

Rhythmic and Motivic Symmetry in Prokofiev's *Precipitato* from Piano Sonata No. 7 Op. 83

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Abstract. Prokofiev provides a unique compositional interpretation in *Precipitato* of his Piano Sonata No. 7 Op. 83. The third movement in asymmetrical meter presents a conclusive finale with a strong rhythmic drive. This research will focus on segmentations derived from Prokofiev's motivic structures. This study will analyze the themes and variations built upon the combination of the five rhythmic motives. This paper traces the theoretical phenomena within the analysis of *Precipitato* and draws analytical conclusions based on the findings.

Keywords. Form, motive, piano sonata, Prokofiev.

1 Introduction

Prokofiev's Seventh Piano Sonata No. 7 Op. 83 is a unique work in its historical background, musical meaning, and compositional style. There are three movements in this work: *Allegro inquieto* in B \flat major, *Andante caloroso* in E major, and *Precipitato* in B \flat major. Historically, this work is prominent because it is one of Prokofiev's three war sonata, completed in 1942 and premiered by Sviatoslav Richter in 1943. (Prokofiev completed Piano Sonata No. 6 in 1940 and No. 8 in 1944.) Analytically, the three movements of Prokofiev's No. 7 Op. 83 provide an interplay between tonality and atonality. Likewise, another fascinating trait is Prokofiev's use of rhythm to outline musical ideas, engraved in voicing, texture, and form. The third movement is a toccata in 7/8 meter. Such rhythm's asymmetrical nature allows Prokofiev to create sudden and suspenseful music, defined through a diverse harmonic language. The use of syncopation and rapid changes in rhythmic structures add to Prokofiev's unique musical style.

Each of the three movements presents its musical imagery and interpretation, featuring various tension and anxiety levels mixed with tranquility and lyricism. This research focuses solely on the third movement, *Precipitato*, and outlines the compositional symmetry from the rhythmic perspective, derived from the opening theme's five rhythmical motives. There are two parts to this article. The first section defines the five rhythmic motives and their respective variations. Likewise, this study covers each rhythmic motive's compositional formulae and its description based on tonal and atonal theory. The second section presents ways in which the proposed motivic seg-



mentation combines to generate multiple phrases, which furthermore produce musical groups responsible for the form of the toccata through a series of symmetrical properties.

This analysis considers the exact measurements of motivic and phrasal endings with a decimal point employed to represent the precise completions. For instance, m. 25.1 represents the downbeat of the twenty-fifth measure. Likewise, various musical elements found in this work may intersect. For example, a motive in mm. 1-3.1 intersects with the proceeding motive at mm. 3-5.1.

2 Previous Research

There have been several significant sources on Prokofiev's compositional language with an emphasis on rhythm and form. Rifkin's dissertation titled *Tonal Coherence in Prokofiev's Music: A Study of the Interrelationships of Structure, Motives, and Design* explores the atonal coherences in various harmonic progressions not related by the notion of tonality [1]. Concomitantly, Rifkin's article titled *A Theory of Motives for Prokofiev's Music* combines Schenkerian and Neo-Riemannian theories to look at the motivic organization and its association with voice leading [2]. There are also several notable works on Prokofiev's compositional language. Harley examines the sequential harmony, dominant-tonic relations, modal variability (*ladovaja peremennost'*), and chromatic substitutions [3]. Moellering focuses on analytical components, such as the employment of sevenths intervals and tritones to generate instability and musical uncertainty, the abrupt resolutions to distant tonal regions, the use of free counterpoint, and homogeneous accompanimental figures [4]. Mainly related to No. 7 Op. 83, Marković provides interpretative approaches based on historical, analytical, and performative practices [5]. Finally, Sicsic applies *Grundgestalt* (Schoenbergian), motivic, and tonal analyses to dissect the sonata's compositional construction [6]. In addition to the preceding scholarship, symmetrical and mathematically driven characterization of Prokofiev's works is likewise prominent and is a known phenomenon in analytical literature. For instance, Tymoczko points out the two-dimensional scale lattice in Prokofiev's Op. 27 [7].

3 Method of Analysis: Rhythmic Motive

The motivic organization is a prominent component of an all-inclusive theoretical understanding of music. Comprehending motives allows researchers and performers to interpret the music's prominent areas and how the composer varies them throughout the work. The *Precipitato* incorporates five rhythmic patterns, labeled as *mot. q*, *mot. r*, *mot. s*, *mot. t*, and *mot. y*. While the first four motives are different in their rhythmic variance, they are derived from identical B \flat -C \sharp -B \flat ostinato. There are four prominent characteristics of such ostinato that define its musical purpose. First, the ostinato never starts on the accented beat. Instead, it is initialized on the second (non-accented) beat of the 7/8 meter. Second, Prokofiev accents each ostinato's second beat, which is

the third beat in each measure, where such ostinato exists. Third, the second scale degree is raised, generating an augmented second interval between the tonic and the supertonic. While the interval is enharmonically equivalent to the consonant minor third, the overall context differs, and subsidiary music material generates multiple melodic and harmonic dissonance levels. Fourth, the ostinato provides the opening pitches for each of the motives on beats 2, 3-4, and 5 throughout the movement.

The rhythmic pattern of *mot. q* consists of fifteen beats, spread through the three measures. Furthermore, *mot. q* includes two supplementary pitches on the ninth and the eleventh beats after the ostinato. The *mot. q* subdivides into five different classes. While the first three pitches of each *mot. q* are identical, the penultimate and the final pitches are not and will be represented with pitch-class notation (0 through 12). This generates five *mot. q* variations, such as:

$$\begin{aligned} \text{mot. } q^1 &= [\text{B}_b\text{-C}\sharp\text{-B}_b] + 10 + 1 \\ \text{mot. } q^2 &= [\text{B}_b\text{-C}\sharp\text{-B}_b] + 10 + 3 \\ \text{mot. } q^3 &= [\text{B}_b\text{-C}\sharp\text{-B}_b] + 10 + 9 \\ \text{mot. } q^4 &= [\text{B}_b\text{-C}\sharp\text{-B}_b] + 11 + 6 \\ \text{mot. } q^5 &= [\text{B}_b\text{-C}\sharp\text{-B}_b] + 10 + 10 \end{aligned}$$

Each variation of *mot. q* contains its unique characterization. In *mot. q*¹, the right hand only presents pitches of the B_b major scale. Besides, this is the only *mot. q* variation to contain every pitch of a diatonic scale. Such a motive exists in mm. 1-3.1, mm. 19-21.1, mm. 127-129.1, and mm. 145-147.1. The most common motives to appear throughout the *Precipitato* are *mot. q*², *mot. q*³, and *mot. q*⁴. Throughout the third movement, *mot. q*² occurs in mm. 3-5.1, mm. 5-7.1, mm. 21-23.1, mm. 23-25.1, mm. 147-149.1, and mm. 149-151.1; *mot. q*³ occurs in mm. 7-9.1, mm. 9-11.1, mm. 133-135.1, mm. 135-137.1, mm. 151-153.1, and mm. 153-155.1; *mot. q*⁴ occurs in mm. 11-13.1, mm. 13-15.1, mm. 32-34.1, mm. 36-38.1, mm. 137-139.1, mm. 139-141.1, mm. 155-157.1, and mm. 157-159.1.

Chromaticism is a crucial aspect of the implication-realization model, which Prokofiev generates in the second, third, and fourth variations of *mot. q*. In these instances, the voice leading of three-note or four-note chords either stay on the same note, or ascend or descend by semitones. An example can be seen in *mot. q*² in mm. 4.3-5.1. The chords G_b-B_b-C, F-A-C, E-G_b-C, F-A-C, and G_b-B_b-C present three different voice-leading scenarios, where the top voice stays on note C, while the middle and the bottom voices generate subsidiary chromatic melodies. From the perspective of set theory, on top of generating a retrograde symmetry, a dissonant (026) motion towards dissonant enharmonically-spelled augmented triad (048) via an entirely consonant F major harmony (037), covering two of the four fundamental trichords.

The final *mot. q*⁵ employs the [3,7,9] pitch-class collection as a cluster chord. This set that can likewise be labeled by its prime form (026) is significant for two reasons. First, it links the third movement with the sonata's first movement, as (026) is employed in mm. 20-23 of *Allegro inquieto*. Stylistically, the first and the third movements produce a large variety of contrast in pianism, harmony, and distinct sonata-form function in each separate movement. An identical pitch-class collection allows Prokofiev to present a symbolic association between multiple parts of the work as a

whole. Second, compared with *Allegro inquieto* and *Andante caloroso*, *Precipitato* is this sonata's most tonally stable movement and a series of (026) collections, subsets of dominant seventh chords that seek resolutions to the tonic, define why. In the case of *mot. q*⁵ in *Precipitato*, [3,7,9] generates a need for gravitational pull towards the B \flat major harmonic zone, seen in mm. 17-19.1.

While *mot. q* contains five variations, both *mot. r* and *mot. s* exist solely in prime form. Both elements are a rare occurrence in this movement with *mot. r* showing up only in mm. 25-28.1 and mm. 28-31.1, and *mot. s* showing up only in mm. 34-36.1. One can, however, interpret *mot. r* as an expansion of *mot. s*. While the ostinato does not appear in *mot. r* in its full form, it is hinted, as *mot. r* incorporates E \flat and a raised neighboring tone F \sharp , generating an interval of an augmented second. The shortest motive in the movement, occurring merely three times, is *mot. t*, consisting of an ostinato and a subsequent single pitch-class on the seventh beat, either 8 (G \sharp /A \flat) or 9 (A \sharp). In mm. 38-39.1 and mm. 43-44.1, *mot. t* ends with pitch-class 8 (and can correspondingly be labeled as *mot. t*¹), while in mm. 44-45.1, *mot. t* ends with pitch-class 9 (that for consistency is *mot. t*²). In the latter example, *mot. t* presents gravitation towards tonality, as seen previously with *mot. q*⁵.

While *mot. q*, *mot. r*, *mot. s*, and *mot. t* occur solely in the left hand of the third movement, *mot. y* can be seen in both hands. This motive incorporates all of the remaining motivic material that does not fit under any of the previously discussed groups. Furthermore, *mot. y* is the only motive that does not start with the B \flat -C \sharp -B \flat ostinato. Also, *mot. y* stands for the emblematic and forceful rhythmic grouping that Prokofiev utilizes in this movement. Prokofiev especially emphasizes the uneven 2/8 + 3/8 + 2/8 metrical subdivision of the 7/8 time signature. Unlike the other four motives, *mot. y* is not based on any specific form and varies in each of its presentations, including modifications from both analytical and performative standpoints in dynamic effect, structure, and the number of pitches utilized. Some instances of *mot. y* generate hidden musical phrases, such as G-E \flat -C \flat -B \flat -A \flat -G in m. 31. In other instances, *mot. y* generates a series of cluster chords, as seen in mm. 163-171.1.

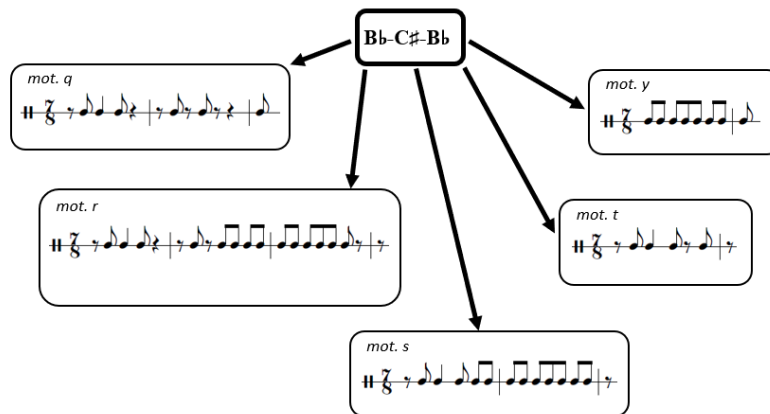


Fig. 1. Rhythmic motives in the *Precipitato* movement of Prokofiev's No. 7 Op. 83.

Furthermore, partitioning of passages with *mot. y* can be interpreted as both tonal and atonal. For example, pitches C, E, G, and B \flat of mm. 165.1-166.2 generate a C 7 chord. On the contrary, C \flat -C-E \flat -F-G \flat -A in m. 168.1 does not produce a unified tonality and instead contains a note A that is shared among two separate harmonies – F major and an enharmonic spelled C \flat 7 . Figure 1 reveals a series of rhythmic motives.

4 Results: Combining the Rhythmic Motives

The combinations of the proposed motives generate the primary theme of the toccata. Theme A of *Precipitato* is seen four times in three different versions (labeled as A^0 , A^1 , and A^2). A^0 , the prime form of the A-theme, is introduced in mm. 1-19.1, contains nine elements, and is the only theme solely generated from q-related motivic material. A similar theme exists in mm. 127-145.1. A^1 exists in mm. 19-45.1, consists of fourteen elements, and is expanded by supplementary motivic structures. Finally, A^2 , found in mm. 145-177.1, is the longest of the themes, contains a total of twenty-three elements, and likewise integrates a coda. Figure 2 presents detailed examples of A^0 , A^1 , and A^2 . Figures 3–5 show examples from the score [8].

$$\begin{aligned} A^0 &= q^1+2q^2+2q^3+2q^4+2q^5 \\ A^1 &= q^1+2q^2+2r^1+y+q^4+s^1+t^1+2q^5+2t^2 \\ A^2 &= q^2+2q^2+2q^3+2q^4+2q^5+14y \end{aligned}$$

Fig. 2. The formula for deriving three variations of Theme A by using the interchange of five motives in *Precipitato* of Prokofiev's No. 7 Op. 83.

The image displays a musical score for a piano piece, specifically Theme A⁰ from measures 1-19.1 of the *Precipitato* movement in Prokofiev's No. 7 Op. 83. The score is written for piano and consists of five systems of music. Each system contains a grand staff with a treble and bass clef. The key signature is one flat (B-flat major or D minor), and the time signature is 2/4. The first system begins with a *mp* (mezzo-piano) dynamic marking. The second system continues the piece. The third system introduces a *mf* (mezzo-forte) dynamic marking. The fourth system features a *cresc.* (crescendo) marking. The fifth system concludes the theme with a fermata over the final chord.

Fig. 3. Theme A⁰ from mm. 1-19.1 in the *Precipitato* movement of Prokofiev's No. 7 Op. 83.

The image displays a musical score for a piano piece, specifically Theme A1 from measures 19-45.1 of the Precipitato movement in Prokofiev's No. 7 Op. 83. The score is written for piano and consists of seven systems of music. Each system contains a grand staff with a treble and bass clef. The key signature is one flat (B-flat major or D minor), and the time signature is 3/4. The first system begins with a forte (*f*) dynamic in the right hand and a mezzo-forte (*mf*) dynamic in the left hand. The music features a rhythmic pattern of eighth and sixteenth notes, with some chords and rests. The second system continues this pattern with some melodic development in the right hand. The third system shows a more active right hand with sixteenth-note runs. The fourth system features a complex texture with many chords and some melodic lines. The fifth system continues with similar textures. The sixth system includes a forte (*f*) dynamic marking. The seventh system concludes with a crescendo (*cresc.*) and a fortissimo (*ff*) dynamic marking.

Fig. 4. Theme A¹ from mm. 19-45.1 in the *Precipitato* movement of Prokofiev's No. 7 Op. 83.

The image displays a musical score for a piano piece, specifically Theme A² from measures 145-177.1 of the Precipitato movement in Prokofiev's No. 7 Op. 83. The score is written for piano and consists of ten systems of music. Each system includes a grand staff with a treble clef on the upper staff and a bass clef on the lower staff. The key signature is one flat (B-flat major or D minor), and the time signature is 3/4. The music is characterized by a driving, rhythmic pattern in the right hand, often featuring chords and sixteenth-note runs. The left hand provides a steady accompaniment with chords and eighth-note patterns. The score includes various musical notations such as slurs, accents, and dynamic markings. A prominent marking is *ff detaché* (fortissimo detached), which appears in the eighth system. The piece concludes with a final chord in the tenth system.

Fig. 5. Theme A² from mm. 145-177.1 in the *Precipitato* movement of Prokofiev's No. 7 Op. 83.

The complete motivic and phrasal analysis from a rhythmic standpoint can be constructed for each A-theme, as shown in Figure 6. Based on the data, the symmetry generated by the combinations of the rhythmic motives derives two postulates and is significant to Prokofiev's compositional language. First, every A-theme contains at least one variation of *mot. q*. Second, *mot. q*¹ occurs only once in each A-theme and generates a B_b major scale in the right hand.

<u>A</u> ⁰	Start	End	Type of Rhythm	<u>A</u> ⁰	Start	End	Type of Rhythm
	1.0	3.1	q1		127.0	129.1	q1
	3.0	5.1	q2		129.0	131.1	q2
	5.0	7.1	q2		131.0	133.1	q2
	7.0	9.1	q3		133.0	135.1	q3
	9.0	11.1	q3		135.0	137.1	q3
	11.0	13.1	q4		137.0	139.1	q4
	13.0	15.1	q4		139.0	141.1	q4
	15.0	17.1	q5		141.0	143.1	q5
	17.0	19.1	q5		143.0	145.1	q5
<u>A</u> ¹	Start	End	Type of Rhythm	<u>A</u> ²	Start	End	Type of Rhythm
	19.0	21.1	q1		145.0	147.1	q1
	21.0	23.1	q2		147.0	149.1	q2
	23.0	25.1	q2		149.0	151.1	q2
	25.0	28.1	r1		151.0	153.1	q3
	28.0	31.1	r1		153.0	155.1	q3
	31.0	32.1	Y		155.0	157.1	q4
	32.0	34.1	q4		157.0	159.1	q4
	34.0	36.1	s1		159.0	161.1	q5
	36.0	38.1	q4		161.0	163.1	q5
	38.0	39.1	t1		163.0	164.1	Y
	39.0	41.1	q5		164.0	165.1	Y
	41.0	43.1	q5		165.0	166.1	Y
	43.0	44.1	t2		166.0	167.1	Y
	44.0	45.1	t2		167.0	168.1	Y
					168.0	169.1	Y
					169.0	170.1	Y
					170.0	171.1	Y
					171.0	172.1	Y
					172.0	173.1	Y
					173.0	174.1	Y
					174.0	175.1	Y
					175.0	176.1	Y
					176.0	177.1	Y

Fig. 6. Motivic construction of *Precipitato* movement in Prokofiev's No. 7 Op. 83.

For A^0 and A^1 , themes can be subdivided into five segments, each containing sole or multiple motives. The five motivic elements of A^0 are equally distributed, and therefore, the five segments are [*mot. q*¹]; [$2(\textit{mot. q}^2)$]; [$2(\textit{mot. q}^3)$]; [$2(\textit{mot. q}^4)$]; and [$2(\textit{mot. q}^5)$]. On the contrary, the segmentation process of A^1 requires the need for motivic amalgamation, and therefore, the five segments are [*mot. q*¹]; [$2(\textit{mot. q}^2)$]; [$2(\textit{mot. r}^1) + \textit{mot. y}$]; [$4(\textit{mot. q}^4 + \textit{mot. s} + \textit{mot. q}^4 + \textit{mot. t})$]; [$2(\textit{mot. q}^5) + 2(\textit{mot. t})$]. Of the five segments, only two are identical in the thematic content, as A^1 begins its deviation process on the third segment. Such symmetrical similarity does not exist within the A^2 . However, it is significant to note that the total number of elements of A^2 is the total number of elements of A^0 and A^1 – each group holding twenty-three elements.

An important observation that can be traced at the end of the coda in mm. 171.2-177.1 is the chromatic substitution of B_b to C_b (enharmonically equivalent of B_h.) According to Bass, such chromatic displacement carries a diatonic function (rather than the function of an altered note) [9]. Furthermore, such diatonic comprehension can be ex-

plained through the *I-R* model. This passage contains two sub-phrases, found in mm. 171.2-173.1 and 173.2-177.1, and can be bifurcated based on its harmonic role and the musically contextual content. The *I* in mm. 171.2-171.7 and the *R* in mm. 172.0-173.1 complete the cycle for the initial subphrase, and the *I* in mm. 173.2-174.7 with the *R* in mm. 175.0-177.1 complete the cycle for the subsequent subphrase of the passage. The *R* elements support the tonal realization of the B \flat major harmony, emphasizing the resolution on the first, third, and fifth chordal factors. Prokofiev utilizes the concept of chromatic substitution on beats 1, 3, and 6 in m. 172 and on beat 6 in m. 173. The inclusion of the tonally right note in m. 172 would generate a B \flat major arpeggio, while the inclusion of the tonally right note in m. 173 would generate a B \flat major scale, yet neither scenario is realized, as Prokofiev prolongs the C \flat , which only resolves to B \flat in m. 175-177.2.

5 Conclusion

The third movement of Prokofiev's Piano Sonata No. 7 Op. 83 contains many symmetrical relationships, where motives, phrases, and variations of the opening theme portray a combination of balance and proportionality. This type of symmetry holds this movement together and is responsible for its strong emphasis on rhythm and syncopation. Prokofiev successfully intertwines the motivic interchange and variations with his interpretation of form and structure in a toccata. The subdivision of melodies into motives allows one to trace the compositional path from the perspective of form and how the composer carefully maneuvers around each element. The symmetrical nature of Prokofiev's motives is a prominent compositional technique of the toccata.

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