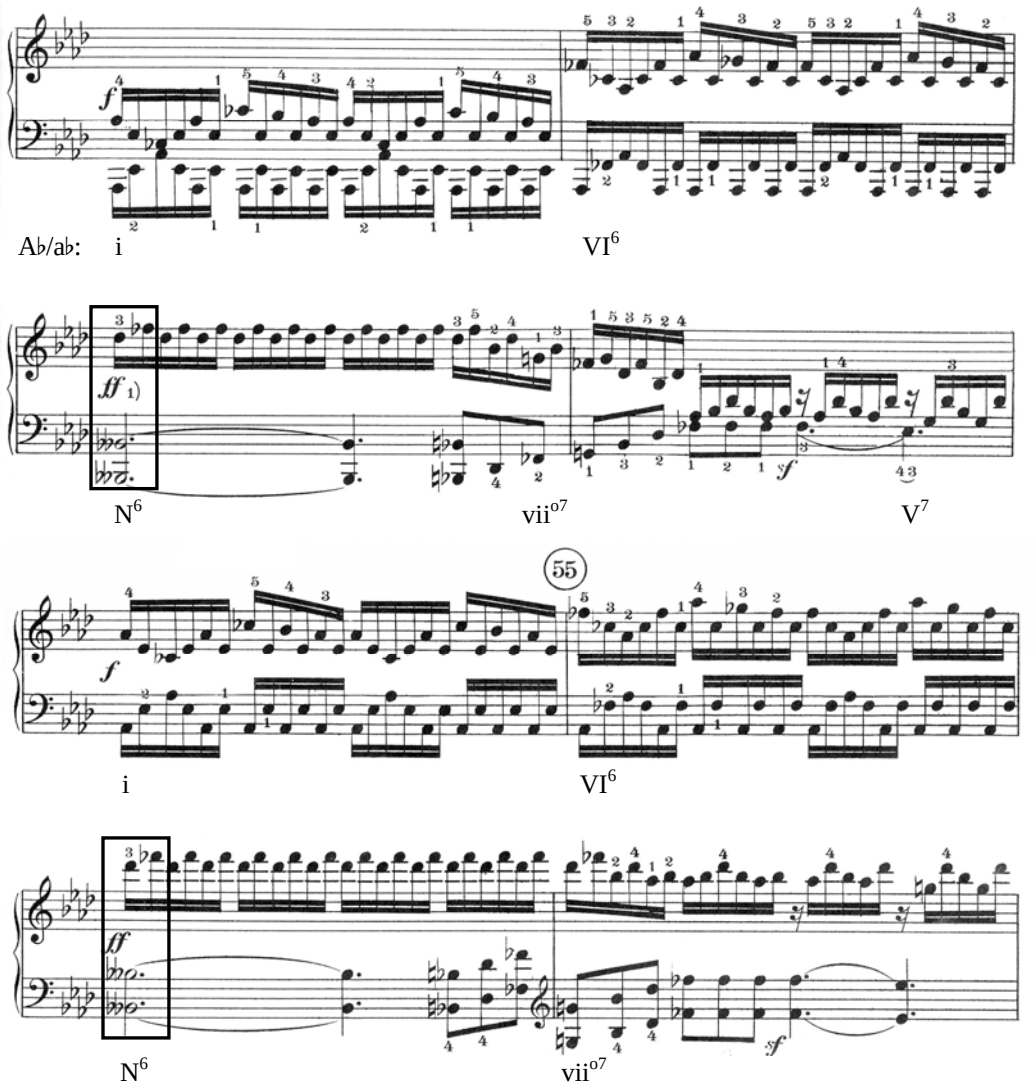
Example 2.7 Beethoven, Piano Sonata in F minor, op. 57, first movement, comparison of primary and secondary themes

Another characteristic of the first movement of Beethoven's Piano Sonata op. 57 that can help situate the E minor enharmonic paradox into the fabric of the piece as a whole is the prevalence of semitonal relationships throughout.[43] At the very opening, the first four-measure phrase is immediately repeated in the key of the Neapolitan, G♭ major (see Example 2.8). The Neapolitan of A♭, B♭♭, is also featured prominently in the second theme group. It is through this harmony that the second theme group changes from the major mode to the minor mode in m. 42 (refer back to Example 2.5 a)). The next theme in the second theme group also emphasizes the Neapolitan by interrupting the eighth-note motion in the bass to hold $\flat\hat{2}$ for nine beats (in 12/8) in m. 53 and m. 57 (see Example 2.9 below). The same is true in the corresponding places in the recapitulation.



Example 2.8 Beethoven, Piano Sonata in F minor, op. 57, first movement, mm. 1–9, semitone relationship of first two phrases

[43] An emphasis on semitonal relationships, such as the Neapolitan, continues in the rest of the sonata as well, especially the final movement.

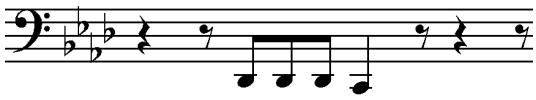


Example 2.9 Beethoven, Piano Sonata in F minor, op. 57, first movement, mm. 51–58, Neapolitan emphasis in secondary theme 2

Another semitone relationship that is dramatized throughout the movement occurs between C and D♭. The first two phrases, shown above in Example 2.8, both end with the dominant in the local key. The first phrase ends with V in the home key of F minor, C major, and the second phrase ends with V in the key of the Neapolitan G♭, which is D♭ major. There is no gradual transition from the Neapolitan key back to the tonic; instead,

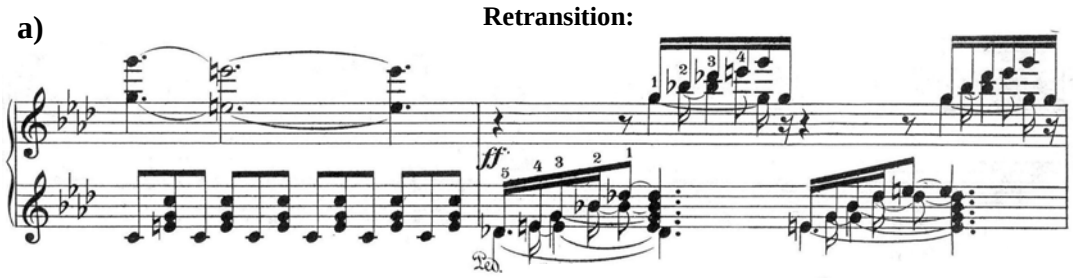
a seemingly out-of-place C major chord abruptly follows the D♭ at the end of the second phrase, directly juxtaposing the two semitone-related harmonies.

C and D♭ also come into conflict in nearly every appearance of the prominent, four-note motive that recurs throughout the movement (Example 2.10). It is first presented in m. 10, and it always returns in the same bass register. The retransition at the end of the development section begins with C major (V) in m. 122, followed immediately by E fully-diminished seventh (vii^{o7}) in m. 123, displayed below in Example 2.11 a). These two harmonies differ by only two notes; the second chord changes the C into a D♭ and adds B♭, which would have been the seventh in V^7. At the end of the retransition, the four-note motive comes back, starting first with all four notes as D♭, moving to the original pitch content from the exposition, and finally ending with a constant eighth-note stream of C's as a dominant pedal in the first part of the recapitulation. This is shown in Example 2.11 b). The motive also returns just before the F-minor entrance of the main secondary theme in the coda (mm. 235–238) during a dramatic passage with *ritardando*.



Example 2.10 Beethoven, Piano Sonata in F minor, op. 57, first movement, four-note motive with semitone D♭–C

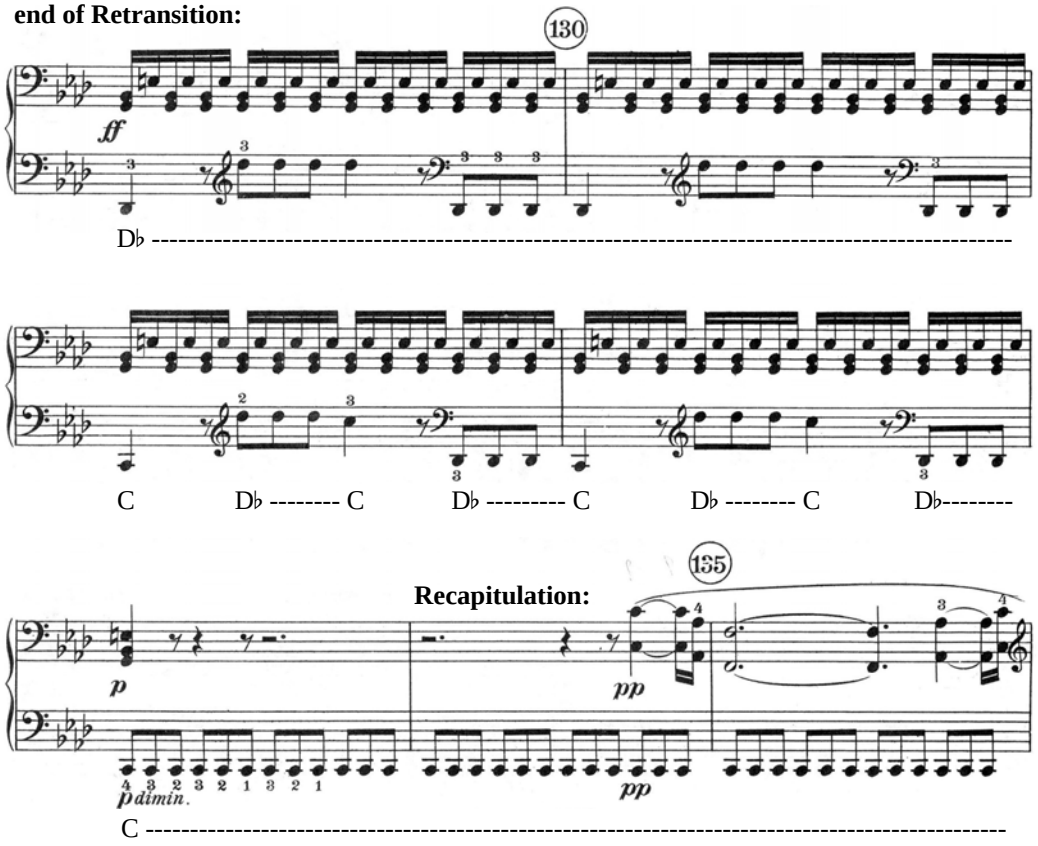
a)



dominant-functioning harmonies:

f:	V	vii^{o7}
	(with C)	(with D♭)

b)



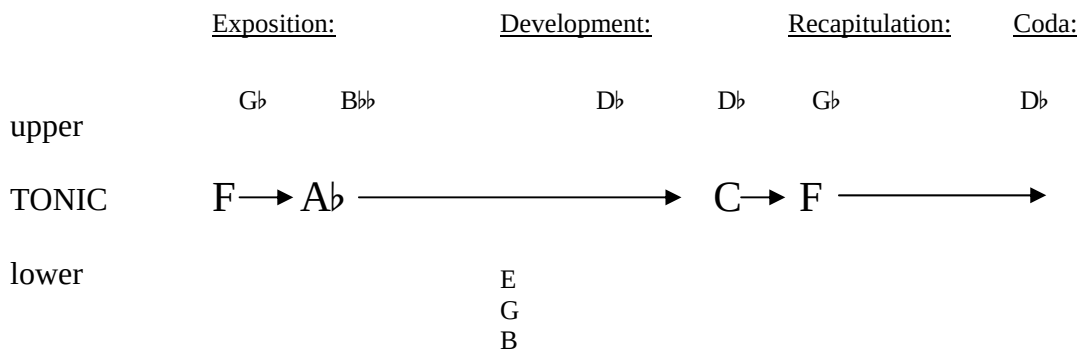
Example 2.11 Beethoven, Piano Sonata in F minor, op. 57, first movement, D♭–C in the retransition: a) mm. 122–123; b) mm. 130–136

D♭ is also featured in several other important moments in the movement, including the huge arrivals of the main secondary theme in both the development section and the coda, as discussed earlier.[44] The fact that a key other than the tonic makes an appearance in the coda conflicts with the expected tonal function of a coda to solidify the arrived-upon tonic. All of these examples illustrate the significant role of D♭, which turns out to anticipate the second movement, which is in D♭ major.[45]

Now the question arises: how does the prevalence of semitonal relationships pertain to the E minor enharmonic paradox? Note that the three semitonal relationships explored in the previous paragraphs deal with notes that are a semitone above the notes of the tonic triad of F minor: G♭, B♭♭, and D♭. The pitches at the enharmonic paradox are E, G, and B—semitones below the notes of the tonic triad. Perhaps these two groups of pitches, each a semitone removed from those of the tonic triad, balance each other on the level of the entire movement. Example 2.12 below shows the pitch classes that are emphasized at various points in the movement, with the tonic triad along the middle axis, the upper semitonal relationships shown above, and the lower semitones below.

[44] Tovey claims that putting the key of D♭ in the coda corrects the D♭ appearance in the development, which was really enhamonically not D♭ after the enharmonic circle in the first half of the development. Donald Francis Tovey, *A Companion to Beethoven's Pianoforte Sonatas*, 173.

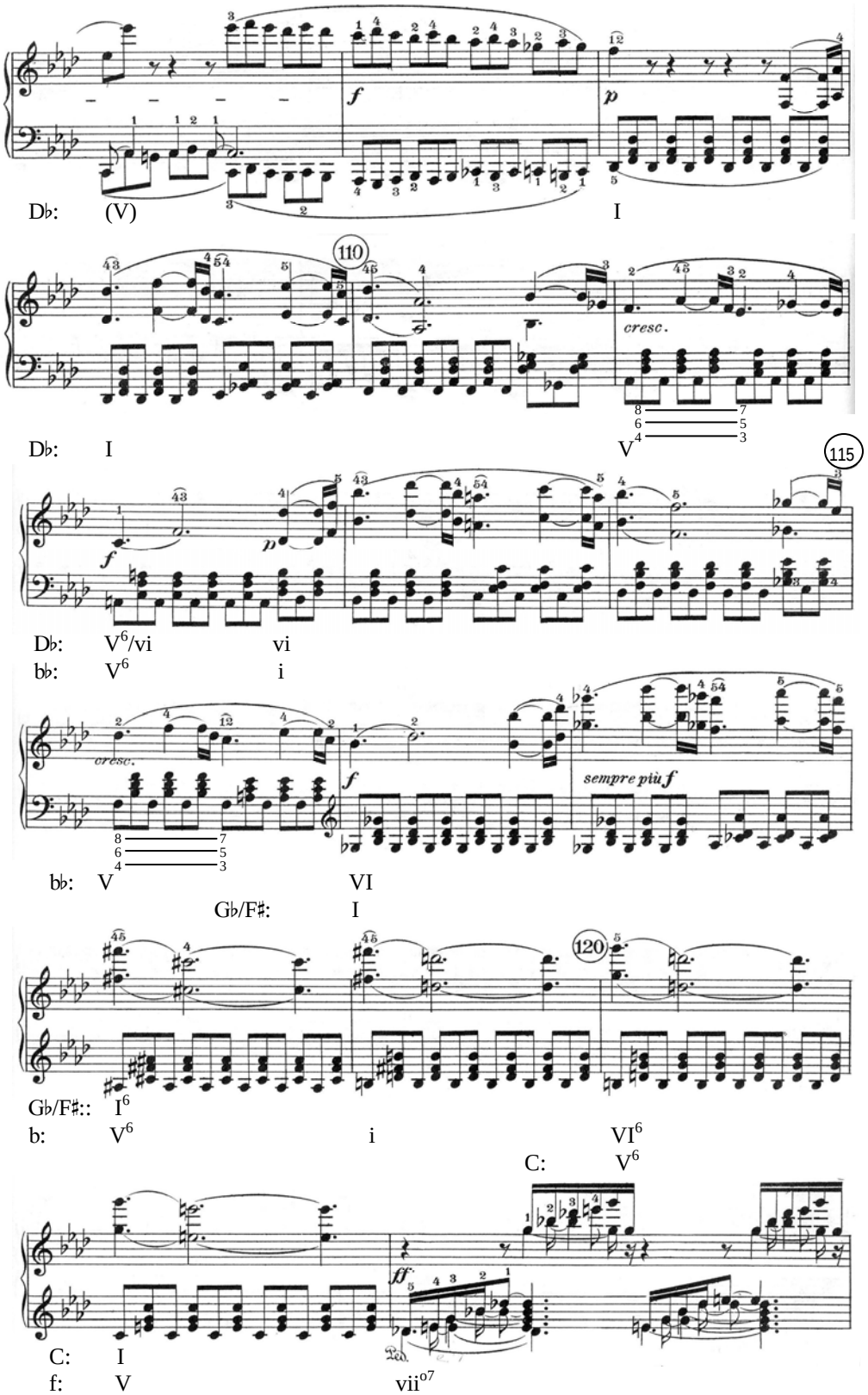
[45] The conflict between the submediant and the dominant in this sonata can perhaps be understood as a microcosm of the tendency in the nineteenth century to privilege third relations over dominant ones.



Example 2.12 Beethoven, Piano Sonata in F minor, op. 57, first movement, emphasized upper and lower semitone relationships

Both the widespread use of mixture and the emphasis on semitone relationships may be analyzed as being linked to enharmonic paradoxes on the specific pitches of the E minor triad. This suggests that this enharmonically paradoxical moment in the development section should be treated not as just a passing moment during a prolongation of III, but rather as an integral part of the narrative of the piece.

There is yet another enharmonic paradox in this movement, one that is more subtly presented, at the end of the development immediately preceding the retransition. After the statement of the secondary theme material in D♭ major at m. 109, there is a rapid succession of keys leading to the C major in m. 122 that begins Example 2.11 a) above. The main secondary theme appears in B♭ minor followed by G♭ major, both reached by submediant relationships to the preceding keys. The theme is then fragmented while the key moves to B minor through its dominant and C major through its dominant. The entire passage is shown below in Example 2.13.



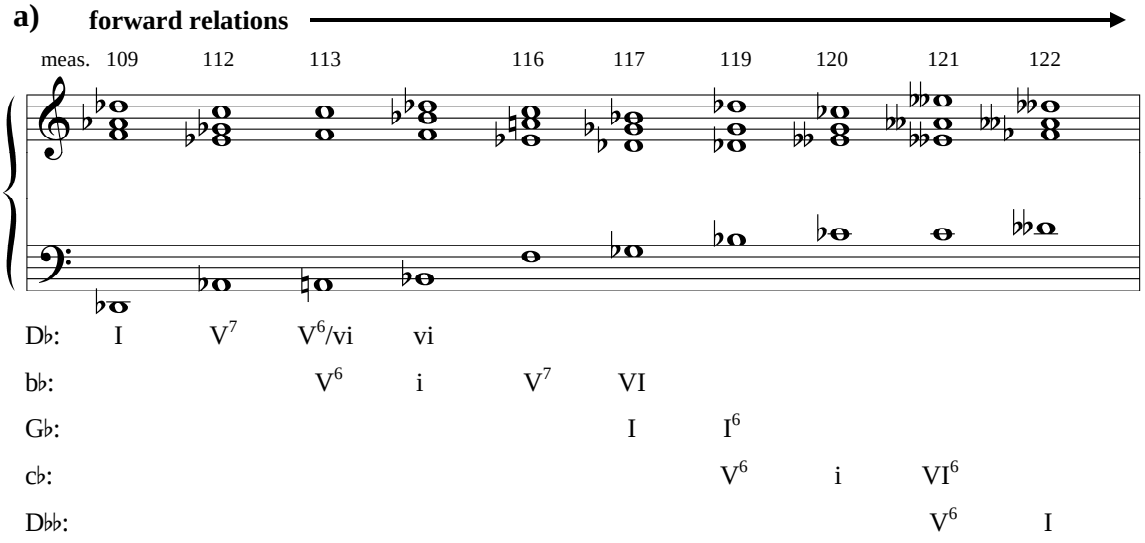
Example 2.13 Beethoven, Piano Sonata in F minor, op. 57, first movement, mm. 107–123, another enharmonic paradox at the end of development

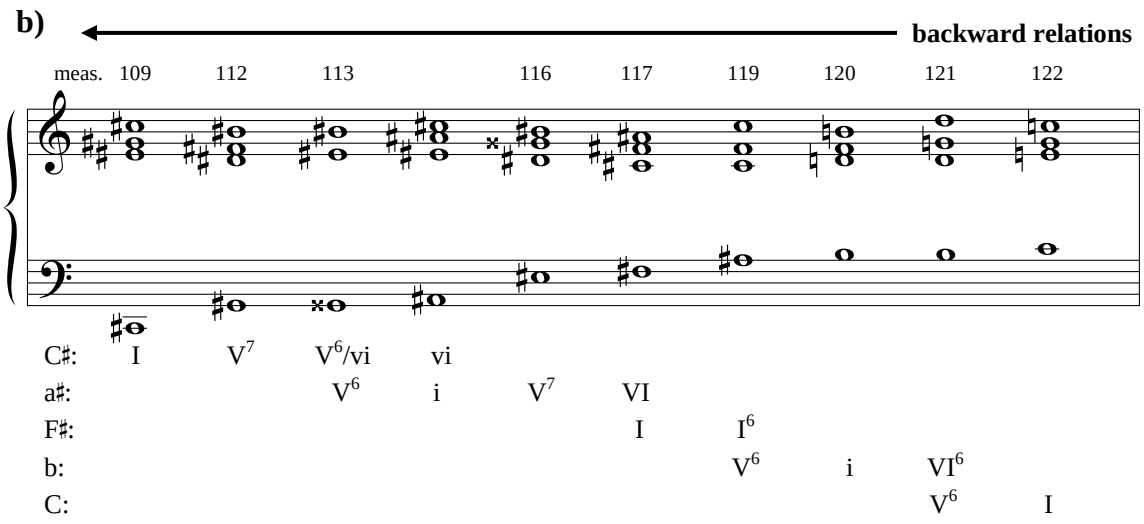
Although the notational enharmonic shift occurs when G♭ major is respelled as F♯ major to become the dominant of B minor, the musical enharmonic paradox does not match the score, as seen in the other paradox from first half of the development. If the spelling of each chord is altered to be concerned only with reflecting moment-to-moment diatonic connections from D♭ major forward, the music ends far afield of C major. Instead of changing to F♯ for notational reasons, the G♭ major could remain with spelling unchanged, with the following B minor respelled as C♭ minor. The G major that arrives next would have to be respelled as A♭♭ major and would serve as the dominant to D♭♭ major. Because C major is a structurally important arrival on the dominant, it is important that its spelling be derived from the tonic key of F minor, which is due to return at the beginning of the recapitulation. Therefore, ending in D♭♭ major will not work in the diatonic context of the overall piece.

Since the diatonic spelling of C major is important, perhaps the preceding chords should be spelled with diatonic consistency from this point backwards. The dominant of C major would have to be spelled as G major, and the preceding mediant of G major would then be spelled as B minor. B minor should have F♯ major as its dominant, and then the spelling of the G♭ major beforehand would be changed accordingly. The two submediant relationships would also have to be spelled correctly, so F♯ major would be the submediant of A♯ minor, which is the submediant of C♯ major. This spelling of C♯ major would then not reflect the relationship with its preceding dominant—the structurally-important prolongation of A♭ from the end of the exposition through the first

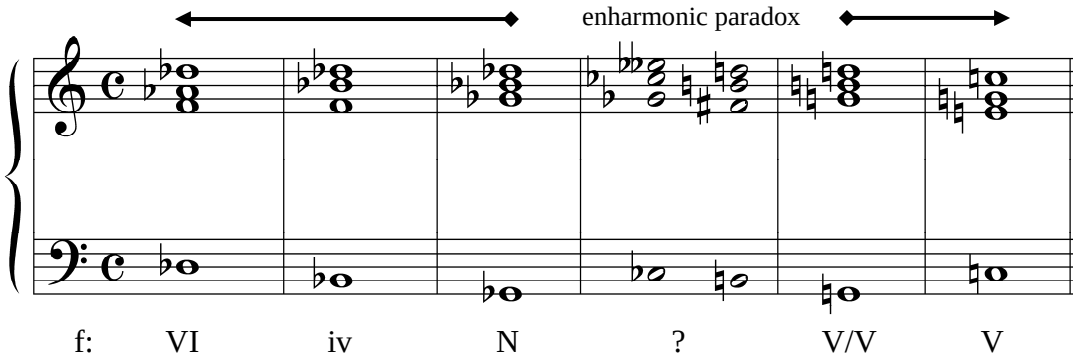
half of the development—and would also not relate diatonically to the overall tonic F minor.

The enharmonic problem arises because this segment needs to begin on D♭ major and end on C major in order to accurately reflect the tonal relationship of these two crucial moments to the overall tonic, but these spellings obscure the diatonic relationships in between. Examples 2.14 a) and b) below show both respellings of the passage. D♭ major, B♭ minor, and G♭ major can be related to the home key as VI, iv, and the Neapolitan, respectively, and C major is V, with the G major functioning as its secondary dominant; therefore, the enharmonic paradox must be located at the B minor (or C♭ minor). Additionally, the B minor is marked by being the first triad in the sequence not related to the previous harmony by submediant, so it stands out in the passage despite its duration of only one measure. The enharmonic paradox is shown in Example 2.15.





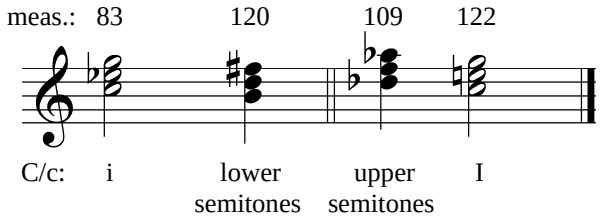
Example 2.14 Beethoven, Piano Sonata in F minor, op. 57, first movement, mm. 109–122, two possible spellings: a) forward relations; b) backward relations



Example 2.15 Beethoven, Piano Sonata in F minor, op. 57, first movement, location of the enharmonic paradox at end of development section

How does this second enharmonic paradox fit into the narrative of the piece that has been presented so far? As explained earlier, the relationship of C to D♭ has been consistently emphasized throughout the piece, both in the motivic juxtapositions of the two pitches and in the harmonic rivalry between C major and D♭ major, the pitches of the latter triad each lying a semitone above the pitches of the former. What if, as in the case

of the E-minor triad, the B-minor triad serves to balance out the upper semitones to the dominant? One problem with this explanation is that only two of the pitches of the B-minor triad are related to C major by semitone, because of their opposing modes. One or the other must change its mode to relate each note by semitone to the other triad. This dilemma might be solved by returning to an earlier shocking harmonic arrival—the C minor of m. 83, earlier in the development section—which was discussed in Chapter 1 during the hexatonic analysis. In my interpretation, since the C major is withheld until the end of the development, the C minor in m. 83 can be thought of as its "substitute," and, thus, both modes of the dominant have an important role in the development section. The pitches of the B-minor triad are the lower-neighbor semitones to C minor, balancing the upper semitones to C major. The semitonal relationships surrounding both modes of the dominant triad in the development section are shown below in Example 2.16.



Example 2.16 Beethoven, Piano Sonata in F minor, op. 57, first movement, upper and lower semitone relations to major and minor dominant

c. Large-scale Analysis

In the final step, I will show that enharmonic paradoxes and other forms of chromaticism can be thought of in terms of an overall competition between two or more

major-minor tonic complexes. I will justify calling the piece multitonal and will demonstrate how these tonic complexes are related to each other and how they shape the narrative of the whole piece.

So far, this analysis of the "Appassionata" has connected important diatonic structural points with salient chromatic events, such as sudden modulations and enharmonic paradoxes. The E minor (F♭ minor) enharmonic paradox is a counterpart to the frequent use of chromatic pitches a semitone above the tonic triad. The surprising arrival of C minor in m. 83 and the pattern-breaking B minor in m. 120 are the minor-mode, lower-semitone counterparts to the rivalry between C and D♭ that is featured throughout the movement. The final task is to demonstrate that all of the connections made above will lead to a comprehensive, intelligible, and unifying narrative of the entire piece.

The first movement of Beethoven's Piano Sonata op. 57 obviously begins and ends on the tonic, F minor, which should be considered the primary key of the piece. It is also clear from the above discussion that both major and minor versions of the tonic, dominant, and mediant also have significant roles. Consequently, the important structural keys in this piece are not simply i, III, and V; the mixture is widespread enough to consider them F major-minor, A♭ major-minor, and C major-minor. Because A♭ major-minor and C major-minor govern many of the movement's important events, I interpret these as two rival, secondary tonics that truly weaken the power of the tonic F major-minor.

As described earlier in this chapter, the first enharmonic paradox arises through mixture with minor iii, A♭ minor, in the exposition and beginning of the development. Thus, the A♭ major-minor complex causes the first shift into chromatic space away from the tonic F minor. The A♭ is also prolonged for much of the movement—from the middle of the exposition to the middle of the development.

The C major-minor complex also takes some power away from the tonic. Throughout the piece, there are instances of the tonic having upper-semitone neighbors to its triad members, and the enharmonic paradox on E minor is related by lower semitone, a harmony chromatically related to the tonic. The E minor does not only belong to the tonic, however; it is also related to the dominant key diatonically as its mediant, and it even appears in the development section before an expected arrival on major V in m. 83 that turns out to be minor instead. C major-minor and F major-minor are both related to this important moment in the piece. C major-minor also rivals the tonic through its own set of upper and lower semitone relationships. A recurring motif directly shows the conflict between the pitch C and its upper semitone D♭, and the two harmonies are sometimes juxtaposed or competing. The second enharmonic paradox, on B minor, provides the lower semitones to the dominant, albeit to its minor form.

Example 2.17 summarizes how the important diatonic and chromatic characteristics of the piece may be fitted to the primary key complex, F major-minor, and the two secondary ones, A♭ major-minor and C major-minor. Upper and lower semitones are labeled in italics as “UST” and “LST.”

Exposition:

	f	G♭	a♭		A♭	a♭	(B♭♭)
F/f:	i	*UST*			III		(*UST*)
A♭/a♭:	vi		i		I	i	(*UST*)
C/c:							

Development:

	a♭	E	e	c	A♭	D♭	b♭	G♭	b	G	C
F/f:			*LST*		III	VI	iv	♭II			V
A♭/a♭:	i	VI		iii	I						
C/c:			iii	i	VI	*UST*			*LST*	V	I

Recapitulation:

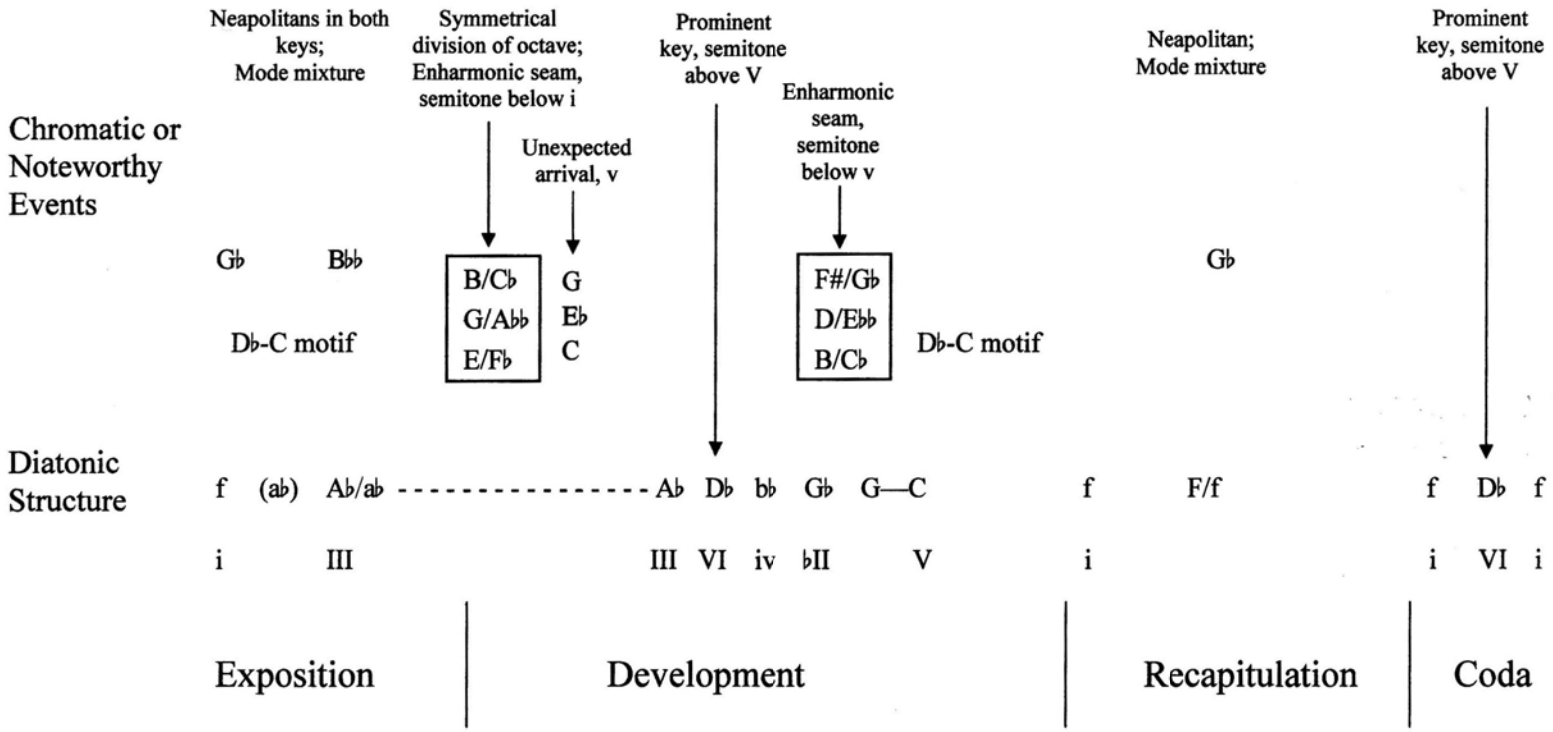
	f	G♭	f	F	f	(G♭)	
F/f:	i	*UST*	i	I	i	(*UST*)	
A♭/a♭:							
C/c:							

Coda:

f	D♭	f
i	VI	i
	UST	

Example 2.17 Beethoven, Piano Sonata in F minor, op. 57, first movement, key relations

A diagram summarizing the chronology of both diatonic and chromatic events in the movement is shown below in Example 2.18.



Example 2.18 Beethoven, Piano Sonata in F minor, op. 57, first movement, summary diagram

5. Conclusion

In music with modulations to remote keys, trying to reflect all local diatonic relationships leads to notationally cumbersome keys whose spelling may not reflect a relationship to the overall tonic. Conversely, attempting to relate the spelling of keys at structurally and formally important moments to the overall tonic leads to pitch classes calling for multiple spellings simultaneously. Either option leads to enharmonic paradoxes, either at the local level, on the large scale, or both. Because my reading privileges diatonic spellings at structurally important points, such as retaining the correct spelling of the dominant in the retransition of sonata form in the Beethoven example above, I favor the latter option in locating an enharmonic paradox.

Due to the significant presence of mode mixture surrounding these paradoxical moments, I represent tonicized keys as their tonic triads (and not just pitches) to both reflect diatonic relationships between keys and to differentiate between the major and minor modes. Often, diatonic relationships are more easily revealed if each key area is considered a major-minor complex on a larger scale, as put forth by Schenker, Schoenberg, and others. On the scale of the entire piece, pinpointing chromatic, enharmonically paradoxical moments can expose competition between multiple tonics and often can reveal such chromatic relationships as semitones and chromatic mediants at deep levels of pieces that may be diatonic on other levels.

It is important to note that this manner of interpretation is best suited to music with particular characteristics. Music with remote modulations, enharmonic paradoxes,

frequent use of parallel key relations, and secondary keys that weaken the tonic will fit nicely into this study. The first movement of Beethoven's Piano Sonata op. 57 demonstrates these elements, all of which can be found throughout much of the nineteenth century. The next question to explore is whether these characteristics are restricted to a certain style, genre, or time period.

Although, as Gregory Proctor and others note, enharmonic reinterpretation is most prominent in nineteenth-century music, it can be found in the music of other periods. Composers used enharmonicism to reinterpret pitches or chords involved in remote modulations at least as early as the mid-eighteenth century, an example of which was presented in Chapter 1, the enharmonic paradox in C.P.E. Bach's Fantasy in C major, Wq 59/6 (H. 284) from 1784 (Example 1.3). Bach informs composers that, by using the diminished-seventh chord and "inverting it and changing it enharmonically," an "endless vista of harmonic variety unfolds before us" and it is hardly difficult to move "wherever we will."[46] Even composers such as Scarlatti and Mozart occasionally exploited the equal division of the octave, which necessarily relies on respelling and enharmonicism to achieve octave equivalence, and the practice continued into the nineteenth century.[47] Paula Telesco gives several examples of the exploitation of enharmonic relationships in Classical music by tracing the history of the "omnibus progression."[48]

[46] C.P.E. Bach, *Essay on the True Art of Playing Keyboard Instruments*, trans. and ed. William J. Mitchell (New York: W.W. Norton, 1949): 430–45.
[47] Eytan Agmon, "Equal Division of the Octave in a Scarlatti Sonata," *In Theory Only* 11/5 (1990): 1–8.
[48] Paula Telesco, "Enharmonicism and the Omnibus Progression in Classical-Era Music," *Music Theory Spectrum* 20/2 (Autumn 1998): 242–79.

By the end of the nineteenth century, enharmonic tonal equivalence had become widespread. Some of what follows in music of the twentieth century, especially neoclassical and popular music, retains the triadic sound of classical tonality while abandoning its structure, tonal hierarchy, and monotonality. According to Jane Fulcher, the purpose of the neoclassical music of *Les Six* was "'reinventing' classic style, or making it 'critical' within the cultural context."[49] Neoclassical composers, such as Francis Poulenc, were thus invoking the traditional, diatonic sound on the surface in order to defy expectations, and part of that defiance included chromaticism on deeper levels and modulations to unexpected places. Walter Everett offers a way to classify popular songs according to their tonal systems, some of which have chromaticism at deep structural levels. While analyzing Beck's "Lonesome Tears," he is faced with enharmonic spelling problems and notes that there are many "questions regarding which pitch-class or pitch-classes might claim tonal centricity" and "which 'chords' have harmonic function and which are embellishing."[50]

It is evident, therefore, that the analysis of enharmonicism does not need to be limited by chronology or style. In this dissertation, I consider enharmonicism across a wide spectrum of musical styles and periods. Although these pieces are different in many ways, they all make use of a familiar tonal language while simultaneously breaking tonal expectations by exploiting the paradoxical and ambiguous possibilities inherent in the

[49] Jane Fulcher, *The Composer as Intellectual: Music and Ideology in France 1914-1940* (Oxford: Oxford University Press, 2005): 14.
[50] Walter Everett, "Making Sense of Rock's Tonal Systems." *Music Theory Online* 10/4 (Dec., 2004): 34, http://www.mtosmt.org/issues/mto.04.10.4/mto.04.10.4.w_everett.html.

diatonic system. Susan McClary, defending her inclusion of diverse musical styles in *Feminine Endings*, especially popular music, explains:

> I have found it useful to develop a practice of scanning across many historical periods. For to focus exclusively on a single repertory is to risk taking its formulations as natural: its constraints and conventions become limits that cease to be noticeable. It is only, I believe, by continually comparing and contrasting radically different musical discourses that the most significant aspects of each begin to fall into relief.[51]

I went about choosing pieces for inclusion in this dissertation with similar goals in mind.

The Fiona Apple song analyzed in Chapter 3 has only one section in a remote key, with enharmonic paradoxes arising as a result of the modulations, and the pitch classes involved in the paradoxes are emphasized in other sections of the song quite clearly. Tracing these pitch classes throughout the song will reveal a compelling harmonic narrative, which reaches its climax right at the moment of the most explicit enharmonic paradox that takes place at the emotional highpoint in both the lyrics and vocal timbre.

Chapter 4 will explore another style often overlooked by studies of enharmonicism—neoclassicism. The second movement of Poulenc's Piano Concerto, from 1949, has many more remote modulations than are found in "Extraordinary Machine," as well as more unexpected shifts of mode. Because there is no text, and the instrumentation is standard for the genre of the concerto, the narrative of the piece may be constructed by means of attention to harmonic relationships and form.

The piece examined in Chapter 5, C.P.E. Bach's Fantasy in C major, Wq 59/6, written in 1784, presents a multitude of challenges for the analyst, including more remote

[51] Susan McClary, *Feminine Endings: Music, Gender, and Sexuality* (Minneapolis: University of Minnesota Press, 1991): 31.

modulations, yet more harmonic and enharmonic ambiguity, and a formal structure that resists classification. As we shall see, an examination of enharmonic paradoxes using the methodology laid out above can help make sense of this harmonically challenging piece that explores the outer limit of what is possible in the diatonic system of chords and scales.

Chapter 3: Fiona Apple's "Extraordinary Machine"

The analysis of popular music, until the recent past, has been a controversial endeavor. Because popular music is primarily consumed, and in some cases produced, by the musically untrained, there is a tendency to focus only on social implications and to downplay the actual music. Nadine Hubbs notes that, until the last couple of decades, critical discourse about popular music came from either journalists or academics in sociology, cultural studies, and media studies, with musicology and music theory coming relatively recently to the scene.[1] Conversely, she claims, when trying to objectively analyze technical details of music, we risk being utrue to the nature of music as we experience it.[2] Similarly, Susan McClary bemoans the analyst's tendency to focus only on formal processes in music while ignoring music's emotional power, physicality, and social impact.[3] Despite these obstacles, a detailed study of the actual music part of popular music, which Philip Tagg claims is being monitored and decoded by the average Westerner for about twenty-five percent of his or her lifetime, is necessary to fully understand its meaning and significance.[4] Musicologists and music theorists have had to

[1] Nadine Hubbs, "The Imagination of Pop-Rock Criticism," in *Expression in Pop-Rock Music: A Collection of Critical and Analytical Essays*, ed. Walter Everett (New York: Garland Publishing, Inc., 2000): 3–4.
[2] Ibid., 6–8.
[3] Susan McClary, *Feminine Endings*, 20–26.
[4] Philip Tagg, "Analysing Popular Music: Theory, Method, and Practice," *Popular Music* 2, Theory and Method (1982): 37.

defend their choices to bring "serious" study to popular music, which was seen until recently as unworthy of detailed musical analysis.

One complication that arises in the analysis of popular music is that so many genres and styles are subsumed within the category and can often be mixed even within the works of one artist or just one song. In "Making Sense of Rock's Tonal Systems," Walter Everett argues that "rock music has found expression in dozens of styles and sub-styles, each characterized in part—sometimes in large part—by its own approach to a preexisting tonal system, or sometimes by its unveiling of a seemingly novel tonal system" and subsequently delineates six categories of tonal systems.[5] He concludes that "there is no single monolithic style of rock harmony, that blues is not the basis of all modern popular music, and that there are gradations between and among approaches based on the interrelated roles of harmony and counterpoint."[6] This multiplicity of styles and harmonic tendencies in popular music has led to a wealth of different analytical approaches.

Everett, along with Matthew Brown, Lori Burns, Timothy Koozin, and others, view popular music through a Schenkerian (or modified Schenkerian) lens, focusing primarily on voice-leading aspects of the music.[7] Others, such as Richard Middleton and

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[5] Walter Everett, "Making Sense of Rock's Tonal Systems," 1.
[6] Ibid., 37.
[7] See, for example, Matthew Brown, "'Little Wing': A Study in Musical Cognition," Lori Burns, "'Joanie' Get Angry: k.d. lang's Feminist Revision" and Walter Everett, "Swallowed by a Song: Paul Simon's Crisis of Chromaticism," Chap. 6, 4, and 5 in *Understanding Rock: Essays in Musical Analysis*, ed. John Covach and Graeme M. Boone (New York: Oxford University Press, 1997); Lori Burns, "Analytic Methodologies for Rock Music: Harmonic and Voice-Leading Strategies in Tori Amos's 'Crucify,'" Timothy Koozin, "Fumbling Towards Ecstasy: Voice-Leading, Tonal Structure, and the Theme of Self-Realization in the Music of Sarah McLachlin," and Walter Everett, "Confessions from Blueberry Hell, or, Pitch Can Be a Sticky Substance," Chap. 8, 9, and 10 in *Expression in Pop-Rock Music: A Collection of Critical and Analytical Exxays*, ed. Walter Everett (New York: Garland Publishing, Inc., 2000). Also see Steven Strunk, "Bebop Melodic Lines: Tonal Characteristics," in *Annual Review of Jazz Studies* vol.3, ed. Dan

Allan Moore take issue with using traditional analytical methods for popular music.[8] Other analysts, including Guy Capuzzo and Matthew Santa, import neo-Riemannian analysis from the study of Western art music.[9] Still other studies look at specific musical features, such as formal, harmonic, and thematic elements, along with lyrics, rhythm, and timbre, coming up with a narrative of a song, uncovering unity or multiplicity.[10] There are also comparative studies across genres, such as the influence of blues on rock musicians in Dave Headlam's "Blues Transformations in the Music of Cream" and crossovers between progressive rock and jazz fusion in John Covach's "Jazz-Rock? Rock-Jazz? Stylistic Crossover in Late-1970s American Progressive Rock."[11] Philip Tagg's method also relies on comparison between works in an attempt to pinpoint specific musical parameters that signify something visual or verbal to the listener.[12] Because it is hard to identify definitive versions of a popular song—it could be a score, a

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Morgenstern, Charles Nanry, and David A. Cayer (New Brunswick, NJ: Transaction Books, 1985): 97–120. Strunk uses Schenkerian background with new "tensions" on foreground for bebop.

[8] Richard Middleton, "Popular Music Analysis and Musicology: Bridging the Gap," in *Reading Pop: Approaches to Textual Analysis in Popular Music*, ed. Richard Middleton (Oxford: Oxford University Press, 2000): 104–121; Allan Moore, "Patterns of Harmony," *Popular Music* 11/1 (Jan., 1992): 73–106; Allan Moore, *Rock, the Primary Text: Developing a Musicology of Rock* (Buckingham: Open University Press, 1993).

[9] Guy Capuzzo, "Neo-Riemannian Theory and the Analysis of Pop-Rock Music," *Music Theory Spectrum* 26/2 (Fall, 2004): 177–200; Matthew Santa, "Nonatonic Progressions in the Music of John Coltrane," in *Annual Review of Jazz Studies* 13, ed. Edward Berger, Henry Martin, Dan Morgenstern (Lanham, MD: Scarecrow Press, 2007): 13–26.

[10] Graeme M. Boone, "Tonal and Expressive Ambiguity in 'Dark Star,'" John Covach, "Progressive Rock, 'Close to the Edge,' and the Boundaries of Style," and Daniel Harrison, "After Sundown: The Beach Boys' Experimental Music," Chap. 7, 1, and 2 in *Understanding Rock: Essays in Musical Analysis* (see note 7); Mark S. Spicer, "Large-Scale Strategy and Compositional Design in the Early Music of Genesis," Chap. 4 in *Expression in Pop-Rock Music* (see note 7). There are also genre-specific studies, such as the collection of essays in Kevin Holm-Hudson, ed., *Progressive Rock Reconsidered* (New York: Routledge, 2002) and Robert Walser, *Running with the Devil: Power, Gender, and Madness in Heavy Metal Music* (Hanover, NH: Wesleyan University Press, 1993).

[11] Dave Headlam, "Blues Transformations in the Music of Cream," Chap. 3 in *Understanding Rock: Essays in Musical Analysis* (see note 7); John Covach, "Jazz-Rock? Rock-Jazz? Stylistic Crossover in Late-1970s American Progressive Rock," Chap. 5 in *Expression in Pop-Rock Music* (see note 7).

[12] Philip Tagg, "Analysing Popular Music."

studio recording, or one of many live performances—other studies compare multiple versions of a song to inform their musical interpretations.[13] Others use a combination of musical and political elements to uncover meaning.[14]

Clearly, there are many approaches to popular music that can reveal much about its construction and its placement within individual and social contexts. Because the main point of this dissertation is to show harmonic commonalities between chromatic pieces from a variety of time periods and genres, my approach will be to examine the key relations, enharmonic paradoxes, and other chromatic features of a popular song. Although my focus will be on pitch relationships, I will not neglect other elements of the song, such as timbre and lyrics; these will inform my harmonic analysis. The focus of this chapter will be Fiona Apple's song "Extraordinary Machine," from the 2005 album with the same title.

Fiona Apple comes from an artistic and musical family and began singing, playing the piano, and writing down her feelings at a young age. These activities helped her cope with a tumultuous childhood, including the sexual abuse during her pre-teen years. In her late teens, she recorded a demo tape and gave it to a friend who was baby-sitting for a music industry executive; he then played it for producer and manager Andrew Slater at a party, and Slater was impressed with Apple and worked with her for

[13] James Borders, "Frank Zappa's 'The Black Page': A Case of Musical 'Conceptual Continuity,'" and Jonathan Bernard, "The Musical World(s?) of Frank Zappa: Some Observations of His 'Crossover' Pieces," Chap. 6 and 7 in *Expression in Pop-Rock Music* (see note 7), both on Frank Zappa, and touched on in Graeme M. Boone, "Tonal and Expressive Ambiguity in 'Dark Star,'" dealing with the Grateful Dead.
[14] Feminism in Susan McClary's *Feminine Endings*, U2's changing politics and image in Susan Fast, "Music, Contexts, and Meaning in U2," Chap. 2 in *Expression in Pop-Rock Music* (see note 7), and the controversy about racial discrimination in Ellie M. Hisama, "From *L'Étranger* to 'Killing an Arab': Representing the Other in a Cure Song," also in *Expression in Pop-Rock Music*, Chap. 3.

several years. Her debut album *Tidal* was released in 1996 and was an instant success. At this point, Apple began performing live for audiences for the first time. Her second album, *When the Pawn…* was released in 1999.[15]

After a several-year hiatus from writing songs, she finally began work on *Extraordinary Machine* in 2002. There was controversy over the new album, with some tracks being leaked, multiple producers in charge at different times, and the release date being delayed until late 2005. The first cut of the album was produced by Jon Brion. Apple claims that the delays in the release were due to her regrets about leaving most of the decisions up to Brion, and she eventually returned to the studio to finish the project under producer Mike Elizondo. Of the album's style in general, Apple says, "Every song that I write, I feel like I'm in a different world. And with this album, because it's been such a long period of time, I didn't want everything to sound one particular way." One of the two tracks from the original Jon Brion sessions that remained unchanged on the final cut was the title track, "Extraordinary Machine," a song that is particularly special to Apple. She says of its subject matter:

> 'Extraordinary Machine' really says how I feel about myself. I like it when I write a song that if somebody were to ask me a question like, '[H]ow do you feel about yourself?' I could say, '[H]ere.' I like songs that are like speeches or essays that make a point very tidy and clear. I've always had this pet peeve: it makes me physically ill when I see somebody looking at me with the worried eye. And I've gotten a lot of it my whole life, partly because, at any given time, I've always been the youngest person in the room. I always want to say to people, even when I'm not alright, I'm alright. My life has taken some pretty great turns, I've been through a lot, I've had some really low lows and some really high highs, but I get better all the time. Whatever people do to me or don't do to

[15] Biographical information from 1999 and earlier is from Nathan Sweet's biography "Fiona Apple" in *Contemporary Musicians*, vol. 28 (2000): 8–10.

> me, I want some credit here for being a pretty extraordinary machine. All these things you're trying to protect me from, I make something out of it. So I'm fine and please stop looking at me that way![16]

The song "Extraordinary Machine" charms listeners with playful timbres created by bells, woodwinds, and *pizzicato* strings, a resemblance to "oom-pah," and the vocalist's graceful, seemingly effortless sliding and use of "blue notes." In contrast, the lyrics have a much more serious tone, reflecting how the singer will overcome adversity even though she feels underestimated by those around her, as Apple describes in the quote above. This same clash between playfulness and seriousness can be found in harmonic aspects of the song as well; the lighthearted exterior masks the complexity and ambiguity that arise through mixture, enharmonic spelling issues, and remote modulations. Therefore, despite its outward appearance of simplicity, "Extraordinary Machine" warrants a close examination through the lens of chromatic tonal theory.[17]

1. Overview

One pivotal moment that demonstrates the song's contrasts comes at the end of the bridge. Although Apple seems nonchalant because of her vocal sliding, apparent

[16] Biographical information from 2000 and later comes from Fiona Apple's official Epic Records website, "Bio," http://www.fiona-apple.com/.

[17] Fiona Apple's music has not been studied extensively by musicologists or music theorists. She is mentioned briefly in Helen Davies, "All Rock and Roll Is Homosocial: The Representation of Women in the British Rock Music Press," *Popular Music* 20/3, Gender and Sexuality (Oct., 2001): 301–319, in a discussion of comparisons between female artists and how that leads to them being treated as a homogeneous group. Apple is also included in the category of "angry women," along with artists like Alanis Morissette, who were able to become mainstream despite having similar views to the earlier, more antagonistic "Riot Grrrl" movement, in Kristen Schilt, "'A Little Too Ironic': The Appropriation and Packaging of Riot Grrrl Politics by Mainstream Female Musicians," *Popular Music and Society* 26/1 (2003): 5–16.

imprecision, and the words "everything will be just fine," through her performance, she makes a seamless, almost imperceptible remote modulation and an enharmonic shift. For one brief moment, it is as if Apple is communicating to the audience that she is completely aware of the musical complications in the song and is capable of making it seem easy anyway.[18]

Although this moment is the most attention-grabbing section of "Extraordinary Machine," it needs to be put into the context of the entire song, because it can be better understood as the culmination of complexities that are foreshadowed from the beginning. The structure and lyrics of the song are shown in Example 3.1, with the verses, choruses, and refrains in C♯ major and the bridge in A minor. I chose to transcribe it in C♯ major rather than D♭, because I interpreted the A minor bridge as an altered, chromatic submediant; choosing D♭ for the home key would necessitate the use of B♭♭ minor for the bridge, so the C♯ and A pair were notationally more convenient.

[18] Special thanks to Walter Everett for bringing the enharmonic shift at the end of the bridge to my attention.

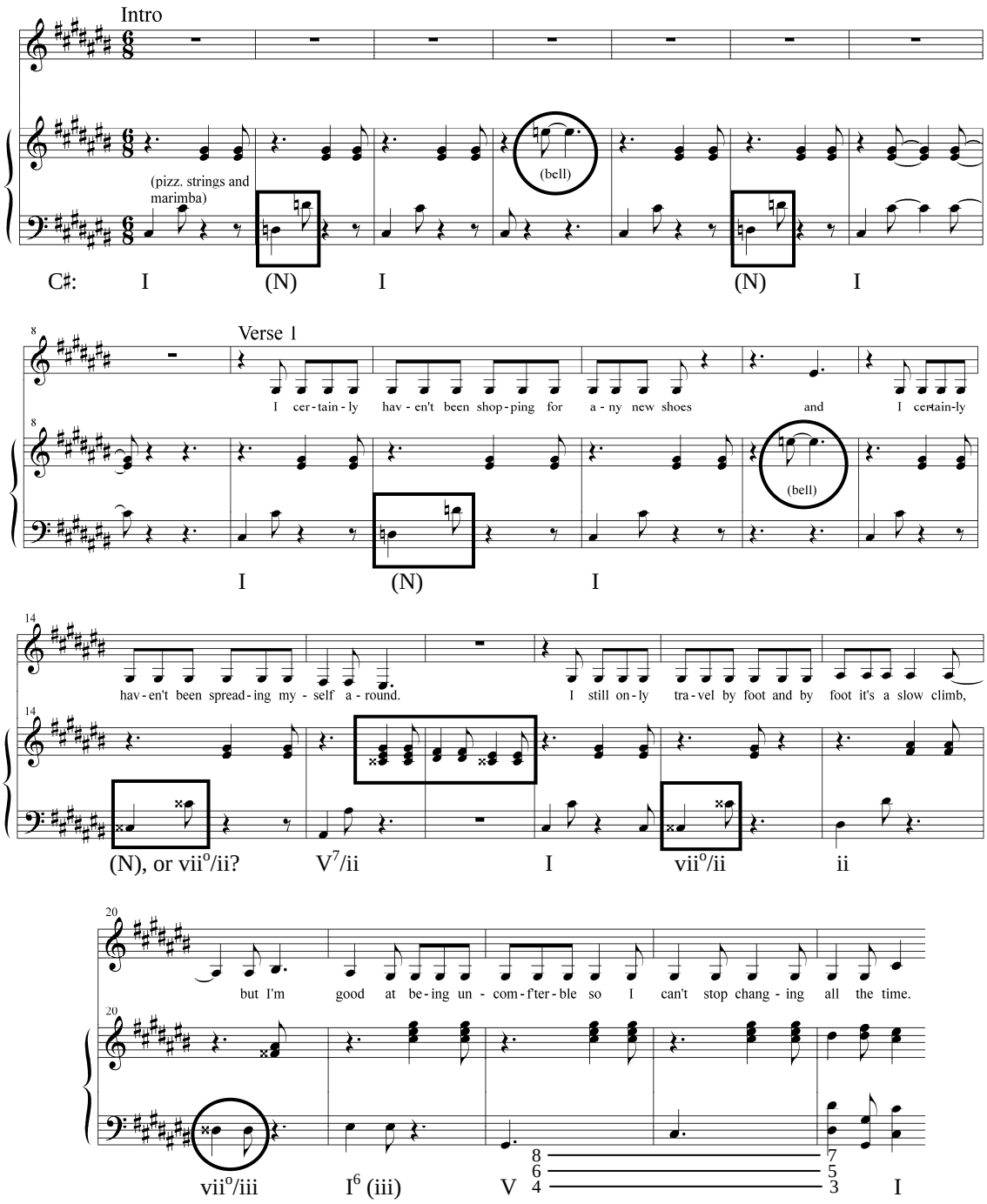
I certainly haven't been shopping for any new shoes -And- I certainly haven't been spreading myself around I still only travel by foot and by foot, it's a slow climb, But I'm good at being uncomfortable, so I can't stop changing all the time	**Verse 1**
I notice that my opponent is always on the go -And- Won't go slow, so's not to focus, and I notice He'll hitch a ride with any guide, as long as they go fast from whence he came But he's no good at being uncomfortable, so he can't stop staying exactly the same	**Verse 2**
If there was a better way to go then it would find me I can't help it, the road just rolls out behind me Be kind to me, or treat me mean I'll make the most of it, I'm an extraordinary machine	**Chorus, Refrain 1**
I seem to you to seek a new disaster every day You deem me due to clean my view and be at peace and lay I mean to prove I mean to move in my own way, and say, I've been getting along for long before you came into the play	**Verse 3**
I am the baby of the family, it happens, so Everybody cares and wears the sheeps' clothes while they chaperone Curious, you looking down your nose at me, while you appease Courteous, to try and help - but let me set your mind at ease	**Verse 4**
(Chorus and Refrain)	**Chorus, Refrain 2**
Do I so worry you, you need to hurry to my side? It's very kind But it's to no avail; I don't want the bail I promise you, everything will be just fine	**Bridge**
(Chorus and Refrain)	**Chorus, Refrain 3**
(Repeat Chorus and Refrain)	**Chorus, Refrain 4**

Example 3.1 Fiona Apple, "Extraordinary Machine" (© 2005, FHW Music), lyrics and formal structure

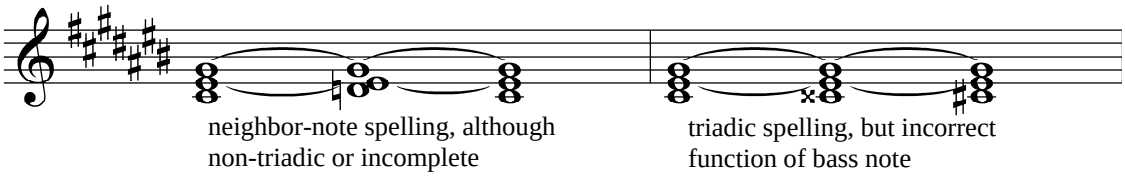
Transcribing “Extraordinary Machine” brought several note-spelling issues to my attention and forced me to choose one spelling over another at several points. The amount and difficulty of these decisions indicate that, indeed, the song merits an in-depth chromatic analysis. I will begin by discussing the verses.

2. Verses

Many of the enharmonic issues found in the entire song are already present in the introduction and first verse, shown with the orchestral parts as a piano reduction in Example 3.2. The rectangles in the example indicate pitch-class 2, and the circles indicate pitch-class 4. Pitch-class 2 is spelled as either D♮ or C× depending on its function. In mm. 2, 6, and 10, the D♮ serves as an upper neighbor, ♭$\hat{2}$, to the bass note C♯. The upper notes E♯ and G♯ are held as pedal notes, leading to non-triadic spelling. Using a C× here would preserve triadic spelling but would indicate that the bass moves to ♯$\hat{1}$, which does not capture its function as a neighbor note. Either the neighbor-note voice-leading in the bass will be misrepresented or there must be a non-triadic spelling (see Example 3.3 below). In addition, C× would imply that the triad is a vii^{o}/ii, but its move directly back to the tonic demonstrates that this chord is merely a neighboring chord not resolving to ii. Chromatic neighbor motion will continue to be featured throughout the song.



Example 3.2 Fiona Apple, "Extraordinary Machine" (© 2005, FHW Music), enharmonic paradoxes in the introduction and first verse



Example 3.3 Fiona Apple, "Extraordinary Machine," two possible spellings for opening three chords

The decision for how to spell the bass note in m. 14 is even thornier, as shown above in Example 3.2. The pattern starts as before, and the listener expects the same neighboring function and a return of the tonic. When the V^7/ii chord appears in the following two measures, however, the listener retroactively reinterprets the D♮ as a C𝄪 to fit with the dominant seventh harmony. The pattern of neighboring ♭$\hat{2}$ in the bass has been broken at this crucial moment. Despite the fact that there is again no direct resolution to ii, as above, the longer duration, the change of pattern, and the addition of the A♯ in the bass all support the spelling of C𝄪. This moment in m. 14, in which the same pitch class must be spelled one way to make sense with the music before it and another way to fit with what follows, is an enharmonic paradox. C𝄪 is also appropriate for m. 18, and this time, the vii^o/ii chord resolves directly to ii for the first time. Although the same collection of three notes appears in mm. 2, 6, 10, 14, and 18, its purpose changes, and my choice of spelling in the transcription is designed to reflect these changes.

As shown in the circles in Example 3.2, there are also two spellings for pitch-class 4, although these are more straightforward. The E♮ in the bell in mm. 8 and 12 are clear examples of "blue notes," which should be spelled as ♭$\hat{3}$ in the key of C♯ major. In m. 20, pitch-class 4 is spelled as D𝄪 because the chord in that measure is functioning as vii^o/iii.

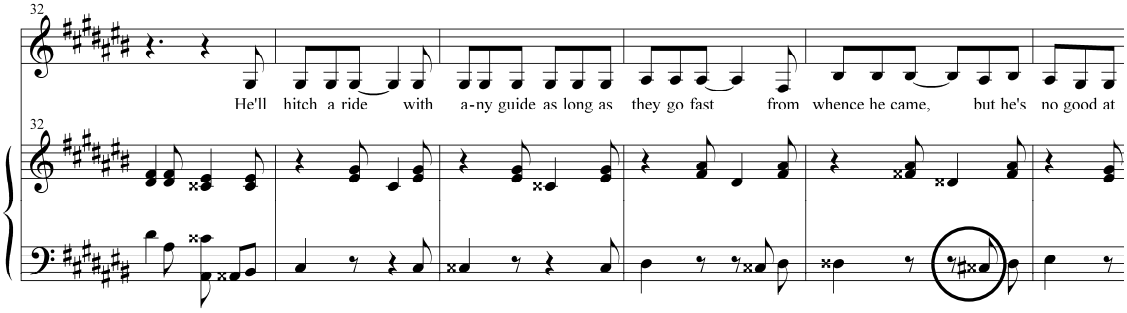
The I^6 in the following measure substitutes for the expected iii chord; the motion of the leading tone D𝄪 to E♯ in the bass gives the listener a sense of resolution.

The spelling issue just described is not the most noteworthy consequence of the E♮; throughout the song, this pitch is highlighted by both the vocalist and the bell.[19] In fact, E♮ is the only pitch played on the bell until the very end, until the final sound of the song, when the bell sounds the tonic note, C♯. With its timbral prominence and its appearance at both the beginning and end, the bell seems to draw attention to one of the primary harmonic dramas in the song. Additionally, the vocalist sings E♯ in the first couple of verses against the bell's E♮ but eventually slides down to sing E♮ in the corresponding places in later verses. Thus, one of the most emphasized pitch-classes so far is not even a scale member of the home key of C♯ major, but is the lowered third borrowed from C♯ minor. Mixture will continue to play an important role as the harmonic narrative of the song unfolds.

The second verse presents the same spelling challenges as above, but the increasing complexity and density of texture add one additional issue, shown below in Example 3.4. This section corresponds to mm. 16–21 in the first verse, with the same ascending bass part and leading tone chords of both ii and iii. This time, chromatic-

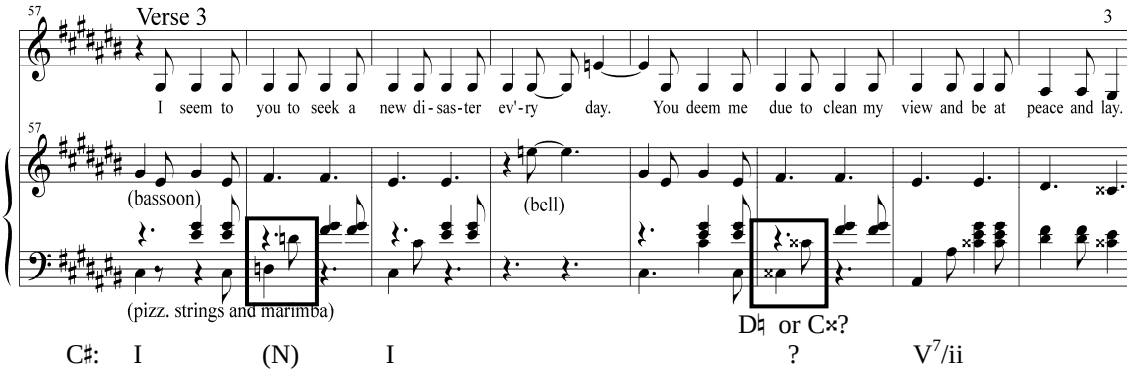
[19] At the Twenty-Second Annual Conference of Music Theory Midwest at the University of Nebraska-Lincoln on May 12–14, 2011, where I presented an earlier version of this chapter, it was brought to my attention that the note E may have been chosen for the bell because it is was originally played as a harmonic on guitar, featured in some live versions of "Extraordinary Machine." The note E is easier to play as a harmonic on the guitar than E♯, which could explain the emphasis on E throughout. I still maintain that mode mixture is the culprit here, because the key of the song could have been changed to C major so that E could have been part of the scale, which is both easier to play and less remote from the bridge's key of A minor, but C♯ major was chosen deliberately.

lower-neighbor notes are added in the bass in mm. 35–36, leading to a spelling of C♯× as chromatic lower neighbor to D× in m. 36.

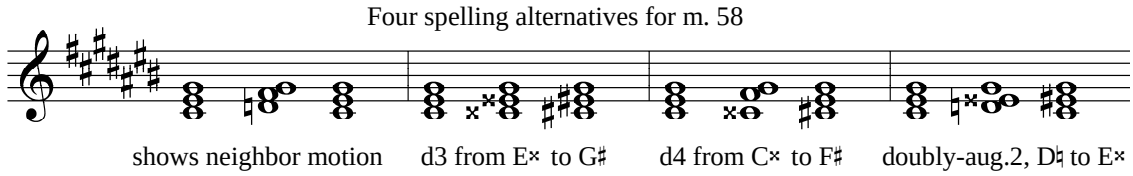


Example 3.4 Fiona Apple, "Extraordinary Machine" (© 2005, FHW Music), triple sharp in the second verse

In the third and fourth verses, the neighboring chord is slightly altered. The beginning of the third verse is shown in Example 3.5. In addition to the C♯ to D♮ neighbor motion in the bass, there is now neighbor motion from the E♯ to F♯ and back in the inner voices, while the G♯ is still held as a pedal. The bassoon also plays this F♯ as a passing note. The alternate spellings of these notes (C× and E×) would obscure this neighboring or passing function. The fact that two voices are showing neighboring motion in these verses also helps to confirm my interpretation of the D♮ at the beginning of the first verse as a neighbor note. The choice of spelling shown in Example 3.5 is non-triadic, as in the first verse, because using C× and E× would lead to an awkward diminished third between the E× and the G♯. Other combinations would also create non-triadic intervals (shown in Example 3.6 below).



Example 3.5 Fiona Apple, "Extraordinary Machine" (© 2005, FHW Music), enharmonic paradox in third verse



Example 3.6 Fiona Apple, "Extraordinary Machine," four possible spellings for first three chords of third verse

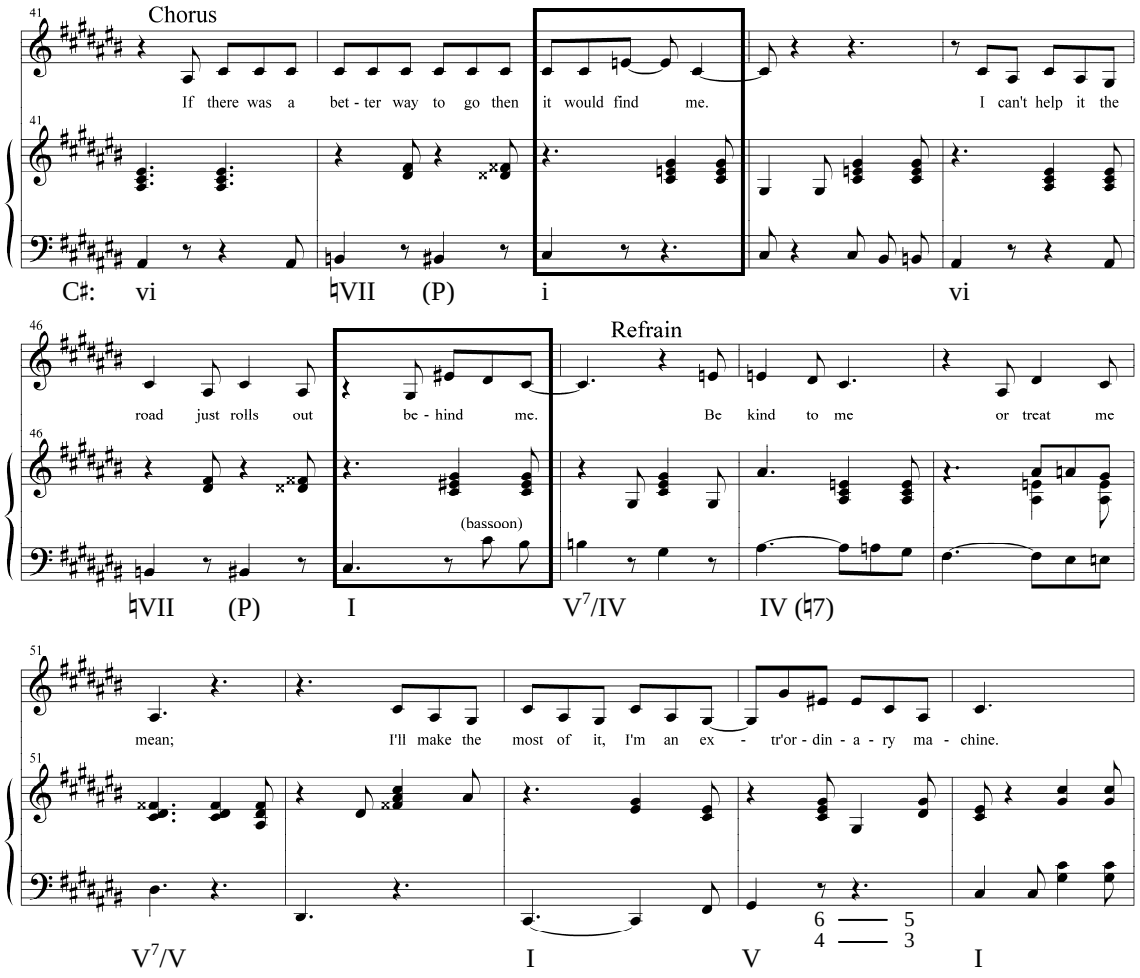
As shown above in Example 3.5, the spelling of m. 62 is even more problematic, because a C× appears in m. 63 as part of the V^7/ii chord. As in the first verse, pitch-class 2 changes roles here only in retrospect; the listener expects the same neighboring function (as D♮) but changes the interpretation to C× with the arrival of the harmony in m. 63, creating another enharmonic paradox. An added problem this time is that the F♯ in m. 62 also needs to be interpreted, while in the first verse, only the function of the C× was in question. Is the F♯ also a neighbor note, or does it, too, have to be enharmonically

reinterpreted? In my opinion, the F♯ is still functioning solely as a neighbor or passing note while the C×/D♮ is serving dual roles.

3. Choruses and Refrains

The basic harmonic structure of the chorus is vi to ♭VII, followed by a chromatic passing chord, and finally to I, an unremarkable progression. What makes this section enharmonically challenging is that the first iteration of this progression ends with a surprising mode shift to the minor tonic, and the major tonic returns to "correct" the mode change in the repetition of the progression; the major and minor tonic chords are shown in rectangles in Example 3.7. This means that in mm. 42–43 there is a direct juxtaposition of D× in the chromatic passing chord and E♮ in the minor tonic, which provides another example of multiple spellings of pitch-class 4. The D× in m. 42 is functioning as the leading tone to E♯, which is delayed until m. 47, while the E♮ in m. 43 is ♭$\hat{3}$, a "blue note" in the key of C♯ major, just as in the verses. Thus, the chorus provides another example of E♮ arising through mixture and creating an enharmonic issue.

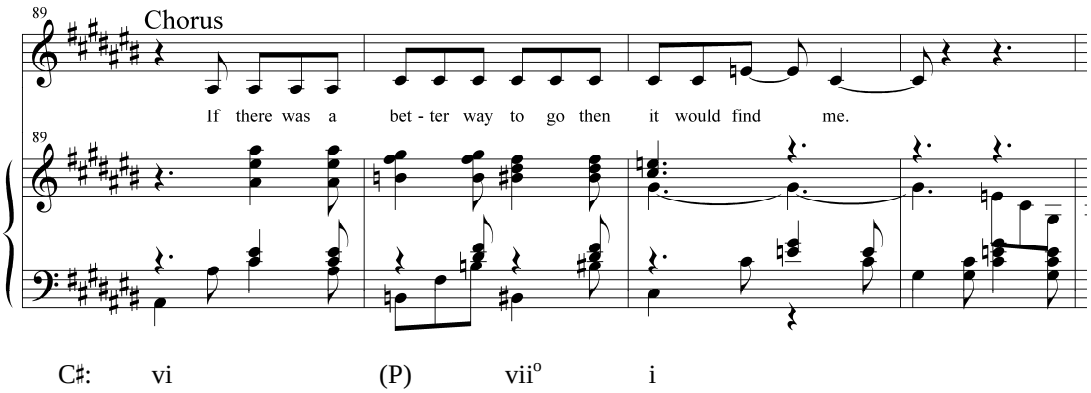
The refrain, also included in Example 3.7, does not have any enharmonic spelling issues and fits well within a diatonic framework. The major I chord at the end of the chorus becomes V^7/IV, which resolves to IV in m. 50. Notably, the IV chord, F♯ major, has an added minor seventh, another use of E♮ in an unexpected place.



Example 3.7 Fiona Apple, "Extraordinary Machine" (© 2005, FHW Music), enharmonic paradox and mode mixture in chorus/refrain

Subsequent choruses and refrains are nearly identical, except for a few changes in the second chorus (the first phrase is shown below in Example 3.8). The addition of the upper lines in the wind instruments changes the pitch content in these measures to remove the enharmonic problem of D× and E♮. The top line, A♯-G♯-F♯-E♮ or E♯, makes the first chord of m. 90 (and m. 94) a passing chord and the second chord a diatonic chord (vii^{o}), a reversal of the roles in the first chorus. The passing chord is spelled as a g♯^{ø7}, a

non-diatonic chord in the key of C♯ major.[20] The second chorus retains the use of both minor and major forms of tonic from the first chorus.



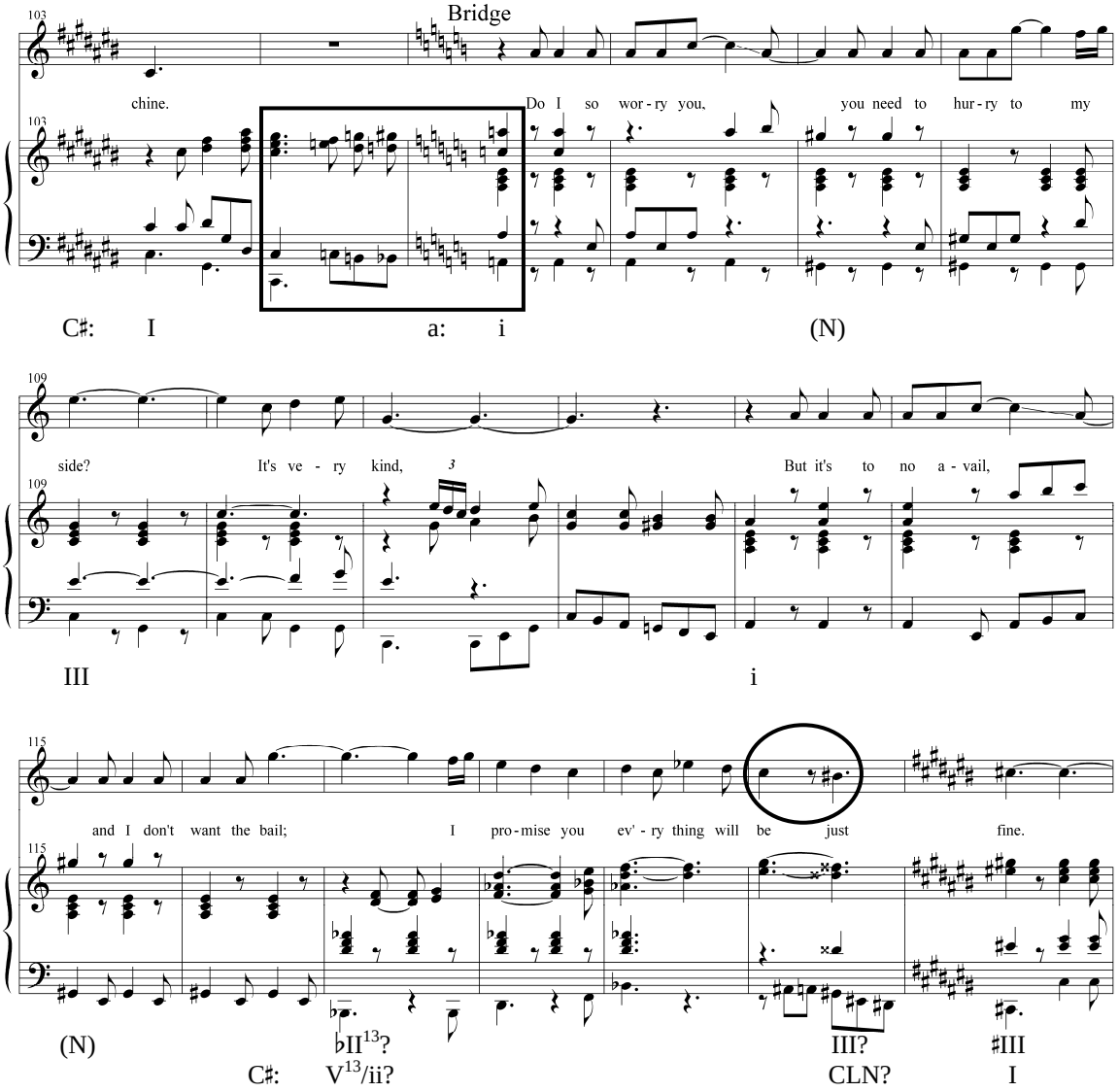
Example 3.8 Fiona Apple, "Extraordinary Machine" (© 2005, FHW Music), enharmonic paradox absent in second chorus

4. Bridge

The smaller issues in the verses and choruses foreshadow the song's most perplexing enharmonic problems, which arise in the transitions before and after the bridge. The entire bridge section, including transitions, is included in Example 3.9. In m. 104, there is an abrupt modulation to the remote key of A minor (from C♯ major), and it is accomplished somewhat smoothly through the chromatic sliding of voices. The modulation back to C♯ major at the end of the bridge, the pivotal moment described at the

[20] There are multiple ways to interpret this chord; perhaps it is simply a ♭VII, as in the first chorus, but with an added sixth, or it might be a minor version of the dominant seventh chord that gets corrected when the leading tone appears in the second half of the measure.

opening of this paper, is more disorienting, although the material between the two modulations is a harmonically stable. Following the bridge are two further iterations of the chorus and refrain in C♯ major.

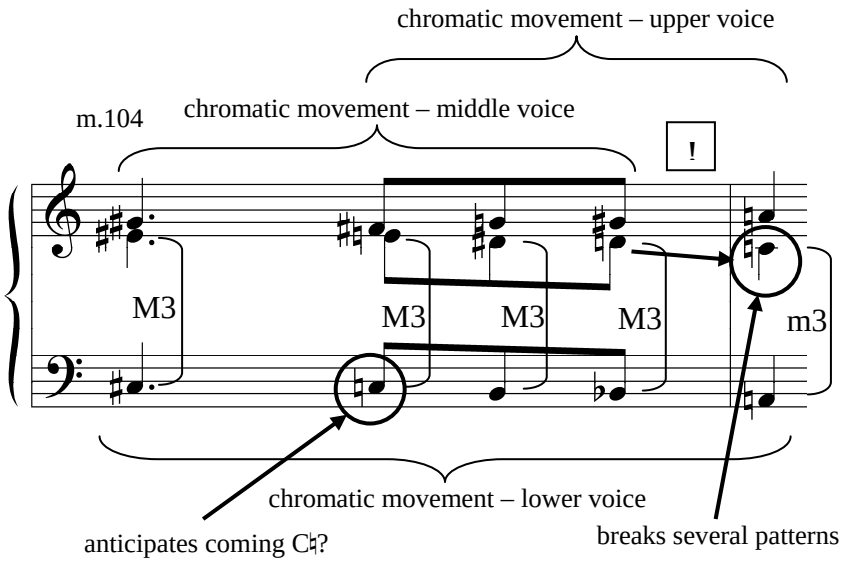


Example 3.9 Fiona Apple, "Extraordinary Machine" (© 2005, FHW Music), overview of bridge section

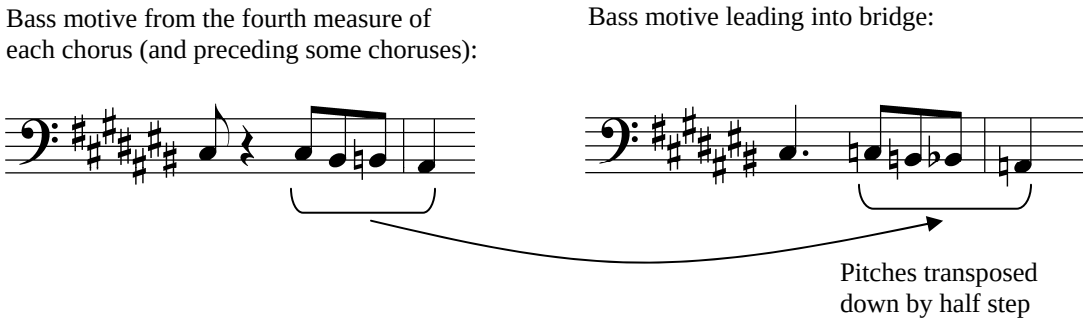
As the key center shifts surprisingly to A minor at the beginning of the bridge, the tone of the lyrics also changes (see Example 3.1). In the first two verses, the singer is describing situations and people that bother her. She defends herself and declares that she is capable of handling her own problems in the chorus and refrain. As the texture becomes thicker in the third and fourth verses, she becomes more emphatic. In the bridge, she directly questions the second person for the first time, finally letting out the feelings that have been building for the whole song. Also at this moment, the vocal register shifts dramatically upward and sounds pleading in contrast to the comfortable- and playful-sounding alto register in the rest of the song.

The modulation at the beginning of the bridge highlights the use of a pitch class that will behave unexpectedly throughout the bridge: pitch-class 0. This pitch has been circled at crucial moments at the end of Example 3.9 and in Example 3.10, which is a subset of the rectangle in Example 3.9. I chose to spell the notes in the second half of m. 104 in terms of the destination key that is reached in m. 105, A minor. The upper voice begins on G♯, descends to F♯, and then proceeds chromatically back upward all the way to A♮. The fifth scale degree of the preceding key becomes the leading tone and leads smoothly to the tonic of the new key. The lower voice moves chromatically downward from C♯ to A♮. Notably, this motion in the bass is an altered version of the prominent chromatic bass motive that happens in several of the choruses, which descends from C♯ to A♯. An example of this can be found above in context in Example 3.7, mm. 44–45. A direct comparison of the two motives is below in Example 3.11. The intervening notes in the bass part could be spelled multiple ways, but I have chosen C♮, B♮, and B♭ to highlight

their relationships to the new key of A minor. The augmented sixth between B♭ in the lower voice and G♯ in the upper voice, creates a strong pull to A as the tonic note.



Example 3.10 Fiona Apple, "Extraordinary Machine," breaking of patterns at the unexpected remote modulation at the beginning of the bridge

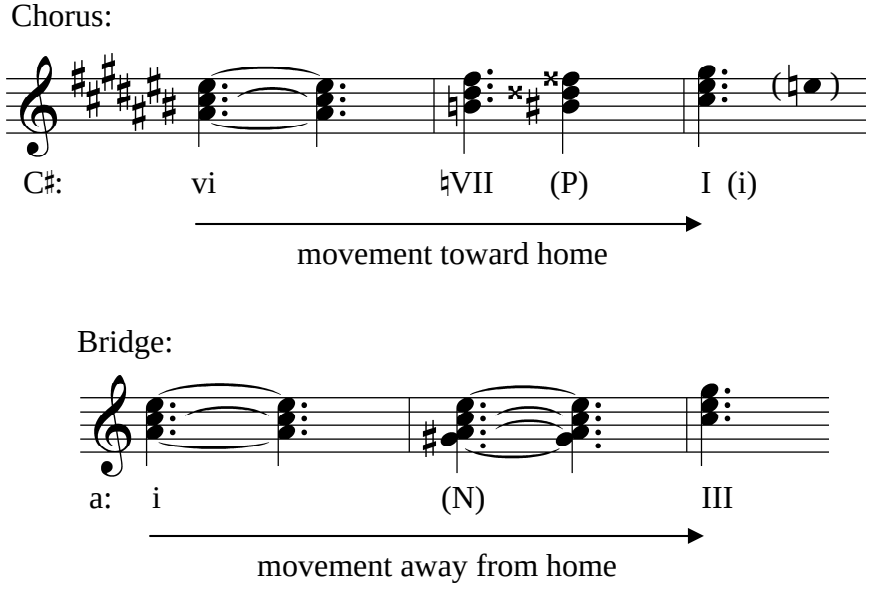


Example 3.11 Fiona Apple, "Extraordinary Machine," comparison of bass motives from chorus and beginning of bridge

More problematic is the middle voice, which is the only voice not to move chromatically from the middle of m. 104. It begins on E♯ at the beginning of m. 104 and does move chromatically throughout that measure; I have chosen the spellings E♮, D♯, and D♮ to highlight the parallel major thirds created with the bass. One expects the next note, at the beginning of m. 105, to be C♯ instead of C♮ for many reasons. First, since all the other voices have been moving chromatically, C♯ should follow D♮ to complete the same pattern in this middle voice. Additionally, the middle voice has been moving exactly parallel to the bass in major thirds, and C♯ would make a major third over the A♮ in the bass. The quality of the last chord of m. 104 sounds like an augmented-sixth chord, which normally resolves to a major chord, the dominant. Finally, the key of A major would be a less remote key than A minor, relating to C♯ major as the borrowed submediant from the minor mode. The only possible indication that A minor might be approaching is the C♮ in the bass voice in the second half of m. 104, but I interpret this as merely a passing note and not a noticeable anticipation. Thus, the C♮ in the middle voice that begins m. 105 is truly a surprise that thrusts the music into A minor, undermining the diatonic tonality of the song.

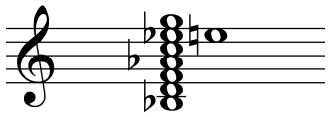
The emergence of A minor instead of A major in the bridge, through this unexpected use of C♮ or $\flat\hat{3}$, parallels the appearance of the E♮ "blue notes" arising through mixture with C♯ minor in the verses and choruses. This is yet more evidence that mixture with the minor mode is responsible for many of the enharmonic shifts and tonal eccentricities throughout the song.

As shown above in Example 3.9, the main body of the bridge is harmonically stable, oscillating between A minor and C major, a relative minor-major pair. Similar in function to the D♮ chromatic neighbors at the opening of the song, the G♯ in the bass in mm. 107–108 and mm. 115–116 serves as an incomplete chromatic lower neighbor to A. The tonic-submediant relationship was also featured earlier in the song. In the choruses, the relative pair of C♯ major and A♯ minor was used, with A♯ minor leading chromatically upward to C♯ major. The major-mode member of the pair was clearly the goal of the progression and was also the primary key of the preceding verses. In the bridge, however, the roles are reversed; the minor mode component of the relative pair, A minor, is the main harmony and C major is its subordinate. Notice in Example 3.12 that the beginning and ending harmonies in the bridge are a half step lower than in the chorus, and both expand the phrase using chromatic passing or neighboring harmonies.



Example 3.12 Fiona Apple, "Extraordinary Machine," comparison of relative major-minor alternation in chorus and bridge

After this period of stability, a B♭ (or A♯) chord suddenly interrupts the pattern in m. 117 and delays the arrival of C major until m. 120. During these three measures of interruption, the orchestra is outlining a B♭ dominant seventh chord, but the vocal melody is creating a lot of dissonance by adding G, E, E♭, and C as its primary notes. As Example 3.13 demonstrates, the resulting sonority is a thirteenth chord over B♭, with a major ninth, both a perfect and augmented eleventh, and a major thirteenth. The vocal part contrasts the two pitches E♭ and E♮ in adjacent measures, mm. 118–119. This is another example of E♮ having a conflicting role with the surrounding harmony. Whereas in the rest of the song, E♮ is contrasted with E♯, this time it is pitted against E♭.

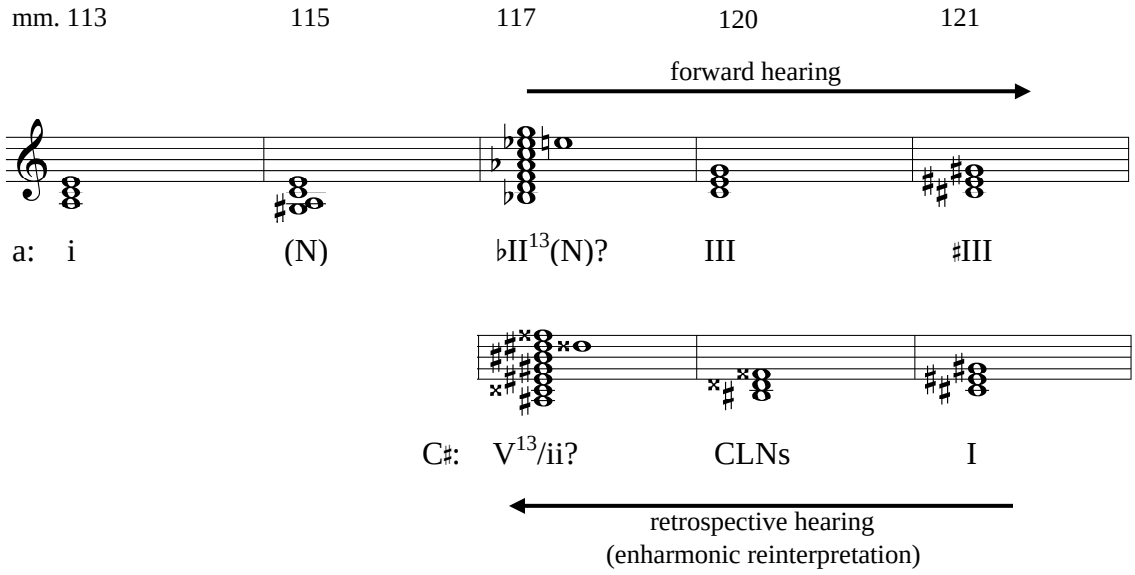


pitches in mm. 117–119

Example 3.13 Fiona Apple, "Extraordinary Machine," thirteenth chord and clash of E♭ and E♮ at end of bridge

Example 3.14 below shows the two possible spellings of this passage. In the transition to the bridge discussed earlier, pitch-class 10 was spelled as B♭ to lead downward chromatically to A♮. In m. 117, the listener first hears this same pitch class as B♭, or $\flat\hat{2}$, in relation to the previous A minor harmony, perhaps as a Neapolitan with added notes. The listener probably expects this B♭ to return to A, which, along with the G♯ lower neighbor, would create a chromatic double neighbor group. This expectation was set up by the chromatic neighboring motion that has been featured prominently in the

song already, namely between the C♯ and D♮ in the introduction and verses. The C major that follows in m. 120 can also be related back to A minor diatonically as III. This interpretation is shown under "forward hearing" on the top line of Example 3.14. Conversely, when the home key of C♯ major suddenly returns in m. 121, the notes of the C major of m. 120 retroactively sound like chromatic lower neighbors and are reinterpreted enharmonically as B♯ major. These are the same pitches as in the chromatic passing chord that leads to tonic in the choruses. In retrospect, the B♭ thirteenth chord must also be reinterpreted as A♯, a pitch which has already been highlighted several times in the song, in the verses as the root of V^7/ii and then in the chorus as the root of vi. This second interpretation appears on the bottom line of Example 3.14 as "retrospective hearing." The chords at the end of the bridge must have two spellings simultaneously to reflect their changing functions, creating another enharmonic paradox.



Example 3.14 Fiona Apple, "Extraordinary Machine," two possible spellings for the enharmonic paradox at the end of the bridge, forward and retrospective

The most crucial piece of information about how these notes should be understood comes from Apple herself and her vocal interpretation of them. Shown in the circle back in Example 3.9, I spell the same pitch class as both C♮ and B♯ in the vocal line in m. 120, partly to show the modulation back to C♯ more clearly. Significantly, Apple actually sings two different pitches in this measure, leaving the C♮ as it sounded in relation to the A minor bridge while making the B♯ higher to pull more strongly toward C♯. The facility with which she accomplishes this move hints that she, the performer and composer, is probably well aware of the enharmonic shift taking place during this transition. Also significant is that this is the same pitch class as the unexpected C♮ that was responsible for the shocking move to A minor at the beginning of the bridge. Attention is again drawn to the minor third scale degree, just as E♮ was highlighted in the key of C♯ major in the verses and choruses.

5. Conclusion

There are enharmonic paradoxes throughout Fiona Apple's "Extraordinary Machine," all of which contribute to an overall harmonic narrative. In the verses, there are paradoxes between C× and D♮ and between D× and E♮; the former fits into the narrative because of the thematization of chromatic neighbor motion and semitone relations in the song, and the latter involves a marked pitch class that continues to play a role in other sections. In the chorus, there is another paradox between D× and E♮, one that arises through mode mixture, which is another technique characteristic of the whole

song. In fact, the change of mode of the submediant A major into A minor at the beginning of the bridge is the source of the enharmonic paradoxes that happen at the end of the bridge, when Apple sings C♮ and B♯ as different pitches in the dizzying modulation back to the home key of C♯ major. Two chromatic techniques emerge as thematic in "Extraordinary Machine": mode mixture and semitone relations, just as in the Beethoven sonata examined in Chapters 1 and 2.

Although "blue notes" are common in popular music, the use of the minor third scale degree in this song does not seem to be purely for color or effect, but rather it highlights how the use of mode mixture at crucial points in the song leads to both enharmonic spelling issues and remote modulations. Nearly every time the note E♮ appears in the song, it conflicts with other sounds or thwarting expectations. Its first appearance is as a mere "blue note" in the introduction and verses, it then turns the expected C♯ major into minor in the chorus, and then it appears again as a "blue note" in the refrain. It finally achieves consonance in the bridge as $\overset{\triangle}{5}$, but it quickly becomes a dissonance against the B♭ thirteenth chord in the transition back to C♯. The mixture is so widespread that the verses, choruses and refrains can be analyzed as C♯ major-minor.

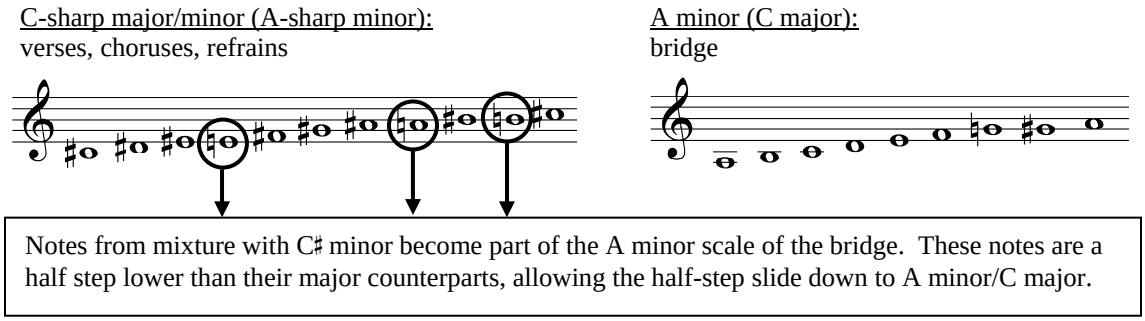
The minor third of the bridge's key of A minor, C♮, is another problematic pitch. At the beginning of the bridge, C♮ replaces the much-anticipated C♯, meaning that A minor arrives instead of the expected A major, and the bridge ends with C♮ becoming B♯ at the most disorienting enharmonic paradox in the song. The minor-third scale degree in the two main keys of the song is both problematic—as it causes enharmonic paradoxes

and remote modulations—and emphasized, both through its placement at important moments and the use of distinct timbres.

Another characteristic of the song that points to mixture as a main player in its narrative is that the submediant (or mediant) relationship is exploited in multiple sections. A♯ is emphasized in the bass during the verses, and there is an alternation between relative minor and major in both the chorus (A♯ minor and C♯ major) and bridge (A minor and C major). On the large scale, the whole song explores the tonic-submediant relationship, with the verses, choruses, and refrains in the tonic C♯ major and the bridge in A minor, a thrice altered submediant.

Beyond the chromatic mediant relationship between the two main keys of the song, there are also semitones at work, a relationship that is also featured throughout on the small scale. Prominent semitone relations in "Extraordinary Machine" begin during the first paradox in the song, which involves chromatic neighbor motion; chromatic neighbor motion is also featured in the bridge, which sets up expectations about the resolution of the B♭/A♯ that are thwarted. Furthermore, there are two motivic indications of a slide down by half step, both mentioned above. First, the linear motion in the bass that leads from C♯ to A at the beginning of the bridge is itself a half step lower than the chromatic bass motive from C♯ to A♯ in the chorus, as shown in Example 3.11. Second, each time Apple is singing in the same measure as the bell, as in m. 12 of Example 3.2, her E♯ gets a little lower in pitch until, by the fourth verse, she is singing even slightly lower than the bell's E♮.

As stated above, the borrowed note E♮ is used frequently in the C♯ major sections. The other two borrowed notes are less-frequently emphasized, but do make an appearance, with B♮ as the root of ♭VII in the chorus and A♮ as part of the A major that is expected at the beginning of the bridge. These borrowed pitches, each a half step lower than its major counterpart, pave the way for the introduction of the scale used in the bridge, A minor, which is made from pitches one half step lower than those of the scale of the rest of the song, C♯ major. The notes of the A minor triad are also a half step lower than the pitches of the diatonic submediant triad, A♯ minor. A minor thus acts as a substitute submediant, with emphasis on its mediant, C major. C major, a half step lower than the actual tonic of the song, has the E♮ that had been consistently borrowed from minor while in C♯ major as its diatonic third. E♮ had been pulling the music down by half step from the beginning, and the key of the bridge finally realizes that downward tendency.



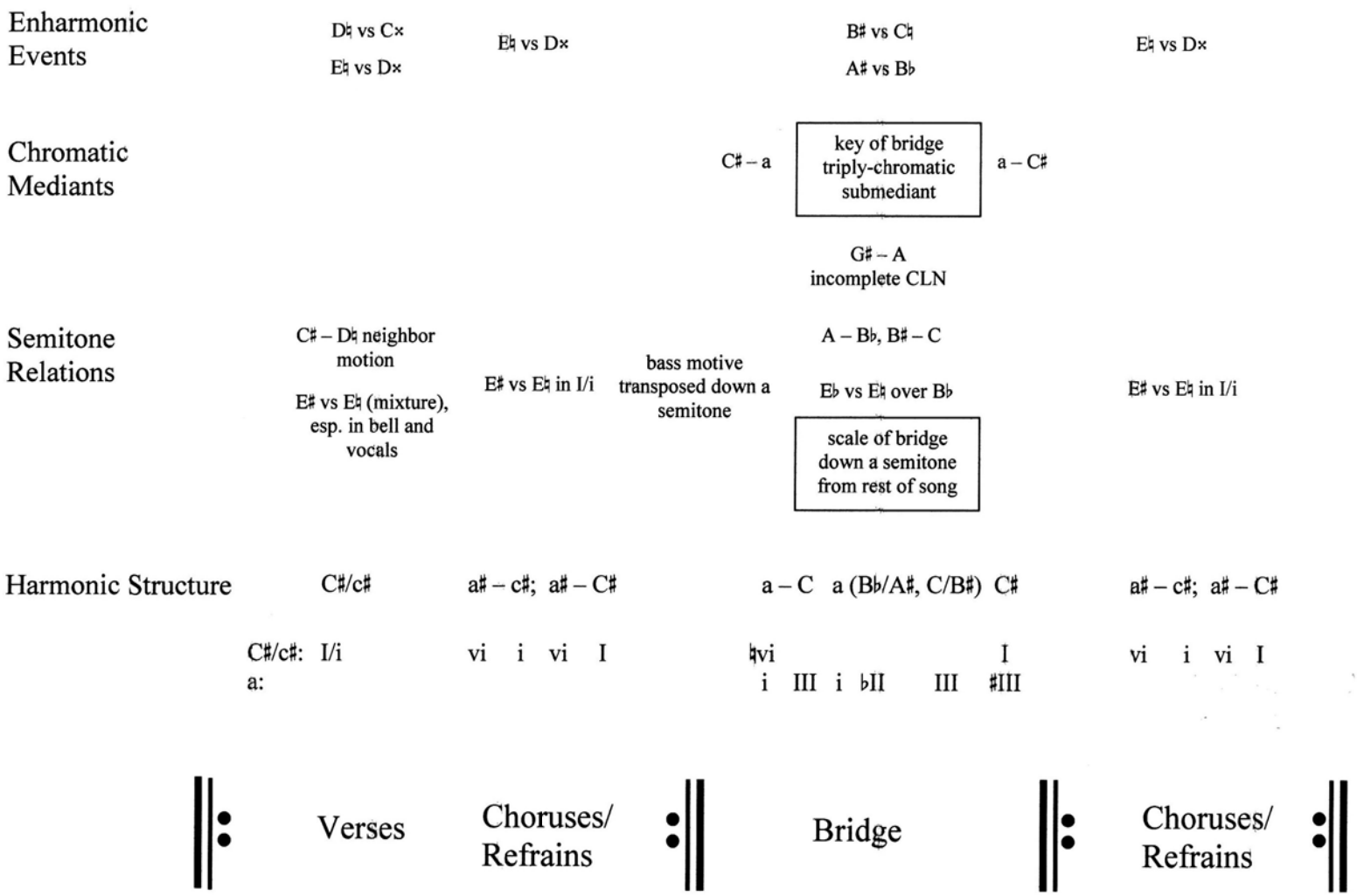
Example 3.15 Fiona Apple, "Extraordinary Machine," semitone relation between the scales of the two main key complexes

Though my focus has been upon enharmonic paradoxes in the harmonic narrative of "Extraordinary Machine," it should be noted that the study of popular music often calls for an investigation of musical elements beyond pitch relationships, such as instrumentation and timbre. The use of the bell draws attention to the borrowed pitch, E♮, as does the singer's consistent semitone clashes with this pitch class. The singer's vocal timbre also changes dramatically in the bridge, which coincides with the most dramatic enharmonic paradoxes in the song.

In a work with text, it is usually revealing to examine the meaning of the words in connection with the music. The sinking of the pitch across the song is perhaps symbolic of the sense of burden described in the lyrics, as the singer struggles—to be "an extraordinary machine" in the face of obstacles and her critics. After the half-step descent in the bridge, at the point of highest despair in the lyrics, there is a sudden shift back up the semitone to the tonic key, C♯ major, on the inspiring words "everything will be just fine." For the rest of the song, only the more uplifting chorus and refrain remain, with the minor tonic being the only remnant of the lowered pitches. The pitches in the song get lower and lower as the tone of the words becomes more negative, while the return up the semitone coincides with the regaining of a more positive outlook. The thematized harmonic relationships are thus reflected in both timbre and lyrics.

Because the tonic C♯ major is consistently weakened throughout the song by pitches from the scale of A minor, "Extraordinary Machine" can be thought of as a double-tonic complex between C♯ major-minor and A minor. C♯ is the clear victor in the struggle between the two key areas; the bell sounding the final note on the tonic pitch

leaves no doubt for the listener. However, mode mixture, semitone relations, and remote modulations create a serious adversary for the tonic and give it something to fight, just as the singer has. A summary of the song is presented below in Example 3.16. Notably, all pitch-classes involved in enharmonic paradoxes in the song are related to the tonic pitch, C♯, by semitone (D♮/C𝄪 in the verses and B♯/C♮ in the bridge) or minor third (E♮/D𝄪 in the verses and choruses and A♯/B♭ in the bridge).



Example 3.16 Fiona Apple, "Extraordinary Machine," summary diagram

Fiona Apple's "Extraordinary Machine" frequently employs techniques common to popular music, such as a seemingly improvisational vocal style, recurring use of "blue notes," and playfulness of timbre and lyrics. Although these features of the song may lead a listener to believe that the performance is naively spontaneous, they mask an underlying craft, a harmonic drama that can be discovered through a thorough analysis. There are many harmonic events in "Extraordinary Machine" that wreak havoc on diatonic tonality, which sometimes occur simultaneously with significant changes in the lyrics. While the analytical techniques I here employed are normally reserved for the study of chromatic, European art music, I believe a close reading of this particular popular song, and perhaps others like it, can enrich our understanding of the performance and the story unfolding in the lyrics.

Chapter 4: Poulenc's Piano Concerto, Second Movement

Francis Poulenc was described by those who knew him as being full of contradictions in his appearance and personality, and some who have studied his pieces have discovered a similar pattern in his music as well. He has been described as simultaneously "dapper and ungainly" and as a "disconcerting mixture of cheerfulness and melancholy, seriousness and futility, triviality and nobility" with a mood that could "vary from one day to the next, even from one moment to another, for he was extremely sensitive and emotional."[1] When describing the juxtaposition of eighteenth-century techniques with the characteristically twentieth-century sound in Poulenc's music, Keith Daniel notes that such "a diversity or, as some might say, a contradiction, is commonplace in Poulenc's music" and that he was "as eclectic a composer as ever lived, borrowing freely and often consciously."[2] The following analysis of the second movement of Poulenc's Piano Concerto from 1949 wrestles with and attempts to reconcile many of the contradictory aspects of his music.

These contradictions, at least the musical ones, likely arose from the fact that he was influenced by a variety of sources early in life. As a boy, he enjoyed listening to his mother play Mozart, Chopin, Schubert, and Schumann on the piano, he was introduced to

[1] George R. Keck, comp., *Francis Poulenc: A Bio-Bibliography*, Bio-Bibliographies in Music 28, series adviser Donald L. Hixon (New York: Greenwood Press, 1990): 6–7.
[2] Keith W. Daniel, *Francis Poulenc: His Artistic Development and Musical Style* (Ann Arbor: UMI Research Press, 1982): 94.

works by Debussy and Stravinsky, and he began playing piano himself, admiring such classics as Schubert's *Winterreise*.[3] Popular music had an influence on him as well, especially that of Kurt Weill and George Gershwin, and he turned "frequently to the style of the café-concert and the Parisian music hall" for musical inspiration.[4] As a member of the group of young composers known as *Les Six*, he "found himself strongly influenced by the music of Erik Satie."[5] Poulenc managed to synthesize this diversity of musical influences and incorporate them into his own unique musical style. George Keck opines that "Poulenc was lucky as a composer in that he found his style early in his career and never really changed."[6] By contrast, Keith Daniel describes how Poulenc's style changes, although subtly, throughout his career: "[I]nstead of dropping one style in favor of another, he simply added the new techniques to his vocabulary."[7] Poulenc's contradictions, thus, extend beyond his personality to include his musical style.

Poulenc's musical philosophy was derived in large part from the French tradition, in which, as Debussy once said, music "should humbly seek to please."[8] Despite the numerous influences on him, however, Poulenc also distinguished himself from the attitudes and styles of his predecessors. Along with his peers in *Les Six*, his aim was to "reinstate the claims of a less pretentious type of music in opposition to the overwhelming impact of Wagner" and "the mists that lingered in the Wake of Debussy."[9] George Auric, a fellow member of *Les Six*, also noted that "once the cause had been won

[3] Henri Hell, *Francis Poulenc*, trans. Edward Lockspeiser (New York: Grove Press, Inc., 1959): 2–3.
[4] Keith W. Daniel, *Francis Poulenc: His Artistic Development and Musical Style*, 67.
[5] Ibid., 95.
[6] George R. Keck, *Francis Poulenc: A Bio-Bibliography*, 8.
[7] Keith W. Daniel, *Francis Poulenc: His Artistic Development and Musical Style*, 94.
[8] Ibid., 18.
[9] Henri Hell, *Francis Poulenc*, 15.

of the movement against the over-refinements of Debussyism, the dangers of modernism, its equally undesirable antidote, were still to be overcome."[10] In creating his individual style, Poulenc balanced the borrowing of characteristics he admired in music of his predecessors with the assertion of a modern, youthful, and unabashedly French identity. The resulting style emerges as a "unique blend of traditional techniques and a modern aesthetic."[11]

This blending comes across in harmonic aspects of his music. According to George Keck, Poulenc, the other members of the group, and Satie "professed antagonism to Romanticism and Impressionism and sought simplicity, clarity, and brevity of expression in music." Keck notes further that Poulenc was influenced by "music of the circus and music-hall with its breezy charm and easygoing rhythms … balanced by a concept of lyric melody unequaled in the twentieth century."[12] Many of these values resemble those of eighteenth-century musicians. He wrote for standard orchestral instruments (plus harpsichord), and the performing techniques he required were rather conservative and not virtuosic. He composed in traditional genres like other neoclassical composers, and the forms he used were often simple and derived from the eighteenth century.[13] Another eighteenth-century characteristic of Poulenc's music is that it is driven primarily by melody, a quality frequently ascribed to the music of Wolfgang Amadeus Mozart. Some go as far as to say that "[m]elody was the most important element for Poulenc. His melodies are simple, pleasing, easily remembered, and most

[10] Henri Hell, *Francis Poulenc*, 18.
[11] Keith W. Daniel, *Francis Poulenc: His Artistic Development and Musical Style*, 57.
[12] George R. Keck, *Francis Poulenc: A Bio-Bibliography*, 8.
[13] Daniel, 57–58.

often emotionally expressive."[14] More importantly for analytical purposes, these melodies emphasize the diatonic, using chromaticism sparingly and mostly ornamentally.[15] Similarly, his chord progressions are mainly diatonic. Keith Daniel claims that the "vast majority of Poulenc's music is unambiguously tonal," giving a "sense of being firmly in a key," and that his "harmony is fundamentally diatonic and functional" with chromatic harmonies embellishing the underlying diatonicism.[16] Later, Daniel further emphasizes the diatonicism of Poulenc's harmony, noting that "no matter how ambiguous, fluid, or colorful the harmonies before a cadence may be, the sense of tonality is always clarified at the cadence."[17] George Keck agrees, stating that Poulenc "preferred clear, simple harmonies moving in obviously defined tonal areas with chromaticism that is rarely more than passing."[18] Obviously, Poulenc's musical style is deeply connected to diatonic roots.

This local, surface diatonicism contrasts with the chromaticism that arises on a deeper level due to frequent, remote modulations. A common feature of Poulenc's music is the "rapid and frequent modulations to colorful and unexpected tonal areas."[19] Much of the non-ornamental chromaticism found in his melodies is "a result of his flexible harmonic style and freedom of modulation."[20] In his music, the fluidity of the melodies and chord progressions, and the simplicity of form, contradict the disjunction and chromaticism of the general harmonic structure. This disjunction stems from an additive,

[14] Keck, 18.
[15] Keck, 18; Hell, 87; Daniel, 64–65.
[16] Keith W. Daniel, *Francis Poulenc: His Artistic Development and Musical Style*, 73–74.
[17] Ibid., 84.
[18] George R. Keck, *Francis Poulenc: A Bio-Bibliography*, 18.
[19] Ibid.
[20] Daniel, 65.

cellular, and non-developmental approach. Perhaps influenced by Mussorgsky, Debussy, Stravinsky, and Satie, Poulenc favors melodic ideas that are exactly repeated before the introduction of a completely new idea. Correspondingly, he does not favor the fragmenting and developing of themes. His "fluid treatment of tonality and modulation … was far more conducive to repetition and contrast."[21] The cellular writing style and colorful modulations may be associated in yet another, more practical way, in that the "frequent and fluid modulations also offer relief from excessive repetition."[22] Poulenc, then, uses diatonicism for the moment-to-moment sound of his music, but his chromatic fluency becomes apparent beneath the surface, on the large scale, in coordination with his concern for form.

These anti-classical, or anti-romantic, aspects of Poulenc's music clash with the neoclassical elements described above. Moment to moment, on the level of individual phrases, diatonicism dominates, and the form has the appearance of being classically derived. Chromaticism in the key relations is systemic, however, and the form is not generated classically by the fragmentation of themes into their constituent motives and the themes' subsequent development, but by the strategic juxtaposition of entire melodies. Since Poulenc's music is a combination of contradictory diatonic and chromatic elements, it provides an excellent test case for the method of this dissertation. An important part of my analysis, thus, will be to reconcile the diatonic and chromatic aspects of his music.

[21] Keith W. Daniel, *Francis Poulenc: His Artistic Development and Musical Style*, 59 –60.
[22] Ibid., 86.

Another relevant stylistic trait is the improvisatory or spontaneous, rather than crafted, character of his music. Daniel writes that Poulenc "wanted his music to strike us as instinctive, spontaneous, and heartfelt," and "if we were to follow Poulenc's own admonition, we would be loathe to dissect his music"; however, "his style can, and ought to be described, in order to discover its unique blend of traditional techniques and a modern aesthetic."[23] Daniel goes so far as to claim that "the key structures rarely appear to be architectonically designed" and there "is no strong drive from one key to another, and often no apparent pattern to the tonal motion."[24] I think that much is gained from analyzing how music of an improvisational character can nonetheless be shown to have a pattern to its chromatic movements, whether intended or not. That a composer whose music is based on diatonic melodies and chord progressions can modulate to remote keys suggests something systemically chromatic in the diatonic system itself.

Because the analyses in this dissertation are piece-driven narratives, it is useful to introduce some historical context. There was a turning point in Poulenc's life in 1935 that affected his music. First, his friend, composer and critic Pierre-Octave Ferroud, was killed in a gruesome accident, prompting a restoration of Poulenc's Catholic faith.[25] Also around 1935, he met Pierre Bernac, who was to become his closest companion.[26] His music, perhaps consequently, took a more serious turn after that point. Keith Daniel classifies the music from 1936 to 1952 as part of Poulenc's third period (of four), in which he turned to a "more serious, lyrical direction," studied Bach, Victoria, and

[23] Ibid., 57.
[24] Keith W. Daniel, *Francis Poulenc: His Artistic Development and Musical Style*, 85.
[25] George R. Keck, *Francis Poulenc: A Bio-Bibliography*, 5; Henri Hell, *Francis Poulenc*, 45–46.
[26] Keck, 5.

Monteverdi, and added "new dimensions and greater depth to his music." A new "romantic coloring began to filter into Poulenc's music," including "more direct emotional expression, the increased use of such devices as rolled chords, tempo rubato, and compound meter, and a more sustained lyricism."[27] With the exception of compound meter, all of these stylistic traits can be found in the second movement of the Piano Concerto. Poulenc wrote a total of five concertos for keyboard instruments that resemble his chamber music in style, being "the most tuneful," with "ingratiating, memorable tunes following in succession and often recapitulated in a ternary structure."[28] This is a perfect description of the second movement of the Piano Concerto, which presents several lush melodies and is in ternary form. The movement is thus a good representative of Poulenc's mature, serious style of that period.

The Piano Concerto was commissioned from Poulenc for the Boston Symphony Orchestra in 1949 and was first performed by the composer and Charles Münch in Boston in January of 1950, during his second American tour with Pierre Bernac. Poulenc felt that the audience was disappointed, and the French press said of a later performance that the piece did not show significant advancement over his earlier works.[29] Possible reasons for the poor reception include the impression that it "is too gay, to the point of vulgarity,"[30] that the last movement differs greatly in tone from the more serious first two movements, or that it suffered from comparison with the more popular Organ Concerto.[31]

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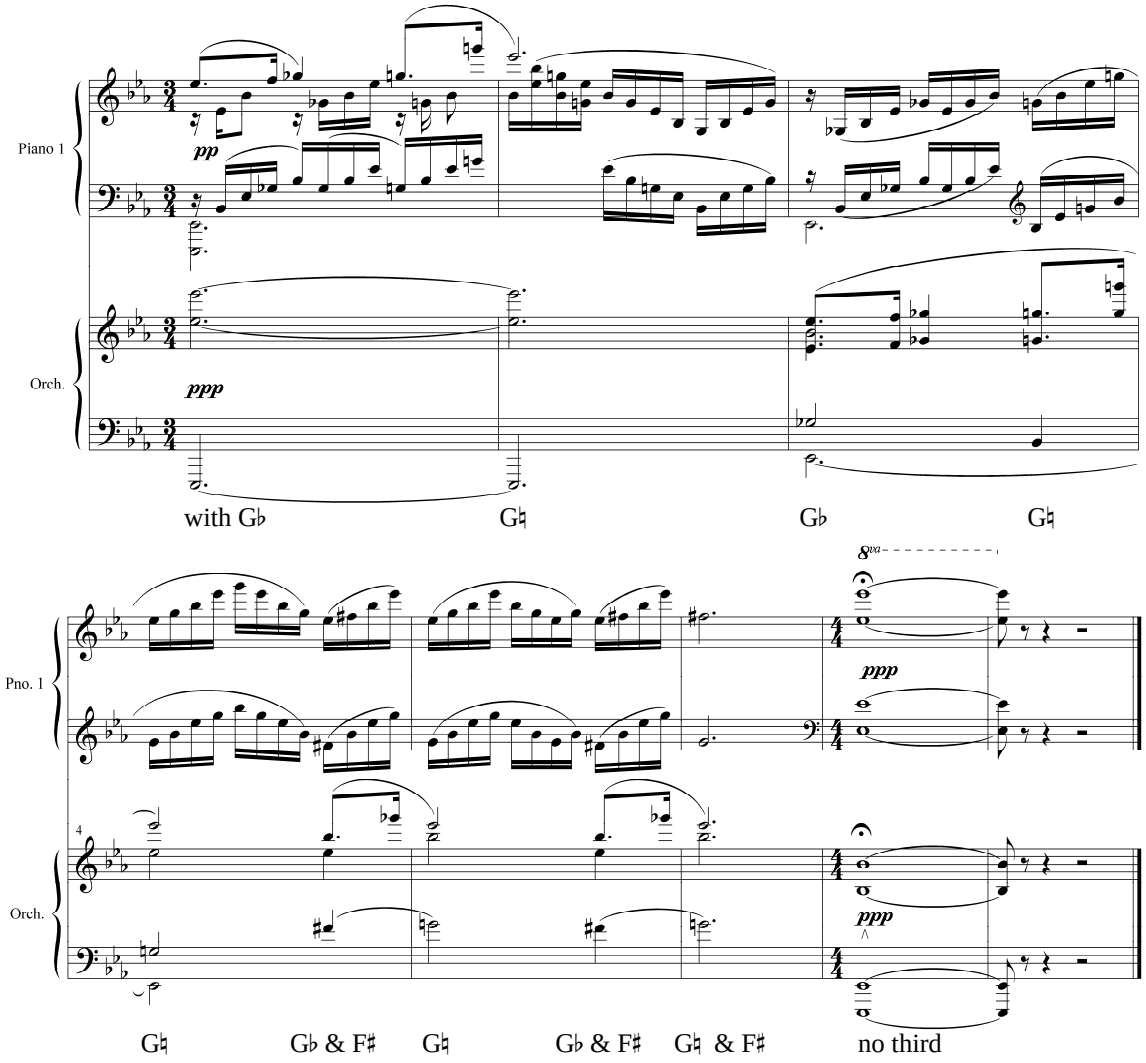
[27] Daniel, 97–98.
[28] Keith W. Daniel, *Francis Poulenc: His Artistic Development and Musical Style*, 68.
[29] Henri Hell, *Francis Poulenc*, 75–76.
[30] Daniel, 154.
[31] Hell, 75.

In the concluding section of his book, Keith Daniel suggests that the concertos need more detailed analytical study, a suggestion that will now be taken up.[32]

1. Overview

The second movement of the Piano Concerto is an excellent demonstration of Poulenc's contradictory nature and the conflict between the diatonic and chromatic. While projecting the composer's values of simplicity of melody and surface beauty, this piece surprises the listener with unexpected modulations, shifts of modality, and enharmonic issues. One particular excerpt, the last eight measures of the piece, illustrates the last two of these (see Example 4.1). (In all score excerpts in this chapter, the orchestral accompaniment is arranged as a piano reduction and shown on the bottom staff.)

[32] Daniel, 313. John Hanson, "Macroform in Selected Twentieth-Century Piano Concertos" (PhD diss., The University of Rochester, Eastman School of Music, 1969), 237–245, presents an analysis of the form of the movements of Poulenc's Piano Concerto.



Example 4.1 Poulenc, Piano Concerto, second movement, enharmonic paradox in the coda

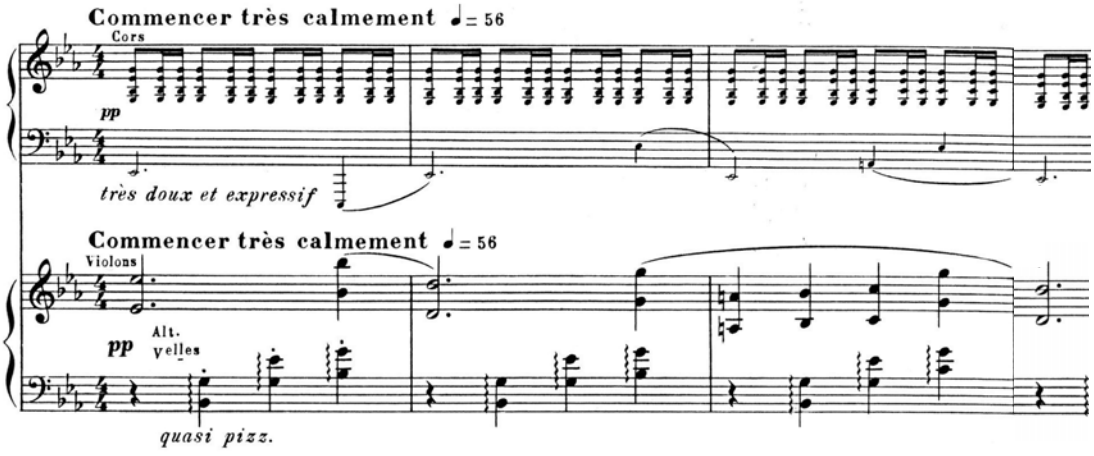
The movement is in E♭ major, but in these last measures E♭ major alternates with its parallel minor through use of a borrowed note, G♭.[33] For the first three measures of the excerpt, this pitch class serves as ♭$\hat{3}$, but in the subsequent two measures, it appears both as ♭$\hat{3}$(G♭) and as ♯$\hat{2}$(F♯), the leading tone to ♮$\hat{3}$. Finally, in the sixth measure, the G♭ has been completely replaced by the F♯, which becomes part of what sounds like an E♭

[33] Poulenc often used mixed major and minor modes for chromatic coloring, according to Keith W. Daniel, *Francis Poulenc: His Artistic Development and Musical Style*, 71.

split-third chord, albeit misspelled. It is striking that, in the fourth through sixth measures above, spelling the pitch class as G♭ rather than F♯ in the solo piano part would have made more sense contextually (from what preceded) and diatonically (to make triadic spelling in the arpeggios). The F♯ in the lowest voice in the same measures, however, is spelled appropriately, because it is functioning as the leading tone to G♮. Consequently, the same pitch class must be represented as both G♭ and F♯ simultaneously, creating an enharmonic paradox. This enharmonic problem involving pitch-class 6 is also related to a shift between the major and minor modes of the home key, lending credence to an analysis relying on mode mixture.

The short excerpt above shows characteristics on the small scale that pervade the rest of the movement on a larger scale. The movement is in ternary form, with the first A section presenting four statements of the main theme. The first few measures of the theme are shown in Example 4.2, with the melody in the orchestral part (bottom staves).

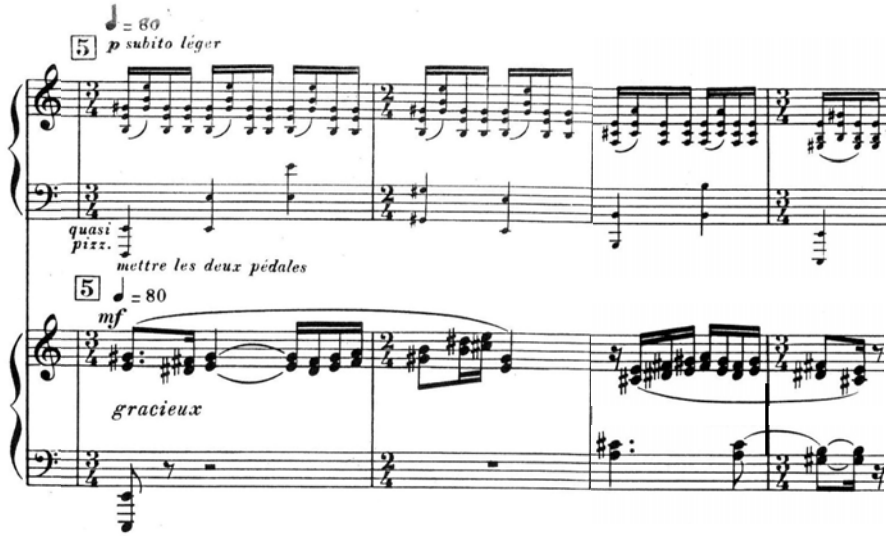
A section: main theme



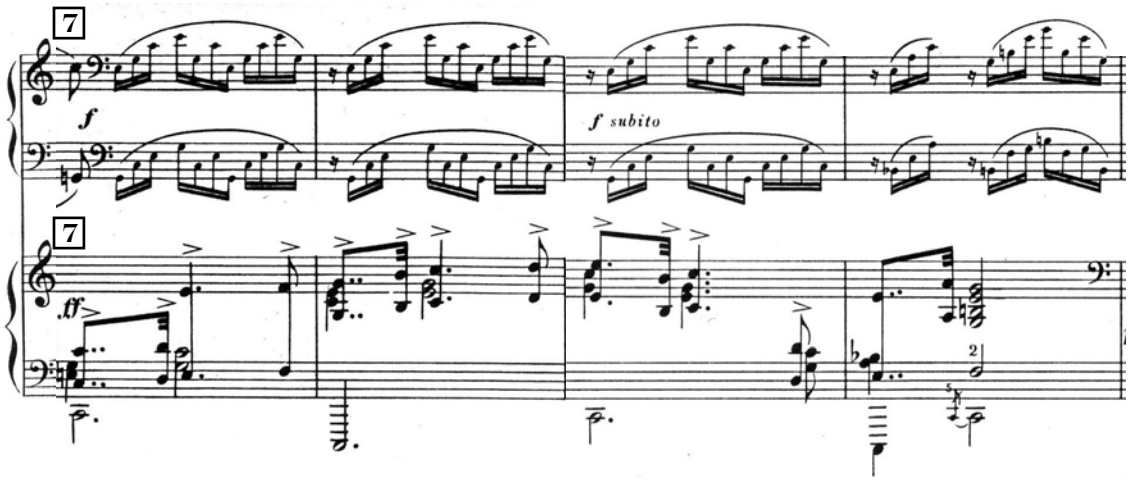
Example 4.2 Poulenc, Piano Concerto, second movement, main theme of the A section

There is a transitional passage that leads to the B section, which has two themes of its own; these are shown below in Example 4.3 a) and b). In both, the melody is again on the bottom staves in the orchestral reduction.

a) B section: first theme



b) B section: second theme



Example 4.3 Poulenc, Piano Concerto, second movement, main themes of the B section: a) first B theme; b) second B theme

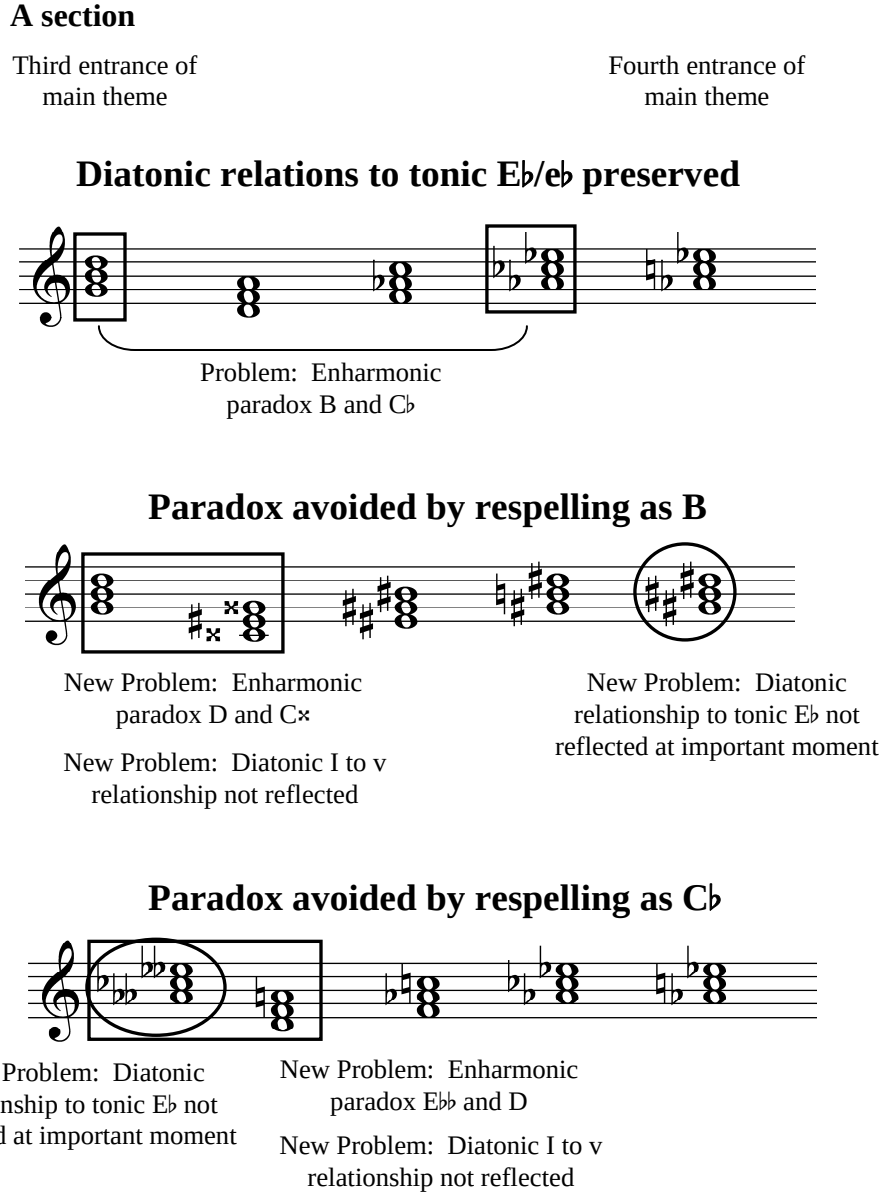
The B section ends with closing material on the dominant, which leads to the A' section and ushers in the return of the main theme and home key. This time, the theme is only stated once before leading to the eight-measure section from Example 4.1 above, the coda, which uses rhythms reminiscent of the B section's themes.

2. The A section

The piece begins with two statements of the main theme in the tonic key of E♭ major. The first enharmonic paradoxes of the movement happen during the third statement of the main theme in G major, which is related to the tonic by chromatic mediant. After only two measures in the new key, there are tonicizations of D minor, F minor, and A♭ minor before the fourth statement of the theme begins in A♭ major.[34] As Example 4.4 shows, there is an enharmonic paradox between the tonic triads of the tonicized keys, namely between the B♮ of G major and the C♭ of A♭ minor. C♭ would create non-triadic spelling with G major, and the spelling of G major cannot be changed easily to A♭♭ major. Besides resulting in a notationally cumbersome key, the spelling of A♭♭ major also would fail to reflect the diatonic root relationships with the preceding E♭ major and following D minor. Similarly, B♮ is not the appropriate third of A♭ minor, but changing the spelling to G♯ minor would create an enharmonic clash with the following A♭ major, whose spelling should remain as it is to reflect the subdominant relationship

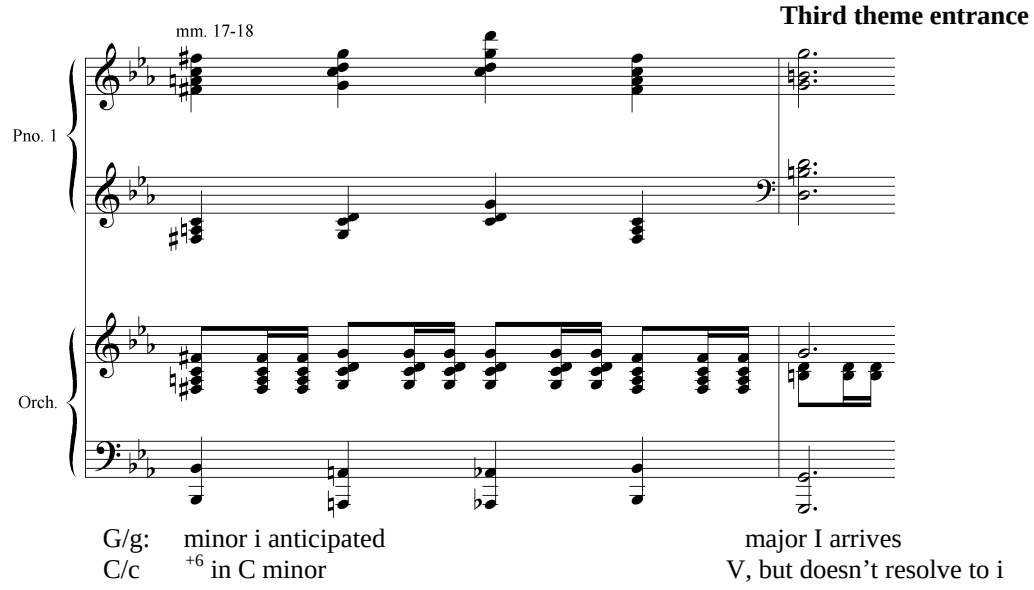
[34] Major-third cycles of minor triads are not uncommon in Poulenc's output, but *minor*-third cycles are much rarer and usually only included two members when they do occur. See David Kopp, *Chromatic Transformations in Nineteenth-Century Music* (Cambridge: Cambridge University Press, 2003): 3–4. Special thanks to David Heetderks for bringing this to my attention.

with the tonic E♭ major. Using spelling that shows diatonic relationships with the tonic is especially important at key moments in the form, as discussed with the Beethoven examples in Chapter 2, such as at these two entrances of the main theme in G major and A♭ major.



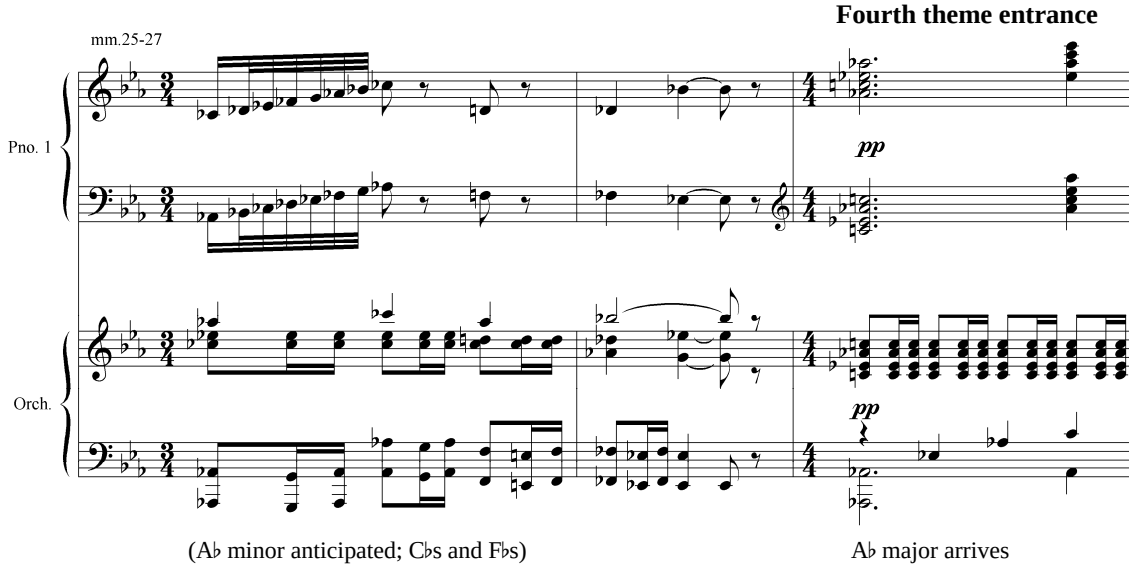
Example 4.4 Poulenc, Piano Concerto, second movement, possible spellings for enharmonically paradoxical part of the A section

The origin of this enharmonic paradox on pitch-class 11 is its appearance as the major third scale degree of the first distantly related key tonicized in the piece, G major. The harmony is ambiguous in m. 17, immediately before the third statement of the main theme begins. G minor is anticipated through the use of its leading tone, F♯, combined with the lowered third, B♭, but the parallel key, G major, arrives in m. 18 instead. Another interpretation of these two measures combines the A♭ in the bass with the F♯ in the upper parts, making an augmented-sixth chord leading to G major as V in the key of C minor (see Example 4.5 below). This would make the major quality of the G appropriate, but it becomes the tonic instead of the dominant, and C minor is never reached. (The withholding of C minor also happens several times in the B section, which will be discussed below in more detail.) If either G minor or C minor had arrived, the three primary keys of the A section would have been closely-related to the home key of E♭ major (I, iii or vi, and IV). From the distant G major, however, the journey back into the closely related realm is tortuous and creates the enharmonic paradox discussed above.



Example 4.5 Poulenc, Piano Concerto, second movement, A section, mm. 17–18, anticipation of minor mode and unexpected arrival of G major

Despite the ambiguity in these two measures, I interpret the G major as a replacement for G minor instead of C minor, because it becomes clear after only a measure of the theme that G is the central pitch. Later, in mm. 25–27, the anticipation of another key is followed by the arrival of its parallel. The A♭ minor ending the sequence of thirds is the parallel key of the subdominant A♭ major that immediately replaces it to begin the fourth iteration of the theme (see Example 4.6).



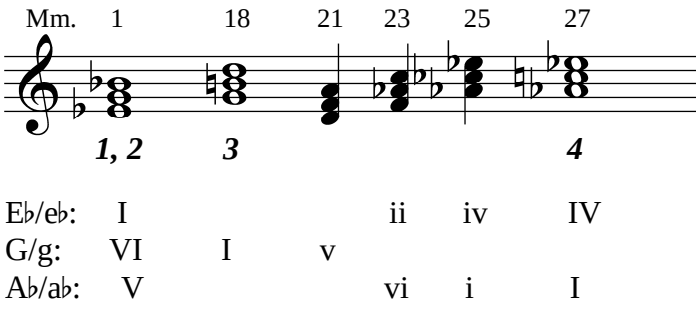
Example 4.6 Poulenc, Piano Concerto, second movement, A section, mm. 25–27, anticipation of minor mode and unexpected arrival of A♭ major

In both instances, the enharmonically ambiguous pitch-class 11 appears as the third of a key which is present in both major and minor forms. As has been demonstrated, the enharmonic paradox could have been avoided if either G minor opened the third iteration of the theme, not G major, or A♭ major had arrived instead of A♭ minor. Additionally, this would also leave all statements of the main theme in keys closely-related to the tonic E♭ major. Because of the relationship between parallel keys, considered diatonic by many,[35] the shared dominant can lead to either mode over the same tonic note. Unexpected arrivals of parallel keys in this piece, however, correspond to enharmonic issues and remote modulations.

[35] Heinrich Schenker, Arnold Schoenberg, Gottfried Weber, and others; refer back to pages 37–44 in Chapter 2.

These juxtapositions of parallel keys at entrances of the main theme suggest an analysis in terms of the major-minor complexes of E♭, G, and A♭, as shown below with Roman numerals in Example 4.7. The main theme enters twice in E♭ major, followed by once in G major and once in A♭ major, the three primary keys of the section. Each theme entrance is marked with a numeral below the staff. The minor keys tonicized by the sequence of minor-thirds, which follow the arrival on G major, are shown as quarter notes; these modulations occur via enharmonic reinterpretations of diminished-seventh chords.

A section:



Example 4.7 Poulenc, Piano Concerto, second movement, key relations in the A section

3. The B section

The transition to the B section, mm. 33–40, begins in C major and in a faster tempo.[36] The music here mostly consists of scalar passages and arpeggios, and quickly

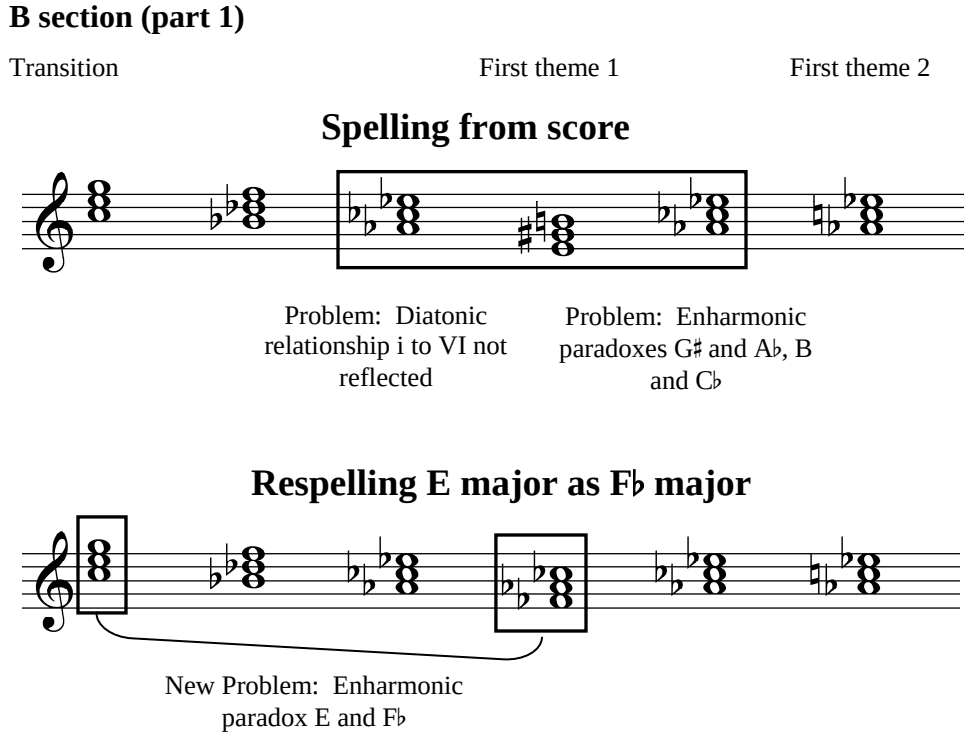
[36] In John Hanson, "Macroform in Selected Twentieth-Century Piano Concertos," 239, this transition is placed at the end of the A section rather than the B section, but I include it in a discussion of the B section because of the sudden change in texture and because it has more elements in common with B.

moves from C major to B♭ minor and A♭ minor. Hints of rhythmic and motivic material foreshadowing the first B theme emerge in m. 38, and the theme begins in earnest in E major (m. 40), followed by a transitional passage in the same A♭ minor that preceded it. Just as in the A section, A♭ minor only appears briefly before being usurped by A♭ major in m. 46 for another statement of the first B theme.

The three primary keys of the first part of the B section, C major, E major, and A♭ major, are major-third-related major keys, and the start of the second part of the B section sees a return to the beginning key of the cycle, C major. These key areas outline an equal division of the octave, a well-known source of enharmonic issues.[37] As in the study of Beethoven's "Appassionata" in Chapter 2, the diatonic relationships of this section may be examined to locate the enharmonic paradox. A♭ major is diatonically related to the tonic E♭ major, and A♭ minor is borrowed from the parallel minor, so those spellings may remain the same. C major is not directly diatonically related to the tonic, but its root $\hat{6}$ is; changing the spelling to B♯ or D♭♭ minor would not make sense here. E major is, thus, the likeliest candidate for a spelling change. As shown below in Example 4.8, thinking of the E major as F♭ major reveals local diatonic relationships. Except for the distantly-related C major, the primary keys in this first half of the B section can be related to A♭ major or minor, IV in the home key. (F♭ major is also related to the tonic as the Neapolitan, although this is a chromatic relationship.) A new problem arises with the spelling, however. Now the F♭ enharmonically clashes with the E of C major. Example 4.8 shows

[37] The keys involved here, C major, E major, and A♭ major, are the same as in the first movement of Beethoven's Sonata op. 57, as noted in Chapter 2.

enharmonic paradoxes using the spelling from the score (E major) and the respelling using F♭ major.



Example 4.8 Poulenc, Piano Concerto, second movement, possible spellings for enharmonically paradoxical part of the first part of the B section

The unexpected appearance of C major at the beginning of the B section complements the use of G major in m. 18 of the A section in several ways. The enharmonic paradox involves pitch-class 4, which is the unexpected major third of the local key, C major. The role of the major third here recalls the surprise mode change to G major in the A section. Specifically, C major follows a measure that seems to point toward its parallel C minor, with an A♭ chord preceding a dominant-functioning chord