HARMONY AND VOICE-LEADING IN MUSIC
BY PHILIPPE GAUBERT:
INNOVATION IN A TRADITIONAL CONTEXT

by

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B.Mus., The University of Manitoba, 2001

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

MASTERS OF ARTS

in

THE FACULTY OF GRADUATE STUDIES

(Department of Theory; School of Music)

We accept this thesis as conforming to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA

September 2003

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Abstract

Philippe Gaubert, French composer and flutist (1879-1941), began his musical career in the creative and innovative atmosphere of the late nineteenth-early twentieth centuries. While much of his music appears to follow the traditions of the common practice period quite closely, it displays peculiarities that prompt the development and application of less traditional analytical concepts. To be sure, his music projects an overall impression of simplicity and familiarity, but there are many instances where Gaubert appears to deliberately avoid the fundamentals of tonality and for which traditional analytical concepts do not suffice. This thesis explores, in Part 1, the ways in which the dominant-tonic cadence and other harmonic expectations are avoided, and in Part 2, the manner in which traditional voice-leading and counterpoint are supplemented with new approaches to pitch organization within a diatonic or nearly-diatonic context. More specifically, Part 1 discusses dominant substitution, non-traditional harmonic progressions/modulations, and the use of non-diatonic, symmetrical pitch-class collections (hexatonic, octatonic, and whole tone), as found in the first movement of Gaubert's Troisième Sonate (1933), while Part 2 discusses unusual voice-leading techniques and symmetrical (but mainly diatonic) pitch and pitch-class arrangements, as found mostly in the "Scherzo-Valse" movement of his Suite (1921).
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*TS = Troisième Sonate    **SV = “Scherzo-Valse”
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Acknowledgments

A number of people have helped me to complete this Master’s thesis, and for this help, I am extremely grateful. I would like to thank my advisor, Dr. William Benjamin, for his time, patience, and guidance throughout the whole thesis process, Dr. John Roeder for being my second reader, and Dr. Richard Kurth for expressing an interest in my work and reading it as well. Thank you to David Litke for putting my musical examples into computer notation, to Dr. Bob Pritchard for helping me with my many computer problems, and to my family and friends for all their support and encouragement.
Introduction

The turn of the twentieth century was a time of great innovation and individuality in the musical world. The Romantic composers, by challenging the norms of the common practice period, had long since begun to open up exciting avenues in the areas of harmony and form. Post-Romantic composers continued to push the boundaries of the traditions that they inherited from their predecessors, finding new and creative ways to think about music and to express their musical ideas. It was in this innovative atmosphere of the early decades of the twentieth century that the French composer and flutist Philippe Gaubert (1879-1941) began his musical career.

Having studied flute under Paul Taffanel, with whom he wrote the influential *Méthode complète de flûte*, Gaubert contributed mainly to the solo flute repertoire, although he is also credited with operas, ballets, orchestral pieces, songs, and chamber music. His musical style follows the French tradition with its "colourful harmonic language, elegant melodic lines, and brilliant, rhapsodic passagework" and is often compared with that of Gabriel Fauré and Paul Dukas, although the influences of Claude Debussy and César Franck may also be heard.¹ In some ways, Gaubert's flute and piano music is less adventurous than music by those major figures, who are known, in various ways, for formal and harmonic experimentation. The sparse texture, lyrical melodies, uniform phrasing, and traditional formal structures of his pieces create an air of simplicity that may convince the listener that there is nothing especially innovative about

Gaubert’s music at all. However, one has only to attempt a harmonic analysis of his music to find that some truly innovative techniques are being explored.

Charles J. Smith observes that “tonal composers have consistently made it their business to juxtapose chords never before juxtaposed, thereby encouraging us to impose a functional sense upon combinations never before so conceived.” However, “we must not forget that if our language is built around labels for particular things, we will tend to recognize only those things – even though that may be only a small part of what we might notice if we had different labels.”

When dealing with music that mixes traditional with non-traditional elements, it is extremely tempting simply to make these non-traditional phenomena ‘fit’ into preconceived and familiar patterns, whether or not this adequately describes what is occurring in the music. But even though a thorough account of these non-traditional elements cannot be completely based on their relationship to traditional concepts, it is equally inappropriate for the analyst to completely ignore these potential connections. Richard Cohn remarks that such “idiosyncrasies are not arbitrary, aimless, or indeterminate by mere virtue of their irreconcilability to diatonic tonality. Some of them simply adhere to an alternative mode of determination.” However, he also remarks that amid passages that defy traditional tonality, it is certainly not uncommon for a composer of this time period to “establish diatonic collections, articulate cadences, and prolong tonics by conventional means.”

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This understated innovation – the cohabitation of the non-traditional with the traditional – is what gives Gaubert’s music interest and depth beneath its apparently simple surface. The way in which he achieves an obvious connection to tonality even in sections of music that are locally quite atonal, and, more specifically, the various ways in which Gaubert deliberately avoids some of the most fundamental (and hackneyed) aspects of common practice tonal music, while retaining other traditional elements, will be the main topic of discussion in this thesis. The thesis will be divided into two parts and will focus on techniques used in two of Gaubert’s pieces for flute and piano: the first movement of his Troisième Sonate (1933) and the “Scherzo-Valse” movement of his Suite (1921). The foci of the whole thesis are 1) the ways in which the dominant-tonic cadence that is so crucial to traditional tonality is avoided; and 2) the manner in which traditional voice-leading and counterpoint are supplemented with new approaches to pitch organization within a diatonic or nearly-diatonic context. Part 1 will discuss dominant substitution, non-traditional harmonic progressions and modulations, and the use of non-diatonic, symmetrical pitch-class collections, all of which are found mostly in the sonata; Part 2 will discuss unusual voice-leading techniques and symmetrical pitch and pitch-class arrangements found mostly in the “Scherzo-Valse”.
Part 1  Collection Interaction, Chord Substitutions, and Gaubert’s *Troisième Sonate*

Chapter 1 – Collection Interaction

Gaubert integrates many different collections into his *Troisième Sonate*, but in such a way as not to disturb the overall tonal impression of the piece. While it is true that the non-diatonic collections are used mostly within a tonal context (and are therefore somewhat subordinate to and dependent on tonal objects and patterns), it is the use of these collections and the way in which they interact with diatonic collections that provide interest in the piece. In order to properly introduce these observations about collection interaction and dominant substitution in the first movement of the sonata, some general properties of the diatonic, hexatonic, octatonic, and whole-tone collections must first be reviewed.

Of all the above-mentioned collections, the diatonic collection is the only collection that divides the octave into unequal steps (both whole-tones and semitones) and is transpositionally asymmetrical. Transpositionally symmetrical collections are, in all cases, formed out of one or more equal-interval cycles. Elliott Antokoletz points out that, “in the pairs of complementary intervals other than that of the perfect fourth and perfect fifth, the smaller interval of each pair generates a cycle that subdivides one octave symmetrically. These other interval cycles include one cycle of minor seconds, two of major seconds, three of minor thirds, four of major thirds, and six of tritones. The perfect fourth – or its

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4 John Rahn, *Basic Atonal Theory* (New York: Schirmer Books, 1980), 90-93. Rahn defines two types of symmetry: transpositional and inversional. A set is transpositionally symmetrical if it maps onto itself under some transposition (Tn), where n does not equal zero. That is, one or more of its transpositions introduce no new elements. While the diatonic collection is not transpositionally symmetrical and therefore, all of its twelve transpositions are distinct in content, it is inversionally symmetrical, meaning that it maps onto itself under at least one inversion (Tn⁻¹).
harmonic inversion, the perfect fifth – is unique among the intervals: unlike the others, it generates a cycle that does not divide one octave symmetrically. Rather, the cycle of fourths must extend through many octaves before the initial pitch class returns." The uniqueness of the multiple-octave cycle of fourths/fifths is something that Gaubert explores extensively in the "Scherzo-Valse", which will be discussed in Part 2. However, it is the cycles that evenly divide the octave, and which form transpositionally symmetrical collections, that are most striking in the Troisième Sonate.

The single collection generated from a cycle of minor seconds spanning an octave is the chromatic collection, or aggregate, using all twelve pitch-classes. A collection generated from a cycle of major seconds spanning an octave (enharmonically) is the whole-tone collection, and two such collections a semitone apart will exhaust the twelve pitch-classes. A single cycle of minor thirds, major thirds, or tritones is too limited to be of much compositional use, but more than one such cycle may be combined to form larger transpositionally symmetrical collections, some of which have become standard. While the chromatic and whole-tone collections, which are single cycles, divide the octave into equal parts, collections that are compound cycles involve 'steps' of more than one size interval. How such collections are formed out of interval cycles may be easily shown.

The octatonic collection, while transpositionally symmetrical, divides the octave unevenly into alternating whole-tones and semitones. However, it

---

5 Elliott Antokoletz, The Music of Béla Bartók (Berkeley: University of California Press, 1984), 67-68. Note that in this and other quotes from Antokoletz, 'pitch' and 'pitch-class' are often confused.
may also be described as the result of pairing two fully-diminished seventh chords a semitone apart. Since there are only three distinct fully-diminished seventh chords (assuming enharmonic equivalence), there will only be three possible pairings of these chords, and therefore, only three distinct octatonic collections. From this description, the connection between the octatonic collection and the minor third becomes obvious, the fully-diminished seventh being a traditional name for (0, 3, 6, 9), the minor-third cycle.

The four major-third cycles (or augmented triads) are the most versatile of all the cycles in respect to the types of collections that may be formed from them. The whole-tone collection described above may also be described as two augmented triads a whole-tone apart. The collection that is formed by the interaction of two augmented triads a semitone apart is the hexatonic collection, of which there are four unique forms. These six augmented triad-based collections (two whole-tone and four hexatonic) account for all the possible pairings of the four major-third cycles. While the whole-tone collection is transpositionally symmetrical and divides the octave into six equal whole-tones, the hexatonic collection is transpositionally symmetrical but divides the octave into unequal 'steps' (alternating semitones and minor thirds). A third type of transpositionally symmetrical collection, which Olivier Messiaen calls the “Troisième mode à transpositions limitées” (Third Mode of Limited Transposition), may be formed by the union of any three augmented triads, each a semitone apart.\(^6\) Richard Cohn refers to this same collection as a Weitzmann region, after

\(^6\) Olivier Messiaen, Technique de mon Langage Musical (Paris: Alphonse Leduc, 1944), 88.
the nineteenth-century theorist Carl Friedrich Weitzmann, although this name also implies a specific derivation. The Third Mode of Limited Transposition or Weitzmann region, is not one of the 'standard' collections mentioned at the beginning of this chapter and is not a particularly important collection in the piece. It is only being introduced at this point because it fits into further discussion below. The name Weitzmann region will be used in reference to this collection from now on, as the implied derivation becomes important in the discussion below. Like the octatonic collection (and the diatonic collection for that matter), the Weitzmann region involves steps of either a semitone or a whole-tone. However, the large number of semitones in this collection make it

Figure 1 – Pitch-Classes of Chromatic, Whole-tone, Octatonic, Hexatonic, Weitzmann Region, and Diatonic (C Major Example) Collections

Note: Collections will be labeled as in Figure 1 throughout the thesis.

Figure 1 cont’d

Octatonic Collection 1
Octatonic Collection 2
Octatonic Collection 3

Hexatonic Collection 1
Hexatonic Collection 2
Hexatonic Collection 3

Hexatonic Collection 4
Weitzmann Region 1
Weitzmann Region 2

Weitzmann Region 3
Weitzmann Region 4
Diatonic Collection (example)
harder to grasp as a gestalt than the octatonic, which probably explains why it has never achieved much currency. There are four groups of three augmented triads that can be made from the four possible augmented triads, and therefore, there are four unique Weitzmann regions. Figure 1 gives a clear visual picture of each of the collections discussed above.

From figure 1, one may see the relationship between the whole-tone, hexatonic, and Weitzmann regions especially clearly, and may specifically note that the union of any hexatonic collection with either whole-tone collection results in a Weitzmann region. While these three collections provide an immediately obvious example of collectional overlap, other collections may also be compared in this way. Table 1 gives a comparison of the number of pitch-classes a collection has in common with each of the other collections discussed, while Table 2 shows the specific pitch-classes that each collection contains, from which a collectional comparison can also be made. (Again, the Weitzmann region will be left out of the discussion until Chapters 2 and 3.)

Table 1 – Number of Pitch-Classes Diatonic, Hexatonic, Octatonic, and Whole-Tone Collections Have in Common

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Note: the number the common tone total is out of corresponds to the cardinality of the smaller collection.
Table 2 – Specific Pitch-Classes in Each Collection

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Note: the diatonic collection – C major or A natural minor – given in each table is one of twelve possible examples. If a different diatonic collection had been chosen, the overall collectional comparison would be maintained, though specifics would of course change. For example, a different diatonic collection would still have five of seven pitch-classes in common with two of the octatonic collections and four of seven pitch-classes in common with the third octatonic. However, which of the octatonic collections has the fewer number of common tones varies according to the diatonic collection used. This follows for the whole-tone and hexatonic comparisons as well.

As Table 1 shows, two of the given collections may have as many as five common tones (with the exception of the comparison of two identical collections), as in the case of a diatonic-octatonic comparison, and as few as zero common tones, as in the case of opposing whole-tone or hexatonic collections, though the majority of collections have three or four notes in common. In musical terms, this means that certain sets of pitch-classes, some of which are scalar segments of these collections, are found in more than one collection and, therefore, may be used to create collectional ambiguity in a piece of music. Just as a fully-diminished seventh chord, with its symmetrical nature, has the ability to suggest movement to eight different major or minor tonics, so these common subsets may suggest more than one collection at a time. For example, Gaubert begins
the first movement of the *Troisième Sonate* quite obviously in the diatonic G major collection. While a non-diatonic note does appear at the end of the second four-bar group in the piano part, it is easily tonally explained as the leading-tone to the dominant. The flute melody, however, stays within the G major collection until the fourth four-bar group. Here, Gaubert obviously changes the melodic collection from diatonic to whole-tone. However, this collection 'modulation' does not come as a great surprise to the listener largely because of what occurs in the flute's third four-bar group. The motion from the F# in measure 10 to the C in measure 11 and back up to the F# emphasizes the largest stretch of whole-tones in the G major diatonic scale. And so this third group is an area of collectional ambiguity and transition, remaining true to the previous G major diatonic collection, but at the same time, hinting at the whole-tone nature of the groups soon to follow. As well, the whole-tone melodic group beginning in measure 13 recognizes its source in measures 10 and 11 by transposing these bars a semitone down in measures 14 and 15.

Because of the tonal and largely triad-based context for most of the non-diatonic collections in this piece, it will be helpful to discuss the types of triads each non-diatonic collection contains as well. The hexatonic collection has already been described as the result of two augmented triads a semitone apart. However, the collection can also be formed by the combination of three major (or three minor) triads, which are a major third apart from each other. For example, hexatonic collection 1 {C, Db, E, F, Ab, A} contains perfect fifths on A, Db, and F, the tones of its 'higher' major third cycle. Two pitch-classes a semitone apart fall
symmetrically in between each of these fifths (F-Ab-A-C, for example), meaning that the triad formed can be major or minor in quality. Because there are no tritones (and therefore, no stacked pairs of minor thirds) included in this collection, no diminished triads are possible.

While the hexatonic collection emphasizes the major third, the octatonic collection emphasizes the minor third. In fact, as Richard Cohn notes, when compared with all other set-classes of the same cardinality, the hexatonic collection provides the maximum number of dyad-class 4 (major thirds) possible, while the octatonic maximizes dyad-class 3 (minor thirds).\(^8\) The octatonic collection has already been described as the union of two fully-diminished seventh chords a semitone apart. However, the collection can also be formed by the union of four major (or four minor) triads built on its 'lower' minor-third cycle. For example, octatonic collection 1 \{C, Db, Eb, E, Gb, G, A, Bb\} contains only four perfect fifths (\{C-G\}, \{Eb-Bb\}, \{Gb-Db\}, and \{A-E\}). As in the hexatonic collection, two pitches a semitone apart fall symmetrically in between each of these fifths, resulting in the possibility of both major and minor triads. While the octatonic collection does contain major thirds as well as tritones, it does not contain two stacked major thirds, meaning no augmented triads are possible. Finally, the whole-tone collection, containing no semitones, is only capable of forming augmented triads. As stated above, two augmented triads a whole-tone apart make one whole-tone collection.

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Table 3 provides a summary of the number of triads a collection has in common with all others, while Table 4 shows the specific triads formed by each of the above-mentioned collections (please see the above note from Tables 1 and 2 regarding the diatonic collection used).

Table 3 — Number of Triads Diatonic, Hexatonic, Octatonic, and Whole-tone Collections Have in Common

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Note: the number the common triad total is out of corresponds to the number of distinct triads that the smaller collection is capable of producing (augmented triads are counted only once).

As these tables show, there is some triadic overlap among collections as well. In his article, "Maximally Smooth Cycles, Hexatonic Systems, and the Analysis of Late-Romantic Triadic Progressions", Cohn states, "phenomena hearable in two or more ways function as pivots through which the music modulates between its conceptual spaces." Thus, the musical resource afforded by the common triads is similar to that of the common tones described above — namely, that such a triad may be used as a pivot chord between two spaces. However, while the

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## Table 4 — Specific Triads in Each Collection

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Note: brackets indicate duplicate augmented triads (enharmonically respelled).
traditional use of a pivot chord would be to link two diatonic keys (i.e. two different collections of the same type), this type of pivot chord would provide a link between two different collectional types. In the same article, Cohn specifically “emphasizes the role of the triad as the seam or pivot that mediates hexatonic and diatonic space.” While some of his ideas will be discussed further in Chapter 2, perhaps it is only necessary to mention at this point that both the hexatonic and octatonic collections are particularly suited to interaction with the diatonic collection because of their ability to form many of the same types of chords and some of the same chord progressions. In particular, the octatonic collection’s “potential to articulate multiple tonal centers; its abundant possession of semantically rich subsets, like consonant triads, seventh chords, French sixths…; and its ability to ‘modulate’ into diatonic collections” make it especially appealing to composers of this era.¹⁰

A good example of this type of pivot technique is found in measures 97 to 101 of the Troisième Sonate. The measures leading up to measure 97 clearly put Cb major in the listener’s ear with a traditional descending-fifths harmonic progression in that key. In measure 97, this progression (I – V/II – II – V – I) begins again but appears to go astray in measure 100. The chord in measure 100 (a fully-diminished seventh chord on C#) seems quite unrelated to the rather diatonic context of the previous measures. While it could be enharmonically respelled as the vii⁰7 of Cb major, it does not resolve to this key. Instead, it leads to a whole-tone collection in measure 101. What is interesting about this

passage is the way in which Gaubert 'modulates' from the diatonic collection of the passage's first few measures, to the octatonic collection (via a collectional pivot chord), to the whole-tone collection at the end of the phrase (see figure 2).

Figure 2  – Collectional Pivot Chord Example (score mm. 94-102)

As with the common-tone example cited above, the brief melodic line also gives the listener clues to the interpretation of this passage. Gaubert chooses to emphasize the octatonic sound at the end of this melodic line (measures 96 and 99) by continuing up the octatonic 1 scale in measures 100 and 101. If one examines the chord supporting the melodic segment in measure 99, one observes that it is a dominant chord (with an added seventh and ninth) in the key
of Cb major. As Table 4 shows, the Gb major triad is one of only three triads that are common to both the diatonic Cb major collection and octatonic collection 1 (eb minor and bb diminished are the other two). This chord (minus the Ab which is quickly dropped after the beginning of the measure) works as a pivot chord between the diatonic material that comes before it and the octatonic collection to which the fully-diminished seventh chord in measure 100 belongs. Then, in measure 101, a single pitch-class, D, added to the otherwise octatonic-compatible (C, E, F#, Bb), effects a second collection modulation to whole-tone collection 1. As soon as the left hand comes in with its whole-tone chord on the second eighth-note of measure 101, the A-Bb semitone, which had been heard as a continuation of the octatonic collection, is now heard as a lower appoggiatura embellishment to the Bb within the whole-tone collection. In such a short passage, each collection only exists distinctly by itself for a measure or less. However, because each collection also exists in the moments of transitional overlap, the listener really can hear three distinct collections in the passage.

One has only to attempt to analyze these measures with traditional Roman numerals to see that it cannot be adequately explained in the context of only one collection. Another quote from Cohn describes the double meanings which are possible in such a musical situation quite well: "Pitch-structures have properties apart from their potential to evoke tonality or participate in tonal routines, and there is no reason to believe that the potentials of these properties
are diffused when those same entities enter into environments that highlight their more traditional behavior as well.""11

Because Gaubert adds many sevenths and ninths to the chords in this passage, it is perhaps not the best example of the strictly triadic comparison that Tables 3 and 4 suggest. Adrian P. Childs notes that "while the analytical insights" of neo-Riemannian triadic transformations (which will be introduced in Chapter 2) "have proven rich and stimulating, a fundamental problem has also arisen: the composers whose works seem best suited for neo-Riemannian analysis rarely limited their harmonic vocabulary to simple triads.""12 However, the main point that is being made in this chapter is that collectional overlap occurs both melodically and harmonically in Gaubert's music. As well, there are significant instances in the Troisième Sonate where Gaubert does use simple triadic harmony, and it is primarily in these instances that the next topic of discussion – hexatonic and octatonic dominant substitution – occurs.

Chapter 2 – Substitutions for the Dominant and other Harmonic Issues

The most fundamental key-defining event in common practice music is the dominant-tonic harmonic progression. To use this progression is to confirm a specific key in the listener's ear, but to avoid this progression is to create a sense of tonal uneasiness and ambiguity. The key-defining elements of this progression are, primarily, the resolution of the leading-tone (7 to 8), and secondarily, the resolution of the dominant chordal seventh (4 to 3). While the dominant to tonic progression may stand without the dominant chordal seventh (4), this scale-degree, when added, strengthens the progression's key-defining properties by resolving the major key's only diatonic tritone (in minor keys, this tritone is not diatonic and must be created by chromatically raising the seventh scale-degree).

There are a number of ways to avoid using a standard dominant-tonic progression, while retaining some of its important features. First, one can retain the paradigmatic voice-leading, while substituting another major triad for the dominant chord. Second, where Mm sevenths are being used as dominants, one can replace a dominant-seventh chord with a transposition that retains two of its pitch-classes, while chromatically altering the others. Third, one can retain all the essential pitches of the dominant and tonic chords while connecting them with non-traditional voice-leading. It is the first and second techniques that are found most prominently in the Troisième Sonate and that will be the focus of this chapter. The third technique will be discussed in Part 2.
In moving from the dominant triad to the major tonic triad, the essential voice-leading is as follows: one voice is retained as a common tone (\(5\)-\(5\)), one voice moves up by semitone (\(7\)-\(8\)), and one voice moves up by whole-tone (\(2\)-\(3\)) (see figure 3h).

Figure 3 - Voice-Leading of all Possible Major Triads to a Common Major ‘Tonic’ Triad (C Major Example)

Figure 3 shows all the possible major triads and their most efficient resolutions (those that involve the smallest moves in the aggregate, totaled up in semitones)
to a common major tonic (in this case, a C major tonic). These triad resolutions may be put into categories based on their resolution characteristics (see figure 4).

Figure 4 – Triad Resolutions Categorized by Voice-Leading Characteristics (Emphasis on Types of Intervals Involved)

0ST (total)  
3CT = C
1ST ↑, 1ST↓, 1CT = Ab, E

3ST
↑ = B
↓ = Db

1ST, 1WT, 1CT
↑ = G, Eb
↓ = F, A

1ST, 1WT, 1m3
↑ = Gb/F#, ↓ = D
6ST (total)
3WT
↑ = Bb
↓ = D

Note: ST = semitone, WT = whole-tone, m3 = minor third (or augmented second), CT = common tone.

Richard Cohn uses voice-leading summation in describing the total voice-leading distance of a triadic pair in his article, "Maximally Smooth Cycles, Hexatonic Systems, and the Analysis of Late-Romantic Triadic Progressions," *Music Analysis* 15, no. 1 (1996): 25. The intervals (in semitones) traversed by the three melodic voices of the triad are summed together to get the total voice-leading distance of the pair ([+] will indicate upward direction, [-] will indicate downward direction). For example, a move from DbM to CM requires each melodic voice to move down one semitone (F-E, Db-C, Ab-G), following the 'law of the shortest way' as defined by Arnold Schoenberg, *Theory of Harmony*, (Berkeley: University of California Press, 1983), 39. The total voice-leading distance is −3 (three semitones down). A move from AbM to CM involves one common tone (C), one semitone up (Eb-E), and one semitone down (Ab-G), so the total voice-leading distance is zero (the semitone motions cancel each other out). Total voice-leading distance is inversely related to efficiency.
A lot of information may be gained from figure 4 about how the twelve major triads are related to the tonic and dominant of a major key. The traditional voice-leading of dominant to tonic involves a voice-leading sum of three semitones in the same direction. There are six triads which satisfy this requirement – DbM, EbM, FM, GM, AM, and BM. As one can see from figure 4, the triad most closely related to the traditional G major dominant is Eb major, which shares all of the dominant's voice-leading characteristics. After Eb major, determining the triad that is next closest to G major really depends on the criteria that one uses to evaluate proximity. The way figure 4 is set up suggests that the F major and A major triads are the next closest because they share the same combination of whole-tone and semitone steps (one whole-tone and one semitone in the same direction). However, the groupings in figure 4 seem counterintuitive in some ways, the most obvious example being the zero-semitone grouping of CM, AbM, and EM. How can the repetition of a C major triad be considered at all similar to a move from E or Ab major to C? What is immediately obvious about this group is that these three major triads are a major third apart from each other, which suggests a hexatonic collection. As well, the reader will quickly see that by modifying the figure to emphasize the direction (up or down) in which the three semitones move, other hexatonic relationships emerge (see figure 5). In this case, B major would be the next closest to G major, rather than F or A major.
As figure 5 shows, separating the triads with a total voice-leading sum of three into two groups of three allows the significant hexatonic relationship to be observed. The summation equivalences that are assumed in figures 4 and 5 (for example, a move from D to C is equivalent to a move from F# to C because 2+2+2 is equal to 1+2+3) make sense if interpreted as symmetrical equivalences within hexatonic collections. The three major triads that involve upward movement (BM, GM, EbM) are each a major third apart, meaning the combination of their pitches forms a complete hexatonic collection 3. Similarly, the pitches of the three major triads involving downward motion (FM, AM, DbM)
also form a complete, but different, hexatonic collection 1. The three triads that have a total voice-leading sum of zero belong to hexatonic collection 4, and the three triads that have a total voice-leading sum of six (GbM and F#M being enharmonically equivalent) belong to hexatonic collection 2. No distinctive collectional relationship (other than the chromatic collection) is evident from the arrangement in figure 4. Such collectional observations have obvious but significant musical applications. Each of the 3ST triads in figure 5 maintains the overall voice-leading sum of the traditional dominant-tonic progression. However, the two triads grouped with G major in figure 5 have the added significance of implying a specific hexatonic collection. In other words, the two other major triads that are symmetrically equivalent to the G major triad in a hexatonic collection also resolve to the tonic C major with equivalent, upward voice-leading motion. Eb major is especially equivalent to G major because it shares the same common tone (G) with both the tonic and dominant of the key.

In relation to a composer such as Gaubert, who makes great use of collectional integration, this is a very useful observation. Gaubert does, in fact, base his dominant-avoiding technique in the *Troisième Sonate* on these equivalences. For example, the repetition of the first theme begins at measure 25 with the expected G major tonal center. The first three phrases are an exact repetition of the first thematic statement. However, instead of continuing on with the fourth group of the theme (at measure 37), Gaubert repeats the last measures of the third, turning the b minor triad into B major on the second repetition. By changing the quality of the chord from minor to major, this chord
takes on the sound of a dominant-function chord and the listener might expect it
to go to an E tonic. What follows, however, is an unexpected Ab major tonic,
which, in retrospect, the listener would have expected to be introduced by an Eb
major triad. Figure 6a shows the actual progression that occurs in measures 43
to 44, while 6b and c show the possible implied versions of the progressions
mentioned.

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**Figure 6** — Tonic and Dominant Comparisons for Ab and E Major

The collection that unites the actual B major dominant that is used to
'tonicize' the Ab major tonic with the expected or implied Eb major dominant is
hexatonic collection 3. The resolution of the B major dominant to the Ab major
tonic has the same voice-leading motion (one semitone, one whole-tone, and
one common tone) that the traditional dominant-tonic progression (EbM to AbM)
has. The B major chord is an effective and interesting dominant substitution
chord because it maintains the traditional voice-leading, while at the same time
suggesting a hexatonic collection 3 with the implied Eb major dominant. Since it
is unclear whether it is the B major dominant or the Ab major tonic that is the
substitute chord in the passage, it is also useful to note that the Ab major and the
implied E major tonic are also related hexatonically, but these two chords belong
to hexatonic collection 4. This makes sense because hexatonic collection 4 maps onto hexatonic collection 3 at T7 – the equivalent of a major tonic-dominant relationship (see figure 7).

As figure 7 shows, there are two ways in which to view this passage. First, as in figure 7a, there is the possibility that the Ab major chord is the ‘true’ chord, with the B major chord being a hexatonically-related substitution chord for the Eb major dominant. Second, as in figure 7b, there is the possibility that the B major chord is the ‘true’ chord, with the Ab major chord being a hexatonically-related substitution for the E major tonic. It is important to note that in each case, there is one other hexatonically-related chord that could have been used. One might wonder then, why Gaubert chose this specific progression to introduce Ab major into the piece when there were other options available. He could have ‘tonicized’ the Ab tonic with the other hexatonic dominant substitute, G major.
Or, he could have moved from B major to the third hexatonically-related tonic, C major. Perhaps the most obvious reason he may have avoided these two choices is that, while they do maintain the three semitone moves, they do not mimic the exact common tone, semitone, whole-tone voice-leading of the traditional progression.

Another more abstract reason has to do with a second interesting collectional relationship that may be observed in this passage. Figure 8 shows the ‘network’ of major chords that may be generated from the tonic-dominant and hexatonic relationships of the two tonics implied in this passage (E major and Ab major). Figure 8 will require some explanation: column one of figure 8a shows the two tonics of the passage (one real, one implied); column two shows the two dominants of the passage (one real, one implied); column three shows the tonic-dominant combination that is actually found in the passage; and column four shows the other possible tonic-dominant combination for these two keys. Figure 8b shows a similar comparison of chords resulting from the combination of the Ab tonic of the passage with its other hexatonically-related ‘tonic’, C major, while figure 8c shows a comparison of chords resulting from the combination of the B major dominant of the passage with its other hexatonically-related ‘dominant’, G major. (Note: chords that are actually found in the passage are given filled in note heads. All other chords are either tonally or hexatonically implied.) From this figure, one may see that all chords in the first column are, of course, from hexatonic collection 4 and all chords in the second column are from hexatonic collection 3. The chords in column three, however, are octatonically-related.
Figure 8 - Tonic-Tonic, Dominant-Tonic, and Dominant-Dominant Relationships for all Hexatonically-Related Triads (Relating to Ab and E Major)

(each pair in the column represents a different octatonic collection), while the chords in column four belong to the same Weitzmann region. What is interesting about this figure in relation to figure 7 is that, maintaining at least one of the actual chords in the passage (Ab or B major), the combination that Gaubert used (shown in column 3 of figure 8a) is the only one that implies an octatonic
relationship, which, as discussed above, is an important collection in the piece in other respects. If Gaubert had chosen to 'tonicize' Ab major with G major, the other chord hexatonically-related to its dominant (as shown in column 4 of figure 8b), no octatonic relationship would have been implied. Likewise, no such relationship is implied when the dominant B major resolves to C major, the other chord hexatonically-related to its tonic (as shown in column 4 of figure 8c). While figure 8 does seem very abstract and removed from the actual passage itself, it helps to point out the very obvious octatonic relationship between the two chords in the passage. The octatonic relationship between two successive chords, both actually sounding, is, in fact, less abstract than the hexatonic relationship, which relies heavily on an understanding of tonal implications.

Now that substitution for the dominant triad has been discussed, it will be useful to discuss the possibilities for dominant-seventh substitution and its musical applications. A figure similar to figure 3 (voice-leading comparison of the resolutions of all major triads to a common tonic) may be constructed for major-minor seventh chords (see figure 9). The first point to notice about figure 9 (as opposed to figure 3) is that the ±2 voice-leading sum of the traditional dominant-seventh to tonic progression does not seem to be particularly unique to this progression.\(^\text{14}\) Figure 3 is informative because it shows how only six of the possible twelve comparisons have a voice-leading sum of ±3, and a further distinction can be made based on exact voice-leading patterns, paring the number down to one or two triads in each category. In figure 9, however, nine

\(^{14}\) ±2 means that the total voice-leading motion may be either up (+) two semitones or down (−) two semitones, because \(\frac{5}{2}\) can move either up two semitones to 3 or down two to 1.
out of the twelve possible progressions have a voice-leading sum of ±2, and five share the same voice-leading pattern (one common tone, two semitones, one whole-tone). Since the voice-leading pattern of their resolutions to tonic does not seem to distinguish many of the major-minor sevenths from each other, another criterion for comparison must be used.

As mentioned at the beginning of this chapter, a second way of altering the traditional dominant-tonic progression might put more emphasis on an increased number of common tones than on exact voice-leading similarities. Because two different major-minor seventh chords may have as many as two common tones out of four (while two different major triads may have, at most, only one common tone out of three), it is perhaps more meaningful to observe which of the possible major-minor seventh chords have the most tones in
common with the dominant-seventh of a key. Figure 10 shows such a comparison.

**Figure 10** — Common Tone Comparison for all Mm7ths with a Common Dominant-seventh (V7 of C Major Example)

The comparisons of figure 10 may be summarized by grouping the seventh chords together based on the number of tones they share with the dominant-seventh of a particular key:

**Table 5** — Mm7th Chords Grouped by Number of Common Tones Shared with the V7 of C Major

| 0: F#/Gb7, Ab7 | 1: C7, D7, Eb7, F7, A7, B7 |
| 2: Db7, E7, Bb7 | 4: G7 |
Table 5 and figure 10 confirm that two different dominant-seventh chords may have, at most, two common tones. However, it is also interesting to note the unique collectional relationship that the four seventh chords with the maximum number of common tones (G7, Db7, E7, and Bb7) share as well. Just as it has been shown that triads, which are hexatonically-related to the dominant (or tonic), make nice substitutions because of their similar voice-leading relationships, so can it be shown that the seventh chords that are octatonically-related to the dominant-seventh chord are convincing substitutions because of their two common tones with the diatonic dominant-seventh.

Gaubert takes advantage of this type of substitution as well. Shortly after the hexatonic dominant substitution that was discussed above, there are two instances of octatonic dominant substitution. The first substitution occurs in measures 51 to 52 and the second occurs in measures 60 to 61. The second substitution will be discussed first as it is a better example of common tone preservation.

The measures leading up to this second substitution are clearly in the key of Cb major. Many tonic-dominant progressions have confirmed this key and so, when the listener hears the dominant ninth of Cb major in measure 58, one expects resolution to a Cb major tonic. The chord in measure 59, while it suggests a resolution to the enharmonic tonic, B major, also includes an added minor seventh, changing its function and making it the dominant-seventh chord of E major. Instead of the expected resolution to E major, a G-rooted chord is heard in measure 61. The chord is not a G major chord, as Gaubert is also
changing the collection from diatonic to whole-tone at this point. However, the resolution from the B dominant-seventh in measure 60 to the G chord in measure 61 is convincing for two main reasons. First, Gaubert puts the F# of the dominant-seventh in the bass, which clearly acts as a leading-tone to the bass G, which definitively arrives in the chord at measure 65. Second, the B dominant-seventh is octatonically related to the D dominant-seventh that one would traditionally expect to tonicize the G chord and therefore, maintains two of its tones – F# and A (see figure 11).

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Figure 11 — Common Tones between D7 and B7

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The first substitution is not as obvious, but perhaps more interesting in other ways. After modulating to Ab major through the hexatonic dominant substitution in measures 43 and 44, Gaubert repeats the first two thematic phrases in this key, arriving on the dominant of Ab major in measure 51. This Eb major chord is tonicized by its own dominant and therefore, does not include a seventh of its own. However, the harmonic progressions of the previous measures (and their parallelism to the opening) make this chord’s dominant function especially clear. One would expect, from this context, that this Eb major
triad would resolve to its tonic Ab major. Instead, it resolves to a Cb major chord (with added seventh) in measure 52, to continue on with the third thematic phrase. As one might now come to expect, the implied Ab tonic belongs to the same octatonic collection 3 as the actual Cb tonic, and the implied Gb dominant belongs to the same octatonic collection 1 as the actual Eb dominant (octatonic 3 maps onto octatonic 1 at T7). One potentially less-convincing point about the octatonic substitution in this passage, however, is that because the chord is a triad rather than a dominant-seventh, it maintains neither the common voice-leading of the hexatonic substitution, nor the 'extra' common tone with the traditional dominant-seventh (see figure 12).

Figure 12 – Common Tones between Gb and Eb Major Triads (a) and Voice-Leading between Gb and Cb (b) and Eb and Cb (c) Major Triads

However, there are also advantages, and an added dimension of interest, to this omission of the chordal seventh. In the discussion of hexatonic dominant substitution above, it was noted that when the tonics or dominants of two keys are hexatonically related, one of the tonic-dominant combinations (mixing keys) has an octatonic relationship, while the other tonic-dominant combination belongs to the same Weitzmann region. Because the hexatonic collection contains no tritones, it cannot form dominant-seventh chords, and therefore,
dominant-seventh chords cannot imply hexatonic collections. The omission of the chordal seventh then, allows the same simultaneous collectional implications that were discussed above with the hexatonic substitution.

Figure 13 – Equivalent Voice-leading for Octatonically-Related 'Dominant-Tonic' Progressions – (a) for Cb Major Tonic, (b) for Ab Major Tonic

As figure 13 (equivalent of figure 7 above) shows, there are two other chords that are octatonically related to the tonally-implied dominant of Cb major, besides the one Gaubert chose. Similarly, there are two other chords that are octatonically related to the tonally-implied tonic (Ab major), besides the one Gaubert chose. Figure 14 gives a similar possible explanation for why Gaubert chose the progression he did. Figure 14 is really the octatonic equivalent of figure 8 above. However, because each major triad is octatonically-related to three other major triads (rather than two, as with the hexatonic collection), there are six possible two-triad combinations for each octatonic collection (rather than
As figure 14 shows, the Eb major-Cb major progression is the only progression that implies a direct hexatonic relationship. The other four possibilities imply either another diatonic collection or a Weitzmann region. The reader should note that figure 14f contains neither the EbM dominant, nor the CbM tonic and, while it has been included to maintain

three, as with the hexatonic collection).
the completeness of the network, it has no relevance to Gaubert's actual passage.

Perhaps the most interesting point to note about the dominant substitutions in this passage of Gaubert's *Troisième Sonate* is the way in which a tonal context highlights possible connections between the octatonic and hexatonic collections. Take the two hexatonically-related triads C major and E major, for example. When the C major triad is transposed up a perfect fifth (the equivalent of the tonic-dominant relationship), its pitches become a minor third away from the pitches of the E major triad. The dominant-tonic relationship, if used in the right way, may link the octatonic and hexatonic through relationships that are both real and implied by the listener's traditional tonal expectations.

The main goal of this chapter thus far has been to show how non-traditional harmonic progressions that resemble traditional progressions in some respect may actually replace them, while still maintaining an overall impression of tonality. However, it is certainly possible to take these voice-leading concepts one step further away from the realm of traditional tonality. Richard Cohn's observations of nineteenth-century harmonic progressions have spurred him and other Neo-Riemannian theorists to resurrect Hugo Riemann's theory mainly because of its ability to avoid assigning scale-degree functions to harmonic objects. Triadic harmonies may be positioned "in relation to neither a diatonic system nor a tonal center, but rather to other triadic harmonies on the basis of the number of pitch-classes that they share, and more generally on the efficiency
of the voice leading between them." Cohn's concept of harmonic relations in nineteenth-century music is often less hierarchical, and more networked, than what a strictly traditional approach to such passages would allow. This harmonic approach and its application to Gaubert's music will be the main focus of the remainder of this chapter.

"Neo-Riemannian theory arose in response to analytical problems posed by chromatic music that is triadic but not altogether tonally unified....[An] emphasis on common-tone preservation and semitonal voice-leading adds yet a further dimension to the relationship between triadic transformations and nineteenth-century harmonic theory. Unlike their eighteenth-century predecessors, for whom triadic proximity was a function of consonance of root relation or, alternatively, of root-relatedness on a line of fifths, many nineteenth-century theorists gauged triadic proximity by number of shared common tones." This quote introduces the motivation behind the Neo-Riemannian method for analyzing harmonic progressions in nineteenth-century music. The reconception of Riemannian functions as dynamic transformations that relate triads directly to each other, thereby eliminating the need for a tonic-related hierarchy, is especially significant for late-Romantic music, of which common tone preservation and smooth voice-leading are characteristic stylistic features.

Cohn notes in his analyses of Schubert's music that there are four harmonic

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characteristics that “respond well to an approach that de-emphasizes diatonic collections and emphasizes voice-leading efficiency: modal mixture, root relation by third, motion through the enharmonic seam, and equal divisions of the octave”, all of which are prominent in Gaubert’s music.\footnote{Richard Cohn, “As Wonderful as Star Clusters: Instruments for Gazing at Tonality in Schubert,” 19\textsuperscript{th} Century Music 22, no. 3 (1999): 215-231.}

In his article, “Maximally Smooth Cycles, Hexatonic Systems, and the Analysis of Late-Romantic Triadic Progressions”, Cohn introduces the concept of the \textit{maximally smooth cycle}. A transition between adjacent chords is \textit{maximally smooth} if only one voice moves by semitone. The \textit{cycle} is defined as an “ordered set of at least four elements whose initial and terminal elements are identical and whose other elements are distinct.”\footnote{Richard Cohn, “Maximally Smooth Cycles, Hexatonic Systems, and the Analysis of Late-Romantic Triadic Progressions,” Music Analysis 15, no. 1 (1996): 15.} He notes that there are six set-classes that can participate in a maximally smooth cycle. Of these six, the consonant triad, together with its nine pitch-class complement, is unique in that its cycle is long enough to be perceived as a cycle, but short enough not to exhaust all the members of its set-class. Figure 15 shows such a cycle:

\vspace{1em}
\begin{center}
Figure 15 – Maximally Smooth Voice-Leading in a Cycle of Major and Minor Triads
\end{center}

\begin{figure}
\centering
\includegraphics[width=0.8\textwidth]{Figure15}
\caption{Maximally Smooth Voice-Leading in a Cycle of Major and Minor Triads}
\end{figure}
It is obvious from figure 15 that the pitch-classes of these six major and minor triads form a hexatonic collection. Thus, there are four maximally smooth cycles of consonant triads, which Cohn terms the four hexatonic systems (see figure 16). By dividing the twenty-four consonant triads in this way, one may discuss their proximity based on voice-leading efficiency (how many semitone moves it takes for one triad to 'become' another). “For a pair of triads that share a hexatonic system, the total voice-leading distance ranges from 0 (for identical triads) to 3 (for polar relations). For a pair of triads in neighbouring systems” (Northern and Eastern, for example), “the total voice-leading distance ranges from 2 to 4. For a pair of triads in complementary systems” (Northern and

Figure 16 — Cohn’s Four Hexatonic Systems

Note: The hexatonic systems are labeled only according to their placement on the page.
Southern, for example), "the total voice-leading distance ranges from 5 to 6."20

A concept that is closely related to Cohn's hexatonic systems is the Weitzmann region. In his brief harmony treatise, Der übermässige Dreiklang, published between 1853 and 1861, Carl Friedrich Weitzmann makes a number of observations about the augmented triad and its relationship to the consonant triad. If a perfect fifth and major third are added above and below a given note, the result is a major triad up from the central pitch and a minor triad down (for example, <F, Ab, C, E, G>). Weitzmann refers to these two consonant chords as nebenverwandt. While they may be conceived in tonal terms as a major dominant with a minor tonic, or a minor subdominant with a major tonic, his point is really that the combination of these two consonant triads produces an augmented triad (Ab, C, E). Each of the four augmented triads relates to six major or minor triads in this way (by a single semitone displacement), comprising the four Weitzmann regions (see figure 17).21

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21 Richard Cohn, "Weitzmann's Regions, My Cycles, and Douthett's Dancing Cubes." Music Theory Spectrum 22, no. 1 (2000): 98. The same augmented triad is formed by three nebenverwandt-related pairs of chords. For example, C major and f minor, E major and a minor, and Ab major and db minor all contain the augmented triad, (C, E, G#/Ab).
As Jack Douthett points out through a figure he calls *Cube Dance*, the Weitzmann regions are closely linked to Cohn's hexatonic systems.\(^\text{22}\)

When one looks at figure 18, one sees that Cohn and Weitzmann's approaches are really two sides of the same coin. While Cohn's approach emphasizes the relationships between consonant triads in a hexatonically-based cycle, Weitzmann's approach emphasizes the relationships the consonant triads have with a common augmented triad. What is interesting about Weitzmann's approach is that the consonant chords center on the dissonant augmented triad, whereas the traditional approach would be to think of such dissonant chords as an alteration of a consonant chord through chromatic displacements. Gaubert's music provides some interesting examples of both ways of thinking.

Perhaps the most obvious example of Cohn's hexatonic systems occurs
within the most traditionally diatonic section of the *Troisième Sonate*. The *eb* minor triad in measure 88 is introduced by a very traditional I-VI-II-V-I progression in that key. However, the sequence that follows this chord in measures 88 to 92 resists such a Roman numeral analysis. Figure 19a shows the harmonic progression, while 19b shows an entire maximally smooth cycle beginning and ending on *eb* minor.

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The resemblance of the two figures is evident, the only difference being the B and G major chords missing from Gaubert's cycle. While these two missing chords do make the voice-leading at the beginning of the cycle less smooth (two voices move by a semitone at once between the first three chords), the relationship between these chords remains distinctly hexatonic within such diatonic surroundings.

The above example shows how unobtrusively the hexatonic can be interwoven with the diatonic. The *eb* minor triad is essentially prolonged by a full
hexatonic cycle that masquerades as a traditional-sounding sequence.\(^{23}\)

However, not all examples of hexatonic relationships are so inconsequential or so diatonically well-concealed as the one above. In fact, the large-scale harmonic organization of the piece, as will be explained in detail in the next chapter, follows the arpeggiation of the augmented triad, G-B-Eb, rather than a tonally directed plan. It is possible to think of the harmonic regions of the piece as fitting together in two ways. First, these regions can be heard as closely related to Cohn’s ‘Western’ hexatonic system – the main key areas of G major, B/Cb major, eb minor, and Eb major all belonging to this system. It is interesting to note that this is the same hexatonic cycle as the one described as a sequence above. And, while the cycle above is two major triads short of a complete cycle (BM and GM), the large-scale harmonic cycle is two minor triads short of completion (bm and gm).

While Cohn’s approach seems to work relatively well in linking the main harmonic areas of the piece, Weitzmann’s approach suggests the second way of relating these harmonic areas. If one views the main harmonic organization of the piece as being governed by the G-B-Eb augmented triad, one can account for many of the important key areas in the piece. It is easy to see from figure 17 that G major (measures 1, 65,178), B/Cb major (measures 40, 52, 94, 130, 170), Eb major (measures 51,122), and c minor (measures 67, 80), all prominent keys in the sonata, ‘hang off’ the G-B-Eb augmented triad (meaning they differ from it by a displacement of only one semitone). Two other important key areas, Ab

\(^{23}\) While the cycle is missing two chords and is therefore, not complete in that sense, it does begin and end on eb minor and thus, comes full circle.
major (measure 44) and eb minor (measures 72, 85), are fairly closely related as well (only two semitones difference). Perhaps what is most important about the large-scale harmonic organization of the piece is the fact that root-relations by fifth do not dictate the structure. In fact, it would be virtually impossible to explain such key relations in hierarchical,tonal terms. Chapter 3 will deal with the specific way these keys fit together and how many of the surface details fit into the overall structure of the piece.
Chapter 3 – An Analysis of Gaubert’s *Troisième Sonate*

While it might initially seem logical to apply traditional concepts to the *Troisième Sonate*, there are many peculiar moments that inspire and require further and less traditional analysis. The music’s surface both encourages and discourages traditional listening. Sometimes this surface disguises innovative aspects but, as explained in the previous chapters, sometimes it foregrounds these non-traditional structures. This suggests that, to gain an adequate understanding of the music, one must be alert to surface peculiarities, regarding them as significant and perhaps as indicative of non-standard principles and methods that are operative alongside others that are essentially traditional. It will be helpful first to briefly discuss the formal divisions of the piece and then to discuss the interesting points in each individual section.

As one might expect, the piece has a fairly standard sonata form with an exposition (including first and second thematic sections), a development, a recapitulation, and a coda. Table 6 shows the overall formal and harmonic structure of the piece.

Table 6  —  Formal and Harmonic Structure of the *Troisième Sonate*

<table>
<thead>
<tr>
<th>Exposition</th>
<th>Development</th>
<th>Recapitulation</th>
<th>Coda</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(trans.)</td>
<td>(Theme 2 fragments)</td>
<td>(trans.)</td>
</tr>
<tr>
<td>Theme 1 (G)</td>
<td>B/Cb (c)</td>
<td><em>Cb</em> (Db)</td>
<td><em>Cb</em> (Db)</td>
</tr>
<tr>
<td>Theme 2</td>
<td><em>Eb</em> (Db)</td>
<td><em>Eb</em> (Db)</td>
<td>130</td>
</tr>
<tr>
<td>1</td>
<td>36</td>
<td>67</td>
<td>93</td>
</tr>
</tbody>
</table>
As table 6 shows, one possible representation of the harmonic (though not the thematic) form of the sonata is as a double arch. In the exposition, the harmonies rise through an augmented triad from G to Eb. The beginning of the development section moves back down to Cb, but then rises again to Eb, descending back down the augmented triad to G in the recapitulation. It is obvious that the piece may be divided into two mirror-image parts, the Cb at the beginning of the development being the center of a large palindromic structure (the moves to B and G at the end of the Coda being an extension beyond the G of the Theme I restatement). It is also obvious that by choosing the augmented triad as the harmonic skeleton of the piece, and often moving between the notes of the augmented triad by whole-tone steps, Gaubert incorporates an aspect of the foreground whole-tone elaboration so prominent at the piece's surface into its background structure. Minor third relationships — B-Ab (measures 40 to 51), C-Eb (measures 67 to 92), and Cb-D (measures 130 to 143), for example — are important, but perhaps secondary to the major third relationships. However, the strong D major at measure 143 and the minor third B to D leading to it suggest that there is still a role for the G major triad in the larger structure. The resulting ur-harmony is (G, B, D, Eb), with the priority of D versus Eb difficult to determine. This opposition is another example of the Hexatonic System/Weitzmann Region opposition discussed briefly at the end of the previous chapter. If Eb is superior, the G triad ‘hangs off’ the augmented triad in Weizmann-like fashion. If D is
ultimately more harmonic, Eb is just an insistently present, but non-diatonic, note in G major, or a cohabitant within hexatonic collection 4.

The opening theme of the Troisième Sonate is basically sixteen measures long. However, the theme is extended for eight more measures before the thematic repetition in measure 25. This opening section provides an obvious starting place for a discussion of innovation in this piece. (The voice-leading of this passage will be discussed in detail in the next chapter – see the voice-leading sketches of measures 1 to 12 in figure 29.) The first eight measures create the impression of tonality in a number of ways. Specifically, the use of the perfect fifth interval accommodates both traditional triadic harmony and circle of fifth harmonic progressions. However, if one attempts to label this section with Roman numerals suggestive of harmonic progressions, one encounters a number of difficulties. It is often challenging even to interpret individual chords in a traditional way. For example, it is difficult to know whether to label the chord in measure 2 as a first inversion tonic chord (as it does contain the G-D fifth and has the B in the bass) or whether, because of the B-F# fifth, it is better labeled as a III chord. Similarly, while it seems logical to label the chord in measure 9 as a IV chord, and the chord in the next measure as a II chord, these two measures actually contain exactly the same pitches and could be heard as inversions of the same chord, despite their apparently different roots. While similar questions may arise in many tonal pieces, the section from measures 14 to 20 really seems to elude meaningful Roman numeral labeling in a more radical way. (To be fair,

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24 Another interpretation of this passage would be to hear measures 1 to 8 as an antecedent and measures 9 to 24 as the consequent. Both have 1:1:2 proportions, but the consequent takes twice as long.
though, the Roman numerals do show how closely the musical surface approximates traditional tonal chords and progressions at times, even if these labels fall short of adequate description.)

Figure 20 shows one possible reduction of the principal theme to its main harmonies. The voice-leading concepts on which this reduction is based will be explained in Chapter 4, where a second, more traditional sketch of the passage is also presented. It is interesting to note that, while some chords are very obviously meant to have traditional tonal functions (dominant, tonic, etc.) the overall harmonic progression of the section is not particularly traditional.

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The progression goes something like this: the G tonic chord moves to a II chord in measure 4 and back to tonic in measure 5. This moves again to an A-rooted chord in measure 7, which now tonicizes the dominant in measure 8. So far, the traditional progression, I-II-V, has brought the phrase to a half cadence. Instead of returning to the tonic, as one might expect of a traditional harmonic paradigm, the bass line, at a middleground level, continues downward by whole step,
through IV and III (measure 12), returning to II in measure 13. The II chord is essentially prolonged until measure 24 (as will presently be explained), where it resolves directly to the tonic chord in measure 25. The overall harmonic progression, I-II-V-II-I, is not particularly traditional, but is consistent with Gaubert's tendency to create symmetrical structures (other palindromic structures will be discussed in Part 2) and to avoid direct leading-tone resolutions.

For essentially half the passage (measures 13 to 24), the II is being prolonged in an interesting way that has more to do with progressing through different collections than with traditional harmonic movement. Measures 1 to 12 express a diatonic G major collection. The collection changes somewhat drastically in measure 14 as the flute descends by whole-tone from the B in measure 13 to the Cb in measure 15. While the flute's collection seems to shift almost immediately from diatonic to whole-tone, the piano takes a more gradual route from the diatonic before arriving on the completely whole-tone chord in measure 20. The diatonic II9 chord in measure 13 is prolonged by a series of Mm7th and MmM9th chords in measures 14 to 19, the roots of which present an obvious octatonic alternation of whole-tones and semitones. It is evident, then, that there are three different types of collections heard in this passage. Figure 21a shows how each individual Mm7th or MmM9th chord in measures 14 to 20 suggests, uniquely, its own diatonic collection. Figure 21b shows how the chords in measures 14, 15/17, and 20 belong to whole-tone collection 2, while the chords in measures 16/18 and 19 belong to whole-tone collection 1 (MmM9th
chords (minus their fifths) are in the same whole-tone collection when they are a major second apart). And figure 21c shows how the chords in measures 13, 14, and 16/18 belong to octatonic collection 1, while the chords in measures 15/17 and 19 belong to octatonic collection 2 (Mm7ths (the 9th is omitted) are in the same octatonic collection when they are a minor third apart).

Figure 21 – Diatonic (a), Whole-tone (b), and Octatonic (c) Collections in mm. 13-20

Octatonic 1 predominates in measures 13 to 20, and it seems reasonable to regard these measures as prolonging the A7 sonority that frames them (in measures 13 and 20) by the succession of octatonically-related seventh chords (A7-Eb7-C7-A7), providing another example of the octatonic seventh chord.
substitution discussed in Chapter 2, though not in the context of dominant function. Also, because chords related to each other by octatonic collection 2 are inserted in between these octatonic 1 chords, the whole-tone collection is heard, connecting the chords of one octatonic collection to those of the other. In this way, the whole-tone chord of measure 20 is anticipated, not only by the flute melody, but also by the chord relationships leading up to it. Detailed discussion of the pitches in measures 1 to 25 will be continued in Chapter 4. Before moving on, it is interesting to note, for now, that while the thematic material suggests a division of the section into three eight-measure groups (or perhaps one eight-measure group and one sixteen-measure group), representing a slow triple hypermeter, the collections used suggest a two-part division (12+12), representing a slow duple hypermeter and creating a kind of three-against-two hemiola effect.

The next thematic section begins at measure 67 in c minor. However, the transitional section that leads to measure 67 needs to be discussed first, as it too is quite puzzling. In measure 25, the first theme begins to repeat exactly until it reaches the b minor chord (III) in measure 36. Instead of continuing the whole-tone descent to II and ultimately to I as previously occurred, the B sonority is extended for eight measures, changing from minor to major in measure 40. At measure 44, there is a transposition up a semitone of the first two phrases of the opening theme in the flute, but F# is used in the harmony of measure 44 rather than F natural, and F#(Gb) recurs by voice-exchange in measure 46. This use of F# allows for the persistence of a second common tone (in addition to D#=Eb)
between this Ab major section and the previous B major chord. The second
phrase ends with the expected cadence on an Eb major chord, but the third
phrase begins immediately in Cb major, a minor third up from the expected
continuation in Ab (note that Cb major is enharmonically equivalent to the B
major chord at measure 40). As well, the harmonic progression of measure 52
and following is noticeably more traditional than that of the preceding music,
beginning as it does with a conventional <I, VI, II, V, I>. In measure 59, the Gb
of the previous measure is enharmonically respelled as F#, becoming a leading-
tone to the G in measure 61. In measures 61 to 66, the G whole-tone collection
returns, now functioning as a dominant (with lowered fifth) of c minor in measure
67.

The reader will recall that these non-traditional harmonic moves (B to Ab,
Eb to Cb, and B to G) have already been discussed in Chapter 2 as instances of
dominant and tonic substitution. However, the ways in which the particular
sonorities resulting from these moves fit into an overall network or design must
also be considered. Why would Gaubert include this odd little section, repeating
the first two thematic phrases a semitone higher and continuing the third phrase
a major third higher? What is the significance of the B/Cb sonorities that are so
prominent here? The first logical interpretation might be that this whole section is
an extension of B major, which then acts as the leading-tone to prepare the c
minor second theme. However, this interpretation does not explain some
important sonorities, and does not properly account for the two distinct functions
that B/Cb has in the section.
The section begins with a G tonic in measure 25. It continues as expected until measure 40 where the B suddenly becomes major and emphasized, sounding dominant in function. The Ab section begins in measure 44, leading to a dominant Eb chord in measure 51. Cb major is now presented as a tonic, and it leads to the G sonority in measure 61, now dominant in function. The main goals and functions of the section are summarized in the table below (bracketed sonorities are more important to voice-leading than to the harmonic structure of the section):

Table 7 — Main Harmonies of the Transitional Section (mm. 25-61)

<table>
<thead>
<tr>
<th>m. 25</th>
<th>m. 40</th>
<th>m. 44</th>
<th>m. 51</th>
<th>m. 52</th>
<th>m. 59</th>
<th>m. 61</th>
</tr>
</thead>
<tbody>
<tr>
<td>G-tonic</td>
<td>B-dominant</td>
<td>(Ab-tonic?)</td>
<td>Eb-dominant</td>
<td>Cb/B-tonic</td>
<td>(B-dominant)</td>
<td>G-dominant</td>
</tr>
</tbody>
</table>

Table 7 clearly reveals an interesting process in the section that is related to the substitution concept discussed in Chapter 2. Even at this early stage in the piece, one can hear a definite ascending arpeggiation of the augmented triad G-B-Eb and back down again to G (measures 25, 40, 51, 52, and 61). As discussed above, this augmented triad becomes extremely important in the piece's overall harmonic organization. However, at this point, it serves a more local purpose as well. As table 7 shows, the hexatonically-related G, B, and Eb major chords all function as dominants at some point during the section. In his book, *Harmonic Function in Chromatic Music*, Daniel Harrison presents the idea of a function shared by a series of chords. He says of a passage by Wagner,
“although the opening idea and its transpositions leave impressions of different keys, they also leave a single impression of unresolved Dominantness, of a general buildup of Dominant charge that requires eventual resolution.” In a similar way, the three hexatonically-related dominant chords of the section help to prepare the c minor second theme. More specifically, in this case, the roots of these chords act collectively to tonicize c minor, by forming an augmented triad built on its dominant (G-B-Eb(D#)).

A second interesting point about this section is that a pattern emerges in which each of the three hexatonic chords is used as both a tonic and a dominant. The G is tonic at measure 25 and dominant at measure 61; the B is tonic at measure 52 and dominant at measure 40; and the Eb is dominant at measure 51. Based on this, one might expect an Eb tonic at some time in the piece’s near future, which is exactly what happens in the second thematic section. Thus, there are two series involving triads built on the Eb-G-B augmented triad – one of dominant function and one of tonic function (see table 8).

| Table 8 — Series of Tonic- and Dominant-Function Chords (mm. 25-72) |
|-------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Measure     | 25   | 40   | 51   | 52   | 61   | 67   | 72   |
| Tonic Series | GM   |       | CbM  |       |      |      |      |
| Dominant Series |      | BM   | EbM  |      | GM−  |      |      |


Another surface event also prepares for c minor. The voice exchange in measures 44 to 46 sounds like the elaboration of an augmented sixth in c minor, implying continuation to a G sonority, which doesn’t arrive until measure 61.
The second thematic section, beginning at measure 67 in c minor, provides contrast to the first in a number of ways. First, it presents the minor mode for the first time in the piece. Second, the accompanimental pattern has changed from the alternating right and left hand fifths to a constant attacking of stacked thirds. Last, the harmonic progressions are much more traditional, generally following the standard tonic-predominant-dominant-tonic pattern closely. However this section is not without interesting features. Extending from measure 67 to measure 93, it can basically be heard as a double period in which a pair of phrases, at measures 67 and 72, respectively, is repeated almost exactly at measures 80 and 85. The main thematic material is first presented in c minor, and is then transposed to eb minor in the second phrase of the section. This 'modulation' to eb minor, while sounding quite sudden because of the repeated melodic theme, is actually prepared by the dominant chord in measure 71. Figure 22a shows the expected resolution of the measure 71 chord, a V4/2 resolving to a first inversion c minor tonic (please note that in the Heugel edition, the G's on the second and third beats of measure 71 should be natural instead of flat, just as in measure 84). Figure 22b shows a vii°6/5 of eb resolving to its eb minor tonic. It is easy to see that these dominant-function chords differ by only one note, and therefore, an eb minor resolution of the chord in measure 71 works quite smoothly.
As mentioned in Chapter 2, the traditional chord progressions of the section’s first measures quickly become dominated by hexatonic sequences based on the maximally smooth cycle. In measures 75 to 77, for example, the flute sequences the same melodic figure, arpeggiating the augmented triad Bb-F#-D, the successive tones of which occur at the beginning of each statement. While the top pitches in the flute melody spell out this augmented triad, the augmented triad itself never sounds harmonically in this passage. “Despite this literal absence, one might say that the shadow of the augmented triad...is cast across the...passage.”

This augmented triad easily moves by semitone to become the augmented triad previously used to ‘tonicize’ c minor, leading back to the repeat of c minor. Instead of leading to c minor in measures 88 to 93, the flute continues its arpeggiation down the augmented triad to return to its starting place (the complete maximally smooth cycle) in measure 92. It is interesting to note that, while Gaubert is obviously making extensive use of the augmented triad in this section, he chooses not to exploit its whole-tone possibilities at this point.

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point, but supports it with traditional-sounding minor triads. Nonetheless, the more traditional use of the augmented triad as a dominant substitution chord allows Gaubert to integrate the whole-tone sound into this definitively tonal section.

The developmental section, beginning at measure 94 and ending at measure 129, is the loosest part of the piece, containing many thematic fragments and quickly shifting tonal centers. The section begins with a fragment of the second theme over the conventional Cb major harmonic progression heard previously in the transitional section between themes one and two (at measure 52). In getting to this Cb major tonal center from the eb minor of the last section, Gaubert simply descends by whole-tone, through Db major in measure 93. After the much more traditional second thematic section, one might expect the Cb major section to at least be introduced by its dominant. However, Gaubert chooses to return to the use of parallel fifths, descending by whole-tone in the bass, from the Eb-Bb in measure 92 to the Cb-Gb in measure 94.

The main harmonic movement in the development section is from Cb in measure 94, to Db in measure 112, to Eb in measure 122, and finally, to the Cb in measure 130 (Cb is essentially prolonged throughout the section). However, the way in which the music gets back up to Eb is not nearly as direct as the way in which it came down from there at the end of the preceding section. As figure 23 shows, Cb is decorated with a lower semitone to Bb, while Db is decorated with an upper semitone to D, a kind of mobile double neighbour figure. Figure 24
provides a much more detailed, pitch-specific sketch of the voice-leading of these measures.

Figure 23 – Main Harmonic Movements in mm. 94-112

Figure 24 – Voice-Leading Graph of mm. 94-112

The constant repetition and sequencing of fragments of the second theme gives this section its very developmental feel. The surface melodic style is that of a post-Wagnerian endless melody: as soon as the theme has been introduced in one key, the melodic line continues upward in an ascent that is succeeded by a new thematic layer, usually in a lower octave, to accommodate yet another stage of ascent. The whole process begins and ends on the same pitch, the Eb6 in
measures 94 and 122, both in the flute. This melodic continuity is shown in figure 25, which uses asterisks to locate the statements of the second theme. Note that, in measure 97, the piano introduces a <1, 3, 3> pattern. This is taken up in the flute beginning in measure 103 and repeated in the piano in retrograde beginning in measure 108.

Figure 25 — Rising Melodic Line in mm. 94-122

There are a few places in this section that contain an idea similar to that used in the previous section, where the flute spelled out augmented triads horizontally while the piano played vertical minor triads. In measures 100 and 101, the bass line spells out a C major chord horizontally, while vertically, a diminished-seventh chord and then whole-tone collection sound overtop (this passage was discussed in Chapter 1 as an example of collectional pivot chords). Similarly, a diminished-seventh chord sounds overtop of an arpeggiated eb minor chord in measures 105 to 107. The local harmonies are somewhat blurry at these points, but the main harmonic motion of the section is very clearly presented.

The Db at measure 112 is prolonged until measure 121, becoming c# minor in the process. It then progresses by whole-tone to Eb in the bass at
measure 122, which quickly returns to Cb in measure 130 via an interesting progression that begins with six voices and ends with four (see figure 26).

Figure 26 – Harmonic Progression in mm. 122-132

Because of the way it is approached, the Eb at measure 122 may be heard as a dominant, and the preceding Db/c# as a subdominant, to an octatonically-derived Cb substitute tonic in measure 130. The return of the first theme in measure 130 may sound like a false recapitulation in Cb major. However, this section harks back not to the beginning of the piece, but to the transitional section between the first and second thematic sections. In fact, there are many similarities between these two sections. Figure 27a reviews the main harmonic moves of the first transitional section from measures 40 to 67, and figure 27b summarizes the main harmonic moves of the development and second transitional sections from measures 94 to 155.

As mentioned above, the Cb in measure 130 is tonicized by the Eb in measure 122, which is an octatonic substitute for the usual Gb dominant (similar substitutions were discussed in Chapter 2). What is interesting about the comparison of the two passages is that the harmonic pattern of measures 40 to
Figure 27 – Comparison of the Main Harmonic Movements of the First Transitional Section (a) with the Development and Second Transitional Sections (b)

a) Transition 1

\[
\begin{array}{cccccccc}
\text{m.} & 40 & 44 & 51 & 52 & 58 & 59 & 61 & 67 \\
B & \rightarrow & Ab & \rightarrow & Eb & \rightarrow & Cb & \rightarrow & Gb = B7 \rightarrow G \rightarrow C \\
D & T & D & T & D & T/D & T \\
\end{array}
\]

b) Development & Transition 2

\[
\begin{array}{cccccccccccc}
\text{m.} & 94 & 103 & 108 & 112 & 122 & 130 & 139 & 143 & 148 - 151 & 155 \\
Cb & \rightarrow & (Bb \rightarrow D) & Db & Eb \rightarrow Cb & \rightarrow & Gb \rightarrow D & \rightarrow & (Db \rightarrow C & Bb \rightarrow A) & \rightarrow & G \\
T & S & D & T & D & T/D & T \\
\end{array}
\]

Note: an arrow indicates a substitute dominant or tonic (either hexatonically- or octatonically-related), dashes indicate a diatonic dominant-tonic relationship, and an equal sign indicates a prolongational relationship. T = tonic-, D = dominant-, and S = subdominant-function chords.

61 from figure 27a is almost identical to that of measures 122 to 155 from figure 27b. The main differences (apart from the fact that different pitch centers are used) are that B to Ab (figure 27a) is an example of hexatonic substitution, whereas Eb to Cb (figure 27b) is octatonic substitution, and that the dominant in measures 58 to 59 of the first transition does not exist in the second, whereas the series of chords between the final dominant-tonic pair (D-G) in the second transition does not exist in the first. One final point of interest about the second transition section involves this 'added' series of chords from measures 148 to
The series recalls the octatonic descent of measures 15 to 20 discussed above. However, within the context of this passage, it has added significance. At the beginning of the second transition, $Cb$ and $D$ tonics are tonicized. These two tonics are related by octatonic collection 3. Then, in the octatonic descent from measures 148 to 151, the $C$ and $A$ chords (measures 147/9 and 151, respectively) are led to by the chords that precede them and by the dynamics of the passage. These two chords are related by octatonic collection 1. Finally, $G$ is tonicized by its diatonic $D$ dominant (the dominant function of the $D$ chord in measure 143 is heard retrospectively once the $G$ appears) at the beginning of the recapitulation, which represents octatonic collection 2.

The opening theme truly returns in $G$ at measure 155. However, the repeat of this theme is soon abandoned for a brief return to the second theme in $B$ at measure 170. The chords in measures 170 to 173 are consistently five-note chords made up of stacked thirds and the root movement is by descending fifth, ending on the dominant in measure 172. While this is a fairly traditional progression, the reintroduction of $B$ (presented before the expected return to $G$) is unusual. Still, it is prepared by the augmented triad structural arpeggiation of the piece. Measures 174 to 177 are interesting for at least two reasons. First, for the first time in the piece, a hexatonic collection is presented right at the surface of the music, rather than implied by chord relationships or spelled out over a large span of time. Second, the chords in measures 174/5 and 176/7 are noteworthy because they can be heard in two ways – either as augmented triads with an added tone ($Bb-D-F# + G$ and $B-D#-Fx + A#$) or as consonant triads with
an added tone (G-Bb-D + F# and D#-Fx-A# + B) (see figure 28). The dual nature of the chords in this passage is significant because it reflects, on a small scale and in a very audible way, the larger structure of the piece – the opposition of the G-B(Cb)-D(Eb) augmented triad with the more traditional G-B-D major triad.

Figure 28 – Hexatonic Collection 3 in mm. 174-177 (score)

Finally, the material from measures 178 until the end of the piece basically extends and reconfirms the tonic G. However, instead of confirming it with a traditional harmonic progression involving dominant-tonic, Gaubert makes obvious use of his established parallel-fifth sound and symmetrical chord progressions (this cadential passage will be discussed further in Chapter 4).
Part 2  Voice-leading, Symmetrical Structures, and Gaubert's Suite

Chapter 4  Innovations in Voice-leading and Resulting Symmetrical Structures

The relationship between the horizontal (melodic) and the vertical (harmonic) pitch components of tonal music is delicately balanced. The vertical slices that can be labeled by Roman numerals as harmonies of specific function are really the result of multiple melodic voices moving together through time. The melodic paths these voices take are, in turn, shaped by the resulting harmonies. Tensions created melodically (by leaps, register, etc.) and harmonically (by dissonant intervals between voices) must be carefully resolved in common-practice music, and the experienced listener comes to expect certain pitches to sound, not only simultaneously, but also in succession. Thus, it is not merely the pitch content of the chords in the music, but also the motion of the individual voices, working together to form such chords, that may be altered to avoid a strictly conventional sound. In Part 1, techniques that varied the expected pitch-class content of chords (while maintaining traditional voice-leading) were mainly discussed. In contrast, the discussion in Part 2 will focus on the way in which Gaubert varies the voice-leading between chords, at times creating symmetrical structures, while retaining fairly traditional diatonic pitch-class content.

In common practice music, the upper voices of the musical texture tend to move from chord tone to chord tone by the smallest interval possible (often by semitone or whole-tone). Step motion is particularly required in upper voices as vertical dissonances are resolved. In the bass voice, however, motion typically
involves larger and more frequent leaps. As well, a fair variety in the types of motion between voices (parallel, contrary, similar, and oblique) is expected. Thus, the listener has specific expectations about how melodic lines in a piece of tonal music move, both individually and in relation to other voices in the texture. These expectations provide more opportunities (in addition to the harmonic opportunities discussed in Part 1) for subtle elements of innovation to exist in otherwise traditional pieces. Gaubert takes advantage of these opportunities for voice-leading innovation. While the majority of the discussion in this chapter results from techniques used in the “Scherzo-Valse”, the Troisième Sonate also provides a couple of brief examples of innovative voice-leading. The discussion will begin with the latter work.

Both the opening theme and the coda sections of the first movement of the Troisième Sonate are characterized by peculiar voice-leading. Figure 29 provides two views of the voice-leading of measures 1 to 12, one traditional (figure 29a emphasizes traditional harmonic voice-leading) and one non-traditional (figure 29b emphasizes the motion of stacks of perfect fifths moving in parallel). The reader will note that both versions are interpretive, that is, both suppress some of the data to emphasize particular continuities. For example, figure 29a emphasizes traditional stacked thirds and stepwise voice-leading that may be heard in the passage, downplaying the significant fifth motion. Figure 29b emphasizes the streams of parallel fifths in the passage, but cannot accommodate some ‘added’ pitches, which make the music sound more traditional, especially at cadences.
Figure 29  –  Two Approaches to Voice-Leading in mm. 1-12 – Traditional (a) and Non-Traditional (b)

Note: Black note heads indicate pitches for which the voice-leading approach cannot account.

The fact that two very different voice-leading graphs may be made for this passage, and the fact that neither fully accounts for the passage without the other, shows how well traditional and non-traditional elements intermingle in the piece. The motions in parallel fifths are most prominent in measures 1 to 3, 5 to 6, and 11 to 12, while traditional voice-leading is mostly found at and after the first big cadence of the piece (measures 7 to 11). By the fourth phrase (measures 13 to 16), the movement of the fifths, while still based on parallel motion, proceeds entirely by step (see figure 30). In a sense, then, the fourth phrase reconciles the stepwise voice-leading of figure 29a with the parallel-fifth motion of figure 29b.
There are three interesting points to make regarding figure 29b. First, the way the voices move in parallel with each other is unusual. The fact that fifths are moving in parallel adds to the peculiarity.\(^\text{28}\) Second, the individual melodic lines do not move consistently smoothly (by step) until the fourth phrase. The disjunct nature of this motion is heightened by the parallelism of the passage. Because voices move mostly in parallel, there is no contrast between the motion of the bass line and the motion of the upper voices. All the voices take on the disjunct character of the bass line, at the expense of the smoothness of the melodic line. In the first two phrases, the flute does not have an independent line, but follows the skeleton of the upper right hand notes of the piano exactly, becoming more independent only at measure 8. It is really not until the third phrase that the flute breaks away from this parallelism with the piano to create a more traditional, step-wise melodic line. Third, the fact that Gaubert chooses to make the interval

\(^{28}\) To write two pairs of fifths moving in long stretches of parallel motion with each other is an obvious avoidance of common-practice voice-leading somewhat reminiscent of Medieval organum. The Ecole Niedermeyer (founded by Louis Niedermeyer) was particularly influential in French musical education in the mid-19th-century, teaching plainchant and modal harmony. Fauré was particularly influenced by this approach, and it is likely that Gaubert was as well, either directly by the school, or indirectly by hearing the music of Fauré and other French composers of the day.
of the perfect fifth prominent in this passage, and the way in which he does this, is interesting. The perfect fifth is probably the most tonally-loaded of all the intervals, and its use evokes the important tonal concepts of triadic harmony and circle-of-fifth harmonic progressions. By almost always including the fifth directly above each bass note, Gaubert insures that one will hear the bass notes as the roots of most chords in these measures. As well, the third that completes the triads outlined by the bass fifths is usually included. However, this third often has its own fifth above and/or below, which calls the triadic basis of the sonority into question. The actual spacing of the sonorities suggests that what is occurring harmonically in this section might be otherwise described than as triadic harmony. Rather than emphasizing the stacked thirds in these chords, the passage might be understood as two separate fifths – one 'decorating' the bass from above and one 'decorating' the melody from below – moving mostly in disjunct parallel motion.

The cadential material from measure 178 to the end of the first movement very obviously recalls the parallel fifths of the opening theme (see figure 31). However, this passage includes another interesting dimension in addition to its similarity to the opening. Measures 178 to 182 may be shown as two pairs of fifths that ascend, one at a time, to an apogee on the V#7 and then descend in the same way to the starting position, essentially prolonging the G tonic (see figure 32).
Figure 31 – Parallel Fifths in the Cadential Material from mm. 178-end (score)

Figure 32 – Temporal Symmetry (Palindromic Structures) in mm. 178-182
What is interesting about this passage is not only its parallel voice-leading by fifths rather than by step, but also the symmetry that is accomplished despite the transpositionally asymmetrical nature of the diatonic collection. There are two types of symmetry in this passage. The most obvious type is the temporal symmetry found in the palindromes of measures 178 to 182 as shown in figure 32. The second and less obvious type of symmetry is the pitch-class symmetry found in the entire passage from measure 178 to the end of the movement. The idea that this passage is governed by a more abstract kind of symmetry is sparked by a detail as simple as Gaubert's inclusion of both C and C# in what is otherwise a diatonic G major passage. Figure 33 shows the three main chords defining this symmetry.

Figure 33 – Pitch-Class Symmetry of the Cadential Material as Defined by Chords in mm. 179, 186, and 187

To understand the significance of the pitch arrangement in figure 33, the reader must first imagine a pitch-class field ordered by the perfect fifth:

\(<C, G, D, A, E, B, F\#, C\#>\)

This field is inversionally symmetrical around C/C# (or F#/G). The music explores this field, expressing the symmetry in temporal rather than in registral
The chords in figure 33 are transpositions of each other, each containing two perfect fifths separated by three perfect fifths in the pitch-class field (or a M21st apart in pitch space). The first motion of the passage is to the chord on beat 1 of measure 179, the rightmost such chord in the field (see figure 34a). This motion is balanced by the motion to chord two in measure 186, which is the leftmost equivalent chord (figure 34b). The 'resolution' to the tonic chord in measure 187, therefore, is not about tendency tones and vertical dissonances moving by step to consonance. Instead, it involves motion to a tonic chord that is in the center of this pitch-class field as defined by the outer boundaries of the previous two chords (figure 34c).

Figure 34 – Pitch-Class Symmetry of the Cadential Material (Motion within an Eight Pitch-Class Field)

a) <C G D A E B F# C#>

b) <C G D A E B F# C#>

c) <C G D A E B F# C#>

A careful distinction must be made between the parallel perfect fifths of the opening example—a pitch phenomenon—and the more abstract symmetrical motion through a field of pitch-classes ordered as a cycle of 7’s, found in figure 34—a matter of pitch-classes. This second example provides a nice bridge between the discussion of the parallel fifth voice-leading of the opening passage.
and the upcoming discussion of symmetrical, 'stacked-fifth' structures in the
"Scherzo-Valse" below because it contains both elements. At the start of the
passage, in measures 178 to 181, the listener hears a temporal symmetry as
perfect fifths move in parallel motion, in a manner reminiscent of the opening
passage. The larger, more abstract symmetry that is described above, deals
with progression through a conceptually ordered collection or field of pitch-
classes and not with melodic voice-leading. (Therefore, the choices of pitches to
represent the elements of the pitch-class field of figure 33 should not be
confused with the arrangement of pitches in the voice-leading graph of figure
29b). Of course, there is no reason why pitch-class symmetry may not, at times,
be realized, or represented, as actual pitch symmetry. This happens when a
pitch-class cycle determined by the ordered interval 7 is realized as a stack of
perfect fifths, as sometimes happens in the "Scherzo-Valse".

"The concept of a tonal center...has two general meanings. One is the
establishment of a given pitch-class as the primary tone of a traditional mode;
here the term center is a misnomer. The other meaning is the establishment of a
given sonic area by symmetrical organization of a conglomerate of pitch-classes
around an axis of symmetry...In such symmetrical relations, the term tonal center
has a literal designation."\(^{29}\) This quote from Elliott Antokoletz's book, The Music
of Béla Bartók, describes what is going on in the "Scherzo-Valse" quite
accurately (if, for "pitches" one substitutes "pitch-classes" in Antokoletz's
definition). The reader will recall from Chapter 1 that the only interval-class that

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does not evenly divide the octave is the perfect fourth/fifth. While each of the other interval-class cycles either forms a 'standard' transpositionally symmetrical collection or may be combined with another cycle based on the same interval-class to form such a collection, the cycle of perfect fourths/fifths extends many octaves before an enharmonically equivalent pitch-class is repeated – the idea of the pitch-class field ordered by interval class 5/7 introduced above, is now expanded to include all twelve pitch-classes.30

Table 9 – Pitch-Classes Numbered as in a Cycle of ‘Perfect Fifths’ (7’s) – An Ordered Pitch-Class Set

<table>
<thead>
<tr>
<th></th>
<th>Bb</th>
<th>F</th>
<th>C</th>
<th>G</th>
<th>D</th>
<th>A</th>
<th>E</th>
<th>F#</th>
<th>C#</th>
<th>G#</th>
<th>D#</th>
<th>A#</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12=0</td>
</tr>
</tbody>
</table>

It has become very natural for theorists to number the twelve pitch-classes chromatically (C=0, C#/Db=1, D=2, etc.), the interval between pitch-class 0 and 1 being a semitone. However, as table 9 indicates, it is also perfectly logical to arrange and number the pitch-classes as they occur in a cycle of ‘perfect fifths’ (7’s)31, the ordered interval between successive pitch-classes being seven semitones. An example from the piece will better clarify the application of this concept and will show how, despite the transpositional asymmetry of the diatonic

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30 The question of whether enharmonic equivalence should be assumed when dealing with cycles of fifths is more complicated than with the chromatic scale. For the purposes of analyzing Gaubert's music, it will be assumed that the cycle closes enharmonically at Bb/A# (for reasons which will become evident in Chapter 5), but with the expectation that there will be further discussion in Chapter 5 regarding the deliberate use of specific accidentals in the "Scherzo-Valse".

31 It would also be possible to arrange the pitch-classes as in a cycle of perfect fourths (5’s). The prominence of the perfect fifth interval in Gaubert's music is the reason the pitch-classes are numbered in this way. However, fifths will be put in quotations to indicate that the interval of a fourth may also be used.
collection, Gaubert is able to create symmetrical structures using motion by 7's rather than by step.

While much of the "Scherzo-Valse" may be quite adequately described using traditional harmonic language, there are a few passages for which this language does not seem to capture all the relationships that are occurring in the music. It is in these passages that the concept of 'stacked fifths' creating symmetrical structures seems to shed more light than a traditional approach.

The piano's two-bar introduction presents an interesting sonority that turns out to be particularly favoured in the piece. It appears to be a dominant, the A to E fifth sounding its outer boundaries, and the minor seventh (G) strongly pointing to this possible dominant function. However, it quickly becomes apparent that the leading-tone is deliberately avoided. Instead of filling the space between A and E with the third of the chord, Gaubert fills it with a G major triad. While the A to E fifth obviously dominates the listener's perception of its chordal function (particularly, the A of the bass falling to D in measure 18), the embedded G major chord can be heard as the subdominant of the key. In this way, the dominant and subdominant functions are united in a single chord that ultimately resolves to the tonic, D major.\textsuperscript{32} While one could attempt to explain the chord progressions that lead from the opening sonority to the tonic with traditional concepts of voice-leading and harmony, it quickly becomes apparent that this approach does not adequately explain the uniqueness of the passage. The opening chord, if viewed

\textsuperscript{32} The concept of dominant and subdominant resolving simultaneously to the tonic seems somewhat Riemannian in nature. Instead of conceiving the subdominant as a predominant chord simply leading to the dominant (a less essential role), it may be conceived as the dominant's equivalent below the tonic chord.
in a more abstract way, actually provides the first hint at a major organizing principle – the concept of ‘stacked fifths’ – and at the generation of symmetrical structures in this passage and in the piece as a whole.

One can easily observe that the pitch-classes in this chord may be arranged in an ungapped stack of 7's, and hence, as <G, D, A, E, and B>, the center of which is A (see figure 35).

Figure 35 – Opening Sonority Represented as a Series of 7's ('Stacked Fifths')

From this sonority, the piece proceeds harmonically to an F-rooted chord, a D dominant ninth chord, and finally, a C major triad at the end of the second phrase (measure 10), a rather curious harmonic progression in the key of D major. However, if the notes of these chords are arranged according to their location in the set <F, C, G, D, A, E, B, F#> (a segment of table 9), in which the ‘fifth’ <D, A> occupies a central location, some interesting symmetrical patterns can easily be seen. The move from the dominant sonority to the F chord involves the addition

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33 Traditionally, these chords might be labeled in the following way: F chord = IV6 of CM (predominant function), Ddom = V9/V of CM, [missing but implied dominant of CM], CM = I of CM = bVII of DM. Obviously, this is not a very straightforward way to begin a piece in DM.
of a pitch that is two positions to the left of the lowest note of the opening sonority (G) within the underlying eight-element set. The D dominant ninth chord (measure 9) has boundaries that are exactly one position to the right of the boundaries of the F chord, and the note at the top of the fifths of the C major chord is exactly two positions to the left of the dominant ninth chord’s upper boundary (see figure 36). As well, the top note of chords one and two (as labeled in figure 36) is held as a common tone between these two chords, while the bottom note of chords three and four is held in common. Chords one and four, therefore, are similar in design (both span five positions), and chords two and three are similar (both span seven positions). (A slightly more abstract interpretation of this passage involves hearing the beginning of an outward spiral by fifth away from the tonic (in this passage, the D-A fifth), which ultimately provides an overall organizing structure for the piece. However, this interpretation is not really comprehensible until the piece is heard and analyzed in its entirety. An attempt at such an analysis follows in the next chapter.)

Figure 36 — Opening Passage Represented as ‘Stacked Fifths’ (mm. 1-10)
While figure 36 does help to point out some interesting symmetrical patterns in the passage, this type of notation would quickly become cumbersome and visually confusing as pitches are added in the extreme registers. However, this figure may be quickly summarized by labeling the pitches of the chords according to the numbering scheme in table 9. While this labeling is more abstract, it avoids a musically counterintuitive reordering of chords in pitch space that limits pitches to a specific register. Chord one may be labeled \{34567\}, chord two \{12567\}, chord three \{24568\}, and chord four \{236\}. If these chords are put into normal form (or in other words, labeled by set-class – terms borrowed from set theory), chord one becomes \{01234\}, chord two \{01256\}, chord three \{02346\}, and chord four \{014\}.

At this time, the reader may be wondering how this information is different from that gained from standard set-theory labeling, an option that will be explored for brief comparison. According to traditional set-theory, chord one belongs to set-class \{02479\}, chord two \{01378\}, chord three \{02469\}, and chord four \{037\}.\textsuperscript{34} There are major differences in the relationships these two labeling systems emphasize. Obviously, the second approach emphasizes how tightly each chord is packed together by semitone, while the first approach packs pitches together by perfect fifth. The first chord, for example, would not be considered very tightly packed by the chromatic standards of the semitone-based approach. However, according to the fifth-based approach, which designates the

\textsuperscript{34} A simpler way to move between the two labeling systems is to use Robert Morris's definition of pitch multiplication (Composition with Pitch-Classes (New Haven: Yale University Press, 1987), 42.): “The multiplication by the integer n of a pitch a is notated as Mn(a) and defines the mapping a → (na)”. For example, if the traditional set-theory label for chord one \{02479\} is multiplied by 7 (a perfect fifth) mod 12, the result is \{01234\}, the fifth-based label for the chord.
perfect fifth as the smallest interval between pitches, this chord is as tightly packed as possible. It is important to note that, while the fifth-based approach is really very similar to the semitone-based approach, the slight twist it brings to traditional set theory does make it more applicable to and consistent with Gaubert's music. In fact, this approach (and also Gaubert's music) can be viewed as a nice middle-ground between the very traditional triadic approach of the common-practice period and the completely chromatic set-class approach of the twentieth-century. While Gaubert's music does have extensive innovative passages that do not resemble traditional diatonic collections, harmonic progressions, or voice-leading, it is important to remember that much of his music is still rooted in tonal concepts. Therefore, to analyze this music without at least some reference to tonal concepts would likely provide less accurate results than would a completely traditional analysis. This short passage can give the reader only a brief introduction to the stacked-fifth symmetrical structures that serve as an organizing principle for the piece as a whole. However, now that the concept has been introduced, its significance will be more fully explored in the analysis of the entire piece in Chapter 5.
Chapter 5 – An Analysis of Gaubert's Suite, “Scherzo-Valse” movement

Like the Troisième Sonate, the final movement from Gaubert's Suite for flute and piano, while very light and playful on the surface, is full of provocative detail that merits intensive study. On the surface, things are as they should be – authentic cadences fall into place, groups often maintain four-bar regularity, an obvious theme is introduced, contrasted with a second theme, and brought back, and so on. In fact, it is extremely easy to be caught up in the lovely melodic flute lines and to accept the traditional appearance of the piece. However, as with the Troisième Sonate, it is really beneath these surface details that the real interest – the real dance – of the piece is heard. Gaubert plays with the listener's expectations and counts on his/her ability to make ‘traditional’, what, in the strict sense of the word, is anything but. While rhythmic, metric, phrase-structural, and formal oddities may be heard frequently in the piece, it is those aspects involving pitch (harmonic and melodic) that will be the main focus of this discussion. Again, it will be helpful first to briefly discuss the formal divisions of the piece and then to discuss the interesting points in each individual section.

The piece is divided into two almost equal halves (the first is 75 measures long and the second, 72 measures). With exactly the same large chunk of material beginning both halves of the piece, the form is probably best described as a binary (antecedent-consequent) structure. Each half begins with a two-bar piano introduction and proceeds with the main theme (A), which is then repeated with the flute melody transposed up a perfect fifth (A') and different piano accompaniment. Following the first thematic sections is a transitional section,
which leads to the second thematic section (B) in the first half and to the coda (which is divided into two sections) in the second half. The overall form of the piece is shown in table 10:

Table 10 – Overall Form of the “Scherzo-Valse”

<table>
<thead>
<tr>
<th>Section</th>
<th>Measure</th>
<th>Length in Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intro</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>3</td>
<td>17</td>
</tr>
<tr>
<td>A'</td>
<td>20</td>
<td>14 (fl = 16)</td>
</tr>
<tr>
<td>Trans 1</td>
<td>34</td>
<td>17 (fl = 15)</td>
</tr>
<tr>
<td>B</td>
<td>51</td>
<td>25</td>
</tr>
<tr>
<td>Intro</td>
<td>76</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>78</td>
<td>17</td>
</tr>
<tr>
<td>A'</td>
<td>95</td>
<td>15</td>
</tr>
<tr>
<td>Trans 2</td>
<td>110</td>
<td>10</td>
</tr>
<tr>
<td>Coda 1</td>
<td>120</td>
<td>17</td>
</tr>
<tr>
<td>Coda 2</td>
<td>137</td>
<td>11 (17+11=28)</td>
</tr>
</tbody>
</table>

The discussion in Chapter 4 emphasizes the important role the interval of the perfect fifth plays in the piece, as illustrated by the chordal structures of the opening thematic section. There is certainly more to be explored regarding this aspect of the piece. However, the fifths are probably most immediately heard as melodic relationships in the opening A and A' sections. The reader will recall that in Chapter 4, there is discussion of a passage in the Troisième Sonate that is described as two streams of fifths – one decorating the bass from above and one

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35 The phrasing of the flute and piano is slightly out-of-sync in these two sections. At the end of the A' section, the piano begins the transition section two measures earlier (in measure 34) than the flute, which finishes its last A' section phrase and then begins the transition section in measure 36. This means that the flute's A' section is two measures longer than that of the piano, while its transition 1 section is two measures shorter.
decorating the melody from below. This surrounding of tones by fifths above and below is also heard clearly in the melody of the opening A and A' sections.

In the first A section (measures 1 to 19), the melody presents a slightly expanded, but extremely straightforward sentence structure, essentially sixteen measures in length (not counting the two-bar introduction or the 'extra' measure right before the cadence in measure 18). Throughout this section, there is a clear interplay between B and E – to the point where it is difficult to decide what the focal pitch-class of the passage is. Harmonically speaking, the E would make the most sense, since it is a primary element of the dominant harmony that prevails during this opening passage. However, as discussed in Chapter 4, the B is also an important part of this chord, viewed as a stacked-fifth formation. Perhaps, then, one might choose the E because of its resolution to the F# in measure 18, which is supported by the first move to tonic harmony of the piece. This would make the B some kind of added harmonic element, perhaps an upper fifth to the E, the main tone of the melody. However, when the passage repeats itself a fifth higher at measure 20 (the beginning of the A' section), the listener may find it difficult to accept the consequences of this interpretation. At the big cadence in measure 18, the melody rises to the high F# (the highest pitch of the piece so far), and the A' section begins on this same F#. All this, it is true, supports hearing F# as the focal pitch-class of the next section, but this means hearing B as a supporting lower fifth. However, it is the B that is analogous to the focal E in section A, and this is especially evident because the melody in A'
exactly transposes that of the A section. In effect, if E is focal in A, B should be focal in A'.

A number of fifth relationships are evident in this interplay of focal pitch-classes. The E-B fifth is presented first in the A section, and is followed by the B-F# fifth in the A' section. A T7 transformation thus links section A to section A'. Given the discussion in Chapter 4, the reader might wonder at this point why it is necessary to pick a single focal pitch for each passage. The concept of hearing a focal fifth, rather than a single focal pitch, seems quite plausible (and certainly not far-fetched, given the other passages of Gaubert's music discussed above) and deserves further examination. At the beginning of the A' section, both the F# and the B can be heard as harmonic elements (just as can both B and E in the A section), since the tonic chord found at measure 18 also includes a B. If separated into its stacked fifths, one sees that the root of this chord (D) has a fifth above (A) and third of the chord (F#) has a fifth below (B). The reader will also quickly see that this chord is similar to the chord structures of the A section discussed in Chapter 4 – for example, it spans the same four fifths (or positions) as the opening chord from measure 1 but is missing a fifth in the middle (see figure 37).
However, in contrast to the abstract 'stacked-fifth' (or series of 7's) concept that structures the pitch movement in the A section (see Chapter 4, p.77-78), the A' section progresses much more traditionally, its movement structured by traditional harmonic progressions and voice-leading. While it may be perfectly reasonable to hear both pitch-classes in each section as focal, it is the more traditional nature of this second section that eventually insists on a single focal pitch-class by the end of the section.

The passage leads to a somewhat unexpected cadence on F# major in measure 34, which supports a single focal pitch (A#) in the melody, so the question is really how this second passage gets to this A# and where it goes from there. The most likely answer is that the A# comes from the B (rather than the F#) in the following way: The B from the beginning of the A' section moves down a whole-tone to A in measure 28. This A is then decorated by G# lower neighbours in measures 29 and 31 and ascends by semitone to the A# in measure 34, which eventually ascends back up to the B focal pitch (decorated by the F# fifth above) at the end of the transitional section in measure 47, completing a larger lower neighbour figure (B-A-(A#)-B). Looking back, then, one
could decide that the E is focal for the first section, while the B is focal for the second section, the B and F# acting as upper-fifth decorations to their respective focal pitches. However, it is also possible, and perhaps more sensitive to the interplay between the two pitch-classes, simply to recognize that Gaubert opens with a more innovative A section that can support two simultaneous focal pitches, and then gradually opts for a more traditional path, over traditional harmonic progressions, and an emerging single focal pitch in the A' section.

Harmonically, these opening sections are also quite interesting – the A section in particular. The first 10 measures have already been discussed in fair detail in Chapter 4. However, it is still necessary to discuss how the music gets from the C major triad in measure 10 to the D major triad in measure 18. Figure 38 shows the first of two possible approaches to the remainder of this first thematic section – measures 11 to 18. This approach attempts a traditional harmonic analysis of the passage.

Figure 38 – Traditional Harmonic Analysis of mm. 11-18
As figure 38 indicates, it is probably most helpful to hear the first two-measure group of the sentence structure as emphasizing the subdominant, while hearing the next two-measure group as headed toward, and the cadential group as securely on, the dominant. It is interesting that one tends to hear the first two bars of this passage as tonicizing G major, but the bass notes are clearly out-of-sync with the chords of the right hand. Thus, the G major triad in the right hand occurs after the G in the bass has moved to the F#. Traditionally, it would make more sense if the F# occurred under a variant of the chord on beat 2 of measure 12 to form the vii°7 leading to G major. In any case, this G major sonority is prominent in the passage and has an interesting function. In relation to the overall key, the G is the subdominant. However, in relation to the C major harmony heard at the end of the previous phrase, the G has dominant function. In a way, then, this chord provides a bridge between these two triads a major second apart (CM and DM). 36

The second two-measure group (measures 13 and 14) is fairly easily heard as incipiently dominant in character. The first chord of measure 13 is reminiscent of the C major harmony in measure 10, and may be thought to function as the lowered VII of D major. The bass line clearly pre-arpeggiates the dominant triad, A-C#-E, and in measure 14, the leading-tone and #VII are actually present for the first time. The dominant arpeggiation is filled in with bass passing motion, over which II7 chords are heard. It is interesting to note that, while the leading-tone of D major is heard for the first time in measure 14, it is

36 The double function of this chord is somewhat analogous to the way the opening sonority includes elements of both the dominant and subdominant of DM.
introduced in the context of descending step motion (not unlike the B, the missing leading-tone of C major from the first half of the section, which occurs as a passing tone in measure 11) and never resolves to the D directly. Instead, the dominant chord abandons the leading-tone in measure 15 to 17, re-invoking the subdominant character by returning to the opening sonority before resolving to the tonic.

And so, while it does seem possible to make this passage conform to a traditional framework, there are obvious problems with this approach. Gaubert constantly alters harmonic progressions to avoid traditional dominant-tonic resolutions by omitting the leading-tone of the dominant, by omitting the dominant chord altogether, or by including pitches that can be explained neither as traditional chord tones, nor as dissonant passing or neighbour tones. As suggested in Chapter 4, it may be helpful to explore non-traditional ways of hearing this passage based on the concept of stacked fifths, the value of which has already been melodically explored in the discussion above.

Figure 39 shows the entire A section from measures 1 to 18 in stacked-fifth notation, while figure 40 shows the same passage represented by the numbering scheme presented in table 9.\textsuperscript{37}

\textsuperscript{37} Both representations of the harmonic context will be included for most passages discussed so the reader may choose which figure s/he finds easier to read.
These two figures show some interesting non-traditional relationships among the chords in this passage. It was shown in Chapter 4, that the chords in measures 1 to 10 make a small symmetrical structure. Continuing along these lines, the reader will see that the addition of the C# in measure 14 makes the entire collection of pitches from this A section (<F, C, G, D, A, E, B, F#, C#>) symmetrical around A (or Eb), two fifths having been added above and below the original <G, D, A, E, B> fifths. The four stacked fifths of the original sonority of the piece are expanded outward in this section, and are then contracted,
returning to this sonority before shifting up a fifth to the tonic. Figure 41 shows how, after the opening stacked-fifth sonority, the upper boundary moves up two consecutive perfect fifths (adding F# and C# to the collection) before descending a M9th to return to the original, while the lower boundary moves down a M9th (adding F to the collection) before returning to the original via two consecutive perfect fifths (filling in the missing C).

Figure 41 – Outer ‘Stacked Fifth’ Boundaries of mm. 1-18

The harmonic progressions of the A’ section are quite traditional and the transitional section does not go anywhere harmonically, so not much more discussion is required for these sections. However, one interesting point can be made before beginning the discussion of the B section. Figure 42 shows a non-traditional way in which the D major sonority at the beginning of section A’ may be connected to the F# major chord at the end of the section.
It is obvious from this figure that the sonorities of measure 33 and 34 are an exact transposition of the dominant and tonic of D major in measures 17 and 18. The two keys are linked in a more abstract way in that the F# major stack of fifths continues up from the D major stack's highest pitch (the same relationship applies to the dominants). This moment hints specifically at the 'sharp' direction of fifths in the outward spiral that has begun in the piece. It will be interesting to consider the 'flat' direction in the material to come.

The contrasting B section is introduced by what appears to be a return to the opening theme. However, this theme is somewhat curious because of its new harmonies and metric position. The durational accent of the dotted quarter note in the flute melody, which originally emphasized the second beat of the measure, is now shifted to coincide with the downbeat of the 3/4 metre. While the listener might initially think that Gaubert is introducing another repetition of this familiar material, this is really just a red herring, and the B section really begins at measure 51. Unlike the first sections, which have sentence structures,
this section is made up of regular four-bar groups of significant similarity to each other. Despite the regularity of the four-bar groups, however, the section is formally and harmonically quite loose in comparison to the previous sections. Contrasting with the rather goal-oriented sentence forms, the groups of this section seem to spin their wheels, circling harmonically around the G major subdominant and recycling melodic material as well.

While a traditional analysis of this section can be done, perhaps the most interesting aspect of its music is in its series-of-7’s implications. Figure 43 shows a series-of-7’s representation of all the chords in this section in 'stacked fifth' notation.

Figure 43 – ‘Stacked Fifth’ Representation of mm. 49-73 (All Chords Included)
As noted above, this passage begins recycling material in measure 65 (the chords and melody of measures 65 to 72 are essentially the same as measures 49 to 56). While some interesting relationships may be seen in figure 43, it will be more helpful to simplify the figure, omitting measures 57 to 64 as they do not progress anywhere harmonically, but instead lead the listener back to the beginning of the section (see figure 44 and 45).

As figures 44 and 45 show, beginning with the chord in measure 53, a highly
symmetrical complex of fifths unfolds in this passage. The three chords leading to and including the harmonic goal at measure 73 are all five-pitch-class collections and when stacked, they reveal interesting relationships. Each chord contains the tonic 'major 17th' interval (four perfect fifths or 7's) from D to F#. In each case, however, this interval is filled in slightly differently. Each of the three chords includes the E, which, although not present in the original tonic D major, divides the 'major 17th' (four 7's) into two 'major 9ths' (two 7's). In measure 53/69, the two other pitches are B and G#. The B fills in the gap between the E and F#, while the G# sounds two 7's above the F#. In measure 55/71, the other two pitches are A and C, the A dividing the lower 'major 9th' of the tonic and the C sounding two 7's below the D of the tonic chord. It quickly becomes apparent that these chords are pitch inversions of each other in the 'stacked-fifth' representation. As pitch-class collections, they are inversions of each other around E.

The chord at measure 56 may be heard as a precursor to the 'real' chord at 73 (since the material between these two chords leads back to the same place harmonically), but contains the C instead of the low Bb. While the passage from measures 57 to 64 appears to be continuing a spiral of fifths in the 'flat' direction, adding the F and Bb below the C, it soon returns to the beginning material of the section. However, if one skips this harmonically circular section, going directly

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The real start of the contrasting section is in measure 51 with the G chord. It is interesting that, although this chord does not participate in the symmetrical structure, the move from this G chord to the chord in measure 53 is very similar to the move from the dominant chord in measure 15 to the tonic in measure 18 – see figure 37. This is not to say that these two chords function as tonic and dominant in this section, but merely that perhaps this motion signals a more immediate change in tonal center from G to D, as in the opening A section.
from measure 55 to 73, one notices an even more interesting relationship. As figure 44 shows, the chord at measure 73 contains the 'tonic' D to F#, which is subdivided by the E, just as the other two chords did. However, neither of the 'major 9ths' is subdivided as in the previous chords. Instead, the other two pitch-classes are A# and Bb (enharmonically equivalent but deliberately spelled as separate entities), which are four 7's above and below F# and D respectively. As well, the A# is two 7's above the G# of the second chord, while the Bb is two 7's below the C of the third chord, creating a highly symmetrical complex of chords. This chord is interesting for a number of reasons. First, it is completely symmetrical around the tonic D to F#. Second, it is the piece's point of furthest remove by fifth from the tonic thus far. And third, it closes off the circle of fifths, since A# and Bb are enharmonically equivalent. And so, the question of whether enharmonic equivalence may be assumed is addressed, if still left unsettled. While Gaubert is obviously aware that the Bb and A# will sound the same, he nonetheless goes to the trouble of writing them as separate entities. Indeed, there seems to be no real reason (other than the one presented here) for Gaubert to write an A# in this chord, as it resolves not to B in the next section but to A.

The final section begins as a lengthy repetition of the opening thematic sections. One interesting difference is that Gaubert begins the recap with the piano's motive from the contrasting B section, showing that it too is fully compatible with the nature of the opening chord and, since this motive retains its subdominant associations from the B section, further emphasizing the chord's
dominant/subdominant nature. The first two sections repeat verbatim until measure 106 when, instead of moving to F# major, Gaubert cadences to D major, a change that might be expected near the end of the piece. Indeed, it appears that things are coming to a close in the measures after the cadence at measure 109. However, Gaubert cannot resist throwing in one final twist. Just as the listener gets comfortable with D major, there is a sudden transition to d# minor and Eb major accidentals in the measures beginning at 120.

It is interesting to note that in measure 120, d# minor is introduced as a kind of sharp minor tonic. This is then reinterpreted as the Neapolitan 6 in measure 124 – the tonic, subdominant, and dominant scale degrees of Eb major being enharmonically equivalent to those of d# minor. From a ‘stacked-fifths’ point of view, this passage widens the envelope one step further in each direction to E# and Eb (the Ab of measure 125 is more a dissonant upper neighbour to the G than a chord tone). The Neapolitan 6 progresses to a potential dominant sonority at measure 132, but this is sidestepped in a slide down to an F# chord in measure 134, recalling the earlier move to F#. This chord contains both A# and D#, which are soon (again) reinterpreted as dissonant appoggiaturas, Bb and Eb, over the dominant harmony of measure 136. The music finally resolves to tonic D major in measure 137. Over the course of the brief coda, Gaubert gradually takes out ‘extraneous’ pitches until only the octave D’s are left.
Conclusion

The majority of discussion in this thesis has been focused on the innovative elements of Philippe Gaubert's music – the avoidance or alteration of the traditional tonal harmonic and voice-leading elements. However, it is also important to acknowledge that, while it is mostly these innovations that intrigue today's listener and that prompt the development and use of non-traditional analytical techniques for this music, these innovations and techniques would not be meaningful without at least some reference to traditional concepts. Along with the goals stated in the introduction, an additional goal of this thesis, then, has been to provide a balance between innovative discussion and reference to traditional concepts, if for no other reason than because this most accurately reflects the very nature – the cohabitation of the non-traditional with the traditional – of the *Troisième Sonate* and the "Scherzo-Valse".
Selected Bibliography


