Syntonality in Dana Richardson's *Andante Amoroso*

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This paper elucidates the form building potential of syntonality by means of a full length analysis of my *Andante Amoroso* for cello and piano that demonstrates how I manipulated syntonal harmony in order to create a sonata form analogue. Because syntonality will be unfamiliar to most of my readers, I will begin with an abbreviated exposition of the theory and its implications followed by the analysis of the piece. (For an in-depth presentation of the compositional theory, please refer to my article "Syntonality: A New System of Harmony.") [1]

Syntonality originated as a harmonic system designed to fill the void left by the collapse of tonality and its capacity to create form through harmonic progression. Its intent is to provide composers with the ability to control the tension/relaxation gradient at will, produce a coherent flow of harmony, and create a satisfying climax/denouement structure, in short, do everything that was possible to tonal composers, while employing all the chromatic resources of post-tonal composition. It can also be applied as an analytical system to the study of 20th century music in so far as some composers, such as Scriabin, Bartok, and Berg,[2] wrote some syntonal passages spontaneously. However, I believe that the system has much more value as a future method of composition than a tool of historical analysis.

Syntonality can be defined as a special case of bitonality, limited by the following conditions: 1) there are two and only two simultaneously unfolding keys. 2) these keys are tritone or semitone related so that all 12 tones are accounted for, with two shared between them. 3) the keys are horizontally and vertically (or registerally) fused with the result that they are at first apparent neither to the eye nor to the ear.

Taking each of the points above in turn:

1) There are two and only two simultaneously unfolding keys. There obviously cannot be fewer than two simultaneous keys because the system would simply then be tonal. Of greater interest, there also cannot be more than 2 simultaneously unfolding keys, as in polytonality, because it would then be possible to form chords that contained all twelve chromatic tones (for instance a dominant 7^{th} in the key of D, a half-diminished 7^{th} in the key of Eb and a major 7^{th} in the key of B). Such a system could be used to justify the harmonic integrity of the total pitch class content of any verticality and as such is "anti-harmonic." Harmonic motion is based on the definable absence of certain pitch classes within each harmony that enables it to flow to pitch classes excluded from its predecessor. Because a twelve-tone verticality contains every pitch class there is nowhere to go harmonically speaking ; motion is blocked. I call this harmonic truth the Exclusionary Principle (or Richardson's Law, if one prefers). Consequently a compositional system that fails to exclude 12-tone sonorities as a matter of its internal logic cannot properly provide a system of harmonic motion.

The keys unfold. Therefore, in syntonal practice, the term bitonality is be taken literally; there are two keystreams, not one chord from one key held against alternating chords from an opposing key for the entire passage as occurs famously in the Stravinsky ballets. However effective this may be aesthetically, it is not really bitonality because one triad cannot define a tonality. Equally uncharacteristic of syntonality are layers of opposed triadic progression that are so chromatic within themselves they do not project a key such as one finds in Milhaud's Cinq Simphonies/IV, for example. Each keystream should produce a logical tonal progression.

2) The constituent keys are tritone or semitone related so that all 12 tones are accounted for, with two shared between them. Why is it so important that the keystreams

be limited to the relation of a tritone or semitone? There are three reasons: a) To avoid lapsing into monotonality. Imagine a case in which both keystreams were in the same key. If the composer wanted to differentiate his harmonic style from traditional tonal practices, the best he could hope to achieve would be pan-diatonicism or 'white note' music. He certainly would not require an analytical apparatus that divided the texture into keystreams! All the pitches would be heard as referable to a single root with dissonances that might or might not resolve. Now suppose that the keystreams were related by perfect fifth, say G and D major as in Darius Milhaud's *Saudades do Brazil.* For the most part, the piece will be heard in the key of G major with some unresolved dissonances. It is obvious that the keys at the greatest remove around the circle of fifths, namely those that are tritonally or semitonally related, will offer the composer the greatest opportunity to create non-tonal sonorities.

b) Only the tritone/semitone relation gives the composer constant access to all twelve chromatic tones. This is a corollary to the first point. Figure 1 demonstrates the fusion of three pairs of scales **C/F#**, **C/Db** and **C/Ab**.[3]

Figure 1. Common tones between fused scales at the tritone, semitone and major third

C/F#: C C# D D# E F F# G G# A A# B C
E# B

C/Db: C Db D Eb E F Gb G Ab A Bb B C
C F

C/Ab: C Db D Eb E F G Ab A Bb B C
C F G

The first two fused scales form the chromatic collection. The two shared pc's are shown beneath each chromatic, F [E#] and B for **C/F#** and C and F for **C/Db**. The third fused scale, **C/Ab**, is different. The F# is missing from the complete chromatic and each keystream shares three out of its seven pc's with the other. Thus, when related by major third, the keystreams are already beginning to show a lack of differentiation.

c) To introduce this lack of differentiation into the tritonal/semitonal superkey structure undermines its integrity and impedes the definition of the new surface.[4]

3) The keys are horizontally and vertically (or registerally) fused with the result that they are at first apparent neither to the eye nor to the ear. Registeral fusion creates a new surface in which the identity of the constituent keys dissolves at the level of conscious awareness. The listener is aware only of the succession of integral syntonal harmonies whose properties seemingly bear no relation to their tonal ingredients. However, as will be demonstrated, there is actually an intimate and definable relationship between the two. Thus syntonality posits a deep structure, the simultaneity of two identifiable major keys or **keystreams,** and a surface structure, the integrally heard fused harmonies or **superchords**, their organization into **superkeys**, and the relations between superkeys. The analysis of the surface structure reveals the deep structure whereas the synthesis of the deep structure yields the surface. The two levels of structure can be elegantly defined in terms of the other.

The syntonal harmony is not called forth by the fiat of the composer. It is a referent that is antecedent to any syntonal composition in the way that the triad is given to any tonal composition. It will be come evident that, although the keystreams dissolve in the new surface, the syntonal capacity for harmonic continuity derives its existence from the fused continuity of their constituent seventh-chords. As will be shown, there are eighty-one eight- pc superchords formed by the fusion of two seventh-chords. Every harmony in every syntonal composition must be one of those eighty-one superchords or its subset. A simultaneity that is not one of those harmonies indicates a dissonance that must be resolved. As in tonality, the relatively small number of possible harmonies is limited by principles inherent in the system.

Example 1 is a short bitonal excerpt with very widely separated registers in the keys of C and F#. Both keystreams are immediately perceptible as separate entities, yet a third factor has been added, the sonority of the simultaneous keystreams. [Example 1. Bitonal stratification]

In Example 2, the bitonally stratified harmonies of Example 1 have been registerally fused. Whereas C and F# major are heard as integral, simultaneous tonalities in Example 1, in Example 2, they cannot be heard independently. In fact, the fused simultaneities of Example 2 sound very different from the corresponding stratified simultaneities of Example 1, even though they are composed of the same pcs. They have been dissolved in the syntonal surface through registral fusion. [Example 2. Syntonal fusion]

Now one is a position to appreciate why bitonally has been rejected by many as an analytical tool. The tendency to fuse bitonal keystreams is very strong even when they are mildly registrally stratified. So, in the vast majority of bitonal pieces one does not hear a clearly divided simultaneity; one hears a more or less unified sonority that becomes completely unified under the condition of syntonal fusion. Only when the registers are very widely separated, and when the tonal harmonies are sufficiently complete to resist assimilation into the opposing keystream are the simultaneous tonal structures detectable. This is what occurs in Example 1.

Although the integral, simultaneous tonalities of Example 1 are dissolved in the syntonal surface of Example 2 through registral fusion, *the resultant harmonies are the same* (if one assumes the principle of octave equivalence). The numbers to the right of the pitches in Example 2 refer to the keystream in Example 1 from which they were taken. Example 2 takes the bitonal harmonies of Example 1 and redistributes the pitch classes but leaves the pc content of each harmony unchanged. Therefore, the tonal principles that control Example 1 must also control Example 2. This justifies the apparatus of keystream analysis to which I now turn.

Deep Structure: The Keystreams

Constant Vauclain established the foundation of syntonal deep structure, the keystreams, (although he didn't call them that) in two articles, "An Experiment in Musical Texture" and "Bartok: Beyond Bi-modality."[5] The presentation of keystream theory here preserves Vauclain's basic conception but modifies it in a way that I consider necessary to maintain the integrity of the system.

Registeral fusion results in new surface with properties not present in either keystream. The keystream analysis extracts the tonal streams, each of which appears on one of two parallel pairs of braced staves. The music in each braced pair must proceed in logical tonal progressions with all dissonances resolving by step. Performance of the two keystreams simultaneously recovers the whole piece. Example 3, the score to the *Andante Amoroso* (with the syntonal superchords and superkeys indicated) and Example 4, which extracts the keystreams for the first 17 measures of the piece, illustrate the process.

In Example 4, the upper brace of staves begins with the keystream in B major that modulates to E and so on. The lower brace begins with the keystream in Bb major. Changes of key within keystreams are indicated by the capital letters in brackets found between the staves. The tonal harmonies within the keystreams are indicated by Roman numerals . The dotted and solid lines indicate dissonances and their resolution. [Example 4. Richardson, *Andante Amoroso*, keystream analysis]

The keystream analysis includes both harmonic and voice leading elements. Purely harmonic considerations will be discussed first.

1) When keystream 1 modulates to back to B in m.10, keystream 2 <u>must</u> modulate. If it did not the two keys, B and Eb, would fail to fulfill the condition that the keys be either tritonally or semitonally related. In this case, keystream 2 modulates to back Bb, the most closely related key. Hypothetically, keystream could have modulated to either C or F major and still have fulfilled the **tritone/semitone condition**.

2) When carrying out a keystream analysis, the analyst should divide the keystreams so that each follows the path of least resistance. Keystream extraction should produce 'natural' results. Bizarre and awkward progressions within each keystream are an indication that there is something wrong with the analysis or that the music is not syntonal.

3) Each successive tonality in a keystream must be <u>completely diatonic</u>. There are no secondary dominants, chromatic embellishments or altered tones. Every dominant implies a new key even if it is immediately succeeded by another dominant implying a different key as in a dominant circle of fifths progression. These constraints are necessary to insure that at every instant the keystreams are tritonally or semitonally related.

One might reason that because the major and its relative minor share the same scale, the relative minor could substitute for its relative major as one of the constituent keys. So, for instance, one might suppose that since d# minor shares the same scale with F# major that the superkey **C/d#** would be equivalent to the superkey **C/F#**. If the C keystream stayed in C, then the other keystream would be free to modulate back forth between F# and d#. Figure 2 reveals why this does not work.

Figure 2. common tones between C major and d# minor

C/d#: C C# D D# E F F# G G# A A# B C
B# Cx E# B

The top line of Figure 2 is the fused C major/d# minor scale. Underneath, the pc's held in common are singled out. Given the necessity of creating a dominant in the minor key, there are now at least three pc's held in common between the two scales, F [E#], B, and Cx. Voice leading may also invoke the melodic minor scale resulting in four shared pc's. Thus, substitution for the major by its relative minor breaks the tritone/semitone condition. The number of shared pc's between the keystreams equates **C/d#** with a keystream relation at the major or even the minor third. (Of course, there is nothing wrong with using the *natural* minor. However, as an analytical convention, all the church modes are assumed to be represented by the major scale into which they can be arranged. This is simply a convenience for the analyst that in no way implies that modes can be reduced to the major scale containing the same number of accidentals.)

The situation is even worse if both keystreams are minor, for instance **c/f#.** Figure 3 shows that, in this case, the keystreams share up to six pc's making them no more differentiated than two keystreams at a whole tone relation.

Figure 3. common tones between two tritonally-related minor scales

c/f#: C C# D Eb E F F# G Ab A Bb B C
D D# E# G# A B

Thus, if the tritone/semitone condition, which limits the number of shared pcs between the keystreams to two and only two, is to be maintained, the keystreams must be major.[6]

Admission of secondary dominants admits uncertainty and subjectivity into the analysis. Ultimately, the argument that secondary dominants are part of the key could be expanded on a Schenkerian scale to include any harmony, no matter how remote, within the realm of one tonic. One can imagine a scenario in which a keystream 1 in B major modulates to a long section in E major, its subdominant, while at the same time a keystream 2 in C modulates to a long section in E major, the V of its vi. The work would putatively project the semitonal superkey **B/C** though, in actual fact, during that section the keystreams in the same key would not sound syntonal at all.

Syntonality justifies a totally chromatic texture with purely diatonic means. Therefore, altered tones and chromatic embellishments that chromaticize the keystreams, and that are then in further need of justification, are excluded. Part of the elegance of syntonality derives from its ability to account for every single note without recourse to events exterior to the system like ‘altered tones’ The keystreams must be in the tritone/semitone relation at every instant and within each key of the keystream the analysis must be completely diatonic. Although these proscriptions may seem overly rigid, they contribute strongly to the coherence of the system, thereby serving as the foundation to the enormous flexibility and freedom that, in fact, characterizes syntonal composition.

Consideration of dissonance invokes the voice leading aspect of keystream analysis. From the deep structural perspective, dissonance is a property of each keystream. It is defined and resolved precisely as it would be in a tonal piece of music.

In Example 4, the dotted lines connect dissonance to its resolution. The dissonance resolution in the first system is unexceptional. For instance, in the upper keystream, the seventh of the F# dominant in m.3 resolves to the third of the B I+6 chord in m.4 in the correct octave. Looking at the second system, in the upper keystream, the seventh of the B dominant chord in m.7 resolves to the G# of the E I+6 chord in m.8. Here the resolution does not occur in the correct octave. Nevertheless, it is permitted because the dissonant note moves by conjunct motion. (One presumes that as the opening note of an arpeggiation, the Bb 32cnd note on the downbeat of m.8 is psychologically heard to extend throughout the measure) *A leading–tone or dissonance can resolve in another voice provided that it moves by step in its own voice to a note in either keystream.* This is an extension of the tonal practice illustrated by Example 5. [Example 5. Wagner, *Tristan and Isolde/Prelude*, mm. 1-3, (after Vauclain).[7]

The solid line connects the dissonance or leading-tone to its resolution. The dotted line connects the dissonance or leading-tone to the next note in its voice to which it moves by conjunct motion. It is fortunate that syntonality has this resource at its command, because without it, its ability to fuse the keystreams would be seriously impaired.

At this point it should be stressed that a keystream analysis is just that - an analysis. Although the keystreams should make musical sense, they are not the music. One doesn’t compose syntonal music by writing two beautiful pieces in keys that are a tritone apart and then combine them. Any good music is written directly to the surface, and syntonality is no exception.

At first, one might think that, given the potential access to all 12 pitch classes, most if not all twentieth century music would turn out to be syntonal. Upon reflection, however, it becomes clear why this would be extremely unlikely. As has been discussed earlier, syntonality is a special case of bitonality. The universality of syntonality as an analytical method would imply that all the masters of the twentieth century were bitonal composers, an improbable scenario.

A syntonal superchord is comprised of no more than eight pcs, the fusion of two seventh-chords drawn from keystreams at the tritone/semitone relation. Dissonance[8] resolution is conditioned by the following considerations.

1) Only 81 out of a possible 495 combinations of eight pcs are superchords. The other 414 contain some unessential[9] dissonance that must be resolved in the correct octave (or by step provided the resolution is taken by another voice).

2) Any simultaneities comprised of more than eight pcs of necessity contain some unessential dissonance that must resolve.

3) The essential dissonances (sevenths) within each superchord must also resolve.

Furthermore, even when no dissonance is present, the keystreams must be able to be extracted in a way that produces logical progressions.

The odds against the above factors being satisfied by chance are high enough that, even with only four or five voices, a prolonged syntonal texture is very unlikely unless the composer is creating it consciously. Therefore, it must be stressed, syntonal theory is designed for the analysis of syntonal works, not to explicate the unity in diversity of twentieth century chromatic music.

Surface Structure: **The Superkey**

The superkey matrix

The superkey is the fusion of two tonal keys a tritone or a semitone apart. There are six tritonal superkeys, **C/F#**, **Db/G**, **D/Ab**, **Eb/A**, **E/Bb**, **F/B**, and twelve semitonal superkeys, **C/Db**, **Db/D**, **D/Eb**, **Eb/E**, **E/F**, **F/F#**, **F#/G**, **G/Ab**, **Ab/A**, **A/Bb**, **Bb/B**, **B/C**. (In Example 3, the score to *Andante Amoroso*, the superkeys are surrounded by an ellipse and the superchords are surrounded by a rectangle.)

A tonal key is represented by seven diatonic seventh chords arrayed in a line, I, ii, iii, IV, V, vi, vii. The fusion of two tonal keys into a superkey is, in essence, a multiplication of the two keys which results in 7x7=49 superchords arrayed in a *square* seven by seven, I/I, I/ii, I/iii… ii/I, ii/ii, ii/iii etc. Example 6 shows the matrix for the superkey **C/F#**. Superchords can be indicated either by functionality as above or by letter name, CM/g#m would refer to superchord I/ii in the superkey of **C/F#**, for instance. The designations M, x, m and ø refer to major, dominant, minor and half-diminished seventh chord qualities respectively.

At this point, the reader has acquired enough syntonal theory to follow the formal analysis of the *Andante Amoroso*. (For more discussion of syntonal surface structure including the nature of the inversional squares of the superkeys, the organization of superchord quality, superkey interrelations, a complete inventory of superchords, string analysis of superchords and an attempt at abstract identification of syntonal progression – without reference to their constituent seventh chords, I again refer the reader to my prior article.)

Theoretical Conclusion

Syntonality assumes that the history of harmony is an unbroken continuity. The elements of tonality are not abruptly abandoned in favor of some completely new system of order (as in serialism) or a return to pre-tonal procedures (linear counterpoint, for instance). On the other hand, tonal principles are not applied anachronistically to a chromaticized context with which they are incompatible as happens in various applications of post-tonal theory. Rather, tonality sinks beneath the surface, as it were, to provide the deep structural foundation for a new surface that obeys its own principles of organization.

When two streams of diatonic tonality fuse to produce the syntonal surface, the listener loses awareness of the independent tonal streams. Nevertheless, their potential for harmonic articulation and continuity is taken directly into the syntonal surface. This is inherent in the process of syntonal formation.

The very existence of syntonality depends on the condition that the constituent keystreams that constitute its deep structure are not accessible to the awareness of the listener and, by definition, can never be so. If they could be independently distinguished, the syntonal surface would be disintegrated into bitonality. However, syntonality would also be impossible without the deep structural keystream organization discussed at length in this paper. To make a homespun analogy, a drop of rain would not feel like water unless it were H_2O (within a certain temperature range). But if one could feel the hydrogen and oxygen in it, it would not feel like water either.

Formal Analysis of the *Andante Amoroso*

The *Andante Amoroso* projects a syntonal analogue to sonata form. Superkeys and superchords are used to build phrases and sections up into the larger formal units such the exposition, development and recapitulation in more or less the same way keys and harmonies are deployed to realize sonata form in tonal music. Although the focus here is on sonata form syntonality can be applied to create an analogue to any tonal form. For the following discussion please refer to the formal outline Example 7, **Andante Amoroso-Syntonal Sonata Form** in relation to the superkey/superchord annotated score, Example 3.

Looking at the 1st theme group of the exposition outlined in Example 7 demonstrates how syntonality works in brief. The superchord Fx/F#x (implying the super key [Bb/B] is “tonicized” by its privileged position as the opening superchord. That privileged position is subsequently confirmed by its reappearance in m. 10 at the beginning of a varied restatement of the opening phrase. Between the opening measure and m.10 the superchordal progression Fx/F#, Gm/G#m, Bbx/Bx, Eb+6/E+6, Fx/F#x consolidates the primary position of Fx/F#x which, at measure 10, can be heard very clearly as a return to the opening harmony and a point of rest, or lower energy, in relation to the surrounding superchords. Thus in this piece Fx/F# provides a ‘tonic’ function. Also note that within the keystreams the progressions are very smooth, generally moving by fifth or whole step. (As far as I have been able to determine in my own practice, the tonic function in syntonality is contextually determined in the manner described above. There is no superchord that has a predefined tonic function for any superkey nor is there any predefined “root position” that implies a greater state of rest. Nevertheless, I have not developed any theoretical principle that would preclude the existence of a predetermined tonic function.) After the initial presentation of the theme in mm. 1-9, its variation in mm. 1-16 moves through the same pattern of superchords, adding Fm/A in m. 16 in order to flow through to the transition theme beginning in m. 17. The transition theme, organized around the superchord Bbm/Dx implying the superkey [Ab/G], is constructed in a similar manner to the two phrases that constitute mm. 1-16; the phrase mm.17-23 is varied (the cello and piano parts are switched) and abbreviated in mm. 24-27. The superchord Bbm/Dx is ‘tonicized’ relative to the other superchords in mm. 17-27 but, as shall be seen, subservient to Fx/F#x in terms of the entire work.

It can be clearly seen in the formal outline that the 2nd theme group (mm. 28-49) is a series of variations and developments of the phrase mm. 28-32, which develops the octave motive b trichordally. All four phrases mm. 28-32, 33-36, 37-40, 41-45 begin with the superchord Dbx/Am, implying the superkey [Gb/C], and end with superchord Abx/Em, which sets up the return to Dbx/Am. The last phrase of the section, mm. 46-49, again begins with Dbx/Am but moves through Abm/Am to set up a new superchord to begin the development, Bb/Bx. Like many tonal pieces, the 2nd theme area is more tonally static; its ‘tonic’ receives more emphasis and there is less concern over ‘getting somewhere.’ The exposition posits a hierarchy of harmonies Fx/F#x (1st theme), Dbx/Am (2nd theme), and Bbm/Dx (transition theme and a half step above Dbx/Am), Dbx/Am being the most emphasized in order to set up a conflict with Fx/F#.

In my syntonal practice, the only requirement that I have for the superkey of the 2nd theme group is that it sound like a ‘different place’ in relation to the music of the 1st theme group. Here, I have also been influenced by the fifth relation characteristic of classical sonata form. Note that the Dbx/Am superchord and [Gb/C] superkey of the 2nd theme group can also be written as Am/Dbx and [C/Gb]. The second half of the constituent seventh chords and keystreams are obviously a fifth higher than those of the 1st theme group Fx/F#x and [Bb/B]. The first element, Am, of the 2nd theme superchord, Am/Dbx, can be thought of as a substitute of Cx in the key of F. In that sense it also has a dominant function (a fifth higher) in relation to Fx in the superchord Fx/F#x. Interpreted in the key of F, the Am becomes part of a superchord Am/Dbx that exists in the superkey [F/F#] whose constituent tonal keys are a fifth higher than the superkey of the piece [Bb,B]. This point takes on significance in the beginning of the varied recapitulation that begins with the superchord Dm/F#x, a fifth *lower* than the tonicized 2nd theme superchord Am/Dbx.

The development (mm.50-78) is much more harmonically restless; none of its sections begins in the same superkey or on the same superchord.. Material from the exposition is transposed to various superchordal levels. The chordal material from mm. 11-14 is transposed up a step at mm. 59-62 and then up a step again at mm.73-76 to create a sense of rising excitement. There is no sharp demarcation between the end of the development and the varied recapitulation; the music glides through.

As mentioned previously, the superkey and primary superchord of the varied recap beginning m. 79 are down a fifth from those of the 2nd theme in the exposition. However, there is a new ostinato in the cello and a development of the octave leap idea in the piano. The varied recapitulation is a part of a trend in my music to get away from literal reprise of the exposition. An abbreviated and rather literal version of the 2nd theme music follows (mm.95-107) presented a fourth higher so that the harmony revolves around Dm/F#x, the tonicized superchord of the immediately preceding section (mm.79-94).

In m. 108 there is a very strong return to the superchord Fx/F#x and the superkey [Bb/B] that opened the work. That this arrival creates such an affirmative ‘tonic’ feeling after its absence since early in the exposition is powerful testimony to the capacity of syntonality to invest its harmonies with perceptible hierarchical significance. The syntonal composer has the ability to self-consciously create form harmonically in a totally chromaticized context that will really be heard.

NOTES

[1] Richardson, Dana, "Syntonality: A New System of Harmony", web published on the Goldberg Stiftung: http://www.goldbergstiftung.de/forum/index.php?a=forum&f=32, 2001. also available at www.danarichardson.org.

[2] For a fuller discussion of this point see Richardson, Dana, "Syntonality: A New System of Harmony"

[3] Superkeys are designated by the constituent keys in bold separated by a slash.

[4] For a fuller discussion of this point see Richardson, Dana, "Syntonality: A New System of Harmony"

[5] Vauclain, Constant. "An Experiment in Musical Texture." *The Musical Quarterly*, 25 (1965/2): 318-35. and "Bartok: Beyond Bi-modality." *The Music Review*. 41 (1981): 243-51. Vauclain coined the term "biscalarity" to identify the new system. On the suggestion of Maria Rose, in 1999 the system was rechristened "syntonality" because it was felt that what is being described is the fusion of two tonalities, not just the fusion of two scales.

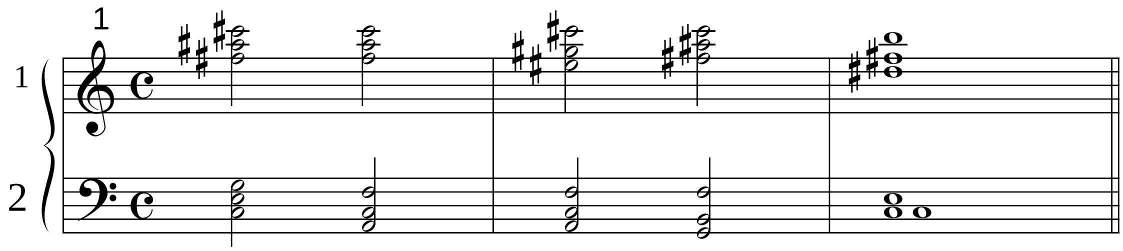
[6] This is a point on which I differ with Vauclain. In June 1994 he wrote to me "As to the question of minor harmony in syntonality, my analyses of my own music (always after the fact, of course) not infrequently turn out to include it, and it appears to me to be merely the inversion of the major." He employs secondary dominants in his analyses as well. See Vauclain, "Bartok, Beyond", p.248, m.10.

[7] Vauclain, "Bartok, Beyond", p. 246.

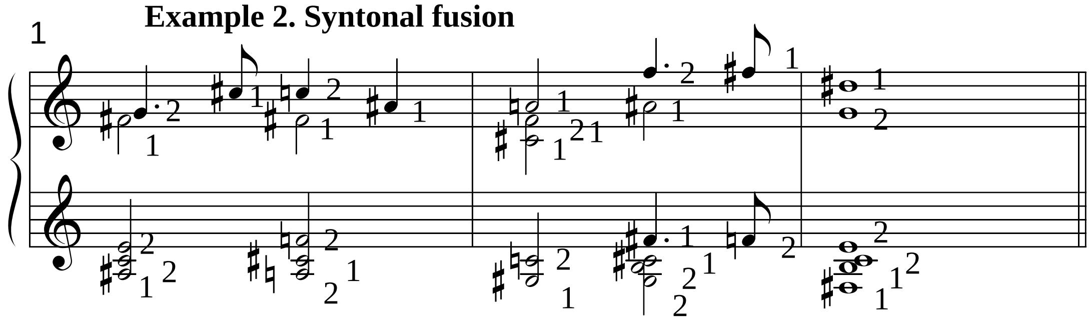
[8] Recall that syntonal dissonance is simply the tonal dissonance *within* each keystream that must be resolved as it would in a tonal work.

[9] The distinction between essential and unessential first made by Kirnberger still seems to me to be a valuable one. An essential dissonance is part of the harmony and resolves on the next harmony in the progression. An unessential dissonance is not analyzed as part of the harmony. It usually resolves over the same harmony. Sevenths can be essential dissonances, though not always. All other dissonances are unessential. Of course, this would not apply to the style of Debussy but that style is already taking its leave of the tonal world.

Example 1. Bitonal stratification



Example 2. Syntonal fusion



Example 3.

Andante Amoroso

for cello & piano

To the memory of Jo Brocklehurst

Dana Dimitri Richardson 2006


9
theme a
p
Fx/F#x
simile
mf
Pno.
Bb, B
12
p
mf
Gm/G#m
Bbx/Bx
Eb, E
15
trans. theme (d)
mp
Eb+6/E+6
Fm/Ax
Bbm/Dx
simile
f
ondulato
Eb, A
Eb, D
Ab, G


19
Ebm/Gx
Abx/Em
Fm/Ax
Bbx/F#m
mp
Pno.
Db, C
Db, D
Eb, D
23
Ebx/ Bm
Fm/Em
Fm/Ax
Bbm/Dx
trans. theme (d)
mf
Ab, D
Ab, G
25
Ebm/Gx
Abx/Em
f
Db, C


2nd theme group
Dbx/Am
theme b varied
Gb, C
Abm/Am
Abm/Dm
Ebm/Gx
Abx/Em
Dbx/Am
Db, C
Gb, C
Pno.
Pno.
Pno.


34
Ebm/Dm
Abx/Em
Ebm/Em
Pno.
Db, C
36
Abx/Em
Bbm/Am
Bbm/Dx
Db, G
39
Ebm/Gx
rit.
Abx/Em
Db, C


41
a tempo
mp sempre cresc.
Dbx/Am
41 a tempo
Abm/Am
p sempre cresc.
Pno.
3
3
Gb, C
43
ff
3
3
Abm/Dm
Ebm/Em
43
f
Pno.
45
f
Abx/Em
45
f Dbx/Am
Pno.
Db, C
Db, G


47
Eb/Am
Abm/Am
3
47
Pno.
50
Development
theme a
pp
dolce
Bbx/Bx
50
Eb+6/E+6
theme c
8va
pp
dolce
theme a
Eb, E
54
3
Dx/Ebx
54
8va
pp
pp
dolce
G, Ab


58
pp
p
mp
Gx/Abx
simile
Pno.
C, Db
61
Am/Bb
mf
Cx/Dbx
Dm/Ebm
F, Gb
65
Dx/Ebx
Em/Abx
G, Ab
G, Db


68
mf
p
Am/C#x
Dx/A#m
Pno.
G, F#
71
rit.
a tempo
f
mp
Fx/Ex
a tempo
Gx/D#m
Cx/Bx
Bbx/F#
p
C, F#
F, F#
Bb, A
Eb, A
75
mf
Gm/Bx
Cx/Bx
Cx/C#m
Dm/F#x
Cx/C#m
Dm/F#x
Cx/C#m
Eb, E
F, E
F, B


Varied Recap
79
p
ostinato (new)
Dm/F#x
(Dm = Fx)
theme b
p delicato molto espressivo
theme c
Pno.
81
84
Gx/D#m
C, B


86
Am/G#m
Am/C#x
Dm/F#x
mp
Pno.
C, F#
C, B
89
Dm/G#m
Gx/G#m
mf
93
Am/G#m
Am/C#x
C, F#


2nd theme group
95
Dm/F#x
Dm/C#m
Pno.
theme b varied
C, B
97
Gm/C#m
C/G#m
F, B
99
Am/C#x
Dm/F#x
F, F#
F, B


101
Gm/G#m
Am/C#x
Am/G#m
Pno.
F, F#
103
Am/C#x
Dm/D#m
Gx/D#m
Pno.
C, F#
105
Cx/G#m
Pno.
F, F#


Reprise 1st theme group
theme a
107
rit.
a tempo
p
Cx/C#x
Fx/F#x
simile
Pno.
Bb, B
110
Gm/G#m
Bbx/Bx
mf
Eb, E
113
trans. theme (d)
mp
Cm/Ex
Fm/Ax
Bbm/Dx
D#/Gx
f
ondulato
Eb, A
Eb, D
Ab, G
C#, C


117
Abm/Cx
Dbx/Am
Bbm/Dx
mp
Pno.
Gb, F
Gb, G
120
mp
mf
Ebx/ Bm
Abx/Em
Bbm/Am
Bbm/Dx
mf
Ab, G
Db, G
122
mf
Ebm/Gx
trans. theme (d)
mf
Db, C


124
rit.
Abm/Cx
Cx/Dbx
(keystreams switched)
Pno.
Gb, F
F, Gb
Coda
126
a tempo
Fx/F#x
simile
Gm/G#m
Bb, B
129
Cx/C#x
F, F#


132
Fx/F#x
Gm/G#m
Fx/F#x
mp
Pno.
Bb, B
135
Gm/G#m
Fx/F#x
mp morendo
138
ppp
pp
p

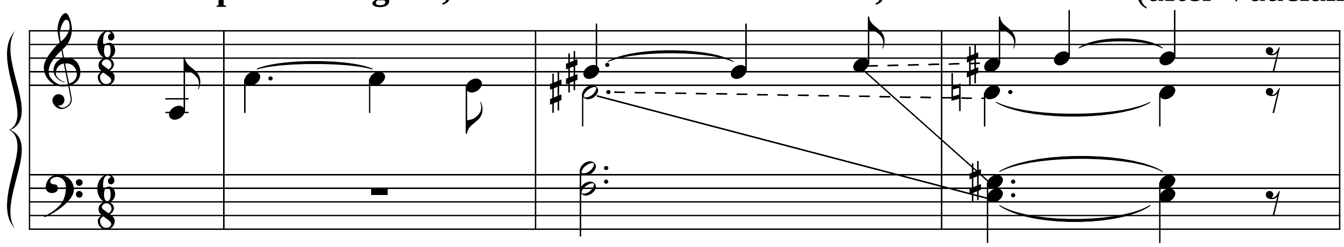
Example 4.

Andante Amoroso Keystreams

[Composer]


12
1
[B]
I+6
vi
[E]
ii
V
4 3
4 9 3
2
7 5
[Bb]
vi
[Eb]
V
15
1
I+6
IV
[G]
V
2
I+6
7 3
ii
[Ab]
ii

Example 5. Wagner, Tristan and Isolde/Prelude, mm. 1-3 (after Vauclain)



Example 6. Matrix, superkey C/F#

C/F#

	iii	IV	V	vi	vii	I	ii
ii	1 d/a#	2 d/B	3 d/C#x	4 d/d#	5 d/e#∅	6 d/F#	7 d/g#
I	8 C/a#	9 C/B	10 C/C#x	11 C/d#	12 C/e#∅	13 C/F#	14 C/g#
vii	15 b∅/a#	16 b∅/B	17 b∅/C#x	18 b∅/d#	19 b∅/e#∅	20 b∅/F#	21 b∅/g#
vi	22 a/a#	23 a/B	24 a/C#x	25 a/d#	26 a/e#∅	27 a/F#	28 a/g#
V	29 Gx/a#	30 Gx/B	31 Gx/C#x	32 Gx/d#	33 Gx/e#∅	34 Gx/F#	35 Gx/g#
IV	36 F/a#	37 F/B	38 F/C#x	39 F/d#	40 F/e#∅	41 F/F#	42 F/g#
iii	43 e/a#	44 e/B	45 e/C#x	46 e/d#	47 e/e#∅	48 e/F#	49 e/g#

Example 7. Andante Amoroso- Syntonal Sonata Form

Exposition

1st Theme Group

description	serpentine (theme a), octave leap (theme b piano) 32cnd arpeggiation in cello (theme c)		variation of mm.1-9 theme a, chordal accompaniment	trans. theme d, b rocking chords	trans. theme varied piano takes theme d
superchord	Fx/F#x→	Eb+6/E+6	Fx/F#x→ Eb+6/E+6 Fm/A	Bbm/Dx→Fm/A	Bbm/Dx→Abx/Em
measures	1-9		10-16	17-23	24-27
superkey	[Bb/B]	[Eb/E]	[Bb/B] [Eb/E]	[Ab/G]→ [Ab/D]	[Ab/G] [Db,C]

2cnd Theme Group

description	chordal variation of octave leap (b)		development of 28-32, chordal accompaniment		variation of 24-27	variation of 28-32	
superchord	Dbx/Am→	Abx/Em	Dbx/Am→	Abx/Em	Bbm/Am Bbm/Dx→ Abx/Em	Dbx/Am→	Abx/Em
measures	28-32		33-36		37-40	41-45	
superkey	[Gb/C]	[Db,C]	[Gb/C]	[Db,C]	[Db/G] [Db,C]	[Gb/C]	[Db/C]

2cnd Theme Group continued

description	variation of 33-36	
superchord	Dbx/Am→	Abm/Am
measures	46-49	
superkey	[Gb/C]	

Development

description	50-51= 1-2 up a 4th theme a	theme a	59-62=11-14 up a M2 piano chords, new cello stuff	66-70=17-21 varied cello solo	73-76=62-66 up a M3	Tag
superchord	Bb/Bx Cm/C#m	Dx/Ebx	Gx/Abx→ Dx/Ebx	Em/Abx→ Cx/Bx	Fx/Ex→ Cx/C#m	Dm/F#x→ Cx/C#m
measures	50-55	56-58	59-65	66-72	73-76	77-78
superkey	[Eb/E]	[G/Ab]	[C/Db]→ [G/Ab]	[G/Db]→[F/F#]	[Bb/A]→[F/E]	[F/B]

Varied Recapitulation

Varied Recapitulation

description	theme b (octave leaps) new cello ostinato	slow octave leaps in cello theme c in piano
superchord	Dm/F#x→Am/C#x	Dm/F#x→Am/C#x
measures	79-87	88-94
superkey	[F/B] [C/B] [C/F#]	[C/B] [C/F#]

2^{cnd} Theme Group

description	chordal variation of octave leap (b) 95-99 = 28-32 up a 4th	development of 95-99, 100-103 = 33-36 up a 4th	104-105 =37-38 up a 4th
superchord	Dm/F#x→Am/C#x	Dm/F#x→Cx/C#x	Dm/D#m→ Cx/C#x
measures	95-99	100-103	104-107
superkey	[C/B] [F/F#]	[F/B] [F/F#]	[C/F#] [F/F#]

Reprise 1st Theme Group

description	108-113= 10-15, a 114= 16 up a 4th approx.	rocking chords, themes d, c 115-121 = 17-23 up a 4th	122-124= 24-26 up a 4th
superchord	Fx/F#x→Bbm/Dx	D#m/Gx→Bbm/Dx	Ebm/Gx→ Cx/Dbx (keystreams switched)
measures	108-114	115-121	122-125
superkey	[Bb/B]→ [Ab/G]	[Db/C] [Db/G]	[Db/C] [F/Gb] (keystreams switched)

Coda

description chords

superchord	Fx/F#x→Cx/F#x	Fx/F#x→Fx/F#x
measures	126-131	132-140
superkey	[Bb/B]] [F/F#]	[Bb/B]