

Chapter 6

II. Eleven Pitch-Class Systems in the Music of Early Nineteenth-Century Romantic Composers

Franz Schubert: Quintet in C major, Op. 163: Mode Mixture and System Shifts as Pre-compositional Determinants

Among Romantic-era composers, Schubert is perhaps most prominent in his unique approach to large-scale mode mixture, specifically, in major-mode compositions that simultaneously unfold major and minor modes of the same tonic over the course of a single movement; often this procedure informs an entire multimovement work. Schubert is not alone in this regard, parallel major/minor juxtapositions are frequent in eighteenth-century and early nineteenth-century works: as we have seen, Vivaldi, D. Scarlatti, G. B. Sammartini, Wagenseil, Gluck and, most importantly, Beethoven, are just a few of the composers whose compositions feature such harmonic parallels. Where Schubert differs from his predecessors is in the extent to which major/minor juxtapositions determine the harmonic plan of the work on the deepest structural level.

The influences upon Schubert for these experiments in tonality come from many sources. Besides the overtures to the operas of Cherubini (see the discussion of Cherubini's overture to *Lodoïska* above), Schubert might also have been influenced by Gasparo Spontini since Spontini's highly respected *La Vestale* (Paris, 1807), an opera known and respected by both Beethoven and Schubert, contains an overture in sonata-overture form (a sonata-form movement with a very short development functioning solely as a retransition). The overture, in D minor/D major, is

entirely constructed of major/minor tonic and dominant parallels in both harmonic areas, each area supported by a change of key signature. It is most striking that each signature change is prepared by the introduction of the missing pitch of the complementary system in the measure preceding the change.

Schubert's most notable compositions that employ major/minor parallels and juxtapositions include the late G major string quartet, the C major cello quintet, the Song "Auf dem Wasser zu singen" and the Op. 90 no. 4 A β Impromptu (these last two open in A β minor with four flats in the key signature). Since the incorporation of the flat third degree within the major mode implies, if not imposes, a structural modulation between complementary eleven-pitch class systems, these works provide ideal opportunities to employ system analysis to uncover their symmetrical properties.

The Cello Quintet in C Major, Op. 163, is outstanding among Schubert's works for its fluid unfolding of the tonic minor triad within the major mode, most notably in the exposition of the first movement (Exs. 6.7a, 6.7b). However, unlike the first movement of the composer's G major string quartet, Op. 161, with its juxtapositions of tonic and dominant major/minor parallels, the first movement of the C major quintet does not actually move into tonic minor harmony at any point. Rather, the arpeggiation of the minor triad over the course of the exposition, first heard melodically in violin I at the outset of the movement, is supported by diminished harmony, on a middleground level, and by a motion into β III, E β , on a deeper structural level. Thus Schubert avoids the shock, even the violence, of unprepared major/minor juxtapositions so characteristic of the G major quartet. Yet he still introduces E β , as well as its enharmonic equivalent, D#, as most prominent pitches, controlling large areas of system modulations.

To begin, the opening phrase of the first movement immediately presents E β within C major harmony. However, every time E β appears, it does so against an F# as part of an F# diminished seventh chord, thus preventing the E β from becoming an active pitch that would shift the C system down to 3 β s (see mm. 4 and 9, for instance).

EXAMPLE 6.7a: Schubert, Quintet in C, 1st Movement, Exposition, mm. 1-33

1st Harmonic Area

Violin I
Violin II
Viola
Violoncello I
Violoncello II

10 (a)

Violin I
Violin II
Viola
Violoncello I
Violoncello II

20 (b) [transitional]

Violin I
Violin II
Viola
Violoncello I
Violoncello II

Counterstatement and Bridge

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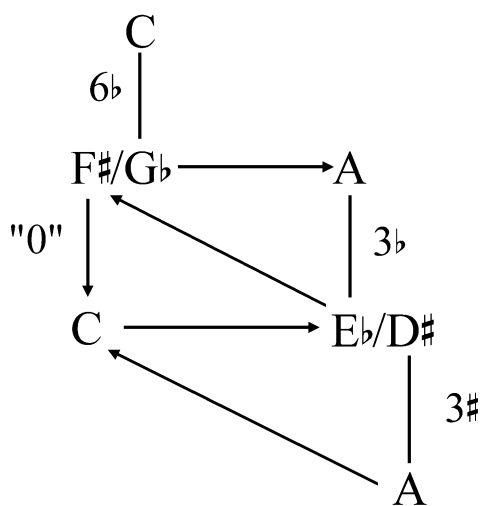
Violin I
Violin II
Viola
Violoncello I
Violoncello II

Counterstatement and Bridge

As one traces the progress of this one pitch, a narrative emerges involving E β in a pitch-class struggle in which it constantly tries to extricate itself from F \sharp , the missing pitch from its opposite system complement. Along with the main plot of E β and F \sharp as protagonists in this musical drama, a subsidiary plot simultaneously unfolds involving E β 's enharmonic equivalent, D \sharp . By introducing this pitch, Schubert incorporates another eleven-pitch class tritone system within the

original diminished thirds box (Fig. 6.2). The missing pitch of the 3# system is C, the pitch that will return the system to the tonic eleven pitch-class system. Thus the potential system-modulatory effects of E β are negated by F#; the same disruptive effects of D#, in turn, will be neutralized by C $_$.

FIGURE 6.2: Expanded "0" Tonic System Matrix



The opening phrase continues with a parallel (beginning in m. 11) phrase a whole step higher in D minor. By doing this, Schubert can now introduce D# as a passing tone to E as part of C major harmony (m. 19). The D# is also called into play as part of the thirty-second-note turn in the 1st violin (m. 23) implying, perhaps, motion to E minor (iii), a motion that is never realized; rather, its dominant, B (m. 24), acts as part of a large-scale arpeggiation in the bass of G, initiated in m. 11 with the opening phrase repeated in D minor. However, no matter what its harmonic significance, D# is never given the chance to effect a modulation up to the 3# system; it is immediately negated by C $_$ (note cello II in m. 23) just as E β is negated by F#. Typical of Schubert, the entire first harmonic area never leaves tonic harmony, but is driven by a gradual

phrase-rhythmic acceleration that becomes increasingly intense toward the end of the counterstatement, where the D minor phrase repeats (mm. 40 ff.).

Supporting the rhythmic acceleration is the ever-increasing occurrence of implied system modulations in which the two complementary sets of tritone systems that make up the extended tonic system matrix — namely, 3βs against “0” and 3#s against “0” — seek to gain control of their respective eleven pitch-class harmonic areas. At first, the conflicting system-shift motivators, Eβ against F#, and D# against C_, appear sporadically and simultaneously, cancelling each other out (see Diagram 6.4). However, this situation changes drastically as the first harmonic area approaches the intermediate harmonic area, sometimes referred to as “the Second Key” of a “Three-Key Exposition” by some analysts.¹

EXAMPLE 6.7b: Schubert, Quintet in C, 1st Movement, Bridge and beginning of the

¹See, for instance, James Webster, “Schubert and Brahms’s First Maturity I & II,” *19th Century Music*, vol.2 no. 1, 1978:18-35; vol. 3, no. 1, 1979:52-71. Schubert is considered the first composer to specialize in three-key expositions. Brahms follows Schubert in this regard.

Intermediate Harmonic Area, mm. 40-60

The musical score consists of five staves: Violin I, Violin II, Viola, Violoncello I, and Violoncello II. It is divided into three systems of measures. The first system (measures 40-47) is marked '(d)' and features a 'Middle Harmonic Area' with a pulsating dominant pedal. The second system (measures 48-53) is marked '(E♭/F♯)' and shows rapid succession of pitch classes. The third system (measures 54-60) is marked '(E♭/F♯)' and continues the harmonic progression. Dynamics range from *f* to *pp*, and articulation includes accents and slurs. The score includes various musical notations such as triplets, slurs, and dynamic markings.

From mm. 49 ff., over a pulsating dominant pedal, E β /F# and D#/C_ appear in rapid succession, each pair of system-motivator pitch classes trying to establish their own harmonic territory, but the "correcting" missing pitch of each respective system thwarts any actual system modulation. The process of systematically negating each other's system gambit repeats twice (mm. 49-52 are identical to mm. 53-56) and an octave lower, maintaining the "0" as the governing system throughout the period. The whole passage climaxes on diminished seventh harmony in which the two rival pitch-classes, E β and F#, are brought together once again in the same F#

diminished seventh chord that began the movement (mm. 56-7).

Only now, with the dominant chord finally resolved, does Schubert make the decisive move to establish E β , not as a harmonic area (there is no dominant preparation for it, nor is there a full harmonic progression in E β), but as a prolonged 3 β eleven pitch-class area in its own right, without any F# to vitiate the motion. Since E β is not a self-contained harmonic area, but, on a deeper level, a contrapuntal passing motion to the dominant in m. 100 (not as yet the dominant goal of the exposition, however), one wonders why Schubert would dramatize the event by extending the passage with so appealing a melody in the form of a symmetrical double period. As an aside, a similar, but somewhat different, situation is found in the first movement of Brahms's Symphony no. 2 in D, with the introduction of a lengthy and quite beautiful theme in F# minor. Like the Schubert theme, it contrapuntally forestalls the eventual move to the dominant by acting as an upper neighbor to the Neapolitan of V/V.²

In earlier Classical sonata-form movements, notably those by G. M. Monn, Wagenseil and Haydn, the introduction of pc 3, spelled as a minor third above the tonic, would have generally signaled the imminent arrival of the structural dominant, the missing pitch of the tonic system appearing as the bass of an augmented sixth or Neapolitan sonority resolving to the dominant of the new key area (see Chapter 5). Such a progression most often occurs within the bridge passage that leads to the new key, and usually as a climax to that passage. What Schubert has done, is to take what would have once been a single chord and to extend it into a lengthy lyrical period (in fact, a bridge theme), only to delay its actual resolution by inserting a further transitional period in

²See Carl Schachter, "The First Movement of Brahms's Second Symphony: The Opening Theme and Its Consequences," *Music Analysis* 2/1 (1983):55-68.

dominant harmony (mm. 100 ff.) that finally resolves the $E\beta$ as part of a harmonically evasive progression, βII_6 to V , within G , and which does not cadence until m. 138.

Throughout this lyrical $E\beta$ period (starting in m. 60), Schubert takes great pains to consistently relate $E\beta$, the root of the complementary system, to C (refer to Fig. 6.2 above). Thus, at this point, $E\beta$ refuses to descend to D as V/V , but moves up in the opposite direction to E -natural (see mm. 70-71, and m. 78). The $E\beta/E_$ relationship that began the movement is further developed here, dramatized by system modulations placed at strategic points within the period. The 3β eleven pitch-class system remains in effect until the end of the first statement of the $E\beta$ bridge theme, veering, significantly, back toward C . Measure 75 once again introduces the $F\#$ diminished seventh chord, the primary issue of the composition, with $E\beta$ in the bass and $F\#$ in the top voice. Finally, $F\#$ returns in m. 80 as the passage cadences on the dominant of C , this time without $E\beta$ to negate its function of returning the $E\beta$ system to "0". The entire period is repeated with the violins restating the original cello theme (mm. 79 ff.). Again, the 3β system returns (along with the $E\beta/E_$ conflict) and, again, the $E\beta$ pitch class fails to descend to D and to resolve there as expected.

The measures right before the transitional period to the closing area (see Ex. 6.7c, m. 96 ff.) are quite revealing when analyzed according to systems: the $F\#$ diminished seventh chord returns once more, but $E\beta$ descends locally in an inner voice (m. 96, 2nd violin) to D (m. 97) within a first-inversion G chord — not of structural harmonic significance. Rather, $E\beta$ plays a more important function as part of a diatonic contrapuntal line that moves up to $E_$ (viola, m. 97) and then to $F\#$ (same voice, m. 98), the pitch that restores the "0" eleven pitch-class system despite the passing $E\beta$ (note the $E\beta/E_$ conflict that results) in the viola in the following measure;

the F# on the last beat of that measure in the 2nd violin maintains the C system. Only now can G, the dominant, assert itself in the lengthy transitional period that follows in m. 100.

EXAMPLE 6.7c: Schubert, Quintet in C, 1st Movement, Transition into

Closing period, mm. 96-142

The musical score is divided into four systems, each containing five staves for Violin I, Violin II, Viola, Violoncello I, and Violoncello II. The first system (measures 96-101) is labeled "Transition Period" and includes dynamic markings such as *fp*, *p*, and *pp*. It features a key signature change to E major (E♯/F♯) and a time signature change to 3/8. The second system (measures 102-106) includes markings for *decresc.* and *simile*. The third system (measures 107-111) includes markings for *decresc.* and a key signature change to C major (C♯ ↓ °). The fourth system (measures 112-116) includes markings for *cresc.*. The score concludes with a final cadence in C major.

The passage from m. 100 to the downbeat of m. 138 (Ex. 6.7c) is functionally problematic, yet typical of the modular designs of many Romantic sonata-form movements by Schubert, Mendelssohn, Schumann, Brahms, Chaikovsky and Dvořák, to name only a few. On the one hand, the passage in question prolongs dominant harmony within a self-contained, closed, musical period. Yet, it appears transitional, not really achieving closure until m. 138. The latter

interpretation would seem to be more accurate since Schubert does not raise a true dominant preparation until mm. 117 ff., which does not conclusively resolve, either rhythmically or harmonically, until the downbeat of m. 138. Offsetting this otherwise harmonically stagnant passage are dynamic system modulations that further enhance its transitional and contrapuntal nature, and which provide it with a decided magnitude of tension and propulsion.

As is often the case in sonata-form movements, the missing pitch of the tonic system is usually spelled as an augmented second above the tonic if the second harmonic area is within the dominant, or, for that matter, in any harmonic area on the sharp side of the circle of fifths (see our discussion of Beethoven's Op. 29 String Quintet above as well as his "Waldstein" piano sonata in Chapter 2). In Schubert's Quintet, the dominant progression that starts in m. 100 naturally raises D# (m. 106) within the context of B major harmony (B is interpreted as V/VI of the dominant at this point, a gesture not realized). The D# raises the 3# system, but C₋, the missing pitch of that system, constantly undermines the former's hegemony. In fact, C₋ in m. 110 manages to displace the 3# system altogether (no D#s follow), creating neutral ground in which E_β might now make an unexpected appearance.

Up to this point, Schubert has clearly let us understand that this transitional period as just that: a passage of music that is kinetic, and which has a deeper purpose, that of establishing the structural dominant. The introduction of D# was simply a ploy to prolong the transitional period, since D#, by itself, is insufficient to initiate a convincing progression to the dominant. In fact, the pitch needed to accomplish the arrival of the structural dominant is E_β, the pitch class that Schubert previously had taken such pains to unfold as a lyrical, but incomplete harmonic area. Only now does E_β return to discharge its function of dramatizing V/V as part of a βII6/V (Ex. 6.7c, m. 118) resolving to D as V/V in m. 119. This moment is so crucial in its harmonic import

that Schubert repeats the passage verbatim in mm. 122-125.

No matter what the significance of Eβ is in establishing the structural dominant, Schubert could not have introduced this variant of pc 3 without effecting a system change to 3βs. Rather, F# appears after each appearance of Eβ to underscore the security of the tonic “0” system. Both Eβ and F#, however, now take on motivic significance as the primary tones of the original F# diminished seventh chord, the development of which is fundamental to the Quintet. The diminished seventh chord returns in m. 127 and governs the passage that follows, up to the arrival of the structural dominant on the downbeat of m. 138. What follows can only be interpreted as a closing period with codetta (m. 146). Even here, as Webster correctly points out, Schubert is reluctant to leave C major harmony.³ Webster attributes Schubert’s avoidance of dominant modulations to the fact that “the dominant no longer commanded the power it had for Classical composers.”⁴ But perhaps this reluctance can be equally attributed to Schubert’s awareness that the “0” system, operating continuously in the background, is never really abandoned, no matter which harmonic areas are explored in the middleground. Significantly, only now, after the structural dominant has been reached, does D# displace Eβ.

Again, as is usually the case with missing pitch classes in expositions, D# does not achieve an extended system modulation up to 3#s: at best, only two measures are allowed within the 3# system before a C_ cancels the modulation (see mm. 139-141 and their repetition an

³James Webster, “Schubert’s Sonata Form and Brahms’s First Maturity I,” *19th-Century Music*, 2/1 (1978):28-29.

⁴*Ibid.*, 24.

octave higher in mm. 143-145).

What we learn from this type of analysis is how only a few pitch classes may have the power to control and to determine large areas of music. In this case, E \flat and F \sharp (and their complements, D \sharp and C \flat) represent far more than just notes in a diminished seventh chord; they control entire eleven-pitch class areas and act on a motivic level that is the basis of a sophisticated developmental procedure.

Schubert's Quintet and The Primary Chromatic Array (PCA)

Before a discussion of the Quintet's development section using system analysis, we need to review the exposition's unfolding Primary Chromatic array, an unfolding that intersects with the structural harmonic goals of the exposition.

Most important to our analysis of the Schubert is how the missing pitch of the "0" system, pc 3 (E \flat or D \sharp), dramatizes the rise of the PCA as the music progresses towards the goal of the dominant. Notably in the works of nineteenth-century composers including Beethoven (covering his whole career), the course of an entire movement is quite often constructed around the working out of pc 3, its rhythmic placement and its harmonic implications.

To review, the first segment of the PCA occurs in the exposition as the music moves from the tonic to its next structural key, in this case, G, the dominant. Most important among the first segment of PCA pitch classes, Pc 3 is often highlighted in the music to show its special importance within the line. As the PCA ascends, individual pitch classes may be spelled as enharmonic equivalents, depending on harmonic circumstances. However, because of voice-leading considerations, PCA notes tend to be presented with one spelling more likely than another (as is the case with the Schubert). Thus, in C major, C# (pc 1) is far more likely to be found than D β , and in fact, in Schubert's exposition, there are no D β s, only C#s. Further, each member of the PCA may be dramatized, harmonically and/or rhythmically, treated simply as passing, or even omitted, depending on the desire of the composer and the nature of the composition. (Not all compositions have complete PCA ascents, but the omission of chromatic pitch classes from the PCA says as much about a piece as their presence.) In Schubert's Quintet, all pitches of the PCA are present. Further, trichordal segments are repeated, often within differing harmonic contexts, before the next segment is presented.

System/PCA Diagram 6.4 gives the PCA unfolding as well as the system changes for the first movement of Schubert's Quintet up through the beginning of the recapitulation. Below the first line, indicating measure numbers, is the line showing the "active system pcs." These pitch classes are the missing pitch classes of the prevailing system. If the prevailing system holds through, meaning that the missing pitch is contested immediately, or even simultaneously, by its own symmetrical inversion, then these pitch classes are indicated in parentheses. For example, in mm. 3 and 9 (see the diagram), E β motivates a system change from the "0" system to that of 3 β s, but the simultaneous occurrence of F#, the missing pitch from a 3 β system, in both measures, indicates a move back up to the "0",

the two effectively canceling out each other. Thus, the background “0” system has not changed despite the flurry of foreground activity. However, if a pitch class actually accomplishes a system change this is noted in the diagram by an arrow, showing direction, either up or down, without parentheses. Measure 49, for example, shows that Eβ is uncontested by an F# and thus shifts the “0” down to 3βs. The measures that follow remain in the new system until the next system change occurs, indicated in this instance in m. 51 where F# restores the “0” once again

EXPOSITION											
1 st Harmonic Area											
Measure:	1	3 & 9	19	23	26	27-----	29	33	CS + Bridge		
Active System Pcs:		(Eβ/F#)	(D#/C)	(D#/C)				(D#/C)		(Eβ/F#)	
System:	“0”										
PCA:	C (0)				C (0) – C# (1) – D (2)						
Harmony:	C				G pedal			C pedal			
	I				V			I			
Intermediate (or 2 nd) Harmonic Area											
M.:	48	49	51	52	53	55	56-57	60	75	77	
ASPCs:	(Eβ/F#)	Eβ↘	F#↗ – (D#/C)	(Eβ/F#)		Eβ↘	F#↗ – (D#/C)	(Eβ/F#)	Eβ↘	(F#/Eβ)F#↗	
System:		3βs	“0” -----	3βs		“0” holds though -----	3βs		3βs	“0”	
PCA:	[Eβ (3)-----] Eβ (3)-----										
Harmony::		G pedal					Eβ			βIII	
		V									
Transitional Period											
M.:	81	91		92	93	96		98	100		
ASPCs:	Eβ↘					(F#/Eβ)		F#↗			
System:	3βs							“0”			
PCA:	[Eβ (3)]	Eβ (3) – E_(4)			F (5)	F# (6) -----		G (7)			
Harmony:	Eβ			C -----				D	G pedal		
	βIII			IV/V				V/V	V		

	Closing Period (as 3rd Harmonic Area)					Codetta			DEVELOPMENT	
M.:	138	139–140	141	143–144	145	146	147	149	155	157
ASPcs:		D#↗	C↘	D#↗	C↘		(D#/C)	(D#/C)		
System:		3#s	“0”	3#s	“0”				:	
PCA:	G (7)					G (7)			G# (8)	[A(9)]
Harmony:	G	B	C			G pedal			G#07 →	A
	V	III#/V	IV/V			V				

M.:	174	175		177	178	180	181		186	188	198	200	202
ASPcs:	D#↗			B#↗	A↘	B#↗			Bβ↘	C↗	A↗	F#↗	D#↗
System:	3#s	-----		6#s	3#s	6#s			9βs	6βs	3βs	“0”	3#s
PCA:		G# (8) regained	-----				Aβ (8)				A_ (9)		
Harmony:	G#						Aβ				A		em

M.:	206	210	218	232–233		236–237	241		242	246	249	250	251
ASPcs:	C↘		D#↗	B#↗		A↘			C↘	Eβ↘	F#↗	D#↗	C↘
System:	“0”		3#s	6#s		3#s			“0”	3βs	C	3#s	C
PCA:	A# (10)	-----		[A# (10)– B (11)]			Bb (10)	-----			[B_ (11)]		
Harmony:	f#m			bm		dm					em → G		

	Retransition					RECAPITULATION		
M.:	259	260		261	262	264	266	267
ASPcs:	(Eβ/F#)			(Eβ/F#)		Eβ↘		
System:						3βs	-----	holds through the recap.
PCA:	[Bb (10)–	B_ (11)]			B_ (11)	-----		B_ (11) C (0)
Harmony:	Aβ aug.6	G		Aβ aug.6	G pedal			C
		V			V			I

M.:	269–270	274	275
ASPcs:	(Eβ/F#)	F#↗	(Eβ/F#)
System:		“0”	
Harmony:		D6	G
		V6/V	V

One can see by the diagram the extent of system changes at a glance. Note that the system change in m. 81 keeps the music within the orbit of a 3β system as far as m. 98 (see Ex. 6.7c). Similarly, this method of presentation is useful for judging the effect of rapid system fluctuations, as is the case throughout the development section. Here system changes to enharmonic equivalents move the music into quite distant harmonic areas, extending the background tonic diminished system to its absolute limits over a relatively short time span. The third line down on the diagram shows what the underlying system is at any given point, whether "0", 3β s, $3\#$ s, etc. Under this line, highlighted in bold, is the Primary Chromatic Array, listing both pitch and number for each pitch class of the array. Pitches of the array unfold at a gradual pace, always ascending from the tonic of the key (pc 0), and often in irregular groupings. How and when a particular pitch class unfolds plays an important function in the harmonic design and structure of the composition, often revolving around the arrival of the missing pitch of the system.

In the Schubert Quintet, note that the first three pitch classes of the array unfold at a rapid rate in mm. 26 and 27 - C moves chromatically up to D. The next pitch is the missing pitch of the "0" system, $E\beta$. Note the care taken by Schubert to prolong this pitch over a very long time period, approximately forty-three measures! While the pitch itself is introduced at the start of the movement, it does not become part of the rising half-step sequence until after the first three pitch classes have been presented in mm. 26-27. In other words, only after this point does $E\beta$ take its position within the ascending chromatic octave where it becomes dramatized as an event of some consequence.

In Diagram 6.4, mm. 35-57, the $E\beta$ is depicted with brackets indicating that it has not yet

attained a structural position within the PCA, but is, however, the next note within the series. The $E\beta$ achieves structural status when the intermediate harmonic area is finally attained in m. 60. At this point, $E\beta$ can be shown without brackets, indicating that this particular pitch class is now operating on a higher structural level than the $E\beta$ s that had preceded it. The line continues to move up in m. 91 as $E\beta$ moves to E_- and then to F in m.93. The $F\#$ is finally achieved in m. 98 as the leading tone to the dominant pitch, G, in m. 100, completing the first half of the PCA rise.

Next, the ascent of the same PCA pitch classes (0—7) is repeated, culminating in a cadence that inaugurates the closing period in m. 138. In other words, once the dominant is reached in the exposition, there may be one or more additional approaches to the dominant cadence in order to strengthen subsequent cadential arrivals. Each time the music progresses towards the next dominant cadence, the first seven pitch classes of the PCA unfold again from pc 0, affirming the dominant area (or whatever the harmonic area happens to be) as functioning on a lesser structural level to that of the larger tonic background. It should be emphasized that the Primary Chromatic Array (as opposed to secondary arrays) fills in only one octave, that of the tonic, and no other, since, ultimately, all harmonic areas within the movement are judged in relation to the underlying tonic, which is never entirely displaced. The Schubert Quintet is somewhat problematic only in that the dominant is reached in m. 100, but not anchored. Instead, Schubert creates a passage that is at once in the dominant but that has not achieved full closure in that harmonic area, and, therefore, has more of a transitional function than that of a true arrival. As if in agreement with this perception, Schubert repeats all the pitch classes of the PCA, beginning in m. 101 with C (pc 0), thereby confirming the tonic. When $E\beta$ arrives again, in m. 118, its function is even more dynamic than it was the first time where it functioned as a

contrapuntal extension of the tonic. Now it acts as a harmonic pitch class within the Neapolitan β II6 chord, a chord that is pre-cadential in function, and which indicates the actual arrival of the structural dominant.

Measures 124-126 show the $E\beta$ rising again to E_- (pc 4) and to F (pc 5) in m. 131 (the same sequence is repeated in mm. 133-136). The $F\#$ (pc 6) that enters in m. 137 is significant since it is the leading tone of the structural dominant in m. 138. There are no further repetitions of pcs 0-7 of the PCA in the exposition. The codetta in m. 146 simply reaffirms the dominant by reiterating pc 7 (G).

As was previously discussed, the chromatic ascent in sonata-form expositions terminates on the pitch class of the local tonic that defines the second harmonic area and that usually concludes the exposition. (In so-called three-key expositions, the terminus will always be the tonic pitch class of the closing harmonic area; in Schubert's case, this is invariably the dominant.) According to the theory, octave completion of the PCA is a primary function of the development section. Specifically, the development continues the PCA ascent from where it left off at the end of the exposition, continuing its chromatic rise until the octave is completed with the return of tonic harmony, usually coinciding with the start of the recapitulation.

As a chromatic tone, the introduction of pc 8 within the opening period of the development can be quite startling. In eighteenth-century classical literature, this pitch, spelled as a sharp, often leads the music towards the direction of the subdominant, a procedure utilized by Schubert in the Op. 163 Quintet. However, Schubert's progression to VI is somewhat shocking, coming as it does after a V7 chord, the last chord of the exposition. (Schubert may have been influenced by Mozart's G minor Symphony, K. 550, whose first movement exposition also ends on a V7 chord; however, unlike the V7 of the quintet, Mozart's V7 is not deceptive in function since the first chord of the

development section is the tonic itself.) The juxtaposition of the G7 chord followed immediately by an inverted G# diminished seventh is not only deceptive: it dramatizes the movement of the PCA from pc 7 to pc 8 as an important event within the background chromatic unfolding. Pc 9 (A) follows as a matter of course, but Schubert surprises us again by making the harmony major (m. 157), thereby implying its function as a localized dominant (see mm. 163-64), rather than as submediant.

An important aspect of PCA analytical theory is that chromatic segments within the PCA ascent assume motivic function, and often become involved within a larger developmental process. In development sections, certain PCA pitch classes also serve to control and motivate large harmonic areas before passing on to the next chromatic note or segment. In Op. 163, after pcs 8 and 9 have been introduced, Schubert reinterprets their relationship by expanding on their individual harmonic potential, a kind of development of the roles of G# and A beyond their conventional voice-leading context. He does this by first reinterpreting G# as the root of its own harmony, beginning tentatively in m. 169 as G# minor, and then becomes more bold by transforming the chord into its parallel major in m. 175. The G# remains the active pitch throughout this entire section (note the G# pedal in mm. 179-180), and instead of moving the pitch immediately upwards to A_, it is enharmonically transformed into Aβ (m. 181; this is indicated in Diagram 6.4). The Aβ (still pc 8, now respelled enharmonically) now has the same function as Eβ had in the exposition: it delays the arrival of the intended goal by expanding a pivot area. In fact, The Aβ controls a large area of music. (By “controls” we mean that a single pitch can determine the harmonic areas of an entire musical period or even multiple periods.) In this case, Aβ throws the music into a flat-key progression that touches on Dβ and Gβ, and in

which $A\beta$ itself figures prominently. The $A\beta$ as pc 8 is sustained all the way from m. 181 to the last beat of m. 198, where A_- (pc 9) is finally attained, the next goal within the PCA ascent. The A_- now becomes the controlling pitch, casting the music into sharp-side harmonic regions.

The next PCA segment, comprising pcs 10 and 11, undergoes a similar developmental process. An $A\#$ (pc 10) appears in m. 211 as part of an extended harmonic period in sharp-key areas, controlled by sharp-side system changes (see Diagram 6.4). Pc 10 holds through this section as part of $F\#$ major harmony, which functions locally as the dominant of B minor. Only in m. 241 does $B\beta$ enharmonically displace the $A\#$, as the system changes turn the harmony toward flat-key regions. The situation is analogous to what happened with $G\#$ and $A\beta$ in the first half of the development.

The B_- (pc 11), the penultimate goal of the PCA, makes a tentative appearance in m. 249 (in the diagram, the pitch is placed in brackets to show that while it is present, B_- has yet to become a “structural” component of the PCA since it does not yet function as the leading tone of the tonic). In fact, $B\beta$ returns in m. 259 and conflicts with B_- until m. 262 where B_- completely displaces $B\beta$ and assumes its function of leading tone, supported by dominant harmony. (In the diagram, the brackets around B_- are removed in m. 262.) The B_- can now move up to the last pitch class in the PCA series, C (pc 0), at the recapitulation in m. 267.

A most provocative element of the recapitulation is the fact that it is not in the tonic “0” system, but rather in a 3β system since $E\beta$ was introduced in m. 264 as part of an arpeggiation of C minor harmony over the dominant G pedal. Because no $F\#$ has appeared to correct the 3β system of the minor mode, the recapitulation simply continues within 3β s despite the return of the C major tonic. Only when $F\#$ is left uncontested in m. 274 does the system shift back to that of

“0”. Schubert is here intimating that the 3β system of the minor mode is perhaps more than just a coloristic alternative to that of the major. The complementary 3β system, impinging as it does on the tonic major, may, in fact, be more symmetrically equivalent than we realize. $E\beta$ and its corrective pitch $F\#$ conflict throughout the first key area of the recapitulation, but the 3β system wins out yet again at the arrival of the intermediate harmonic area (“bridge theme”) in m. 322. Here the lyrical melody first presented in $E\beta$ is now transposed into $A\beta$, βVI of the C major tonic. Nevertheless, $E\beta$ as a pitch class is still in control (the $A\beta$ harmonic area is a subset of the 3β system), so much so that the system change back to C does not take effect until m. 367 where $F\#$ is finally introduced in the absence of further $E\beta$ s.

However, it is the coda (beginning in m. 414, see Ex. 6.7d) that is most problematic. Here the $F\#$ diminished chord returns once again, but this time $E\beta$ is isolated from the chord (m. 417) and allowed to control the coda uncontested (if $F\#$ does appear it is negated each time by the presence of $E\beta$). The arpeggiation of the B-diminished chord over the tonic pedal, five measures before the end, with its prominent $A\beta$, is the final remnant of the 3β system. Since no $F\#$ appears to redress the 3β system, the movement must be said to end within the complementary system to that of the C major tonic.

EXAMPLE 6.7d: Schubert, Quintet in C, 1st Movement, Coda, mm. 414-45

The image displays a musical score for the Coda of Schubert's Quintet in C, 1st Movement, measures 414-45. The score is arranged in five staves, corresponding to the instruments: Violin I, Violin II, Viola, Violoncello I, and Violoncello II. The music is in common time (C) and features a variety of dynamic markings, including *p* (piano), *ff* (fortissimo), *cresc.* (crescendo), and *decresc.* (decrescendo). The score is divided into four systems. The first system (measures 414-420) includes a 'Coda' section and a key signature change to E-flat major (E♭/F♯). The second system (measures 421-426) continues the development with various dynamics and a *cresc.* marking. The third system (measures 427-435) features a *pp* (pianissimo) dynamic and a *decresc.* marking. The fourth system (measures 436-445) concludes the piece with a *pp* dynamic and a *decresc.* marking. The score ends with a '3 System' instruction, indicating that the music continues on the following page.

What is perhaps even more remarkable is the conclusion of the last movement. After a series of flat-versus-natural system altercations, F# seems to win out at the *Più presto* (m. 401) deciding the outcome in favor of the tonic “0” system. But then, surprisingly, A♭ returns in m.

421, just nine measures before the end of the movement. $A\beta$ by itself, would not cause a system change, but here the $A\beta$ pitch class prepares for the even more remarkable return of pc 3, $E\beta$, as an upper neighbor trill to $D\beta$, the root of a French augmented sixth. Without $F\#$, $E\beta$ by itself would have shifted the “0” system down to that of 3β s. But the addition of two added flats within the same passage – $A\beta$ and $D\beta$ – firmly fix the 3β system of the tonic minor, and so the entire quintet must be said to end in its complementary 3β system. We believe that Schubert has done this deliberately, demonstrating that both the tonic major system and that of its minor mode complement can be treated as equals on the deepest structural level, a compositional procedure that adumbrates the symmetrically conceived works of Bela Bartók in the twentieth century!