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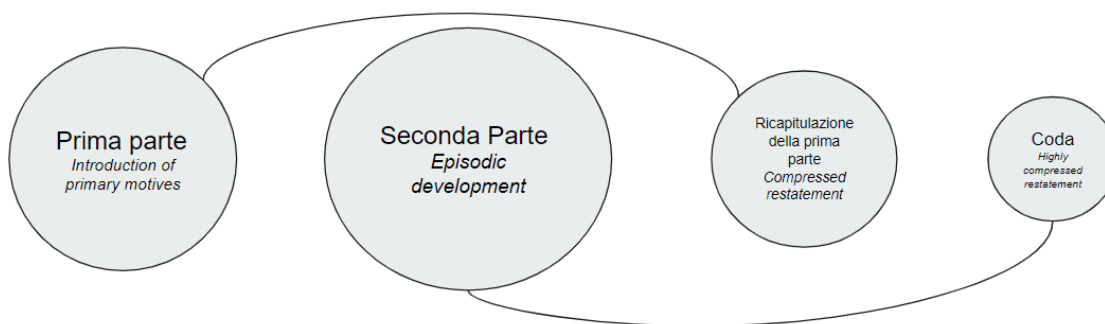
Structural and Harmonic Symmetries in *String Quartet No. 3* by Bela Bartok

Perhaps no modern composer from the 20th century, outside of the prominent serialists, has received as much analytical attention as Bela Bartok. His remarkable set of works from the earliest points of his life in Hungary to his death in America comprise a remarkable splice of compositional modernity. Bartok's early days were influenced by late German Romanticism, flowering through the contemporary expressionism of Wagner and Strauss. Their influence was clearly reflected in his early works, which demonstrate the contrapuntal rigor of Brahms and the dense tonality of Strauss. The tone poem *Kossuth*, and to an extent his *String Quartet No. 1*, emphasize these qualities. Yet, Bartok manages to plant in these early works a compositional seed easily noticed by both the scholastic and casual: a penchant for lyrical folk tunes, a dynamic sense of meter, and a prioritization of dialectical structural integrity. This is not to say that Bartok was an anachronist – it is challenging to find a composer from this time who wasn't slightly reverent of the past – but Bartok reshaped and rechallengeed the mold that was cast, using it to not only frame a personal credo, but to keep his music inside of a continually molding dialectic tradition.

Bartok's *String Quartet No. 3* is a central pivoting point in the middle of his career. Composed alongside a work considered his magnum opus – *String Quartet No. 4* – in 1927, the work was dedicated to the Musical Fund Society of Philadelphia and demonstrates compositional

traits that would echo into his latest works.¹ The work is the shortest of the quartets Bartok would compose, undergoing full musical development in just under 15 minutes. Composed as a four-movement quartet without pause, the work displays numerous harmonic and structural intricacies that mark it as one of Bartok's most rigorously composed works. The majority of musical material is derived from the very first page of the quartet, and the quartet's unique use of axes of symmetry, allow for distantly related notes to be paired together developmentally. In order to demonstrate these qualities, a structural analysis of the whole work, and a harmonic analysis of major points of the "Prima Parte," and "Seconda Parte" will prove prudent.

The work as a whole, demonstrates formal compression. As the work goes on, the recapitulatory movements serve to "summarize" the motivic ideas that occur prior. The four-movement work, as written, can be visualized as so:



The first movement, labeled by Bartok himself as "Prima Parte," introduces the primary harmonic motives of the work. These include subsets of the chromatic tetrachord, [0,1,2,3], as

¹ Bela Bartok, "String Quartet No.3," in *The String Quartets of Bela Bartok* (London: Boosey and Hawkes, 1945), 109.

well as the motivic germ of the whole work [0,2,5]. An exemplary visualization of this comes from the outset of the work itself, as seen in Figure 1 below:²

The image shows the first page of the musical score for Bartok's String Quartet No. 3. It features four staves: Violino I, Violino II, Viola, and Violoncello. The tempo is marked 'Moderato' with a metronome marking of 88. The first violin part is highlighted with a cyan box, and the first two measures of the first violin are circled in red. The second violin part is also circled in red. The viola and cello parts are marked 'con sord.' and 'pp IV'. The first violin part is marked 'senza sord.' and 'p'. The score includes dynamic markings like 'dim.' and 'pp'.

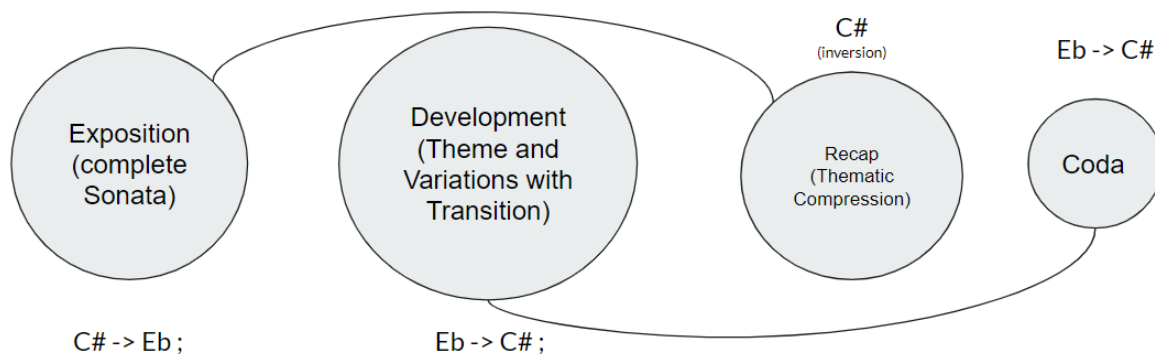
Figure 1

The start of the work demonstrates the chromatic tetrachord, being held underneath the moving framework theme. Bartok has very clearly intended this chord to be simultaneously open and closed in terms of its voicing and sonority. The cello harmonic floats next to the E natural held in the viola, and the low C# is in binary opposition to the D# nearly two octaves away. The first violin enters this chord in the middle of the register, and moves outside of the octaves very briefly, before descending downwards again. The primary melodic/harmonic cell, [0,2,5], is heard in a typical Bartok-ian canon after the initial framework theme is played in the violin. Strong beat emphasis is given to notes that are unimportant, but the intervallic content of the first

² Bartok, "String Quartet No. 3," 109.

and second violins is the same. The cello responds and as it descends downwards marks the arrival of the viola, who enters on set [0,1,5]. Note how both introduced sets that are partial subsets of the chromatic tetrachord.

The formal requirements of the work exhibit characteristic double function form:



The first movement of the work exhibits characteristics of both a full-fledged sonata, as well as an exposition of a larger sonata, demonstrating equivalent and symmetrical functionality. The chart below, Figure 2, helps demonstrate these equivalences:

Measure Numbers	Reh. 0 - 2	Reh. 2 - 4	Reh. 4 - 6	Reh. 6 - 8	Reh. 9 - 11	Reh. 11 - 13
Sonata	Framework Theme	Main Theme	Second Theme and Closing Theme	Development	End of development to Retransition	Recapitulation, Codetta, and Transition
Exposition	Framework Theme/Primary Theme	Transition with Medial Caesura	Second Theme (S1)	S2 (based on PT)	S3 (based on PT) with second medial caesura before Reh 11	Closing Space

Figure 2

Bartok will very often use a framework theme, something discussed by scholar Terry Klefstad, who summarizes:

The string quartets of Bela Bartok are tightly constructed: often the first few measures contain the motivic, harmonic and rhythmic material for a given movement of even the entire quartet. Many movements open with an introductory theme that does not function structurally as part of the first-theme group, but reappears intact throughout the movement at prominent structural junctures.³

The framework theme opens the movement, and is heard again at Reh. 2. The difference in interpretation begins here – if this framework theme is considered primary, the movement structurally moves to a cadential point before the developmental/episodic material that comprises the middle portion of the movement. This clear arrival is the medial caesura, shown in Figure 3:⁴



Figure 3

This point of the work emphasizes the harmonic dialectic Bartok is still exploring – one that has been continually explored – the opposition of sonority between perfect and dissonant intervals. The first arrival of the work is grounded in a resonance of fourths, and the pc material explored very clearly emphasizes this: [0,2,4,7,9]. This passage’s importance supersedes local harmonic importance, as structurally it makes a recurrence in the last passage of the movement, as seen in Figure 4:⁵

³ Terry Klefstad, “The Structural Function of Framework Themes in Bartok’s String Quartets,” *International Journal of Musicology* no. 9 (2000)

⁴ Bartok, “String Quartet No. 3,” 110.

⁵ Bartok, “String Quartet No. 3,” 110.

The image shows a musical score for Bartok's String Quartet No. 4/5. It features four staves (Violin I, Violin II, Viola, and Cello/Double Bass). The score includes dynamic markings such as 'ritard.', 'accel. al.', 'Tempo . ♩ = 88-84', and 'sord.'. There are also performance instructions like 'pizz.' (pizzicato) and 'ppp' (pianissimo). A red bracket highlights a section of the music, and an arrow points to the 'accel. al.' marking. The publisher's information 'B & H 9042' is visible at the bottom.

Figure 4

Here we have found the inherent harmonic dialectic present in all works that exhibit sonata function, that of tonic and dominant – in abstracted terms, arrival and developmental – as well as the dialectic present in expositions: contrasting thematic cells/motives that are used in later parts of the piece which recur in the recapitulation. Figure 2 demonstrates Bartok’s early developments in formal junction. The famous “arch form” that Bartok would explore in his finest works (*String Quartet No. 4/5*, *Concerto for Orchestra*), is being developed here, albeit in a more classical manner. There is a formal juncture between the first and the third movements – but one that serves a recapitulatory purpose. In his later works, the connection is more abstract: whether that may be using similar harmonic material, or using a similar tempo.

Underscoring the major formal parts of the work is necessary to understand the formal importance of the axes that Bartok uses throughout the work. Bartok’s use of these axes of symmetry is equivalent to modulation – allowing for him to emphasize disparate pitches, and create a joined hierarchy amongst them, whilst freely moving between the scalar and intervallic content generated. While Bartok would often use pitch centricity in his later works, in this quartet he seems to use “invisible axes” in order to bind pitches together. The first time an axis is used in the work is in a derivative, expository manner. In Figure 5, note how the descending,

contrary motion in the cello allows for Bartok to introduce a Bb, which he treats like an anticipation to the glissando cadence at Reh. 2:⁶

Figure 5

The Bb is an inversion over T₃I of the suspension being held in the second violin, 4 measures after Reh. 1. The rest of the material is an echo of the pc material in the first violin; stratifying the ensemble in this manner allows for him to explore a homophonic texture after the contrapuntal density of the opening measures – another dialectical choice.

In Figure 6 we can see a crucial choice in instrumentation, one which Bartok uses to mark numerous important structural points in the work to emphasize the axis he is currently using, as well as its derivative material:

⁶ Bartok, “String Quartet No. 3,” 109.

Figure 6

The image shows two systems of musical notation. The first system consists of four staves: Violin I, Violin II, Viola, and Cello. Red brackets and lines highlight specific intervals and melodic lines. A box with the number '3' is in the top left of the first staff. The second system also has four staves, with the tempo marking 'Sostenuto ♩ = 60' and 'G.P.' (Grave) written on the right side of the staves.

The first violin and viola are in a carefully chosen canon in fourths – this interval distance allows for the pitch class material introduced in the viola to not be inverted out of its prime [0,2,5] form, and junctures them together harmonically. The cello is playing anticipatory material yet again, anticipating the medial caesura at the sostenuto. The inversional axis is once again T_3I , and it is being exemplified in the (figured) trill written in the second violin. T_3I is a bipolar axis, meaning that it falls in between the pc's [1,2] and [7,8]. The second violin, hovering on [7,8] allow for the harmonic material surrounding it to be balanced. While there may not be a pull towards these pitches, the axis here allows for the material to not sound intervallically disparate, when it ordinarily would: with the clashing dissonances of the audible compound minor seconds/tritones.

The axes Bartok's uses are, again, interconnected to the melodic material used in the start of the work. Primary axes that are used throughout the work include T_0I , T_3I , T_5I , and $T_{10}I$. There are two rationale for why these axes, in particular, are being used. The first regards scalar and pc-collection interconnectivity: the major pitches that Bartok centers the work around include pc1 (C#) and pc3 (Eb). He uses these characteristics in opposition at various points throughout the

work, but the start of the “Seconda Parte” demonstrates how he develops and juxtaposes these materials. In Figure 6, note the distant scalar juxtaposition being used, namely the modes of D Mixolydian and Eb Dorian:

The image shows a musical score for Bartok's String Quartet No. 3, specifically a passage from the second part. The score is in 2/4 time and features a cello and viola part with an ascending scalar idea. The cello part is marked 'pizz.' and 'con sord.', and the viola part is marked 'quasi gliss.' and 'arco'. The score includes dynamic markings like 'pp' and 'mf', and a first ending bracket.

Figure 7

The ascending scalar idea passed between the cello and viola (shown here starting in the cello) is centered around pc2 (D). PC6 (F#) is seen at the peak of the scale in the middle voicing of the chord. The viola quietly sets this melody off with a rapid figuration of the chromatic tetrachord, in transposition while the first violin echoes the second primary theme in the movement. This theme is firmly centered around pc3, moving modally around the Eb Dorian scale. On the outset, these scales seem distant and superficially related by semitone. In reality, they are once again being balanced around an inversional axis, this time T_0I . There are exactly two common tones between these two distant scales, that of pc1 and pc6, which happen to be the poles of the axis itself. The instrumentation in this passage harkens back to Figure 6 – the second violin is again sustaining a trill around the root notes of both explored scales, binding them together.

⁷ Bartok, “String Quartet No. 3,” 115.

There is a secondary explanation for why these axes are used – if we relabel the axes as if they were pc's, and place them in normal order we arrive at [10,0,3,5]. In prime form this set is [0,2,5,7]. Here we can clearly visualize the complete sublation of melodic and harmonic content -- axes of symmetry are labeled by the summation of the balanced pitches, and in this case, it is more than likely Bartok used the [0,2,5] set in transposition (T_2) to create a hierarchy of intervallic content. The “Prima Parte” hovers around T_{3I} and T_{10I} , while the “Seconda Parte” shapes its first major sections around T_0I . The axis that listeners hear immediately after the penultimate movement is significantly tighter, and more constrained in pc-space, than where we ended. The expansion from this axis, in both melodic and harmonic stratifications, allows for Bartok to create a very natural harmonic and aural destination for the music.

Bartok's *String Quartet No. 3* is perhaps one of the finest examples in the quartet repertoire of using musical materials like literary synecdoche: each individual part of the quartet, both structurally and harmonically, serves to unify the quartet as a whole. Destinations, whether the listener immediately notices or not, are predetermined and foreshadowed from the outset of the work. All of the harmonic materials, including the pc centers, are determined within the first 20 bars of the work. This level of compositional rigor not only allowed Bartok to coherently move within a relatively atonal harmonic space, but allowed for him to develop a unique compositional voice that was inimitable. While Bartok's personal credo would heavily modulate due to the adversity he would soon face after the composition of this piece, all of his late works demonstrate his compositional mastery, as well as definitively proving his dialectic evolution from romanticism into modernity.

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