

TONAL MULTIPLICITY IN
SCHOENBERG'S FIRST STRING QUARTET, OP. 7

by

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ABSTRACT

This study describes the integration of harmonic idiom and tonal design in Schoenberg's First Quartet, op. 7. Two general questions are answered: whether the composition should be judged by common-practice-period norms, and whether a coherent tonal structure is truly discernible.

Chapter 1 first surveys the existing literature. It then describes a prime motivator of foreground chromaticism in the quartet—the chromatic surrounding of tonic and dominant pitches—and discusses two features of large-scale pitch organization applicable to Schoenberg's first-period music that contravene common-practice-period norms: tonal structure consisting of a pattern of keys, and systematic use of dual or even multiple tonics in place of monotonicity. Examples illustrate three types of graphic representation of tonal duality to be used in the study.

The next four chapters describe tonal process within and across the four "movements" of the quartet (Schoenberg's Parts I through IV). Chapter 2, which studies Part I, reveals systematic avoidance of V–I function in the opening key, D, tonal rivalries between D and each of its two semitone-related keys, and the beginning of a large-scale chromatic surrounding of the key of D. Chapter 3, on Part II of the quartet, demonstrates continuation of the rivalry between tonics D and D $\flat$ by their use as competing secondary tonics within the Scherzo, and the harmonic progression VII–I replacing V–I at a crucial structural point. Chapter 4,

on Part III of the quartet, describes tonal duality as it occurs in the Adagio, the furthering of the tonal plot in a section that engages in a “plagal” system of tonality, and the beginning of a large chromatic surrounding of A. Chapter 5 shows that Part IV eschews a simple relationship between the A-major tonic of the Rondo and the D-major tonic of the Coda by allowing the infiltration of elements of the D $\flat$ -major collection.

Chapter 6 summarizes the evidence contradicting a monotonal understanding of the composition and reviews evidence that the demonstrated multi-tonal coherence is part of the musical reality of the work.

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LIST OF ABBREVIATIONS AND SIGNS

ABBREVIATIONS

CS	countersubject
c.t.	common-tone, as in c.t. ^{°7} chord
IC	interval class
LIP	linear intervallic pattern
m./mm.	measure/measures, as in the original edition of the score; used with a rehearsal letter or, if understood from the context, without.
m.4 ₄	measure 4, beat 4
pc/pcs	pitch class/pitch classes
PT	Principal Theme (i.e., PTGa ¹)
PTG	Principal Thematic Group
r.	rehearsal letter
S	subject
STG	Subordinate Thematic Group
TS	tritone substitute, as in TS(V ⁷)—tritone substitute chord for V ⁷ .
va	viola
vc	violoncello
vn1/vn2	violin 1/violin 2

SIGNS

a, b, . . . m	designations for themes as given in Appendix A; used with or without PTG or STG as a prefix.
d', g', etc.	varied forms of themes.
a ¹ , a ² ; k ¹ , k ²	first and second ideas, respectively, of theme a and theme k.
C4, C5, etc.	octave designations for pitches where middle C is C4.

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INTRODUCTION

Comprehensive descriptions of tonal structure in late-romantic works are infrequent in the analysis literature. Often, the deterrent is not the difficulty of demonstrating tonal coherence in a particular composition, but the possibility that such a demonstration may prove to be an object of purely intellectual intuition removed from the listener's musical reality. Historians of nineteenth-century music generally maintain that as the traditional paradigms for large-scale tonal structure declined in use tonal coherence was superseded as the primary goal of pitch organization by a new sophistication of motivic process in late-romantic composition.¹ Carl Dahlhaus argues, "the real question is whether a complex tonal configuration was 'composed' at all, in the sense that the piece would fall apart structurally without it" (Dahlhaus 1989, 381).

The composer's intention is reasonably allowed as a point of departure in analyzing a piece, if not as evidence of what was actually composed. Schoenberg believed that music composed within the major-minor tonal system would always require attention paid to tonality's structural function. In passages scattered throughout his *Harmonielehre* he philosophizes on the structural demands of

¹See, for example, Dahlhaus 1989, 368-79.

tonality. One such passage interrupts his discussion of techniques for modulation to the closely related keys; on the subject of analysis of modulatory passages, he remarks:

Analysis would far better show *why* (yes, *why!*) a passage turns in a certain direction. And, since the method of harmony instruction is synthetic, the directions for the use of modulatory means must proceed from the '*because*'! (Schoenberg 1978, 163).

Insomuch as he desires that the student gain a feeling for whether to modulate directly or to enrich a modulation with an intervening key, he comments:

In composing we must have the simple as well as the complicated possibilities at our disposal. Whether we use the latter or the former is perhaps sometimes only a question of taste; *often, however, it is also a question of structure* [emphasis mine] (Schoenberg 1978, 171-72).

Lest we think that he is describing only a traditional, restricted style of tonal composition, he says:

It will be found curious, in a text whose purpose is presumably to explain the most up-to-date harmonies, to hear these 'old-fashioned views'. But these views are not a matter of fashion; they are just old. And herein lies their value. They contain something that will perhaps be eternal or at least of such long duration that we may just as well say eternal. It will not, however, be the laws that are eternal: Not that one must modulate gradually because it is thus better understood. Nor that one must bind successive events to the initial ones by means of the relationships. Nor that our understanding requires logical presentation. Perhaps [the eternal is] not even that which is general in these laws. *Yet it is at least the circumstance that the work of art will always mirror our modes of thought, our perceptual and conceptual powers, and our feelings—that these are what we always have to look for when we analyze* and not, say, that 'the diminished seventh chord may yet even . . .' [emphasis mine] (Schoenberg 1978, 164).

There is a Kantian cast to Schoenberg's view of the principle of causality as fundamental to our perceptual and conceptual makeup. In the introductory

chapter on modulation in the *Harmonielehre*, he summarizes the belief thus:

[Our logic] cannot imagine that there are causes without effects. Consequently, it wants to see effects from every cause, and in its works of art it arranges the causes in such a way that the effects visibly proceed from them (Schoenberg 1978, 164).

In the same chapter, Schoenberg prescribes that modulations to remote keys need to be “*perceived* as consequences of the initial events” [emphasis mine]. As an illustration of what we are to listen for when we analyze, he gives the example of a composition (by Brahms) in which the relationship between the keys of the principal and subsidiary themes is a large-scale manifestation of a surface-level motive prominent near the beginning of the composition (Schoenberg 1978, 164).

Therefore, even when analyzing late tonal music, Schoenberg sought a cause-and-effect relationship between the elements of tonal structure, and between tonal elements and other structural parameters.

Schoenberg’s belief in the necessary structural role of tonal process in tonal music is easily overlooked, because it is not a belief that he would continue to expound. His later pedagogical and polemical writings are dominated by what became a more urgent concern—the need to defend twelve-tone composition against those who would decree that major-minor tonality is a *sine qua non* of musical form. It is not surprising then that, after the third edition of the *Harmonielehre* (1922) and with the exception of *Structural Functions of Harmony* (completed 1948 and first published 1954), the principal compositional processes described in Schoenberg’s theoretical writings are as applicable to nontonal as to tonal music. His treatments of topics such as contrapuntal technique, the

formative potentialities of thematic components, “developing variation” of motives, and the “musical idea” give implicit support to the notion that tonality is not indispensable to musical form.

On at least one occasion, however, the two topics, tonal structure and defence of nontonal music, intersect in Schoenberg’s writings. In a short 1925 article entitled “Tonality and Form,” he attempts to confound his detractors on their own ground by claiming that when he did write tonal music he fulfilled tonality’s demands with respect to form better than those composers currently claiming to be the champions of tonality do. Having pointed out that skill in creating continuity between thematic statements is the fundamental issue in teaching composition, he then establishes his credentials on what he considers to be the more rarefied issue of tonality thusly:

In my *Harmonielehre*, I also analyze the function of tonality and show what the tasks of a composer are who wishes to make use of the medium. Tonality does not only serve; on the contrary, it demands to be served. And that is not so simple as the decreeing committee thinks. I am probably the last of the modern composers who has occupied himself with tonal harmony in the sense of the oldest masters. That this circumstance is not heeded nor understood is not my fault. Those who examine in my First String Quartet [1904-05] or in my *Kammersymphonie* [1906] the relation of the keys to each other and to the incident harmony, will get from them some conception of the demands that are made, in the modern sense, on the tonal development of a harmonic idea. Perhaps they would also understand why a step must be taken from thence onwards, which the critics in question would gladly reverse (Schoenberg 1984, 256-57).

Although the article as a whole makes clear that Schoenberg did not regard tonality as essential to all music, this statement affirms that he considered tonality, when used, to be an exacting process with obligatory formal demands that were

never abolished. His advice, if one wishes to understand tonal music in the modern era, is that one should study “the relation of keys to each other and to the incident harmony” in the two milestone works of his first style-period that he names.

The present study takes up the challenge contained in the quotation by analyzing Schoenberg’s First String Quartet, op. 7, also referred to as the D-minor Quartet. The study will focus on foreground harmony in relation to large-scale tonal structure and on both levels of harmonic structure in relation to the motivic-thematic design. Chapter 1 begins by summarizing the thematic design of the work as known from Schoenberg’s own analysis, and continues with a survey of latter-day analyses of motivic and tonal processes in the quartet. Chapter 1 then establishes terms of reference for discussing foreground harmony and a methodology for explaining large-scale tonal relationships in late-romantic music. Both Schoenberg’s theory and present-day theories of tonality are considered. Chapters 2-5 present a detailed and comprehensive analysis of tonal process in the quartet at all structural levels. They show a correlation between surface-level harmony and large-scale tonal design, and gradually qualify the assumption that the composition sits in the key of D minor in the conventional way. The concluding chapter summarizes evidence that perception of the tonal plot of Opus 7 is essential to an understanding of the work’s coherence.

CHAPTER 1

THEORETICAL BASES

Arnold Schoenberg composed his String Quartet, op. 7 between March 1904 and 26 September 1905 amid continuing work on the songs Opp. 6 and 8 (Benson 1993, 375).¹ The *première* of Opus 7, played by the Rosé Quartet, took place in Vienna on 5 February 1907 with Gustav Mahler among those in attendance. The next day Mahler wrote to Richard Strauss and recommended that Schoenberg's quartet be performed at a festival planned for Dresden that summer. As a result, the second performance, again by the Rosé Quartet, took place in Dresden at the beginning of June 1907 (Stuckenschmidt 1977, 90-91).

The first audiences found the work difficult to comprehend.² Unlike the earlier completed instrumental works of Schoenberg's maturity, Opus 7 has no explicit programme.³ It employs an advanced harmonic idiom and extensive

¹The approximate starting date for the composition of Op. 7 was derived by Mark Benson from studies of Schoenberg's sketches (Benson 1993, 380-81).

²The reception of Schoenberg's First Quartet in 1907 is described in Reich 1971, 20-21 and in Stuckenschmidt 1977, 90-91. Excerpts from contemporary periodical reports are quoted in the *Sämtliche Werke*, Vol. B20, pp.XV-XVI.

³A one-page text in Schoenberg's handwriting glued to the back cover of his 1904-05 Sketchbook has been identified by Christian Martin Schmidt as a concealed programme for Opus 7. Schmidt's transcription of the programme is given in his 1986 article and in the *Sämtliche Werke*, Vol. B20, pp. 109-10; an English translation is given in Benson, 379. Benson's article demonstrates that the programme was invented after Schoenberg reached m.72 and during a period in which he put the

passages in dense polyphonic texture; moreover, it is approximately fifty minutes in duration, proceeding without break. In its use of a time-honoured medium for absolute music, in its ever-more concentrated harmonic idiom, and in its spaciousness, Opus 7 was a landmark achievement in the career of the thirty-one-year-old composer. Its richness has continued to challenge performers, listeners, and analysts.

THEMATIC DESIGN OF THE FIRST QUARTET

Existing studies of Schoenberg's First Quartet take as their starting point his own analysis, the two principal versions of which are readily accessible (Rauchhaupt 1971, 11-13 and 35-42).⁴ The first of these was intended to prepare listeners for the 1907 Dresden performance (Schoenberg 1907). The second is contained in "Notes on the Four String Quartets" (1949), in all likelihood prepared to accompany a recording.⁵ The two versions are purely thematic

quartet aside, despite the fact that he continued to have time to work on other compositions (Benson, 381-82). Benson argues that the literary programme inspired the continuation of the first half of the composition, hitherto stalled, and that a subsequent weakening of the programme's ability to spark Schoenberg's imagination accounts for deficiencies Benson perceives in the second half (beginning at r.K). This dissertation will demonstrate a thread of coherence that is fulfilled, not weakened, in the second half.

⁴The second of the principal analyses is also available in *Self-Portrait* (Schoenberg 1988, 71-75) and in a recent dissertation (Niederberger 1991, 96-100), in both cases reprinted from Rauchhaupt. In addition to the principal analyses, a short commentary that Schoenberg prepared to accompany the private recording of his complete string quartets made by the Kolisch Quartet in December-January 1936-37 is given in Steiner 1978, 132-33. Brief remarks by Schoenberg on Op. 7 may be found in Schoenberg 1984, 42-46 and 61-67.

⁵Ursula von Rauchhaupt gives the origins of the two analyses translated and/or reprinted in her study as Vienna 1906 and Los Angeles 1936. Walter Frisch redates them as 1907 and 1949 (Frisch 1988, 291, n.; 1993, 189, n.). 1949 was the year the ALCO record company made firm plans to issue commercially the recording by the Kolisch Quartet (see n. 4) (Steiner, 130).

guides—neither situation requiring descriptive notes provided an appropriate context in which to describe tonal and harmonic processes—and are the same in their essentials. Both divide the composition into four parts: they describe Part I as a sonata form, and refer to Part II as the Scherzo (or Scherzo and Trio), Part III as the Adagio, and Part IV as the Rondo (or Rondo-Finale). Themes are quoted and categorized according to their roles in the four traditional movement types. No measure numbers are given for the beginnings and endings of formal sections.⁶

The composition is not merely a multi-movement work whose four movements are played without pause. In the introductions to the 1907 and 1949 analyses of Opus 7, Schoenberg points out that intricate thematic interrelationships unify the four-movement plan within a single movement. Bearing in mind the Lisztian tradition of superimposing the style characteristics of the four-movement sonata cycle on a one-movement sonata form, and the models provided by other Schoenberg works,⁷ later commentators have attempted to chart the functions of themes and sections as they pertain to the three divisions of a single sonata-form

⁶The 1949 version differs from Schoenberg's 1907 analysis in that it includes brief verbal descriptions of two development sections only referred to in the 1907 analysis, and for Part IV replaces quotation of themes with verbal description. The two analyses disagree on one particular: the starting point of the "Trio" of Part II. The first analysis quotes the theme that begins in m.F44 as the theme of the Trio; the second quotes the material at m.F5 as the beginning of the Trio. As a tonally and thematically rounded small-ternary form begins at m.F44, whereas the passage at mm.F1-43 has the character of a transition passage, I have chosen to adopt the first analysis. This accords with Friedheim (1963, 299), Frisch (1988; 1993, 188), Niederberger (1991, 99), and Benson (377). Hattesen, on the other hand, follows the 1949 analysis (1990, 274).

⁷*Pelleas und Melisande*, op. 5 (1902-03) and the *Kammersymphonie*, op. 9 (1906) also amalgamate the traditional four movements within a single sonata-form movement.

movement in addition to their functions within the four-movement sonata cycle.⁸

The analytical task of representing how Schoenberg accomplished this feat is very nearly as formidable as the compositional task of integrating the two forms. As Michael Cherlin has commented:

The real trick—and it is a very difficult task indeed—is to project shifting or elusive musical boundaries through which successive spans are subsumed into larger contexts of musical space. It is through such shifting contexts that we reevaluate the meanings of the past and also reconstitute protensions toward the future. . . . The static or tabular model [of charting musical form] misrepresents the processes at work in each of the major works up until the Second Quartet (Cherlin 1994, 180).

With acknowledgement that a “tabular model” cannot convey all formal subtleties, I draw the reader’s attention to Appendix A, which gives in chart form the designations that I will use for themes and sections of the quartet throughout this study. The sections of the one-movement form are delineated by the shaded bands on the left: Exposition–Development–Recapitulation—[Second] Development—Coda. The four “movements” (Schoenberg’s Parts I through IV) are named in bold upper-case letters across the tops of sections. Up until m.C1, the one-movement sonata form and the first movement of the four-movement format share all components. After this point, some passages belong more clearly

⁸The exception is Benson who, unlike other analysts, believes that the two major divisions of the quartet, Parts I-II and Parts III-IV, lack integration—that each operates “in its own thematic and formal world” to the extent that the work has a “double personality.” Following the model of analyses of *Verklärte Nacht* by Philip Friedheim and Richard Swift, Benson suggests that the overall form of Op. 7 is not a single sonata form but a pair of side-by-side sonata forms (Benson 1993, 394). In this scheme, Sonata II begins at the natural dividing point, r.K. The large outline of Sonata II then consists of principal theme at r.K (Adagio 1), subsidiary theme at m.K52 (Adagio 2), development section at r.L, “lyric interlude” at m.L52, and recapitulation of principal and subsidiary themes at r.M (Rondo). The Rondo movement fits particularly well into the two-sonata-form scheme. The major flaw of this scheme is the fact that the recapitulation of Sonata I’s subsidiary group (mm.L52-91) occurs within Sonata II.

to one of the four movements than to the over-all sonata form: they are shown to be "Interpolations" within the sonata form, with their designations italicized.

Even so, the main theme of the Scherzo movement interpolated within the Development section is a recasting or quasi-development of an earlier theme, and the Adagio interpolated after the Recapitulation of the Principal Thematic Group (PTG), by incorporating themes d and e from the Subsidiary Thematic Group (STG), continues the process of recapitulation. Certain other passages after m.C1 belong only to the large-scale sonata form and not to any of the last three movements. Their designations begin at the same left-hand point as headings prior to m.C1: Development resumed, Recapitulations of the PTG and STG, the bridge to the Coda, and the Coda.

Among the passages which are difficult to represent are those that accomplish transition between the four-movement plan and the sonata form. The most notable of these is the transition from the interpolated Scherzo movement to the resumption of the large-scale Development section, which occurs in two stages: mm.G1-33 and mm.G34-111. Already at m.G34 a resumption of developmental style can be perceived, but at the same time this passage serves as the thematic rounding-off of the Scherzo-and-Trio movement; at m.H1 the large-scale Development section resumes in earnest.

The fourth movement, Rondo-Finale, is difficult to categorize within the one-movement form. Its refrain is recapitulatory, primarily of material new to the second half of the composition, m.K1 ff., rather than original thematic material.

Its episodes, which emphasize material from the second half but incorporate materials from the entire work, are developmental in character. As a whole, the movement is coda-like in that it is an appendage following the Recapitulation of the STG.⁹ I have opted to refer to the Rondo-Finale as a “Second Development” section within the sonata form rather than a coda because it provides development of themes not yet presented at the point of the central Development section, and because a distinct coda follows it.

While limited in its ability to convey these and other nuances with total clarity, the chart in Appendix A will serve to aid a reader in following the analytic discussion of this dissertation. Abbreviations that will be used to designate themes are based on designations in this chart; for instance “PTGb” refers to theme b of the Principal Thematic Group. It should also be noted that throughout this paper, when the words Exposition, Development, Recapitulation, and Coda are capitalized, they refer to the parts of the overall sonata form. The discussion assumes that the reader has at hand a score with rehearsal letters and measure numbers as in the original edition or in the Kalmus reprint of the original edition.¹⁰ Appendix B is a list of corrections to pitches and rhythms in the original edition made by the Complete Works edition.

⁹In a 1912 article, Webern describes the fusion of the four movements into a single movement, and suggests that the Rondo-Finale may be regarded as an extended coda (Stuckenschmidt, 83).

¹⁰The String Quartet, op. 7 was first published in Berlin in 1907 by Dreililien (Stuckenschmidt, 52). In this edition and in the Kalmus reprint, measure numbers begin again at each rehearsal letter. The *Sämtliche Werke* edition numbers the measures continuously from the beginning while retaining the rehearsal letters.

LITERATURE SURVEY

Among prior modern-day analyses of Schoenberg's First Quartet, those that encompass the structure and continuity of the work as a whole fall into two categories. Some examine the entire composition purely from a thematic-motivic point of view and are not concerned with tonality as a structural parameter. Other analyses assume the existence of large-scale tonal structure, but confine discussion to selected passages, being therefore unable to demonstrate a tonal design that accounts for the entire piece.

Analyses falling into the first category include the discussion of the First Quartet contained in Philip Friedheim's pioneering survey of Schoenberg's first-period music (Friedheim 1963). In his introductory chapter, Friedheim postulates an evolutionary course, its beginning already anticipated in Beethoven, in which musical form gradually relies less on tonal relations and more on a tight motivic structure as a means of coherence (Friedheim, 12). An outstanding, advanced exemplar of the new attention to motivic process is the music of Brahms, a formative influence on Schoenberg's style (Friedheim, 20). On the other side of the coin—the decline of tonal structure—the evolutionary impetus is said to spring from Wagner. In Wagner's music dramas, "the different keys correspond to specific programmatic associations, and the direction of the libretto conditions their appearance" (Friedheim, 38). Ambiguities of tonal function in Wagner's scores are, however, balanced by a "symphonic development technique," relying on thematic interrelations that serve as the unifying device on the largest scale

(Friedheim, 36).

Therefore, Friedheim's analysis of the First Quartet stresses the subtleties of its thematic structure, reveals unifying pitch and rhythmic motives, and draws attention to passages of tonal instability. His chart of the formal structure lists main keys of main themes, but he says nothing about the structural relations of these keys.

Two other analysts, Jim Samson and Walter Frisch, reinforce the view that tonality is not a structural parameter in Schoenberg's First Quartet (Samson 1977; Frisch 1984, 1988, 1993). Samson, in remarks on Schoenberg's first-period tonal masterworks, lists constructive methods "which gradually ousted tonality": "closely integrated thematic process achieved through elaborate techniques of motivic variation and transformation," "renewal of contrapuntal independence," and "use of characteristic sonorities as non-diatonic referential features," as well as "structures based on symmetry" (Samson, 95). "Total thematism" in these works is considered to be both a cause and a result of the decline of tonality (Samson, 100). In Opus 7, the decline of tonality is said to be evident in the fact that in many passages tonality is obscure and in all passages, not just formal development sections, key sense is unstable (Samson, 96). Samson's chart of the main keys of the quartet attempts to discern a hierarchy of key relations but leaves the impression that much of the key scheme is either arbitrary, or conventional in a routine way (Samson, 102).

Frisch provides a detailed examination of the motivic and harmonic

construction of the PTG of Opus 7, basing his remarks on Schoenberg's understanding of Brahms's use of motivic processes, and on advanced principles of chord construction discussed in the *Harmonielehre* (Frisch 1984, 1993). Our understanding of large-scale motivic-thematic process and of Schoenberg's compositional process in the creation of the motivic-thematic plot are enhanced by Frisch's discussion of the sketch material for Opus 7 (Frisch 1988; 1993, 201-211). Of the sketch materials chosen for discussion, he notes that they reveal more vacillation in Schoenberg's mind on thematic than on tonal elements. Although this difference may only support the conclusion that spinning out the tonal plot was, for Schoenberg, a more intuitive process than that of keeping the motivic plot on track, Frisch uses the difference to infer that in Schoenberg's quartet, "harmony no longer plays as significant a role in the articulation of form as in Beethoven (or Mahler)," and therefore that "greater structural weight has to fall on large-scale thematic relationships" (Frisch 1984, 312). He details the large-scale thematic plan of the quartet, but refrains from even a cursory indication of keys.

The most comprehensive discussions of thematic-motivic process in the First Quartet are provided by two German analysts, Heinrich Hattesen (1990) and Rainer Wilke (1980). Hattesen's point of departure is the belief that harmony in the style of this work is contingent upon the unfolding of theme. He frequently quotes Schoenberg's *Fundamentals of Musical Composition* (Schoenberg 1967), drawing analogies between Schoenberg's theoretical prescriptions for thematic

design and the course of thematic events in the quartet. Charts interspersed with Hattesen's verbal discussion categorize sections of the work down to the level of the rhythmic structure of phrases. In these charts, keys are sometimes noted in a cursory fashion. For instance, a chart of the STG in the Recapitulation has some keys noted, but there is no accompanying discussion of the purpose served by the considerable differences between the tonal design of the STG in the Recapitulation and that of the same thematic material in the Exposition. Hattesen defines as the *Grundgedanke* of the composition its many-layered possibilities for interpretation of form derived from thematic-motivic relationships. When he comments that the Finale synthesizes diverse materials as a resolution of internally envisioned goals, he is thinking only of the motivic-thematic plot (Hattesen, 303).

Wilke's 1980 analysis of developing variation technique in the First Quartet avoids any reference to tonality or harmony. It stresses the continuous evolution of motivic forms, emphasizing that this process cuts across boundaries separating conventional formal components such as first theme or second theme, exposition or development (Wilke 1980, 143). Example 1-1 is based on his discussion of the PTG and his discussion of the transition to the STG (Wilke, 134-44). As marked in Ex. 1-1a, the Principal Theme (PT) is a continuous reformulation of combinations of IC5 and IC1, particularly combinations of IC5 and a semitone that together form IC6. The opening of the Fugato, a passage that Schoenberg analyzes as the transition to the Subsidiary Group, marks the first change in the thematic and textural continuity of the work thus far. Yet as Ex. 1-1b shows, the

motivic bases of countersubject and subject of the Fugato section are intervals that originated in the PT. The role of the Fugato in making transition from the tonality of the PTG to that of the STG is not dealt with by Wilke.

Ex. 1-1 Intervals basic to Op. 7 in Wilke's analysis.

(a) Principal Theme

1 2 3 4 7 8

— IC5 — — IC5 — — IC6 —
 ST- IC6 ST- IC6 — IC1 — IC5 - STs -

(b) Fugato (transition to STG)

A 1 2 3 4 5

— IC5 — — IC5 —
 IC6 - STs - IC6 - ST

Countersubject Subject

IC5 - ST ST - IC5 - IC1
 — IC6 — — IC6 —

Despite the chorus of opinion that thematic and motivic process in Schoenberg's First Quartet supplant tonal design in structural importance, two analysts, Thomas Clifton (1966) and Severine Neff (1984), are of the opinion that the work has large-scale tonal organization, and a third, Maria Niederberger

(1991) purports to show the relation of keys to foreground harmony. All three differ, however, in their methodologies and in their basic understandings of the tonal design, and none provides a comprehensive tonal analysis of the entire work.

Clifton's aim is to categorize the types of ambiguity inherent in Schoenberg's first-period harmonic style. At the outset of his dissertation he states:

Considered on the level of the largest span, Schoenberg's compositions . . . reveal an unequivocal sense of order and tonal logic. It is precisely this foundation which supports the complexities and ambiguities of the middleground and foreground. Accordingly, these levels will receive the greater share of attention in the following pages (Clifton, 19).

The First Quartet is among the works Clifton analyzes to support his thesis that Schoenberg's harmonic style is deliberately ambiguous at middleground and foreground levels. He employs Schenkerian-style reductions of selected passages to demonstrate subtle use of the principles of functional harmony in places where other analysts have considered harmony to be eclipsed by total thematicism. Clifton's demonstrations of large-scale, directed motion between particular keys are not always convincing, but he does begin the task of relating keys to foreground harmony. Some of his observations will be discussed in the main body of this paper. Clifton's analysis is not able to substantiate the notion of tonal order and logic in Opus 7 at the deepest level because he does not provide a complete analytic narrative.

Severine Neff's 1984 article and Maria Niederberger's 1991 dissertation both use two of Schoenberg's theoretical concepts to understand pitch organization

in Opus 7: the concept of *Grundgestalt* (“basic shape”) and the concept of “regions” (diatonic collections of varying distances from the collection associated with the main tonic). The analysts’ differing identifications of the *Grundgestalt*, and Niederberger’s idiosyncratic application of the term “region,” result in two different concepts of foreground harmony and large-scale coherence.

Neff’s analysis focuses on mm.1-30. Example 1-2 is derived from her discussion. She identifies as the *Grundgestalt* of Opus 7 a set of three motives—a, b, c—that originate in mm.1-3 of the PT and coincidentally have strong similarities to Wilke’s choice of basic intervallic components (Neff 1984, 13-14).¹¹ As described by Neff, the essence of motive a is its semitone, of motive b its tritone, and of motive c its perfect fifth. Unlike Wilke, Neff not only traces transformations of these intervallic shapes, but also identifies foreground harmonies and aspects of the larger tonal structure that derive from the three intervals basic to the PT. Within mm.1-3 she observes three pcs inconsistent with the pure D-minor scale: in m.1 vn.1, motive a is produced by C[#]; in mm.1-2, altered forms of motive b (b¹ and b² each contain a tritone) are produced by G[#] and B[#] in the va accompaniment. Two of the altered pcs, G[#] and C[#], as well as being essential to their motive forms, create altered versions of supertonic and mediant harmonies (Neff, 19). With respect to the composition as a whole, Neff briefly mentions that G[#], C[#], and B[#] may be thought of as preliminary references to three regions prominent in the larger tonal plan of the work: A major, D

¹¹Neff does not refer to Wilke’s analysis.

major, and C# major respectively (Neff, 17). Although she concludes that “Schoenberg generates his material for the piece out of the harmonic, linear (melodic), and regional (tonal) transformations of the basic shape” and that “he consciously worked with the motives of the basic shape to ensure coherence in his work” (Neff, 45), she gives no substantial evidence of tonal coherence beyond m.30.

Ex. 1-2 Intervallic and tonal elements of the *Grundgestalt* in Neff’s analysis.

Niederberger’s analysis uncovers another candidate for the role of *Grundgestalt* of Opus 7 that has implications for the foreground harmonic idiom and large-scale relationships. Her choice of *Grundgestalt* is the unidirectional series of leaps alternating perfect fourths and major thirds that is first heard explicitly in the vc mm.8₄–12₁, there presented successively in two transpositions. Niederberger is the first to reveal that the P4+M3 idea (as I shall refer to it)¹² is a

¹²I here adopt Clifton’s designation for the theme (Clifton, 199).

melodic framework behind all main themes, including the PT as presented in the opening measures. Example 1-3, which reproduces her Ex. 7b, shows how four consecutive notes of the P4+M3 shape lie hidden within the vn1 melody of mm.1-3—its first two pitches disguised as embellishing tones to the basic harmony. Other segments of the P4+M3 idea, and transpositions of these segments, are prominent as the melodic framework of STGd (its consequent phrase, mm.A61-63), STGe (mm.A71-72), the Scherzo theme (mm.E1-3), and the Trio theme (mm.F44-45).

Ex. 1-3 *Grundgestalt* structure of the PT in Niederberger's analysis (Ex. 7b).



Niederberger shows that the P4+M3 idea has a direct or indirect effect upon choice of key in some passages, that it controls certain large-scale continuities between distant sections of the work, and that it saturates the foreground harmony of particular passages. A P4+M3 succession constitutes a complete octatonic collection when taken to the eighth pitch and therefore has three distinct transpositional forms. Niederberger refers to the three transpositions of the P4+M3 idea as three “regions.” She thereby seems to imply that tonal space in this work is demarcated by the three octatonic collections. As she

describes it, the three octatonic regions account for the semitone transpositions of the PT within the PTG as a whole: from D minor at m.1 to E $\flat$ minor at m.30 and to C $\sharp$ minor at m.54.

Particular pairs of themes are linked in a coherent way because the second-occurring theme presents the continuation of the P4+M3 line begun by the prior theme, perhaps even in the precise register that can be expected from the unidirectional line ("*Grundgestalt* complementation"). To cite just two instances: the beginning pitch of the first Subsidiary Theme (STGd), G5, is the next element in the P4+M3 transposition that underlies the PT in D minor (Niederberger, 19) (cf. Ex. 1-3 and m.A57); the four-note P4+M3 segment that underlies the Scherzo theme complements the four-note segment that underlies STGe, although not in the precise register (Ex. 1-4) (Niederberger, 21). Observations such as these have definite but limited use in explaining the keys of themes and sections.

Ex. 1-4 An instance of "*Grundgestalt* complementation" in Niederberger's analysis (Niederberger, Ex. 10).

A 71 72 E 1 2 3 4

STGe Scherzo

The intervallic structure and limited transpositional property of the P4+M3

idea control foreground continuity in particular passages: the bridge to Fugato 1 (mm.85-96) and all three fugato sections of the quartet (Niederberger, 64-91).¹³ The fugato subject begins with the upward perfect-fourth leap. In Fugato 1 the initial dyads of four consecutive subject entries that constitute a given subsection of the fugue successively produce the ordered pc elements of a particular transposition of the P4+M3 idea (Niederberger, 70). When this occurs in Fugato 3, the dyads are even arranged registrally so that an actual ascending P4+M3 idea is traced (Niederberger, 88). Generally speaking, pitch levels of subject entries in the fugatos are motivated by the intent of tracing the P4+M3 idea across the contrapuntal texture as a whole. Less frequently does the P4+M3 idea account for continuity of harmonic progression.

There can be no doubt that the P4+M3 idea is motivic to Opus 7 at many levels. Even so, Niederberger's conclusion that it embodies "the relation of the keys to each other and to the incident harmony" in the First Quartet seems overstated. Her remarks on foreground continuity are limited to sections built from a particular motive, the fugato subject. Even in these sections, the discussion rarely accounts for vertical chord structures or their harmonic successions. The tonalities of many sections are not accounted for by *Grundgestalt* complementation. Moreover, after r.K, the role of the P4+M3 idea dwindles: it is limited to determining the starting pitch, register, and to a limited extent, the shape of the Adagio theme—and hence the Rondo theme, which uses

¹³The designations for these three sections adopted in the present dissertation, Fugatos 1, 2, and 3, are adapted from Niederberger. Their locations are given in Appendix A.

almost identical pitches (Niederberger, 43, 46-47). Therefore, much is left to say about the relation of keys to each other and to surface harmonies in this work.

THE FOREGROUND HARMONIC IDIOM OF THE FIRST QUARTET

Schoenberg's introductory remarks to his 1949 analysis of the First Quartet make retrospective reference to "greatly expanded melodies based on a richly moving harmony and new chord progressions; and a contrapuntal technique that solved problems offered by superimposed, individual parts which moved freely in more remote regions of a tonality and met frequently in vagrant harmonies" (Rauchhaupt, 36). These remarks distinguish the origins of foreground harmonies in two different types of texture in the work. In passages dominated by a principal melody, chords are extensions and chromatic alterations of the basic elements of functional harmony, and progressions are attenuations of the norms of functional harmony. In textures where the four parts are equal in interest, the superimposed melodies create vertical harmonies that tend to be functionally ambiguous chords and therefore keep key centre in constant flux between distant secondary tonalities.

If one is to identify a relationship between foreground harmony and the key scheme, it is first necessary to identify a characteristic idiom of the foreground that recurs throughout the work, in both types of texture. A good place to begin is the opening passage, where the texture is dominated by the PT. Two analysts have focused exclusively on the foreground idiom of the quartet: Christopher

Wintle in a discussion of the opening passage (Wintle 1980, 52-55), and Peter Schubert, in a discussion that ranges over the entire work (Schubert 1993, 305-12). Their findings are described below in preparation for my own characterization of the foreground.

Wintle's observations are based on Berg's harmonic reduction of the opening ten measures (Berg 1952, 192). Wintle compares these vertical harmonies with explanations of chord structures in Schoenberg's *Harmonielehre*, noting that the harmonic surface as construed by Berg contains a large number of three-note, four-note and even six-note whole-tone chords. He first deals with the same chords in m.1 that we already noted Neff examines in relation to the motivic content of mm.1-3 (Ex. 1-2). Wintle hears the whole-tone chords in m.1, a French augmented-sixth and an augmented triad, as a prefiguring of whole-tone chords in mm.8 and 9;¹⁴ Ex. 1-5, derived from his remarks, illustrates this. He points out that, just as in the examples of such chords in the *Harmonielehre*, these whole-tone chords arise in m.1 as a result of chromatic voice-leading elaborating the D-minor chord, and then take on independent, chordal existences in mm.8 and 9 (Wintle, 53-55).¹⁵ Wintle intends simply to demonstrate the possibility of using Schoenberg's harmony treatise as a starting point for analyzing his tonal music and therefore does not expand these observations on whole-tone harmony into an

¹⁴Neff also attaches significance to this relationship (Neff, 19, 23).

¹⁵It is in keeping with Wintle's and Neff's findings that Niederberger's analysis attaches motivic importance later in the work to a particular whole-tone chord that is also octatonic, the French augmented-sixth (Niederberger, 64-72).

analysis of the entire work.

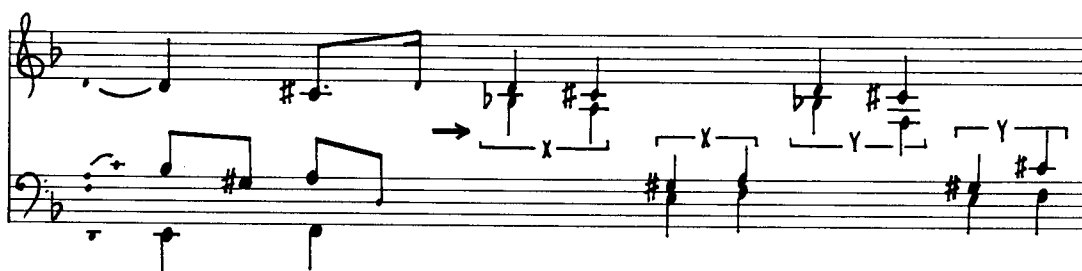
Ex. 1-5 Selected whole-tone chords in mm.1-9 in Wintle's analysis (after Berg).



Peter Schubert, in his study of foreground harmony in the First Quartet, attributes motivic import to the same m.1 sonorities as do Wintle and Neff, but deduces a very different description of the stylistic constant in the foreground. Whereas Wintle understands a type of chordal construction to be the stylistic constant, and Neff understands a set of discrete intervals derived from the PT to be the stylistic constant, Schubert conceives of two particular two-voice contrapuntal frameworks as the constant (Schubert, 306-11). He refers to a pair of horizontal lines in a recurring vertical interval succession as a “combination motive.” He discovers two combination motives embodied in the pair of augmented chords in m.1; these are summarized in my Ex. 1-6. Motive X is the vertical interval of a major third moving to another major third a semitone below or above; motive Y is the vertical interval of a major third moving to another major third a minor third above or below—particularly with the voices exchanged so that one voice leaps a perfect fourth, one moves by semitone, and one major

third is actually a minor sixth/augmented fifth (Schubert, 306-07).

Ex. 1-6 Schubert's analysis of "combination motives" in m.1 (Schubert, Exs. 16 and 17, adapted).



The large number of different major thirds in m.1 is, of course, related to the fact that the two simultaneities represent two whole-tone collections. But combination motives X and Y also occur in the quartet in pairs of harmonies that are not exclusively whole-tone. They occur in each of the three fugatos. Both the subject and countersubject of these passages contain the upward, semitonal voice leading that is part of motive X (see again Ex. 1-1b). Also, because the fugatos are saturated with the octatonic P4+M3 construct that Niederberger identifies, and because an octatonic collection contains four major thirds that are separated by minor third, motive Y is naturally present within the fugatos.

Motives X and Y also occur in other passages that are neither whole-tone or octatonic: in progressions of altered triads, in passages of vagrant harmonies, and in obviously non-functional, linear streams of similar chords (there are several passages, usually transitional in nature, that are streams of parallel augmented triads, major thirds, or minor sixths). Schubert's point is that these passages are

less easily justified as arbitrary chromatic voice leading, or by harmonic function, than by their preservation of the combination motive. He hypothesizes that it is because these voice-leading pairs are motivic that they are capable of holding remotely related chords together (Schubert, 312). Although he does not wish to add another contender for the designation of *Grundgestalt* of the work,¹⁶ Schubert tentatively suggests that in addition to a melody or a tonal process, *Grundgestalt* could possibly refer to a combination motive such as he has described (Schubert, 312).

The presence of combination motives in Opus 7 is indicative of the evolutionary state of harmony at the end of the tonal era: there have evolved so many diatonic and chromatic variants of standard chord functions and so many possibilities of harmonic progression that unity of foreground harmony requires selection of a particular group of related chord types and modes of progression. In Schoenberg's music, we may suspect that the selected group will include chords and progressions that are reflected in an initially established motive and that are in a cause-and-effect relationship with large-scale tonal structure. Therefore, if one is to identify a relationship between foreground harmony and the tonal scheme, it is necessary not only to identify recurring foreground features common to varied textures but to identify them in terms that can be transferred to the level of key relations. The task of finding common features between foreground harmony and key relations requires a harmonic rather than a purely intervallic description of the

¹⁶Schubert cites Neff's but not Niederberger's study of Op. 7 (Schubert, 306).

characteristic sound of the foreground. To define these common features, I will invoke seven principles. These principles will be illustrated by Ex. 1-7, parts a-w, which present models and examples of the foreground idiom of Opus 7.

Ex. 1-7 a-w Models and examples of the foreground harmonic idiom of Op. 7.

(a)

A 71 72 73 74 75

C: I - IV⁷ - bVII - biii⁶ - (o7) - bVI[#] - bII[#]⁷

D: bii⁶ - II - I⁷

76 77 78 79

V - I^{b7} - IV - bVII - biii

PRINCIPLE 1: Authentic progression. *The authentic progression is characterized by root movement by fifth downward, and by scale-degree tendencies $\hat{7}-\hat{1}$ (the characteristic semitone of authentic progression), $\hat{2}-\hat{3}$, and $\hat{5}-\hat{5}$ (or $\hat{5}-\hat{1}$). A pattern of root movement by fifths modelled on the authentic cadence V-I, but variously chromaticized and extended with chromatic roots, generates much*

form of subdominant harmony (described further, below, in connection with Principle 6). The chord reached at m.60 is two perfect fifths below the tonic, therefore iv of IV, and approaches IV in m.61. In mm.61-62₂, IV of E $\flat$ is expanded by means of a common-tone augmented sixth to A $\flat$ harmony (G $\sharp$ =A $\flat$). The subdominant-function harmony that follows at the beginning of m.62 has the addition of $\hat{2}$, an element of dominant harmony; it is therefore a less pure form of subdominant harmony, ii $\overset{4}{2}$.

PRINCIPLE 3: Mixed-function chords. *The archetypal mixed-function chord is the leading-tone diminished-seventh chord: its resolution to the tonic triad mixes two scale-degree tendencies characteristic of the authentic progression— $\hat{7}$ - $\hat{1}$ and $\hat{2}$ - $\hat{3}$ —with two scale-degree tendencies characteristic of the plagal progression— $\hat{4}$ - $\hat{3}$ and $\flat\hat{6}$ - $\hat{5}$ (Harrison 1994, 64-65).*

The effect of a mixed-function chord depends upon the relative strengths and voicings of scale degrees. $\hat{7}$ is an overpowering conveyer of dominant function; therefore, despite the presence of an equal number of subdominant-function as dominant-function scale degrees, vii $\overset{\circ}{7}$ is a dominant-function chord with shades of subdominant function (Harrison 1994, 66). In Ex. b, the presence of $\hat{4}$ and $\flat\hat{6}$ in the penultimate chord of the excerpt, vii $\overset{\circ}{7}$, is a reflection of prior subdominant harmony, but dominant function prevails at that moment. Scale degrees in the bass voice carry more functional weight in mixed-function chords than do those in upper voices (Harrison 1994, 60-61); therefore, in vii $\overset{\circ}{3}$ ⁴ (not shown) the strength of subdominant function is equal to, or greater than, the

strength of dominant function, despite the presence of $\hat{7}$ (Harrison 1994, 66-67).

(c) (i) (ii) (iii) (iv) (v)

G/d: $vii^{\circ 7}$ V^{b9} — V^7 $ii^{\circ 7}$

Ex. c. Two basic pentachords of mixed function derive from the minor-third stack $\hat{7}-\hat{2}-\hat{4}-\hat{b}6$. One results from adding the pitch a major third below the third stack— $\hat{5}$ (Ex. c (ii)); the other results from adding the pitch a major third above the third stack— $\hat{1}$ (Ex. c (iii)). With the addition of $\hat{5}$, the chord's dominant function is increased; with the addition of $\hat{1}$, its subdominant function is increased. When $\hat{5}$ is added, the element at the opposite extreme, $\hat{b}6$, is frequently, but not necessarily, omitted (Ex. c (iv)); both V^7 and V^{b9} are encountered. When $\hat{1}$ is added, the element at the opposite extreme, $\hat{7}$, is almost always omitted, for the sake of a subdominant-function chord (Ex. c (v)); therefore, the five-note chord at (iii) has no conventional symbol.¹⁸

PRINCIPLE 4: Multiple roots for the diminished-seventh chord (Schoenberg 1978, 193-95, 366-67, 380-81). *Being symmetrical, the leading-tone diminished-seventh chord may attract any or all of four potential roots of dominant function, one root a major third below each apparent $\hat{7}$.*

¹⁸Jean-Michel Boulay further discusses the theoretical bases of five- and six-note "octatonic" harmonies (Boulay 1992, 92-93, 99-102).

Ex. d. Characteristic of Schoenberg's tonal harmonic style is the reoccurrence of a diminished-seventh chord with successive, changing roots (Ex. d (i)). When all four potential roots are used in succession, any two, or all three, of the four-note minor-third cycles are united: one minor-third cycle being the basic diminished-seventh chord, another minor-third cycle made up of its potential roots, and—if the minor-ninth chords are imagined as rooted on dominant pitches—the third minor-third cycle made up of the potential (or realized) tonic pitches (Ex. d (ii)). As Ex. d (ii) also shows, the succession of potential dominant-tonic pairs belonging to one diminished-seventh chord produces the P4+M3 idea of Opus 7 (Clifton 1966, 202; *cf.* Schoenberg 1978, 381, Ex. 314 i).¹⁹

(d) (i)



(ii)



Ex. e. In this excerpt from Fugato 2 of the quartet, the compatibility of the P4+M3 idea with a single diminished-seventh chord is made evident.

Overlapping entries of the fugato subject, the first beginning C-F and the second

¹⁹A variant way in which Schoenberg harmonizes the P4+M3 idea as a bass line in Opus 7, incorporating the same diminished-seventh chord in every harmony (rather than in just odd-numbered chords), is discussed in Chap. 2 in connection with m.8, beat 4, to m.12.

A-D, trace a four-note segment of the P4+M3 theme. The perfect-fourth leaps imply tonics F, then D for the successive subject entries. In m.40, E-G-B $\flat$ -D $\flat$ is the common diminished-seventh chord of these two keys, with C ($\hat{5}$ of F) added in beat 1 and A ($\hat{5}$ of D) added in beat 3.

(e)

C 39 40

F: I V of I of V $\flat 9$

D: I V $\flat 9$

(f)

C 59 60 63

d/D: V $\flat 9$ I V 7

64 65 D 1 2

d/D: V $\flat 9$

F: vii $^{\circ 7}$ I

Ex. f. In another excerpt from the quartet, the diminished-seventh chord subset of V^9 of D, $C^\sharp-E-G-B\flat$, is used to pivot from D major to F major without substituting the alternate root, $\hat{5}$ of F. The pc $G\flat$, included in the ostinato figure, is yet another of the four possible roots of this particular diminished-seventh chord ($\hat{5}$ of $C\flat/B$), but is not so realized here. In this passage, it eventually resolves downward as $\flat\hat{2}$ of F (mm.C65-D1).

PRINCIPLE 5: Chromatic "projections" (Harrison 1994, 115-23).

Chromatic projections (or simply "projections") are parallel-motion accompaniments of minor-mode $\hat{6}-\hat{5}$ (the characteristic tendency-tone resolution of subdominant function) or major-mode $\hat{7}-\hat{1}$ (the characteristic tendency-tone resolution of dominant function). Their occurrence accounts for many instances of $\flat\hat{2}$, $\sharp\hat{2}$, and $\sharp\hat{4}$.

Chords of dominant function containing chromatic projections (Exs. g-q):²⁰

(g)

D/d: $vii^{\circ 7}_{\flat 3}$ = bII^{+5}
TS(V⁷)

Ex. g. When $\flat\hat{2}-\hat{1}$ replaces diatonic $\hat{2}-\hat{1}$ in the resolution of $vii^{\circ 7}$, it does so as a projection of the semitone motion $(\flat)\hat{6}-\hat{5}$ (Ex. g (i)). In context, the

²⁰Charles Smith gives a table of dominant-function chords containing the chromatic alterations $\flat\hat{2}$ and $\sharp\hat{2}$. Although he does not here acknowledge $\sharp\hat{4}$, this scale-degree function, as well as $\flat\hat{4}$, may be observed in the chords he lists (Smith 1986, 124-25).

parallel perfect fifths may or may not be disguised. The altered $\text{vii}^\circ 7$ is likely to take the form of a German augmented-sixth chord on $\flat\text{II}$ resolving to I (Ex. g(ii)). This augmented-sixth chord is enharmonically equivalent to a major-minor seventh chord rooted a tritone away from the actual V^7 —hence the label “tritone substitute for V^7 ” (McNab, 18-20). $\text{TS}(\text{V}^7)$ contains $\hat{4}$ and $\hat{7}$, i.e., the same key-defining tritone as V^7 contains, resolving identically, but replaces the perfect fifth $\hat{5}-\hat{2}$ with its tritone transposition $\flat\hat{2}-\flat\hat{6}$.²¹

In this connection it is also noteworthy that, depending upon which pitch is interpreted as $\hat{7}$ and which is interpreted as $\hat{4}$, the tritone may resolve in either the inward or outward direction to $\hat{1}-\hat{3}$. Therefore, any dominant-function tetrachord that contains a tritone potentially defines two tonics by means of the two possible resolutions of this tritone; these two tonics are tritone separated. In the table below, the chord at one end of an arrow may be enharmonically reinterpreted so as to resolve in the manner of the chord at the other end of the arrow, i.e., to the tritone-related key.

²¹Similarly, the “German augmented-sixth chord,” enharmonically equivalent to a major-minor seventh chord, is $\text{TS}(\text{V}^7/\text{V})$ because it contains the same tritone as V^7/V , but its perfect fifth is a tritone away from the perfect fifth in V^7/V .

Fig. 1-1 Table of common “tritone-substitute” chords.

Tritone: C/B $\sharp$ -F $\sharp$ /G $\flat$ Two tonics: G, D $\flat$ /C $\sharp$

	Chord type	Resolving to G:	Resolving to D $\flat$ /C $\sharp$:
1.	V ⁷	D-F $\sharp$ -A-C	A $\flat$ -C-E $\flat$ -G $\flat$
2.	TS(V ⁷) i.e. $\flat$ II ⁺⁶ ₅	A $\flat$ -C-E $\flat$ -F $\sharp$	D-F $\sharp$ -A-B $\sharp$
3.	V $\flat$ ₅ ⁷ i.e. Fr ⁺⁶	D-F $\sharp$ -A $\flat$ -C	A $\flat$ -C-E $\flat\flat$ -G $\flat$
4.	vii ^o 7	F $\sharp$ -A-C-E $\flat$	C-E $\flat$ -G $\flat$ -B $\flat\flat$

Enharmonic reinterpretation of chords in the first three categories—a technique for modulating directly to the tonic a tritone away—is frequently encountered in Schoenberg’s tonal music as a way of either introducing a remote key (or a passage in remote keys) or returning from a remote key (or passage of such keys), and yet integrating the key(s) smoothly into the tonal scheme. The technique of replacing a prevailing local tonic with the tritone-related tonic will be referred to as “tritone-replacement.”

Example h shows an instance in the key of C $\sharp$, from the First Quartet, of the chord in Ex. g, TS(V⁷). D $\flat$ 4-C $\sharp$ 4 ($\flat\hat{2}$ - $\hat{1}$) is motivated as a projection of A3-G $\sharp$ 3 ($\hat{6}$ - $\hat{5}$). Prior to this cadence, the tritone-related tonic to C $\sharp$, G, was in effect, having been established in mm.B66-67 by the enharmonically equivalent major-minor seventh chord, D-F $\sharp$ -A-C. The shift to C $\sharp$ at m.B76, accomplished

by the enharmonic reinterpretation of the tritone $F^\sharp-C$ to $F^\sharp-B^\sharp$, is the realization of the ultimate goal of the larger section after a passage in remote keys.

(h)

B 75 76

C#: TS(I') ——— I

(i)

D: $vii^{\circ 7} \sharp 3$

(j) *Pelleas und Melisande* (closing measures)

d: i (vi) i (vi) i ———

Ex. i. $\sharp 2-3$ occurs as a projection of $\hat{7}-\hat{1}$. It creates the appearance of $vii^{\circ 7}$ with raised third ($vii^{\circ 7} \sharp 3$) and intensifies the resolution of a dominant-function element.

Ex. j. The final cadence of *Pelleas und Melisande*, op. 5 employs a variation on the chord in Ex. i. In minor mode, $\hat{2}^\sharp$ is spelled as $\hat{3}$ and remains stationary. With $\hat{4}$ omitted, the altered diminished-seventh chord now gives the appearance of a minor triad on the minor submediant that resolves to the tonic chord (Smith, 121-23).

Ex. k. An example from the First Quartet of altered forms of $\text{vii}^\circ 7$ of D. The diminished-seventh chord $\text{C}^\sharp\text{--E--G--B}^\flat$ arises in a tonally unstable passage. In mm.90-97 it is given three of its roots, C, A, and $\text{F}^\sharp$, in succession. At m.100, G is lost to F ($\hat{4}$ of D is lost to $\hat{2}^\sharp/\hat{3}$ of D minor), producing the variant of a leading-tone diminished-seventh chord, vi of D minor. The addition of the pc A in m.102 confirms dominant function in the key of D. The cadence is reinforced by repetition of vi , which is then modified to form the French sixth form of V_3^4 .²²

(k)

G 90 92 98 100 102 103 107 109 110

d: $\text{vii}^\circ 7$ vi V^7 i vi V_3^4 I

²²The French-sixth form of V^7 is discussed in connection with Ex. 1-7t below.

Ex. 1. The literal $\hat{\#2}$ is found in major keys, frequently within V^7 . The example is from the quartet.²³

(l) L. 14 15

C: $\underline{V}^6_4$ — 3 7 #5 1

Ex. m. In $\text{vii}^{\circ 7}_{\#5}$, $\hat{\#4}-\hat{5}$ occurs as a projection of $\hat{7}-\hat{1}$, increasing the dominant function of the chord. As in Ex. g, voice leading by parallel perfect fifths is not necessarily disguised in compositional use. Harrison argues that because $\hat{\#4}-\hat{5}$ accompanying $\hat{7}-\hat{1}$ has the stylistically integral role of strengthening dominant function, such parallel perfect fifths are not to be heard with common-practice-period ears (Harrison 1994, 124-26).²⁴

Ex. n. An abbreviated version of the chord in Ex. m, i.e., without the chordal seventh, resolves to tonic harmony at an important structural point in the quartet. The triad $\text{vii}^{\circ}_{\#5}$ has only dominant-function pcs, including the additional leading tone $\hat{\#4}$, but not including $\hat{5}$. The parallel perfect fifths in the resolution

²³Schubert identifies "combination motive Y" in mm.L14-15: G2-D#5 moving to C2-E5 (Schubert, 307, Ex. 17e).

²⁴Also on the subject of voice leading by consecutive fifths (and octaves) prohibited on stylistic rather than absolute grounds, see Schoenberg 1978, 68-69.

of $\text{vii}^{\#5}$ to the minor tonic triad, far from being disguised, are emphasized by octave doublings.²⁵

(m)



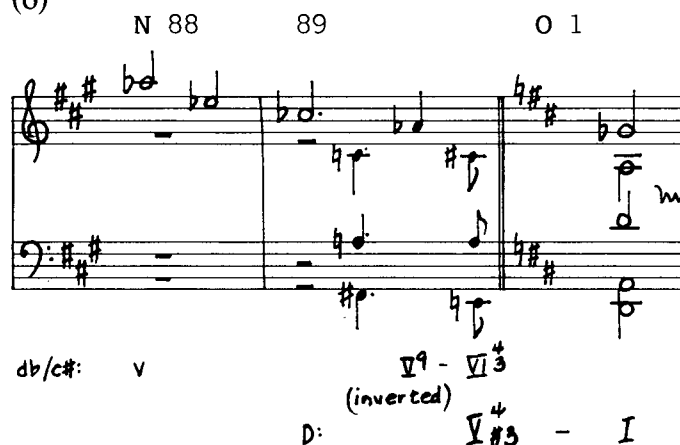
(n)



²⁵A variation on the association of $\hat{4}$ with $\hat{7}$ occurs in Ex. o, shown at the right. Like Ex. n, Ex. o comes from a structurally crucial moment in the quartet and involves reinterpretation of a harmony having tonic function in $\text{c}\sharp/\text{d}\flat$ as a dominant-function chord in d/D : i.e., $\hat{5}$ of $\text{c}\sharp/\text{d}\flat$ is reinterpreted as $\hat{4}$ of d/D . The two examples differ, however, in the way that $\hat{5}$ of $\text{c}\sharp/\text{d}\flat$ functions and consequently in the way that $\hat{4}$ of d/D resolves. In Ex. n, $\text{G}\sharp$ functions as the chordal fifth of i of $\text{c}\sharp$ and has no inherent tendency (other than to return to its source, $\text{C}\sharp$). Subsequently reinterpreted as $\hat{4}$ of d , $\text{G}\sharp$ is free to follow its upward tendency to $\hat{5}$ of d .

In the penultimate chord of Ex. o, on the other hand (final eighth of the bar), $\text{A}\flat/\text{G}\sharp$ functions first as the chordal seventh of VI^7 of $\text{d}\flat/\text{c}\sharp$, this chord a deceptive resolution of V^9 caused by retention of the pc A. (The larger context, which sets a pattern of downward-resolving major sevenths, is explained in connection with Ex. 5-7.) The initial status of $\hat{5}$ of $\text{d}\flat/\text{c}\sharp$ as a chordal seventh motivates it to resolve downward to $\hat{4}$ of $\text{d}\flat/\text{c}\sharp$ —even as root movement down a perfect fifth, from A to D, reinterprets $\text{A}-\text{C}\sharp-\text{E}-\text{A}\flat/\text{G}\sharp$ as $\text{V}^{\#7}$ of D . Therefore, in both Ex. n and Ex. o it may be said that $\hat{4}$ of D accompanies $\hat{7}$ of D because $\hat{5}$ of $\text{C}\sharp$ accompanies $\hat{1}$ of $\text{C}\sharp$, but only in the first example is $\hat{4}$ of D free to function as the leading tone of $\hat{5}$.

(o)



Exs. p and q illustrate $\hat{\#2}$ and $\hat{\#4}$ combined. In Ex. p, $\flat vi$ of D major is introduced as a variant of $\flat VI$. Reinterpretation of $\hat{3}$ as $\hat{\#2}$ in the uppermost voice and the addition of $\hat{\#4}$ in the bass create $vii^{\circ 7}$ with raised third and fifth.

(p)

A 86 87 89 90

D: I — $\flat VI$ — $\flat vi$ $\overset{cf.}{vii^{\circ 7}}$ $\overset{07}{vii^{\circ 7}}$ $\overset{07}{I} \overset{6}{4}$
 (inverted)

Ex. q. The first chord, as well as having $\hat{\#2}$ and $\hat{\#4}$, includes major-mode rather than minor-mode $\hat{6}$, and thus gives the impression of a major-minor seventh chord on VII resolving to I. Regarding this progression as $VII^{\#5-I}$ of $E^{\flat}$ rather than a deceptive progression (in G minor?) is in keeping with the context.²⁶

(q)

A 91 92

$E^{\flat}$: $VII^{\#5}$ — I

²⁶Smith comes to the same conclusion in discussion of the progression as it occurs in a passage by Brahms (Smith, 125-26).

Chords of subdominant function containing chromatic projections (Exs. r and s):

(r)

H 42 43

Db: ct.°7 I

Detailed description: This musical example is in D-flat major (Db:). It shows measures 42 and 43. In measure 42, there is a common-tone diminished-seventh chord (ct.°7) with notes Bb, Db, Fb, and Ab. In measure 43, the chord resolves to the tonic (I), which is Dbb (enharmonically C). The notes in measure 43 are Dbb, Fb, Ab, and Bb. The notes Bb and Ab are common to both chords. The notes Fb and Dbb are chromatic projections of the absent 7th degree (Bb) of the tonic triad.

(s)

52 53 54

c#: c.t.°7 ct.Mm7 i

Detailed description: This musical example is in C major (c#:). It shows measures 52, 53, and 54. In measure 52, there is a common-tone diminished-seventh chord (c.t.°7) with notes Bb, Db, Fb, and Ab. In measure 53, the chord resolves to a common-tone major-minor seventh chord (ct.Mm7) with notes Bb, Db, Fb, and Gb. In measure 54, the chord resolves to the tonic (i), which is C. The notes Bb and Ab are common to both chords. The notes Fb and Gb are chromatic projections of the absent 7th degree (Bb) of the tonic triad.

In Ex. r, parallel tendency tones $\hat{\#2}$ and $\hat{\#4}$ ($E\flat$ and $G\flat$) are chromatic projections of the absent $\hat{7}$. This “common-tone diminished-seventh chord” is characteristic of major mode because it contains major-mode $\hat{6}$ ($B\flat$). Occurring here in the bass, $\hat{6}$ does not follow its step-wise tendency.

Example s shows that in minor mode $\hat{\#2}$ of a common-tone diminished-seventh is rendered as minor-mode $\hat{3}$ (here E). $\hat{\#4}$ (Fx) is a projection of the theoretical $\hat{7}$. At m.53, when $\flat 2$ ($D\sharp$) replaces $\hat{3}/\hat{\#2}$ (E) in the upper voice, a common-tone major-minor seventh chord is created.

PRINCIPLE 6: “Double-neighbour chords”: chords containing either an augmented sixth/diminished third, or a minor seventh/major second enharmonically reinterpreted (McNab 1982, 29-34; see also Harrison 1995). *Such a chord employs in one harmony both the upward- and the downward-resolving tendency tone to either $\hat{1}$, $\hat{3}$, or $\hat{5}$. This accounts for the occurrence of $\flat 2$ in combination*

with $\hat{7}$, $\hat{\#2}$ in combination with $\hat{4}$, and $\hat{\#4}$ in combination with $\flat\hat{6}$, where $\flat\hat{2}$, $\hat{\#2}$, or $\hat{\#4}$, as the case may be, does not occur as a projection of $\flat\hat{6}$ or $\hat{7}$.

Double-neighbour chords of dominant function (Exs. t and u):

(t)

O 18 19

D: V_3^4 I
 $Fr. + \frac{6}{3}$

(u)

A 82 83 84 85 86

Ab: $I(\frac{3}{4})$ $V\#5$ $b5$
D: $I \frac{3}{4} - I$

Ex. t. With $\hat{6}$ absent, as it frequently is when $\hat{5}$ is included, $\flat\hat{2}$ ($E\flat$) is motivated as the complementary note to $C\sharp$ in a double-neighbour resolution to $\hat{1}$. The resulting French augmented-sixth chord appears as a variation of V^7 ($V\flat 5^7$) and is typically in second inversion. In the First Quartet, the French sixth as a simultaneity occurs more often as V of the prevailing tonic than as V of V.

Ex. u. In the *Harmonielehre*, Schoenberg derives a six-note whole-tone chord by substituting both $\flat\hat{2}$ and $\hat{\#2}$ for $\hat{2}$ in a dominant major-ninth chord (Schoenberg 1978, 392). Other dominant-function whole-tone chords are subsets of this chord. In m.85 of the example, the upper line of V^7 of $A\flat$ moves in a short whole-tone descent through $\hat{\#2}$ and then $\flat\hat{2}$ to $\hat{7}$ (B-A-G). This excerpt also

illustrates tritone replacement of a given key. With $\flat\hat{2}$ ($B\flat\flat/A$), the V^7 of $A\flat$ is in its French-sixth form. Reinterpretation of the tritone $G-D\flat$ as $G-C\sharp$ and reassignment of double-neighbour function from $A-G$ to $E\flat-C\sharp$ suggests the French sixth $E\flat-G-A-C\sharp$, which resolves as an inverted $V\flat^7$ of D .

Double-neighbour chords of subdominant function (Exs. b and v):

In a previous example, Ex. 1-7b, mm.58₃-59 contain a chromaticized version of the diminished-seventh based chord that includes "root" $\hat{1}$ and omits $\hat{7}$. This apparent German augmented-sixth chord on $\hat{4}$ (IV^{+6}) is $ii\hat{5}$ with $\flat\hat{2}$ replaced by the lower chromatic neighbour to $\hat{3}$, $\sharp\hat{2}$, as double-neighbour counterpart to the upper neighbour, $\hat{4}$. In this instance, the occurrence of $\hat{4}$ in the bass and exigencies of root movement in that voice take precedence over the semitone tendency of $\hat{4}-\hat{3}$. IV^{+6} is characteristic of major mode because it contains major-mode $\hat{6}$, which, like minor-mode $\hat{6}$, normally falls.

(v)

1

The common-tone French augmented-sixth chord of Ex. v has diatonic tone $B\flat$ ($\hat{6}$) and its double-neighbour counterpart $G\sharp$ ($\sharp\hat{4}$) resolving to $\hat{5}$.

* * *

Naturally, conventional secondary leading-tone functions also occur in the foreground harmonic idiom of this work. In a D-minor context, when a chord containing $G^\sharp$ is followed by A-rooted harmony, the first chord is obviously a form of V of A. Such a $G^\sharp$ does not occur as a projection of $\hat{7}$ of D, $C^\sharp$. Neither does it occur as double-neighbour counterpart to $\hat{6}$ of D, $B^\flat$ (unlike the $G^\sharp$ in Ex. v); rather, $B^\flat$, if present, is motivated as double-neighbour counterpart to $G^\sharp$. When followed by A-rooted harmony, $G^\sharp$ is the literal leading tone of V. Similarly, in the key of D, $E^\flat$ may function within iv of iv as the literal $\hat{6}$ of G minor (or within V^7 of VI as the literal $\hat{4}$ of $B^\flat$), and in D major $E^\sharp$ may function within V of III as the literal $\hat{7}$ of $F^\sharp$.

The distinction between chromatic pitches resulting from Principles 5 and 6 and “literal leading tones” leads to the last principle to be discussed.

PRINCIPLE 7: Mixture of diatonic collections (Benjamin 1976, 32-33). *A chromatic pitch that is motivated as a projection or double-neighbour counterpart in the local key may exert literal leading-tone function with respect to another diatonic collection operating in the wider context. This suggests the coexistence of the diatonic collection in which the chromatic pitch is a projection (or double-neighbour counterpart) and the diatonic collection in which the chromatic pitch is a literal leading tone.*

The wider context of Ex. 1-7 l (not shown), illustrates mixture of diatonic collections. The authentic cadence in C at m.L15 is preceded by a long approach,

The aftermath bears out this impression. Following prolongation of the C-major tonic, mm.17-18 effect a swift modulation to E major, the key of a codetta-like passage. Despite its long preparation, the authentic cadence in C proves to be subsidiary to the overall tonal design of the passage in which it occurs.

Therefore, within mm.9-14 the apparent V^7 of E and the tendency-tone resolutions $D^\sharp-E$ and $C^\sharp-D^\sharp-E$ have a tonal meaning beyond that of strengthening the resolution of V^7 of C with projections of its leading-tone motion: the “raised” pcs are usefully heard as owing their primary allegiance to E as tonic rather than simply as chromatic pitches in C major. Pitches diatonic to E major mixed with pitches diatonic to C major motivate a conclusion in E major that otherwise sounds unprepared.

The advanced stage of mixed diatonic collections, what William Benjamin has termed “chromatic bitonality,” will be discussed near the end of this chapter in connection with its implications for large-scale tonal structure.

* * *

The foregoing principles of chromaticized authentic and plagal progressions and mixed diatonic collections underlie the harmonic idiom of the quartet. It will have been observed that the chromatic projections discussed and the diatonic scales degrees that they parallel include all of the semitonal neighbour notes to $\hat{1}$ and $\hat{5}$ of the prevailing key: $b\hat{2}$ and major-mode $\hat{7}$ neighbouring $\hat{1}$, and $\sharp\hat{4}$ and minor-mode $\hat{6}$ neighbouring $\hat{5}$. The much-discussed m.1 of the quartet (Ex. 1-7v) presents three of these pcs in the key of D minor: Bb , $G^\sharp$, and $C^\sharp$. The pc Eb

makes its first appearance in m.8₄, at the head of the P4+M3 theme in the bass and as a lowering of the previous E (see again Ex. 1-5). Here, E $\flat$ does not resolve to D, but the similarity that Wintle pointed out between this whole-tone chord and the augmented triad F-A-C $\sharp$ in m.1 suggests a connection between E $\flat$ and the chords in m.1 that contain semitonal neighbours. Therefore, m.1, with m.8₄, embodies the idea of chromatic surrounding of $\hat{1}$ and $\hat{5}$ that is idiomatic to chord structure and voice leading in the quartet.

We have noted that Schoenberg does not hesitate to allow either $\flat\hat{2}$ and minor-mode $\hat{6}$ in combination, or major-mode $\hat{7}$ and $\sharp\hat{4}$ in combination, to resolve simultaneously, thereby creating consecutive perfect fifths a semitone apart. In such a harmonic progression, the emphasis is on intensity of harmonic function, not independence of voice leading. Example 1-8 is an excerpt from a passage in the First Quartet beginning in G minor that is saturated with repetitions of a three-note motive containing a perfect-fifth leap. Here, the motive occurs in the lowest two voice parts: $\hat{5}-\hat{1}$ is followed by perfect-fifth leaps a semitone below and then a semitone above, a virtual surrounding of scale degrees $\hat{1}$ and $\hat{5}$. As well, the third note of the motive relates to either the first or the second note by IC1.

As Wilke points out, the origin of the three-note motive in Ex. 1-8 is the last three notes of the fugato subject, m.A4 (Wilke, 153; see again Ex. 1-1b). The observed tendency to surround or delay a chord root or fifth with chromatic tendency tones is therefore related to the basic intervallic motive that Wilke observes in the PT: a melodic perfect fifth/fourth or tritone extended or divided

by a semitone (*cf.* Ex. 1-1a and Ex. 1-7v).

Ex. 1-8 Motive of parallel perfect fifths surrounding $\hat{5}-\hat{1}$ in mm.H1-4.

Moreover, both semitonal surrounding of $\hat{1}$ and $\hat{5}$ and mixture of diatonic collections are foreground features of the First Quartet that have the potential to be transferred to the level of key relations, the subject of the next section.

TONAL STRUCTURE IN LATE-ROMANTIC MUSIC

Existing studies of late-romantic works have demonstrated departures from the Schenkerian paradigm of tonal structure. In representative pieces:

- (1) The tonal structure is *not* a contrapuntal framework generating an unambiguous composing out of I-V-I at the background level.
- (2) The tonal structure may unfold in time as a pattern of successive keys—what a Schenkerian would distinguish from tonal structure as “tonal design”²⁷

²⁷David Beach makes clear the distinction between tonal design and tonal structure in an article entitled “Schubert’s Experiments with Sonata Form: Formal-Tonal Design versus Underlying

and what I shall call the “horizontal dimension” of tonal structure.

- (3) Although there are some recurring patterns, no single paradigm of tonal structure is common to all works of the style: tonal structure is contextual.
- (4) With regard to chronological time, the tonal structure may be presented in a discontinuous rather than linear fashion; as a result, a given structural level may not “compose out” any one triad clearly.
- (5) Tonal structure is unifying, yet at the same time a given structure may eschew the principle of monotonicity. The resulting tonal duality constitutes the “vertical dimension” of a tonal structure.
- (6) Analytic perceptions lend themselves to depiction by modified Schenkerian principles of harmonic reduction.

These six points will prove useful in the analysis of Schoenberg’s First Quartet.

Explanation of them immediately below will be given under two headings: points 1-3 under “The Horizontal Dimension of Tonal Structure” and points 4-6 under “The Vertical Dimension of Tonal Structure.”

The Horizontal Dimension of Tonal Structure

The horizontal dimension of tonal structure, like a system of Schenkerian prolongational levels, occurs in chronological time; it is not, however, necessarily

Structure” (Beach 1993). See particularly pp.1-3 and 7. Whereas the distinction between tonal design and tonal structure is important in analysis of the traditional tonal repertoire, in Schoenberg’s music I believe the two concepts merge.

contrapuntal in nature. An analysis of a late tonal work that assumes a fundamental structure consisting of the contrapuntal progression I–V–I, and therefore conceives the deepest middleground levels as further stages of contrapuntal expansion, will for some compositions overlook structural elements that are fundamental to that particular work. The progressively deeper-level tonal elements of such a composition, revealed by their association with successively higher-order levels of thematic design, are purely and abstractly harmonic. This leads to the following possibilities for the horizontal dimension:

(i) A harmony that is an implied tonic rather than a chord literally present may be a link in the tonal structure of a piece on a structural level as deep as, or deeper than, that of any harmony that is actually present.

(ii) Other diatonic and non-diatonic harmonies and key relationships may supersede V in fulfilling structural roles on the background level.

The two points are explained in the following two subsections.

A Theory of Tonal Structure in Terms of Keys

In pieces whose structure is illuminated by the Schenkerian paradigm, the contrapuntal prolongation of chords differs from the succession of keys and, because of its greater explanatory power with respect to structure, the former has structural priority over the latter (Schachter 1987, 299). In late-romantic music on the other hand, the pattern of changing tonal centres at a particular structural level often proves to have the greater explanatory power with respect to tonal

structure. It is for this reason that Patrick McCreless adopts a re-definition of structural levels in his approach to Wagner's operas:

[T]he tonal structure of the cycle depends not upon the linear prolongation of a single diatonic key but upon an array of referential keys . . . the term "background" will here refer to the primary keys of that array; that is, keys which govern the beginnings and ends of acts, The use of the term here will thus eliminate the linear connotation given to it by Schenker, and express only a harmonic and tonal one. . . . "middleground" will refer to the organization of tonalities within the formal subdivisions of single scenes, and "foreground" will designate the details of surface harmonic progression (McCreless 1982, 89).

The case of a large-scale piece of absolute music that begins and ends with the same tonic presents a different challenge to understanding tonal coherence than an opera that for referential, "extra-musical" reasons begins and ends in different keys. But the notion of assigning key centres in an instrumental work to structural levels according to the status lent their tonics by the thematic design is equally applicable and valid when it reveals a coherent tonal plan.

Benjamin, in his analysis of the first movement of Bruckner's Eighth Symphony, proposes "a theory of tonal space in terms of keys" (Benjamin 1991, 12). His sketch of the tonal space of the first movement shows on a bass staff the structural hierarchy of all tonics, realized and implied, coordinated with the thematic design. The sketch demonstrates that the movement's tonal coherence derives from its pattern of intermittent references to earlier keys and to relationships between these keys.

It is to be acknowledged that, insomuch as a "key" is a complex of relationships, it is neither possible to "prolong" a key nor to hear one key "move"

to another, even metaphorically, the way a chord may be prolonged or one pitch “moves” to another in a contrapuntal structure. But it is possible to perceive the influence of a secondary tonic prevailing over a stretch of music, and to perceive changes in tonal “distance” of secondary tonics from the main tonic, and from each other. This is especially true if these relationships between tonics are reinforced by repetition at different structural levels. The horizontal dimension of tonal space is thereby spanned by a structure composed of tonicized diatonic and chromatic scale steps that conceivably form a coherent pattern.

Schoenberg appears to have understood the structural function of tonality as a balanced pattern of relationships between the main tonic and tonics of secondary keys, literal and implied. The following citation occurs in a context where his aim is to prove that all twelve pitch classes, and triads composed of any of these, can be related to a main tonic. First he situates these triads within passages that are in remote keys, and then he describes how keys remotely related to the main tonic can follow one another:

[A] departure from the key within a closed composition can be justified, in so far as the sense of tonality is harmonic unity, only if that departure can be related to the principal key. That such can in fact be the case, even in the most far-reaching departures, is shown, for example, in the music of Beethoven, who introduces into *c* minor compositions sections in *b* minor . . . Now within the tonality the fundamental chords of such sections and groups, if one is to be able to grasp the unity of the latter, must relate to one another, set side by side, as do the successive chords within a section: i.e. they must be comprehensible as a unity, they must have coherence (Schoenberg 1978, 222).

The examples of modulations in the *Harmonielehre* illustrate the requirement that the succession of tonics must relate to one another as a succession of chords.

Example 1-9 is one such example (Schoenberg 1978, 280). The modulation from A minor to B $\flat$ minor is carried out, as indicated by Schoenberg's label (1+4), by first touching on a key centre one position down in the circle of fifths (F major), and moving from there the distance of four more positions down to B $\flat$ minor. The succession of tonic chords, A minor–F major–B $\flat$ minor, is itself coherent, and if one were to reduce the example to a three-chord framework, it would, in any case, consist of these three triads.

Ex. 1-9 Textbook example of a modulation to a distant key (with added roman numeral analysis) (Schoenberg 1978, 280, Ex. 211k).

a — b $\flat$ (1 + 4)

roots: F G $\flat$ F G $\flat$ G $\flat$ (E-G $\flat$) F B $\flat$

a: i

F: ii $\frac{4}{2}$ I $\frac{6}{5}$ ii I $\frac{6}{5}$ bII $\frac{6}{5}$

bb: of ii V $\frac{6}{5}$ VI $\frac{6}{5}$ I $\frac{6}{5}$ of I $\frac{6}{5}$ VI $\frac{6}{5}$ — $\frac{4}{2}$ (V of) bII $\frac{6}{5}$ Gr. $\frac{6}{5}$ V — i

A similar example, but with mode change for the second tonic, could be devised from the key succession in the opening thirty measures of the First Quartet. The modulation from D minor to E $\flat$ minor for a restatement of PTGa is accomplished via B $\flat$ minor (the key of PTGb at m.14) with E $\flat$ minor initially established for PTGc at m.24 and clinched by a cadence on V of E $\flat$ at m.29. The difference is, of course, that here the second triad in the three-chord reduction, B $\flat$

minor, is not diatonic to D minor. But, key successions whose tonic triads are chromatically related are equally possible, according to the conventions of chromatic chord succession. The modulation from A minor to B $\flat$ minor in Ex. 1-9 could also be carried out as 4+1 in the downward direction, i.e., A minor–F minor–B $\flat$ minor. The chromatic relationship of A-minor harmony to F-minor harmony is presented in the *Harmonielehre* in the chapter on triads derived from “the third and fourth circles downward,” the chord succession A minor–F minor being shown in Ex. 156 (p. 224, seventh line, fifth measure). In the same example (eighth line, first measure), the chord succession A minor–B $\flat$ minor is shown; therefore, the possibility of direct modulation from a minor key to another minor key a semitone above is not contraindicated by Schoenberg’s modelling of key succession on chord succession—it is only less gradual. With regard to the pacing of modulation to remote keys Schoenberg remarks:

Even in the older music the question of justifying such modulations is not a question of relationship, but rather only a question of how to represent this relationship through appropriate separation in time and space and through gradual connection. But time, space, and speed are not absolutes. Hence, today we can reduce them to a minimum and can set directly together what formerly had to be kept far apart and carefully connected. The interconnections are familiar to us; they were demonstrated in former epochs, hence do not need to be spelled out anew in every composition but are accepted as given (Schoenberg 1978, 222-23).

In *Structural Functions of Harmony*, Schoenberg analyzes passages from a variety of tonal works as a succession of harmonic functions related either directly to the main tonic or to secondary tonalities, the “regions,” and thereby indirectly to the main tonic. His analyses of tonal structure in classical-period and early

romantic-period works in terms of key rather than chord are questionable to modern-day theorists.²⁸ It seems likely that Schoenberg's own compositional practice led him to analyze in terms of key succession, in which case such a view, although limited in its explanatory power for earlier tonal music, remains an appropriate one for analyzing his tonal compositions.

On the other hand, Schoenberg's method of naming and categorizing key relationships, his "Chart of the Regions" given in *Structural Functions of Harmony*, is of limited use in dealing with even his own works because it drastically restricts the possible ways in which a remote or distant tonic may be related to the primary tonic. His Chart of the Regions in Minor, reproduced in Fig.1-2a, focuses on keys of "close" and "indirect" relationship to a minor tonic, including also some of the keys that Schoenberg categorizes as "remote." Unlike his chart of regions in major, however, it omits those that he categorizes as "distant" (Schoenberg 1969, 30; *cf.* p. 74). Therefore, Fig.1-2b expands the given chart into all possible regions following the plan of the chart of regions in major (*cf.* Schoenberg 1969, 20). For comparison with Ex. 1-9, Fig. 1-2c shows the expanded chart in A minor. According to the chart, B $\flat$ minor relates to A minor in only one way: as "minor subtonic's minor mediant" (subtm). Yet in Ex. 1-9, B $\flat$ minor actually occurs in a much more direct relationship to A minor: following F major, it is "major submediant's minor subdominant." The omission

²⁸See, for example, Carl Schachter's criticisms of Schoenberg's Theory of Regions and his criticism of Schoenberg's analysis of Mozart's "Voi che sapete" (Schachter, 304-05; 308-14; Schoenberg 1969, 69-70).

in the chart can be remedied at the expense of making it more complex. It will be noted that the chart in Fig. 1-2c gives B $\flat$ *major* twice—in the upper left-hand corner as minor subtonic's major mediant, and at the bottom of the chart in the vicinity of D minor and F major, where it is labelled Neapolitan (Np).²⁹

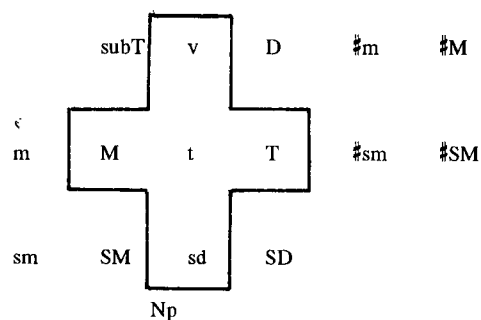
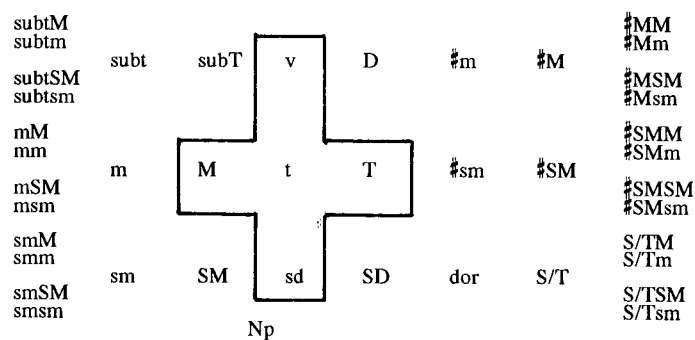
Therefore, what the chart needs to handle Ex.1-9 is the addition of the *minor* Neapolitan in the vicinity of the major Neapolitan to show the case of major submediant's *minor* subdominant (or minor subdominant's minor submediant).

This addition is made in Fig. 1-3. Schoenberg does in fact give an example in *Structural Functions of Harmony* of an excerpt from Brahms containing a modulation from A minor to B $\flat$ minor (via F minor), in which he labels B $\flat$ minor as the minor Neapolitan (np) (Schoenberg 1969, 78, Ex. 87).

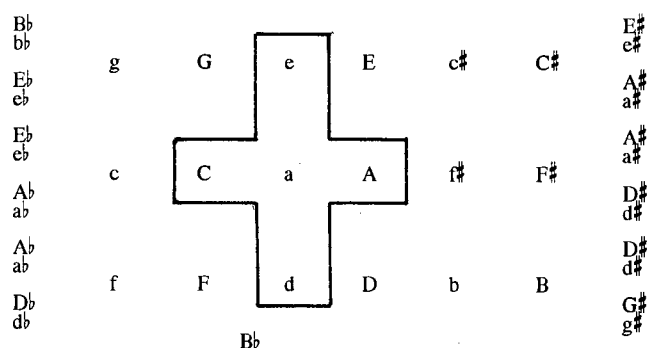
²⁹In a later chapter of *Structural Functions*, Schoenberg refers to the Neapolitan as minor subdominant's major submediant (Schoenberg 1969, 69). According to its position on the chart, equally close to the major submediant in Fig.1-2, he also acknowledges the Neapolitan as submediant's major subdominant.

Fig. 1-2 Charts of Regions in Minor.

(a) Schoenberg's Chart of the Regions in Minor (Schoenberg 1969, 30)

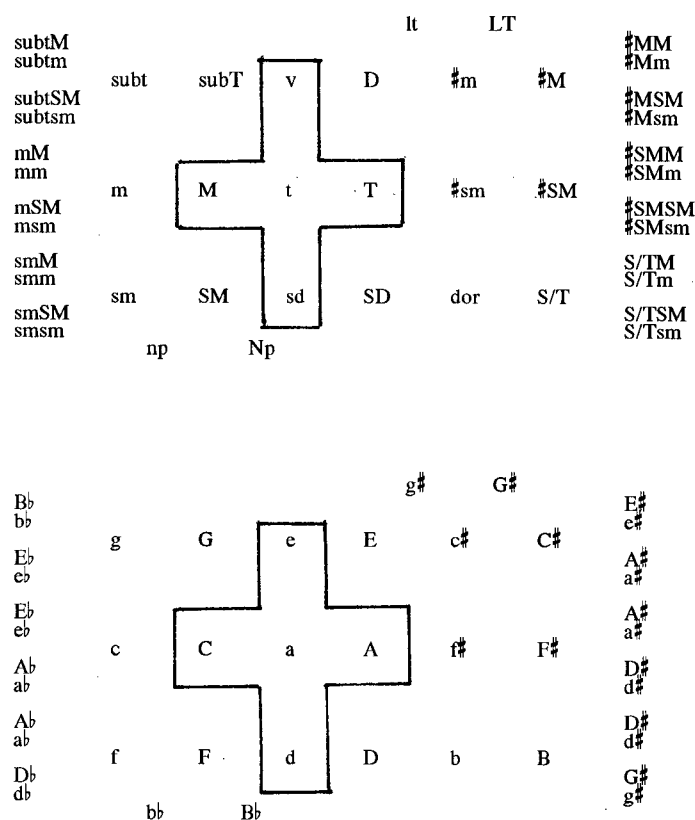
(b) Chart of Regions in Minor expanded in manner of Chart of Regions in Major³⁰

(c) Expanded Chart of Regions of A minor



³⁰Abbreviations are read as follows: "subtM" means "minor subtonic's major mediant;" "#Msm" means "major sharp mediant's minor submediant;" and so on. S/T stands for supertonic.

Fig. 1-3 Chart of Regions in Minor further expanded.



The possibilities of key relationships are of course manifold, and Schoenberg has chosen to show only the more common case of the major Neapolitan, and not the minor Neapolitan in the charts of regions of major and minor. If he were to persist in making each chart symmetrical, then to balance the Neapolitan, which occurs in the flat and subdominant quadrant of each chart, he would also show major and minor counterparts in the sharp and dominant quadrant of each chart. Fig. 1-3 shows how this would turn out in minor mode. The minor key that is "major dominant's minor mediant," $G^\sharp$ minor, and the

minor-major pair of keys that are “sharp mediant’s dominant,” G[#] minor and G[#] major (the two “leading-tone keys”), would balance the two Neapolitan keys. The sharp and dominant relationships are more characteristic of major mode, just as the Neapolitan is more characteristic of minor mode, but the former may be shown in minor mode just as the Neapolitan is shown by Schoenberg in the chart of regions in major. The inclusion of the minor and major “leading-tone keys” in a chart of the regions in minor shows the possibility of these secondary keys arising in a nineteenth-century piece in connection with either the major dominant or the sharp mediant, just as the secondary tonic on the lowered supertonic arises in connection with the minor subdominant or the flat submediant of a major key. Given Schoenberg’s theory of the “interchangeability of major and minor” (Schoenberg 1969, 51-56) the secondary tonic on the leading tone is potentially available in both major and minor forms in minor as well as major keys.³¹

In short, modulatory paths in romantic and late-romantic works, including Schoenberg’s own compositions, are more diverse than the chart of regions in *Structural Functions of Harmony* explicitly implies.

Models for the Horizontal Dimension of Tonal Structure in Late-Romantic Music

In the *Harmonielehre*, Schoenberg understands tonal structure to be contextual, not prescribed, and to arise out of an idea given at the opening:

³¹Recall Schoenberg’s reference (quoted on p. 53 above) to an unnamed piece by Beethoven in C minor that employs the region of B minor.

“An example: when Brahms introduces the second theme of this Third Symphony (*F* major [first movement]) in the key of *A* major, it is not because one ‘can introduce’ the second theme just as well in the key of the mediant. It is rather the consequence of a principal motive, of the bass melody (harmonic connection!) *f-ab* (third and fourth measures) whose many repetitions, derivations, and variations finally make it necessary, as a temporary high point, for the progression *f-ab* to expand to the progression *f-a* (*F*, the initial key, *A*, the key of the second theme). Thus, the basic motive is given by the initial key and the key of the second theme” (Schoenberg 1978, 164).

That a tonal relationship at a deep structural level is conceivably “the consequence of a principal motive,” i.e., contextual, not archetypal, is a point worth pursuing in analysis of Schoenberg’s tonal music, but this not to say that from piece to piece there are no recurring tonal designs. Schoenberg does, in fact, favour certain designs. Earlier, I discussed a foreground motive in the PT of the First Quartet that other analysts have considered to be significant: in the opening measure, the two semitonal neighbour tones to the dominant and the lower semitonal neighbour to the tonic (Ex.1-7v). It is congruent with this motive occurring at the pc surface that at a deeper level Schoenberg has a tendency to tonicize the chords, or modulate to the keys, a semitone above or below the main tonic and dominant. Clifton refers to this tendency as Schoenberg’s “Semitone Relation” (Clifton, 8). The textbook modulation from *A* minor to *Bb* minor cited in Ex. 1-9 is representative in its use of semitone relationships at the levels of both chord and key. In his comments on the set of examples from which this one is extracted, Schoenberg emphasizes that the modulatory outcome is always prepared in the foregoing. Of this particular example, he remarks that the Neapolitan sixth of *F* (m.3), having *Bb* in the bass, points toward the key of *Bb*

minor at the cadence (Schoenberg 1978, 282). It could also be pointed out that mm.3-7 consist largely of alternating F-rooted and G^b-rooted harmonies, which are themselves semitone related. In mm.5-6, VI of B^b minor is also used as V of a C^b-major triad, thus introducing the harmony a semitone above I of B^b minor.

There is a larger category of tonal design than semitone relations that Schoenberg seems to regard as a paradigm for tonal unity: the deployment of two keys that are equidistant from the main tonic. This understanding of tonal unity may derive from a literal interpretation of the phrase “tonal centre.” Lewin (1968, 2-4) cites the following three points as evidence for this supposition:

(1) Schoenberg’s attitude toward the subdominant. In the *Harmonielehre*, Schoenberg states that when the dominant-tonic relationship alone is not definitive of the main key, it is made unambiguous by balancing the relationship V–I with IV–I because “IV . . . is the sharpest antithesis to *G* major (in this context) [V], and its relation to the tonic *C* is the inverse of that of the Vth degree” (Schoenberg 1978, 132). In the same paragraph, he speculates: “that activity, that movement which produces music, is the activity implicit in the tonic alone, the creativity created by the relation of its two satellites to it and to each other.” It is noteworthy that this statement does not give key-defining priority to the interval of a perfect fifth: it gives key-defining priority to the equidistance of two scale degrees from I and to their resultant antithetical property to each other around the main tonic as centre.

(2) The “Chart of Regions” in *Structural Functions of Harmony*. The

disposition of keys in these charts suggests that Schoenberg conceives of a tonic as a central point around which all secondary tonics are to be balanced. Returning to Fig. 1-3, if one takes a ruler and connects the symbol for A minor with the symbol for any key of the same mode, and then follows the line of the ruler on the opposite side of A minor to the next symbol for a minor key, one comes to the symbol for the inversionally balanced key of the same mode—another key that is the same distance from A measured by semitones as is the first key, and the same distance from A in the circle of fifths as is the first key.³² Therefore, the chart shows all the pairs of minor keys that, like E and D are antithetical with respect to A. This configuration implies that, in the appropriate, advanced tonal context, deployment of a pair of keys balanced around the main tonic by the interval of a major or minor second or major or minor third is as tonally unifying as would be a balance of perfect fifths or fourths around the tonic.

(3) Compositional practice. Lewin cites the opening of the First Quartet as an example of inversional balance of keys in Schoenberg's tonal music. In the PTG, theme a occurs in successive keys D minor (m.1), E $\flat$ minor (m.30), C $\sharp$ minor (m.54), and D minor (m.65). Each of the key changes is preceded by intervening keys, but the coincidence of these points with restatement of the

³²Exceptions to this exact symmetry occur in connection with the regions most distant from a minor and therefore least likely: a $\flat$ and d $\flat$ in the bottom half of the extreme left-hand column and e $\sharp$ and a $\sharp$ near the top of the extreme right-hand column; e.g. d $\flat$, a, and e $\sharp$ do not fall on one line. The rule would hold if for the tonics in the bottom half of the left column and the top half of the right column the lower-case symbol were written above the upper-case symbol. Instead, I have modelled the expanded Chart of Regions in Minor after Schoenberg's Chart of the Regions in Major which maintains the order of upper case and lower case throughout.

principal theme allows us to juxtapose them on a deeper level.

Along the same lines, Friedheim discovers a symmetrical disposition of keys in *Verklärte Nacht*. Friedheim analyzes this work as consisting of two successive sonata structures in D minor. In Sonata 1, D minor is opposed by the key of B $\flat$ minor for the subsidiary theme; in Sonata 2, D minor is opposed by the key of F $\sharp$ major for its subsidiary theme. The secondary tonics, although not the same distance from D minor in the circle of fifths because their modes are different, are the same number of semitones from D. Friedheim acknowledges that the balance of tonics a major third below and above the main tonic is form-producing (Friedheim, 138-39).

Dika Newlin tells us that Schoenberg was intrigued when, long after its composition, it struck him that a powerful effect in the latter part of *Verklärte Nacht* is caused by approaches to the tonality of D major first by a cadence on E $\flat$ minor (mm.222-29) and then by material in D $\flat$ major (mm.320-43) (Newlin 1978, 214-15). An even larger-scale instance of a similar disposition of secondary tonics in a Schoenberg work occurs in the recapitulatory section of *Pelleas und Melisande*. Again, the main key is D minor. The recapitulation occurs at r.50 in C $\sharp$ minor. Subsequently—between r.59 and immediately before the D-minor coda at r.62—there is a striking episode in E $\flat$ minor. Evidently, not only was D minor a favourite key for Schoenberg, he also favoured confirming D minor by encircling it with passages in the keys of E $\flat$ and C $\sharp$.

As a structural feature, the encircling of a main key with keys a semitone

above and below is not peculiar to Schoenberg's works. Jean-Michel Boulay, who refers to this technique as "chromatic surrounding," finds it to be a recurring means of tonal unity in Strauss's *Salome* (Boulay 1992, 7-10). The present dissertation adopts Boulay's term.

The case of chromatic surrounding of a tonic key has an unusual similarity to the surrounding of a tonic with its dominant and subdominant. Most chromatic and diatonic key relationships between keys of the same mode are between tonics that are the same number of semitones apart as they are separated by steps in the circle of fifths: for example, D minor and B $\flat$ minor are a pair of keys whose tonics are four semitones apart and four steps distant in the circle of fifths. But the two keys whose tonics have the same mode as D minor and are five semitones below and above the main tonic, i.e., A minor and G minor, are each *one* step away from D in the circle of fifths. Conversely, the two keys whose tonics have the same mode as D minor and are one semitone above and below the main tonic, i.e. C $\sharp$ minor and E $\flat$ minor, are each *five* steps away from D in the circle of fifths. In both instances, the two keys in symmetrical balance around the tonic are themselves two semitones apart. The distance between one of these pairs of keys (G, A) and the other (C $\sharp$, E $\flat$) is precisely one-half of the octave. From a harmonic-functional standpoint, C $\sharp$ groups with A and E $\flat$ with G, that is to say, the roots of the analogous harmonies are major-third distant. Rooted a major third above V is the minor triad (and region) VII, whose three scale degrees have strong dominant function; rooted a major third below IV is the major triad (and

region) $\flat$ II, whose scale degrees have strong subdominant function. Therefore, the triads (and regions) that are rooted a semitone away from a main tonic are chromatic versions of its major dominant and minor subdominant having but one altered pitch, but expressing a distant tonality in the fifths circle. The near-yet-far relationship is possibly a reason that Schoenberg favoured the inversional balance of semitone-related keys around a main tonic.

It should be kept in mind that in Schoenberg's music a symmetrical balance of keys may occur not only around the tonic, but also around the dominant (Clifton's "Semitone Relationship"). This yields a further potentiality for symmetry in key plans.

Thus far, we have considered a primary tonic perceived on the highest structural level and other, lesser tonics perceived on successively lower structural levels that form the horizontal dimension of tonal structure. We have thus been concerned with pitch organization having as its source and ultimate goal a major or minor triad that is perceptibly the centre of a monotonal system. Monotonicity and the purely horizontal conception of tonal structure reveal the coherence of pitch organization in most nineteenth-century chromatic music, but some theorists have questioned their applicability to certain late tonal repertoires.

The Vertical Dimension of Tonal Structure: the Theory of Tonal Duality

In his article, "Mirrors and Metaphors" Christopher Lewis advises:

[W]e must be careful not to assume that because a piece exhibits some of the surface characteristics of the common practice, and because some parts

of its structure yield to the techniques of voice-leading analysis, it ultimately must express the prolongation of a single tonic triad to which all events of the piece can be made relevant. The question is . . . whether the analysis comes to grips with the essential tonal nature of the music (Lewis 1990, 31).

The main tonal issue of a piece may be a conflict between two tonics that, unlike primary and secondary tonics, do not each occupy a separate and continuous span of the composition and therefore are not hierarchically distinct. Rather than monotonicity, these works exhibit tonal duality. The relationship of hierarchical equivalence between two or more tonics I refer to as the vertical dimension of tonal structure.

Schoenberg's Notions of "Rival Tonics" and the "Polytonal Chromatic Scale"

Schoenberg believed that tonal coherence as evidenced in the nineteenth century and beyond includes both monotonicity and other orders of tonality. In the *Harmonielehre*, when he first broaches the subject of modulation, he makes it plain that although it is usual that a single tonic be supreme, in an advanced musical idiom it is also possible that the ostensible tonic not be strong enough to rule over all contenders for the role of tonal centre. Monotonal rule may be supplanted in favour of the "self-directed functioning of other bonds." These bonds create a "new form or order" that "becomes completely equivalent to the old" (i.e., equivalent to monotonicity) in comprehensibility (Schoenberg 1978, 152). He describes one of the new tonal orders thus:

From 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" (Schoenberg 1978, 153).

In a later chapter ("Some Additions . . . to Round Out the System"), Schoenberg refers to this new tonal order as "fluctuating tonality" and begins to expand upon the subject:

Such is not readily illustrated by little phrases because it most surely involves the articulation (*Gliederung*) of distinct parts of a composition. Whoever wants to take a look at it will find many examples in the music of Mahler and others. . . . Two pregnant examples of fluctuating tonality from my own compositions are: *Orchesterlied*, Op.8, No. 5, 'Voll jener Süsse', which wavers principally between $D\flat$ and B major; and Op. 6, No. 7 (*Lied*), 'Lockung', which expresses an $E\flat$ -major tonality without once in the course of the piece giving an $E\flat$ -major triad in such a way that one could regard it as a pure tonic. The one time it does appear, it has a tendency, at least, toward the subdominant (Schoenberg 1978, 383).³³

He briefly exemplifies how fluctuating tonality can be accomplished:

"If the key is to fluctuate, it will have to be established somewhere. But not too firmly; it should be loose enough to yield. Therefore, it is advantageous to select two keys that have some chords in common, for example, the Neapolitan sixth or the augmented six-five chord. C major and $D\flat$ major or a minor and $b\flat$ minor are pairs of keys so related. If we add the relative minor keys, by fluctuating between C major and a minor, $D\flat$ major and $b\flat$ minor, then new relations appear: a minor and $D\flat$ major, C major and $b\flat$ minor; the dominant of $b\flat$ minor is the augmented six-five chord of a minor, etc. It is evident that vagrant chords will play a leading role here: diminished and augmented seventh chords, Neapolitan sixth, augmented triad" (Schoenberg 1978, 384).

Dense usage of ambiguous chord functions such as are mentioned in the above quotation produces the other new type of tonal order that Schoenberg has in mind, what he refers to as "suspended tonality" in the later chapter (p.383).

Schoenberg says of suspended tonality: "The classical development sections are not too far removed from this," which I take as establishing similarity, not

³³For relevant analyses of *Lockung*, see Schoenberg 1969, 112-13 and Lewis 1990, 26-29.

identity, between the tonal state of a development section and the advanced evolutionary state he calls suspended tonality (Schoenberg 1978, 384).

Suspended tonality is the fourth and last in a list of increasing shades of departure from the principle of monotonicity: tonicization, modulation, fluctuating tonality, suspended tonality (Schoenberg 1978, 152-53). Notice in the following description of suspended tonality that even in this case, Schoenberg hesitates to say that the pitch organization is without source, but ventures the hypothesis of a central source consisting of more than one tonic:

The harmony is nowhere disposed to allow a tonic to assert its authority. Structures are created whose laws do not seem to issue from a central source (*Zentrum*); at least this central source is not a *single* fundamental tone (Schoenberg 1978, 153).

This is as much information about the new types of tonal order as Schoenberg is able to give in the *Harmonielehre*. He is not able to illustrate with short examples, because the distinction between the concept of rival tonics and the concept of primary and secondary keys, and the way in which rival keys can be the source of tonal coherence, only becomes clear over the entire structure of an actual composition. We are exhorted to find examples in the literature by modern composers (his own First Quartet belongs to the period he has in mind).

Moreover, although Schoenberg has formulated a theory of monotonicity, he cannot formulate a paradigm that summarizes how the central source of pitch organization in a piece can be dual. This is because the concept of tonal duality is by its very nature contextual rather than particular. Conversely, because the notion resists formulation, tonal duality cannot be as systematically demonstrated

as monotonicity: every manifestation is a particular manifestation, not an instance of a generality. An understanding of how the coherence of a particular piece springs from the rivalry of two tonics primarily illuminates that particular composition, although it may also have implications for interpreting another composition.

One other notion related to the absence of monotonicity is mentioned in the *Harmonielehre*. At the end of the chapter entitled "Some Additions . . . to Round Out the System," Schoenberg makes a list, in evolutionary order, of ways in which the chromatic scale can be the basis of musical composition. The final item in this list is "the polytonal chromatic scale," to which, he says, his book does not extend.

* * *

Modern-day analyses of works by Wagner, Mahler, Strauss, Schoenberg, and others—both short songs and extended, multi-movement works—have demonstrated the possibility of tonal duality. Frequently the main tonal strategy of a composition appears to be either a wavering between two keys, as Schoenberg described, or infiltration of the main diatony by a collection of foreign tones or even an added-note chord or polychord. It is possible for tonal duality, a "vertical" harmonic event, to occur instead of, or in addition to, a horizontal structure. In both cases the prevailing infiltration of the main tonic by other tonal-harmonic elements is as crucial to the fundamental structure as are either a contrapuntal framework or a key design in the horizontal dimension. This then

becomes a further step in the radical re-definition of the term “background” begun by McCreless.³⁴

The notion of tonal duality is not a mere classification for the purpose of conveniently labelling a set of related oddities, side-stepping a terminological problem, or avoiding rulings on ambiguous cases. Tonal duality applies when it succeeds in proving palpable tonal coherence where monotonal principles founder. It is suspect if applied mechanically in analysis of any composition that begins and ends in different keys or any piece that defies demonstration of prolongational levels. In order to have explanatory power, tonal duality must be shown to illuminate the unfolding of events within a particular work at every level.

Modern-day theories of tonal duality are sensitive to the exigencies of particular contexts. Existing paradigms have not always been formulated with reference to each other, nor are they easy to integrate into one generalization. Summaries of the most notable paradigms follow.

The Notions of “Interlocking” Diatonic Collections and “Shadow Tonic”

William Benjamin’s 1976 article “Interlocking Diatonic Collections as a Source of Chromaticism in Late Nineteenth-century Music” aims to account for chromaticism by generalizing the concept of mixture so as to include not only mixture of diatonic modes but also mixture of any pair of diatonic collections having different tonics. For a passage from the introductory section of Franck’s

³⁴Christopher Lewis takes this stance: “I adopt Patrick McCreless’s convention that the term [background] shall refer to those harmonic relationships that govern important structural entities” (Lewis 1990, 19).

D-minor symphony, mm.6-12, Benjamin demonstrates that the bass line of the passage contains a systematic interlocking of hexachords from the D-minor and E^b -minor diatonic collections and that the interior harmonies of the passage are interpretable in both D minor and E^b minor. In the course of the discussion, this understanding of the passage is compared to: (1) a plausible Schenkerian analysis that shows directed motion in D minor from I to V and regards events of the passage that involve six flats as uncoded foreground activity within prolongations of I and V (Benjamin 1976, 45, Ex. 4); (2) a hypothetical variant of the passage that convincingly substitutes for either its first or final chords (or both chords) an E^b -minor triad, while leaving the remainder virtually intact (Benjamin 1976, 49, Ex. 8); (3) remarks on the structure of the movement as a whole, including the fact that the principal thematic material of the Allegro section (D minor) receives its structural recapitulation (m.349) in E^b minor (Benjamin 1976, 38-39).

The second of these analyses suggests that E^b is what Benjamin calls a “shadow tonic” in later writings (Benjamin 1984, 15; 1991). The E^b tonic is not explicit in the pitch organization of mm.6-12, but its function as the alternative source or goal of the chords and lines is implied so strongly—by the hypothetical tonal affiliation of the interior harmonies—that arrival on an E^b tonic is plausible. Although the actual E^b tonic is not present, its “shadow,” in the form of the diatonic collection having six flats, is present; therefore a shadow of the key of E^b exists. Benjamin points out that insistence on the reality of the “shadow key” of

E $\flat$ as well as the reality of the key of D is not the same as insisting that it is possible to hear both keys at once; the assertion is that on any given hearing it is possible to hear one of them “against the background of knowing the other to be possible” (Benjamin 1976, 37-38, n. 8).

Later in the movement the key of E $\flat$ minor assumes a structural role by carrying the principal thematic material in the recapitulation. This becomes logical when the “interlock” of D-minor and E $\flat$ -minor collections, rather than the D-minor collection alone, is regarded as the main pitch-class space of the movement.

In the same article, Benjamin briefly hypothesizes a role for the secondary key in a piece whose main tonality is an interlock of two diatonic collections. He conceives of a secondary tonic as being derived from both collections for the purpose of occupying common ground between the two collections. A secondary key can do this either by its tonic triad being positioned midway between the two primary tonics on the circle of fifths, or by containing the pcs common to the two primary keys. For example, the pcs F and B $\flat$ common to mixed D-minor and E $\flat$ -minor collections are both contained in a B $\flat$ -major triad (Benjamin 1976, 39).³⁵

In his more recent work on tonal music by Bruckner and Schoenberg and on the early atonal music of Schoenberg, Benjamin has referred to the situation that engenders a shadow tonic as “tonal bivalence” or even “tonal multivalence” or “polyvalence” (Benjamin 1982, 1989, 1991). His 1982 paper entitled

³⁵B $\flat$ is not, however, the key of the subsidiary theme of the symphonic movement by Franck.

Ex. 1-10 Benjamin's sketch of *Chasel*, op. 6/5, adapted (Benjamin 1982, Ex. 2).

1 3 4 5 6 9 11 14 16 17 18 19 20

actual second half

hypothetical second half

[F:] I — [D:] VII I [V:] V = [A:] I —
 — III 5 — I
 IV
 21 23 26 27 28 29 30 31 32 33 34 35 36 41 42
 [F:] (III 5) — I⁴6 — IV⁴-3 V⁴- I
 [E:] VI VII⁷ II⁷ V⁷ (VII II V) I

“Polyvalent Harmony in Schoenberg’s Early Atonal Music,” includes an analysis of a short tonal work, the song *Ghasel*, op.6, no.5 (composed January, 1904). The piece begins and ends with F-major harmony; however, an assumption of this triad as sole source and goal of the song’s relentless chromaticism seems inadequate in the last half of the song (see Ex. 1-10). The prominent C $\sharp$ -minor harmony of m.21 followed by the G $\flat$ /F $\sharp$ major-minor seventh chord at the end of m.28 and the B major-minor seventh chord at the end of m.31 are disorienting ways of elaborating harmonies functioning in F major but are clearly directed toward E major as VI-II⁷-V⁷. To portray this, Benjamin’s analytic reduction of harmony and voice leading in the score becomes a double sketch halfway through. The upper sketch of mm.20-42 assigns harmonies to deep and surface levels on the basis of their roles in defining the F-major tonic. The lower, alternative sketch assigns harmonies to levels on the basis of their roles in defining the E-major triad as their source and goal. In the two sketches, harmonies that are structural in one are elaborative in the other, and *vice versa*. In one of these hearings, and at any one moment, F envelopes E, and in the other E envelopes F. The ultimate decision in favour of one or the other tonic is left until the last moment of the song: the penultimate measure (m.41) begins with F-major harmony that has been prolonged since m.36. It is followed by strong elements of the E-major collection; the penultimate chord even has the pc B $\natural$ in the bass. Benjamin’s alternative sketch concludes, very plausibly, on a hypothetical E-major triad to illustrate the function of this triad as a coexisting goal (with the F-major

triad of the final measure) of the tonal structure.³⁶

Chromatic Bitonality

In a 1984 paper, “Harmony in Radical European Music (1905-20),” Benjamin adopted the term “chromatic bitonality” in reference to the phenomenon of tonal duality. This designation is apt when the implications of two tonics are simultaneous but confined to separate strands of a musical texture. The modifier “chromatic” in the designation distinguishes it from bitonality in the Milhaudian sense of “opposing diatonic blocks or fields” projected by differing registers or instrumentation (Benjamin 1984, 15-16). Chromatic bitonality operates in textures of near or total chromatic saturation and is realized in its fullest meaning in Schoenberg’s second-period music. Benjamin perceives that in Schoenberg’s second-period music chromaticism is organized in overlapping and non-overlapping textural strata, each of which employs the chromatic scale to project its own tonic in varying degrees of clarity. Varying numbers of common tones between strata allow either for integration or for the tonality of one stratum to overshadow the entire texture.³⁷

In Schoenberg’s tonal music, use of chromatic bitonality is in a primitive stage and is a much more transitory, purely foreground, feature than it becomes in

³⁶The notion of E as “shadow key” in *Ghasel* has a counterpart in the main tonal issue of the first song of Opus 6, *Traumleben* (December, 1903), which has E as its main key. Wintle discusses *Traumleben* as an example of Schoenberg’s “fluctuating tonality” and finds in it a “high degree of intersection between E major and F major collections” (Wintle, 60). Lewis understands the pairing of E and F in *Traumleben* to be a rudimentary example of a “double-tonic complex” (Lewis 1990, 22).

³⁷Benjamin, in a conversation with the author.

his second-period music. Its momentary use can, however, reinforce a sense of background tonal duality yet-to-be, or already, established. Brief snatches of bitonality occur when a strand of the texture employs a melodic motive that is key-specific but not employed in the transposition consistent with the tonal centre of the remaining strands of the texture. An example of chromatic bitonality from Schoenberg's *Der Wanderer*, op.6, no. 8, will be discussed below (Ex. 1-15).

Ex. 1-11 Chromatic bitonality in *Traumleben*, op. 6/1.

1 2 3 4

21 22 23 24 25

E: I_2 I_6 I/V I^{b9} I

F: c.t. Gr. $5^{\sharp 6}$ I_4^6 (c.t. Gr. $5^{\sharp 6}$) I 4-3 5 E: c.t. Gr. $5^{\sharp 6}$ I

In Schoenberg's tonal music, chromatic bitonality is sometimes pointed up by restatement of the independent strand at the same pitch level as in its first

statement, but in a new tonal context (see Ex. 1-11). In *Traumleben*, a portion of the opening vocal line (m.2-3) arpeggiates an F-major triad, but is harmonized by V/V in E major, with pcs E $\sharp$ /F and B $\sharp$ /C interpreted as unresolved chromatic embellishing tones. In the restatement of the opening vocal phrase in mm.21-25, the F-major aspect of the line is pointed up by harmonization of mm.21-23 with an F-major six-four chord and m.24 with V⁷ of F before the cadence on an E-major triad (Lewis 1990, 24).³⁸

It is of foremost significance that the interlocking of diatonic collections and chromatic bitonality are methods of approaching or achieving the total chromatic. Any pair of semitone-related or tritone-related keys of the same mode, or a major scale combined with the harmonic-minor scale a semitone above, encompasses the total chromatic. Joel Lester sees the notion of combined semitone-related diatonic collections as the likely origin of chromatic saturation in certain twentieth-century styles (Lester 1989, 154-55). Albert Jakobik's remarks on Schoenberg's *Kammersymphonie*, op. 9 and his analysis of Schoenberg's Second Quartet, op.10 demonstrate a similar belief that chromaticism may derive from simultaneous use of two semitone-related diatonic collections. He makes a point of demonstrating the complementarity, with respect to the total chromatic, of two scales with semitone-related tonics when one is a melodic-minor scale and the other the major scale with the same third scale degree, e.g., F $\sharp$ minor and F

³⁸Similar, although not an example of bitonality, is an instance in Schoenberg's song *Verlassen*, op. 6, no. 4 discussed by Frisch. Here, a simultaneous pair of motives functions equally well, and at the same pitch level, harmonized by E $\flat$ -minor harmony in m.3 and by D7 harmony in m.31 (Frisch 1993, 182-83).

Ex. 1-12 Two excerpts from Jakobik's depiction of the integration of f#-minor and F-major collections in the first movement of Schoenberg's Second Quartet, op. 10 (adapted from Jakobik 1983, 31-32).

i

Exposition

Theme

1: mm. 1-11 f# to F

2: mm. 12ff. f[#] to F

1

C#5

B#3/C#4

12

F#4

17

F#4

F5

In succession:
C#5
= f# minor
= F major

In succession:
F#4
= f# minor
= F major

III.

Development

Theme 1 Contrapuntal
mm. 90ff. simultaneity of
f $\sharp$ and F (d)

90

98

Simultaneous:

mm. 90-91

m. 99

F#4 ↔ F4

C#5 ↔ C4/B#3

B#5 ↔ C#5

major (Jakobik 1983, 123). Example 1-12 gives two excerpts from his diagrammatic analysis of the first movement of Opus 10 (Jakobik 31-32). The first excerpt points out that the first two themes of the movement each delineate a compound form of IC1 in the horizontal direction: C#5-B#3/C4 in the first and F#4-F#5 in the next theme. Meanwhile, each theme “modulates” from F# minor to F major, complementary diatonic collections with respect to the total chromatic. The second excerpt is from the beginning of the development section. It shows the same pairs of IC1, now realized in a condensed time frame and occurring only vertically, not horizontally. Meanwhile, the tonalities that were presented successively in the exposition are presented simultaneously in the development. Jakobik suggests that Schoenberg did not think of this movement as being in F# minor or as having a theme in F# minor, but as existing in the total chromatic, organized around the major seventh/minor ninth C#-B#, with this interval concretized as the triadic pair F# minor:F major (Jakobik, 29).³⁹

The Notion of “Double-Tonic Complex”

A theory set forth by Robert Bailey in a 1978 paper describes a manifestation of tonal duality that focuses more on the respective tonic triads than on two diatonic collections, but concurs on the basic definition of tonal duality:

These two tonalities are not really set in opposition to each other like the contrasting keys found in earlier practice; rather, they are co-existent, in

³⁹Cf. the short analysis of *Traumleben* by Edward Cone in which he identifies the interval of a minor ninth (for example, the vertical interval B2-C5 at the beginning of m.3) as one of the song's most prominent melodic and harmonic elements (Cone 1974, 30-31). There, the ninth B-C is indicative of the integration of tonalities E and F.

such a way as to form what I have chosen to call a double-tonic complex. Within such a complex, one key of the pair maintains a primary position, though either one can serve as representative of the tonic (Bailey 1978).

Bailey's published formulation of the theory is contained in an essay accompanying his edition of the *Tristan* Prelude (Bailey 1985, 121-22). The term "double-tonic complex" draws attention to alternating manifestations of the tonic triads of two keys rather than mixed diatonic collections, and does not imply that the respective diatonic collections have maximum contrast. In repertoire by Mahler and Wagner, Bailey observes fluctuating tonics in movements where the harmony representative of the tonic may sometimes be an actual combination of elements of both tonic triads. He most often detects oscillation between, and overlay of, two third-related tonics—in the *Tristan* Prelude, A minor and C major.⁴⁰

Lewis integrates Bailey's theory with observations of bitonality and Schoenberg's idea of fluctuating tonality in analyses of turn-of-the-century music (Lewis 1984, 1990). He invokes and extends the spatial analogy for tonal structure to suggest that if the traditional polarization of two keys in the background tonal structure is thought of as the "length" of that structure, then a double-tonic complex is the "depth" of a background structure (Lewis 1990, 27).

Added-note Chords and Polychords as Manifestations of Tonal Duality

The operation of both the length and depth of tonal structure in a late-nineteenth-century work are described in Lewis's analysis of Mahler's Ninth

⁴⁰See also Lewis 1990, 18-21 for a summary of Bailey's view of the interaction of A minor and C major in the *Tristan* Prelude.

Symphony. Of the first movement (main key, D), Lewis shows that in the first theme group D-major and D-minor triads are frequently overlaid with the pitch class $B^{\sharp}$ or $B^{\flat}$ respectively. In each case, the added sixth suggests a double-tonic complex, either D major:B minor or D minor: $B^{\flat}$ major. Conversely, $B^{\flat}$ is chosen as the overt tonality of the second theme group. Its tonic triad, too, is part of a tonic complex when at times $B^{\flat}$ minor triads are overlain with the pc $D^{\sharp}$, suggesting, by means of the third D-F, D-minor triads and the double-tonic complex $B^{\flat}$ minor:D minor (Lewis 1984, 13, Ex. 2.1). Therefore, not only has this movement a rivalry between D and $B^{\flat}$ tonics as its primary key complex, but also a reversal of this conflict provides a secondary key complex, opposed to the primary complex in the horizontal dimension.

Lewis's analysis of the second and third movements of the Mahler Ninth also shows systematic double-tonic complexes consisting of third-related keys; but the tonal duality of the last movement employs a different interval relationship. This movement is saturated by its main tonic, $D^{\flat}$, but is not without curious, conflicting references to the original key note of the symphony, D. A subsequent article by Harald Krebs demonstrates that the D: $D^{\flat}$ association is foreshadowed in the first three movements of the symphony. For example, in the first movement frequent addition of $D^{\flat}/C^{\sharp}$ to representative D-minor chords, producing the third $D^{\flat}$ -F, foreshadows $D^{\flat}$ -major (Krebs 1990, 67-68). In this way, the $D^{\flat}$ -major triad is always a phantom representative of the tonic, and the conclusion of the symphony with a movement in the key of $D^{\flat}$ is a means of unification, not a

loosening of tonal order.

Summary Definitions and Principles of Graphic Illustration

From the foregoing survey, I summarize three general types of manifestation of tonal duality. These lend themselves to depiction by three types of graphic illustration based on modified Schenkerian principles.

1. Rival keys: Single Sketching. Within one thematic area, the initial tonal centre is established by its tonic or dominant, but elaborated in a discontinuous way, being intermittently interrupted by an equally discontinuous presentation of another key (or keys). The oscillation between two or more keys is aided by the use of ambiguous common chords. Insistent alternation of tonally contrasting blocks that share the same motivic materials suggests that no one chord is hierarchically superior to all and that there is no overall prolongation of any one triad. If one tonic, by means of temporal priority, gives the impression of being the main tonic, the other will be referred to as the rival tonic; or, in a context where neither deserves priority, the keys will be referred to jointly as “rival keys” or as a “key complex”. If there is a structural restatement of the opening thematic material, it is typically in the rival key, for the rival too can serve in the structural capacities reserved for the main tonic of the piece. An “eleventh-hour” decision results in a final cadence on one or the other tonic.

The case of oscillation between rival tonics will normally be illustrated with a single sketch accompanied by changing key designations to show the fluctuating functional allegiance of chords. The intention of the sketch is that an

intervening block of material in a rival key *does not* prolong the tonic of the previous block and that over the course of the entire passage each tonic merely recurs. A sketch illustrating an instance of rival tonics will be discussed below under the heading “Dual Secondary Keys” (Ex. 1-17).

2. *Shadow key: Double Sketching.* Between harmonic pillars in the initial key, chromatic harmonies imply another key so consistently that the ultimate goal could well be its tonic triad and not the original tonic. In the course of the passage, the listener can choose to hear either tonality prevail throughout, although not both at the same time. The case of a shadow tonic will be illustrated with a double sketch, one sketch showing functional harmonies and their contrapuntal connections in the main key and the other sketch showing these relationships in the shadow key. The double sketch shows that what is prolongational (elaborative) in the main key is structural in the shadow key and *vice versa* (Benjamin 1982, Ex. 2; Lewis 1990, Ex. 6c). Prolongation exists, not as an absolute but as a set of two possibilities as to what chord is expanded.

Example 1-13 sketches a passage from Part II of Schoenberg’s song *Der Wanderer*, op.6, no.8 (?April–October, 1905). The song begins in G minor, and after a tonally contrasting section, returns to G minor near the beginning of Part II (mm.17-39). The sketch is of a portion of Part II, phrase 2. Within this phrase, mm.27-32 are an insistent alternation between the diminished-seventh chord $F^{\sharp}-A-C/B^{\sharp}-E^{\flat}/D^{\sharp}$ (and variations of this chord) and an $F^{\sharp}$ -minor six-four chord; mm.33-39 contain a similarly insistent alternation of V of D and V of $C^{\sharp}$. In one

Ex. 1-13 Double sketch showing main and "shadow" tonics in *Der Wanderer*, op.6/8, mm.26-39.

The image displays two musical sketches for measures 27-39 of 'Der Wanderer'. The upper sketch shows a progression from G minor (g: ii°7) to D major (V7/V #5). The lower sketch shows a more complex progression involving F# minor (f#: vii°7/V), G minor (g: ii°7), and D major (V7/V #5), with various figured bass notations like i6, Ger. 5, and V sus. 4.

hearing of this phrase (upper sketch), the F# triad of mm.28-31 is vii#5 and elaborates the leading-tone seventh chord of G minor; the G#-rooted harmony of mm.35-38 similarly elaborates V of D. The other hearing of mm.27-32 (lower sketch) acknowledges the rhetorical effect of the second-inversion F# triad, which is strongly that of an incipient V or nascent I of F# minor. In this hearing, it is the diminished-seventh chord, vii°7/V in F#, that is elaborative and the six-four chord, with its dominant and virtual tonic implications in F# minor, that is

structurally and hierarchically superior to the diminished-seventh chord. The upper-voice F $\sharp$ 5, retained as the seventh above bass G $\sharp$ in mm.35-38, provides a registral connection between F $\sharp$: i $\bar{4}$ and F $\sharp$: V/V. The latter harmony is appropriately elaborated by an augmented-sixth chord having A in the bass. Given the distinct possibility of hearing the passage as in the lower sketch, the key of F $\sharp$ shadows G in this phrase and tentatively suggests the possibility of G:F $\sharp$ tonal duality.

Ex. 1-14 Double sketch showing main and "shadow" tonics in *Der Wanderer*, op.6/8, mm. 67-70.

The image displays a double sketch of musical notation for measures 67-70 of *Der Wanderer*, op.6/8. The notation is presented in two systems, each with a treble and bass staff. The first system (top) shows a melodic line in the treble and a harmonic line in the bass. Below the bass staff, the harmonic analysis is given as: g: i (Neighbour chord) vii $\sharp$ 5 (Neighbour chord) vii $\sharp$ 5 i. The second system (bottom) shows the same melodic line but with a different harmonic interpretation in the bass. Below the bass staff, the harmonic analysis is given as: f $\sharp$: I $\flat$ 5 - i($\bar{4}$) I $\flat$ 5 - i($\bar{4}$) ?.

The existence of tonal duality is not necessarily certain early in a piece; the lack of hierarchical distinction must be confirmed over the larger structure of a

composition in order to be valid. G:F# duality is confirmed toward the end of *Der Wanderer* in the passage shown in Ex. 1-14, the conclusion of Part III. In one hearing (lower sketch), the upper parts trace tendency tones having dominant function in F# that twice resolve into a supposed F#/Gb-minor tonic, albeit again in an apparent six-four position. The actual vocal part (not shown) twice outlines $\hat{5}-\hat{7}-\hat{1}$ of Gb/F# and concludes on the pc F#. Only in the one-bar interlude, m.70, does the piano part alter the impression of F# as sole tonic. In another hearing (upper sketch), the G1 is interpreted from the start as an imaginary pedal point sustained throughout the passage; judgement as to the function of the F#-minor triad is reserved until m.70, where all three of its pitches rise in parallel motion and it proves to be vii#5 of G minor.

3. *Chromatic Bitonality, Added-note chords, and Polychords:*

Segmentation of a Sketch. Two diatonic collections, or two triads, may be simultaneously implied in different parts of the texture. At different times, such a "bitonal" passage may be heard in either of two ways: with all strands of the texture integrated into one tonality and employing a harmonic vocabulary expanded by extended and altered chords; or with one or more strands (usually the uppermost) contradicting the remainder of the texture and projecting its own key. Graphic illustration will consist of a linear-harmonic reduction that is segmented (with boxes, circles, or brackets) to isolate harmonic functions pertaining to individual keys, but whose harmonic functions are also labelled as an integrated whole (Lewis 1990, 29-30, Exs. 14 and 15).

Ex. 1-15 Chromatic bitonality in *Der Wanderer*, op.6/8, mm.45-47.

(a) Key defining motive.

(b) Segmentation of sketch.

40

45 46 47

Voice

Piano

D: I — (b9) —

F: I^{b9} I^{b7} — $b9?$ — — — — — Ger. $\frac{+6}{5}$

Bb: I^7 — $b9$ — — — — — ?

Example 1-15 shows two short passages from *Der Wanderer*. The first establishes a descending three-note motive of which the initial note is clearly mediant in function. The second passage employs the same motive, transposed to F# minor, in the right hand of the piano part. Accompanying it is an F⁷ chord in the left hand—of uncertain function, but definitely not projecting F# minor—and the pc F in the vocal part. The passage demands to be considered in two equally valid ways: the pcs A and F# of the motivically generated strand are integrated into the wider texture as chordal third and minor ninth of the F-rooted harmony, which then progresses to its common-tone German sixth; in the other hearing, the right-hand strand implies an independent F#-minor tonic that progresses to its dominant-seventh chord.

Ex. 1-16 Segmented sketch showing polychordal motive basic to *Pelleas und Melisande*, op. 5.

[8]

Example 1-16 shows the basic recurring motive of *Pelleas und Melisande* in its first appearance. It consists of the main tonic triad of the piece, D-minor, overlaid with a crucial *leitmotif* that includes as well as the pc F the dissonant pcs G# and C#. The upper part therefore outlines a C#-major triad—the semitone-related triad with the same third as the D-minor triad. In itself, the first measure contains an added-note chord rather than a polychord; the *leitmotif* in the inner voice makes clear the D-minor basis. A hearing that concentrates on the uppermost voice of both measures discerns the C# triad. The second measure unites elements of both consonant triads in an augmented triad. The conflict between D and C# triads is given large-scale structural significance when the recapitulation of the D-minor opening of the tone poem occurs in C# minor (r.50). These two features, one on the level of motive and one on the level of large-scale tonal design, suggest that a tonic complex D:C# operates in the work.

Dual Secondary Keys

The possibility of dual secondary keys has been less often demonstrated in the literature. In the earliest of his articles cited above, Benjamin mentions the possibility of “interlocks of derived collections,” i.e., an interlock of secondary keys that are somehow derived from the primary keys; however, he does not expand on this point (Benjamin 1976, 39). We noted, above, an instance of dual secondary keys in Lewis’s analysis of the first movement of Mahler’s Ninth. In this example, the secondary key complex adopts and reverses the same tonal issue begun by the primary key complex.

In his article on Bruckner’s Eighth Symphony, Benjamin deals with “the non-hierarchical presentation of secondary tonalities.” He observes that “in Bruckner, it is . . . common for secondary keys to be presented in discontinuous fragments, interrupting an equally discontinuous representation of the primary tonality” (Benjamin 1989, 12). Because the first and second thematic areas of the first movement of this symphony are themselves multipartite, “secondary keys” in this instance refers to keys secondary to the predominating key of the second thematic area. The second thematic area has G major as its first and predominating key and secondary keys G $\flat$ major, C major, and A major in its continuation. Benjamin notes that the elaborations of the three secondary tonics are intertwined, and that all three are equally associated with the same motivic material, making it inappropriate to hierarchize them.

In Schoenberg’s tonal music, it is not uncommon for the set of keys of a

secondary key complex to be distinct from those of a primary key complex, but to have among them the same intervallic relationship as the keys of the primary key complex. Therefore, when the secondary key of a tonal piece is V (or III in the case of a minor-mode piece), a secondary key complex may be formed from the dominants or mediantes of the keys involved in the primary key complex. In *Der Wanderer*, the most clearly stated secondary key is V, D major. We have already noted in Ex. 1-13 the passage that concludes Part II: it contains alternating references to V of D and V of C $\sharp$. At the opening of Part III in m.40, V of D at last prevails and a new theme, based on the motive of three stepwise descending notes, is heard in D (Ex. 1-15a). Later in Part III, the shadow of C $\sharp$ as rival to D returns. Example 1-17 sketches the transition to the reprise of the D-major headmotive at m.61. The only obvious tissue of continuity in this passage is not harmonic but motivic—the repetitions and gradual mutations of the three-note, descending motive marked in the uppermost voice. Harmonically, the passage alternates references to V of E $\flat$, $\overset{6}{I}^4$ of D, and V of C $\sharp$, that is, references to the main dominant and to its two chromatic neighbours. Most significantly, the harmony before the return of I of D is V of C $\sharp$ /D $\flat$. This passage confirms the key of C $\sharp$ as rival key to D at the hierarchical level of the secondary key and, by suggesting E $\flat$ as a further rival key to D, provides the dominant counterpart of the rival tonic A $\flat$, yet to be encountered in Part IV.

Ex. 1-17 Single sketch showing rival secondary tonics in *Der Wanderer*, op.6/8, mm.54-61.

54 55 56 57 58 59 60 61

Eb: I^7 (neigh- I^7 (passing IV^6_5 (i^6_4) va^{o7}/I
 D: Ger. $+^6_5$ (i^6_4) Ger. $+^6_5$ (chord) I^7 (passing V^6_5 (vii^{o7}_2 I
 Db: I^7 (chord) I^7 (chord) I^7

In large-scale instrumental pieces, tonal duality at the level of secondary tonics, whether secondary tonics in conventional fifth relationship to the primary tonic or in semitone or third relationship to the primary tonic, is especially useful as a way of extending the intricacy of tonal design initiated by duality within the primary key area.

CHAPTER 2

THE TONAL STRUCTURE OF PART I

Part I of the quartet, extending as far as r.E, is a sonata-form “first movement.” The expository section of the first movement serves also as the Exposition of the single-movement design, and the development section of the first movement functions as the initial division of the Development section of the work as a whole. Complexity of thematic design in Part I becomes particularly evident when the first-movement recapitulation occurs as an interpolation within the overall Development section. Therefore, the tonal scheme of Part I must serve two purposes. On the global level, Part I initiates a tonal plot to be worked out in the course of a continuous, fifty-minute composition. On the local level, the tonal plot of Part I must effect a rounding of the first-movement structure even while implying the continuation of the large-scale Development section. A detailed examination of Part I, section by section, will reveal how both global and local purposes are accomplished.

The Principal Thematic Group (mm.1-65)

The PTG is itself a substantial section. It fuses at least three archetypal

musical forms, any of which may come to the fore in the mind of the listener.

Some analysts regard the PTG as a microcosm of a structural archetype that normally extends across an entire work. For instance, Friedheim (302) and Samson (96) have noted similarities to sonata form in the tonal and motivic fashioning of the PTG:

mm.1-13	First Theme in tonic key (my PTGa);
mm.14-29	Second Theme in related key, minor submediant (my PTGb);
mm.30-64	Development in distant keys;
mm.65ff.	Recapitulation in tonic key. ¹

Frisch (1993, 193) draws attention to the strophic effect of the three principal occurrences of PTG theme a, and to the ternary effect of their tonalities:

		<u>Thematically</u>	<u>Tonally</u>
m. 1	PT in D minor	A	A
m.30	PT in E ^b minor	A'	B
m.65	PT in D minor	A''	A

The antithesis to regarding the PTG as a miniature representation of a large form—interpreting it as a greatly expanded version of a small syntactical unit such as the period—is also possible. Benjamin regards mm.1-64 as a parallel-structure period of inflated dimensions.² Measures 1-29 serve as a long Antecedent, and mm.30-64 as a somewhat longer Consequent. Three motivic units comprise the

¹Wilke objects to the sonata-form characterization of the opening on the grounds that it crudely segments what is a continuous motivic-thematic process; it ignores, for example, structures and functions that make mm.14-29 a further development of mm.1-13 (Wilke, 143).

²This model was proposed by Benjamin in a conversation with the author.

Antecedent and are reworked in the Consequent, thus:

Antecedent PTGa¹ (m. 1) — PTGa² (m. 8₄) — PTG b (m.14)

Consequent PTGa¹ (m.30) — PTGa² (m.45) — PTG b/a (m.54).

The Antecedent begins in the tonic key. The Consequent begins as a sequential repetition of the Antecedent (a semitone higher) and is followed by the reestablishment of the tonic at m.65, the beginning of a third long syntactical unit. According to this understanding, the m.65 return of the PT in the tonic key is not part of the PT as such, but marks the beginning of the transition process to the subordinate key area essential to the first-movement exposition.

The common factor in all three interpretations of mm.1-64—whether (1) Exposition–Development; (2) Part form (AA' thematically, AB tonally); or (3) Antecedent–Consequent in parallel structure—is that mm.30-64 parallel mm.1-29 by extending and reworking the same thematic materials within new tonal areas. This feature of the passage is evident in Ex. 2-1, a sketch of harmonic and linear design in mm.1-65 that will be used in the following discussion.³ For ease of reference, mm.1-29 will be henceforth referred to as the Antecedent, and mm.30-64, as the Consequent.

Tonal Structure of the Antecedent: mm.1-29

The Antecedent presents the four motivic-thematic elements of the PTG: a¹, which is the PT proper (mm.1-8₃), and its derivatives a² (mm. 8₄-13), b (mm.14, ff.), and c (mm.24₂-29). The vn1 part of PTGa² spins out a motive

³The broad outline of Ex. 2-1 is adapted from a sketch by Benjamin.

Ex. 2-1 Principal Thematic Group.

1 2 5 7 8 9 10 11 12 14 18 19 21 23 24 26 28 29

PTGa' PTGa² PTGb PTGc

Y⁷ of eb Y⁷ of Db

Y⁶(Y⁶ iv⁶ —) Y⁷

d: eb:

30 34 36 37 38 41 42 44 45 47 49 52 53 54 56 58 59 60 62 65

PTGa' PTGa² PTGb/a PTGa

c: TS(Y⁷) i ii³ Y⁷ vii^{o7}/Y⁷

c#: ct.o7 — i — ct.o7 ? Y⁷?

d:

derived from the contour of mm.2₃-3₂ of the PT (Wilke, 135); themes b and c preserve the dotted rhythm characteristic of the PT. But whereas the motivic plot is tight and coherent, tonal organization, as judged against expected norms, is problematic: the I-V relationship in D is avoided (mm.1-23) yet a clear V of E^b is prominently established (mm.24-29).

Mm.1-23: avoidance of the I-V relationship in D. The main key is established by the opening harmony, the D-minor triad elaborated briefly in m.1 by chromatic movement around its root and its fifth. The tonic chord is not touched on again within the initial presentation of the PT; therefore, the pc D on which the melody begins is the only upper-voice member of the chord to be supported by tonic harmony.

Measures 2-8 of the PT (vn1), which we noted in Chapter 1 are constructed from the motive of a semitone and tritone combining to form IC5, arpeggiate expansively around a third-stack, E-G (or G[#])-B^b-D. The function of this supertonic-seventh harmony is subdominant: in this style it could either progress to dominant harmony (i.e., function as pre-dominant harmony) or return to tonic harmony (i.e., function as a common-tone seventh chord). With G[#]—the leading tone of $\hat{5}$ —in m.5, pre-dominant function is intensified. The way in which E-rooted harmony is expanded and the way in which its tendency toward dominant harmony is thwarted are the subjects of the following discussion.

Measures 2-4₂ contain the basic pitch level of the arpeggiated supertonic-seventh harmony in vn1 (Ex. 2-2). The contour of the vc countermelody

strengthens the overall effect of $ii^{\phi 7}$: in m.2, G2 accompanies E4; the countermelody rises to $Bb2$ in the second half of m.2; and a return to G2 accompanies the return to E4 in m.3.

Ex. 2-2 PTGa¹ (mm.2-8): prolongation of $ii^{\phi 7}$.

The musical score for Ex. 2-2, PTGa¹ (mm.2-8), is presented in two systems of two staves each. The first system covers measures 1-4, and the second system covers measures 5-8. Measure numbers 1, 2, 3, 4, (4), 5, 6, 7, and 8 are indicated above the staves. Annotations include 'exact repetition' for measures 1-4, 'sequential repetition up a 3d (not exact)' for measures 5-8, and 'tial repetition up a 3d' for measures 5-8. A 'sequen-' label is at the end of the first system.

In the compound inner line of mm.2-3 (va), D4 momentarily falls to C[#]4. (As we noted in the previous chapter, C[#] is then elaborated with its own chromatic lower neighbour, not shown here.) C[#] momentarily increases the dominant-function content of the harmony, for it becomes E-G-B^b-C[#], vii^o7, for two beats (mm.2₄-3₁). C[#] proves to be a lower neighbour to D4, not a resolution,

when D4 and its chordal skip B $\flat$ return in the va for the remainder of m.3. It is striking how even the accented bass passing tone A2, although elongated (as accented tones of figuration often are), has little power to create a feeling of arrival at dominant harmony. A2 is merely the penultimate note of the first phrase of the vc countermelody; moreover, like the neighbour tones C $\sharp$ 4 and A3 in the va, it is subsumed by the strong arpeggiation of supertonic-seventh harmony in the PT.⁴

The remainder of theme a¹ continues to expand supertonic harmony and to resist resolution to dominant harmony. The method of expansion is innovative. Within m.4, theme and countermelody begin repetitions, but in ways that synchronize them differently, in time and in vertical distance. At beat 2 of m.4, the countermelody begins to repeat the idea that originated at m.1₂ a third higher;

⁴Various objections might be raised to the idea that the A2 of m.3 be heard as an accented passing tone within expansion of supertonic harmony. The slurring in the vc part of mm.1-3 might be thought to attach structural importance to A2. It should be noted that the rhythmic shape of the vc countermelody includes an anticipation at the end of m.2 of the accented passing tone A2; the slurring in the vc part of mm.1-3 reflects the articulation between the anticipation and its principal tone. This accords momentary emphasis to the accented A2, and a momentary impression, during the first three beats of m.3, of dominant-rooted harmony. But the G2 at the end of the measure remains the final and structural note of the vc phrase, for given the emphatic supertonic harmony in the vn1 theme G2 cannot be subsumed into a continuation of dominant function. Therefore, the apparent beginning of a slurred group with the A2 of m.3 does not elevate A2 to structural status in the phrase as a whole: it remains a passing tone between B $\flat$ 2 and G2.

The occurrence of A2 in the bass voice, which normally rules harmonic function, might suggest that its potential dominant function must attach to the continuation of C $\sharp$ 4 in the inner part and the upper-voice E5. But the power of the bass voice to rule harmonic function is attenuated in Schoenberg's music by the saturation of his textures with invertible counterpoint. When the themes of mm.2-3 are presented in mm.31-32 transposed and inverted—with PT in the vc and countermelody in vn1—there is no doubt that the arpeggiated supertonic-seventh harmony in the lowest voice defines harmony in that measure, because the momentary dominant triad is in too unstable a position to attract attention. Hearing supertonic harmony in m.3 as having deeper structural status than dominant harmony makes it possible to hear the harmonic shapes of the parallel measures, m.3 and m.32, as identical.

at beat 3 of m.4, vn1 repeats its material that originated not in the first measure but at m.2₁, and does so at the original pitch level for the remaining two beats of m.4; this creates new counterpoint between theme and countermelody in m.4.

The vn1 part gets on track with sequential repetition a third higher in mm.5 and 6.

Augmentation of the rhythm of the countermelody in m.5 puts the theme by the beginning of m.6 an entire measure ahead of the countermelody compared to their original alignment. The temporary realignment takes advantage of the similarity of the melodic and harmonic content of the theme in m.2 and in m.3, the only difference in m.3 being downward rather than upward arpeggiation of the E half-diminished seventh chord. Thereby it is possible for the vc part in m.5 to sequence the first two pitches of the countermelody in m.2—G₂ and passing tone A₂—with B $\flat$ ₂ and passing tone B $\sharp$ ₂, while the vn1 part of m.5 sequences mm.2₃-3₂, and yet imply a similar relationship between outer parts in m.5 as in m.2. The exact vertical intervals are different but the harmonic effect is analogous.

Diminution of the rhythm of the countermelody in m.6 brings the two themes somewhat closer to their original alignment by the end of m.6.

We have noted that in m.4 the theme continues its suggestion of an E half-diminished seventh chord while the countermelody now begins on F₂. The new vertical intervals between the two themes in mm.4-7 require the inner parts to serve as a new harmonic “glue.” In m.4 the compound melody in the va is used to meld the bass F₂ and the upper-voice B $\flat$ ₄-D₅ with an accompanying B $\flat$ triad. B $\flat$ harmony in the va is expanded with a passing C₄ in beats 3 and 4 that

harmonizes with G2 in the bass and E4 in the upper voice. Although a B $\flat$ chord begins the phrase, the overall effect in m.4 is not of B $\flat$ harmony: the bass F2 provides only weak support for B $\flat$ harmony on beat 1—as if B $\flat$ harmony were embellishing—and the upper-voice arpeggiation of E⁷ harmony that begins again at beat 1 is so strong as to leave the impression that the E4 of beat 3 is harmonic and the F2 of beat 1 is a lower neighbour tone.⁵

The same melding is necessary in m.5 where the upper voice gets on track with sequential repetition of m.3 a (major) third higher while in the vc B $\flat$ 2 parallels the G2 of m.2 a (minor) third higher. Diatonic sequencing up a third adds to the third stack rather than effecting a harmonic progression. The sequenced harmonic effect is parallel to that of m.2 where G2 in the bass and E4 in the uppermost voice implied a first-inversion supertonic-seventh chord. But whereas the appoggiatura F in the vn1 part of m.2 created a temporary minor seventh above G2 (momentarily iv⁷), the pitch a third higher in the vn1 part of m.5 creates a more intense major seventh (momentarily VI⁷). If the underlying harmony in m.2 is the first-inversion supertonic-seventh, then the corresponding underlying harmony in the sequential repetition is a similar function, iv⁶₅. In this case it is actually #iv⁶₅ because $\hat{4}$, G, has been raised to # $\hat{4}$, G#, adding an element of “dominant of the dominant” function and preserving the downward semitone

⁵At m.33, where the PT is transposed to E $\flat$ minor, the counterpoint is inverted and the countermelody's sequential repetition occurs in vn1. Placed in the uppermost voice this time, the starting note of the countermelody does not in itself interfere with an impression of actual submediant harmony. This time, however, the phrasing of mm.32-33 vn1 makes scale step 3 at the start of the countermelody's sequential repetition sound decidedly like a neighbour tone. As a result, the apparent submediant triad is again an embellishing harmony to the prevailing supertonic-seventh chord.

relation of appoggiatura and principal tone. The inner-voice arpeggio reinforces all pitch elements of the growing third stack in beats 1 and 2 of m.5 by doubling the appoggiatura, A6, with A4 which falls to G4, and also including the former appoggiatura, F (F4 falls to E4), during beats 1 and 2. This strengthens the momentary impression of VI⁷, but it is soon possible to hear the underlying harmony of the measure as a new position and chromatic alteration of the supertonic-seventh harmony that has prevailed since m.2: (E-)G[#]-B^b (or B^b in the bass of beats 3 and 4)-D. In any case, sequential repetition a third higher cannot alter the impression of the prevailing harmony's root; in this context it can only give the impression of motion within the same harmony.

Thus far, there have been two apogees in the vn1 line, F5 in m.2 and A5 in m.5. At m.6 the bass reaches its new apogee at D^b3 rather than D3, preserving more closely the contour of the line being sequenced, and again temporarily forming the fully-diminished-seventh chord E-G-B^b-D^b. This time the apparent vii^o7 is itself expanded, through the first beat of m.7. But in the remainder of m.7, and in the first three beats of m.8, the pc D returns in the inner harmony and in the vn1 arpeggiation, while the outer-voice counterpoint resumes its expansion of supertonic-seventh harmony. The pc F, as a member of the third stack above E, gains a moment of independence from resolution to E or G when it participates in the vn1 arpeggiation of m.7.

The uppermost voice having reached B^b5 in m.7, it descends by chromatic motion to G5 while the bass descends back to the harmonic root, the pc E. The

middleground-level voice-leading result of the entire prolongation of supertonic-seventh harmony in mm.2-8 is a voice exchange between soprano and bass parts (Ex. 2-1). The harmonic rhythm of PTGa¹ is striking: after a single measure of tonic harmony, pre-dominant harmony has been expanded over seven measures. Intermediate attempts within theme a¹ to resolve the dissonant D to C[#] are all short-lived. Resolution to dominant harmony is still anticipated in what is to follow.

Theme a² which follows at m.8₄ is a clear motivic outgrowth of a¹ but not a clear harmonic outgrowth. The perfect-fourth leap of m.7 is the source of the fourths in the P4+M3 idea in the vc, and the vn1 motive of mm.2₃-3₂ is the source of the vn1 part in mm.8₄, ff.. PTGa² occurs in two sequentially related statements whose upper-voice starting pcs, F6 in m.8₄ and A6 in m.10₄, recall the appoggiatura pitches in mm.2 and 5. The harmonic effect of a², however, is not clearly the dominant harmony anticipated by theme a¹.

Measures 8₄ to 12 are a particularly dense and elaborate variant of Schoenberg's textbook method of harmonizing a bass line that alternates IC5 and IC4 (Schoenberg 1978, 381, Ex. 314 i). The four-part counterpoint forms a linear intervallic pattern (LIP) in two sequentially related statements shown in Ex. 2-3.⁶ The vertical structure consists of alternating outer-voice major ninths and

⁶The term "linear intervallic pattern" (henceforth LIP) is borrowed from Allen Forte (Forte 1979, 363-76). It refers to a repetitive pattern of vertical intervals formed by outer voices. With the exception of the point of departure and the goal, the simultaneities thus formed have the lowest possible degree of harmonic import. The designation LIP is preferred to "sequence" because the melodic detail may change while the pattern remains constant (Forte, 366).

augmented fifths harmonized by augmented triads with the addition of minor sevenths. All of the chords, not just every other chord, are derived from the set of major-minor seventh chords obtained by attributing roots to a single minor-third cycle, with the additional complication that the chord fifths are augmented.⁷ Bass notes are treated alternately as chordal sevenths and roots (alternating $\frac{4}{2}$ and $\frac{7}{2}$ positions) of these related seventh chords. Bass notes that are chordal sevenths (odd-numbered bass notes in the series) belong to the background minor-third cycle, and those that are roots (even-numbered bass notes in the series) naturally belong to another minor-third cycle.

Ex. 2-3 PTGa² (mm.8₄-12₁): interaction of harmonic and linear processes.

The chord that begins PTGa² is potentially V of D. It contains the pcs A

⁷William Benjamin pointed out to me the essential uniformity of chord types. The main exceptions to the pattern of augmented-minor seventh chords are the endpoints of each statement of the LIP which, as will be discussed below, have specialized functions. Frisch sketches the vertical harmonies variously as whole-tone, diminished-seventh, and major-minor seventh chords (Frisch 1993, 198, Ex. 8.8). But the seeming inconsistency from chord to chord disappears when a rhythmic adjustment at chords 5 and 6 (also to be discussed) and the specialized harmonic function of the endpoints are taken into account.

and C $\sharp$ in inner voices. The uppermost F (recalling m.2) might be construed as the raised fifth of V (or the dominant thirteenth) and the bass E $\flat$ (which continues the prior descent of the vc line and, as was mentioned in Chapter 1, provides the upper neighbour counterpart to C $\sharp$) might be construed as the lowered fifth of V. The chord is also, of course, an augmented triad with minor seventh rooted on F. Therefore, interpretation of its actual harmonic function as V of D in highly altered form would require explicit confirmation of the functions of C $\sharp$ as $\hat{7}$ and E $\flat$ as $\flat\hat{2}$. This never occurs.

Instead the interval content of the chord in m.8₄ is repeated, with small alterations, in successive transpositions and revoicings. In order that the final chord of the first statement of the LIP might occur on a strong beat, the rhythm of the previous two chords is accelerated—a decision that requires a single form of the quadruplet va motive to serve for two chords within the fourth beat of the measure. Hence the occurrence of F $\sharp$, the perfect fifth, rather than the augmented fifth Fx in the B $\flat$ ⁴ chord.

The strict LIP is also broken at the end of the first statement where instead of the A $\flat$ -rooted $\frac{4}{2}$ chord that the underlying pattern dictates, the ninth between the outermost voices is harmonized with the alternative augmented-minor seventh that contains F $\sharp$ and A $\flat$, B $\flat$ -D-F $\sharp$ -A $\flat$. This achieves a chord that mimics the German augmented-sixth chord of D minor, B $\flat$ -D-F $\sharp$ -G $\sharp$ and therefore suggests the same function, pre-dominant, with which PTGa¹ ended.

The chord that begins the sequential repetition of the LIP a major third

higher at m.10₄ is very similar to that at m.8₄. With A6 now uppermost, and G2 instead of E $\flat$ 2 in the bass, it can momentarily be construed as a V $\sharp$ ⁷₅ of D in third inversion that resolves the chord at the end of the first statement of the LIP. But as with its counterpart at the beginning of the first statement, the continuation of the chord treats it as an intervallic structure and not a collection of tendency tones.

The outer-voice ninth at the end of the second LIP is harmonized by a French augmented-sixth chord, G $\flat$ -B $\flat$ -C-E, that is expanded in mm.12 and 13 and becomes the harmonic goal at the end of theme a² as a whole. It resolves in common-tone fashion to the B $\flat$ -minor tonic of theme b in m.14. This outcome retrospectively suggests that prominent upper-voice pitches of theme a², F6 and A6 at the beginnings of the statements of the LIP and C6 in m.12, arpeggiate V of B $\flat$. The harmonic effect of PTGa² can be summed up as a merging of potential V of D function that is never realized with potential V of B $\flat$ function that is realized.⁸

As shown in Ex. 2-1, the pc C at the end of PTGa² leads to the first prominent upper-voice pc of PTGb, D $\flat$. Although not the only member of the B $\flat$ -minor triad to be given tonic support in the ensuing measures, D $\flat$ sounds as the logical successor to the initial D of the fundamental upper voice in mm.1-14—

⁸Clifton's description of the merging of V of D and V of B $\flat$ functions in this passage is more difficult to perceive. He suggests that the diminished-seventh chord horizontalized by odd-numbered pitches in the bass of the first statement of the LIP and by odd-numbered pitches in the upper voice of the second statement, A-C-E $\flat$ -F $\sharp$, be heard as vii^o7 of B $\flat$ extended over the entire passage. He also attributes harmonic function to two vertical chords internal to the LIPs, hearing the F7 chord of m.9 beat 3 as V of B $\flat$ minor, and its sequential counterpart, the A7 chord of m. 11 beat 3, as a retroactive V of D "reversing the harmonic flow" (Clifton, 200-202).

because of its proximity to D and because deep-level motion from D to D $\flat$ recalls the surface-level neighbour-note motions between D and C $\sharp$ /D $\flat$ in PTGa (in m.1 and in inner voices of mm.3, 6, and 7). Prominent use of the enharmonic equivalent of the leading tone of D at the head of theme b suggests that the prolonged submediant harmony B $\flat$ -D $\flat$ -F functions as a semitone-related substitute for A-C $\sharp$ -E.⁹ In the large-scale linear structure of mm.1-14, upper-voice D moving to D $\flat$ /C $\sharp$, accompanied by bass D moving to B $\flat$, replaces the more usual outer-voice framework for I moving to a prolonging V.

PTGa² is further developed in mm.21-23₁. The original upper-voice motive of PTGa², a combination of chromatic descent and wide downward leaps, occurs this time in rhythmic augmentation. It also occurs in the bass in extreme rhythmic augmentation with the P4+M3 melody embedded in its contours. This time, the P4+M3 idea fulfils its potential to function as a series of alternating dominants and tonics as in the Schoenbergian model. Example 2-4 sketches this short LIP. Again, outer-voice major ninths are featured. The first two major ninths top major-minor-seventh chords that each resolve to a seventh chord rooted a perfect fourth above. Thus the first four essential bass pitches are harmonized as $\hat{5}$ - $\hat{1}$ pairs.¹⁰

⁹Cf. the discussion in Chap. 1 of minor-mode vi as a form of dominant-function harmony (Exs. 1-7 j and 1-7 k).

¹⁰Of course, although the dominants are minor-third related, none contains all four pitches of the same minor-third cycle because the chord ninths are major, not minor, in this instance.

Ex. 2-4 Shorter version of PTGa² in mm.21-24.

The LIP breaks in m.23 where instead of a C⁹ chord the previous A^b-rooted harmony continues in first inversion with chordal fifth lowered (E^b_b/D in the uppermost part). This “French augmented-sixth” cadences, as if an altered V⁶ of D^b, on a solitary D^b. Meanwhile, at the same time as mm.21-24 progress toward D^b they also foreshadow V⁷ of E^b (see Ex.2-1). Prominent upper-voice pitches of mm.21-24—those forming major ninths above the bass, the lowered fifth of the A^b seventh chord in m.23, and the pitch on which PTGc begins in m.24—constitute a downward arpeggiation, A^b-F-D-B^b. In effect, an upper-voice arpeggiation of a B^b⁷ chord overlaps with a suggestion of a local V-I in D^b.

We have observed that both LIPs featuring parallel major ninths have a modulatory function by which V of the future key is horizontalized in the highest voice. In both cases, this function overlaps with vertical harmonies of functional significance in a preceding key (D^b is the relative major of B^b minor). In the case of the second example, it is particularly significant that D^b should be tonicized just as the E^b tonic is being prepared: D^b is the semitonal neighbour to D on the

opposite side of $E\flat$ and another of the two keys in which the PT will be heard in the Consequent.

Mm.24-29: prominent establishment of a semitone-related key to D. PTGc begins in m.24 on the $B\flat$ -major harmony foreshadowed at the end of PTGb and confirms that this harmony is V of $E\flat$ minor. The harmony that was vi of D minor and a pseudo dominant has now been altered to a literal V of another key, the upper-voice pc $D\flat$ returning to $D\sharp$. Establishment of the key of $E\flat$ minor is emphatic. Its dominant seventh is prolonged by means of minor and major forms of IV of $E\flat$ in mm.26-28. The new key is highlighted by thematic differentiation (PTGc), dynamic emphasis, registral prominence, and a deliberate tempo (*etwas langsamer*). On the downbeat of m.29, the $B\flat$ major-minor seventh occurs as an *sf* cadential chord set off by the first simultaneous break in all parts of the texture. These combined forces accord V of $E\flat$ at the end of the Antecedent the clarity and structural status thus far denied any form of V of D.

Tonal Structure of the Consequent: mm.30-64

Mm.30-44: PTGa¹ in the Consequent. The $B\flat$ -major harmony's function as V of $E\flat$ is realized at a deeper level at the beginning of the Consequent where PTGa¹ returns in $E\flat$ minor in varied and expanded form. The opening measures, 30-37, parallel mm.1-8: the tonal level is a semitone higher and the outer voices are exchanged, but all else is preserved.

The following measures, 38-41, further expand the supertonic-seventh chord of $E\flat$, using the same motivic materials, but also developing a harmonic

Ex. 2-5 PTGa¹ in the Consequent (mm.30-41): prolongation of $ii^{\phi 7}$ of eb .

feature that was latent in the D-minor version of the material. We noted in m.7 vn1 a perfect-fourth leap, $F-Bb$, incorporated into the arpeggiation of $E-G-Bb-D$. The parallel event in the Consequent, m.36 vc, incorporates $Gb-Cb$ into the arpeggiation of $F-Ab-Cb-Eb$ (Ex. 2-5). Beginning at m.38, this motive is repeated and sequenced. Both its arpeggio inclusive of the fourth leap and the fourth leap in isolation recur built on all pcs of the basic half-diminished seventh harmony in counterpoint with the scale-wise motive of m.36 vn1 at its original pitch level. In m.38, while vn1, vn2, and vc parts reuse the three distinct voice parts of m. 36—the framework of the F half-diminished seventh harmony—the va begins a rhythmically augmented version of the arpeggio motive beginning on Ab , i.e., $Ab-Cb-Eb-Gb$ climaxing with the leap $Bb-Eb$ at the start of m.39. The m.39 vc part and mm.40-41 vn1 also incorporate the arpeggio and fourth leap at this pc level. Meanwhile other parts maintain the arpeggiation of the $F^{\phi 7}$ chord, the m.40 vn2 arpeggiation of this harmony naturally incorporating the leap $Gb-Cb$.

Always lacking explicit resolution, the repeated perfect fourths $G\flat-C\flat$ and $B\flat-E\flat$ gradually become as much a part of the harmonic effect as the thirds $F-A\flat-C\flat-E\flat$.

Ex. 2-6 PTGa¹ in the Consequent: quartal harmony expanded in mm.36-41.

$E\flat$: ii 7
 with addition of 3 remaining diatonic pcs $\rightarrow$ configured in perfect fourths.

The impression of quartal harmony is confirmed by the simultaneity on the downbeat of m.40, $C\sharp-F-B\flat-A\flat$. $C\sharp$, the first pc of the passage not expressly diatonic to $E\flat$ minor, foreshadows the m.41 melodic fourth $C-F$, essential to the implication of a momentary F major-minor-seventh chord at the end of m.41 (to be discussed shortly).

At the beginning of m.41, the va supplies pc $D\flat$ as part of the melodic fourth $A\flat-D\flat$. The entire set of seven pcs normally belonging to the diatonic collection of $E\flat$ minor has now been heard in the context of supertonic harmony. The configuration of the seven pcs is partially quartal; but, because the three perfect fourths originate as imitations of a melodic figure embellishing a four-note tertian chord, the “quartal” harmony preserves its supertonic function (Ex. 2-6).¹¹

¹¹This situation is reminiscent of a discussion in the chapter “Chords Constructed in Fourths” in the *Harmonielehre*. Schoenberg defends the use of a theoretical construct—all twelve pcs of the chromatic scale heard as superimposed fourths:

Although the effect of $ii^{\phi 7}$ of E^b is preserved, its harmonic function is not confirmed by resolution to its corresponding V. At the end of m.41, amid the perfect fourth leap C^b-F in the same measure, the F half-diminished seventh is reduced and altered to the major-minor seventh $F-A^b-C^b-E^b$ (see Ex. 2-7). This resolves as the double-neighbour chord $TS(V^7)$ in E to a momentary E-major triad (C^b delays B in m.42 vn1). The E-major triad, retrospectively V/iv in E minor, immediately gives way to its respective $ii^{\phi 6}$. Given the swift tempo, the entire modulatory process is perceived merely as a smooth shift of the same set of contrapuntal lines up a semitone from E^b minor to E minor. After barely two measures, the $F^{\sharp\phi 7}$ chord confirms its supertonic status by resolving to V of E at m.44. In this way, a B-major chord, VI in relation to E^b minor, is the end result of a harmonic motion that was anticipated to arrive at B^b -major harmony. This is the parallel of the harmonic motion at the end of PTGa in the Antecedent where an arrival at B^b harmony, vi, albeit minor that time, occurs instead of an arrival at A-rooted harmony.

... the quartal construction makes possible ... accommodation of all phenomena of harmony; thus, if we assume that on occasion tones may also be omitted from the middle [of the twelve-part chord], that a chord could consist, for example, of the first, second, fourth, and tenth tones, then we can also produce the chords of the tertian system (Schoenberg 1978, 407; cf. Ex. 338 on p. 406).

The differences in the Op. 7 situation are: (1) the pcs involved are the seven pcs of the E^b minor collection, not the total chromatic; (2) conceptually, the relationship between quartal and tertian construction works in the opposite direction, beginning with a tertian harmony and gradually adding to, and reconfiguring its pcs so as to suggest a seven-note quartal chord, rather than beginning with a quartal chord that may be abstractly pared down to a tertian harmony.

Ex. 2-7 PTGa¹ in the Consequent: move to V of the semitone-related key in mm.41-44.

Mm.45-53: PTGa² in the Consequent. As shown in Ex. 2-1, the dominant-function harmony of m.44 progresses deceptively to vii^o7/V in E harmonizing the bass C#. The promise is of eventual resolution back to V and thence to I of E major or minor. But first the diminished-seventh chord C#-E-G-A#/Bb is arpeggiated in the principal melodic contours of mm.45-53 (Ex. 2-8). In the bass beginning at m.46₂, the vc presents PTGa²; this theme's chromatic descent from the dissonant B4 regains C#4 at m.47₃ and substitutes for it C#3 at m.48₁. Next, sequential repetition of the same from a dissonant D4 arrives at E3 (prolonged in mm.49₃-51₁) and finishes with Fx/G2 at m.52₁.

Meanwhile, even more prominent than PTGa² is the melody of vn2, which, beginning at m.44, is the countermelody to the PT of mm.1-3 (most recently heard in mm.30-35 as the highest voice). In it, each repetition of the motive rises to a different member of the same diminished-seventh chord: G in m. 45, Bb in m.47 and Db/C# in m. 49. E is achieved in mm.51-52 vn2, at approximately the same time as the bass reaches Fx.

Ex. 2-8 PTGa² in the Consequent: expansion of diminished-seventh chord.

The musical score for Ex. 2-8 is presented in two systems, each consisting of three staves. The first system covers measures 45 through 49, and the second system covers measures 50 through 53. Measure numbers are placed at the beginning of each staff line. The notation includes various musical symbols such as notes, rests, accidentals, and dynamic markings. A dashed line separates the two systems. Labels include 'root', 'PTGa² counter melody', 'sequential repetition', and 'C#-E-G-Bb'.

System 1 (Measures 45-49):

- Measure 45:** The first staff begins with a treble clef and a key signature of one flat (Bb). The second staff has a treble clef and a key signature of one flat. The third staff has a bass clef and a key signature of one flat. A label 'root' points to the first note of the first staff. A label 'PTGa² counter melody' points to the first note of the second staff.
- Measure 46:** The first staff has a treble clef and a key signature of one flat. The second staff has a treble clef and a key signature of one flat. The third staff has a bass clef and a key signature of one flat. A label 'PTGa² counter melody' points to the first note of the second staff.
- Measure 47:** The first staff has a treble clef and a key signature of one flat. The second staff has a treble clef and a key signature of one flat. The third staff has a bass clef and a key signature of one flat. A label 'PTGa² counter melody' points to the first note of the second staff.
- Measure 48:** The first staff has a treble clef and a key signature of one flat. The second staff has a treble clef and a key signature of one flat. The third staff has a bass clef and a key signature of one flat. A label 'sequential repetition' points to the first note of the second staff.
- Measure 49:** The first staff has a treble clef and a key signature of one flat. The second staff has a treble clef and a key signature of one flat. The third staff has a bass clef and a key signature of one flat. A label 'sequential repetition' points to the first note of the second staff.

System 2 (Measures 50-53):

- Measure 50:** The first staff has a treble clef and a key signature of one flat. The second staff has a treble clef and a key signature of one flat. The third staff has a bass clef and a key signature of one flat. A label 'C#-E-G-Bb' points to the first note of the second staff.
- Measure 51:** The first staff has a treble clef and a key signature of one flat. The second staff has a treble clef and a key signature of one flat. The third staff has a bass clef and a key signature of one flat.
- Measure 52:** The first staff has a treble clef and a key signature of one flat. The second staff has a treble clef and a key signature of one flat. The third staff has a bass clef and a key signature of one flat.
- Measure 53:** The first staff has a treble clef and a key signature of one flat. The second staff has a treble clef and a key signature of one flat. The third staff has a bass clef and a key signature of one flat.

Therefore, in mm.45-53, what on a note-to-note level seems to be a harmonically haphazard counterpointing of independent melodies, serves on a larger scale as an inventive expansion of a diminished-seventh chord.

Considerable harmonic tension accumulates over the ten measures as expectation grows for the resolution of $\text{vii}^\circ 7/\text{V}$ back to V of E . The tension is dissipated rather than released when, at m.54, it resolves instead as a common-tone-diminished-seventh to a $\text{C}^\sharp$ -minor triad (see Ex. 2-1). This triad is positioned to serve as the tonic of the next motivic unit of the Consequent, in place of the E -major tonic that had been assumed all along. The implication of E major, whose tonic is barely present and never manifested by a key-defining motive, turns out to be merely a way of moving from $\text{E}^\flat$ minor to $\text{C}^\sharp$ minor, the other key that is semitone-related to D , before the end of the Consequent.

Mm.54-64: PTGb in the Consequent. The arrival at I of $\text{C}^\sharp$ minor is harmonically understated, but thematically significant, because the final section of the Consequent counterpoints short canonic entrances of the PT in $\text{C}^\sharp$ minor with short canonic entrances of PTGb. The sense of $\text{C}^\sharp$ minor is short-lived. Ex. 2-1 shows a dissonant tetrad with root $\text{A}^\sharp/\text{B}^\flat$ in the bass expanded in mm.58-64. In mm.59-62₁, it takes the form of $\text{B}^\flat 7$ harmony and alternates with $\text{A} 7$ harmony. In their immediate context, the functions of the two major-minor sevenths, whether a hierarchically undistinguished pair of vacillating dominant sevenths or the German sixth and $\text{V} 7$ of D and, are not clear. But in m.62 the $\text{B}^\flat 7$ harmony is settled upon and $\text{F}^\sharp$ joins it as uppermost pitch. For a moment, the clearest possible

interpretation of the B $\flat$ -rooted chord is V¹³ of E $\flat$ minor, F $\sharp$ =G $\flat$. This whole-tone harmony is expanded into a complete whole-tone scale. At the very last moment, resolution to E $\flat$ is avoided when the presumed dominant harmony is reinterpreted as a subdominant-function common-tone augmented-sixth chord: in m.64 the pcs B $\flat$ and A $\flat$ /G $\sharp$ converge on A as part of the tonic chord of D, the harmony that begins the next section at m.65.¹² It is characteristic of D and E $\flat$ tonics in this piece that even after a long stretch in which the original tonic has been avoided, its return is not preceded by its own V, but rather by a chord that was most forcibly V of a semitone-related key.

Summary of the Tonal Structure of the PTG, mm.1-65

Example 2-9 summarizes the deep middleground level of linear and harmonic design in the PTG. Within the Antecedent, no structural V of D is present; while the upper line moves from D to its leading tone, the structural bass moves the distance of IC4, from D to B $\flat$, resulting in the minor submediant triad instead of a true dominant. At the end of the Antecedent, B $\flat$ -major harmony is given prominent preparation as dominant function and then resolved as such at the beginning of the Consequent. This manner of establishing the key in which the PT is repeated is in absolute contrast to the avoidance of V of D in the first statement of the PT. Depriving the original tonic of its opposing pole and then

¹²The m.64 motive originated in m.1 va in which context it was clearly D-minor harmony expanded by a common-tone augmented-sixth chord.

creating a prominent dominant-tonic relationship between $B\flat$ and $E\flat$ has the result of skewing the tonal shape toward the $E\flat$ - $B\flat$ axis, and of casting the viability of D as main tonic into doubt.

Ex. 2-9 Principal Thematic Group (mm.1-65): deep middleground level.

In the Consequent, as in the Antecedent, the structural bass moves the distance of IC4 instead of IC5—from $E\flat$ to $B\flat$. Upper-voice $E\flat 5$ is retained to become the leading tone $D\sharp 5$ in m.44. At m.45, an expected, further outer-voice octave, E-E is avoided by the deceptive move to the outer-voice tenth $C\sharp 3$ - $E5$. This leads to a third statement of the PT in $C\sharp$ minor (established without its dominant) that achieves a chromatic surrounding of D. Then, while a subordinate upper line descends from $G\sharp 5$ back to $E5$, the bass again seeks out $A\sharp/B\flat 2$ and effectively sustains it from m.58 through m.64. The choice of harmony at the end of the Consequent—the whole-tone chord $B\flat$ -D- $F\sharp$ - $A\flat$ —again suggests the domination of $B\flat$ harmony and an imminent arrival at an $E\flat$ -minor tonic. At the last moment, the $B\flat$ -rooted chord resolves as a common-tone augmented-sixth

chord to the D-minor harmony suggested in m.64 and substantiated in m.65.

Therefore, it is not enough to observe that a D-minor tonic is heard at the beginning and at the end of the closed cycle of keys, D-E $\flat$ -C $\sharp$ -D. One must also take into account the relative strengths with which these are established by functional harmonies. D minor is like C $\sharp$ minor here in that its dominant is missing. E $\flat$ minor alone is presented with clear V-I and I-V progressions at a deep middleground level. The prominence of the complete E $\flat$ -B $\flat$ axis in the face of the ordinal priority of D minor suggests a rivalry between tonics D and E $\flat$.

Bridge (mm.65-96) and Fugato 1 (mm.A1-56)

In the course of describing the exposition of thematic materials in Part I, Schoenberg refers to the Fugato subject as the "transition theme" (Rauchhaupt, 11 and 40). Indeed, Fugato 1 prepares, motivically and tonally, for the STG. But Fugato 1 is in itself a significant section and thus requires its own preceding bridge passage, its own closing process of dissolution, and a subsequent bridge. Therefore, transition to the STG must be regarded as occurring in several phases and subphases. The two large phases, mm.65-96 and mm.A1-56, will be referred to as the Bridge and the Fugato (Fugato 1) respectively. Within each large phase are two subphases.

Bridge to the Fugato: mm.65-96

The Bridge between the PTG and Fugato 1 is organized as follows:

Ex. 2-10 Bridge to Fugato 1: subphase 1, mm.72-84.

72 73 74 75 77₃ 78

E-G-Bb + D +F +Ab Gb + Bb-D-E

79 80 81 82 83 84

F#-A-C-Eb 3 diminished-7th chords

CH-E-G-Bb augmented triads augmented triads (vertical)

d: 5 ? V⁺ vii^{°7} of Gb

Subphase 1, mm.65-84. Subphase 1 begins as a varied restatement of the original PTGa in D minor: the harmonic structure of the first eight measures, employing theme a¹, is unchanged. Beginning at m.72₄, the close of a¹ is extended with sequential repetition of its final two measures by ascending minor thirds (note also the inversion of the counterpoint). As shown in Ex. 2-10, the minor-third cycle that is the basis of the tetrachord E-G-Bb-D, has its “root above,” D, exchanged for F in m.73 and Ab in m.74, creating two more half-diminished seventh chords. In m.75 the intervallic pattern breaks when a member from the cycle of “roots below,” Gb, is added. This creates the tetrachord

G $\flat$ -B $\flat$ -D $\flat$ /C $\sharp$ -E, which is first elaborated in mm.75-78. By this point, the key of D minor has been left behind for an undetermined tonal region in which only the pc G $\flat$ seems referential for the moment.

A registral and dynamic climax is reached in m.79. In mm.78-79, while the bass ascends chromatically from G $\flat$ 3 to A3, theme a² enters in vn1 on the pitch C7 to begin a downward arpeggiation of the diminished-seventh chord containing C that continues while inner-voice entrances of theme a² begin downward arpeggiations of the diminished-seventh chord containing C $\sharp$ in m.79. Meanwhile in m.79, the vc begins a prominent entry of the PT, theme a¹, starting on the pitch A2. The pc A is rhetorically emphasized by this climactic preparation and by its dynamic and durational values.

Although in relation to m.65 the nominal function of the bass A in mm.79-80 is $\hat{5}$ of D, its harmonic-melodic context make its actual scale-degree function indeterminate. First, unlike pcs that have hitherto been judged to have harmonic function, the sustained A of mm.79-80 is not accompanied by a functional chord containing A, or any functional chord at all, for that matter. It is accompanied by the counterpointing of two diminished-seventh chords, i.e., by no particular diatonic collection, let alone an embellished D-major-minor or A-major-minor collection. This makes it futile to attempt to hear A as having a particular primary scale-degree function. Second, the pcs of the vc melody in mm.79-84, and the emphases accorded certain of these by contour, do not exclusively suggest either the key of D-minor or A-major-minor; this melody projects the key of

F $\sharp$ /G $\flat$ minor equally well. For example, C $\sharp$ prominent in mm.81-83 of the melody is both $\hat{5}$ of F $\sharp$ and $\hat{7}$ of D. The augmented triad F-A-C $\sharp$, prolonged in the upper voices as well as the melody in mm.81-82, is equally V $^+$ of F $\sharp$ /G $\flat$ and V $^+$ D while neither F nor C $\sharp$ resolves upward within the melody.

Finally, a retrospective feeling that the melody is actually in F $\sharp$ /G $\flat$ is created when the diminished chord B-D-F(-A $\flat$), arpeggiated in m.83, resolves to a G $\flat$ major triad in m.84. The apogee of the vc melody, B $\flat$ 4 in m.84, has the bright sound of a major mediant replacing a hitherto minor mediant.

Therefore, whereas there is no doubt that the salient A of mm.79-80 is a token of $\hat{5}$ of D, its purpose appears to be to draw attention to the continued absence of actual V of D harmonic function in the work thus far.

Subphase 2, mm.85-96. Subphase 2 liquidates PTGa, thins the texture in preparation for the beginning of the Fugato, and reinforces the significance of the key of F $\sharp$ /G $\flat$. The dominating instrumental part, through m.89, continues to be that of the vc, which plays a descending chromatic line in the form of PTGa 2 .

Meanwhile and subsequently, four motivic elements are deployed:

- (1) mm.85-87 diminutions of the first PT motive (altered intervals);
- (2) mm.85-95 descending tritone leaps;¹³
- (3) mm.88-96 subsets of the P4+M3 idea;
- (4) mm.90-94 isolated PTGa 2 units linked to tritone leaps, in a sequential chain passed between four instruments, arpeggiating C $\sharp$ -E-G-B $\flat$.

¹³As demonstrated in Chap.1, Ex. 1-1, the melodic tritone motive is a basic element of the PT. See also mm.5-6 (vn1).

Ex. 2-11 Bridge to Fugato 1: subphase 2 (mm.84-96).

84 85 86 87 88

Gb: I - vii⁰⁷ - V^{b9} (V⁶_C — +⁶_C) i⁶ vii⁰⁷/V V⁺

sequential pattern - 1. segment 2.

89 90 91

background 07

Gb: I (whole-tone link in upper line: Gb down to C.) c.t.⁰⁷ Eb⁷ 5 — — 6 A⁷ C⁵ - 6 F^{#7} C⁵ - 6 A⁵ - 6

segment 3 seg. 4 whole-tone link, Gb down to C.

92 93 94 95 96

A⁵ - 6 Eb⁷ — F^{#7} 5 - 6 Gb⁷ (°7) Gb: Ger.⁺⁶ 5 V Ger.⁺⁶ 5 C: c.t. Mm⁷ I

Although the counterpoint of the mm.85-96 is extremely dissonant, even in comparison to the style thus far, harmonic and tonal implications are not lacking (Ex. 2-11). Each motivic element has a harmonic value. That of motive 1 derives from its arpeggiations. The isolated tritone leaps of motive 2, as opposed

to those belonging to the background $C^\sharp-E-G-B^\flat$ harmony of mm.90-94 (motive 4), are not of harmonic value as such, but their isolated pitches reinforce local vertical harmonies. The majority of pitches in the descending chromatic scale (mm.85-89 vc) are passing dissonances, but the rhythm is calculated such that certain of these pitches are chordal. The harmonic value of the P4+M3 idea in this context will be described below.

As shown in Ex. 2-11, mm.85-88 suggest $G^\flat$ as tonal centre: vii° ⁷ of $G^\flat$ prevails in mm.85-86₃, mm.86₄-87₄ contain variants and embellishments of dominant harmony, and in m.88₂ the first P4 leap ($D^\flat-G^\flat$), with the vc $B^\flat$, provides the tonic triad.¹⁴

The temporary arrival at I of $G^\flat$ in m.88 is followed by a series of overlapping tritone leaps in vn2 and va that coalesce into parallel descending thirds. As shown in Ex. 2-11, these trace a descending whole-tone link from $G^\flat$ ₄ to C₄. A register change in m.89₂₋₃ prepares for the next pattern, also a descending one. This descending pattern is a harmonic sequence that remains static within the diminished seventh $C^\sharp-E-G-B^\flat$. The sequential nature of the lines is disguised by the constant interchange of voice parts in the original. In the sketch it may be observed that each segment of the sequence begins with a verticalized major-minor seventh chord (or a major triad) whose minor thirds belong to the background diminished-seventh. The first three notes of each entry

¹⁴The diminished-seventh chord $B-D-F-A^\flat$ attracts more than one root in mm.85-86. As well as $D^\flat$ in m.85, it acquires G at the beginning of m.86. The arpeggiated triad in m.86 vn1 has the effect of V^+ of C, which tonic is a member of the same minor-third cycle as A and $G^\flat$.

of the P4+M3 motive create the major triad belonging to this chord. The fourth pitch effects a 5–6 contrapuntal exchange, i.e., substitutes the next minor-third-related root below. At the close of the segment the sixth pitch does the same with respect to the previous harmony. Each subsequent segment of the sequence begins a minor third lower than the previous one began (disregarding register changes and inversion of the counterpoint). A progressive slowing that begins in m.88, and a thinning of texture from m.90, allow harmonic relationships to come increasingly into focus.

Modifications to the sequential pattern begun in m.89₃ place emphasis on F[#]/G^b harmonies. In the third segment, m.92, the P4+M3 line is shortened by one dyad; as a result, this statement, like the previous one, ends with the dyad that defines an F[#]/G^b triad. (An exceptional counterpoint, m.92 vn1, fills out E^b⁷ harmony at the end of segment 3, but this is not as prominent as the implication of F[#]/G^b harmony before it.) A fourth, incomplete segment of the sequence begins in m.93 with a variant of the P4+M3 line, F3–B^b3–D^b4–G^b4, that dwells solely on G^b⁷ harmony. (F3 must be regarded as a temporary displacement of the chord seventh, the pc E, employed to maintain the rising fourths feature.)

From m.93, the thin texture fosters multiple interpretations. The upper line of mm.93-96 reproduces the whole-tone link descending from G^b4 to C4 that occurred in mm.88-89. There it was in thirds whereas now it occurs in parallel fourths. In this sense, the dyads B–E and A–D in mm.94-95 perform a passing function. In m.95, the vc motive is abbreviated and begins with the descending

tritone leap. Thereby, the passing A–D in m.95 va is incorporated into a double-neighbour chord to V of G $\flat$: D–F $\sharp$ –A–C, which is TS(V⁷/V) or the German augmented-sixth chord in G $\flat$. The tritone leap in the vc is followed by two ascending semitones, to D $\flat$ 2 ($\hat{5}$ of G $\flat$) and D2 ($\flat\hat{6}$ of G $\flat$).¹⁵ Isolated in m.96, the upper neighbour tone D2 implies the same double-neighbour chord to V of G $\flat$ as was traced in m.95. From m.96 to m.A1, D2 is accompanied by the dyad G3–C4; whether D–G–C is regarded as a chord in its own right, or the pc G is heard as an unresolved substitute for F $\sharp$ in the manner that m.93 was interpreted, its double-neighbour function in relation to D $\flat$ harmony is evident.

From a different, but overlapping aural perspective, the dyad G–C is itself a point of arrival (of the passing perfect-fourth leaps)—an arrival that has a key-defining function scarcely lessened by the *pianissimo*, low-register D beneath it. When followed by the dyad G–C heard as $\hat{5}$ – $\hat{1}$, the four-note chord implied by the D2 appears to function also as a common-tone major-minor seventh chord to a C-major tonic triad.

Therefore, by virtue of the distinct key-defining effects of two motives, the descending tritone leap followed by two ascending semitones in mm.95–96 vc, and the ascending perfect fourth leap in mm.96–A1 va, both G $\flat$ and C tonics are readied in preparation for the Fugato's first entries.

¹⁵The seminal melodic motive linking a tritone, semitone, and IC5 is thereby reintroduced (Ex. 1-1).

Fugato 1: mm.A1-56¹⁶

It has been stated that Fugato 1 is a significant section in itself. We shall see that its transition functions are far reaching for they imply preparation not only for the STG but also for future “movements.” Motivically, Fugato 1 foreshadows elements of the STG and the Scherzo.¹⁷ We shall focus on the process by which the Fugato makes tonal preparation for future sections of the composition. Our analysis will also serve to illustrate a method of achieving tonal multiplicity within a passage: the counterpointing of melodic motives that have differing inherent tonal implications.

The transition process in Fugato 1 occurs in the following subphases:

1. *Fugal Exposition, mm.1-20.* The exposition’s harmonic materials derive from elements of the preceding bridge: the diminished-seventh harmony B–D–F–A $\flat$ of mm.85-86 and the circle of minor third-related $\hat{5}$ – $\hat{1}$ pairs of mm.88-93. The Fugato’s paired entrances of countersubject (CS) in mm.A1-5 and subject (S) in mm.A2-4 echo motivic elements and tonal implications of mm.95-96. The counterpointing of CS and S will establish the pattern for harmonic process in the

¹⁶From this point on, rehearsal letters A through O mark the points at which measure numbers begin again at 1. Once a new rehearsal letter has been mentioned in the discussion it is to be assumed that all subsequent measure numbers follow that same letter, unless clearly prior to r.A or otherwise specified.

¹⁷Frisch (1988; 1993, 201-07) casts light on the relationship between the Fugato themes, and two following themes, STGd and the Scherzo theme, which both appear to be derived from the Fugato themes. In an examination of the sketch material for Op. 7, he demonstrates that the Fugato themes, STGd, and the Scherzo theme were composed in reverse order.

Fugato as a whole.¹⁸

Ex. 2-12 Fugato 1, mm.A1-6: motivic and tonal elements of S and CS.

CS 1st limb 2d limb 3d limb 4th limb (stems up)

S 1st limb (stems down) 2nd limb (stems up)

A 1 2 3 4 5 6

double-neighbour motion around V of Gb. tonicization of A. double-neighbour motion - V of C.

C: I - I - (V 7 of ii) - V^{b9} A: V^{b9}-i

The vc motive of mm.95-96, with its implication of an augmented-sixth chord moving around $\hat{5}$ of G $\flat$, begins the Fugato at m.A1 in vn1; hence the Fugato seems to open in G $\flat$. As noted in Ex. 2-12, this melody continues with three more limbs, and will prove to be an early manifestation of CS. S enters in m.A2 vn2 with the G3-C4 gesture of mm.96-A1 va, and continues with pitches

¹⁸The vn2 melody of mm.A2-4 is the principal melodic component of the fugato. That Schoenberg considered this to be so is evident from his own commentaries in which he quotes the vn2 melody as *the* transition theme to the Second Group (Rauchhaupt, 11, 40). Fugatos 2 and 3 employ this melody only, omitting the vn1 melody of mm.A1-5. Obviously the opening of Fugato 1 is unusual in that CS, as well as accompanying S in its first entry, actually enters before S. This abandonment of fugal decorum is redressed with the paired entrances that begin in m.A5 and m.A6, beat 4, where CS properly waits until one or two notes of S have been heard.

C[#]4/D^b4–D4 derived from mm.95-96 vc. This latter motive is thus held in common with CS. S concludes in m.A4 with the leap G3–A^b4, which, along with the preceding D4, implies V^b⁹ of C. Also in m.4, CS limb 3, a changing-note figure, supplies the chord seventh, an embellished F4, to the V of C.

The harmonic function of the pc motive C[#]–D in m.3 vn2 differs from its function in CS. In m.A2 of the latter, D^b/C[#] is $\hat{5}$ of G^b embellished by its upper neighbour; in m.A3 of S, where C[#] is preceded and followed by suggestions of I and V of C, it is the leading tone of ii of C. Accompaniment of C[#]4 by an embellished A4 in CS, and of D4 by an embellished F4 in CS, supports this interpretation of harmonic function in S.¹⁹

CS limb 2 itself warrants discussion here. It begins with the tritone D5–G[#]4 proceeding to A4. Harmonically, what is significant about this tritone is that it momentarily tonicizes yet another member of the prevailing minor-third cycle of tonics, A, albeit integrated as V/ii in a wider sense.²⁰

¹⁹Clifton draws a connection between the tonicization of D here and the D-minor tonality of the PTG. He regards the interval G–C[#] between the first and third pitches of the initial S entry as evidence that the Fugato begins in D minor. He is therefore able to say that the Fugato serves to modulate from the key of the PTG to the key of the STG, E^b (Clifton, 214-19). Of course, in our reading D minor has been abandoned by m.85; Fugato 1 begins in G^b/C and the first S entry contains a passing tonicization of ii of C. The melodic tritone leap, presented as a perfect fourth plus a semitone, will prove significant in the later, developmental sections of Fugato 1, but it does not define the keys of S entries in the fugal exposition.

²⁰The first three pitches of limb 2 derive sequentially from limb 1. Niederberger emphasizes

The functions of three minor-third cycles, $G\flat-A-C-E\flat$ as a set of tonics, $C\sharp-E-G-B\flat$ as the corresponding set of dominants, and $F-A\flat-B-D$ as the basic diminished-seventh chord are now to be fully exploited. The principal by which the pitch levels of entries of *S* succeed each other in the fugal exposition is that of exchange among the four possible roots of the basic diminished-seventh chord. The arpeggiated V^{b9} of m.4 includes *D*, *F*, and $A\flat$ of the basic diminished-seventh, and *G* as chord root (Ex. 2-12). In m.5, while two pcs, *D* and $A\flat$, are still sustained, another root, the pc *E*, enters and begins the subject in the key of *A*. The pattern continues until all four roots have been employed as the anacrusis to an entry of *S* and within that entry as the bass of an arpeggiated V^{b9} :

mm.	part	root
2 ₄ , 4 ₃	vn2	<i>G</i>
5 ₁ , 6 ₃	va	<i>E</i>
6 ₄ , 8 ₃	vc	$C\sharp$
9 ₁ , 10 ₃	vn1	$B\flat$

Whereas the first root, *G*, stands alone with upbeat $\hat{5}$ function at m.2₄, all other instances of *G*, *E*, $C\sharp$, and $B\flat$ cited above occur within the aural context of the

that the respective tritone leaps of limbs 1 and 2 together constitute the French augmented-sixth belonging to both the keys of $G\flat$ and *C*, $D-F\sharp-A\flat/G\sharp-C$ (Niederberger, 68, Ex. 44). It must be added, however that the interval $D-G\sharp$, in its immediate context, does not function as part of a French sixth of either key. As illustrated in the example, in the resolution of the French sixth common to $G\flat$ and *C*, ordinarily to *V* of its key, the tritone $D-A\flat$ moves by oblique motion to a perfect fifth. The tritone of m.A3 resolves to forms of *V* of *D* minor, both the third $A-C\sharp$ heard as the sixth $C\sharp4-A4$ between vn2 and vn1, and the third $A-C$ in vn1.

m. A3

Fr.6 - V Fr.6 - V
of $G\flat$ of *C*

polyphonic web of pitches drawn from the harmony B-D-F-A^b. Niederberger, by analyzing such harmonies according to which octatonic collection they belong to, is able to generalize that in mm.1-12, "the harmony of every other measure [i.e., even-numbered measures] is comprised of pitch classes belonging to the first region," that is to say, pcs belonging to the octatonic collection combining B-D-F-A^b and C[#]-E-G-B^b (Niederberger, 73). Our interpretation specifies the tonal and functional aspects of these octatonic chords.

Other than the S and CS described, no other subjects or free materials are employed in the fugal exposition. Yet from m.5 on, because CS is almost twice as long as S and is always in stretto with other concurrent entrances of CS, a texture of at least three voices is maintained. We noted in Ex. 2-12 that segments of S and limbs of CS have a variety of harmonic, and corresponding tonal, implications. CS limb 4 in m.5 vn1 moves within V of C. Accompanying it in vn2 is the tritone gesture of the first regular entry of CS, which defines pre-dominant harmony in C. Meanwhile, the va S entrance in the same measure is in A. Over the course of the four subject entries in mm.1-13, a different counterpointing of motives, suggesting a set of two or even three different tonalities from the minor-third cycle G^b-A-C-E^b, occurs in every measure of the fugal exposition. In mm.9₁-10₁, the total chromatic is produced by the following counterpointed motives and their implied keys or harmonies:

<u>Part</u>	<u>Motive</u>	<u>Tonicization or Harmony</u>
vn1	S	E $\flat$
vn2	CS, limb 4	V of G $\flat$
va	CS, limb 2	C (V/f)
vc	CS, limb 1	pre-dominant harmony in G $\flat$

This is not to say that two or three distinct keys can be simultaneously heard at any point. Belonging as they do to a single minor-third cycle, and having been generated from their similar dominant harmonies, the “keys” in any given measure do not sound as independent tonalities. Rather, the effect is of a single area of tonal space, revolving around a characteristic diminished-seventh harmony and having four facets distinguished by alternating choices of local dominants and tonics. Therefore, the succession of S entries in different keys is unlike that of the exposition of a Baroque-period fugue. There, alternating entries are in hierarchically related tonic and dominant keys, the dominant-key material serving to establish the pre-eminence of the tonic. Here, no hierarchy is possible because the key centres form a circle of enharmonically equivalent intervals that allow no differentiation among points on the circle, and because key-defining melodic segments pertaining to different members of the circle are heard simultaneously. As the tonics are not hierarchized, and share the same basis for their dominant harmonies, their relationship is one of equivalency.

Tonal contrast is provided in a counter-exposition, mm.14-20. Allowing for the fact that its beginning overlaps with the end of the first exposition and its ending overlaps with the beginning of the following development section, it is evident that the counter-exposition simply duplicates the original exposition

process a minor seventh higher. That is to say, it uses the B $\flat$ -C $\sharp$ -E-G cycle as tonics, the F-A $\flat$ -B-D cycle as dominants, and A-C-D $\sharp$ -F $\sharp$ as underlying vii $^{\circ}$ ⁷.

2. *Fugal Development and Bridge to the STG, mm.20-56.* The Fugato continues with sections that develop S and CS materials and gradually prepare for the STG:

Development i	<i>nach und nach etwas lebhafter</i>	mm.20-31
Development ii	<i>immer belebend</i>	mm.31-42
Development iii	<i>wieder ziemlich bewegt</i> ♩	mm.43-49
bridge		mm.50-56

During these sections, thematic materials are progressively pared down to two motives that form the final link to, or the germ of, the first theme of the STG.

Tonal materials gradually return from the contrasting cycle of tonics employed in the counter-exposition to the original cycle; from this set of keys, two, E $\flat$ and C, will be selected as the keys of STG d and e.

Development i is a stretto passage that continues to operate within the harmonic framework of the counter-exposition. It begins with the C $\sharp$ entry (vn1) that completes the counter-exposition. From here, main entries continue in the pattern of descending minor thirds: the C $\sharp$ entry is succeeded by entries in B $\flat$ (m.24 vc) and G (m.29 va), these in rhythmic augmentation. The lengthened temporal space between the rhythmically augmented subject statements is occupied by partially diminished, whole-tone-separated entries that are in stretto with the main entry and with each other. Hence, overlapping with the m.20 C $\sharp$ entrance

are entries implying keys of B (m.21 vn2—S with rhythmic diminution after the third pitch, and the succeeding CS truncated) and A (m.22 va—S in diminution after the second pitch and the succeeding CS extended). In stretto with the m.24 entry in B $\flat$ are the m.26 A $\flat$ entry (vn2) and the m.27 G $\flat$ entry (vn1), with diminutions and CS attributes corresponding to the entries accompanying the C $\sharp$ entrance. As shown in Ex. 2-13, each of the stretto entries is harmonically integrated into the texture in that the third note of each stretto entry supplies the chordal third in the V b9 of the previous key. Thus, these rhythmically altered S entries are the first of which it may be said that the tritone between the first and third pitches is at least as significant a harmonic element as the perfect fourth between pitches 1 and 2.

Ex. 2-13 Fugato 1, mm.A20-31: harmonic reduction of "Development i".

The musical score for Fugato 1, mm. A20-31, is presented in three staves. Above the staves, measure numbers are indicated: A20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 31. The notation includes various musical symbols such as notes, rests, and accidentals. Below the staves, there are harmonic reductions for each measure, including key signatures and chord symbols like C#: I - V b9 , B: A: V b9 /B, B $\flat$: vii $^\circ7$ V b9 I - V b9 , and G: vii $^\circ7$ V b9 I - V b9 .

Overlapping with the G-major entrance of Development i is the beginning

of Development ii at m.31. Development ii reemphasizes the keys from the original minor-third cycle—primarily C with $E\flat$ as a secondary key (Ex. 2-14).

Ex. 2-14 Fugato 1, mm. A31-35: first contrapuntal permutation of four motives in "Development ii".

Harmonic analysis below the staff:

C: V I ct.°7 → V I V-I ct.°7 V b9 V b7 #3 #5 I

of bIII

This stage of the motivic process fragments CS and recombines motives of S and CS. The four instruments exchange four melodic units, in four permutations, at constant pitch-class levels, in the manner of a canon. These four units and their harmonic implications are:

1. i) Subject in C, followed by
 - ii) the tritone leap of CS, altered in pitch-class level and rhythm to suggest $vii^{\circ 7}$ function in $E\flat$ and C.
2. i) Expansion of CS limb 3 (changing-note motive)—ranging from lower neighbour $F\sharp$ to upper neighbour $B\flat$, then passing back to $F\sharp$ again—followed by
 - ii) the last three pitches of S, diminished, pitched as embellishments to V of C.

3. i) The first four notes of CS at a pc level consistent with a common-tone diminished-seventh embellishment of V of C, followed by
 - ii) a chromatic double-neighbour figure around pc D (a pc common to V/C and V/E $\flat$).
4. i) Two measures of silence followed by
 - ii) S in E $\flat$, diminished.

Ex. 2-15 Fugato 1, mm.A43-44: first contrapuntal permutation of three motives in "Development iii".

The musical score for Example 2-15 shows two measures, 43 and 44, in a fugato style. Measure 43 features a first part (labeled '1.' and 'second part') and a second part (labeled '2.' and 'beginning'). Measure 44 features a first part (labeled '1.' and 'beginning') and a second part (labeled '2.' and 'beginning'). The chords are labeled as C#-E-G-Bb and D-F-Ab. The tritone Eb-A is also indicated.

Development iii, which begins at m.43, further fragments S and CS within alternating harmonies too ambiguous to define tonal centres: the diminished chords C $\sharp$ -E-G-B $\flat$ and D-F-A $\flat$ and the tritone E $\flat$ -A (Ex. 2-15). Three motives occur in triple counterpoint in four of their possible voicing permutations. The motivic emphasis is on tritones and the changing-note motive. Melodic tritones occur both as dyads and as the outer pitches of three-note S incipits.²¹ Even though the perfect-fourth leaps are not incorporated into chords in this immediate

²¹Previous analysts have pointed out that Developments ii and iii and the following bridge serve motivic process by progressively isolating a set of four tritones: B $\flat$ -E, G-C $\sharp$, D-A $\flat$, and E $\flat$ -A (Clifton, 218-19 and Niederberger, 78-79).

melodically and arranged in an ascending pattern.

At the climax, mm.55-56, the four tritones coalesce as two semitone-separated French-sixth chords. $B\flat-D-F\flat-A\flat$, heard *ff* in the upper octave, followed by $A-C^\sharp-E\flat-G$ at a lower dynamic level and in the lower register. Clifton regards these chords as $V\flat_5^7$ of $E\flat$ and D respectively, preparing the tonic of the STG and recalling the tonic of the PTG (Clifton, 219). Their potential function as double-neighbour chords as well as dominant sevenths evokes three keys, $E\flat$, D , and $C^\sharp$. Figure 2-1 details these shared harmonies.

Fig. 2-1 Harmonic functions shared by keys $E\flat$, D , and $C^\sharp$ in mm.A55-56.

	$B\flat-D-F\flat-A\flat$	$A-C^\sharp-E\flat-G$
$E\flat$:	$V\flat_5^7$	$vii^\sharp_3/V$
D :	$Fr. +6$	$V\flat_5^7$
$C^\sharp$:	—	$Fr. +6$

The functions in $E\flat$ major are the most relevant at the foreground level: a new, lyrical theme, STGd, begins in m.A57 when the French sixth on A progresses to a first-inversion G -minor triad that proves to be a contrapuntal link to I of $E\flat$ major. $E\flat$ major is thereby established as the main key of the STG, and as a secondary key in the overall tonal scheme of the quartet. The key of $E\flat$ was foreshadowed throughout the Fugato where it was one member of the $F^\sharp-A-C-E\flat$ cycle of keys.

By exposing a cycle of four tonics, the Fugato has foreshadowed not only the main key of the STG, but also the key of the Subordinate Group's second theme (theme e in C), and keys of future "movements": $G\flat$ for the Scherzo and A for the Adagio and Rondo-Finale.

The Subordinate Thematic Group (mm.A57-103)

Overview

The STG is a chain of related themes whose basic melodic shapes derive from previous motivic material (Fig. 2-2). The recurrence of theme d at the end rounds the group thematically and confirms $E\flat$ as tonal centre for the group.

Fig. 2-2 Tonal and thematic plan of the STG in the Exposition.

m.	Theme	Beginning Key	Motivic Source
A57	d	I ($E\flat$)	antecedent—Fugato CS limb 3. consequent—P4 + M3 idea.
A71	e	$VI\sharp$ (C)	theme d consequent, transformed.
A82	f	IV ($A\flat$)	theme d antecedent, transformed.
A92	d	I ($E\flat$)	as at m.A57.

Just as motivic materials of the STG have their origins in the PTG and Fugato, the keys associated with its three themes were all prepared earlier. $E\flat$ and C ($VI\sharp$) were isolated in the development section of the Fugato. The key of $A\flat$ (IV) was also foreshadowed toward the end of the Fugato (in Development iii)

as one of the pitch levels for entries of the fugato subject incipit. There it was incidental whereas in the STG the key of $A\flat$ assumes a prominent role.

Example 2-17 illustrates the middleground level of linear and harmonic design within the STG. The $A\flat$ -major triad at the beginning of theme f (m.82) fulfils a deep-level structural role in prolonging the $E\flat$ -major tonic triad established at m.57 and reestablished at m.92. The C-major triad at the start of theme e divides the fifth between the main tonic and its subdominant. Between these four harmonic pillars, I-(VI)-IV-I, linear motion is organized as chromatically descending parallel tenths (in themes d and f) or as a modified 10-7 pattern (in theme e).

Ex. 2-17 Subordinate Thematic Group (mm.A57-103): middleground level.

A 57 63 70 71 76 78 81 82 85 86 92 96 103
 theme d e f d
 3 4 3
 10 10 10 10-7 10-(b) 10-7 10-7 10 10 10 10 10
 Eb: I — (VI) —)-IV — I

The First Subordinate Theme, STGd (mm.A57-70)

Example 2-18 illustrates how STGd elaborates the chromatically

descending parallel tenths of mm.57-71. The antecedent phrase, mm.57-60, establishes the outer-voice tenth E^b3-G5 . The cadence of the consequent phrase, at m.63₁, alters the prevailing mode from major to minor, lowering G to G^b .

Ex. 2-18 STGd and transition to STGe (mm.A57-70).

A57 60 61 63 64 66 67 69 70 (71)

antecedent cons. ant. cons. e

10 10 6 6 6 10 10

roots: $E^b - p - A - A^b$

$E^b: (iii^6) I$ $I^b - V^b - bVI$ $- V - 4?$ V^7

$D:$ $II^4 - I^b + 6$ $(VI^7) V^b_5 - [I]$

$Db:$

Between major and minor forms of the tonic, the neighbouring A^b harmony at the beginning of the consequent (m.61) anticipates the neighbouring subdominant harmony that we have already noted at the highest structural level of the STG. The idea of IV elaborating I, in particular IV as a dissonant double-neighbour chord containing the augmented sixth/minor seventh $F^\sharp/G^b$, occurs at all hierarchical levels of the Subordinate Group. At the surface level of mm.57-59, an augmented-sixth chord on A^b prolongs the tonic (Ex. 2-19). Its enharmonic equivalent, the $A^b \frac{4}{2}$ chord of m.61, has the same outer voices, exchanged (Ex. 2-18). Although at the surface the A^b harmony prolonged in m.61 relates to the

preceding $D\flat$ -minor triad as its V_2^4 , the wider context confirms the status of the $A\flat$ chord as IV of $E\flat$ and the $D\flat$ chord as subordinate to the $A\flat$ harmony (iv/IV). As the inner-voice chromatic descent continues through C and $C\flat$ in m.61, this particular instance of IV is succeeded by $vii^\circ 7$ —a dominant-function harmony containing subdominant elements—before resolving to I. Explicit $B\flat$ -rooted harmony has been absent in the establishment of $E\flat$ major.

Ex. 2-19 STGd, mm.A57-60: prolongation of I by subdominant-function chord.

A 57 58 59 60

$E\flat$: (iii b) I IV^{+b}_5 iv/IV

STGd is repeated in varied fashion in mm.63₂-70₄. Both antecedent and consequent phrases are given a new, contrapuntal setting, placing the established melody of each phrase in the lowest part (vc) and adding a countermelody above (vn1; doubled by va during the antecedent phrase).²²

The antecedent phrase undergoes subtle melodic and harmonic changes. The pc $G\flat$ at the end of the original consequent is picked up as $F\sharp$ in the vc at the

²²The countermelody is derived from PTGa², mm.8-9 vn1 (Wilke, 146).

beginning of the repetition of the antecedent. Only the initial pc of this repetition (including the first return of this pc in the changing-note figure) is altered from the original: the changing notes have reverted to the interval of a semitone (as in the Fugato subject) instead of the whole-tone distance of theme d at mm.57-58, and all other pcs remain identical to their counterparts in mm.59-60 (Ex. 2-20). The new beginning pitch, F $\sharp$, is still treated as a major mediant, so that the opening harmony is I of D (Ex. 2-18, m.64). The close of the phrase, previously a chromatic descent to $\flat\hat{7}$ of E $\flat$, is treated as a descent to $\sharp\hat{7}$ of D harmonized by V of D.

Ex. 2-20 STGd antecedent: E $\flat$ -major and D-major melody forms compared.

A 57

A 63

Harmonization of STGd in D major, at virtually the same pitch level as that harmonized in E $\flat$, and the placing of V of D in a structural position (the close of the phrase)—something denied V of E $\flat$ —places the key of D in an equivalent syntactical position to that of the apparent main key, E $\flat$. It recalls the approach to the STG, mm.55-56, in which forms of V of E $\flat$ and V of D were juxtaposed (Ex. 2-16). The result is comparable to the situation in the PTG. There, the first

theme was introduced in D and then restated in $E\flat$, V of $E\flat$ having assumed the structural function denied V of D. Here, the same two keys recur with their roles reversed.

The middleground descent of the uppermost line of STGd continues with the next phrase. Following the m.66 cadence on V of D, the varied consequent begins on $B\flat$ -major harmony while the uppermost line descends to F (m.67, Ex. 2-18). Apparently $\flat VI$ of D, the $B\flat$ harmony also suggests V of the original key. Semitone-related tonics having been juxtaposed in mm.63-64, their respective dominants are now likewise paired, but in reverse order. In a sense, I-V of D has been nested within I-V of $E\flat$.

$B\flat$ harmony never gains unequivocal meaning as V of $E\flat$ in this phrase. Measures 67-68 remain within the orbit of D minor. In m.69, there is a deft shift down a semitone to $D\flat$ major as tonal centre (Ex. 2-18). $B\flat^7$ harmony returns at the start of m.70, but as a result of the prominent melodic line $E\flat_6-D\flat_6-A\flat_5-G\flat_5-F_5$ in mm.69-70 and the $A\flat^6_5$ harmony in m.70 (V of $D\flat$?), $B\flat$ harmony sounds as much like VI of $D\flat$ as V of $E\flat$. The French sixth $D\flat-F-G-B$, within the outer-voice major tenth $D\flat-F$ that ends the phrase, serves as a pseudo I of $D\flat$. It is reinterpreted as an altered V^4_3 of C when it resolves to the outer-voice C-E at the start of m.71.

Therefore, the linear framework of mm.57-71 is a chromatic descent of outer-voice major tenths, from $E\flat_3-G_5$ at the start of theme d to C_3-E_5 at the start of theme e.

Ex. 2-21 STGe (mm.A71-81): harmonic and linear structure.

ant. A71 72 73 74 75

76 77 78

cons.

79 80 81

C: 1 - IV^7 - bVII - biii^6 - $\text{bIII}^6 - (\text{b}^{\flat}\text{VI})^{\sharp} - (\text{b}^{\flat}\text{II})^{\sharp}$ - V^7

G: bII^6 V^{13} - V^7

of V

C: V - $\text{I}^{\flat 7}$ - IV - bVII -

C: biii - bIII^7 V^7

Ab:

12 11 10

W

The Second Subordinate Theme, STGe (mm.A71-81)

Outer voices of theme e move freely about the basic 10-7 LIP, but root movement by descending fifths is always audible (Ex. 2-21). Adjustments to the upper-voice of the intervallic pattern occur in order to maintain its general chromatic descent while preserving enough diatonicism in the bass to remain within close range of C major. (If the chromatic descent of the upper part were uninterrupted, the bass would traverse through all twelve pcs.) For this reason, the upper voice of the antecedent, having reached $D\sharp 5$ in the second half of m.72, rather than descend to $D\flat 5$, backtracks to $E\flat$ (which happens to be supported by $G\flat 2$ rather than $E\flat 2$ in the bass). $D\flat/C\sharp 5$ is reserved as upper-voice pitch of the chord rooted on the pc $A\sharp$ in m.74, which would otherwise have had $A\flat$ in the bass with C above. The outer-voice seventh $D-C\sharp$ is thus available for the final measure of the phrase.

The connection of $E\flat$ -rooted harmony in mm.73-74 and A-rooted harmony in m.74 suggests an interpretation of the $E\flat$ -major chord as the Neapolitan in the key in which A is V. Meanwhile, the temporary use of $G\flat$ rather than $G\sharp$ in the bass of mm.73-74 creates a moment of chromatic bitonality. At the beginning of m.74, $G\flat$ momentarily serves as the bass of $V^7/C\flat$. Meanwhile, the upper line of mm.73-75 descends the octave $B\flat-A\flat-G\flat-F\flat-E\flat-D\flat-C\flat/B-B\flat/A\sharp$, i.e., $\hat{7}-\hat{7}$ through a $C\flat$ -major scale (Ex. 2-21, short staff). Therefore, within the A^7 chord, certain melodic pitches sound in two keys: $D\flat 5$ functions as both the fifth of the $G\flat^7$ chord and as $C\sharp$, the third of the A-rooted chord; $B4$ in m.75 is both $C\flat$ and

a passing “thirteenth” above V of G; A[#]4 in m.75 is both B^b ($\hat{7}$ of C^b) and the augmented fifth of V of G.

The consequent phrase of STGe, which begins in parallel relation to the antecedent, but a fourth below, reproduces the same essential upper line, which again backtracks up a semitone at the fourth-occurring chord. Having reached E^b harmony by the fifth chord, the 10-7 pattern comes to an end, the phrase having merely to prolong this harmony for the remainder of its span (in anticipation of theme f). At m.78, transfer of register up an octave for the final pcs of the upper-voice descent, B^b5–A^b5–G5, prepares for the register of theme f in m.82.

The Third Subordinate Theme, STGf (mm.A82-91)

The prolonged E^b harmony at the end of theme e serves as V of the opening A^b harmony of theme f. STGf is a transformation of STGd that positions the pitch oscillation between scale degrees $\hat{1}$ and $\hat{7}$ of the key of A^b. Thereby it is possible to begin the theme on both the pc A^b and on A^b harmony. Other elements of transformation are: altered time values, sequencing of the final five-note chromatic motive, and an appended cadential motive (m.85) borrowed from theme e, m.73.

In m.83, the initial A^b harmony is modified by the addition of G^b and leads, in m.84, to a second-inversion D^b harmony (Ex. 2-22). As in m.60, D^b harmony serves as IV of A^b, this time preparing V⁷ of A^b (m.85). Within this dominant, the melodic descent B^b6–A^b6–G^b6 not only alters the quality of the chord fifth, from a raised fifth to a lowered fifth, but alters the prevailing diatonic

collection, thereby preparing for reinterpretation of the altered V^7 of $A\flat$ as a "French" V^4_3 of D. The consequent thus begins on the tonic of a remote key, the tritone-replacement key for $A\flat$.

Ex. 2-22 STGf (mm.A82-91): harmonic and linear structure.

A 82 83 84 85 86 87 89 90 91 92

antecedent consequent d

Ab: I ($b7=6/4$)

D: $I^{#5} b5$ ($Fr.$)

E $\flat$: IV

$I^{#5} b5$

$I^{4/3} - I^{bVI}$

bvi

$vii^{#6/3} - I^{6/4}$

$VII^{#5} - \#6/4 - I$

D-major harmony supports an implied $F\sharp 5$ in the upper voice. From the second half of m.87 through the first half of m.90, D-rooted harmony is elaborated, first by $B\flat$ -major harmony (made evident by stretto-like entries of STGf on $F4$, $B\flat4$, and $F5$), then by altered forms of $vii^{\circ 7}$ of D, beginning with bvi of D. When D-rooted harmony returns in mm.90-91 with upper-voice $F\sharp$ clearly present, it is in the form of a second-inversion major-minor seventh chord.

Functioning as an altered form of $vii^{\circ 7}$ in the primary key of the STG, it is this D^6_3 , not the $B\flat$ harmony, that resolves to the root-position $E\flat$ -major harmony at the return of theme d at m.92. At this structural point, the juxtaposition of

chords rooted on the rival tonics D and E $\flat$ expressly recalls the juxtaposition of their respective dominants in mm.66-67 of theme d.

Like the harmonic design, the large-scale linear design of mm.82-92 has a unifying motif. The G5 of m.92 is approached by both its lower chromatic neighbour and, on a deeper structural level, by its upper neighbour, A $\flat$ 5. The double-neighbour figure on the large scale recalls foreground-level subdominant chords incorporating F $\sharp$ /G $\flat$ into A $\flat$ harmony: IV⁺⁶ in m.59 and IV₂⁴ in m.61. In the final approach to I of E $\flat$ and principal tone G5, the triads harmonizing the neighbour tones A $\flat$ and F $\sharp$, IV and VII, have each been tonicized, and are major triads rooted on the pair of scale degrees forming the tritone that defines E $\flat$ as tonic. In lieu of dominant harmony, the final tonic of E $\flat$ is approached by both of these harmonies, by VII directly, and by IV on the deepest structural level.

The Reprise of STGd and the Link to the Development

The ensuing restatement of theme d collapses its original phrases into a single antecedent-consequent pair incorporating the rival keys (Ex. 2-23). The antecedent begins on I of E $\flat$ and cadences on V of D. The consequent reaches B $\flat$ harmony in highly obscured form at m.100 but, in preparation for the ensuing section, has already digressed from its original thematic course. The chromatically descending bass motive B $\flat$ -A-A $\flat$ of mm.99-102 recalls at the dominant level the chromatic descent E $\flat$ -D-D $\flat$ in the theme d antecedent. Once more, as in m.70 of theme d, B $\flat$ harmony neither has a strong sense of V function, nor proceeds back to E $\flat$ harmony. Instead, the m.103 link (which

employs the motive common to the theme d consequent and theme e), from which the development section will proceed, vaguely suggests a (D $\flat$ -)augmented triad.

Ex. 2-23 Restatement of STGd and link to development section, mm.A92-103.

A 92 93 94 95 96 97 99 100 103

antecedent consequent

Eb: I —
 D: — I

iii
 iv

[V $\flat$ 9 of V $\flat$ 9 of] V 7 — ?

Summary of the Tonal Structure of the STG

The main features of the tonal structure of the STG are:

1. Expansion of the tonic triad of E $\flat$ and principal tone G5 by subdominant harmony at the deepest level (Ex. 2-17). At the deepest level, IV harmonizes the upper neighbour to $\hat{3}$ of E $\flat$, and at foreground levels, IV $^{+6}$ and a form of dominant harmony, VII, harmonize the chromatic lower neighbour to $\hat{3}$ of E $\flat$ (Exs. 2-19 and 2-22).

2. Juxtaposed harmonizations of the first theme in E $\flat$ major, then D major, and pairing of the semitone-related perfect fifths E $\flat$ -B $\flat$ and D-A (Exs. 2-20 and 2-18).

Recalling that within the PTG three semitone-related keys—D, E $\flat$ and

C[#]—are associated with the PT, it is also noteworthy that in the STG, too, reference is made to the key of D^b—principally at the end of each occurrence of theme d. In addition, there are two references to D^b harmony as IV of A^b (m.60 and m.84). While not at this stage appearing as a I–V axis, use here of the D^b–A^b IV–I axis does introduce yet another fifth relationship that will later prove significant to the composition as a whole.

The First-Movement Development Section (r.B–r.C)²³

Overview

The first-movement development section serves also as the first major division of the Development section belonging to the sonata form that extends across the entire work. Therefore, the section between r.B and r.C must provide tonal preparation for the first-movement recapitulation at r.C without arriving too conclusively at this point so that, in the larger scheme, r.C initiates a further phase of developmental process. While examining the first-movement development, we shall observe an unusual tonal process whereby r.C functions as the arrival point while yet continuing to prolong a harmony initiated during the preceding section.

²³Schoenberg describes mm.B1-13 as a further transformation of theme d; hence most other commentators assume that these measures belong to the exposition and that the development section begins at m.B14. Measures B14-32, however, are yet another transformation of d, probably the reason why Friedheim designates m.B33 as the beginning of the development section. Comparison with the unambiguous close of the STG in the large-scale Recapitulation suggests that the exposition ends with m.A103 (*cf.* m.L91). Whereas mm.B1-13 might be regarded as a bridge passage between exposition and development proper (Friedheim, 299), the tonal design described below is further evidence that m.B1, not m.B14 or m.B33, begins the development section proper.

Five motives, derived from the PTG, the STG, and the Fugato, are employed in the first-movement development:

- d' changing-notes with closing chromatic descent;
- e' theme e in a tonally obscure form originating in m.A103;
- a" ascending, scale-wise eighth notes, first used in B35-36 va;²⁴
- S Fugato subject;
-  rhythmic motive of PTGa¹ in chromatically descending parallel thirds.

Tempo changes, periods of tonal movement, and changes of texture and motivic emphasis divide the development into four major parts (see Fig. 2-3).

Fig. 2-3 Motivic design and key plan of first-movement development section.

Tempo	Mm.B	Motives, Texture	Keys
1. <i>Sehr rasch.</i>	1-13	d' and e' counterpointed.	db/c# (?)
2. <i>Viel langsamer. rasch beschleunigend.</i>	14-34 35-53	d' with new accompaniment. a", S, &  alternating and overlapping.	e - V ⁷ of a-(B)-Db
3. <i>wieder s. rasch.</i>	53-76	a", d', & S counterpointed.	c-g-c#
4. (no change)	77-86 87-101	e', fragment of a" accompanying. e' with  accompanying.	c#-(d- Eb)-E-A
Recap. <i>Sehr rasch.</i>	r.C -	PTGa with  accompanying.	c#

²⁴Newlin points out that the motive we have designated a" is derived from the opening bass countermelody of PTGa, mm.1-3, of which it is a rhythmic diminution. In connection with this motive and others, she demonstrates possible ways in which Schoenberg modelled his development section after the development section of the first movement of Beethoven's *Eroica* Symphony. Among other parallels, Beethoven's development employs a very similar running-eighth-note motive at a point corresponding to that at which Schoenberg introduces the same (Newlin 1978, 228); cf. mm.168-236 of the *Eroica* first movement.

Part 1 (mm.B1-13)

Figure 2-3 suggests that the key of $D\flat/C\sharp$ is a recurring feature of the development. It was previously suggested that in the concluding measure of the exposition, m.A103, the augmented triad outlined by theme e has $D\flat$ as root (Ex. 2-23). Similarly, Ex. 2-24 shows the development section beginning on $D\flat$ -major harmony. It must be admitted, however, that the existence of any particular tonality in Part 1, mm.B1-13, is indefinite. Motive d', which moves mainly by semitone, and motive e', which outlines augmented triads with added semitones, are each in themselves tonally indeterminate. In the vertical dimension of this passage, there is a studied avoidance of full tertian harmonies that might define a key. Example 2-24 suggests how the passage could possibly be heard tonally.

Ex. 2-24 First-movement development section, Part 1 (mm.B1-13).

B 1 3 5 6 7 8 11 12 13

$D\flat$: I - (IV) - I — ii — $\text{V}^{\text{substitute}}$ I⁺ - V —

The sequencing of motive d' in falling fourths in mm.3₁-7₄ suggests root movement within the $D\flat$ -major collection. The supertonic harmony of m.7 arrives at a substitute for V of $D\flat$, the diminished-seventh chord $A\flat-C\flat[-D]-F$, prolonged

in mm.8-10. Measure 11 returns to the outline of a D^b -augmented triad before mm.12-13 suggest V of D^b again. The closing, chromatic fragment of d' , being unaccompanied, is at the same time flexible enough to lead to the beginning of Part 2 in E minor.

Ex. 2-25 First-movement development section, Part 2 (mm.B14-53).

B 14 18 25 33 34 35 36 37 38 39 43 44 45 46 47 48 50 52 53

e: i I of iv
a: i
Db: i
C: i

$Ts(X^7/x)I^7-I - I^7 - I$
of B

$Ts(I^7/x)-I - I - I^7$

$II^+ - I^7 - I$

Part 2 (mm.B14-53)

Part 2 matches a new tempo and character with the new tonality. Its harmonic structure is sketched in Ex. 2-25. After a lengthy prolongation of E-minor and then E^7 harmonies (mm.14-31), a sequential passage moves through a whole-tone chain of keys, beginning with A minor, passing through B major, and regaining D^b major. The keys of B and D^b are both defined by entries of S. In each instance, above the final pitch of S (scale degree $\hat{b}6$ in m.39 vc and m.48 vc), harmonic progression is suspended for a time by streams of parallel major

thirds, descending chromatically and carried by the dotted-rhythm motive. The first stream bridges occurrences of V/B in m.38 and in m.43. The second stream, which follows V/D $\flat$ at the end of m.47, facilitates a harmonic shift to C major at m.53. The semitone relationship characteristic of Schoenberg's music is in evidence when the A $\flat$ -D $\flat$ rising-fourth incipit of S in mm.45-46 is succeeded by $\hat{b}6$ of D $\flat$ (A3 in mm.48-49) falling to $\hat{b}2$ in the bass of m.50. From the augmented triad rooted on D in m.50, D-F $\sharp$ /G $\flat$ -B $\flat$, the chromatic motive now continues in both upper and lower parts, ascending a fourth in the bass from D3 to G3 and descending a fourth in the uppermost voice from B $\flat$ 5 to F5. Thus, the lines converge on the whole-tone chord G-B-D $\flat$ -F, which resolves as V $\hat{b}5^7$ of C at m.53. The C-major triad occurs at the first textural break since m.13. As a result, the upper-voice B5 of m.14 and C6 in m.53 are equally prominent.

Part 3 (mm.B53-76)

Part 3 has the most contrapuntal texture of the four sections. It is made up of polyphonic units that are repeated sequentially in triple and quadruple counterpoint. In terms of harmonic motion, Part 3 divides into two subsections, mm.54-67 and 68-76 (see Exs. 2-26a and 2-26b).

Measures 54-67 contain two sequentially-related statements of the same contrapuntal unit: the first, mm.54-59, in C minor and the second, mm.60-65, which proves to be in G minor. An authentic cadence in G minor, mm.66-67, prevents the sequence from continuing up another perfect fifth.

Ex. 2-26a First-movement development section, Part 3, beginning, (mm.B54-67).

B 54 55 56 57 58 59 60 61 62 63 64 65 66 67

$c:$ i $(V^7 \text{ of } biii)$ $o7$ vii^{o7} V^7 vii^{o7} $\text{of } V$
 $g:$ i $(I^{\#} \text{ of } biii^b)$ $o7$ $vii^{o\#}$ I^7 i

Ex. 2-26b First-movement development section, Part 3, conclusion (mm.A68-76).

B 68 69 70 71 72 73 74 75 76

$g:$ i $TS(I^7) \text{ of}$ $V \text{ of}$ V 7
 $C\#:$ $TS(I^7) - I$

repetition up maj. 3d

The beginning of the second subsection of Part 3, m.68, continues with G-minor harmony beneath uppermost pitch B $\flat$ 5. At first, V of G appears to be the harmonic goal of this passage (Ex.2-26b). B $\flat$ 5 is, in effect, prolonged in mm.69-71 as part of the chord B $\flat$ -D-F-A $\flat$ /G $\sharp$, which is treated as a tritone-substitute chord, and which resolves to V/V in G at m.72; V of G is attained in m.74. Measures 74-76, however, proceed as a sequential repetition of mm.70-71 a major

third higher: the D-major harmony is altered to D-F[#]-A-C/B[#] (mm.74-75)—so as to parallel the double-neighbour harmony on B^b in mm.70-71—and resolved as the chord TS(V⁷) of C[#]. The tonal goal of the passage is thus determined to be not a perfect fifth away, but a tritone away from G minor—and a semitone away from the beginning key of Part 3.

Meanwhile in Part 3, the uppermost voice completes a middleground descent that began with C6 at m.53 followed by B^b5 at m.68 (Exs. 2-26a,b). B^b continues to an implied A5 at m.72, and arrives at G[#]5 in m.76. The beginning of Part 4 at m.77 confirms the return to G[#]5, the pitch on which the upper line of the development section began (*cf.* Ex. 2-24).

Part 4 (mm.B77-101)

The harmonic progression that closes Part 3 in C[#] suggests that Part 4 begins in the key of C[#]. In itself, the principal motivic idea, e', remains tonally obscure: heard in unison in the lower parts of mm.77-78, e' still outlines an augmented triad, now spanning C[#]2 to C[#]3, with semitone motion at beginning and end—thus C[#]-D-F-A-B[#]-C[#]. Now, however, e' is accompanied by a C[#]-minor/major arpeggiation in the upper two parts, confirming that C[#] is chord root. Motive e' is repeated in diminution in the next measure (m.79) and then in inversion in mm.80-81—spanning the octave F[#]4-F[#]3—with accompanying pitches suggesting V⁷-iv⁶ of C[#].

This set of materials, mm.77-81, is then sequenced in rising semitones, i.e., beginning on D at m.82 and touching on E^b at m.87, before reaching E at

m.90 (Ex.2-27). Having passed from C $\sharp$ to E, the larger tonal structure of Part 4 continues a path remarkably similar to that of Parts 1–2. The E-major harmony of mm.90-92 supports the implied prolongation of G $\sharp$ 5 in the upper voice.²⁵ At m.93, the key of E gives way to its subdominant, A, just as it did in Part 2. A-major harmony supports an upper neighbour tone to the opening G $\sharp$ 5 of the upper line. In mm.98-101, this neighbour tone is retained by vii $^{\circ 7}$ of C $\sharp$, which harmony resolves to the tonic, reinstating G $\sharp$ 5, at r.C. When PTGa is reprised in C $\sharp$ in m.C1, there is no doubt that the tonality is C $\sharp$ minor.

Ex. 2-27 First-movement development section, Part 4 (mm.B77-101).

B 77 80 81 82 85 86 87 89 90 93 95 98 101

sequential rep. sequ.

iii - I - V - iv $\flat$
of D

iii $\flat$ - I
of E $\flat$

I - I - IV
bVI of E I

of A

bIII - bVI - vii $^{\circ 7}$

C $\sharp$: I - V $\sharp 2$ - iv

Summary of the Tonal Structure of the First-Movement Development

As shown in Ex. 2-28, the tonal design of the entire first-movement development section, climaxing with the onset of the recapitulation, is balanced

²⁵The close identity of the keys C $\sharp$ minor and E major, due to their shared diatonic collection and shared tonic-triad component E-G $\sharp$, is frequently exploited in the work. The first instance occurred in the PTG with the modulation to C $\sharp$ at m.54 via E major at m.42 (Ex. 2-1).

around Part 3 in the centre. Part 1, with its vague suggestion of a $D\flat$ -major tonic, and the beginning of the recapitulation in $C\sharp$ minor correspond at the two extremes. Two larger chunks, Parts 1–2 and Part 4–recapitulation of PT, have the same sequence of keys: $C\sharp$ –E–A– $C\sharp$. The central section, Part 3, provides tonal contrast by means of the key with tonic a semitone below $C\sharp$ —C—and its dominant—G—which is in tritone relation to $C\sharp$. The effect of the symmetrical scheme extending from r.B to r.C is that the entire passage is a prolongation of the outer-voice perfect fifth $C\sharp^2$ – $G\sharp^5$ (Ex. 2-28). On the largest scale, this aspect of harmonic design creates the effect of a continuation of the development section beyond the point of r.C.

Ex. 2-28 First-movement development (mm.B1-101): deep middleground level.

B 1 14 33 44 46 52 53 68 77 87 90 95 98 C1

Pt. 1 Pt. 2 Pt. 3 Pt. 4 Recap.

$C\sharp$: I – VII – I – $(vii^\circ 7)$ –I

At the same time, however, r.C is the culmination of a definite, but unusual tonal process. We have observed that the degree to which the prevailing tonic is defined varies progressively through the first-movement development.

Reference to C $\sharp$ as tonal centre is vague in Part 1 and fleeting in Part 2.

Following the central, contrasting section, the key of C $\sharp$ minor becomes gradually more explicit. C $\sharp$ appears to be the main tonality of Part 4, established, however, in connection with the same tonally ambiguous motive as heard in Part 1.

Finally, at r.C, C $\sharp$ emerges unambiguously as the key of a theme having strong tonal implications, the principal theme of the work. The entire process marks r.C as a point of arrival tonally as well as thematically, although in another sense, r.C is a continuation of a prolongation initiated in the first-movement development section.

If the passage from r.B to r.C is thought of as being principally in the key of C $\sharp$ minor, and if its tonality is considered in relation to the preceding large sections, a pattern emerges: each of the three principal sections of the composition examined thus far has as its overall tonal centre one of three semitone-related keys: the Principal Thematic Group in D (with E $\flat$ as rival), the Subordinate Thematic Group in E $\flat$ (with D as rival), and the Development section thus far in C $\sharp$. This plan will unfold further in the first-movement recapitulation.

The First-Movement Recapitulation (mm.C1–D33)

Beginning at m.C1, successive passages recall themes belonging to the PTG, the Fugato, and the STG. Thematically, a recapitulatory function is thereby

served.²⁶ The tonal design of the thematic reprise, however, does not serve to make D minor the exclusive tonal centre; the recapitulation begins with PTGa in C# minor and follows a scheme by which each key of the exposition is reassigned to a theme other than that with which the key was originally associated.

It will be recalled that the key of C# minor, as well as prevailing in the formal development section (mm.B1-101), was originally associated with a brief appearance of PTGa within the PTG (mm.54 ff.). There, its syntactical position (embedded in the "Consequent") and its tonal position (within a chromatic surrounding of the D-minor tonic, D-Eb-C#-D) clearly placed the C#-minor tonic on a lower structural level than the D-minor tonic triad. At m.C1 the use of C# minor as the key in which PTGa is recapitulated makes the C#-minor tonic syntactically equivalent to the D-minor tonic on the level of the first movement. C# thereby emerges here as another rival tonic to D. As summarized in Fig. 2-4, three sections of the first movement contain an element of tonal duality.

Fig. 2-4 Tonal duality within the first movement.

	PTG	STG	Dev.	Recap.
m.	1	A57	B1	C1
key:	d	Eb	c#	d expected,
rival:	eb	D		c# substituted

Recapitulation of the PT (mm.C1-34)

We have noted that, by opening in C# minor, the recapitulation serves also

²⁶Neff was the first analyst to point out that r.C marks the beginning of the first-movement recapitulation (Neff, 45).

as a continuation of the large-scale Development section in terms of tonal design. Motivically, too, it begins as an extension of the previous development section. The upper-voice G[#]5 of m.C1 leads off the parallel-thirds dotted-rhythm motive so prominent in the development (now $\text{♩} \text{♩} \text{♩}$) as accompaniment for PTGa heard in va and vc in the first ten measures.

Ex. 2-29 First-movement recapitulation of PTGa and link to Fugato 2 (mm. C1- 34).

c#: i - pre-dominant — v V⁺
 Eb:
 f V¹³?
 V⁵/₃ _{b3} 7

At m.11, a tenuous V of C[#]—the augmented triad C/B[#]-E-G[#]—is reached once more (Ex. 2-29). Measures 11ff., rather than being a literal reprise of PTGa², are an extended working out of its motive that prolongs the augmented triad at great length. In mm.11-19, the chromatic descent of the PTGa² motive in all parts traces parallel augmented triads (vn1 whole notes are rhythmically shifted with respect to these triads). In mm.20-29, two pairs of major-third-separated chromatic lines in the form of PTGa², the pairs either in contrary or parallel

motion against each other, continue the stream of whole-tone chords.²⁷

At the endpoint of the prolongation of C-E-G[♯], m.C30, the pc G[♯]/A^b remains prominent at the top but the pc B^b has been added. Sounding very much as V^{b13} of F, a major-third related key to C[♯], it creates expectation that a passage in F will follow. Instead, in the ensuing linking passage, the whole-tone chord is altered to B^b-D-E-A^b, a tetrad that proves to be V^{b5} of E^b.

Recapitulation of the Transition (Fugato 2, mm.C35-48)

The brief recapitulation of the Fugato begins with a subject entry in E^b, thus reassigning E^b from its role as key of the STG to the opening of the Fugato. From this point on, harmonic events of Fugato 2 are a compact display of tonics and dominants related to each other in minor-third cycles (Ex. 2-30). Immediately after the $\hat{5}-\hat{1}$ leap at the beginning of S has defined E^b, it is overlapped by a subject entry in C. When the closing pitches of the subject entries in E^b and C, $\hat{2}-\hat{5}-\hat{b}\hat{6}$, overlap, their respective dominant ninths and shared diminished-seventh chord D-F-A^b-B are defined. In the next two measures, sequential repetition at the distance of IC1 yields E and C[♯] tonics and the dominant ninths associated with the diminished-seventh chord D[♯]-F[♯]-A-C. Sequential repetition again at the distance of IC1 results in entries in F and D.²⁸ The entry in D is the last

²⁷In mm.11-19 the chromatic scales are marked off in partitions of three semitones by long time values, and in mm.20-29 they are marked off in partitions of two semitones by long time values.

²⁸Niederberger has elucidated Schoenberg's decision to pair the minor-third related subject entries and to sequence the pair at successive semitones higher. As indicated by pc names immediately above the treble staff in Ex. 2-30, two complete and distinct statements of the P4+M3 idea (albeit not unidirectional) are traced by the successive, upward perfect-fourth leaps and downward perfect-fifth

suggestion of an actual key in Fugato 2. It is followed by outlines of not two, but all four dominant minor-ninth harmonies pertaining to one minor-third cycle—the dominant ninths having the diminished-seventh chord $D\flat-E-G-B\flat$ in common.

Ex. 2-30 First-movement recapitulation of Fugato: Fugato 2 (mm.C35-48).

C 35 36 37 38 39 40 -

F - $B\flat$ D - G B - E $G\sharp$ - C $\sharp$ || F $\sharp$ - B D $\sharp$ - G $\sharp$ C - F A - D || 42 43

41 44-46 46₃ - 48₄

octatonic
hexachord

Beginning at m.42, the four minor-ninth outlines of this last set are divorced from the S incipit and alternated cyclically in rhythmic diminution. The rhythmic figure gradually slows to the original tempo until in mm.46₃-48₄ two minor-ninth

leaps contained in this concatenation of S entries (Niederberger, 82-86.)

outlines are dropped, leaving those with roots A and G $\flat$. The result is an octatonic hexachord consisting of the diminished seventh D $\flat$ -E-G-B $\flat$ and two of its potential roots. This versatile harmony, with the pc B $\flat$ positioned at the top, will serve as the link to each key employed in the recapitulation of themes of the Subordinate Group.

Recapitulation of the STG (mm.C49-65)

In keeping with the function of the first-movement recapitulation as part of the Development section, STG themes follow in varied rather than original order. From m.48 to m.49, the linking octatonic chord, in its rhythmic figure, resolves in common-tone fashion to a B $\flat$ -minor tonic triad, traced in vn2 and vc by the same rhythmic figure. In m.50, theme f enters in this key played by vn1 and va in parallel thirds. B $\flat$ -minor is thus one of the keys reassigned, from its original association with a PTG theme (PTGb), to an STG theme.

The opening neighbour-note figure of theme f is sequenced upward in mm.50-56. This creates an uppermost line consisting of an arpeggiation of the half-diminished seventh F-A $\flat$ -C $\flat$ -E $\flat$ followed by semitone descent from C $\sharp$ to B $\flat$ (Ex. 2-31a). The haunting character of this version of STGf is due, at least in part, to the method by which its harmonies are generated linearly. While the B $\flat$ retained by the rhythmic figure serves as common tone to successive harmonies, the pitches above it move slowly in staggered semitone descents, descending from each of the pitches of the ascending arpeggio of the F half-diminished seventh chord so as eventually to arrive at pitches of the restored B $\flat$ -minor triad (Ex. 2-

31b). From m.51 to m.52, F5 falls a semitone, exposing E5 at the top of the next chord. From thence, the rhythm of the upper-voice arpeggiation accelerates so that when the next upper-voice pitch, A $\flat$, falls, A $\flat\flat$ is covered by the next pitch of the arpeggiation, C $\flat$ at m.55. The descent from A $\flat$ continues in the inner part, A $\flat\flat$ falling to G $\flat$ in m.56. Further descent from G $\flat$ to the pc F occurs in the lower octave in mm.57-58. Meanwhile, E5 continues its descent through E $\flat$ 5 (doubled by E $\flat$ 6 of the arpeggiation) to D $\sharp$ 5 and D $\flat$ 5. C $\flat$ 6 (m. 55) is picked up again as B $\sharp$ 5 at m. 57, from whence it falls to B $\flat$ 5. The pc B $\flat$ is thus re-established as primary upper-voice pitch.

Ex. 2-31 First-movement recapitulation of STGf (mm.C48-58).

(a)

C 48 49 50 52 54 55 56 57 58

(b)

As indicated in Ex. 2-31a, the octatonic hexachord returns at the end of m.58. This time the potential function of its pc A as root of a dominant minor-

ninth harmony is used to resolve the octatonic chord to a D-major tonic at m.60.²⁹ The D-major tonic creates expectation that the recapitulation will appropriately conclude in the tonic major key. The second subordinate theme (STGe) is briefly recalled here in a setting similar to that just given to STGf, i.e., over an accompaniment in which the rhythmic figure provides a tonic pedal. The contour of the theme (in vn1) gives renewed prominence to upper-voice B $\flat$ at m.62 (Ex. 2-32). The single, short phrase cadences on V⁷ of D, but only as a pivot back to the linking sonority. At r.D, the diminished-seventh component of the linking sonority is resolved as vii^{o7} of F.

Ex. 2-32 First-movement recapitulation of STGe (mm.C59-65).

Coda and Bridge to the Second Movement (mm.D1-33)

Beginning at r.D, explicit recapitulation function lapses, to be replaced by

²⁹Niederberger, too, ascribes dominant function to the harmony in m.C59 (Niederberger, 87). Nevertheless, given that it is an octatonic chord, C $\sharp$ -E-G-B $\flat$ with the addition of "roots" A and G $\flat$, and the fact that it has previously served to introduce a B $\flat$ tonic (and will subsequently introduce an F-major triad) the chord is not unequivocally V of D.

a yet more fragmentary presentation of STG materials in the style of a coda. This coda gradually evolves into a bridge to the second movement.³⁰ The first subsection, mm.D1-14, is remarkable for its ambiguous shifting between a newly established tonic, F, and the previous tonal centre, D, so that dual function in terms of thematic design (recapitulation/coda or bridge?) is paralleled by tonal duality.

As shown by Ex. 2-33, F major is a shadow key to D major in mm.D1-14. This passage falls into two phrases, mm.1-6 and mm.7-14. The first phrase begins with F-major harmony, embellished by a prominent upper-voice G, as if in the key of F, but concludes with an authentic cadence in D. The second phrase opens with a harmonic progression in G minor, a key closely related to both D and F. That G-minor is equally iv of D and ii of F in this context is evident in the fact that both V of F (in m.13) and V⁷ of D (m.14) succeed the temporary tonicization of an implied G-minor triad. Throughout the second phrase, upper-voice pc G is prominent.

³⁰Multiple formal functions are in operation in mm.D1-14 and D15ff.. In addition to their roles in closing the first movement and initiating a bridge to the second, the passage in mm.D1-14 serves as the recapitulation of STGd. The characteristic phrase of theme d is not explicitly recalled, but the passage does restate all subsidiary materials related to STGd: the countermelody of its antecedent phrase (compare mm.D1-6 vn1 with mm.A63-66 vn1/va) and its consequent phrase, melody and countermelody (compare mm.D7-14 with mm.A67-70). The countermelody in mm.D9-10 vn1 evolves into STGf (mm.D11-14), which concludes the restatement of materials related to STGd. Thematic recall in the coda/bridge is not confined to the STG, however. The countermelody to PTGa is heard in the vc in mm.D1-5 and diminished in mm.D18-20. Measures D15-18 employ not-as-yet recalled themes of the PTG (b and c) in counterpoint, and mm.D18-23 employ the Fugato subject in diminution. At m.D15 the faster tempo, and at m.18 the *accelerando*, suggest that bridge function to the second movement is now the primary intent.

Ex. 2-33 First-movement coda and bridge to the second movement.

D 1 2 4 5 6 7 8 9 10 11 13 14

D: $\text{bIII} \text{ — } \text{b7} \text{ Ger. } \text{5}^{\text{b6}} \text{ V}^{\text{b5}} \text{ I}$ $\text{VI} - \text{ii}^{\text{b6}} - \text{iv}^{\text{b6}} - \text{vii}^{\text{b4}}_3$ of iv c.t.o7 $\text{I}^7 \text{ of } \text{bVII} - \text{vii}^{\text{b7}} \text{ V}$

F: $\text{I} \text{ (bIII)} \text{ I}^7 \text{ of } \text{IV}^7 \text{ I}^{\text{b5}} \text{ of } \text{V}/\text{ii}$ $\text{V} - \text{VI} - \text{ii}^{\text{b6}} - \text{iv}^{\text{b6}} - \text{vii}^{\text{b4}}_3$ of ii c.t.o7 $\text{V}^7/\text{V} \text{ V} \text{ } \text{vii}^{\text{b7}} \text{ of vi}$

15 17 18 24 26 28 29 30 33 E1

F: $\hat{2}$ — — — — — $\text{Gb: } \hat{2}$ $\hat{3}$

F: ii — — — — — $\text{V}^7 - ?$

Gb: $\text{I}^7 \text{ of } \text{V}^{\text{b6}} \text{ of } \text{V}^7 - \text{I}$

Both keys, F and D, are structurally logical. Recapitulation of STG themes in the form of a D-major coda is to be expected at the close of a D-minor movement. At the same time, because F major is a logical secondary key for a multi-movement D-minor composition, a bridge preparing a definitive F-major tonic for the second movement is equally possible. What is unusual is that the respective keys of the two structural functions are, for a time, employed simultaneously.

An actual close in D major is not achieved but instead the F-major tonic gradually eclipses D. In mm.D15ff., the oft-referred-to G-minor harmony, with either upper-voice G or B $\flat$, sounds increasingly as ii of F major rather than iv of D (Ex. 2-33). Particularly in mm.D24-29, G-minor harmony supports $\hat{2}$ of F in the uppermost voice, with temporary excursions to $\hat{4}$ above. In mm.D30-32, the pc G continues to rule when V⁹ of F is reached as an intermediate harmonic goal. This dominant recalls the unfulfilled V^{b13} of F at m.C30. During mm.D30-32, in which the C⁹ harmony is expanded and repeated, it appears certain that the next principal section will open in the key of F.

Surprisingly, in m.33 a harmonic "sleight of hand," played broadly and *fff*, reinterprets the V⁹ of F as preparation for V of G $\flat$. At the beginning of m.33, the C-D ninth moves outward to B $\flat$ -E $\flat$ as part of an E $\flat$ -augmented triad, beginning a chain of fifth-related roots. From B $\flat$, the bass returns to C as part of an A $\flat$ ⁷ chord that continues on to V⁷ of G $\flat$. With doubled D $\flat$ in the outer voices, the D $\flat$ -seventh chord is unable to resolve as the German sixth in F; its function as

a dominant-seventh, V^7 of $G\flat$ is thereby secured. In this way, and at the last moment, the key that is $\sharp III$ in relation to D minor replaces $\flat III$ as key of the second movement.

Summary of the Tonal Structure of the First-Movement Recapitulation

Example 2-34 summarizes the harmonic and linear design of the first-movement recapitulation. It begins with $C\sharp$ -minor harmony and outer-voice pcs $C\sharp^3$ and $G\sharp^5$ and ends with $D\flat^7$ harmony with the same effective outer voices enharmonically notated. Certain intervening harmonic events are embellishing. In mm.C35-64, the temporary tonics $E\flat$, $B\flat$, and D are fleeting and their uppermost pitches are passing and neighbouring events in the wider scheme of the recapitulation. On the other hand, in mm.D1-14 elements of F major (and, for the moment, elements of D major) are goal oriented, not embellishing. In mm.D15-32, the progression $F: ii-V^9$ exerts so definite a pull toward an F-major tonic that, even in retrospect, it is problematic to consider these harmonies as subordinate and prolongational to the $C\sharp/D\flat$ harmony at beginning and end. In particular, the upper-voice pc G of mm.D15-32 sounds strongly as $\hat{2}$ of F. The harmony of mm.30-32 has been prepared at length and is so clearly V/F that it appears to succeed the opening $C\sharp$ harmony in structural weight. Only when V/F is abruptly supplanted by $V^7/G\flat$ does the true nature of V/F become evident. It has been counterpoised as rival to the dominant of $G\flat$, and is of equal structural weight to I of $C\sharp$ and V of $G\flat$.

Ex. 2-34 First-movement recapitulation, coda, and bridge to the second movement.

C 1 11 30 33 34 35 39 46 49 59 60 62 63

Harmonic analysis for measures 1-39:

C#: I - Y⁺ Eb: V — I
 F: Y^{b13}? Y-I V: V-I
 bb: cto7-i
 D: Y^{b9} - I Y⁷ (vii^{o7})

D 1 5 6 10 12 13 14

Harmonic analysis for measures 46-63:

D: bIII V^{b5} - I vii³ of V⁷ of bVII V —
 F: I — V/ii N^b.vii³ of V⁷ of V V of V of ii - V⁹?
 Gb: V⁺ of V⁶ of V⁷

G $\flat$ major, the key of the Scherzo, has been prepared in two ways: in the Fugato 1 exposition, the G $\flat$ tonic was prominent in the minor-third cycle of equivalent tonics that foreshadowed two keys employed in the STG; the first-movement development section and recapitulation together prolonged the C $\sharp$ -minor triad in preparation for converting it to V of G $\flat$ at the end of the transition to the Scherzo.

Overview of Part I

We have observed that the thematic design of Part I suggests a sonata-form movement. The tonal design of Part I bears a more tenuous resemblance to sonata form because it must reconcile two competing purposes: closure within the first-movement recapitulation and continuity in the large-scale Development section within which this recapitulation is interpolated. It does so by means of two idiosyncracies of the horizontal dimension of the tonal plot:

1. The first-movement development contrives to make the onset of the recapitulation, m.C1, a point of tonal arrival even while the reprise of the PT continues to prolong a triad initiated at the beginning of the development section, a triad that is not the original tonic;
2. In the manner of a development section, the first-movement recapitulation contains constant tonal fluctuation. Instead of being recast all in one and the same key, the tonic, themes are recapitulated in a variety of keys, all of which originated in the exposition.

Figure 2-5 reveals the logic behind the ordering of keys in the

recapitulation and the tonal design of Part I as a whole. Measure C1 is crucial because around this point the key scheme spreads in symmetrical balance.

Fig. 2-5 Tonal design of Part I (the “first movement”).

<u>FIRST MOVEMENT</u>						<u>BRIDGE</u>
m.1	m.A57	m.B1	m.C1	m.C35	m.C49	m.D1
<u>Expo.</u>		<u>Dev.</u>	<u>Recap.</u>			<u>Coda</u>
PTG	STG		PT	Fugato 2	STG	
d-(b $\flat$)-d	E $\flat$	c $\sharp$	c $\sharp$	E $\flat$ - D	(b $\flat$)-D	D/F

Flanking the centrally positioned key of C $\sharp$ minor are two occurrences of E $\flat$ major, employed for the exposition of the STG and for the beginning of Fugato 2. The return to D minor at the end of the PTG exposition is matched by the key of the last subject entry of Fugato 2, D. The key of PTGb, B $\flat$ minor, is mirrored by the choice of the same key for the first-to-be-recapitulated theme of the Subordinate Group (STGf). The entire movement, exclusive of the F-major bridge to the Scherzo, is framed by the PT in D minor and the reprise of STGe in D major. Moreover, the two most prominent tonics nested within the principal key, E $\flat$ and C $\sharp$, relate to D by semitone above and below, a further symmetry.

On the level of the quartet as a whole, Part I initiates several strands of a tonal plot that will sustain the fifty-minute composition. In the horizontal dimension, the large chromatic surrounding of the primary key, D, by the key of the STG, E $\flat$, and the key in which the Development begins, C $\sharp$, has yet to be closed. Also in the horizontal dimension, the use of two of the minor-third-

related tonics from the Fugato 1 exposition, E^b and C, for themes of the STG, and the preparation of G^b for the second movement, leaves A, the last of the minor-third cycle of keys, for a future theme. In the vertical dimension, Part I has begun a plan in which each main key is one element in a pair of tonal rivals. It is a mark of the overall tonal integration that the pcs that are tonics forming the chromatic surrounding of D are also those rivalling D in the vertical dimension. In the bridge to Part II, the rivalry between two mediant of the key of D—F and G^b —for tonic of the second movement suggests that semitone rivalry will continue, but with different pitch classes.

CHAPTER 3

THE TONAL STRUCTURE OF PART II

In keeping with the plan of superimposing a four-movement sonata cycle over a single sonata-form movement, the large-scale Development section incorporates a lengthy episode that constitutes the “second movement” of the quartet. The episode is styled as a Scherzo and Trio. It, together with the remainder of the Development section and the Recapitulation of the PTG, will be referred to as Part II of the composition. The passage in mm.E1-133 is the Scherzo; mm.F1-43 are a bridge passage to the Trio, mm.F44-G33; the passage in mm.G34-111 functions both as a quasi reprise of the Scherzo and as a transition back to the Development section proper; mm.H1-I37 complete the Development section and will be referred to as “Development 2;” mm.I38-80 present the Recapitulation of the PTG in D minor.

Part II is thematically diverse, but contains a unifying tonal plan, picking up on, and giving further play to, the tonal plot we observed in “Development 1,” mm.B1-D33, and eventually resolving its main tonal issue. It will be recalled that within the Development section thus far, the first-movement recapitulation began in C# minor rather than D minor. This will prove to be the first stage of D-C# rivalry that we shall trace in the remainder of the Development section.

The Scherzo (mm.E1-133)

The Scherzo is a small ternary form. Part 1, mm.E1-50, begins in G-flat major; its opening melodic idea, theme g, is a transformation of the Fugato subject. Part 2, mm.51-105, is derived from Part 1 but also provides thematic and tonal contrast.¹ Measures 106-33 are a varied restatement of Part 1 that begins and ends in G-flat major. The Scherzo is one of the few tonally closed passages in the quartet. A detailed look at its tonal structure, however, reveals a much richer design than mere prolongation of the G-flat major triad. Rivalry between third-related keys and between semitone-related keys is employed in an amusing fashion befitting the thematic stylization as Scherzo.

The Role of B $\flat$ in the Tonal Structure of the Scherzo

As shown in Ex. 3-1, the pc B $\flat$ and B $\flat$ -major harmony have roles to play in phrase 1. The head motive of theme g, D $\flat$ 4-G $\flat$ 4-A $\flat$ 4-B $\flat$ 4, provides an initial ascent to $\hat{3}$ of G $\flat$ major while prolonging tonic harmony. B $\flat$ harmony occurs within a long prolongation of A $\flat$ -rooted (pre-dominant) harmony. The initial expansion of this latter harmony occurs in mm.3-9, during which the head motive in altered form is heard at the supertonic level (mm.6-7). A $\flat$ -rooted harmony is elaborated in an unusual way in mm.10-15. Measures 10-12, using the three stepwise notes of the head motive in vn1 and vc in contrary motion, compose out A-major harmony, evidently the Neapolitan of A $\flat$ (or regarded more directly, $\flat$ VI

¹The designations "Part 1" and "Part 2" for the first and second sections of the ternary-form Scherzo (the "Scherzo proper") are not to be confused with "Part I" and "Part II" of the quartet as a whole.

of the dominant, $D\flat$). Then, instead of proceeding directly back to $A\flat$ harmony as V of $D\flat$, the whole-tone idea is sequenced up a further semitone—i.e., beginning on $B\flat$ -major harmony—and expanded into complete, contrary-motion whole-tone scales in mm.13-15. Finally, this whole-tone collection coalesces on a variation of $A\flat$ -rooted harmony, a “French” V_3^4 of $D\flat$, before resolving to $D\flat$ harmony at the end of phrase 1.

Ex. 3-1 Scherzo: Part 1, phrase 1 (mm. E1-25).

E 1 2 3 6 7 9 10 13 15 16-25

Neapolitan
of ii
Db: $bVII^b$ (pass.) $V_3^4 - I$ (Fr.)

The role of $B\flat$ -major harmony is elevated beyond passing significance in the consequent phrase (Ex. 3-2). At m.32, $III\sharp$ is a local, implied tonic. Measures 32-38 contain an ascending octave-progression, $B\flat 4$ to $B\flat 5$, supported by harmonies that include V^7 of $B\flat$ in the penultimate two measures. But at m.38, this V^7 resolves deceptively up a semitone, unexpectedly restoring the $G\flat$ -major tonic. By fluctuating between $G\flat$ and $B\flat$ tonics, the consequent phrase presents the two as interchangeable.

Ex. 3-2 Scherzo: Part 1, phrase 2 (mm.E26-38).

E 26 27 28 29 32 33 34 35 36 37 38

Harmonic reduction:

Gb:	I	ii	I	III ⁴	—	VII ⁷ ₄₅	—	I
Bb:	I	I	I	I	—	V ⁷ ₄	—	bVI

The third and last phrase of Part 1 contains brief reference to B $\flat$ -rooted harmony in m.45 (Ex. 3-3). More obvious is the harmonic goal of the phrase, V⁷ of V. This A $\flat$ seventh chord supports $\hat{2}$ and creates expectation for a new theme in the dominant key.

Ex. 3-3 Scherzo: Part 1, final phrase (mm.E38-50).

E 38 39 40 41 42 43 44 45 46 47 50

Harmonic reduction:

Gb:	I	—	ii	—	III ⁷ ₄	V ⁷ ₄	—
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A harmonic reduction of the first phrase of Part 2 is shown in Ex. 3-4.

The contrasting melodic contour, theme h, is unexpectedly fashioned so as to

avoid the key of $D\flat$. It begins in m.50 with a descending perfect fifth belonging to the $A\flat^7$ chord, $E\flat-A\flat$, but follows it with an ascending fourth $A-D$ in m.51 harmonized by the tritone-related D major-minor seventh chord. The D^7 chord is followed by the third-related F^7 chord. The three seventh chords— $A\flat^7$, D^7 , and F^7 —are all derived from the same minor-third cycle. The last chord of the chain is given a regular resolution: the F major-minor seventh is realized as the dominant-seventh of $B\flat$ in m.55. Therefore on first hearing, Part 2 begins with a suggestion of V of V in $G\flat$, briefly suggests the key of G , and then settles into $B\flat$ major—the same mediant key that alternated with $G\flat$ major in Part 1.

Ex. 3-4 Scherzo: Part 2, phrase 1 (mm.E50-68).

E 50 51 53 55 57 59 60 61 62 63 64 68
 $A\flat^7$ D^7 F^7
 G $\flat$: V^5_4 TS(V^5_4) V^4_2 III 6 I 5 — 6 — II 5 — TS(V^7/V)
 G: ? V^4_2
 B $\flat$: V^4_2 I 6 V^4_2 — bVI

The $B\flat$ tonic is then prolonged in mm.55-59. For the moment, we believe the mediant key to be the contrasting tonality provided by Part 2. But in m.60, when V of $B\flat$ again resolves deceptively to $G\flat$ harmony sustained for three measures, it becomes apparent that once more there has been no move to a

secondary key, and that neither tonic is confined to one or the other thematically distinct portion of the Scherzo. Thus far, tonality oscillates between $G\flat$ and $B\flat$.

Ex. 3-5 Scherzo: restatement of Part 1 (mm.E106-127).

E 107 108 109 110 111 112 113 114 115 116 117

118 119 120 121 122 123 126 127

Ab7 E7 Bb7 Gb7

+6 cadential
Ger. 5 - 6/4

iii⁶ V⁶ V⁷ - I

Continuing to examine the role of $B\flat$ in the Scherzo, we shall now leave the remainder of Part 2 for the time being and look ahead to the restatement of Part 1, analyzed in Ex. 3-5. Here, $\hat{3}$ is confirmed as fundamental upper-voice pc,

and $G\flat$ - $B\flat$ ambivalence resurfaces: mm.114-125 may be interpreted in both keys. Measures 118-22 are particularly to be noted. This sequential passage emphasizes the approach to $B\flat$ 6 in m.123. Supporting the $B\flat$ 6 in mm.123-26 are four measures of $B\flat$ -minor six-four harmony. The six-four harmony has a strong rhetorical effect, heightened by the tremolo flourish of mm.123-126: it signals a cadence in $B\flat$ minor. As it turns out, the $B\flat$ six-four is followed by an unequivocal authentic cadence in $G\flat$, in effect reinterpreting the apparent cadential six-four embellishment of V of $B\flat$ as an altered V of $G\flat$. At this crucial moment of the Scherzo, the two keys share a chord that is a variation on dominant function in each key.

Thus far, it appears that all three formal sections contain $G\flat$ - $B\flat$ ambivalence. Whereas $G\flat$ is obviously prior, it is not clear that $B\flat$ is presented in formal opposition to it. The prior key seems reluctant to subsume $B\flat$ as a true secondary key, neither assigning it to its own contrasting thematic section, nor dispelling it for the final section; instead, it allows $B\flat$ a certain equality, a status as an alternate. $G\flat$ and $B\flat$ appear to be rival tonics.

The Role of D in the Tonal Structure of the Scherzo

Nevertheless, the Scherzo is not without a secondary tonality in formal contrast to the primary tonic. It emerges in Part 2, phrase 2, shown in Ex. 3-6. This phrase begins identically to phrase 1 of Part 2, but transposed a major third higher. That is to say, it begins with C^7 harmony, followed by the minor-third-related seventh chords $F\sharp^7$ and A^7 . The last of these proves to be V^7 of D. The

apparent D-major tonic is then prolonged. Admittedly, it is not particularly stable, but neither does it give way to G^b major again as did its B^b counterpart in the previous phrase. D may therefore be regarded as truly set in opposition to the main tonic.

Ex. 3-6 Scherzo: Part 2, phrase 2 (mm.E68-80).

E 68 69 71 73 75 77 78 79 80

C⁷ F^{#7} A⁷ F⁷ A^{b7} D⁷

D: V⁴ - I⁶ 5/3 #5 V⁴ - I⁶ 7s(V⁷) V^{b5} - I

D:
D^b:
G:

There is a curious moment in mm.78-80, when D-rooted harmony is elaborated by the trio of third-related seventh chords F^7 , A^b7 , and D^7 . The A^b7 chord actually resolves momentarily to a D^b -major triad on the strong beat of the triple-metre bar—a pointed allusion to the A^b7 at the beginning of Part 2 that did not lead to a passage in D^b . Immediately following the D^b chord, D-rooted harmony returns in the form of a dominant seventh that resolves to a G-major chord. This shift to G major is very tentative, because it occurs on the weak second and third beats of the measure; the phrase seems to “peter out” here.

The next three measures, sketched in Ex. 3-7, are a mysterious interlude.

As if to say, “Yes, a shadowy G-major tonic is intended,” mm.81-83 draw attention to this harmony in a rhetorically understated way, softly prolonging G-major harmony in a slower tempo and with the delicate timbre of natural harmonics. Subtle as it is, this proof of the tonicity of G confirms the function of D-major harmony as its dominant. At the same time, the delicate atmosphere of the G-major passage marks it as an interpolation, existing outside of the chronological or “real” time of the Scherzo, so that G-major itself does not come across as a secondary key in the ordinary sense.

Ex. 3-7 Scherzo: G-major interlude (mm.E81-84).

E 81 82 83 84

G: I - (V) - I - (V) - IV - I⁷ - bII

In real time, D-major harmony has played an active role in Part 2: it has first been used as a secondary tonic, independent of the main tonic; it has crowded out a momentary allusion to a D^b-major tonic as a secondary tonic; and D has demonstrated its function as V of G.

The passage that follows the G-major interlude is the retransition. Measures 84-91 begin with and prolong A^b⁷ harmony. Beneath dissonant

counterpoint, a persistent $A\flat$ pedal promises again the truant $D\flat$ tonic. But, once more, the $D\flat$ tonic is avoided (see Ex. 3-8). In m.92, theme h returns in unison, beginning with the descending perfect fifth $A\flat-D\flat$. Treated to its usual manoeuvres, this melody quickly shifts its affiliation away from $D\flat$: the rising perfect-fourth leap that follows in m.93 is D-G. From this G, the basic melodic line descends in whole tones connecting G6 to B4/B3 at m.99. Conjoined at m.99 is the ascending whole-tone line from phrase 1 of Part 1 (*cf.* m.10), now heard a semitone higher, that is, beginning on $B\sharp$ ($\hat{3}$ of G) rather than $B\flat$. As a result, the phrase borrowed from Part 1 cadences a semitone higher than it did originally—on D-major harmony for the end of Part 2.

To summarize, in the retransition the long prolongation of $A\flat^7$ harmony sets up $D\flat$ to be the “dividing dominant” in preparation for the return of Part 1 in the tonic key. The thematic material used in mm.99-105 was previously associated with an arrival at $D\flat$. But because this material is now transposed, the “dividing dominant” turns out to be a D-major chord, a change of outcome that is not necessarily easy to perceive. For most listeners, the irony of this adjustment becomes evident in mm.106-08 with the juxtaposition of the head motive of Part 1 in $G\flat$ major without further harmonic connective. So abrupt is the juxtaposition that the traditional connective—reinterpretation of the major triad on $\flat VI$ as a German augmented-sixth that resolves to V of the main key—is not even implied.

Ex. 3-8 Scherzo: conclusion of Part 2 (retransition, mm.E84-106).

E 84 85 86 87 88 89 90 92 93 94 96 97 99 104 105 107

G $\flat$: V — $7/V$ — $vii^{\circ 7}/V$ (V?) — I

G: I — (III $\flat$) Fr. $+4$ -V — V 3 -I (Fr.)

D: I — (III $\flat$) Fr. $+4$ -V — V 3 -I (Fr.)

If we were to attempt at this point a preliminary assessment of the tonal structure of the Scherzo, we might consider describing its background level as I-V-I of G $\flat$ and its middleground level as incorporating a symmetrical division of the octave by ascending major thirds in the bass, supporting triads I-III- $\flat$ VI-I. This is a tonal scheme sometimes found in nineteenth-century music. There are three weaknesses in this model's explanatory power for the Scherzo. First, it fails to convey the persistent fluctuation between G $\flat$ and B $\flat$ tonics; B $\flat$ harmony does not succeed the prior tonic in a lesser structural role, it rivals it. Second, the model fails to account for pointed allusions made by V/V in G $\flat$ to D $\flat$ harmony as the appropriate, or even intended, structural divider. As well as major-third relationships, the foreground harmony models perfect-fifth relationships that are not contained in this model of the middleground of Part 2. Third, the large-scale

equal-division-by-major-thirds model fails to demonstrate that the function of the D-major chord at the end of Part 2 is in two ways akin to that of a dividing dominant: it is literally V of the mysteriously interpolated G-major passage; and it is introduced as the goal of the retransition in a way that brands it as a usurper to the true dominant of the main key. In point of fact, the function of D-major harmony in the Scherzo is not $\flat$ VI of $G\flat$; it is V of G, and it displaces V of $G\flat$. The failure of the ascending major thirds model might suggest that we do better to loosely describe the harmonic plan as a network of referential harmonies, devoid of any middleground or background significance of the type found in conventional tonal music.

Ex. 3-9 Scherzo: cadential extension (mm.E127-133).

E 127 128 129 130 131 132 133

G $\flat$: I — ii $\flat$ II — $\flat$ VII — vii $\frac{4}{3}$ — I

Hypothetical Conclusion

G: I — V — I

For now, we shall reserve further judgement and observe how the Scherzo concludes. Elided to the authentic cadence in G^b at the end of the restatement of Part 1 is a short cadential extension. This is shown in Ex. 3-9. The first three measures, 127-29, simply confirm the G^b tonic. The next three chords repeat the three-note motive just heard as the harmonies I-IV-I in G major played softly in harmonics. This is a clear allusion to the earlier G-major passage. The G-major harmony is then followed by its dominant chord in m.132. At this moment, it is very easy to imagine that an authentic cadence in G major will conclude the Scherzo. But another chord, also containing the pcs D and A derived from the V of G, abruptly decides in favour of the G^b tonic. This penultimate chord functions as an altered $vii^{\circ 4}_3$ of G^b : its raised supertonic degree, $A^{\sharp}$, leads semitonally into the restored B^b . Tinged with two pcs retained from the D-major chord, and arranged with the subdominant of G^b in the bass, this ingenious linking chord restores functionality in G^b , but minimizes dominant function in the final cadence of the excerpt.

Summary of the Tonal Structure of the Scherzo

The cadential extension's allusion to the G-major tonic indicates that this harmony, too, is significant in the structure of the Scherzo and points out a further omission in the ascending-thirds middleground scheme suggested earlier.

Moreover, we can now draw a more specific conclusion than saying that the tonal structure of the Scherzo relies on a referential network of recurring harmonic motifs. The juxtaposed elements of the cadential extension suggest that we do

well to contemplate the music non-linearly; we thereby discover a background structure.

Example 3-10 is a sketch of the entire Scherzo. As shown on the top staff, tonic harmony of G^b major is prolonged in mm.1-60. In mm.32-60, the G^b -major tonic is elaborated by its III^b . The middle staff indicates that in mm.32-60 it is equally true that the key of B^b major shadows G^b , the B^b tonic elaborated by its bVI .

The prolongations of G^b and B^b tonics are discontinued in mm.63-78. Projection of a rival tonic, G , is shown on its own staff at the bottom for the sake of clarity. The suggestion made by A^b ⁷ harmony in m.46 is that Part 2 is intended to establish D^b as the structural key opposed to G^b . The bottom staff shows that instead of counterpoising D^b to G^b , Part 2 counterpoises D to G —in mm.73-83. The passage prolonging the tonic of G major, mm.80-83, occurs drastically late in relation to the ternary thematic structure, but is set apart from the reality of linear time by its unique dynamic level and timbre. It therefore carries structural significance independent of its real position in time (the shading of m.80-83 in the lowest staff of Ex.3-10 signifies this). Differing interpretations of mm.84-105 on top and bottom staves show that the intention of G^b - D^b polarity remains alive, but V of G serves as the structural divider crucial to the form.

In mm.107-28 as represented in the top staff, G^b - D^b polarity resumes as if there had been no hiatus in its presentation; but as shown in the middle staff, a strong element of an authentic cadence in B^b infiltrates the cadence in G^b . The

bottom staff shows that the cadential extension nearly concludes with an authentic cadence in G major. It thereby confirms that G and D are just as *capable* of functioning as the structural pillars of the Scherzo as are G $\flat$ and D $\flat$ —that they contribute to tonal coherence in a deep, structural way analogous to, if not identical to, the way G $\flat$ and D $\flat$ harmonies do. If we contemplate this music in a non-linear way, we apprehend a disjunctive presentation of G $\flat$ –D $\flat$ polarity intertwined with an equally disjunctive presentation of G–D polarity. Regarding the tonal structure as containing a rivalry between two semitone-separated tonic-dominant polarities has the greatest power to explain the negation of D $\flat$ as a key and to explain the infiltration of sharp-key events.

Role of the Tonal Structure of the Scherzo within the Development

It is to be admitted that Ex. 3-10 depicts the role of G-major harmony as rival to G $\flat$ more vividly than does the actual music. The Scherzo chooses to emphasize rival dominants, not tonics, because it is D $\flat$ –D rivalry that is the central tonal issue in the large-scale Development section. Whereas at r.C in the first movement a C $\sharp$ /D $\flat$ tonic supplanted the expected D-minor tonic, in the Scherzo the reverse dynamic is achieved between the two keys: D $\flat$ is the expected secondary key whose absence is filled by tonicized D-major harmony at the structurally decisive climax of the contrasting section. We saw a similar reversal take place in the first movement: in the PTG D is the main key and E $\flat$ is its rival key; in the STG E $\flat$ is the main key and D is the rival key (Fig. 3-1).

Fig. 3-1 Pattern of rival keys in first and second movements.

	FIRST MOVEMENT				SECOND MOVEMENT
	PTG	STG	Dev.	Recap.	Scherzo
m.	1	A57	B1	C1	E1
key:	d	E$\flat$	c$\sharp$	d expected,	G$\flat$ $\rightarrow$ D$\flat$/C$\sharp$ expected,
rival:	e$\flat$	D		c$\sharp$ substituted	D substituted

Although the Scherzo concludes with a G $\flat$ -major tonic, its tonal plot remains incomplete in that the intended secondary key, D $\flat$ major, has never been realized. D $\flat$ /C $\sharp$ as a key will emerge only gradually during the remainder of Part II.

Bridge and the Trio (mm.F1-G33)

As companion piece to the Scherzo, and further continuation of the Development section, the ternary-form Trio reworks thematic and harmonic elements of previous sections. Its main melodic idea, theme i at m.F44, employs the rhythm of the Scherzo theme, and its contour is a further adaptation of the P4+M3 idea, this time in the downward direction (Niederberger, 34-35). Just as the Scherzo was cast in a key that is III in relation to two first-movement keys (G $\flat$ major is III of D major and III of E $\flat$ minor), the Trio is in the mediant key of C $\sharp$ minor, that is to say, E major. Furthermore we shall see that, like the Scherzo, the Trio makes another unsuccessful attempt to reach D $\flat$ /C $\sharp$ as a structurally important secondary key. Whereas in the Scherzo the interference is from the key of D, in the Trio there is ambivalence between two keys in submediant relation to

E major, C $\sharp$ minor and C major. The new rivalry, we shall see, is played out not so much at the actual submediant level as at the level of V of C major and V of C $\sharp$ minor, that is, at the level of $\flat$ III and III $\sharp$ harmony. Both G and G $\sharp$ are prominent dominant-function harmonies in the Trio, but neither the C-major tonic nor a C $\sharp$ tonic emerges clearly.

Modulation to E major

Measures F1-44 form a bridge between Scherzo and Trio. Between m.F1 and m.F22, the tonal centre descends by semitones, from G $\flat$ to F and from F to E. The remainder of the bridge, mm.22-44, foreshadows the I-VI relationship in E major: a first-movement theme, the countermelody of the STGd antecedent (mm.A63-65 vn1), is heard at the pitch level of E major in mm.F29-34 vn1, and then begins at the pitch level of C $\sharp$ major in mm.36-40 vc, although it is not literally harmonized in either of these keys.

A prolonged V of E in mm.40-44 resolves to I⁶ at the first downbeat of the Trio in m.F45. The resulting bass G $\sharp$ in place of E is the beginning of mediant emphasis in the Trio.

The Role of G-rooted Harmony in Part 1 of the Trio

The Trio is sketched in Ex. 3-11. Phrase 1 cadences at m.F54 on the dominant of E major, following which phrase 2 repeats the Trio theme (in the vc) in C major. Literal C-major harmony is not prominent, however, and its definition is largely accomplished by functional, diatonic harmonies other than tonic, particularly its dominant. Phrase three, which begins at m.62, employs the

countermelody of STGd (the theme heard most recently in the bridge passage) at the G-major tonal level harmonized by V^7 of C major. C-major harmony is reached in passing in mm.67-68, but not as a cadential goal.

Ex. 3-11 Ternary-form Trio (mm.F44-G1).

F 44 54 56 62 63 66 67 68 71 74 75 79

Part 1

E: I^b V^7 $\frac{V^{b9}}{\text{of } bVII}$ vi V^7 — $bVII$ — V^7 $\frac{V^{\sharp 3}}{bIII}$ V^6 $\frac{3}{\text{(or } V^6/bIII?)}$

80 82 84 85 86 91 93 95 97

Part 2

G: V^6 I c.t. Fr. $\frac{+6}{\rightarrow} V^7$ of $VII^{\sharp}$ I

E: — $bIII$ — $vii^{\circ 6}$ of ii^6 c.t. Fr. $\frac{+6}{\rightarrow} V^7$ of V^7/vi

105 107 108 109 113 114 115 118 119 120 125 131 G1

$G^{\sharp 7}$ B^7 D^7

Restatement of Part 1

iv V^7 $\frac{V^7}{\text{of } vi}$ V^7 V^7 of $V^7/bVII$ — I/vi I V^7 I

The theme d countermelody and the key of C dissolve in the closing measures of Part 1, mm.71-79. Measures 71-73 seem to promise a return to E major, but V^7 of E and V^7 of G, minor-third-related dominants, alternate in measures 71-79. The closing pcs of the dissolution passage, $F^\sharp$ and A in m.79, are those common to both dominants.

The Role of G- and $G^\sharp$ -rooted Harmonies in Part 2 of the Trio

Part 2 of the Trio presents the two parallel phrases of theme j, the first in the vc mm.80-86, and the second in vn2 mm.91-97.² A linking passage between the phrases (mm.87-90) and a retransition passage (mm.98-119) are formed from the scale-wise accompaniment figure of theme j. The question of whether the harmony closing Part 1 is V^7 of E or G is answered with the first phrase of Part 2 which begins in G major (Ex. 3-11). The phrase cadences on an $F^\sharp^7$ chord at m.86. At the start of phrase 2, the $F^\sharp^7$ chord resolves back to G-major harmony, but because this phrase continues in sequential repetition of phrase 1 a major ninth higher, the cadential arrival of phrase 2 is on a $G^\sharp^7$ chord. No single tonality emerges clearly, but the overall harmonic motion of Part 2 has thus far been from G to $G^\sharp$ harmonies, i.e., from $\flat III$ to $III^\sharp$.

The remainder of Part 2 is dominated by the accompaniment figure and fragments of theme j, in preparation for the restatement of Part 1. Although the passage has the quality of a retransition thematically, it lacks an overall sense of

²The scale-wise accompaniment figure of Part 2 of the Trio recalls the same motive in Development 1, mm.B35ff. The motive in vn1 mm.F84-86, vc mm.F89-90, and va mm.F95-97 is from PTGb mm.14-15 near the beginning of the quartet.

harmonic direction. Measures 97-109 expand the $G\sharp^7$ harmony in prolonged anticipation of a $C\sharp$ tonic; the V^7 -of- $C\sharp$ function of the $G\sharp$ is made clear by interpolation in mm.105-08 of iv of $C\sharp$ expanded by its V^7 . The prolongation of the $G\sharp^7$ harmony recalls mm.E84-91 of the Scherzo which expanded $A\flat^7$ harmony in anticipation of a $D\flat$ tonic that was never reached. In the present instance, the $G\sharp^7$ resolves briefly to momentary $C\sharp$ -minor harmonies in mm.110-12, but there is never an actual arrival at $C\sharp$ harmony. In mm.113 and 114, $G\sharp^7$ harmony is exchanged for brief moments of third-related B^7 and D^7 harmonies. The D^7 harmony prepares for m.115, where the theme d countermelody returns at the pitch level of, and harmonized very much as in, Part 1 phrase 3, i.e., with prominent use of V^7 of C. For a moment, it appears that Part 1 of the Trio has returned without its opening theme. But in m.119, the implied G^7 harmony is followed by a $G\sharp$ chord that harmonizes the anacrusis of the return of the opening theme of the Trio (theme i). This juxtaposition adds to the sense of alternating emphasis on harmonies rooted on G and harmonies rooted on $G\sharp$. The reverse order of presentation of the themes from Part 1—theme d before theme i—creates uncertainty as to where the return of Part 1 begins.³

The Reprise of Part 1 of the Trio and the Modulating Bridge to $C\sharp$

The return of theme i with the anacrusis to m.120 confirms the return of Part 1, and strong functional harmonies confirm the key of E. The close at r.G is

³This device, restating the second thematic idea of a main section at the end of the retransition to the main section, is also used elsewhere in the quartet, for example, in mm.E99-116 of the Scherzo, which presents the second idea of theme g before the restatement of the first idea of theme g.

the most definitive authentic cadence to occur in the composition thus far. A lengthy cadential extension to the Trio, mm.G1-33, goes on to expand the tonic triad of E as an augmented triad (the pc B is replaced by B $\sharp$ /C). At the climax, m.G33, contrary-motion whole-tone scales converge on the major third G $\sharp$ -B $\sharp$ /C. This acts as dominant of the local C $\sharp$ tonic that begins the next section. C $\sharp$ is thereby achieved as a structurally important local tonic, although as we shall see, its rivalry with D, begun in the Scherzo, is not over yet.

Transition to “Development 2” (mm.G34-110)

In his 1907 thematic analysis of the First Quartet, Schoenberg refers to a “Scherzo-like transition in [the] form of a recapitulation” between the Trio and the “second development” (Rauchhaupt, 12). In his 1949 analysis, he says that the second development immediately follows the concluding section of the Trio, “starting in the character of the Scherzo and dealing for quite a time with its thematical material” (Rauchhaupt, 41). This analytic discrepancy is due to the presence of formal duality beyond the scope of Schoenberg’s brief descriptions. As Frisch acknowledges in his overview of the quartet’s form, the passage in mm.G34-110 is both Scherzo reprise and the beginning of Development 2 (Frisch 1993, 188). It is an overlapping of two sections that might otherwise have been placed side-by-side. The fusion of the two formal functions creates an unusual type of transition, one that befits the necessity of moving between two structural levels: the four-movement plan and the sonata form.

The Function of mm.G34-110 in the Thematic Design

The passage from m.G34 to m.110 functions as a reprise of the otherwise open-ended Scherzo-and-Trio in its choice of thematic materials. Its opening theme is a minor-mode version of the Scherzo theme (g). Its conclusion employs the same cadential flourish as closed the Scherzo proper (compare mm.E124-27 and mm.G107-110).

At the same time, the treatment of the Scherzo theme, and accompanying harmonic events, render this passage so unstable as to simultaneously suggest either a transition passage or resumption of the Development section within which the Scherzo-and-Trio has been interpolated. These functions become increasingly evident over the passage's three sections, mm.G34-67, mm.G67-88, and G89-110.

At the beginning of section 1, theme g is introduced in C[#] minor as an inner voice (va) in a contrapuntal texture. After its fifth measure, the va departs from the contour of theme g and cadences in mm.39-40 with a minor-ninth leap reminiscent of the fugato subject (S). A long, modulatory "tail," which employs the dotted-rhythm motive of the first movement, is appended to it (va, mm.41-47). Section 1 presents this version of the theme twice: in va modulating from C[#] minor to A^b minor; then in vn2 modulating from A^b minor to E^b minor (vn2, mm. 50-62). Throughout section 1, pairs of accompanying voices employ a triplet-rhythm motive derived from the Scherzo proper, mm.E70 ff.⁴

⁴The motive in mm.G47-48 vn1, and G79 vc, appears to be a dotted-rhythm version of the countersubject of STGd antecedent, in mm.A63-65 vn1.

In sections 2 and 3, these basic materials and methods are altered to correspond more closely to the fugatos—from which theme g originally derived—than to the Scherzo. Section 2 begins at m.67₃ up another perfect fifth with an entry on B $\flat$ (vc). Entries of the theme succeed each other canonically at IC3, and the “tail” mentioned above serves as countersubject. In the contour of the theme, the large ascending interval from the second to third measures is altered from the octave leap characteristic of theme g to the minor ninth of S. Section 3, beginning at m.89, employs the major-mode version of the head motive of theme g but follows it immediately with the minor-ninth leap of S. Niederberger, who refers to sections 2 and 3 as “Fugato 3,” further notes that mm.89ff. employ close stretto in a way that recalls Fugato 2 (Niederberger, 90). Insomuch as both Fugato 1 and Fugato 2 functioned as transition passages, a transition function for “Fugato 3”—between the Scherzo and the resumption of the Development—is fitting.

The Tonal Function of mm.G34-110

Harmonic events of the entire passage refer to the D $\flat$ –D conflict of the Scherzo, but provide neither a resolution of this conflict nor closure in G $\flat$. In this respect, harmonic events are consistent with interpreting mm.G34 ff. as either the resumption of the Development or as transition to the resumption proper. Details of the D $\flat$ –D conflict are sketched in Ex. 3-12.

Ex. 3-12 Transition to "Development 2" (mm. G33-110).

Section 1 Section 2

G 33 34 43 45 59 66 68 69 70 72 73 75 76 78 79 81 84

C#/D $\flat$: I I V ii VI 7 I 7 Ger. $^{\sharp 5}$

D: I 7 -(Ger. $^{\sharp 5}$)

Section 3

86 87 88 89 90 92 98 100 102 103 107 109 110

C $\sharp$ Ger. $^{\sharp 5}$ C $^{\flat 9}$ A $^{\flat 9}$ F $^{\sharp 9}$

D $\flat$: V $^{\sharp 2}$ (I $^{\flat}$) V $^{\sharp 3}$ — 5

D: vii $^{\circ 7}$ — bvi V 7 - i bvi Fr. V $^{\sharp 3}$ - I

The starting key, C $\sharp$ /D $\flat$ minor, is both the tonal centre that prevailed in Development 1 and the secondary key of the Scherzo that was systematically avoided in favour of the key a semitone higher. As has been noted, keys of thematic entries beginning at m.G34 move away from C $\sharp$ in a series of ascending fifths: C $\sharp$ -A $\flat$ -E $\flat$. Section 2 reverses the movement by beginning a further fifth above (on B $\flat$) and following this with a sequence of harmonies in descending thirds, returning to C $\sharp$ /D $\flat$ harmony thus: B $\flat$ -G-E-D $\flat$. Each of these latter four

pcs, made prominent as the key note of thematic entrances, is harmonized as the root of a major-minor seventh chord. Each major-minor seventh chord is elaborated by exchange with a first-inversion major triad on the same bass note, forming intervals $\begin{smallmatrix} 7-8 \\ 5-6 \end{smallmatrix}$ above the bass in a LIP.

Following the return to the D^b root, the LIP breaks. At m.78, the A-major harmony that results from the linear exchange applied to the D^b7 chord is itself rendered as a major-minor seventh in root position and begins to sound like V^7 of D. The subsequent B^b seventh chord of m.79 appears to function as a German augmented-sixth in D. Fugato 3 continues subject entrances at pitch-class levels belonging to the same minor-third cycle as was begun at m.68—G in m.82, E in m.85, (not $C^\sharp$), and B^b in m.87 (not shown in harmonic sketch). However these are all subsumed into the higher-level V of D in mm.81-84, as is an attempt by the previous tonic, D^b , to reassert itself in the foreground harmonic progression of mm.86-88. A prolongation of the diminished-seventh chord containing $D^b/C^\sharp$ begins in m.89: in mm.89-98, fragments of the Fugato 3 countersubject and of the triplet countermelody outline the harmony $D^b/C^\sharp-E-G-B^b$ while the stretto entries of the Fugato 3 subject successively introduce possible “roots” of this diminished-seventh chord: C in m.89, A in mm.90-91, and $F^\sharp$ in mm.92-94. (In mm.95-98, the harmony is simply the diminished-seventh chord.)

The prolongation of the diminished-seventh chord is interrupted in mm.98-99, where the cadential motive of S, heard in parallel thirds, prepares the B^b -minor harmony used in the cadential flourish of mm.100-102. This is the same

harmony as was heard in the identical cadential flourish at the end of the Scherzo proper (mm.E124-26). There the B $\flat$ -minor harmony proved to be iii, a neighbour chord to V of G $\flat$, and prepared an authentic cadence in G $\flat$. Here, it prepares an authentic cadence in D minor, as if $\flat$ vii of D. In retrospect, the diminished-seventh chord C $\sharp$ -E-G-B $\flat$ has been interpreted as vii $^{\circ 7}$ of D.

Therefore, the passage that began at m.G34 in C $\sharp$ /D $\flat$, V of the Scherzo key, cadences in D, the same semitone-substitute for D $\flat$ that thwarted the literal V of G $\flat$ in preparation for the reprise of the original Scherzo. The arrangement of the D-minor tonic triad in m.103, with F in the uppermost voice, makes prominent the pc that the D-minor tonic has in common with the thwarted D $\flat$ -major tonic. Measures 103-10, however, repeat the cadential passage in varied form, confirming D as the goal, but this time placing the pc.F $\sharp$ /G $\flat$ at the top of the chord (m.110).

The overall tonal motion of this passage, from C $\sharp$ to D, results from D having rivalled and prevailed against C $\sharp$ toward the end (recall the attempt of C $\sharp$ /D $\flat$ to reassert itself in mm.G86-88). The move from C $\sharp$ to D will be played out again with a greater sense of tonal gravitation and with greater finality in the transition from the Development to the Recapitulation.

“Development 2” (r.H-I37)

It is clear from the thematic material at m.H1—the PT from Part I—that

the Development section belonging to the composition as a whole resumes in earnest at m.H1. Niederberger offers an explanation for this occurrence of the PT in G minor, and for restatement of the PT in the same contrapuntal context at m.H44 in A minor. The P4+M3 segment that underlies the G-minor transposition of the PT in mm.H1-4, F[#]4-B^b4-E^b5-G5, is the octatonic complement, in the precise register, of the P4+M3 segment underlying the C[#]-minor presentation of the PT in the PTG mm.54-55, B[#]2-E3-A3-C[#]4.⁵ The P4+M3 segment that underlies the A-major entrance of the PT in mm.H44-47, G[#]3-C4-F4-A4, is the complement, in the precise register, of the P4+M3 segment underlying the E^b-minor presentation of the PT in the PTG mm.30-31, D2-G^b2-C^b3-E^b3 (Niederberger, 39-42). Therefore, the statements of the PT in keys that are iv and v of D minor accomplish two purposes: they complement those in [#]vii and ^biii heard much earlier in the composition (“*Grundgestalt* complementation”) and they “lead the harmony back to the main key of D minor” at the Recapitulation in m.I38 (Niederberger, 58-59).

“*Grundgestalt* complementation” is obviously a consideration here. It is also true that in an abstract sense, the statements of the PT in G minor and A minor prepare for the Recapitulation. Nevertheless, the D-minor return of the PT does not follow directly from these statements, nor are G-minor and A-minor harmonies prolonged in the extensive intervening passages.

Development 2 also follows another agenda in its route to the

⁵The imbedding of the P4+M3 idea in the PT was demonstrated in Ex. 1-3 in D minor.

Recapitulation. Since the beginning of Part II of the composition, the roles of keys D and C[#] have been the reverse of what they were in Part I. Instead of D being main key and C[#] being either a secondary key (in the horizontal dimension) or rival to D (in the vertical dimension), in Part II C[#] has been main key (with respect to the Development section as it began at r.B, although it is a secondary key with respect to the entire work), or the expected key (with respect to the Scherzo), and D has been its rival in the vertical dimension. One of the functions of "Development 2" (mm.H1-I37) is to re-establish C[#] harmony as unrivalled at the structural level of the Development. This necessitates banishing the key of D from the remainder of Part II of the composition. Thereby, preparation will be made so that at the beginning of the Recapitulation D may emerge afresh as fundamental key of the overall tonal structure. These requirements, affirmation of C[#] in its primary role within the Development and preparation for the return of D as main key, will happen over three stages in Development 2:

- (1) The passage between r.H and r.I regains the F[#]/G^b tonic of the Scherzo's G^b-D^b axis, then descends by perfect fifths to E (third-related tonic to D^b/C[#]). In the process, the G-D axis is banished.
- (2) The passage mm.I1-31 uses the minor-third cycle surrounding E to foreshadow and effect a return to C[#] as tonal centre.
- (3) The passage mm.I31-38, based upon C[#] harmony, make retransition to the Recapitulation in D minor.

(1) Measures H1-I1

Stage 1 falls into two subsections, mm.H1-43, and their sequential counterpart, mm.H44-I1. The respective beginning points of the subsections are marked by the two appearances of the PT. Comparison of Figures 3-2 and 3-3 shows that two keys of the descending fifths plan mentioned above, F# minor and B-minor, follow from G minor and A minor respectively.

Fig. 3-2 Motivic and tonal structure of mm.H1-43.

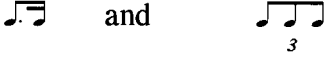
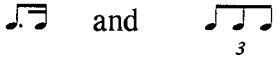
m.H1-10	mm.11-12	m.13	m.19-31	m.26-39	mm.40-43
PT; Fugato and PT motives; motive from cadential flourish.	 Counter melody of theme d antecedent.				Cadential flourish.
key g	Cadence: F#: Fr.V3- I	Key: f#: i	-	ii -	Cadence: f#: I - V

Fig. 3-3 Motivic and tonal structure of mm.H44-88.

mm.H44-54	mm.54-55;56-57	57-62	mm.63-70	mm.71-83	mm.84-88
PT; Fugato and PT motives; motive from cadential flourish	 Counter melody of theme d antecedent.				 theme c; theme c inverted.
key a	cadence: Fr.V ⁷ -I A _b - e-b b: #VI-iv-i	b: i	-	ii	- V ⁷ /iv e: V ⁷

The entrance of the PT in G minor follows the conclusion of the Scherzo's

cadential flourish on a D-major chord. This completes the G-D member of the G-D/G $\flat$ -D $\flat$ conflict in the tonal plot of Part II.

Ex. 3-13a "Development 2", stage 1, mm.G110-H13: shift from g to f $\sharp$.

G 110 111 H 1 2 3 4 5 6 7 8

The musical score is written for two staves. The top staff contains measures 110 through 113. The bottom staff contains measures 110 through 113. The key signature is one flat (F major/G minor). The time signature is 4/4. The score includes various musical notations such as notes, rests, and accidentals. Below the staves, there are labels for the measures: G: V, - i, root A $\flat$, root B, root F, root D, root F $\sharp$, root E $\flat$, root F $\sharp$, and F $\sharp$: V $\frac{4}{3}$ (Fr.) — I i.

Labels below the staves:

- G: V
- i
- root A $\flat$
- root B
- root F
- root D
- root F $\sharp$
- root E $\flat$
- root F $\sharp$
- F $\sharp$: V $\frac{4}{3}$ (Fr.) — I i

Mm.H1-13. Example 3-13a explains in detail the move from G minor in m.G110 to F $\sharp$ minor in m.H13—a downward shift foreshadowed in the foreground semitone relationships of mm.G110-H3, and facilitated by a shift from one prevailing diminished-seventh chord to another. At the foreground level, the semitone relationship is encapsulated by a fugato motive ideal for the purpose—descending perfect fifth followed by rising minor ninth—heard in three instrumental parts tracing parallel triads. In mm.G110-111₁, parallel triads D

major-G major are followed by an $A\flat$ -minor triad. This relationship is repeated down a semitone beginning at m.G111, where a $G\flat$ -major triad, preceded by its dominant triad, is followed by a G-minor triad at H1, thereby returning the harmony to G. Between the $A\flat$ -minor triad of m.111₁ and the $G\flat$ -major triad of m.111₃, the G-rooted triad has been encircled by two semitone-related triads, $A\flat$ minor having $C\flat/B$ as common tone with G-major, and $G\flat$ major having $B\flat$ as common tone with G minor. While m.H1 begins the G-minor entrance of the PT, two more accompanying statements of the fugato motive, one leaping the perfect fifth from $C\sharp$ to $F\sharp$ and the other from $E\flat$ to $A\flat$, encircle G.

Beginning with $E\flat_3$ - $A\flat_2$ - A_3 in m.3 vc, the accompanying fugato motive functions harmonically in the same manner as it did in Fugatos 1 and 2—that is to say, the tritone between the first and third pitches of the three-note motive supports a prevailing diminished-seventh harmony, while the middle pitch is one of the four possible roots of the diminished-seventh chord. In this case, while mm.3₂-8₁ of vn1 conclude and extend the PT by outlining $vii^{\circ 7}$ of G, $F\sharp$ - A - C - $E\flat$, four occurrences of the fugato motive present pitches of the same diminished-seventh chord and all four possible third-related roots, $A\flat$, B, F, and D (Ex. 3-13a). Toward the end of the prolongation of $vii^{\circ 7}$ of G, mm.6₂-8₁, the motive of the tremolo “cadential flourish” outlines one in particular of the implied dominant harmonies, an F major-minor seventh chord. At this point, the diminished-seventh chord element $F\sharp/G\flat$ is rendered a dissonant minor ninth.

The dissonance of $F\sharp$ is resolved by changing the prevailing harmony from

the F minor-ninth to an F $\sharp$ major-minor seventh chord, arpeggiated in va mm.8, ff. (the m.10 D6 is an appoggiatura to C $\sharp$ 6). The new background diminished seventh, A $\sharp$ -C $\sharp$ -E-G, is arpeggiated by PT motives in vn1, and the fugato motive in mm.8-9 outlines this diminished seventh and provides two possible roots, E $\flat$ and F $\sharp$. In m.11, the background diminished-seventh chord A $\sharp$ -C $\sharp$ -E-G provides common-tone preparation for a French sixth, C $\sharp$ -E $\sharp$ -G-B/G-B-D $\flat$ -F, and this resolves to an F $\sharp$ -major triad. To confirm F $\sharp$ as tonic and not as dominant, the chord of arrival is repeated in minor form in m.13.

Ex. 3-13b "Development 2", stage 1, mm.G110-H12: middleground level.

Example 3-13b summarizes and interprets harmonic events in mm.G110-H12. Measure G110's D-major harmony, tonic of the previous passage, is reinterpreted as V of G so that the passage at r.H may open in G minor. As marked by arrows, the pc F $\sharp$ begins as neighbour to G. Subsequently, the relationship between G and F $\sharp$ is reversed. F $\sharp$ harmony in m.8 is preceded by F harmony as lower neighbour, then by G (the bass pitch of a French sixth) as its

upper neighbour, and is tonicized by its French V_3^4 (the double-neighbour chord) at the cadence. The tonicization of G by its dominant at the beginning of the passage, countered by the tonicization of $F^\sharp$ at the end, recalls the rivalry of G-D and $G^\flat$ - $D^\flat$ axes in the Scherzo. This is the beginning of the process by which the G-D fifth is banished.

Ex. 3-14 "Development 2", stage 1, mm.H13-43: i-V progression in $f^\sharp/g^\flat$.

Mm.H13-43. Ensuing motivic development, as far as m.H43, may be heard with reference to the $F^\sharp$ tonic. Example 3-14 sketches harmonic events. In mm.13-24 the tonic triad is prolonged by its $vii^\circ 7$. The theme d countermelody heard in the vc at m.19 is in the key of $F^\sharp$ minor. When this melody is sequenced a tone higher in m.25 vn1, the local key centre is shifted up a tone. As a result, during further motivic development in mm.26-39—involving the theme d countermelody, theme c, and familiar rhythmic motives— V^7/ii in $F^\sharp$ is prolonged. A descending stream of six-three chords in mm.39-40, beginning with VI of $G^\sharp$ minor, connects $V^7/G^\sharp$ with the familiar cadential flourish of the Scherzo. This

time, the ascending tremolo arpeggio is F $\sharp$ -major, not B $\flat$ -minor, harmony, and the chord of arrival is the long-denied V of F $\sharp$ /G $\flat$. Here, at last, D $\flat$ harmony is achieved without reference to D-rooted harmony. Whether the progression from F $\sharp$ harmony (F $\sharp$ ⁷ in m.41₁) to D $\flat$ harmony is I⁽⁷⁾ -V of F $\sharp$ or IV⁺⁶-I of D $\flat$ is not clear, nor does it need to be. In either case, the G-D fifth is now banished entirely.

Ex. 3-15 "Development 2", stage 1, mm.H44-57: shift from a to b minor.

H 44 47 49 51 53 54 55 56 57

a: i - vii[°]₃
 Ab: c.t.°7 Fr. I₂ - I₆ - bvi
 b: iv - i

Mm.H44-88. The sequential counterpart to mm.H1-43, mm.44-88, employs the identical thematic, and nearly identical harmonic, materials. Measures 44-55 rework mm.1-12 a tone higher and with the counterpoint inverted and varied (Ex. 3-15). Whereas the choice of A minor for the m.44 reference to the PT fulfils the purpose of completing a presentation of the P4+M3 idea (as described above), presentation of the material a tone higher than at m.H1, and therefore arriving at A $\flat$ major in m.55, does not fit into the plan of descending fifths. With the aid of a linking E-minor triad in mm.56-57, the A $\flat$ triad is

replaced by a B-minor triad in m.57.⁶

From m.57, the material originally heard in mm.13ff. in F $\sharp$ proceeds in B minor—each voice a perfect fourth higher (or perfect fifth lower) than in the first statement—with the counterpoint inverted (Ex. 3-16). Tonicization of ii of B occurs then as a matter of course and V⁷/ii in B is prolonged in mm.70-82. At m.84, harmonic and motivic events diverge from their counterpart at m.40. The cadential flourish is absent. The B-rooted harmony regained at m.85 is prolonged as a major-minor seventh chord, and forms a transition passage leading to a new section at r.I that begins yet another fifth below, in E.

Ex. 3-16 “Development 2”, stage 1, mm.H57-88: parallel to mm.H13-43.

H 57 59 69 70 71 76 82 83 84 85 88

b: i (vii $^{\circ}$ /i) I 4 I 7 $\frac{6}{5}$ $\frac{3}{2}$ of ii

e: I b7 I 7 —

Figure 3-4 summarizes the tonal plan of mm.G34 to r.I.

⁶Measures H56 beat 2 to 57 beat 2 contain nothing other than the E-minor linking harmony and the B-minor tonic. Thematic development comes to a momentary halt here, and the harmonic progression is not in itself essential to the tonal structure. Therefore the necessity to the tonal plot of both the key of A minor for the PT statement and the key of B minor for the following material appears to be the only purpose served by this curious moment of stasis.

Fig. 3-4 Tonal plan of mm.G34 to r.I: tonics descending by perfect fifths.

G34	H13	H58	r.I
c $\sharp$	f $\sharp$	b	e

(2) Measures I1-37

The second stage of Development 2 sustains tonal uncertainty (Ex. 3-17). Tentatively grounded in E minor, mm.I1-8 develop direct and inverted forms of PTGc, exploiting the theme's motivic construction and registral disjunction. The harmony expanded is ii ϕ^7 of E minor, i.e., the minor thirds F $\sharp$ -A-C to which "root" E is added above. Measures I9-32 then prolong the basic diminished-seventh chord D $\sharp$ -F $\sharp$ -A-C with roots below supplied by stretto entries of the Fugato 3 version of theme g (making this section similar to the climactic measures of Fugato 3, mm.G89-98, in which C $\sharp$ -E-G-B $\flat$ was thus elaborated). The entry in the key of F supplies F in m.I9 and D in m.I10; the entry in D supplies D in m.I13 and B in mm.I14-16. (Only G $\sharp$ does not appear thus as an implied dominant in connection with D $\sharp$ -F $\sharp$ -A-C.) The sequence breaks part way through m.I16: an extra measure and a half leads to an entry of theme g in B $\flat$ instead of B (heard in m.I18 vc and va). It is thus that B $\flat$, another key in the minor-third cycle containing E, is reached.

The B $\flat$ -minor entry of theme g is accompanied in m.I18 by a PT entry in F minor. Measures 18-28 sequentially employ a combination of g, PTGa¹, and PTGa². The upper-voice pc F in m.18 is the beginning of an LIP in which root

The thematic sequence breaks at m.I28 when a member of the background diminished-seventh chord, F $\sharp$, is tonicized independently of an entry of theme g. The potential dominant a tone above F $\sharp$, G $\sharp$, is never reached as the start of a segment of the LIP. The harmonic pattern is broken: in m.28 when C $\sharp$ harmony is introduced as V of F $\sharp$ at the head of the PTGa¹ motive, and at the end of m.29 when the D $\sharp$ ⁷ chord is resolved in common-tone fashion to C $\sharp$ -minor harmony. *Sforzato* reiterations of a C $\sharp$ -minor triad in mm.30-31 obliterate F $\sharp$ and, without needing any G $\sharp$ dominant harmony, render C $\sharp$ as tonic. After the lengthy prolongation of vii^{o7} of C $\sharp$ that began at m.I8, this dissonance finally realizes its goal. C $\sharp$ harmony is now established as unrivalled at the deepest level of tonal structure in the Development.

(3) Retransition: mm.I31-37

Harmonically, the retransition is striking for the way in which it prolongs C $\sharp$ harmony. It thereby conveys the aural impression that the C $\sharp$ harmony is the structural predecessor of the Recapitulation's deeper-level D-minor triad.

The motivic material employed in the retransition was foreshadowed in mm.I21ff: it is the descending chromatic motive PTGa². In mm.I30-31 vn1, this motive elaborates the C $\sharp$ -minor triad with upper and lower neighbours A5 and Fx5. At m.I32₃, the pc A is transferred up an octave and begins the complete descending pattern of PTGa² in the transposition originally heard in mm.10-12 near the beginning of the work (Ex. 3-18). The vc joins two beats later on E2 with the corresponding transposition of the P4+M3 theme while inner parts

Ex. 3-18 Final stage of "Development 2": retransition to the Recapitulation.

The musical score for Ex. 3-18 is presented in two systems. The first system contains measures 30, 32, 33, 34, 35, and 36. The second system contains measures 37 and 38. The key signature is one sharp (F#). The melody is primarily in the treble clef, while the bass line is in the bass clef. In measures 34 and 37-38, the melody is transposed up an octave, indicated by a bracket labeled '8va'. The score includes various musical notations such as notes, rests, and accidentals.

complete a harmonization similar to that in mm.10-12. Whereas the original P4+M3 theme at this transpositional level stopped at the seventh pitch of the series, B $\flat$ (*cf.* mm.10₄-12₁ from the opening of the work), this time the melody continues to an eighth pitch, making it, however, D rather than the D $\sharp$ called for by the pattern of alternating perfect fourths and major thirds. D in m.34 is harmonized by an unexpected harmony, B-D-F-A, which breaks the pattern of minor-seventh chords with augmented fifth. Varied repetitions of the LIP create a tension-gathering effect. The repetitions begin at m.34₄ and m.36₄, always on uppermost pitches A6-G $\sharp$ 6. A6 at the beginning of the second and third

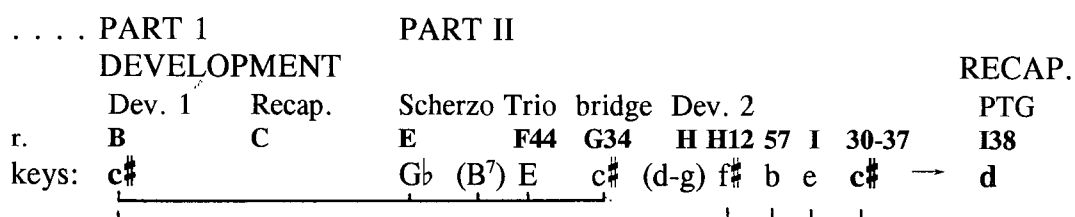
statements of the LIP is harmonized by an A⁷ chord in third inversion, registrally and structurally prominent. The ending of the third and final statement is altered slightly: the B half-diminished seventh chord is omitted in m.I37 and C[#]-minor harmony, in strongly articulated form, is regained as the last harmony of the development section. Its outer-voice fifth, C[#]2-G[#]6, moves to D2-A6, the framework of the D-minor harmony at the beginning of the Recapitulation of the PT. The A6 of the D-minor harmony recalls the same pitch harmonized repeatedly by an A major-minor seventh chord during the retransition while the C[#] harmony at the end of the linear intervallic pattern recalls the C[#] harmony prolonged since mm.30-31. The C[#]-minor harmony, because of its parallel projection of C[#]-D with G[#]-A, provides more forceful progression to the D-minor harmony than could the A⁷ chord in this style.

Overview of the Development Section

Figure 3-5 puts the tonal scheme of Development 2, mm.H1-I37, into the context of the Development section as a whole. The entire Development section has prolonged C[#]-minor harmony. Just before the beginning of the Scherzo, C[#]-rooted harmony was reinterpreted as V of G^b. This began an expansive harmonic progression by falling perfect fifths, G^b-B-E, followed by the third relationship E-C[#], over mm.E1-G34. Subsequent arrival at D-minor and D-major harmony at m.G103 and m.G110 was tentative because C[#] harmony had not yet been re-established as a definite entity, independent of D. Thereafter, Development 2

repeats the same harmonic progression, asserts C $\sharp$ harmony as a definite entity distinct from D, and progresses from a C $\sharp$ -minor triad to a D-minor tonic to reassert the fundamental key of the work. In keeping with harmonic plot begun in the first movement, D still lacks its defining dominant.

Fig. 3-5 Summary of the tonal scheme of the Development section.



Recapitulation of the Principal Thematic Group (mm.I38–80)

The return of D minor for the PTG Recapitulation brings to an end, for the time being, a feature of the vertical dimension of the work's tonal structure—the rivalry between D and C $\sharp$ that was evidenced by the first-movement recapitulation. It also completes the horizontal dimension of the tonal scheme of Parts I–II—a large chromatic surrounding of the D-minor tonic (see Fig. 3-6).

Fig. 3-6 Horizontal dimension of the tonal structure of Parts I–II.

	EXPOSITION		DEVELOPMENT	RECAPITULATION
	PTG	STG		PTG
mm.	1	A57	B1	I38
Keys:	d	E $\flat$	c $\sharp$	d

The large chromatic surrounding was foreshadowed on a more immediate level

within the PTG, mm.1-65, by successive entrances of PTGa in D minor, E^b minor, C[#] minor, and D minor.

It is typical of the style of thematic reprise in this work that the Recapitulation of the PTG does not restate all thematic materials in their original order. The P4+M3 idea, which in the Exposition accompanied PTGa² and therefore followed PTGa¹, precedes the Recapitulation of PTGa¹, for it has just been heard in combination with PTGa² at the close of the Development section. It would seem to be for this reason that the P4+M3 idea is absent from the actual Recapitulation of PTGa in mm.I38ff.

The Recapitulation of PTGa¹ and a² combines two versions of these materials from the Exposition, mm.1ff. and mm.65ff. Selected tonal and motivic materials from these two passages are recombined in the compact manner shown in Fig. 3-7.⁸

Measures I38-45 present another permutation of three contrapuntal lines devised in invertible counterpoint—lines originally presented in mm.1-8 and next reworked in mm.65-72 (Berg, 193). In mm.I45-49, in the absence of the P4+M3 idea, PTGa¹ motives are spun out in the manner of mm.73-77. This leads once more to the climactic but tonally ambiguous passage that originated in mm.78-83, restated without change in mm.I50-55.

⁸In the following paragraphs, measure numbers without rehearsal letter refer to measures before r.A.

Fig. 3-7 Recapitulation of PTG materials.

Motivic materials	Recapitulation		Source in Exposition	
	mm.	key	mm.	key
PTGa ¹	I38-45	d	1-8 or 65-72	d
Spinning out of PTGa ¹	I45-49		73-77	
PTGa ² / PTGa ¹	I50-55	d/f#?	78-83	d/f#?
upper voices: PTGb lower voices: PTGa ²	I56-60	b $\flat$	14-18 84-89	b $\flat$
PTGa ¹ , a ² fragmented	I61-80	d	—	—

In mm.I56-60, while lower voices continue to develop PTGa² as in the Exposition's mm.84-89, theme b of PTG is recapitulated briefly in its original key. The m.I56 arrival of PTGa¹ on the pitch class B $\flat$ in vc, precisely as in the original version at m.84, facilitates establishment of the temporary B $\flat$ tonic for PTGb. As before, in the larger D-minor context the prolonged B $\flat$ -minor triad is a semitone-related substitute for V of D. But whereas the literal V of D is still absent, D-minor is no longer rivalled by the key of E $\flat$ minor. PTGc, which served in the Exposition of the PTG to establish E $\flat$ minor with its dominant (and which was prominent in Development 2), is omitted here.

In mm.I61-64, the PTG is reduced to the single motive common to theme a¹ and theme a². Meanwhile, the restored D-minor triad is elaborated by several of its possible upper and lower neighbour tones, including E, G, and B $\flat$, and most prominently E $\flat$ and C $\sharp$ in the outermost voices. In a further affirmation of D as

tonic, mm.I65-71, a D pedal point is accompanied by a chromatic descent of the common motive, which at its goal, mm.I68-71, again reiterates E $\flat$ and C $\sharp$ neighbour tones to D. The fundamental integration of the key scheme of Parts I through II and the foreground idiom of the work crystallizes here.

Measures I71-80 serve as a link to the "Slow Movement." Unison va and vc in recitative style gradually transform the motive common to a¹ and a² into motives foreshadowing the main theme of the Slow Movement. Meanwhile in mm.I74ff., alteration of the pc B $\flat$ to B $\natural$ shifts the tonal centre away from D minor toward A minor.

CHAPTER 4

THE TONAL STRUCTURE OF PART III

Decisive turns in the motivic and tonal plots of the quartet take place at the beginning of Part III. The first theme of the Slow Movement, which begins at m.K1, provides a marked contrast, for it derives less obviously from prior thematic materials than did themes of Part II.¹ The choice of A minor for the beginning of Part III is significant given the avoidance of the dominant region of D minor thus far in the work. It does not signify, however, capitulation to a clear I-V relationship in D, for the A-minor triad does not provide the true dominant of D. The A-minor tonic functions instead at the level of the four-movement cycle, as a resumption of the large-scale arpeggiation of a D-major triad (see Fig.4-1).

Fig. 4-1 Primary keys of movements I through III as a D-major arpeggiation.

First Movement	Scherzo	Slow Movement
d	F#	a
i	III	v

Integration of the one-movement and four-movement plans continues in Part III. Just as the Scherzo-and-Trio occurs within the Development section, the

¹Niederberger discusses subtle registral and motivic connections between the main theme of Adagio 1, mm.K1-4, and prior themes (Niederberger, 43-48).

Slow Movement is nested within the Recapitulation. Also like the Scherzo-and-Trio, the Slow Movement is in ternary form with a greatly modified return of its first part. The contrasting parts of the Slow Movement will be referred to as Adagio 1 (mm.K1-51) and Adagio 2 (mm.K52-79). Measures L1-51 constitute a quasi reprise of Adagio 1 elided to a transition passage. Part III of the quartet concludes with the Recapitulation of the STG, mm.L52-92, which incorporates a brief link to the Rondo-Finale.

Adagio 1 (mm.K1-51)

The tonal plot of Adagio 1 stems from the intervallic components of its main theme, k^1 , presented monophonically in mm.K1-4. These intervals are the downward leap E6-A5 which is key-defining, and three descending intervals that are contextually ambiguous in their scale-degree functions: the leaps C6-D#5 and F5-C5, and the semitone C5-B4.

The Link to Adagio 1

As indicated by brackets and connecting lines in Ex. 4-1, the ambiguous downward leaps of theme k^1 originate in the monophonic linking passage just before r.K. It has already been noted that mm.I74-78 dissolve the tonality of D minor by introducing B $\sharp$ in place of B $\flat$. Measures I77-78 are possibly heard as an outline of V⁷/A (although lacking an explicit G $\sharp$). In mm.I79-80 the descending melodic intervals F-C and C-D $\sharp$ skirt around V of A. Measures 79-80 come across, first and foremost, as a varied, sequential repetition of m.78, putting

emphasis on consonant, F-rooted harmony just as m.78 emphasizes E⁷ harmony.

Ex. 4-1 Link to Adagio 1 and theme k¹ of Adagio 1 (mm.I77-K4).

I 77
immer mehr zurückhaltend
Sehr lange Haltung

K 1
Mässig; langsame Viertel

Given the protracted time frame over which mm.79-80 occur, during which the influence of the E⁷ harmony and the B^b of m.78 wanes, the emphasis on the consonant leap F-C is such that there is a tendency for the downward leap C-D[#] to sound diatonically compatible with F-C, as if it were the major sixth C-E^b, and similarly for the upward step D[#]-F to sound like the major second E^b-F. From a diatonic perspective, the phrase ends with the impression that F is possibly either a modal tonic, or V of B^b.² Even if the dominant seventh of A is still recalled during mm.79-80, so that the pc D[#] sounds like [#]4 of A, the fact remains that the leap from F to C in mm.78-79 puts emphasis on F-rooted harmony within the context of A minor.

²From a design perspective, a modulation to B^b seems unlikely given the recent use of B^b minor as the key of PTGb, and a modulation to F major is more likely. It will be recalled that the transition passage to the Scherzo also seemed, at first, to prepare F as tonic.

Harmonic Ambiguity in Theme k¹: mm.K1-4

At m.K1, tonal orientation crystallizes on A by means of the entrance of the head motive of theme k¹, the leap E6–A5. For the moment, the last pitches of m.180, D#2 and F2, are made explicit as neighbour tones to the initial $\hat{5}$ of A of the theme, and the return of the descending interval C–D# in m.2 implies the German sixth chord (or vii^{°7}/V) in A. In the following measure, with the return of the descending leap F–C—now prefaced by G, a pc that points away from A as tonic—tonal implications become ambiguous again.

The ambiguity becomes apparent when one tries to pin down the harmonic implications of the melody. Hearing the phrase in A minor, one naturally imagines tonic harmony in m.1 and dominant harmony at the close. A harmonic understanding of the intervening two measures, however, presents a problem with respect to harmonic rhythm—for in the key of A *both* measures suggest pre-dominant harmony of the “German augmented-sixth sort” (F–A–C–D#). Even assuming that the melodic pc G of m.2, rather than being merely ornamental, is part of the underlying voice leading, the harmonic rhythm that results from following it with the literal German augmented-sixth chord in m.3 is unsatisfactory.

Example 4-2a presents a tentative solution. The need for a chord in m.3 that is sufficiently different from A–C–D#–G in m.2 is filled by having the minor seventh A–G of m.2 expand outward to an octave Ab, creating the chord with doubly-augmented fourth shown in m.3 of Ex.4-2a. Nevertheless, this merely

pushes the problem of harmonic continuity one measure over, for dominant harmony in m.4 does not follow from the chord in m.3: $A\flat$, the lowered tonic in m.3, sounds like the leading tone of A, making the chord not so much a variation on the German sixth $F-A-C-D\sharp$ as an expansion of the dominant-function chord vi ($F-A\flat-C$) and therefore an unsatisfactory pre-dominant chord. The alternative continuation in m.4, resolving the chord in m.3 to tonic harmony and then progressing to the true dominant, does not solve the problem of the unsatisfactory clash between the substitute dominant triad and the literal dominant triad.

Ex. 4-2 Two hypothetical harmonizations of k^1 (mm.K1-5).

(a)

K 1 2 3 4 5

a:
a:
pre-dominant
or dominant? $V \frac{4}{3} = \frac{5}{3}$ vi

(b)

a:
c:
iv $\frac{6}{5}$ $V \frac{4}{3} = \frac{5}{3}$ iv

Interestingly, the arrival on the literal V of A minor at the end of the phrase also creates the milder problem of parallel fifths with the F-minor chord (again a substitute dominant?) that begins the next phrase.

All of these problems are solved if one imagines the cadence as harmonized in C minor (Ex. 4-2b). Assuming the same harmonies in mm.2-3 as in Ex. 4-2a, m.3 is now interpreted as iv_5^6 of C, which resolves to V of C embellished by the cadential six-four. The choice of C minor, rather than the traditional relative major key for the cadence, integrates three attributes of the given melody that are either inherent or latent: the harmony arpeggiated by the melody in m.2, which is potentially a C-minor triad; the octave A^b that creates satisfactory harmonic motion from m.2 to m.3; and the F-minor triad with which the next phrase begins at m.5.

The point is not that Ex.4-2b shows the true harmonic implications of the phrase but that *both* interpretations of the deliberately monophonic theme are implicit: the one that remains in A minor, because this is how one hears such a short opening phrase melodically, and the one that modulates to the minor mediant, because this is what works harmonically. (It will be observed later in Adagio 1 that theme k^1 beginning in a minor key other than A is harmonized with modulation to iii at the cadence.)

The Minor-Third Relationship in Theme k^2 : mm.K5-9

The melody of the second phrase, mm.5-9 (which will be referred to as theme k^2), derives from the descending semitone of m.4. Its harmonization

supports the notion of juxtaposed minor-third-separated tonics of minor keys such as the A-minor–C-minor relationship we have hypothesized as existing in k^1 . The chromatic harmonies of k^2 are largely minor triads, particularly, F-, B-, D-, and A^b -minor triads, and D- and B-half-diminished-seventh chords. These chords all derive from a set of octatonic pentachords related to $G^\sharp$ –B–D–F, the diminished-seventh chord belonging to A harmonic minor. The set of four pentachords relevant to this passage results from adding the pitch a major third above each member of the minor-third stack in turn. As was discussed in Chapter 1, unlike the pentachord that results from adding a major third below the lowest note of a minor-third stack, which tends to function as a V^{b9} , the octatonic chord that results from adding a major third above the highest note of a minor-third stack has no conventional functional name. This is because when the pitch a major third above the most extreme pitch of the minor-third stack is added, the element at the opposite extreme is almost always omitted for the sake of creating an unambiguous subdominant-function chord, $ii^{\phi 7}$, thus: $G^\sharp$ –B–D–F–[A].

According to the principle of multiple added “roots”³ for a symmetrical chord, the complete cycle of pentachords and half-diminished seventh chords of subdominant function derived from $G^\sharp$ –B–D–F is:

³The notes added a major third above the highest note of the third stack are “roots” in the dualistic sense that regards minor triads and subdominant triads as generated *downward* from their roots. Dualist theory, as it applies to the Slow Movement, will be considered more thoroughly in the discussion of Adagio 2, below.

Key:

A: G[♯]-B-D-F-[A]

C: B-D-F-A^b-[C]

E^b: D-F-A^b-B-[E^b]

F[♯]: F-A^b-B-D-[F[♯]]

From the cycle of half-diminished seventh chords of subdominant function derives the cycle of minor triads of subdominant function: D-F-A (iv of A), F-A^b-C (iv of C), A^b-B-E^b (iv of E^b), and B-D-F[♯] (iv of F[♯]). All four minor triads, and some of the half-diminished seventh chords from the above list are prominent in theme k² (Ex. 4-3).⁴ As a result, the harmony of mm.5-9 is governed by chains of subdominant-function chords from the minor-third cycle of keys that includes A minor. Dominant-function harmony is absent.

Ex. 4-3 Adagio 1: theme k² (mm.K5-9).

iv/c iv/f[♯] iv of a iv/f[♯] iv/iv/a iv/e^b iv/f[♯] iv ii^{°7}/c iv/iv/f[♯] ii^{°7}/c ii^{°7}/a

⁴Schubert's "combination motive Y" occurs in this passage between the minor triads whose roots are a minor third apart, i.e., between the second and third chords of m.5 (Schubert, 307, Ex. 17d) and between the second and third chords of m.7. More of the chords of this passage can be derived from the principle of multiple roots for a symmetrical chord than from the principle behind combination motive Y.

In the first segment of the phrase, mm.5-6, two minor triads express their subdominant functionality directly: the F-minor triad in relation to the prior implication of V of C minor in m.4, and the D-minor triad in relation to the A-minor harmony in m.6 (Ex. 4-3).

The second segment of the phrase, mm.7-8, is an inexact sequential repetition of the first segment, beginning up a tone with a minor triad from a different minor-third cycle (G minor is iv of D minor), then adjusting the melodic shape so as to return to triads from the original minor-third cycle, A $\flat$ - and B-minor triads. Just as the G-minor triad in m.7 sounds as iv of the D-minor triad at the end of m.5, the E-minor triad at the end of m.8 is iv of the B-minor triad at the end of m. 7. The subdominant-function harmony beginning m.8, iv or ii ϕ^7 of C, is repeated at the start of m.9. In m.9 it is immediately reinterpreted as vii $^\circ 7$ of A (as if the pc C delays B) when A $\flat$ /G $\sharp$ 5 rises to the pitch A5 harmonized by ii ϕ^7 of A minor. In the course of Adagio 1, tonal-motivic process will lend varying functional interpretations of the melodic dyad A $\flat$ /G $\sharp$ -A $\natural$. Here, two different harmonizations of a semitone motive involving A $\flat$ /G $\sharp$ juxtapose key-defining progressions in C minor and A minor.

Tonal Uncertainty in the Restatement of Theme k¹: mm.K10-17

Emphasis on subdominant function and allusions to the key of F continue in a modified return of k¹, mm.10ff. Repetitions of the head motive in mm.10-11 (with altered rhythm) are harmonized by dissonant chords that barely uphold the key-defining property of the leap E-A: two pitches from vii $^\circ 7$ of A beneath E6,

and the diminished-seventh chord containing A beneath A5 (Ex. 4-4). This is complicated by a simultaneous entrance of the head motive in the bass of m.10 at the subdominant level. In m.11, the chord harmonizing C6 sounds like VI⁷ of F minor, and is supported by the head motive in F in the bass. In m.12, the diminished-seventh chord containing A is restored and harmonizes the pitch D[#]/E^b in the descending leap C-D[#], but suggests no particular key. Measure 3 of k¹ is omitted and the closing gesture begins at the end of m. 12 on the G^b/F[#] of the diminished-seventh chord (not on the G^b of m.3).

Ex. 4-4 Adagio 1: theme k¹ reharmonized (mm.K10-18).

The musical score for Ex. 4-4, Adagio 1: theme k¹ reharmonized (mm.K10-18), is presented in two systems. The first system contains measures 10, 11, and 12. The second system contains measures 13, 14, 15, 16, 17, and 18. The notation is written on treble and bass staves. Measure 10 features a treble staff with a half note G[#]4 and a bass staff with a half note G^b3. Measure 11 shows a treble staff with a half note A[#]4 and a bass staff with a half note F[#]3. Measure 12 has a treble staff with a half note B[#]4 and a bass staff with a half note E^b3. The second system continues with measures 13 through 18, showing various harmonic and melodic developments. Annotations include 'a: V9' in measure 10, 'c.t. o7 to' in measure 11, 'neighbour tone' in measure 12, 'imitation a 5th below' in measure 13, and 'imitation a 3d below' in measure 14. The score concludes with a double bar line at the end of measure 18.

In mm.13-15, k^1 dissolves with repetitions of the motive C5-B4, harmonized with the chords of mm.5-6 as if the ending of k^1 and the first measure of k^2 have been elided. Subdominant harmonies from the F $\sharp$ -A-C cycle of tonics are used again and V of A is still avoided. The oscillation between pitches C5 and B4 is momentarily sequenced down a semitone in m.16 and immediately evolves into the changing-note motive of STG theme d. A modified form of the cadential motive of theme d is accompanied by an authentic cadence in F minor in mm.17-18.

Continuous Variations on Two Themes and Two Keys: mm.K18-48

The initial presentation of basic thematic and harmonic materials complete, Adagio 1 now continues by alternating variations of themes k^1 and k^2 . In these variations, theme k^1 is now usually counterpointed by one or another theme belonging to the STG from Part I. The restatement of STG themes within the Slow Movement is an appropriate allusion to the Recapitulation in progress at a higher structural level.

Following the authentic cadence in F minor at mm.17-18, the head motive of k^1 enters in F minor in m.18. Therefore, the immediate impression is that the key of F has asserted itself in tonal contrast to A. It is, indeed, possible to hear mm.18-24 in F minor-major (Ex. 4-5, upper sketch): mm.19-20 tonicize iii of F major, and mm.20-23 expand V of V in F major in preparation for a modulation to C minor at m.26. At the climax of the phrase, m.24, the motive G $\sharp$ -A is harmonized by augmented triads rooted on V and I in F. On the other hand, it is

also logical to consider that the A-minor harmony of m.20 relates more strongly to previous A-minor passages than to the F-minor triad tonicized at the start of the phrase. In this sense, the F-minor triad of m.18 is vi of A, hierarchically inferior to the ensuing A-minor triad (Ex. 4-5, lower sketch); mm.20-24 expand V of III of A minor; and the augmented triads in m.24 are a deceptive progression in A. The subsequent shift from A minor to C minor is consistent with a tendency already observed.

Ex. 4-5 Adagio 1: A and F as “shadow” tonics in mm.K18-26.

K 18 19 20 21 23 24 25 26

F: i $\text{vii}^{\flat 5}_{\text{5}}/\text{iii}$ - iii $\text{V}^{\sharp 3}$ of V - $\text{vii}^{\flat 5}_{\text{5}}$ - $\text{V}^{\sharp 3}$ - $\text{I}^{\sharp}$ - $\text{ii}^{\flat 6}$ V of V i

a: bvi $\text{vii}^{\flat 5}_{\text{5}}$ - i $\text{V}^{\sharp 3}$ of III - $\text{vii}^{\flat 5}_{\text{5}}$ - $\text{III}^{\sharp}$ - $\text{VI}^{\sharp}$ - $\text{ii}^{\flat 6}$ V of III i

It is impossible to choose between the sketches in Ex. 4-5 as to which is the more accurate representation of tonal hierarchy in the music: we have noted reasons in favour of both ways of hearing the phrase. If the F-minor triad of m.18 is primary and m.24 is heard in F minor-major, then the ascending line traced by the passage spans the root-position F-major triad: F5-G5-A5-B4-C5 (upper sketch). If the A-minor triad of m.20 is primary and m.24 is heard in A, then the ascending line traced by the passage spans a second-inversion A-minor triad: E5-F5-G#5-A5-B4-C5 (lower sketch). Rather than preferring one or the other, the explanation most inclusive of motivic and harmonic events within the phrase, and most consistent with previous events, regards the sketches as representing two different but coexisting facets of harmonic orientation in mm.18-25, either of which can be heard with the knowledge that the other is also possible. Both tonics, A and F, prevail; both generate the secondary dominant applied to C; and both generate the augmented triads of m.24. At this stage in Adagio 1, the melodic dyad G#-A (mm.24-25) is harmonized ambiguously in both F and A.

At the end of the passage, mm.25-26, there is a definite shift of tonal centre to C minor—whether v of F or iii of A minor—via the strong functional harmonies ii-V-i in C, in preparation for another statement of k^2 . Measures 26-27 present the initial gesture of theme k^2 a minor third higher than in mm.5-6 (Ex. 4-6a). As a result, many of the same subdominant-function chords appear in mm.26-27 as in mm.5-9. C minor is elaborated, and the four-measure unit that is

theme k^2 is completed, by sequential repetition of the entire texture of mm.26-27 a tone higher in the following two measures. This entire harmonic unit, mm.26-29, is juxtaposed, without harmonic connection, with theme k^1 in $F^\sharp$ minor at m.30, the half-way point of Adagio 1. The key of $F^\sharp$ is, however, as short-lived as was C. In the same way as we hypothesized that theme k^1 in A minor could be harmonized with a modulation to the minor key a minor third higher, here the theme in $F^\sharp$ minor is harmonized with a modulation to A minor at the cadence (Ex. 4-6b). In this way, the original tonic is regained.

Ex. 4-6 Adagio 1: secondary keys c and $f^\sharp$ surrounding halfway point.

(a) Theme k^2 .

(b) Theme k^1 .

K 26 27 30 31 32 33

c:

f#:

a:

Ger. $+6/5$ of bII

$VII-iv^6$ — $VI-Y$

The introduction of the $F^\sharp$ tonic at m.30, after theme k^2 begun in C, is a harmonic *non sequitur* at the surface level, but it serves a logical purpose at a larger level, for it completes a pair of keys balanced by the minor-third

relationship around A. Here at the centre of Adagio 1, C-minor and F $\sharp$ -minor thematic entrances are deployed side by side by virtue of their inversionally balanced relationship to the main tonic, that is to say, A : C :: F $\sharp$: A.

The next four measures (mm.34-37) preserve A as tonic while developing motives contrapuntally. Theme k^2 is heard in the vc while the upper three instrumental parts employ the final motive of k^1 . An ascending line from E5 to C6 is traced (Ex. 4-7, mm.33-37). In mm.37-40, the pitch C6 is reiterated, harmonized by each of the three triads that have been fundamental from the beginning of the movement: A-minor in m.37, C-minor at the beginning of m. 39, and F-minor in m.40.

Ex. 4-7 Adagio 1: rival keys a minor and f minor in mm.K33-40.

K 33 34 35 36 37 39 40

a: V - F: iv +b V^b - i iii v i

Tonal orientation around A is not, however, preserved for the remainder of Adagio 1. In the bass of mm.39-41, accented leaping pitches lead to m.42's bass pitch F, accompanying a reprise of the head motive of k^1 in F in vn1. The head motive of k^1 , joined to a diminished form of STGe, is repeated in vn1 in an

ascending sequence, all the while in canon with the vc, which presents much the same sequence of motivic components one-half measure earlier. As sketched in Ex. 4-8, in vn1 the motive begins on C6 in m.42, F6 in m.43, and A $\flat$ 6 in m.44, arriving at A $\flat$ 6 at m.45 as the final pitch of an authentic cadence in F major. Although briefly stated, this cadence is Adagio 1's most definitive harmonic arrival (certainly, there has been no comparable authentic cadence in A): the harmonies, V⁷-I in F, are full and unaltered. The A6 (ornamented by a neighbouring B $\flat$) is the apogee of Adagio 1. At this climactic point, the melodic dyad G $\sharp$ /A $\flat$ -A $\sharp$ is interpreted in F major only.

Ex. 4-8 Adagio 1: rival keys a minor and f minor (mm.K42-51).

K 42 43 44 45 46 47 48 51 52

Transition

F: i - (pre-dominant) - V⁷-I - 6 - 5

A: i - V

E: iv - I

Despite this definitive move to F major, the following passage, mm.46-51, begins theme k¹ at the transpositional level of A minor once again. Here at last, the D $\sharp$ of theme k¹ resolves to $\hat{5}$ as part of dominant harmony; nevertheless, an authentic cadence in A is still avoided. By coming to rest on E-major harmony,

the passage serves as a bridge to Adagio 2.

Tonal Duality in Adagio 1, mm.K1-55

In summary, the key of F does not appear to be a secondary tonic to A in the conventional sense:

- (1) At the beginning of Adagio 1, theme k^1 in A minor is preceded by a monophonic linking passage suggesting F as a possible tonic.
- (2) Within the first period, mm.1-18, A minor is never given clear harmonic definition by means of an unequivocal V-I relationship.
- (3) After the establishment of the key of F with an authentic cadence in mm.17-18, A minor returns as a shadow key in mm.18-25.
- (4) Measures 33-46 alternate blocks of harmony in A minor with blocks of harmony in F major or minor.
- (5) The melodic dyad $G^\sharp/A^\flat-A$ is heard three times in the course of Adagio 1, harmonized three ways—(i) in A minor (m.11); (ii) ambiguously in A and in F (mm.24-25); (iii) in F (mm.44-45).

A:F duality creates a vertical dimension for the tonal structure of Adagio 1. Less prominently, a horizontal dimension is evidenced by keys in minor-third relationship to A minor: C minor and $F^\sharp$ minor, both heard briefly in the centre of Adagio 1, are structurally subordinate to the A:F complex surrounding them. The vacillation between tonics A and F is the more salient phenomenon and is the one with long-range significance. F will assert its equivalence to A on a large scale when the restatement of Adagio 1 at r.L begins in unambiguous F minor.

Adagio 2 (mm.K52–79)

The contrasting section of the Slow Movement, “Adagio 2,” has a slower tempo than Adagio 1 and a yet more rarefied atmosphere—an atmosphere created by restrained melodic contours, languid rhythms, and transparent textures. Although made up of largely new motivic material, Adagio 2 contains subtle or fleeting references to previously presented materials.⁵ Supple three- and five-measure phrases recur in barely perceptible reorderings or with their components subtly extended or compressed. From the opening measure, harmonic relationships suggest the syntax of functional harmony, but in an puzzling, elusive way.

This puzzling harmonic syntax and the harmonic system that supports it will be the subject of the following discussion. We shall begin by demonstrating that the harmonic system at the opening of Adagio 2 has its origin in the conclusion of Adagio 1.

The Transition from Adagio 1 to Adagio 2

It was shown that although Adagio 1 is nominally in the key of A, it largely avoids reference to E-major harmony, its V. In the opening monophonic statement of theme k^1 in A minor, tendency tones $D^\sharp$ and F are not explicitly resolved; their resolution is delayed until the close of the final reference to k^1 in A minor where, from m.47 to m.48, the embellishing pitches $D^\sharp5$ and $F\flat5$ lead to

⁵The accompaniment motive is derived from Development 1, mm.B14ff.. The melodic motive of m.K59 vn2 derives from mm.A74-75 in STGe.

E5 supported by a tentative-sounding (first-inversion) E-major chord (Ex. 4-8). A root-position E-major triad is then prolonged in mm.48₄-51₄, the bridge to Adagio 2. As was discussed in Chapter 1, in the harmonic style of the late tonal period it is no longer axiomatic that a chord with doubled root approached by a diminished third/augmented sixth functions as V.⁶ In this instance, one imagines the surface-level pcs D[♯] and F[♭] as surrounding a tonic pitch. This is because, judged according to the customary disposition of primary chords in a tonal work, the first occurrence of emphatic E-major harmony comes too late for it to qualify as the harmony expanding the A-minor tonic triad. Appearing at the close of Adagio 1, it is something new and immediately attains the status of a new tonic. Simultaneously, the relative status of the A-minor triad re-established in m.46 becomes subdominant of E. Therefore, at the middleground level, a new tonic, E, is approached and established by its subdominant—the harmony A-C-E—with the aid of foreground-level, neighbour pcs to E, D[♯] and F.⁷

The double functions of the A-minor triad, as both i of A and iv of E, and

⁶The chord of resolution may be “either a locally dominant- or a locally tonic-functioned entity” (Harrison 1995, 176).

⁷In his discussion of the transition from the tonal centre of Adagio 1 to the E-major tonic of Adagio 2, Frisch comes to much the same conclusion, although his interpretation differs in its details. Frisch does not hear the thematic entrance at m.46 as key-defining and considers the F-major harmony of m.45 to be prolonged through m.48, beat 3 (Frisch 1993, 238-40). Therefore, in his reading, it is the Neapolitan chord of E major (another type of subdominant harmony) that establishes the new tonic. “[O]n the downbeat of the next measure [K.49] . . . the E-G[♯] dyad metamorphoses as if by magic into E major. . . . The tonal shift from F to E in the slow movement of op. 7 is achieved without the mediation of any dominant or German sixth. It is accomplished essentially by stepwise voice-leading and by the assertion of E-G[♯] as tonic in K49” (Frisch 1993, 240). In my view, the question of whether in m.46 the pc E is considered to be basic to prevailing harmony and the pc F elaborative, or *vice versa*, is symptomatic of the hierarchical equivalence of A-minor and F-rooted harmonies throughout Adagio 1.

of the E-major triad, as both V of A and I of E, are in both cases qualitatively different from that of a conventional pivot chord used in modulation in that these “pivot chords” do not prepare B-major harmony, V of the new key. Dominant function being absent, the change of tonal centre at m.49 is by no means unambiguous from the point of view of functional harmony. One senses that the progression from A-minor to E-major harmony in the final refrain of Adagio 1 projects a pair of “coexisting tonal fields,”—A: i–V and E: iv–I.⁸ Resulting from ambiguity of primary triad functions, the coexisting tonal fields at the end of Adagio 1 are a type of tonal duality that we have not thus far encountered in the quartet.

The final linking harmony at the end of the bridge to Adagio 2, F[#]–A–C, strengthens the impression of a shift to E major as tonic by means of the pc F[#]. Lacking D[#], this linking harmony is more closely related to iv than to V of E major. Therefore, as well as blurring our impression of the harmonic field A: i–V, it corroborates our sense of the harmonic field E: iv–I.

Prolongation of E-major harmony continues into the opening of Adagio 2, at m.52. Initiation of fresh melodic and rhythmic motives within an E-major triad, iteration of E-major harmony, and the E pedal point (now in the bass) confirm the tonic status E major for this section of the quartet (Ex. 4-9). E is such a strong “presentational” tonic at the beginning of Adagio 2 that the sense of

⁸The phrase “coexisting tonal fields” is borrowed from Benjamin 1989, 6. See also pp. 4-6.

opposing harmonic fields is by now erased.⁹ Still, there is no foreground B-major harmony in the opening gesture. Therefore, what is not erased is the sense of the E-major tonic of Adagio 2 having been approached by A-rooted harmony.

Ex. 4-9 Adagio 2, Part 1 (mm.K52-59).

K 52 53 54 55 56

Phrase 1

head motive

57 58 59

Phrase 2

An Overview of Adagio 2

The pc E, particularly as the root of an E-major triad, proves to be referential throughout Adagio 2. Figure 4-2 summarizes the thematic design of

⁹Smith uses the term “presentational tonality” to refer to a tonality established by contextual factors rather than by its dominant harmony (Smith 1986, 129).

Adagio 2 as a whole and gives a cursory indication of tonal design by noting harmonies occurring at phrase beginnings and endings.

Fig. 4-2 Adagio 2: thematic design and structural harmonies

Part 1	Part 2	Part 1	Part 2	Part 1	Part 1
K52-59	K59-62	K62-69	K69-71	K71-74	K75-79
Ph.1 Ph.2	Phrase 3	Phrase 1	Phrase 3	Phrase 2	Ph.1 Ph.2*
52-56 ₃ 56 ₄ -59 ₁	59 ₂ -62 ₁	62 ₁ -69 ₂	69 ₃ -71 ₃	71 ₄ -74	75-76 77-79
E-E G-E	c#-G	G-E	d-(d#)	d-E ⁷	e-e G-V ⁷ /F

*Bridge to restatement of Adagio 1.

With the exception of the passage serving as bridge to the restatement of Adagio 1 (mm.77-79), all statements of Part 1 (and within Part 1 all occurrences of phrase 1) cadence on E-rooted harmony. Contrasting harmonies tonicized at other structural points are most often upper and lower mediant, striking a balance around E. The prolongation of D-minor harmony, mm.69-72, is more difficult to explain; a glance at the opening measures of Adagio 2 is sufficient to note that a D-minor triad, juxtaposed with the E-major tonic, is also significant on the foreground level, and confirms that the role of the progression bvii-I in Adagio 2 is vital, if functionally enigmatic. At the same time, it should be noted that the E-major tonic is never defined by V of E at the middleground level and, as we shall observe, only rarely at the foreground level.¹⁰

¹⁰A note about roman numeral chord symbols in the remainder of the discussion of Adagio 2 is necessary. Roman numeral symbols can either designate both triad root and triad quality (by using a combination of upper- and lower-case symbols) or only triad root (by consistently using upper-case roman numerals). In some contexts, triad quality is useful or necessary information. In other contexts,

As a way of explaining the unconventional, yet functional, harmonic syntax, we shall test the hypothesis that the use of the “dominant below” to lead to the referential opening harmony of Adagio 2 sets up a tonal system in which the governing axis is, at least some of the time, I–IV. As we trace the harmonic shape of Adagio 2 in detail, it will become evident that, at middleground and foreground levels, Adagio 2 alternates between two harmonic systems each centred around the same tonic. Certain passages employ the conventional system governed by the tonic-dominant axis (henceforth, the “authentic system”). Other passages are governed by the exceptional tonic-subdominant axis (henceforth, the “plagal system”). Moreover, we shall observe that in the most complex passages, middleground and foreground levels are not necessarily in agreement as to which axis is operating. An initial foreground analysis of Part 1 will serve to introduce the plagal system.¹¹

triad function as defined by the scale degree of the root is of exclusive significance and the specification of triad quality is a distraction or cause for redundancy. For example, the establishment of a new tonic by subdominant harmony has a qualitative distinction from the establishment of a new tonic by its dominant that holds whether the actual triads in the former case are IV–I, iv–I, or iv–i. The general principle can be represented by IV–I versus V–I. Therefore, in the following discussion, upper-case roman numerals only will be used when modal distinctions would distract from the main point.

¹¹See Benjamin 1989, 3, for another instance of opposition between two harmonic systems. I here adopt Deborah Stein’s designation for the tonic-subdominant axis—“plagal axis”—and by extension, coin the phrase “authentic axis.” The phrases “plagal system” and “authentic system” will be employed when speaking about either system as a whole. See Stein 1983, 153–80. Stein’s article begins by codifying the types of “plagal ambiguity” encountered in conventional tonal music. It then goes on to describe the more exceptional “plagal axis” and how it originated in the late nineteenth century:

The development of the tonal system reached a plateau wherein the tonic-dominant axis was so commonplace that it could be replaced by new, equivalent structures. Further, a stasis had occurred in the use of the tonic-dominant axis and alternative cadence patterns and structural designs had to replace the powerful but now too predictable tonic-dominant relationship. . . . As is the case in any form of harmonic substitution, the substitution of the subdominant for the dominant is predicated upon the retention of the traditional function of the dominant harmony;

The Plagal System

The opening of Part 1 immediately strikes one as being modal, but in a complex way (Ex. 4-9). In the melody of phrase 1, chordal pitches B $\flat$ 4 and D $\flat$ 5, and passing tone C $\sharp$ 5, trace a melodic cell that is harmonized by the E-major triad and an embellishing D-minor triad. With E heard as tonic, the mode of phrase 1 is the mixed phrygian-major collection that includes phrygian-mode elements F $\flat$ ($\flat\hat{2}$) and D $\flat$ ($\flat\hat{7}$) and major-mode elements G $\sharp$ ($\sharp\hat{3}$) and C $\sharp$ ($\sharp\hat{6}$). In the opening harmonies of phrase 2 (beginning at m.56₄ but excluding the appoggiatura C $\sharp$), the pure phrygian collection, incorporating G $\flat$ and C $\flat$, may be heard. (The chromatic alterations B $\flat$ and E $\flat$ in m.57 will be discussed below.) Therefore, in order to understand the harmonic style of Adagio 2, it is necessary to examine properties peculiar to phrygian mode, properties that lend themselves toward governance by the plagal axis.¹²

A special relationship holds between the major scale—paradigm for the

the success of dominant replacement, therefore, depends upon the ability of the plagal domain to provide a plagal analog for the function of the dominant, that is, to replace the tonic-dominant axis with what could be called a *plagal axis* (p. 161).

After exemplifying the plagal axis as it occurs at the foreground level and the middleground level in selected songs by Wolf, Stein concludes that the plagal axis differs from the tonic-dominant axis in that “its tonal definition is inherently unclear,” necessitating “local compensatory authentic cadences that clarify the otherwise ambiguous tonal relationships” (p. 175).

¹²The “plagal system” to be described here is applicable to the Schoenberg passage under examination. It is not, however, the only way in which phrygian elements have been observed to operate in late-romantic music. Using different suppositions, Smith has proposed a “Phrygian system” that accounts for functional harmonies containing $\flat 2$ in excerpts by Debussy and Liszt (Smith, 130-35). The nineteenth-century theorist Arthur von Oettingen, side tracked while trying to account for minor mode, proposed a system of “phonicity” as the phrygian-mode counterpart of “tonality,” citing as evidence minor-mode pieces employing $\flat 2$ (Harrison 1994, 247-50). The similarities and differences between these systems and the present “plagal system” will be briefly mentioned in footnotes to the discussion.

tonal system—and the phrygian scale. As ordered sets, they are inversive equivalents of each other (Benjamin 1989, 3): the semitone between $\hat{3}$ and $\hat{4}$ in major maps onto the semitone between $\hat{6}$ and $\hat{5}$ in phrygian, and the semitone between $\hat{7}$ and $\hat{1}$ in major maps onto the semitone between $\hat{2}$ and $\hat{1}$ in phrygian (Ex. 4-10a). Similarly, the harmonic minor scale (major with lowered $\hat{3}$ and lowered $\hat{6}$) and the phrygian-major scale observed in Adagio 2 (phrygian with raised $\hat{6}$ and raised $\hat{3}$) are the inversive equivalents of each other (Ex. 4-10b).¹³

Ex. 4-10 Inversionally related scales.

(a) Comparison of major and phrygian scales.

(b) Comparison of harmonic-minor and phrygian-major scales.

Ex. 4-10 consists of two parts, (a) and (b), each showing two musical staves. Part (a) compares the major and phrygian scales. The top staff shows the major scale (1-2-3-4-5-6-7-1) with semitones between 3-4 and 7-1. The bottom staff shows the phrygian scale (1-7-6-5-4-3-2-1) with semitones between 6-5 and 2-1. Part (b) compares the harmonic-minor and phrygian-major scales. The top staff shows the harmonic-minor scale (1-2-3-4-5-6-7-1) with semitones between 2-3, 5-6, and 7-1. The bottom staff shows the phrygian-major scale (1-7-6-5-4-3-2-1) with semitones between 6-5, 3-2, and 2-1.

As a result of the reversal of the order of tones and semitones, in a phrygian or mixed phrygian-major scale analogous tendency tones operate in the reverse direction as compared to its inversive counterpart, the major or harmonic-minor scale. In major and minor scales, the tonic is approached by

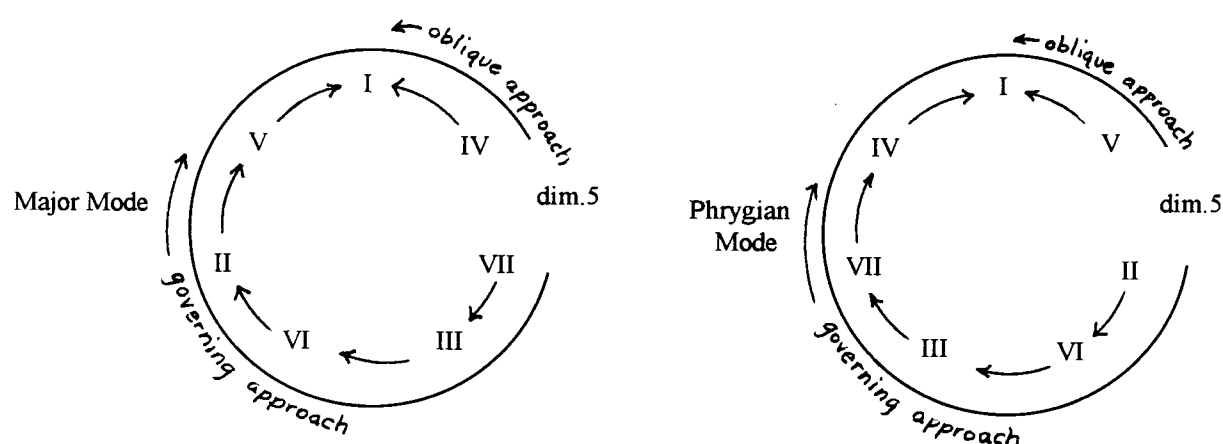
¹³Benjamin, in a conversation with the author.

minor second from below and by major second from above; in phrygian and phrygian-major scales, the tonic is approached by minor second from above and by major second from below. Therefore, $\hat{7}$ of the phrygian scale system is analogous to $\hat{2}$ of the major-minor system, and $\hat{2}$ of the phrygian system is analogous to $\hat{7}$ of the major-minor system. The directions of the major and minor thirds above and below $\hat{1}$ are similarly reversed, creating analogous relationships between $\hat{3}$ and $\hat{6}$ of each scale system.

It appears to follow then that the subdominant of phrygian mode is in some way counterpart of the dominant of major mode, and *vice versa*. A further comparison of harmonic systems makes this clear. In the phrygian scales, the naturally occurring diminished fifth/augmented fourth is between scale degrees $\hat{2}$ and $\hat{5}$, rather than between $\hat{4}$ and $\hat{7}$ as in their major and minor counterparts. This is crucial because it affects the direction in which stacked perfect fifths collect in relation to the tonic and the direction in which triads in the circle of fifths progress toward the tonic triad. Example 4-11 indicates triads on the scale degrees of major mode and triads on the scale degrees of phrygian mode in their respective circles of fifths. The two series of perfect fifths are broken differently by the positioning of the diminished fifth. In major mode, the unbroken series of perfect fifths approaches I in the order VII - III - VI - II - V - I; IV approaches I alone from the opposite direction. We consider that harmonic motion from V to I is strengthened when V is prepared by additional falling perfect fifths in front of it. The approach to I from IV, root movement up a perfect fifth, cannot be

strengthened by additional rising perfect fifths before it. There is a sense in which this gives falling fifths toward I a stronger drive than the rising-fifth progression IV-I. I therefore define root movement down a perfect fifth as the governing—meaning the direct—approach to the tonic in the major-mode system. The progression IV-I is the oblique or indirect approach to the tonic.

Ex. 4-11 Comparison of fifths circles in major and phrygian modes.



On the other hand, in phrygian mode the unbroken series of perfect fifths approaches I in the order II - VI - III - VII - IV - I. Here V stands alone on the opposite side. Analogously then, harmonic motion from IV to I is the governing harmonic motion in phrygian tonality. It is strengthened when IV is prepared by additional rising fifths in front of it. Root movement up a perfect fifth is the governing approach to the tonic in this system. The approach to I from V, root movement down a perfect fifth, cannot be strengthened by additional falling perfect fifths before it, and is the oblique approach to the tonic in this system.

Therefore, I hypothesize a plagal system of tonality, generated by the

phrygian scale, in which IV–I is the governing axis, analogous to V–I in the conventional, authentic system, generated by the major scale.

We have already noted evidence of a IV–I governing axis in the Slow Movement of the quartet: the approach to the E-major tonic of Adagio 2 by subdominant harmony. Further evidence of IV of E at a structural point occurs within the first phrase of Adagio 2: there is an arrival at A-major harmony in the latter half of m.53, the point of punctuation at the end of the first phrase member (Ex. 4-9).

Ex. 4-12 Two functions of IV and its substitute in the authentic system.

(a) (b)

E min.: IV – V – I IV – I IV II II – V – I IV II – I II⁶/₅ – I

It is also possible to extend the analogy between harmonic functions in plagal and authentic systems beyond comparison of the axis poles to other functions. In the authentic system, subdominant harmony has two main functions: one function of IV is to provide preparation for the axis pole of the authentic system—hence the chord progression IV–V; the other main function is to progress to I, either as the oblique approach to I at a cadence or as a way of prolonging tonic harmony within a phrase (Ex. 4-12a). Subdominant harmony is not, however, unique in its ability to fulfil these functions (Ex. 4-12b.) In both

capacities, preparation for V and oblique approach to I, the subdominant triad may be replaced by a substitute triad that results from exchanging the fifth of IV for the scale degree a sixth above its root—the supertonic triad. II prepares V in a similar manner to IV, and especially in the form II_5^6 , provides an oblique approach to I.

Ex. 4-13 Two functions of V and its substitute in the plagal system.

(a) (b)

E phryg.-
major: V - IV - I V - I V VII VII - IV - I V VII - I

By analogy, then, Ex. 4-13 is derived. As given in Ex. 4-13a, in the plagal system, V functions either as a harmony that may provide preparation for the axis pole, IV, or as an oblique way of approaching or expanding I. Compare Ex. 4-13b: the derivative of V, analogous to the way II derives from IV in the authentic system, is VII. VII derives from V by replacing the apparent *root* of V, B, with the scale degree that is a sixth below the fifth of V. (The comparable replacement occurs below rather than above this time because the plagal system is an inverted or “upside down” system. In a sense, F, not B, is the root of V, but we will not concern ourselves with that for the time being.) Notice again in Ex. 4-11 that VII occurs in the phrygian (or plagal) circle of fifths in the functional position analogous to II in the authentic system. As a substitute for V, plagal-

system VII can be expected to occur even more often than II as a substitute for IV in the authentic system because, in both phrygian and phrygian-major modes, V is a diminished triad, whereas VII has the advantage of being minor and therefore more stable.

The procedure of 5-6 replacement can also be used to derive triads that occasionally substitute for the governing triad of each system. The most commonly encountered harmonic functions are summarized in Fig. 4-3 for both authentic and plagal systems.¹⁴

Fig. 4-3 Harmonic functions in two tonal systems compared.

	Tonic	Preparation	Governing Approach*	Tonic	Oblique Approach	Tonic
Authentic System	I	IV or II ⁶	V (or VII)	I	IV or II ⁶	I
Plagal System	I	V ⁶ or VII	IV (or II)	I	V ⁶ or VII	I

* Axis pole

Analysis of Phrase 1

We are now able use the concept of the plagal axis to explain the harmonic progression of Phrase 1 (see Ex. 4-14). With tendency tones generated by the E-

¹⁴The crucial difference between the plagal system presented here for explaining phrygian-mode elements in the Schoenberg excerpt and Smith's "Phrygian system" is that, whereas the plagal system has $\hat{6}$ as its characteristic tendency tone (in keeping with Chap. 1, Principle 2), Smith regards $\hat{b}2$ as the characteristic tendency tone of Phrygian mode (Smith, 130). The difference in terms of functional harmony is evident in a comparison of Fig. 4-3 with Smith's Table 3. In the plagal system, governing triads are those containing $\hat{6}$ —iv, II, and (less often) VI. In Smith's "Phrygian system," the "pivotal," i.e., governing, triads are those containing $\hat{b}2$: v° , vii, and II (Smith, 132, Table 3).

phrygian-major scale, harmonic relations are governed by the plagal system. The opening tonic triad is prolonged with one of the triads that provides an oblique approach to I in the plagal system, VII. At the deep level the harmonic structure of the phrase is E (phrygian-major): I-VII-IV-VII-I. This progression operates within the tonic-subdominant axis in the manner of: Tonic - Preparation - Axis Pole - Oblique Approach - Tonic.

Ex. 4-14 Adagio 2, phrase 1 (mm.K52-56): explanation of harmonic functions.

K 52 53 54 55 56

E phryg.-major: I - (VII - I - VII - I) VII - IV VII I

Tonic. Oblique prolongation of Tonic. Prep. for Axis pole. Oblique approach to Tonic.

Compared to the authentic system, the plagal system, of course, has an inherent weakness. Some would say that our hearing is conditioned to give greater cadential weight or preference to root movement by descending fifth than to root movement by ascending fifth. Others would offer an acoustical reason for this preference: root movement by descending fifth can be construed as an overtone returning to its fundamental, while root movement by ascending fifth can be construed as a fundamental pitch searching out its overtone a fifth above (*cf.*

Schoenberg 1978, 23-24). Equal status for the two directions of root movement by fifth cannot easily be supported by acoustical arguments: analogous "undertones," as Hugo Riemann finally had to admit, do not exist (Mickelsen 1977, 55).

Even so, composers have experimented with the plagal axis. The inherent weakness accounts for the rarity of the plagal system, for the fact that it is never used for an entire piece (not even for all of *Adagio 2*), and for concurrent features that compensate for the weakness of the plagal axis in this and most examples. The example at hand has the E pedal point in the bass rather than a real bass line of chord tones. This helps strengthen the impression of E as tonic. Another typical way of compensating for the weakness of the plagal axis is to insert foreground authentic cadences (Stein, 166-67). This happens at the end of m.55 where B-major harmony is suggested. The foreground authentic cadence helps to eliminate any doubt as to whether the relative functions of the A-major triad at the end of the first phrase member and the E-major triad at the end of the phrase are not perhaps I and V in the key of A. The deep-level harmonic motion at the end of the phrase remains VII-I with its effect of an oblique cadence in the plagal system.

To illustrate the analogous nature of the plagal system to the authentic system, Ex. 4-15 is a hypothetical, authentic-system paraphrase of the same passage. The triads employed are those that have already been hypothesized as functionally analogous to the ones employed in the actual phrase. This version too

arrives at the axis pole at the midpoint, and concludes with an oblique approach to the tonic, thus: I-II-V-II-I. Although the mode is now minor, in character the analogue is more grounded and conventional than the original passage.

Ex. 4-15 Adagio 2, phrase 1: authentic-system analogue with explanation of harmonic functions.

(52) (53) (54) (55) (56)

E minor:

I - (II - I - II - I) II - V II - I

Tonic. Oblique prolongation of Tonic. Prep. for Axis pole Oblique approach to Tonic.

Devising the horizontal lines of the authentic-system version was a matter of substituting the analogous voice leading from one triad to another in the corresponding voice part, *not* of substituting analogous scale degrees according to the circles of fifths in all voice parts. The voice-leading consideration informally determined the starting note of each part and its continuation. Notice particularly that the characteristic tendency-tone resolution in the melody in m.52, $\sharp 6-\hat{5}$, has as its authentic-system counterpart $\sharp 7-\hat{8}$. A more systematic description of how the horizontal lines can be derived becomes possible when the nineteenth- and early twentieth-century theory of “major-minor dualism” is invoked.

Briefly stated, the theory of major-minor dualism attempts to account for the existence of minor triads, and thereby the minor mode, by positing an intrinsic opposition between the two kinds of consonant triad. Moritz Hauptmann (Hauptmann 1888, 14-20), Arthur von Oettingen (Harrison 1994, 242-51), Hugo Riemann (Mickelsen, 52-57; Harrison 1994, 254-65), and their followers believed that unlike major triads, minor triads are generated *downward* from their respective roots; for example, what we ordinarily think of as a C-minor triad is not generated upward from C but downward from G using the same order of intervals, major third–minor third, that in the upward direction produces a major triad. Historically, this theory has not proven to be of much use in understanding tonal music, but it does have some more promising, updated versions.¹⁵ The adaptation employed here suggests that, given a demonstrably inverted tonal system—the plagal system—it makes sense to say that all of its triads are generated downward. Example 4-16 adopts this understanding by showing the tonic triad of the quartet phrase generated downward from B, the triad labelled IV (the governing triad) generated downward from E, and V (the oblique approach to I) generated downward from F.

Lewin describes a theory of generalized tonal functions in which he demonstrates tonal functions as operating in what he calls a “Riemann System” (Lewin 1982). Lewin’s theory confines itself to major and pure minor modes when he is dealing with tonal music, but some aspects of his theory can be

¹⁵See Lewin 1982 and Harrison 1994.

adapted to mixed modes. Example 4-16 is similar to a “canonical listing” for one of his Riemann Systems, except that the present example involves mixed modes. If phrygian-major were one of the diatonic collections Lewin was working with, he would call this tonal system “Dual B phrygian-major” because the tonic triad of the system is generated downward from B. According to this theory, the canonical listing in Ex. 4-16 applies to a musical context in which B, not E, is the referential pc of the tonic triad, an idea borne out in the upper voice of the quartet excerpt by the insistence with which the melody of phrase 1 returns to the pc B.

Ex. 4-16 Primary triads of phrygian-major tonality generated downward.



In Lewin's theory, there are four operations, including the identity operation, that may be applied to any Riemann System to create a group of four, related tonal systems, any of which may be designated the original. Of the four operations, I am going to refer to the one of interest to us as “ $\hat{1}-\hat{5}$ exchange.”¹⁶ Example 4-17a applies this operation to the canonical listing in Ex. 4-16. $\hat{1}-\hat{5}$ exchange is so called because, in terms of left to right, the respective positions of the pitch classes that are $\hat{1}$ and $\hat{5}$ in the original are exchanged. Therefore, one of the results of $\hat{1}-\hat{5}$ exchange is a tonal system in which triads are generated in the

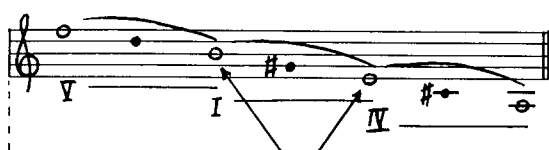
¹⁶Lewin's name for this particular operation is “tonic-dominant inversion” (Lewin 1982, 33).

reverse direction from that in the original: in this case, upward instead of downward. Another factor in this operation as described by Lewin is that within the tonic triad, the order of interval sizes will remain the same. In the original, the left-to-right order of interval sizes in the tonic triad is minor third–major third; therefore in the derived system, the left-to-right order of intervals is also minor third–major third. As a result, the tonic triad of the derived system is minor.

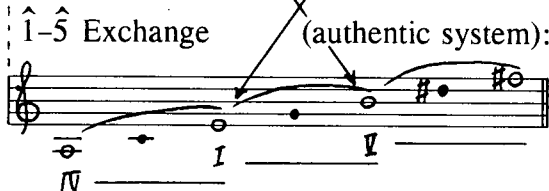
Ex. 4-17 Plagal and authentic systems related by $\hat{1}-\hat{5}$ exchange.

(a) Canonical listings of primary triads. (b) Canonical listings of secondary triads.

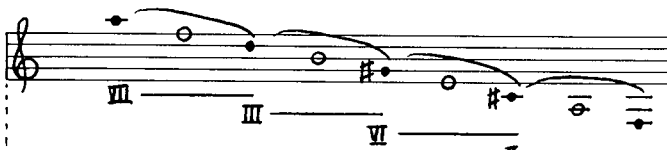
Original (plagal system):



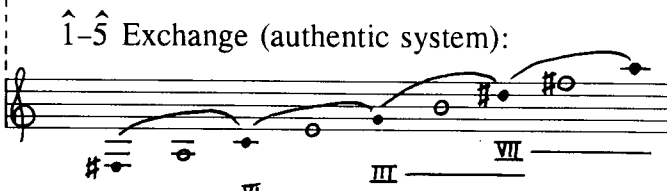
$\hat{1}-\hat{5}$ Exchange (authentic system):



Original (plagal system):



$\hat{1}-\hat{5}$ Exchange (authentic system):



In Lewin's generalized system of pure major and pure minor modes, all three primary triads of a tonal system are the same quality, either all major or all minor. In Ex. 4-17a, involving mixed modes, the qualities of the triads other than tonic are derived, as they were earlier in our discussion, by using the pitch classes that result from inverting the scale from the same starting pitch. Our initial observation was that the inversion of the phrygian-major scale is the harmonic

minor scale. Therefore, I have completed the canonical listing for the derived system with the pcs of E harmonic minor, including D $\sharp$ and F $\sharp$.

For every pc of the original system, the vertical alignment in Ex. 4-17a shows exactly which pc it maps into in minor mode. Example 4-17b shows the canonical listings extended by one more element in each direction to make clear analogous secondary triad functions; however, there are no new pc mappings to be revealed.

By returning to Exs. 4-14 and 4-15 we can see in what ways comparison of the derived version with the original is consistent with the mapping of pcs given in Ex. 4-17. We will make four observations over the course of the following four paragraphs.

First, as we have already noted, chords in the analogue have the same harmonic functions as those in the original according to the circles of perfect fifths examined earlier. The choice of chords in the analogue is also consistent with the mapping in Ex. 4-17.

Second, the arrangement of every chord in the derived version is related to its analogue in the original in a manner consistent with $\hat{1}$ - $\hat{5}$ exchange. For example, according to the definition of the operation $\hat{1}$ - $\hat{5}$ exchange, it is to be expected that within the opening tonic chord, $\hat{1}$ and $\hat{5}$ are exchanged. Therefore, whereas the original soprano begins on B, the soprano of the analogue begins on E. This fits with the theory that B is the generating pc of the tonic triad of the original plagal system excerpt—B-G $\sharp$ -E—and that E is the generating pc of the

tonic triad of the authentic-system version. (Note that although I am prepared to say that the pc B generates the tonic triad of the original, and that B is the referential pitch in the uppermost melody, I do not go so far as to alter our original observation that E is the tonic pitch of the *scale on which the excerpt is based*. This relates to the wider context of Adagio 2, which, as a whole, is in the key of E. Therefore, I have retained the E pedal point in the analogue.)

Consistent with the mapping in the canonical listings, for every pair of analogous triads, the generating note of the downward triad is exchanged for the generating note of an upward triad, the fifth of a downward triad is exchanged for the fifth of an upward triad, and third is exchanged for third.

Third, there are two points at which the versions do not correspond in terms of modal inflection. This is because phrygian-major and harmonic-minor scales both contain an augmented second, but not between scale degrees that are analogous in the canonical listings. In E phrygian-major the augmented second is between $\hat{2}$ and $\hat{3}$, F $\flat$ and G $\sharp$. Therefore, at the asterisk in Ex. 4-14, G $\sharp$ is lowered to G $\flat$ to create a smooth melodic line. The pcs F–G $\sharp$ of phrygian-major map into pcs forming the unproblematic major second A–G of harmonic minor. Therefore, at the corresponding point in the minor-mode version no analogous inflection of G $\flat$ to G $\sharp$ is wanted. In harmonic minor, the augmented second is between C and D $\sharp$. Therefore, at the asterisk in Ex. 4-15, C is raised to C $\sharp$ to create a smooth melodic line. The augmented second C–D $\sharp$ of minor maps into the unproblematic minor second D–C $\sharp$ in the original. Therefore, in the original

there was no need to alter the pc D at the corresponding point.

Fourth, because $\hat{1}-\hat{5}$ exchange creates analogous voice leading in the two versions, every horizontal strand in the original is mirrored in inversion in the authentic-system analogue. This is true in terms of numerical values of intervals, but not exact qualities of intervals, because analogous pairs of scale degrees in phrygian-major and harmonic-minor systems do not always form the same interval quality. For instance, the phrygian major second $\hat{7}-\hat{1}$ is mirrored by the minor second $\hat{6}-\hat{5}$ of harmonic minor according to Ex. 4-17. As a result, in one place in the authentic-system version—the alto part of the second phrase member—it is not possible within the descending C-B to reflect the exact contour of the major second D-E filled by the passing D $\sharp$ in the original.¹⁷

I have chosen to place the three voice-leading strands of the analogue in the same order from top to bottom because of the homophonic nature of the original. The fact that the original lacks a true bass line, the pedal point substituting, at first glance eliminates a dilemma that otherwise arises in the creation of the derivation by $\hat{1}-\hat{5}$ exchange. The dilemma arises only if we need to ask these questions: (1) What happens analogously between plagal-system and authentic-system passages in the lowest voice? (2) How is the effect of “root position” created in the plagal system—by the lowest voice or by the highest voice? To avoid confusion of terminology, I will substitute the phrase

¹⁷In Oettingen's theory of major-minor dualism, the “dualized” version of a major-mode harmonic progression employs mirror-imaging of precise intervals. This is possible because the dualized version is generated by the phrygian collection having the same key signature, not the same key note, as the original, major-mode progression (see Harrison 1994, 249, Ex. 5.5).

“generating position” for “root position” while discussing these questions.

In the authentic system, a triad is in “generating position” if its generating note is lowest. Logically, in the plagal system, a triad is effectively in “generating position” if its generating note is highest. From this point of view, there is no analogy to be drawn between the respective lowest parts of authentic- and plagal-system passages. In the Schoenberg passage, chords in “generating position” are the opening tonic chord, because B is highest, the IV chord at the very end of the first phrase member when the upper voice gains the pc E, and the final chord of the phrase when the upper voice gains the pc B. (This way of defining “generating position” has no basis in acoustic theory, of course; the aural basis for the definition lies only in the referential function of the pcs that were pointed out in this context.) According to this view, the upper voice of a plagal-system passage is analogous to a bass line in the authentic system and *vice versa*.

Strictly speaking, this analogy requires us to invert the counterpoint when $\hat{1}-\hat{5}$ exchange is applied. The result would be the authentic-system analogue in Ex. 4-18. Example 4-18 has the voice-leading strands of the previous authentic-system version in reverse order from top to bottom; it also replaces the pedal E with inverted pedal B, which is its strict analogue. The disadvantage to posing this version as analogue to the original is that it makes the authentic-system version sound upside down and the plagal-system version right-side up in terms of texture. The original was apparently not constructed with the possibility of contrapuntal inversion in mind for the inversion contains pairs of objectionable

consecutive fifths and awkward fourths above the bass. More importantly, it puts the melody of the homophonic texture in the lowest voice, which is not how conventional homophony works, but could be how plagal-system homophony should be constructed. Theoretically, if the uppermost part of a homophonic plagal-system passage directs chord position, then it is the lowest voice that is free to carry a melody (and the highest voice that would typically carry a pedal point).

Ex. 4-18 Adagio 2, phrase 1: authentic-system analogue with counterpoint inverted.

It is reasonable to conclude, then, that our actual plagal-system original has the uppermost voice carry the melody—the one that should theoretically control chord position—rather than the lowest voice—as a borrowing of the texture of traditional homophonic music: borrowed because the traditional texture will be more familiar to listeners and because it will integrate more easily with Adagio 2 as a whole. The resulting problem of what to place in the lowest voice of the plagal-system phrase, if not the melody, has been obviated by employing a pedal point—the pc E rather than the referential B—to clarify the tonic of the wider context. The two aspects of compromise—the choice of pc for the pedal point and

the order of lines in the texture—are without analogues other than themselves.

Therefore, Ex. 4-15, not Ex. 4-18, is the more accurate authentic-system version.

Analysis of Phrase 2

Phrase 2, mm.56-59, exemplifies two more features of the use of the plagal system: chromaticism within the plagal system, and a pivot from the plagal system at the beginning of the phrase to the authentic system at the end. To help explain these features, Exs. 4-19 and 4-20 will provide a comparison between harmonic progression in this phrase with a hypothetical version that begins in the authentic system and then pivots to the plagal system.

1. *Chromatic tendency tones.* At the outset of phrase 2 of Adagio 2 (Ex. 4-19), we notice that the unmixed mediant, $G\flat$, is used as the root of the mediant triad, not $G\sharp$, which would produce a diminished triad; nevertheless, consistent with modal mixture in the previous phrase, the mixed submediant, $C\sharp$, is employed as appoggiatura within III. The opening harmonies, III–VII, exemplify harmonic progression in the governing direction in the plagal system, analogous to VI–II in the authentic system (Ex. 4-20). They are followed in the original not by IV, but by a major triad rooted on chromatic note $B\flat$, which is a chord of secondary function, IV of the following phrygian II. In order to understand secondary function chords in the plagal system, it is necessary to examine how the accumulation of chromatic tendency tones in the phrygian system compares with that in the major-minor system.

Ex. 4-19 Adagio 2, phrase 2 (mm.K57-59): explanation of harmonic functions.

K 57 58 59

E phrygian: III VII IV/II II +6
E major: V ⁹ 7 6 4 3 5- I

C-A-F-D# → [B] - D# - - A-C

Ex. 4-20 Adagio 2, phrase 2: analogue.

E major: VI II v/vii vii°7
E phrygian: governing harmony — IV add 6 I

D#-F#-A-C → [E] - C- - F-D#

In major-minor (authentic) tonality, the characteristic accumulation of chromatic tendency tones occurs on the sharp side such that each new sharp is $\hat{7}$ -tending-to- $\hat{1}$ of the scale degree being tonicized. In phrygian (plagal) tonality, the characteristic accumulation of chromatic tones of secondary scale-degree function accumulates on the flat side such that each new flat is (minor) $\hat{6}$ -tending-to- $\hat{5}$ of the scale degree being tonicized. Figure 4-4 compares the accumulation of sharps

in E major with the accumulation of flats in E phrygian. Shaded areas distinguish “tonicizations” accomplished by diatonic rather than chromatic tendency tones.

Notice that in each system, in addition to the tonicization of I, there is one other tonicization in which the semitone resolution of the characteristic tendency tone is fulfilled by a diatonic note and therefore accomplished without a chromatic triad—“V of IV” (G $\sharp$ -A) in E major and “IV of IV” (F-E) in E phrygian.

Fig. 4-4 Accumulation of chromatic tendency tones in two tonal systems.

E major		E phrygian	
Tonicized by its V:	tendency $\hat{7}-\hat{8}$	tendency $\hat{6}-\hat{5}$	Tonicized by its IV:
IV	G $\sharp$ -A	—	—
I	D $\sharp$ -E	C-B	I
V	A $\sharp$ -B	F-E	IV
II	E $\sharp$ -F $\sharp$	B $\flat$ -A	VII
VI	B $\sharp$ -C $\sharp$	E $\flat$ -D	III
III	F $\times$ -G $\sharp$	A $\flat$ -G	VI
(VII)	(C $\times$ -D $\sharp$)	D $\flat$ -C	II

This scheme is modified by phrygian-major mixture. In a context where the subdominant triad of phrygian mode contains a borrowed major-mode $\hat{6}$, the cycle of secondary subdominants may follow suit, in which case it takes longer for lowered tendency tones to begin to accumulate. Example 4-21a illustrates. In E phrygian-major, the first flat, B $\flat$, does not occur until IV of II—the last diatonic

triad of the broken circle of fifths to be tonicized—and it occurs as the lowest member of the secondary subdominant. This situation is analogous to a context in which major-mode secondary dominants each contain a borrowed minor-mode $\hat{7}$.¹⁸ Example 4-21b illustrates. The first sharp, $A^\sharp$, does not occur until minor V of III. If minor V of the diminished triad VII may be allowed as a continuation of the sequence, the next sharp, $E^\sharp$, follows.

Ex. 4-21 Accumulation of chromatic pitches in plagal and authentic systems compared.

(a) Accumulation of flats:

E phrygian
with maj. $\hat{6}$: $\text{IV} - \text{I}$ IV of IV IV of VII IV of III IV of VI IV of II $\text{IV}/\text{II} - ?$ i.e. $\text{II} + \flat$
may become

(b) Accumulation of sharps:

E major
with min. $\hat{7}$: $\text{V} - \text{I}$ V of V V of II V of VI V of III V of VII $\text{V}/\text{VII} - ?$ i.e. VII°
may become

As shown in the last measure of Ex. 4-21b, in major mode we are

¹⁸Harrison argues that just as a major triad may suggest subdominant function in either mode, a minor triad may suggest dominant function in either mode; he also cites examples (Harrison 1994, 53-54).

accustomed to the addition of minor-mode $\hat{6}$ ($C\flat$ in this key) to the leading-tone diminished triad to yield $vii^{\circ 7}$. If $C\flat$ is respelled as $B\sharp$, the next element in the accumulation of chromatic tones is brought into play. The phrygian counterpart, as shown in the last measure of Ex. 4-21a, would be the addition of major-mode $\hat{7}$ to the phrygian II. The phrygian II^{+6} occurs this way in m.57₄ (see Ex. 4-19), the difference being that the pc I interpret as $D\sharp$ is notated as $E\flat$ because in the next measure it is ornamented with its chromatic lower neighbour. The respelling makes evident the second flat in the accumulation of chromatically lowered tones. For the same reasons, but with directions reversed, in the analogue (Ex. 4-20) $vii^{\circ 7}$ has been spelled with $B\sharp$.

2. *Pivot to the opposite tonal system.* In Exs. 4-19 and 4-20, the secondary-function chord of m.57₂ has root $B\flat/A\sharp$ and fifth $F/E\sharp$ common to IV of the phrygian II and “V of the leading-tone triad.” This represents a point of convergence of the two tonal systems on the extreme pole of the $E-B\flat$ axis of symmetry. This convergence continues to be evident in the next beat in the similarity of the two governing harmonies: II^{+6} ($D\sharp-F-A-C$) and $vii^{\circ 7}$ ($D\sharp-F\sharp-A-C$). In m.58 their similarity is exploited as a means of pivoting from the plagal system to the authentic system.

In the original (Ex.4-19) we have already noted that m.58 begins by ornamenting $D\sharp/E\flat$ with a lower neighbour tone ($D\flat$). $F\flat$, the element of II^{+6} that is not found in $vii^{\circ 7}$, is omitted for the moment. Therefore in beat 2, the addition of the pc B (“root below”) transforms the remaining $D\sharp-A-C$ into an

undoubted V^{b9} in inversion. Similarly, in the phrygian-system analogue of m.58₂ (Ex. 4-20) the “root” of E-C-A, E, is added above the third stack derived from the previous measure.

The common tone in the voice leading of the original from m.57 to m.58, the tenor A, is not matched by a common tone in the analogue because its counterpart under $\hat{1}-\hat{5}$ exchange is $F^\sharp$ in major mode and $F^\flat$ in phrygian. $F^\sharp$ is not represented in the original m.58₁₋₂ because it is not essential to the identity of V of E. As a result, its counterpart in the voice leading of the plagal system, the pc A, is absent from beats 1 and 2 of m.58, even though it is a useful pc for recognizing the governing harmony in the plagal system. The impossibility of creating an exact analogue illustrates that the original voice leading is constructed to take advantage of common tones between E phrygian and E major-minor in the pivot from one system to the other.

Analysis of Part 2 and the Restatements of Parts 1 and 2

Part 2 of Adagio 2 contrasts with Part 1 in that it remains entirely in the authentic system. It is appropriate that $C^\sharp$ -minor harmony, VI of E major, is prolonged in Part 2: submediant harmony was not employed in Part 1 in either form, C-major of the pure phrygian collection or $C^\sharp$ -minor of the major and phrygian-major collections.¹⁹ The tonicization of $C^\sharp$, effected within Part 2 by V of $C^\sharp$ (resolved deceptively in m.60 and resolved to I of $C^\sharp$ in m.61), is clearly

¹⁹At the end of Adagio 2, m.K79, where C-major harmony is finally introduced as V of F in preparation for the beginning of the restatement of Adagio 1, it is evident that C-major harmony has been reserved for this function.

governed by a secondary tonic-dominant axis operating within the E-major system (Ex. 4-22).

Ex. 4-22 Adagio 2, Part 2 (mm.K59-61).

K 59 60 61

E major: I V VI I
of vi

The restatement of Part 1, mm.62-69, is modified. In addition to the fact that it contains only phrase 1 and not phrase 2, its opening is reharmonized, and at two points its harmonic progression pauses or digresses (Ex. 4-23). To begin, in m.62 the head motive of phrase 1, at its original pitch level, is harmonized by G-major harmony alternating with a neighbouring B-minor chord. The G-major triad is preceded by its own V^7 in the link—the D^7 chord of m.61_{2,4}—and thus given an authentic tonicization. The bass $F\sharp^2$ of the B-minor triad continues to tonicize G in the manner of the authentic system. With reference to the main tonic, which Part 2 did not undermine, the tonicized G-major triad is both the mixed mediant $\sharp III$ of E major and diatonic III of E phrygian (the latter analogous to VI of the authentic system). A new mixed phrygian-major collection, $\{E, F, G, A, B, C\sharp, D, E\}$, the inversion of the melodic minor scale, is implied here,

but obscured by the retention of the authentic-system leading tone $F^\sharp$ on the foreground level of m.62. After a pause in m.63, mm.63₃-64₂ regain the original harmonization (*cf.* m.53), thus unequivocally returning the pc collection to E phrygian-major and the tonal system to plagal. Therefore, in m.62 overlapping authentic and plagal systems, at lower and higher structural levels respectively, effect the transition between Part 2 in the authentic system and the return of Part 1 in the plagal system.

Ex. 4-23 Adagio 2: link to, and return of, Part 1 (mm.K61-67).

K 61 62 63 64 65 66 67
 E phryg-
 major: III — I — VII — IV —
 E major: VI I of $\sharp$ III IV - VII $\sharp$ 5 (V⁷/III?)
 c.t. Ger. $\sharp$ 5 $\rightarrow$ III

In m.64, at the end of the subphrase, phrase 1 is interrupted by a thematic and harmonic interpolation: a spectral revival of PTGa¹ traces an arpeggiated $D^\sharp$ major-minor seventh chord while this harmony is sustained in the background. The $D^\sharp$ ⁷ chord contradicts the E-phrygian system with root a tritone away from the axis pole IV, casting into doubt, once again, the tonal system and throwing open the field of functional relationships. For the moment, the $D^\sharp$ chord sounds

like V^7 of III in E major (V^7 of $G^\sharp$). It eventually resolves as a German augmented-sixth in common-tone fashion to a G-major triad, returning this version of phrase 1 to its starting point.

III of the phrygian scale having been regained in m.67, the harmonic progression of phrase 1 continues up a perfect fifth to the phrygian VII and thence to I, thus concluding phrase 1 again with a plagal-system oblique approach to the tonic. By now, the approach to I from the phrygian VII is familiar enough that a foreground authentic cadence is not needed to confirm E as tonic. The surface-level elaboration of the basic VII-I progression at the conclusion of the phrase this time includes whole-tone linear motions in vc and vn1 parts (mm.67-68; *cf.* mm.55-56).

Part 2 (phrase 3) now recurs (mm.69₄-71). The melody begins a semitone higher than originally and, correspondingly, D-minor harmony, familiar from the phrygian scale, is tonicized this time rather than the authentic system's $C^\sharp$ -minor triad, VI. In addition to the new pitch level, mm.69₄-72₁ are a varied form of mm.59₂-61₃ in so much as the sequential repetition of the melodic motive, rather than being up a third, is up a semitone (the repetition up a semitone only beginning at the fourth note of the motive, m.71, beat 1). Nevertheless, as shown in Ex. 4-24a, on the largest scale, mm.69₄-72₄ do serve to prolong D-minor harmony. Moreover, having heard many prior phrases end with the cadence VII-I, at the end of m.72 we anticipate that the D-minor chord will again function as a plagal-system approach to I.

Ex. 4-24 Adagio 2: restatement of Part 2 (mm.K69-72).

(a) Harmonic sketch:

authentic system at foreground level:
(d min.)

apparent VII^7 , i.e., II^{addb} —

Ger. $5^{\text{+b}} - \text{I} - \text{VI}^+ \text{I}^7$ of VII

Ger. $5^{\text{+b}} \text{V}^{\text{+b}} \text{IV}^{\text{+b}}$ of VII

($\text{I}^{\text{+b}}$)

apparent VII^7 — i.e., II^{addb} — [I]

Ephrygian-major

(b) Analogue:

plagal system at foreground level:
(f# phryg.)

apparent II^{addb} , i.e., $\text{VII}^{\text{+b}}$ —

TS ($\text{IV}^{\text{addb}} / \text{IV}^{\text{addb}}$) - IV^{addb} - $\text{III}^{\text{+b}}$ - II^{addb} of II

TS ($\text{IV}^{\text{addb}} / \text{IV}^{\text{addb}}$) - IV^{addb} - V^{addb} of bII

(I^{addb})

apparent II^{addb} , i.e., $\text{VII}^{\text{+b}}$ — [I]

E minor:

The harmony containing D-F-A of m.69_{3,4} and m.72 functions differently from that of phrase 1 because it includes the pc C. Properly speaking, in the plagal system D-F-A-C is not VII^7 : it is the dualistic triad C-A-F (i.e., II) with D added a seventh below, and substitutes for IV, providing a direct, governing approach to I in the plagal system. For easy recognition, in Ex. 4-24a I have

labelled it $\text{II}^{\text{add}6}$. Example 4-24b shows the authentic-system analogue, in which at the deepest level the apparent $\text{II}^{\text{add}6}$ is clearly the leading-tone diminished-seventh chord ($\text{VII}^{\phi 7}$ the last time), providing a direct approach to I in the authentic system.

Like Part 1 phrase 2, the restatement of Part 2 illustrates chromaticism within the plagal system and a shift between systems. It also illustrates use at the foreground level of the opposite system to that prevailing at the deep level. In m.70 of the original, the apparent D-minor triad is prolonged with a “deceptive” authentic-system progression, $\text{V}-\text{VI}^+$. Correspondingly, in the analogue the apparent $\text{F}^\sharp$ -minor triad is prolonged with the plagal-system progression $\text{IV}-\text{III}^+$. It should be noted that in mm.70-71 the analogue has been constructed with the lower voices rearranged in their order to provide a stronger bass line.

In the sequential repetition (m.71 of the original), which is in $\text{D}^\sharp$ minor at the extreme foreground level, the irregular resolution of V is to a six-four chord, instead of a five-three chord, on the $\text{D}^\sharp$ bass. This chord happens to have two pcs in common with I of E phrygian-major, $\text{G}^\sharp$ and B. Therefore, by following the $\text{G}^\sharp$ six-four with I_2^4 in E (which is the German augmented-sixth chord in common-tone relationship to the $\text{G}^\sharp$ -minor triad), the result is the main tonic triad with the phrygian $\hat{7}$ in the bass. This provides a smooth return to the apparent VII of E phrygian-major. The pc C is added to the triad again in m.72, beat 3, rendering it $\text{II}^{\text{add}6}$ once more.

Correspondingly, in m.71 of the analogue, the foreground level tonicizes

$\flat$ II of E minor using progressions belonging to F phrygian. At beat 3, the five-three chord C-E $\flat$ -G $\flat$ occurs irregularly in place of the expected six-four chord C-A $\flat$ -F. The diminished triad, V of F phrygian, does not, however, have any exact pcs in common with I of E minor, and therefore, several chromatic adjustments must take place to achieve I^{add6}.²⁰ Again we see that the voice-leading of the original takes advantage of the specific placement of common tones between the two systems as a smooth way of pivoting between the two systems.

The anticipated progression of II^{add6} to I of E phrygian-major does not occur forthwith. There is another shift of system before the harmonic progression is complete, a shift that occurs in mm.72-74 (Ex. 4-25). This passage is based on the melodic and harmonic material of phrase 2 (the phrase in Part 1 that shifted from the plagal system to the authentic system at its cadence, and the phrase that was absent from the first restatement of Part 1). The harmony C-A-F-D of m.72 is converted to the governing V⁷ of E minor by raising F to F $\sharp$, D to D $\sharp$, and resolving C down to B. We continue to anticipate a tonic triad rooted on E, but now approached authentically. At the start of m.74, the B⁷ chord is thinned and altered to F $\sharp$ -A-C $\flat$, attenuating the effect of an authentic approach (*cf.* Ex. 4-8, m.K51, where this harmony is subdominant in function). The "tonic" harmony that finally ends the phrase is also ambiguous: an E⁷ chord of uncertain tonal allegiance. Assuming a hypothetical resolution of the E⁷ chord down a perfect

²⁰In the analogue, the chords shown at the end of m.71 and at the beginning of m.72 have C altered to C $\sharp$ (raised submediant) so as to fit with use of the "melodic form" of the E-minor scale in the uppermost voice, m.72.

fifth, we are confronted with the coexisting tonal fields E: $V^7/IV - [IV]$ and A: $V^7 - [II]$. The harmonic plot has apparently come full circle since the end of Adagio 1. Neither functional interpretation of the chord at the end of m.74 is confirmed, for the opening chord of the following phrase is an E-minor triad.

Ex. 4-25 Adagio 2: final appearance of phrase 2 (mm.K71-74).

K 72 73 74

E phrygian: ($I \frac{1}{2}$) II ^{add b} I^{b9} $vii^{o7} V^7 / IV$

A Final Shift in Harmonic System and the Bridge to the Restatement of Adagio 1

We have observed thus far that the tonal system of Adagio 2 alternates between conventional functional harmony and an analogous, inverted system. This accounts for certain passages that sound comprehensible in terms of a functional harmonic hearing, but in an “upside down” way. The harmonic syntax of Adagio 2 has revealed that the major-minor tonal system, however resourceful, is not the only possible system for organizing functional triads into grammatically comprehensible phrases. Still, one is inclined to believe that the inverted system is dependent upon its template, functionality within the major system, for its comprehensibility.

Ex. 4-26 Adagio 2: final allusion to phrase 1 (mm.K75-76).

K 75 76

Langsam

pp am steg

series each pitch is assigned to the next possible element of a minor triad.

Fig. 4-5 System of triad construction and succession in mm.K75-76.

	C#	D	C#	B
1.	—	3d	5th	8ve
2.	3d	5th	8ve	3d
3.	5th	8ve	3d	5th

By this method, eight different triad roots occur in the bass and eleven different pcs occur in the entire texture (all except C $\sharp$). There is no attempt to define a particular tonal centre by means of harmonic function. The E-minor triad is made presentational tonic by its opening and closing position. Bass notes at the ends of statements of the pitch series, B-G $\sharp$ -E, “prolong” an E-major triad.²¹ Familiar harmonic function is absent, but a chord succession organizing eleven pcs manifests its own aural logic, the logic of triad roots changing according to a formula controlled by the periodicity of the melodic motive.

With this passage, Adagio 2’s flexibility of harmonic system is stretched to extreme limits, for here is not only another shift of harmonic system, but a radical experiment in non-functional harmonic syntax briefly interpolated into functional tonality. Even so, the effect is not incongruous. The simultaneities are still triadic and consonant. The initial and final E-rooted triads relate the passage to the foregoing material and enable the continuation on III of E minor-E phrygian, the G-major triad of m.77.

²¹Benjamin, in a conversation with the author.

Despite the suggestion at the end of m.74 that A, the original key of the Slow Movement, might return, the bridge passage, mm.77-79, modulates from E to the key of F for the restatement of Adagio 1. In m.78 the phrygian II progresses to V^7 of E minor, which resolves deceptively to C-major harmony—a harmony absent in Adagio 2 until now. In m.79 C-rooted harmony is reinterpreted as a V; prepared by pre-dominant harmony in F during the first two beats, the C^{b9} chord of m.79₃₋₄ resolves to the tonic of F minor at r.L.

Summary of the Tonal Structure of Adagio 2, mm.K52-79

Rival tonics are not a feature of Adagio 2. Brief passages of coexisting tonal fields A and E create a similar duality, however. Another kind of tonal duality takes centre stage in Adagio 2: competing harmonic systems, the plagal system and the authentic system. In mm.57-58 and in mm.72-73 we hear harmonies operating within the plagal system juxtaposed with ensuing harmonies operating in the authentic system on the same structural level. Such shifts from one harmonic system to another may be compared to the change in focus when one element of a double-tonic complex takes over from the other. In other instances in Adagio 2 the two harmonic systems coexist on different structural levels. In m.62 and in mm.69-72, a middleground-level harmony functioning in the plagal system (III in m.62 and II^{add6} in mm.69-72) is prolonged by authentic-system progressions at the foreground level.

In terms of the tonal design of the entire composition, the significance of the use of the plagal system having E as tonic is that A is at last used as polar

opposite to a tonic; used thus in the plagal system, its status is, of course, an interim "achievement," being that of polar opposite to E rather than D.

Restatement of Adagio Themes and Transition to STG Recapitulation (L1-51)

The three-part design of the Slow Movement is completed in a manner that we have come to expect in the quartet. Beginning at r.L, a greatly modified restatement of Adagio 1 serves as the nominal rounding of the Slow Movement's form, but avoids full closure, leading instead almost imperceptibly into a transition passage to the STG Recapitulation. As always, the aim is to preserve continuity on the large-scale structural level of the quartet.

We have already noted that the restatement of Adagio 1 begins in the rival key to A minor, F minor/major. Not even at the outset do mm.L1ff. constitute a literal, transposed restatement of Adagio 1. Different tonal purposes have now to be served, tonal rivalry being no longer the issue. Thematic presentation is now developmental rather than expository and, as usual, Schoenberg is loath to restate a set of themes in their original order. On first listening, the shifting keys and the thematic ordering may appear arbitrary. We shall pursue three related questions with respect to mm.L1-51: (1) What is the logic behind the tonal shape of the passage? (2) How does the passage cohere linearly? (3) How does the order of thematic presentation either support or control the harmonic and linear design? The entire passage falls into four subsections: mm.1-17, mm.18-23, mm.24-37, and mm.38-51.

(1) The Tonal Structure of mm.L1-51

Subsection 1 (mm.1-17). Subsection 1 is the principal section having restatement function. Its tonal scheme is a straightforward modulation from F to C major, unusual in this work for its directness. Thematically and contrapuntally, subsection 1 is full of surprises. Measures 1-4 restate k^1 with theme l counterpointed. From m.5 to m.17 theme k^1 is absent and the STG themes associated with Adagio 1, d and e, are heard in counterpoint with theme l . Theme k^2 is not heard in subsection 1.

We noted in Chapter 1, in the discussion of foreground harmony under Principle 7, that over mm.L10-14₄ the voice leading of the cadence in C major is reinforced by a parallel projection of $\hat{7}-\hat{1}-\sharp\hat{2}-\hat{3}$ (D $\sharp$ -E)—which foreshadows a modulation to E major. The cadential extension to the close in C major, mm.15₃-17₁, counters the raised supertonic by surrounding the upper-voice C with D $\flat$ ($b\hat{2}$) and B. In m.17, D $\flat$ and B assist in the swift modulation to E major. As shown in Ex. 4-27, the modulation from C to E is accomplished by tonicizing the major-third divider, A $\flat$, at the foreground level and resolving V of A $\flat$ to its bVI . Accordingly, D $\flat$ 6 and B5 are harmonized in m.17: D $\flat$ 6 as common uppermost pitch of the local progression $ii - V^7$ of A $\flat$, and B5/C $\flat$ 6 as the uppermost pitch of the F $\flat$ -major chord, the deceptive resolution of $V^7/A\flat$. The F $\flat$ -major chord is reinterpreted as an E-major tonic when it is followed by its own V^7 in the last beat of m.17. Just as the E-major triad is first treated as bVI of A $\flat$ major, at a slightly deeper level the C-major tonic has been reinterpreted as bVI of E major.

Ex. 4-27 Linear continuity in modulation from C major to E major, mm.L15-18.

L 15 16 17 18

C: I ——— E: I - V⁷ - I

Ab: ii - V⁷ - bVII ———

Subsection 2 (mm.18-23). The second subsection is entirely in E major. It is an aborted restatement of Adagio 2, reviewing theme *1* in its original key and in one of its original textures. By the time it draws to a close in the sixth measure, one senses that this section is a thematic codetta to the entire Adagio.²² But, given that E is a secondary key, not a primary key in the Slow Movement, the tonal effect, even to the final lingering on a first-inversion E-major triad, is open, and the possibility of continuation is preserved. As may be seen in Ex. 4-28, in mm.23-24, the pc G[#]/A^b in the bass proves to be a common mediant in the pivot to the key that begins subsection 3, F minor.

Subsection 3 (mm.24-37). The third and fourth subsections together effect a transition to the resumption of the Recapitulation. In one of his analyses, Schoenberg terms subsection 3 a “modulatory episode” (Rauchhaupt, 42). Yet in terms of thematic design, subsection 3 serves also to complete the restatement of

²²Hattesen, too, regards mm.L18-23 as a codetta (Hattesen, 301).

Ex. 4-28 Slow-movement codetta and beginning of transition to the STG
Recapitulation (mm.L18-38).

Subsec. 2 Subsection 3 Subsec. 4

L 18 20 23 24 25 26 27 28 29 30 31 32 33 38

A: V

f: vi — iii — V⁺ — i — ?

Db/C#: Y^{#7} of TS(Y⁷) — I

Gb/F#: bVII (Ger. +⁶/₅) — V — I

f: vi — V⁺ — i — ?

Db/C#: Y^{#7} of TS(Y⁷) — I

Gb/F#: bVII (Ger. +⁶/₅) — V — I

Adagio 1 themes. At m.24, theme k^2 is heard *tremolo, sul ponticello* in F minor, the tonal level consistent with the restatement of k^1 at m.L1. The D $\flat$ -minor harmony that begins theme k^2 at m.L24, vi of F minor, is the counterpart of the F-minor harmony that began k^2 in A-minor at m.K5. As shown in Ex. 4-28, the tonic triad of F minor emerges most clearly at the end of m.L28, following a modified dominant triad, and is then prolonged through m.30. The second half of

m.30 contains a striking overlap of contradictory arpeggiations, ending with a $D\flat/C\sharp$ -minor triad in the upper voices over the pc A in the vc. This "A-major-major seventh chord" introduces a D major-minor seventh chord prolonged in mm.31-32 that resolves as $TS(V^7)$ in $C\sharp$ major. In effect, the $D\flat$ -minor harmony on which subsection 3 began has been altered to the $C\sharp$ -major triad of mm.33-37.

Subsection 4 (mm.38-51). The $C\sharp$ -major harmony of mm.33-37 proves to be V of $F\sharp/G\flat$ with the first chord of subsection 4. A shift to $B\flat$ major is suggested over the course of mm.40-43, but $G\flat$ harmony regains prominence in m.48. This final subsection departs from Slow-Movement tonal and thematic materials in order to complete the transition to the STG recapitulation. Reintroduction of the PT, the sole theme developed in this subsection, returns us to the structural level on which the Recapitulation operates.

Summary of the Tonal Structure of mm.L1-52. Example 4-29 puts the $G\flat$ -major harmony of subsection 4 into perspective by summarizing the tonal scheme of the entire passage, mm.L1-52. The keys of the first two subsections are VI and V of A minor, the main key of the Slow Movement. After the I-V tonal motion in F of subsection 1, every subsequent key is introduced by the harmony on its minor submediant leading to its dominant and thence to its tonic. The E-major tonic of subsection 2 is reached by means of $\flat VI-V-I$ at the end of the previous section. Within subsection 3, F minor is defined by a slightly varied version, $vi-V^+-I$. Similarly, the authentic progression that defines $G\flat$ major for the start of subsection 4 is preceded by a harmony on $\flat VI$ of $G\flat$. Finally, at the

end of subsection 4 where the F-major triad is regained as V of B $\flat$, the G $\flat$ harmony is reinterpreted as $\flat$ VI of B $\flat$ major. Therefore, $\flat$ VI harmony is the consistent factor unifying the harmonic design of the passage as a whole.

Ex. 4-29 Restatement of Adagio themes and transition to STG Recapitulation (mm.L1-52): deep middleground level.

Subsection 1	2	3	4	STG
L 1 15 17	18	24 28 28 31 33	38 48 49 50	51 52
octatonic scale				

a:	VII	—	V	—	
E:	$\flat$ VII	—	V	—	I
F/f:	I $\flat$	—	V		($\flat$)vi — V $\flat$ — i
G $\flat$:					$\flat$ VII — V — I
B $\flat$:					$\flat$ VI — V — I

chromatic surrounding:

Considered more broadly, the harmonic design of the entire passage is an elaborate method of converting I of F major/minor into V of B $\flat$, the key of the STG Recapitulation at m.L52. As shown by the lowest staff in Ex. 4-29, F-rooted harmony is chromatically surrounded by E and G $\flat$ tonics. Therefore, despite the reintroduction of E-major harmony, the A-minor tonic of the Slow

Movement is never regained. Rather, B $\flat$ major is set to replace it for the remainder of Part III of the composition.

(2) Linear Coherence

Example 4-29 also illustrates how mm.L1-52 cohere linearly in the uppermost part. Structural chords within the harmonic plan support a linear descent from C6 to D5. Controlled by the particular shifting key centres, the upper line descends in seven steps alternating semitone and tone—an octatonic scale.

In the first stage of the descent, C6–B5–A5–G $\sharp$ 5 occurs in conjunction with the modulations from F to C in subsection 1 and thence to E major for subsection 2. C6 is supported by the F-rooted harmony of m.1 and the C-major harmony of m.15; C $\flat$ 6/B5 is supported by $\flat$ VI of A $\flat$ which is I of E. V 7 of E supports the pitch a further tone down, A5, and its resolution to the E-major tonic of m.18 supports G $\sharp$ 5 uppermost.

The pc G $\sharp$ is reinterpreted as A $\flat$ in the common-tone modulation from E major to F minor at the beginning of subsection 3. The second, overlapping stage of the descent, A $\flat$ 5–G $\flat$ 5–F5, occurs in conjunction with the modulations to G $\flat$ major at the beginning of subsection 4 and B $\flat$ major within subsection 4. Toward the end of subsection 3, $\hat{3}$ of F minor is reinterpreted as $\hat{2}$ of G $\flat$ which descends to $\hat{1}$ of G $\flat$ at m.38 harmonized by V–I in G $\flat$ major. A modulation to B $\flat$ occurs within subsection 4 so that by m.46 the pc G $\flat$ has been reinterpreted as $\flat\hat{6}$ of B $\flat$. At m. 49 $_2$, G $\flat$ 5 in the uppermost voice is harmonized by a prominent iv of B $\flat$;

this breaks up the octaves that would otherwise occur between $\flat$ VI and V of $B\flat$ at m.49₄ where the F-major harmony supports F5.

During the elaboration of V of $B\flat$ in mm.50-51, F5 descends to $E\flat$ 5.

While the vn1 part continues to descend to the $B\flat$ at the beginning of m.52, it is the $E\flat$ 5 that connects with the opening melody note of the STG, D5. Admittedly the rhythm of the harmonies supporting the descent from C6 to D5 has been irregular, but the consistency in direction and intervallic pattern maintained in this line from the beginning to the very end of the passage makes it reasonable to consider its entire span to operate on one structural level.

(3) Cooperation Between Theme and Harmonic-Linear Design

In short, the means by which transition is made between harmonic events at the relatively local level of the third movement to harmonic events at the large-scale level of the sonata Recapitulation are a lavish but controlled exhibition of harmonic and linear ingenuity. Another, more direct path might have been taken to convert the F-major tonic to V of $B\flat$ than tonicizing its upper and lower neighbour tones. The linear dimension of the passage might have been organized as a seven-note, diatonic descent from C6 to C5. Comparison with a hypothetical diatonic line, C- $B\flat$ -A-G-F- $E\flat$ -D-C, shows how the octatonic descent comes about. The altered and additional pitch classes that form the octatonic line are: $B\sharp$ instead of $B\flat$; the inserted $G\sharp/A\flat$ after $A\sharp$; and $G\flat$ substituted for $G\sharp$. These additional pitches either coincide with thematic purposes, or fit the logic of the tonal design, or accomplish both. Allusions to Slow-Movement themes and their

keys fulfil thematic purposes: $B\flat$ and $G\sharp$ result from the reminiscence of Adagio 2 in E at m.18; $A\flat$ occurs naturally in connection with the restatement of theme k^2 in F minor at m.24. $A\flat$ also facilitates the introduction of the pc $G\flat$ at m.38. A vital feature of the harmonic design is fulfilled by $G\flat$: the introduction of $\flat VI$ of the goal key so as to parallel the motivic use of $\flat VI$ in themes k^1 and k^2 .

The consistency of the octatonic line, like the harmonic scheme involving $\flat VI$, is a deeply embedded means of organizing the passage. The resulting ingenuity of design matches that of Fugato 3, which bridged local and large-scale structural levels at the end of the Scherzo.

Finally, it should be noted that the establishment of $B\flat$ major (by its V) for the STG is stronger than the establishment of the key of the Slow Movement where no clear I–V–I relationship in A emerged.

Recapitulation of the Subordinate Thematic Group (mm.L52-91)

The tonal design of the Recapitulation of the STG is of interest for the ways in which it preserves, and the ways in which it modifies, the design of the original STG.

Overview of the STG Recapitulation

At m.L52, STG theme d returns in $B\flat$ major, that is to say, transposed down a perfect fourth from its original version in the Exposition. A comparison of Ex. 4–30 mm.L52-65 with Ex. 2–18 will show that in the $B\flat$ -major version of STGd the key of A naturally occurs as the rival to $B\flat$ just as D had occurred as

rival to E $\flat$ in the Exposition of STGd.

Ex. 4-30 Recapitulation of the STG, mm.L52-78.

L 52 55 56 58 59 60 61 62 63 64 65

B $\flat$: $\hat{3}$

10 - theme d 10 6 6 6 6 10 -

B $\flat$: I - V - $\frac{6}{5}$ - vii $^{\circ 7}/\frac{6}{5}$ of

A: I $\flat$ - II $\flat$ - bVI

66 67 68 69 70 71

E/F $\flat$: $\hat{3}$

- 10 theme f TS theme e

B $\flat$: VII $\flat$ F $\flat$: VII $\flat$

G: I V $\flat$ - 5 Db: V $\flat$ 5 - I

72 73 74 75 76 77 78

E/F $\flat$: $\hat{3}$ - $\hat{4}$ B $\flat$: (# $\hat{2}$) - $\hat{3}$

theme f d'

E/F $\flat$: I V/bVII $\frac{vi}{bVII}$ - $\frac{II}{3}$ - IV - IV - $\frac{IV}{3}$ - VII $\frac{6}{3}$ - I

B $\flat$:

The close of the initial presentation of STGd in the Recapitulation, mm.L64-65, is slightly altered in comparison to mm.A69-70. This time, there is no hint of a tonicization of the key a whole tone below the primary tonic (i.e., no tonicization of A^b major to correspond to the suggestion of D^b major in m.A69), and harmonic preparation for the major submediant key at m.L66, G major, is accomplished in m.L65 by the diminished-seventh chord common to B^b and G (rather than a French sixth as at the end of m.A70).

From m.L66 on, STG material is reworked in three significant ways. The first two alterations are thematic:

(1) Theme e and theme f occur now in reverse order or, more accurately, with theme e sandwiched between the antecedent and consequent phrases of f (Ex. 4-30). Therefore, it is theme f (its antecedent phrase) and not theme e that occurs in G major at m.L66.²³ A greatly reworked and abbreviated version of theme e occurs in vc mm.L70-74 counterpointed by the antecedent phrase of theme f repeated at a new tonal level. The consequent phrase of f, as originally given in mm.A86-91, is then compressed into mm.L75-77.

(2) Just as STG themes d and e are part of the texture of the Adagio, Adagio theme *l* interpenetrates the STG Recapitulation. For instance, in mm.L70-73 theme *l* is heard in vn2.

The third alteration is tonal:

²³The diminuted form of theme e in m.L66 vn2 and va and its inverted form in vc were involved in the original presentation of theme f in mm.A82ff. Therefore these forms of e at m.L66 are not necessarily to be regarded as representing theme e as heard originally at m.A70.

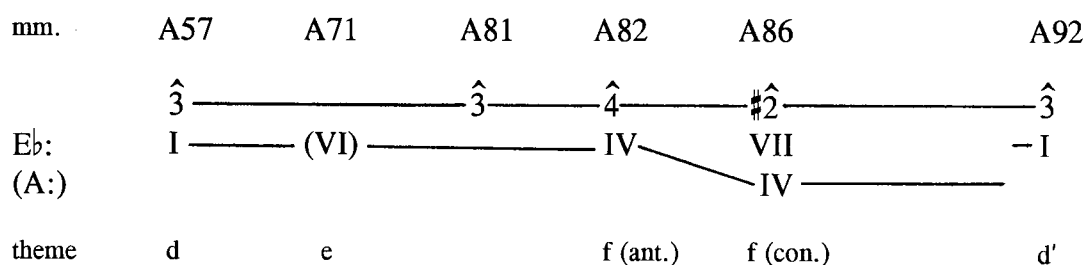
(3) Following mm.L66-69 in VI, the tonal scheme deviates from the original. The key of theme e at m.L70, D $\flat$ major, is the beginning of a break with the scheme of transposing the original version of the STG either down a perfect fourth or up a perfect fifth. As a result, on first hearing the key scheme of mm.L70-77 seems arbitrary. Its logic can only be understood with reference to the concept of tritone replacement, as will become evident in a comparison of the two versions of the STG.

Tritone Replacement in the Harmonic Structure of the STG Recapitulation

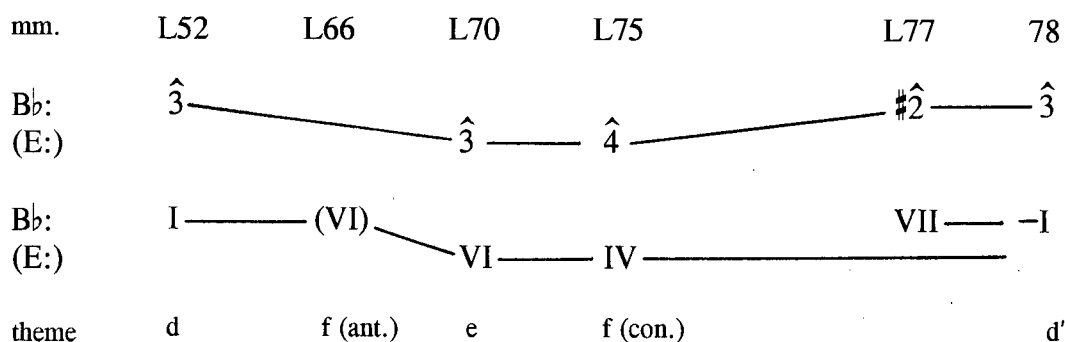
Figure 4-6 compares the key schemes of the STG in the Exposition and the Recapitulation.

Fig. 4-6 Key schemes of STG in Exposition and Recapitulation compared.

Key Scheme of STG in Exposition



Key Scheme of STG in Recapitulation



In mm.A57-85, the initial tonal motion is $E\flat$: I-(VI)-IV, theme e occurring in C major and the antecedent of theme f in $A\flat$ major. At m.A86, the key shifts from $A\flat$ (IV) to the tritone-related key with the result that theme f continues in D major. (It may be noted by referring to Ex. 2-22 that the pivot chord between $A\flat$ and D tonics is their common dominant-seventh with lowered chord fifth.) D-rooted harmony, after having been gained as the tritone-related harmony to IV of $E\flat$, is reinterpreted as VII of $E\flat$ when it leads back to the $E\flat$ tonic of m.A92.

The harmonic scheme of the recapitulated version is consistent with that of the original version of the STG in that here, too, a shift to the tritone-substitute harmony occurs after the antecedent of theme f: from m.L69 to m.L70, $V\flat_5^7$ of G is enharmonically reinterpreted as $V\flat_5^7$ of $D\flat$ (Fig. 4-6 and Ex. 4-30). But because the switch to the tritone-related level occurs earlier in relation to theme e (which is only now about to be heard), and earlier in relation to the continuation of theme f than it occurred in the Exposition, the matching of key and theme appears radically altered in the recapitulated version. Theme e, instead of being in either VI as it was in the prototype, or in IV, the key that followed VI in the prototype, is in the key a tritone away from VI of $B\flat$ major, $D\flat$ major. Because it is the key for material that was originally heard in VI of $E\flat$ major, $D\flat$ major might well be construed as VI of E major. Consistent with this supposition is the fact that, following the $D\flat$ -major material, the consequent of theme f (which begins in va with the anacrusis to m.L75) is composed in the key that is IV of E major, A major. The prolonged A-major triad has subdominant function in

relation to the tritone-related key of B $\flat$ major, E major, just as A $\flat$ major at m.A82 functioned as IV in relation to E $\flat$.

As we have already noted, the tritone relation was also evident in the original STG: the key of the consequent of theme f at m.A86, D, is the tritone replacement of the subdominant key, A $\flat$ major, in which theme f began. As a result, the tonal level of the consequent of theme f at m.L75 parallels that of the same phrase at m.A86. The prolonged A-rooted harmony of mm.L75-77 is VII of the overall B $\flat$ tonic just as the D-rooted harmony prolonged in mm.A86-91 is VII of E $\flat$ major. A-rooted harmony in mm.L75-77 is not expanded by precisely the same means as is the D harmony of mm.A86-91, but by the end of m.L77 it is transformed to a second-inversion major-minor seventh chord on A, and resolves as an altered VII⁷ in B $\flat$ major, the parallel of the progression that restores the E $\flat$ -major tonic in m.A92.

Tritone Replacement in the Linear Design of the STG Recapitulation

A cursory comparison of sketches of the STG in the Exposition and in the Recapitulation would seem to indicate that the reordering of themes and the earlier adoption of the tritone-related level of harmonic relationships in the Recapitulation radically alter the linear design of the STG in the Recapitulation. Yet as indicated by scale-step numerals in Fig. 4-6, the essence of the uppermost line remains the same when tritone replacement is taken into account. A closer comparison of Ex. 2-17 with Ex. 4-30 bears this out.

Again, the deviation begins at m.L66 as compared to m.A71. Example 2-

17, mm.A71-81 sketches the descending upper line of the passage in VI of E $\flat$ as a continuation of the preceding descent that returns the uppermost voice to $\hat{3}$ at m.A81. The parallel passage in Ex.4-30, mm.L66-69, is much shorter, but manages briefly to continue the downward motion. At the beginning of this G-major passage, we shall infer B $\sharp$ 5 as the resolution of the C6 in m.L65 vn1 and hence as the actual uppermost pitch. Theme f in vn1 covers the inferred B $\sharp$ 5 with G6 but gradually descends to the register of B $\sharp$ 5, and gains a sustained B $\flat$ 5 in mm.L68-69. The descent continues on a subordinate level in whole-tones in m.L69 while the altered V 7 of G reorients itself as V 7 of D $\flat$. In m.L70, the point at which vn1 resolves its G $\flat$ 5 to F5, the insistent headtone of theme l in vn2 returns the uppermost voice to A $\flat$ 5, sustained then throughout mm.L70-72. If the D $\flat$ triad is regarded as VI of E/F $\flat$ major, then the A $\flat$ 5 of m.L70 represents a resumption of $\hat{3}$, being that scale step in the tritone-related key to B $\flat$ (cf. Fig. 4-6).

In mm.L73-74, the secondary dominant G-B-D-F and its deceptive progression to an A-minor six-three chord prepare a shift to the key of A. Within the G 7 chord, A $\flat$ /G $\sharp$ 5 may be assumed to continue as a member of the same cycle of minor thirds as is contained in the G 7 chord. After touching on A5 in m.L74, the upper line regains $\hat{3}$ of the tritone-replacement key—the G $\sharp$ 6 functioning within V 4_3 of A. This latter harmony is the counterpart of the E $\flat$ 7 chord in m.A81 that regained the upper-voice $\hat{3}$ of E $\flat$ in anticipation of $\hat{4}$. The continuation of $\hat{3}$ of E to $\hat{4}$ of E is implicit in m.L75 and made actual in m.76 by the A5.

As a result, beginning at m.L70 the original $\hat{3}$ - $\hat{4}$ -($\hat{\sharp}2$)- $\hat{3}$ shape of the

uppermost voice of the STG is disguised. $\hat{3}$ of $B\flat$, established in STGd, is transferred a tritone away at m.L70 to $\hat{3}$ of $E/F\flat$. This pc, $G\sharp/A\flat$, is then ornamented with its upper neighbour tone $A\flat$. Only in the last half of m.L77, when vn1 supported by A-rooted harmony reaches for the $C\sharp6$ ($\hat{\#2}$) that resolves to $\hat{3}$ of $B\flat$, does the uppermost voice again parallel the original and relate once again to $B\flat$ major. (That the abrupt-sounding turn from $\hat{4}$ of E up to $\hat{\#2}$ of $B\flat$ is countenanced is symptomatic of the interchangeability of E and $B\flat$ tonics assumed in this context.) The overall $\hat{3}-\hat{4}-(\hat{\#2})-\hat{3}$ shape, established in the prior, parallel passage, has been split between two tonal levels. Therefore, although the line is altered in its presentation, it need not be regarded as altered in its essence.

The theoretical status of prolonged A-major harmony in mm.L75-77 as IV of the tritone-replacement key for $B\flat$ is admittedly obscure. Neither is the relationship between this harmony and the main tonic, $B\flat$, as clear as the relationship between D and $E\flat$ harmonies in the parallel passage in the Exposition. There, D-rooted harmony was expanded by means of its $\flat VI$ chord—a harmony suggestive of V of the overall key (Ex. 2-22). Here A-major harmony is prolonged by its subdominant chord, which is not particularly suggestive of $B\flat$ major. Therefore, the prolonged uppermost pitch of mm.L75-77, $A5$, does not function clearly in $B\flat$. This explains why the reaching for $C\sharp6$ in the second half of m.L77, and its resolution as $\hat{\#2}$ of $B\flat$ to $\hat{3}$ of $B\flat$ in m.L78, sound more abrupt than parallel events in the Exposition.

Summary of the Tonal Design of the STG Recapitulation

The statements of theme e and the theme f consequent in mm.L70-77 operate in remote regions compared to those of the surrounding passages, mm.L52-69 and mm.L78ff. Harmonies in the latter two passages relate to the B $\flat$ tonic directly. Comparison of the harmonies in mm.L70-77 with those in parallel measures in the Exposition suggests that, instead of serving to prolong the main tonic, these harmonies revolve around a tritone replacement for the B $\flat$ tonic, E. The prolonged D $\flat$ - and A-rooted harmonies relate to E major, not B $\flat$ major; in the way that the C- and A $\flat$ -rooted harmonies related to the Exposition's E $\flat$ major (Fig. 4-6). The analytic advantage afforded by hearing the upper line in both versions of the STG as essentially the same suggests that in the second version the tritone-related tonal level is surrogate for the other.

Overview of Part III

The return of theme d in B $\flat$ major at m.L78 confirms B $\flat$ as the main key of this entire restatement of the STG. The comprehensive way in which thematic and tonal events of the STG have been reproduced here (unlike the greatly modified recapitulation of the STG at the end of the first movement), suggests that although it is not in the key of D, this passage is the STG counterpart of the PTG Recapitulation at m.I38. The key of B $\flat$ fits the plan of the second major division of the work reproducing certain tonal events of the first division a perfect fifth higher (see Fig. 4-7). The relationship of the keys A minor and B $\flat$ major in Part

III parallels that of D minor and E $\flat$ major in Part I. Whereas A minor is never established by its dominant, B $\flat$ major is firmly established by its dominant. Subsequently, within the STG B $\flat$ major is briefly challenged by A major.

Fig. 4-7 Partial key schemes of Part I and Part III compared.

	PART I			PART III	
	PTG	STG	...	Adagio 1	Recap. of STG
m.	1	A57		K	L52
keys:	d	E $\flat$ (rivalled by D)		a	B $\flat$ (rivalled by A)

It remains to be seen whether the large-scale chromatic surrounding of D that occurs in the first major division of the work will be paralleled in the second division by a complete surrounding of A, involving the key of G $\sharp$ /A $\flat$. Part I included middleground and foreground references to the key of C $\sharp$ /D $\flat$, but in Part III, the key of A $\flat$ has been absent at the foreground level.²⁴ Whereas the closing measures of the STG in the Exposition prepared an ambiguous D $\flat$ tonic, the closing measures of the Recapitulation of the STG do not prepare any sort of A $\flat$ tonic.

²⁴The prolonged D $\sharp$ major-minor seventh chord in mm.K64-66 of Adagio 2 did not turn to a G $\sharp$ /A $\flat$ tonic; mm.L62-65 of the STG Recapitulation omitted the reference to A $\flat$ major that would have paralleled the reference to D $\flat$ major in the same phrase in the Exposition.

CHAPTER 5

THE TONAL STRUCTURE OF PART IV

Introduction

It is appropriate to summarize the tonal idiom of Parts I through III before analyzing the conclusion of the composition. The most salient feature thus far has been a complete absence of V (major) of D on the deepest structural level. This phenomenon is closely allied with four other features:

- 1) Symmetrical key schemes, particularly chromatic surrounding of the fundamental tonic, D, and the beginning of a chromatic surrounding of A.
- 2) Dual tonics, either semitone-related, or third-related, resulting from:
 - (a) the absence of V of the primary key in conjunction with a complete I-V axis in another key; or
 - (b) substitution of one tonic for another at a structurally important juncture; or
 - (c) reharmonization of an untransposed theme in a semitone-related key; or
 - (d) constant oscillation between the same two keys within both first and second themes; or
 - (e) I-V/IV-I ambivalence.

3) Plagal relationships: at the foreground level, approaching I with a chord containing $\hat{1}$; at the middleground level, defining the local tonic with a governing I-IV axis.

Part IV resolves the tensions inherent in some of these points and brings others to their logical conclusion. It consists of an A-major "Finale" in sonata-rondo form (mm.M1-N81), a bridge passage (mm.N81-89), and a D-major Coda to the entire work (r.O). It is of foremost significance to an understanding of the tonal plot that although the change of tonal centre between r.M and r.O is from A major to D major, the apparent V-I relationship in D is not straightforward.

Rondo-Finale (mm.M1-N81)

Overview of the Tonal and Thematic Designs

The second major division of the composition, which began at r.K with the Slow Movement, is completed by mm.M1-N81, the Rondo-Finale. Three properties group this movement with the Slow Movement:

(1) Their common tonal centre, A. Since m.K74 near the end of Adagio 2, a promised return to A as tonal centre has been in abeyance, for the Slow Movement was completed by an F-minor/major restatement of its main theme. The tonal scheme of the Rondo returns to A major for each of the Refrains. At two points, mm.L88-M1 and mm.M44-48, the transition to the A-major refrain is accomplished by a chromatic harmonic progression and upper-voice ascent G-G $\sharp$ -A, the pc G $\sharp$ supported by the literal V of A (Ex. 5-2, p. 303).

(2) The similarity of their themes. The Rondo theme (theme *m* at *r.M*) is a modal and rhythmic transformation of *k*¹ (the first phrase of the Adagio 1 theme), and the theme of Episode 1 (*mm.M26 ff.*) is a new setting of *l* (the theme of Adagio 2).

(3) Their similar positions in the one-movement plan. Like the Slow Movement (which immediately follows the PTG Recapitulation), the Rondo (which immediately follows the STG Recapitulation) may be thought of as an interpolation within the Recapitulation, an interpolation that delays the Coda.

It will be recalled that the closing material of the Exposition of the STG was followed at *r.B* by the first stage of the Development section. The closing material of the Recapitulation of the STG is almost identical to that of the Exposition of the STG. From this perspective, the "Recapitulation proper" ends with the STG Recapitulation and the Rondo is an ensuing formal unit. It seems appropriate to designate this ensuing formal unit of the one-movement plan a "Second Development" section¹ because each section of the sonata-rondo either transforms, or reworks and recombines, materials from previous movements.² In Fig. 5-1, headings show the principal sections of the sonata-rondo form and letter names indicate themes developed.

¹"Second Development section" is not to be confused with the designation "Development 2" which was used to refer to the continuation of the large-scale Development section, i.e. *mm.H1-I37*, following the interpolated Second Movement.

²The only themes not alluded to in the Second Development section are ones of lesser importance: *b* and *c* (which are derived from *a*), *h* (the subsidiary theme of the Scherzo), and *i* and *j* (themes of the Trio). The Fugato subject is not literally present, but is a form of *g*, which is further developed here; *k*, the Adagio 1 subject, is represented by *m*.

As the Rondo theme is a transformation, rather than a development, of theme k^1 (hence the new designation, m), the Refrains are admittedly less “developmental” than the Episodes. Nevertheless, the close of the first Refrain incorporates a developmental passage that begins with references to the PT. Episode 1 is a reworking of the Adagio 2 theme (l). Episode 2 is a purely developmental section. Within it, mm.N1-27 rework the Scherzo theme (g) in counterpoint with STGd; mm.N28-45 reproduce the developmental section of the first Refrain (mm.M15-28) at another tonal level, and introduce a rhythmic variation of m at m.35 (m'); and mm.N46-67 are a further reworking of theme l in counterpoint with STGe and f . The final Refrain counterpoints themes m' and l (note that the combination of k^1 —from which m derives—and l was employed only briefly in Part III, mm.L1-2). Therefore, as the Second Development section, the Rondo transforms and reworks themes that had not yet been presented at the time of the principal Development section, and accomplishes further reworkings of themes from the Exposition.

Our attention will now be centred on the way the Rondo completes the tonal plot of the composition.

The First and Second Refrains and Episode 1: mm.M1-59

A characteristic feature of the composition's tonal design has been inhibited motion toward V and minimization of tonic-dominant relationships at the deepest structure level of individual movements. In contrast, the Rondo has a clear tonic-dominant axis in its main key supported by foreground authentic cadences. The

Ex. 5-1 Approach to, and first Refrain of, Rondo-Finale (mm.L87-M26).

L 87 88 89 M 1 2 3 4 5 6 7 8
 Refrain (theme m)
 A: $\text{V}^6 - 5 - \text{I} - \text{TS} (\text{V}^7/\text{V}) - \text{V} -$
 M 9 10 12 13 14 15 20 22 26
 PT PT m Episode 1
 I - $\text{V}^{\text{iii}} - \text{V} - \text{VII} - \text{iii} \text{ c.t. } 07$

first Refrain is approached by a clear V of A (Ex. 5-1). Within the first Refrain, dominant harmony is frequent, as is foreground progression from V to I of A. As shown in Ex. 5-2, Episode 1 prolongs E-rooted harmony and a long E pedal point precedes the second Refrain. The tonal motion of the second Refrain is, again, I-V. All of these harmonic progressions and prolongations are straightforward.³ Obviously, the unambiguous tonic-dominant relationship of A and E that exists in mm.M1-59 gives no opportunity for tonal duality. It also “normalizes” the A-E

³The exception is the retransition to the final Refrain (subsection 3 of Episode 2), which will be discussed below.

key-defining relationship, which in the Slow Movement was subdominant-tonic.

The first and second Refrains and Episode 1 are also unified by their uppermost line (Ex. 5-2). The approach to A5 in m.M1, G5–G#5–A5, is followed by a descent through the same two pitch classes: G# in mm.15–25—harmonized by V, VII, and iii of A—and G $\flat$ —part of the diminished-seventh chord that begins at the end of m.25—represented by G5 in m.25 and G4 in m.26. Episode 1 in E major then restores G#5 and takes it to A5 for the second Refrain. The lower register is employed again when the final G#4 of the second Refrain resolves to A4 at the beginning of Episode 2 (Ex. 5-3).

Episode 2: mm.N1-67

The task of reviewing and fulfilling the tonal structure of the entire composition falls to the main development section of the Rondo, Episode 2. Episode 2 falls into three subsections.

1. *mm.N1-38*. The dominant harmony at the end of the second Refrain progresses deceptively to $\flat$ VI of A major at the beginning of Episode 2. Subsection 1 prolongs F-rooted harmony (Ex. 5-3).

Beginning with an entry of theme g in D $\flat$ major at m.N22, the sequence of events—tonal, or tonal and thematic—that originally occurred in mm.M1-25 (the developmental passage in the Refrain) is reproduced in mm.N22-38. This is illustrated in the chart, Fig. 5-1, by the vertical alignment of tonal events in the exposition and tonal events in the development, and by a comparison of Ex. 5-3 with Ex. 5-2. This time, the sequence of events is transposed up a major third (as

if in D $\flat$ major). The end result is different, however, in that the entry of theme *m* (rhythmically varied) in F minor at m.N35 recalls the F-major tonic with which the Episode began. As shown in Ex. 5-3, the uppermost line reaches F5 in m.N35 in the course of a large voice exchange.

2. *mm.N39-45*. Subsection 2 begins, like Episode 1, with a prolonged diminished-seventh chord. It is not, however, the exact counterpart of the diminished-seventh chord expanded in mm.M26ff. (it is not the common-tone diminished-seventh chord to the F-minor tonic); henceforth, the parallelism with earlier material ends. Whereas in subsection 1, tonal events were a major third above those in the first Refrain, a C-major entry of theme *m'* at m.N42 (appropriately V of F major, not V of D $\flat$ major) puts the tonal level at $\sharp$ III of A major—i.e., a major third *below* above the level of Episode 1. As shown in Ex. 5-3a, the C-major theme moves the uppermost line from the pc G $\flat$ /F $\sharp$ to the pc G.

3. *mm.N46-67*. Subsection 3, the retransition to the final refrain, continues to develop theme *l*, now in counterpoint with STG themes *e* and *f*. It begins by prolonging dominant harmony of C major in mm.46-54 (Ex. 5-4). The entire contrapuntal texture of mm.48₁-53₁ is sequenced up a semitone in mm.56₁-62₁ (the sequence is inexact at its end) so as to prolong A $\flat$ -major harmony as if it too is of dominant function. In the course of this prolongation, the uppermost line

Ex. 5-2 Rondo-Finale: first Refrain and Episode 1 (mm.M1-48).

Refrain Episode 1 Ref.

L 88 M 1 14 15 20 22 26 29 32 33 34 36 37 39 44 45 48

A: I - (V VII) ^{o7} iii⁶ - V - (Ger.^{+b}₅) V - I

Ex. 5-3 Rondo-Finale: Episode 2 (mm.N1-67).

Subsection 1 Subsection 2 Subsection 3 Ref.

N1 15 21 22 27 28 33 35 39 40 41 42 46 54 57 62 63 65 67 68

(a)

A: V - ^bVI - (bVII⁶ - bIII - V) - i^b ^{o7} - V - V/III(VII) vii^{o7}[Y^{#7}](iv - I

(b)

D^b: i^b - (I VII) - iii^b V - v⁷ minor Neapolitan V⁶ 5 4 I

is returned to $G^\sharp/A^\flat$ at m.62. $A^\flat$ -major harmony in a position of dominant function, presumably V of $D^\flat$, appears to provide the harmonic parallel, up a major third, of V of A in m.M29 (Fig. 5-1, m.N57). Whether it truly is V of $D^\flat$ or perhaps I of $A^\flat$ is undecided for the moment. By m.N60 in particular, the $A^\flat$ -rooted harmony is an augmented triad and sounds just as much like I^+ of $A^\flat$ as V^+ of $D^\flat$. Beginning at m.61, an increase in tempo and stretto entries of motives from theme f underscore the harmonic tension as $E^\flat$ -major harmony again progresses to the augmented fifth $A^\flat-E$ in m.62 (now notated as $G^\sharp-E-A^\flat$). In the second half of m.62 the third above the bass becomes $B^\flat$, so that the harmony now ambiguously suggests both ${}^\flat VI^6$ of $A^\flat$ and V^6 of A. Within m.62, while $A^\flat/G^\sharp$ is regained as upper pitch, $G^\sharp$ remains the bass note. During mm.63-64, the bass and the effective uppermost voice remain solidly $G^\sharp$, contributing to the ambiguity of whether this pc is a chord root or an upward-leading tendency tone. Meanwhile, in mm.63-64 the addition of $F^\sharp$ and $D^\flat$ to $G^\sharp-B$ creates a collection of tendency tones leaning toward A major. In m.64 the momentary addition of E underscores leading-tone function for $G^\sharp$, and $D^\sharp$ near the end of m.64 is a projection of that leading-tone function.

Ex. 5-4 Rondo-Finale: transition to final Refrain (mm.N42-68).

N 42 46 47 48 49 50 51 52 53 54

C: I V 5 V of V of V I⁺ VII[°] of

55 56 57 58 59 60 61 62

Db: V V of V of V (ii) V⁺ - V⁶/V V-I V⁶ - I⁺ (A: V⁶) -

63 64 65 66 67

A: VII[°]7 V⁷ #7 (iv (minor Neapolitan)) -V⁶ - 2

68 -hypothetical actual m. 68
Db: I⁶ A: I⁶7 Db: V⁷/Np.

Of the tendency tones in m.64, only the implied G[#]5 of the uppermost line fulfills expectation at m.65. Theme *l*, which was neglected during the previous four measures, returns in mm.65-67 in a *fortissimo* homophonic setting that prolongs a D-minor chord. (The E^bs in the vn1 part are in keeping with the original, phrygian context of theme *l*.) As well as restoring A5 in the uppermost line, D-minor harmony would at first seem to confirm the hypothetical interpretation of the harmony containing G[#] as having dominant function in A, and to function as a plagal embellishing chord delaying the A-major tonic.

On the other hand, E^b in the vn1 part is very insistent, and simultaneously the vc part of m.67₃₋₄ descends through the whole-tone segment C-B^b-A^b-G^b. These upper-voice and bass elements combined create the dominant-seventh chord of D^b once again (*cf.* the hypothetical dominant function of A^b harmony in mm.N56-62). The A5 of the upper line of mm.N65-67 is for a moment unstable and a stable A^b5 could follow it. As shown in Ex. 5-4, theme *m'* in D^b major could conceivably follow in m.68.⁴ The other harmonic option for m.68, the presented A-major harmony (actually an A major-minor seventh chord by the second half of m.68), is tonic in relation to the subdominant sound of D-minor harmony in the previous three measures, but has an unexpectedly bright sound—due to its alternate function as V⁷ of the Neapolitan of D^b.

Therefore, as suggested by Ex. 5-3b, D^b is a shadow key to A major in

⁴Benjamin, in a conversation with the author.

Episode 2, particularly in mm.57-67. Dominant-function A^b harmony established in m.57 is expanded through m.62, goes “out of focus” in mm.63-64, and returns at the end of m.67 after the interpolation of a tritone-related chord, the minor Neapolitan of D^b in mm.65-66. Retrospectively, this suggests that the sequence of events in mm.N22-38, which parallel mm.M1-25 up a major third, have meaning in D^b major.

The D^b shadow tonic completes an overall harmonic scheme of descending major thirds in the Rondo in which each successive tonic is introduced as bVI of the previous tonic⁵ (Fig. 5-2).

Fig. 5-2 Summary of the tonal scheme of the Rondo-Finale.

<u>Refrain</u>	<u>Episode 2</u>	<u>Final Refrain</u>
A: I – V – bVI		
	F: I – V – bVI	
		D^b : I – V – bVI
		A: I

The motion from A^b -rooted harmony to the A-major refrain at m.N68 is significant not just for the tonal structure of the Rondo but also for the tonal structure of the work as a whole. In climactic effect and in harmonic relationship, it parallels the approach to the D-minor Recapitulation by $C^\sharp$ -rooted harmony, but a perfect fifth higher. The shadowy D^b – A^b progression in Episode 2, the development section of the Rondo, parallels the huge G^b – D^b progression that

⁵Benjamin, in a conversation with the author.

spans the Development section in Part II (see Fig. 5-3). The tonal scheme of the Rondo/Part IV is a microcosm, transposed up a perfect fifth, of a large-scale tonal scheme that extends from the beginning of the work to the Recapitulation of the PT.

Fig. 5-3 Comparison of two points of climax in the quartet.

Part I m.1	Part II/Dev. E1	Retransition Climax at I37	Recapitulation I38
D	G $\flat$	→ d $\flat$ /c $\sharp$	d
Part IV M1	Episode 2/Dev. N22	Retransition Climax at N67	Refrain N68
A	D $\flat$	→ A $\flat$ /G $\sharp$	A

The Final Refrain: mm.N68-80

In the final Refrain, other than presentation of the theme that has come to be associated with the key of A, and the pedal point of mm.68-71, there is little that re-establishes and confirms A as tonic. The role of A $\flat$ /G $\sharp$ as leading tone to A continues to be cast in doubt because V of A is now absent. The falling scale step G $\sharp$ 5-F $\sharp$ 5 of the theme in mm.70-71 is reharmonized in the higher octave in mm.74-75 and 76-77 with D-major harmony. This alternates with the falling step G6-F6 harmonized by B $\flat$ -major harmony (Ex. 5-5). D and B $\flat$ triads are possible in many keys (not only the key of A) as a pair of chromatically related chords. In m.78, G $\sharp$ 6-F $\sharp$ 6 becomes A $\flat$ 6-G $\flat$ 6 harmonized by an A $\flat$ minor-seventh chord changing to a tritone-related D major-minor seventh chord at the end of the

measure. This resolves plagally as a common-tone augmented-sixth chord to a first-inversion A-major triad. V of A is also absent, uncharacteristically, from the final presentation of the upper-voice ascent G6-G#6 in mm.79-80: this time the C#-minor triad does not become an E-major triad before G# rises to A (*cf.* mm.N80-81 with mm.L88-90 and M44-45). Finally, the lack of a stable harmonization of the A in m.81 creates doubt again as to which is structural and which is embellishing, the G# or the A.

Ex. 5-5 Rondo-finale: non-key-defining tertian harmonies in conclusion, mm.N74-80.

N 74 75 76 77 78 79 80

D - B $\flat$ D - B $\flat$ a $\flat$ ⁷ - D⁺b - A - C - c $\sharp$

Therefore, in the final Refrain A-rooted harmony has neither been confirmed as tonic nor clearly been given any new harmonic function.

Bridge to the Coda (mm.N81-89)

Harmonic function remains indeterminate in the bridge passage. The bridge to the Coda begins in m.N81 with an inverted pedal point on the octave A5-A6, played *tremolo* by vn1. The pedal A enters *ffp* > , accompanied by

dissonant pitches, then drops to a whisper while played *am Steg*. It becomes nearly inaudible in mm.83-84, relinquishing any pretence to tonic or dominant function that it might have had as a pedal point. Accompanying it, in the form of the PTGa² motive, are chromatic scales in parallel minor sixths played *am Steg* (mm.81-84₁₋₂) followed by parallel augmented triads played with conventional bowing.⁶ The first augmented triad is F-A-C[#] on the third beat of m.84 (Ex.5-6). As the chromatically descending augmented triads continue and the pedal

Ex. 5-6 Tonal indeterminacy of the pc A in the bridge to the Coda.

point (now played conventionally rather than *am Steg*) crescendos in m.85, the pc A takes on the possibility of chromatic tendency-tone function. Its tendency-tone function is reinforced in the accompanying parts each time the succession of chromatically descending augmented triads reaches F-A-C[#]; for example F-A-C[#] is the simultaneity at the beginning of the last beat of m.85. Of the two

⁶Measures N81-85 of the bridge are therefore reminiscent of three earlier climactic moments within the PTG: mm.79-84 of the original PTG presentation, mm.C14-29 of the first-movement PTG recapitulation, and mm.I51-55 of the large-scale Recapitulation of the PTG.

possibilities for eventual semitonal continuation of the pc A, up or down, the choice of up to B $\flat$ in m.86 finally achieves a breaking out beyond the G-G $\sharp$ -A motion repeated throughout the Rondo. The resulting B $\flat$ 6 is the highest pitch, thus far, of Part IV of the work.

Ex. 5-7 Derivation of the link to the Coda (mm.N86-O1) from an LIP.

(a)

N 86 O 1

(b)

eb: $V^7 - VI^7$
 db: $V^7 - VI^7$
 D: $V^{\sharp 7} I$

86 87 88 89 1

(c)

eb: $V^7 - VI^7$ iv⁶
 db: $V^9 - VI^3$ v⁶
 D: $V^{\sharp 3} I$

(inverted)

The harmonization of the octave B $\flat$ 5–B $\flat$ 6 is a comparatively stable, root position B $\flat$ major-minor seventh chord, played *fff* and *tremolo* for the entire measure. Here again, at a point of arrival, is V⁷ of E $\flat$, the dominant harmony that functioned prominently in the original PTG while V of D was absent.

The functionality of the B $\flat$ ⁷ chord as V of E $\flat$ is neither contradicted or affirmed, for it is resolved deceptively as if to VI of E $\flat$ minor with the uppermost B $\flat$ sustained above bass C $\flat$ in the manner of a suspension. This sets off a very short LIP. Example 5-7a shows three statements of a basic intervallic pattern from which mm.N86-O1 derive. The suspended note resolves downward creating a minor six-five-three chord. A major-minor seventh chord on the same root as the minor six-five begins the next statement of the pattern. Therefore, each segment of the pattern is a whole tone below the previous one and the upper line is a whole-tone scale. As with all LIPs, an alteration of the underlying pattern will eventually create an arrival point; in the interim between beginning and end, all chords are non-functional.

Example 5-7b shows the alteration of the underlying pattern that creates the actual point of arrival at m.O1. At the end of the second segment, a new bass note and its doubling replace the F $\sharp$ six-five chord dictated by the pattern with a D-major five-three chord. The previous chord, VI⁷ of D $\flat$ minor, has therefore been reinterpreted as V $\sharp$ ⁷ of the D-major triad. Within the LIP, there is nothing inevitable about the alteration that closes the pattern on a D-major triad; the pattern could just as easily have closed in another way or on another triad with

root in the same whole-tone scale as is D. Interestingly, all three of the dominants belonging to the main keys of Parts I-II of the quartet are present in the passage in one or another form.

In the actual passage, the C^b-major-seventh chord is presented in arpeggiated form in m.87, and an A^b-minor triad is arpeggiated in mm.88-89.⁷ Therefore, the LIP spans three registers. Example 5-7c shows the further alterations of the underlying pattern that occur in the actual passage. In the second segment of the pattern, the bass line is altered to create a whole-tone descent, but the 7-6 motion can still be heard between an inner part and the uppermost part. With the pc E in the bass of the inverted V^{#7} of D, this chord still suggests, ambiguously, an inverted VI⁷ of D^b/C[#] minor—or the first-inversion tonic triad of D^b/C[#] minor with appoggiatura B^{bb}/A in the tenor.

Summary of the Bridge to the Coda

The close of the LIP in mm.N86-89 on D is in keeping with a distant memory of D as tonic at the beginning and ending of the first major division of the composition, and it is in keeping with a less distant memory that A-major harmony was structurally positioned at the beginning of the Rondo. Nevertheless, the close on D is not inevitable. Its approach is not from the A-major tonic of the Rondo, which was dissolved without being turned into V of D; the structurally positioned dominant-function chord preceding the D-major Coda is the V⁷ of E^b

⁷It is an A^b-minor seventh chord if the G^b6 and ensuing pitches of m.N87 are considered to be part of its arpeggiation.

beginning the LIP at m.N86. The surface-level chord above bass $E\flat$ directly preceding the beginning of the Coda is an unusual form of V of D concealed within a linear pattern such as might carry any passing or embellishing chord. Moreover, this surface-level chord suggests tonic function in $D\flat$ minor.

We have noted that the uppermost note of V^7 of $E\flat$ in m.N86, $B\flat$, is the goal of the chromatically ascending uppermost line repeatedly traced by the Rondo. $B\flat$ is also the starting point of the whole-tone descent to the third of the D-major triad: $B\flat-A\flat-G\flat/F\sharp$. That this whole-tone descent, a subset of both the $E\flat$ -minor and the $D\flat$ -major or -minor scales, serves as the line approaching and gaining the D-major triad of the Coda reaffirms that $E\flat$ and $D\flat$ tonics are inextricably bound up with the tonicity of D in the quartet.⁸

Coda (r.O)

As if to bring the composition full circle, the bridge to the Coda and the Coda itself make use of themes from the first half of the composition exclusively. The Coda uses g, PTGa¹, and the Fugato subject. In one particular sense, the Coda completes the composition tonally: it is an extended prolongation of the D-major triad, the triad created by combining the main tonics of the four

⁸Therefore, although it is to be agreed with Frisch that the Coda's effect "is different from a conclusion that grows out of extensive dominant preparation," it cannot be agreed that choosing A major for the Rondo and then at the end eschewing a conventional V-I close stems from a mere reluctance on the composer's part to do the conventional thing (Frisch 1994, 211). Rather, the material that prevents the harmonic connection between the A-major Rondo theme and the D-major Coda is a deliberate means of summing up the rivalry between D, $E\flat$, and $D\flat$ tonics that has been given play throughout the work.

movements.

The harmonic background of the entire composition—D, surrounded by, and rivalled by, E $\flat$ and C $\sharp$ tonics—is corroborated at the foreground level of the Coda. Surface-level dominant-seventh harmonies occur and resolve regularly at three points. At mm.4₄-5, D $\sharp$ 4 (vn1) is preceded by E $\flat$ 4 and C $\sharp$ 4 (vn2), and A $\sharp$ 2 is preceded by B $\flat$ 2 (vc), creating a complete surrounding of D and a partial surrounding of A. In mm.18₄-19, the voice leading simultaneously includes the semitone motions E $\flat$ -D in the bass and C $\sharp$ -D in the soprano. Only in mm.38₃₋₄ - 39 is the authentic cadence entirely diatonic.

One other subtle allusion to D's semitone rivals gives the Coda an uneasy sense of peace. The former semitonal neighbour tones to $\hat{5}$ of D, B $\flat$ and G $\sharp$, are employed again in the whole-tone descent that originated in mm.N86-O1. B $\flat$ -A $\flat$ -F $\sharp$ /G $\flat$ is echoed two times above a D-A double pedal point—in mm.O24-26 and finally m.O46. Shortly thereafter, the entire work concludes on three statements of the D-major triad, each statement emphasizing upper-voice F $\sharp$ —a pc common to all three rival keys—in each of the three registers in which the whole-tone descent occurred in mm.N86-O1.

Overview of Part IV

Part IV resolves some, but not all, of the tonal tensions of the work. Unambiguous A-major harmony (the missing V of D in Parts I-II and the unconventional axis pole to E in Part III) is made prominent as the primary key of

the Rondo-Finale. Unlike the previous three movements, in which the dominant-tonic relationship in the main primary key was missing at either the middleground level (the Scherzo) or at both middleground and foreground levels (the First Movement and the Slow Movement), in the Rondo the V-I relationship in A major is remarkably conspicuous from the beginning through the second Refrain. In the Coda, A-major harmony is used at the foreground level as V of D.

Other aspects of the tonal plot of the quartet are brought to their logical conclusion in Part IV. According to studies made by Frisch of the sketch material for the quartet, Schoenberg originally planned that the third movement would be in B $\flat$ minor and would serve both as the Slow Movement and as the Recapitulation of the STG; he also considered casting the Finale in D major (Frisch 1993, 208-10). The key scheme Schoenberg eventually decided upon, A minor for the Slow Movement and A major for the Finale, makes possible a large-scale chromatic surrounding of A in the second major division that is completed in the Rondo by the prominent A $\flat$ harmony occurring at the end of Episode 2. The surrounding of $\hat{5}$ balances the surrounding of $\hat{1}$ in the first major division (Fig. 5-4).

Fig. 5-4 Two chromatic surroundings at the background level of the quartet.

Part I			Part II		Part III		Part IV	
PTG	STG	Dev.	PTG	Recap.	Slow Movement	STG	Recap.	Refrain Ep. 2 Refrain
d	E $\flat$	c $\sharp$	d		a	B $\flat$	A	A $\flat$ A
└──────────┘					└──────────┘		└──┘ └──┘	

It is indicative of the lesser status of the chromatic surrounding of A that A $\flat$ harmony is not made nearly as prominent in the horizontal dimension of the work as was C $\sharp$ harmony.

There is a further reason why A $\flat$ harmony is not as prominent in Parts III-IV as C $\sharp$ harmony was in Parts I-II: in the first major division, the keys E $\flat$ and C $\sharp$ relate to D in the vertical as well as the horizontal dimension. In the second major division, tonal duality is largely between major-third-related keys rather than semitone-related keys. The tonic A is shadowed by F in Adagio 1 and by D $\flat$ at the end of the Rondo.

Finally, the D-major Coda brings the work to a logical conclusion by completing the large-scale arpeggiation of the D-major triad created by main keys of movements (Fig. 5-5).

Fig. 5-5 Large-scale arpeggiation of D-major triad completed.

First Movement	Scherzo	Slow Movement/Rondo-Finale	Coda
D	G $\flat$ /F $\sharp$	A	D

Nevertheless, just as D-rooted harmony does not progress to the G $\flat$ tonic at the opening of the Scherzo on the foreground or even middleground level, and the G $\flat$ tonic of the Scherzo likewise does not progress to the A-minor tonic of the Slow Movement, the close of the Rondo and bridge to the Coda present no direct relationship, in a functional harmonic sense, between the A-major tonic of the Rondo and the final, D-major tonic. Instead, in the approach to the final Refrain

the A-major tonic is destabilized by shadow key D $\flat$ major, and in the bridge V 7 of E $\flat$ major is used as structural chord of arrival overshadowing a linearly generated, chromaticized V 7 (V $^{\sharp 7}$) of D just before the D-major Coda. The manner in which the final tonic chord is reached is in keeping with the nature of its tonicity from the beginning of the work: it is not meant to sound as sole tonic, but shares its tonicity with the keys of D $\flat$ and E $\flat$. This final remnant of tonal tension is inherent in the Coda's echoing of the descending whole-tone fragment B $\flat$ -G $\sharp$ -F $\sharp$ and in the conclusion of the uppermost voice on F $\sharp$ /G $\flat$, a pc that is the common to D major and E $\flat$ minor as mediant, as well as to D $\flat$ major-minor as subdominant.

CHAPTER SIX

CONCLUSION

The preceding four chapters have shown that the quartet passes through a multiplicity of keys on each structural level. This chapter will summarize the evidence in favour of the three hypotheses about Schoenberg's Quartet, op. 7 that were made in the Introduction and Chapter 1: that there is a similarity between its style of foreground harmony and its key scheme; that pitch organization in the composition cannot be understood as purely monotonal; that the tonal structure is essential to the listener's musical reality of the composition.

Foreground Harmony and the Key Scheme

Each principle that was used in Chapter 1 to describe an aspect of the foreground harmonic idiom of the quartet has been shown to have a parallel in its key scheme.

PRINCIPLE 1 (Authentic progression). Each Part of the composition contains at least one pair of consecutive keys whose tonics are related by authentic progression at a middleground level. In Part I, the statement of the PT in E $\flat$ minor (m.30) is preceded by PTG $\flat$ in B $\flat$ minor (m.14). The B $\flat$ -minor triad

becomes a $B\flat^7$ chord at m.29.

The tonal structure of the entire Development section is organized largely as a pattern of keys in descending fifths, $C\sharp-G\flat/F\sharp-B-E$, before E returns to $C\sharp$ by means of a minor-third cycle (Fig. 3-5).

In Part III, the passage that serves as the restatement of the Adagio 1 theme and the bridge to the Recapitulation of the STG is an elaborate way of converting the F-major tonic of the Adagio 1 restatement to V of $B\flat$, the key of the STG in the Recapitulation (Ex. 4-29).

In the Rondo-Finale, the key of Episode 1, E major, is in authentic relationship to the A-major Refrain, which follows. This is in contrast to passages in E major or minor in the Development section, which were always followed by a passage leading to $C\sharp$ minor.

The existence of large-scale dominant-tonic relationships at the middleground level makes the absence of the V-I relationship in D at all levels conspicuous.

PRINCIPLE 2 (Plagal Progression). The relationship of the keys of Adagio 1 and Adagio 2 is plagal: in the bridge passage between the two sections, E-major harmony is established as a new tonic in the absence of its dominant, and the A-minor harmony at the end of Adagio 1 is thereby reinterpreted as IV of the E-major tonic of Adagio 2. Within the first phrase of Adagio 2, A-major harmony functions as the polar opposite to the E-major tonic in a plagal system of tonal relations.

Use of the plagal axis at a deep level in Adagio 2 accomplishes two purposes. First, it counterpoises the opposite tonal system to the authentic system (duality of tonal system). Second, whereas A-major harmony has been absent as the axis pole to the fundamental tonic of the composition, use of the plagal axis in Adagio 2 implements A as an axis pole, albeit to a secondary tonic.

A further stage in the search for a tonal axis consisting of pcs D and A is the plagal progression from D-minor to A-major harmony for the final Rondo Refrain, mm.N65-68.

PRINCIPLE 3 (The diminished-seventh chord as mixed-function chord) and PRINCIPLE 4 (Multiple roots for the diminished-seventh chord). In the Fugatos and in the last subsection of Development 2, the potential multiple roots below a diminished-seventh chord create dominant minor-ninth chords of a minor-third cycle of keys. The minor-third cycle of keys of subject entries in the first exposition of Fugato 1 foreshadows the keys of the most prominent of subsequent themes of the composition: E $\flat$ major for STGd, C major for STGe, G $\flat$ major for the Scherzo, and A minor/A major for the theme common to Adagio 1 and the Rondo. In phrase 2 of Adagio 1 (theme k²), multiple "roots above" the vii^{o7} chord of A create a cycle of chords of subdominant function, including subdominants of the two secondary keys briefly heard at the midpoint of Adagio 1, C minor and F $\sharp$ minor.

PRINCIPLE 5 (Chromatic "projections"). Progression of the C $\sharp$ -minor harmony that is prolonged by the Development section to the D-minor tonic of the

PTG Recapitulation is a large-scale manifestation of paradigmatic use of $\hat{\#4}-\hat{5}$ as a projection of $\hat{7}-\hat{1}$ in the foreground authentic progression VII-I (or vii-i). This relationship repeats itself a perfect fifth higher in the structural harmonic progression from the end of the second Development to the beginning of the final Rondo Refrain: $A\flat^{(7)}$ harmony, prolonged in mm.N57-64 and suggested at the end of m.N67, progresses to A-major harmony (Ex. 5-3).

PRINCIPLE 6 ("Double-neighbour chords"). Large-scale counterparts to double-neighbour chords are the chromatic surroundings in the key scheme: of the key of D in Parts I-II, and less obviously, of the key of A in Parts III-IV (Fig. 5-4). Lower-level key schemes organized as chromatic surroundings are the surrounding of D within the exposition of the PTG and the surrounding of F by E major and $G\flat$ major in the bridge to the STG Recapitulation (Ex. 4-29).

PRINCIPLE 7 (Mixture of diatonic collections). The large-scale counterpart is the subject of the next section.

The Vertical Dimension: Evidence Against a Monotonal Hearing of Opus 7

At the foreground level, the entire composition is characterized by a multiplicity of shifting tonal centres. There is a qualitative difference between two types of tonal instability in the work: shifts of tonal centre that create and maintain tonal hierarchy, and shifts that do not.

Development 1, Development 2, Adagio 2, the bridge from the Slow Movement to the STG Recapitulation, and the Rondo as far as m.N57 are

passages whose harmonic organization maintains tonal hierarchy; therefore they are monotonal. Of these, in the passages that are tonally closed (Development 1, Adagio 2, and the Rondo), the tonic is established by its dominant (or by a substitute with clear dominant function), and it recurs at points that are thematically demarcated from those carrying contrasting tonalities. In the passages mentioned that serve to progress from one tonality to another (Development 2 and the bridge to the STG Recapitulation), successively different tonicizations succeed each other in a progressive series. Their successive subsections are demarcated by distinction of tonal level as well as change of motivic emphasis, and within each subsection one triad is distinguished as hierarchically superior. Examples 2-24 through 2-27 show that in Development 1, the tentative C $\sharp$ -minor tonic of m.B1 is established (or re-established) by its V in mm.B45-46, by its TS(V⁷) in mm.B75-76, and by its vii^{o7} in mm.B98-C1. Between these points, intervening tonics, each established by its dominant, create substantial departures from the C $\sharp$ harmony, during which time it is they that expand the C $\sharp$ harmony and not the C $\sharp$ harmony that expands any one of them (Ex. 2-28). Development 2 has an even more conventional method of tonal organization: quickly changing tonics are arranged hierarchically by a broad sequential plan (Exs. 3-13 to 3-18).

In comparison to the above, certain other passages—particularly the PTG, the exposition of Fugato 1, STGd, the Scherzo, and Adagio 1—display a qualitative difference in the way in which tonality fluctuates that is not conducive

to regarding every new tonic as hierarchically differentiated from the initial one.

In two of these passages, the PTG and STGd, the initial tonic is devoid of a I-V axis and a subsequent tonic, also associated with the primary thematic material, *is* projected by a I-V axis. Tonal duality is created by a conflict between two ways in which a tonic is normally established.¹ In each of these passages, presentation at the outset of one tonic as the *source* from which the passage will grow is countered by subsequent presentation of a tritone (either within dominant-function harmony or within a progression from pre-dominant to dominant harmony) which predicts another tonic as the *goal* to which the music is heading. The contradiction between source and goal in the PTG is illustrated in Ex. 2-9 and in STGd in Ex. 2-18.

In the Fugato 1 exposition (mm.A1-13), entrances of S and CS occur not in traditional alternating tonic and dominant keys and not merely in succession. Instead, they occur in a minor-third cycle of keys (all sharing the same basic vii^o7 chord) and in stretto, making them devoid of substantial tonal distinction, and creating a tonal complex of four keys.

In the Scherzo, tonal duality occurs at the level of the secondary tonic during the tonally contrasting section and the retransition. One secondary tonic (V) is predicted as goal at the end of the retransition by its dominant-seventh, and another secondary tonic (#V) supplants it, even though it is incapable of making

¹Schachter defines two facets of the nature of tonicity in these terms: "the tonic as matrix" and "the tonic as centre" (Schachter, 290-92).

smooth retransition to the restatement (Ex. 3-10).

In Adagio 1, the keys A minor and F major are associated with the same theme. Given that the opening statement of theme k^1 is in A minor (A minor as source), the A-minor statement of theme k^1 immediately before the bridge to Adagio 2 is plausibly considered to be a return to the key of A minor that provides closure. It is, however, preceded by a statement of k^1 that re-establishes F major with the strongest dominant harmony to occur in Adagio 1 (Ex. 4-8). Therefore, at least one analyst perceives the last A-minor triad as subordinate to the F-major tonic (Frisch, 238-40). Tonal duality is inherent in the oscillations between the two tonal centres and in the contradiction between source and goal.

Passages such as the PTG, the exposition of Fugato 1, STGd, the Scherzo, and Adagio 1 all carry prime thematic materials. They might each be expected to project a single, primary tonal centre by means of functional relationships at the middleground level that are at least as clear as those in developmental passages. Instead they project tonal duality, and in doing so make duality a tonal issue for the work as a whole.

Tonal duality accounts for certain reversals of key relationship among the passages mentioned in the above paragraph. In the first movement, given that V of E_b supplants V of D in the PTG, a useful way to think of the infiltration of E_b major by D major in STGd is as reinforcement of the notion of tonal duality. In the light of $C^\sharp$ minor replacing D minor at r.C, continuation of D: $C^\sharp$ rivalry is a useful way to perceive the relationship of the missing D_b -major and existing D-

major dividing harmony in the Scherzo.

The notion of tonal duality accounts for the sudden shift from V of F to V of G $\flat$ just before r.E: otherwise, the long preparation for V of F becomes illogical (Ex. 2-33).

Tonal duality of a slightly different nature (coexisting tonal fields) accounts for the E major–A minor ambiguity in the bridge to Adagio 2 (Ex. 4-8). It does *not* account for the ambiguous relationship of E-major and A-major triads in the opening phrase of Adagio 2: the E pedal point makes it impossible to imagine the phrase as being in A major. The duality within Adagio 2 is rather the coexistence of two tonal systems, plagal and authentic systems, rather than two tonics.

The long avoidance of a clear V of D in Parts I-III, and the interrupted relationship between the A-major tonic of the Finale and the D-major tonic of the Coda, are best perceived as ways of creating and sustaining the tonal dualities D:E $\flat$ and D:C $\sharp$. The keys E $\flat$ and C $\sharp$ in Parts I-II were established by their own dominants; near the end of the work, these dominants are juxtaposed with V of D in the bridge passage between the Rondo and the Coda (V of E $\flat$ is the most prominent of the three in this passage). The harmonic syntax of mm.N86-89 makes most sense judged as a manifestation of E $\flat$ and D $\flat$ as inexorable shadow keys to D (Ex. 5-7).

In the chapter on “Closes and Cadences” in the *Harmonielehre*, Schoenberg examines the convention of closing a piece on the same tone with which it began. He compares the possibilities for treating the opening tonic to

two different political rulers. One is strong and absolute; it is “morally right” to obey him in all situations. This is the tonic that sounds predestined when it returns in the final cadence. The other possibility is of a ruler who is weak while his subjects are strong:

Just as it is hardly inevitable that a conqueror will endure as dictator, so it is no more inevitable that a tonality must take its direction from the fundamental tone, even if it is derived from that tone. Quite the contrary. The struggle between two such fundamentals for sovereignty has something indeed very attractive about it, as numerous examples of modern harmony show. And even if here the struggle does end with the victory of the one fundamental, *that victory is still not inevitable* [emphasis mine] (Schoenberg 1978, 128).

Schoenberg goes on to say that the reason this situation is so attractive is that it is the question itself, not the “alleged solution,” that is of the most interest in the composition. This is true of his First Quartet. In the body of the work, the main tonal issue is duality: in Parts I-II D coexists with two other contenders for the role of primary tonic, and in Parts III-IV, A coexists with two contenders for the role of secondary tonic; achieving a monotonal I-V axis in D at the background would be a simplistic conclusion.

Therefore, for the chord at m.O1 and for the Coda—an extension of this chord—although one triad must be selected, the D-major triad is made to sound as only one possibility, in no way predetermined. At the foreground level of mm.O24-26 and O46, the descending whole-tone segment common to E^b minor and the key of D^b, B^b-A^b-F[#], is a deceptively tranquil reminder of a conflict that endures under the guise of a truce.

**Evidence that the Tonal Structure
is Part of the Musical Reality of the Composition**

The sense of quiet unease in the foreground chromaticism at the end of the work is not a traditional "happy ending," but it is both satisfying to the listener and consistent with the larger structure of the work. It appears that the correlation between foreground harmony and deep levels of tonal structure (operating in both vertical and horizontal dimensions) makes the deep levels of tonal structure audible in the musical subconscious.

When theme and motive are the only musical parameters contemplated in this work, then Parts III and IV do not seem well integrated with Parts I and II: the second division contains new themes and, with the exception of the STG Recapitulation, its references to first- and second-movement themes are little more than reminiscences. The P4+M3 theme is abandoned altogether in the second division. It is the continuation of the tonal plan begun in Parts I-II that integrates the two halves; without this, the structure of the composition would fall apart.

Understanding the tonal plan makes it possible to comprehend the great length of the quartet. Themes and keys return many times over the fifty-minute work; they do so as a way of playing out an expansive and intricate tonal structure. The thematic profuseness of the bridge between the Slow Movement and the STG Recapitulation is an example of cooperation between thematic development and an intricate tonal scheme. One does not exist without the other.

Individual themes and harmonic idiom in the quartet are inextricably

intertwined because theme and melody are synonymous here, and melody in this style still implies its harmony in ways discerned by the mind steeped in the tonal idiom. For instance, the unharmonized melody at the beginning of the Slow Movement predicts the move to C minor halfway through Adagio 1 (*cf.* Ex. 4-2b and Ex. 4-6a). Again, the thematic design does not exist independently of the tonal structure. It is the careful attention to playing out tonal relationships on both the local level and on deep structural levels that ensures tonal design is a facet of the reality of the listening experience and not an object of purely intellectual intuition.

* * *

A composition that on first listening seems to employ a bewildering multiplicity of tonal relationships has upon closer and repeated listening proven to be tonally unified—paradoxically, by systematic use of tonal duality. Moreover, upon detailed analysis the composition has satisfied a desire that is variously thematicized throughout Schoenberg's *oeuvre*, the desire to perceive cause and effect—in this case between theme and key, between incidental harmony and key, and between key and key. The uneasy reconciliation of D with the remnants of its rivals E $\flat$ and C $\sharp$ at the close of the work is the end result of the causal chain. Inasmuch as there exists a symbolic representation of the human experience of causality in the composition's tonal design, it is all the more believable because the final tonal struggle cannot be absolutely won.

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APPENDIX A

OUTLINE OF THE THEMATIC STRUCTURE OF THE QUARTET, OP. 7*

MOVEMENT I: SONATA-ALLEGRO

EXPOSITION

Exposition

Principal Thematic Group

a ¹ (PT); a ²	m.1; 8 ₄
b; c (both derived from a)	m.14; 24
a; a/b; a	m.30; 54; 65

Transition: Fugato 1 S

m.A1

Subordinate Thematic Group

d (derived from S, 2d limb)	m.A57
e (cf. theme d consequent phrase)	m.A71
f (d transformed)	m.A82
d'	m.A92

Development "Development 1"

m.B1

(Schoenberg, m.B14; Friedheim, m.B33)

Recapitulation

PTG a	m.C1
Transition: Fugato 2 S	m.C35
STG f (transformed)	m.C49
STG e	m.C60
Codetta d (cons. & counterpt.); f	m.D1
Bridge to Movement II b; c; S	m.D15

MOVEMENT II: SCHERZO AND TRIO

DEVELOPMENT

INTERPOLATION

Scherzo

g (reformulation of S)	m.E1
h (derived from g)	m.E50
g'	m.E106

Trio

Bridge	m.F1
i (derived from g)	m.F44
j	m.F80
i'	m.F120
Bridge	m.G1

Scherzo (transformed): Fugato 3 g (S) m.G34Development resumed "Development 2"

m.H1

R E C A P I T U L A T I O N

I N T E R P O L A T I O N

Principal Thematic Group

a	m.I38
b	m.I56

MOVEMENT III: ADAGIO

<i>Adagio 1</i>	k^1 ; k^2 ; (d, e)	m.K1
<i>Adagio 2</i>	l	m.K52
<i>Adagio 1</i>	k^1 , l , d, e	m.L1
<i>Codetta</i>	l	m.L18
<i>Bridge to STG:</i>		
	k^2	m.L24
	derived from a^1	m.L38

Subordinate Thematic Group

d	m.L52
f	m.L66
e	m.L70
f	m.L76
d'	m.L78

D E V E L O P M E N T

MOVEMENT IV: RONDO-FINALE

Refrain 1	m (reformulation of k)	m.M1
	d, a	
Episode 1	l	m.M26
Refrain 2	(abbrev.) m	m.M48
Episode 2	g, d, a, m' , l , e, f	m.N1
Refrain 3	(abbrev.) m' , l	m.N68

Bridge to Coda a^2 m.N81

CODA g, a^1 , S m.O1

C O D A

*Based on analyses by Schoenberg (Rauchhaupt 1971, 11-13, 36-42), Friedheim (1963, 299-300), Neff (1984, 33), Frisch (1988, 292), and Niederberger (1991).

APPENDIX B

LIST OF PITCH AND RHYTHMIC CORRECTIONS TO THE ORIGINAL EDITION

Measure(s)	Part	Division	Original Edition	Complete Works Edition
79 ₄ – 81	va		tenor C clef	alto C clef
A45	vc	6th 	C2	C#2
E15-25 and E102-04	all parts			
E114	vc	1st 	E $\flat$ 3	D $\flat$ 3
I32	vn1	beat 2, 2d 	G5	G#5
I44	vn1	8th and 12th 	D#5	D5
I54	va	beat 4, 3d 	E $\natural$ 4	E $\flat$ 4
K10	vc	1st 		
L67	va	5th 	E $\flat$ 3	E3
N58-60	vc		alto C clef	tenor C clef
N60	va	1st 		
N60	va	10th 	C $\flat$ 4	C $\natural$ 4