

Case Studies in the Relationships Between Harmony and Orchestration  
in Prokofiev's Orchestral Music

by

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## ABSTRACT

This research paper investigates the relationship between orchestration and harmony in Prokofiev's orchestral works through selected case studies drawn from his symphonies and several of his symphonic suites. The research focuses on moments where the combination of orchestration and harmony stand out from the orchestral texture. Prokofiev uses these two elements of music to create both a large range of orchestral colors as well as to highlight structurally important moments in thematic development. Through the selected music examples, I highlight how the two elements are mutually dependent, even synergistic. I also argue that Prokofiev uses the two elements in a highly inventive manner to create unique timbral/harmonic effects. Drawing on recent theories related to timbre and perception, the chosen segments of music are analyzed in detail within the context of the works' form and narrative. The study of these combinations suggests further research and interpretative possibilities for composers, music theorists, and performers.

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## CHAPTER 1

### INTRODUCTION

#### PRIOR AND RELATED RESEARCH

This research project is unique in its two-pronged theoretical approach toward Prokofiev's orchestral works. Much research has been done on Prokofiev's idiosyncratic use of harmony in his solo and chamber works. Examples includes Konrad Harley's 2014 dissertation, "Harmonic Function in the Music of Sergei Prokofiev,"<sup>1</sup> Deborah Anne Rifkin's 2000 dissertation "Tonal Coherence in Prokofiev's Music: A Study of the Interrelationships of Structure, Motives and Design,"<sup>2</sup> and Neil Minturn's 1997 book *The Music of Sergei Prokofiev*.<sup>3</sup> These works provide thorough overviews of the harmonic processes in Prokofiev's music, addressing in particular the composer's penchant for using "wrong notes" in his harmonies, the *Prokofiev dominant*,<sup>4</sup> and Prokofiev's relation to nineteenth-century precursors, particularly the chromatic harmonic language of Franz Liszt. This prior research provides an invaluable foundation for my own research project.

Harmony and orchestration are rarely examined in synergistic combination. Harmony has traditionally been linked more to other elements of music such as rhythm and form, rather than orchestration. A standard harmonic analysis of a given piece of tonal music will assist in leading the theorist to both small and large-scale harmonic structures with a special highlight on cadential moments. By locating these cadences,

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<sup>1</sup> Konrad Harley, "Harmonic Function in the Music of Sergei Prokofiev" (PhD diss., University of Toronto, 2014).

<sup>2</sup> Deborah Anne Rifkin, "Tonal Coherence in Prokofiev's Music: A Study of the Interrelationships of Structure, Motives and Design" (PhD diss., Eastman School of Music, 2000).

<sup>3</sup> Neil Minturn, *The Music of Sergei Prokofiev* (New Haven: Yale University Press, 1997).

<sup>4</sup> Harley, "Harmonic Function in the Music of Sergei Prokofiev," 2-12.

light is shed on the overall form and process of a piece. The study of harmony in relation to time and rhythm gives birth to the term *harmonic rhythm*, the rate at which chords change over time, and which can help account for the intensity and phrase structures in the music at any given part of a work. Analyses of these musical elements in a combined manner have become commonplace in music theory.<sup>5</sup>

By contrast, orchestration has evaded codification in music theory because of each composer's unique methods of orchestration and a lack of existing theoretical foundations for the study of timbre. This is a field of study that is more often casually observed by performers and theorists rather than seriously analyzed. The study of orchestration has historically been characterized not by acoustical description, but rather by one-word semantic descriptors or phrases, as shown in research by Gregory John Sandell and Zachary Wallmark.<sup>6</sup> Authors of orchestration use evocative metaphors, simile or onomatopoeia to describe their aural impressions of certain passages of music. The elusive nature of the art of orchestration is best encapsulated by Rimsky Korsakov's remarks in his *Principles of Orchestration*, "The power of subtle orchestration is a secret impossible to transmit, and the composer who possesses this secret should value it highly and never debase it to the level of a mere collection of formulae learned by heart."<sup>7</sup> The art of orchestration ostensibly possesses no set rules and concerns only select

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<sup>5</sup> See, e.g., Stefan M. Kostka and Dorothy Payne. *Tonal Harmony: with an Introduction to Twentieth-Century Music*, 6th ed. (New York: McGraw-Hill, 2009).

<sup>6</sup> Gregory John Sandell. "Concurrent timbres in orchestration: A perceptual Study of factors determining 'blend'" (PhD diss., Northwestern University, 1991), 11-12. Examples of one-word semantic descriptors and phrases of orchestration impressions and timbre can be found in this dissertation. Zachary Wallmark, "A corpus analysis of timbre semantics in orchestration treatises," *Psychology of Music*, Vol.47, No.4 (2019): 585-605.

<sup>7</sup> Nikolai Rimski-Korsakov, *Principles of Orchestration with Musical Examples Drawn from His Own Works*, ed. Maximilian Steinberg and trans. Edward Agate, (New York: Dover Publications, 1964), 25.

practitioners of music – composers, conductors, and orchestral musicians. Yet by examining Prokofiev’s orchestration techniques in conjunction with harmonic processes, we may arrive at a more definite understanding of both.

Orchestration is also inextricably linked to the study of timbre. The abovementioned one-word descriptors and phrases highlighted by Wallmark’s article and Sandell’s dissertation apply to describing timbre as well. In addition to existing timbre-related research focused on electronic and electroacoustic music,<sup>8</sup> there has been recent interest in the study of timbre and orchestration as demonstrated by Emily Dolan’s keynote address at the 2018 McGill Music conference: “Timbre is a Many-Splendored Thing.”<sup>9</sup> Meghan Goodchild and Stephen McAdams’s research at McGill University has also linked orchestration and timbre as co-dependent and has provided a possible method for critically analyzing the two.

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<sup>8</sup> Slawson and Engebretsen note the significant contemporary scholarship on timbre: Wayne Slawson, *Sound Color*, (Berkeley and Los Angeles: University of California Press, 1985), 3-14; Nora Engebretsen, “Minding the Gap: Conceptualizing “Perceptualized” Timbre in Music Analysis,” *Leonardo Music Journal* 30 (2020): 15.

<sup>9</sup> [https://youtu.be/cW3b3SZ\\_W0M](https://youtu.be/cW3b3SZ_W0M)

## WHY PROKOFIEV?

An examination of Prokofiev's music helps further the analysis of the unique relationship between orchestration and harmony in multiple ways. First and foremost, his orchestral music involves frequent and quick shifts in texture resulting from contrasts in both harmonies and orchestration. These shifts in texture occur typically in incidental music composed for ballets, operas and films, where the music is driven by the changes in scenes and narrative. Perhaps without surprise, several of Prokofiev's orchestral works were adapted from his ballets, operas, and film music into stand-alone orchestral suites (e.g., *Suite from "The Prodigal Son," Suite from "Lieutenant Kijé, Suite from "Romeo and Juliet,"* , *Suite from "Cinderella,"* etc.) Furthermore, sketches and sections of music originally meant for ballets and operas have also been reworked into his symphonies where motifs are developed more rigorously (e.g., Symphony No. 3 from *Fiery Angel* and Symphony No. 4 from *Prodigal Son*). However, compositional devices and processes from his incidental music can also be found in his orchestral music. Techniques that mark scene changes from his incidental music, where a new theme or section emerges unexpectedly in an unrelated key, tempo, and orchestral texture, frequently appear in his symphonic suites and symphonies. The result of these adaptations is less focus on thematic development of the themes and motifs, and a wider array of musical sections organized in a pastiche manner. In addition to contrasting sections, Prokofiev's harmonic language also emphasizes rapid tonal shifts within a period or a phrase. Not conforming to the typical traits of a nineteenth-century or earlier symphonic work, these quick modulations in his music not only serve a larger tonal plan, but they are used locally to create a myriad of diverse tonal environments. These moments of contrast between

sections serve as ideal examples for an intriguing analysis of Prokofiev's use of orchestration and harmony in-tandem.

The use of polytonality in many of his orchestral works also leads to interesting timbral effects. Different keys are juxtaposed against each other to create a jarring harmonic effect. Yet there are distinct ways and innumerable possibilities for orchestrating the juxtaposed keys. The contrast between the two different keys could possibly be outlined or enhanced in an exaggerated fashion by attaching an instrumental family or type to a specific key. On the other hand, the dissonances between the juxtaposed keys could also be intensified by orchestrating them across different instrumental families with the intent to blend them, making it more difficult for a listener to distinguish the two juxtaposed keys at play.

Prokofiev's prolific writing for orchestra provides a broad range of music to study from the perspective of timbre and harmony; it therefore allows a wide variety of case examples to be used in demonstrating the main points of this paper. He has been viewed as both a conservative and a modern composer at different phases of his career for various social and musical reasons.<sup>10</sup> The legacy of Prokofiev's music has always been contested. Ranging from the more straightforwardly tonal Symphony No. 1 (1916-17) and the nostalgic Symphony No. 7 (1951-52) to the more complex Symphony No. 2 (1924-1925), made of "iron and steel."<sup>11</sup> Written under the pressure of impressing avant-garde Parisian critics, the Second Symphony cannot be more different than the preceding

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<sup>10</sup> Peter Schmelz, "After Prokofiev," in *Sergey Prokofiev and His World*, ed. Simon Morrison (Princeton and Oxford: Princeton University Press, 2008), 493-522.

<sup>11</sup> Semyon Shlifstein, *Sergey Prokofiev: Autobiography, Articles, Reminiscences*, trans. Rose Prokofieva (Moscow: Foreign Languages Pub. House, 1959), 173.



Symphony No. 1. As Malcolm Hamrick Brown observes, “The contrast in temperament between the Classical Symphony and the Second Symphony is acute.”<sup>12</sup> This wide-ranging variety in harmonic language used by Prokofiev exists not only between different works, but also within single works as well. Brown also described the harmonic contrast between the differing sections within the Symphony No. 2: “The material is realized through an orchestral mass which impresses more by extravagance than by economy of detail. Yet the subdued theme of the variations in the second movement is a model of refined, impressionistic tone painting in the tradition of Ravel.”<sup>13</sup>

Lastly, the foundational instrumentation choices of Prokofiev’s symphonies and orchestral suites are consistent to a large degree. Although most standard and auxiliary orchestral instruments had been introduced at this point of music history and were at his disposal, Prokofiev stuck to a standard instrumental set-up for these concert pieces. As Table 1 illustrates, his most frequently used instrumentation is the one employed in *Cinderella Suite No. 1*, Op. 107. Of course, there are also outliers in the data – the classically scored Symphony No. 1, Op. 25 and the increased orchestral forces seen in *Scythian Suite*, Op. 20. It is worth noting that both of these pieces were composed relatively early in his career, before his first trip to the United States in 1918. Thereafter, Prokofiev remained faithful to his standard instrumental palette, with the exception of the inclusion of E-flat clarinet (7 pieces), tenor saxophone (4 pieces), cornet (3 pieces), celesta (8 pieces), and the rare exclusion of English horn (1 piece), bass clarinet (2 pieces), contrabassoon (2 pieces), harp (4 pieces), and piano (6 pieces). Two trumpets

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<sup>12</sup> Malcolm Hamrick Brown, “The Symphonies of Sergei Prokofiev” (PhD diss., The Florida State University, 1967), 65.

<sup>13</sup> Brown, “The Symphonies of Sergei Prokofiev,” 66.

instead of three were used in *Prodigal Son*, *Lieutenant Kijé* and all three *Romeo and Juliet* symphonic suites. Otherwise, the instrumentation remained the same.

This constrained basic instrumentation extends to the percussion section as well, which arguably provides the most varied timbres in general. Prokofiev employed different combinations of percussion instruments in these concert works, choosing from a fixed set of percussion instruments that never ventured beyond timpani, tambourine, side drum, cymbals, bass drum, tam-tam, tubular bells, glockenspiel, xylophone, triangle, woodblock, castanets, and maracas. This means that any innovations in timbre manipulation through harmony and orchestration, were done entirely within a fixed parameter of instrumentation limits. This constancy between his pieces allows the further isolation of select moments of harmony and orchestration in these works. Moreover, this makes for the perfect setting to better compare and cross-reference different works by Prokofiev as he had largely the same timbral tools with which to work.

# ORCHESTRA

Piccolo	Tamburino
2 Flauti	Tamburo
2 Oboi	Piatti
Corno inglese	Cassa
2 Clarinetti	Tam-tam
Clarinetto basso	***
2 Fagotti	Campanelli
Contrafagotto	Silofono
***	Campana
3 Trombe	***
4 Corni	Arpa
3 Tromboni	Piano
Tuba	***
***	Violoni I
Timpani	Violini II
Triangolo	Viole
Castagnetti	Violoncelli
Legno	Contrabassi

Figure 1. Most Common Instrumentation, Prokofiev's Cinderella Suite No. 1, Op. 107

Symphonies	Year	Opus	Picc	Fl	Ob	CorA	Ebcl	Cl	Bcl	Tsax	Bn	Dbn	Hn	Crt	Tpt	Trbn	Tuba	Hrp	Piano	Cel	
Symphony No. 1	1916-1917	25		2	2			2			2		2		2						
Symphony No. 2	1924-1925	40	1	2	2	1		2	1		2	1	4		3	3	1		1		
Symphony No. 3	1928	44	1	2	2	1		2	1		2	1	4		3	3	1	2			
Symphony No. 4	1929-1930/ 1947	47/112	1	2	2	1	1	2	1		2	1	4		3	3	1	1	1		
Symphony No. 5	1944	100	1	2	2	1	1	2	1		2	1	4		3	3	1	1	1		
Symphony No. 6	1945-1947	111	1	2	2	1	1	2	1		2	1	4		3	3	1	1	1	1	
Symphony No. 7	1951-1952	131	1	2	2	1		2	1		2		4		3	3	1	1	1		
<b>Suites</b>																					
Scythian Suite	1914-1915	20	1	3	3	1		3	1		3	1	8		4	4	1	2	1	1	
Suite from "Chout"	1920	21bis	1	2	2	1		3			3		4		3	3	1	2	1		
Suite from "The Love for Three Oranges"	1919, rev. 1924	33bis	1	2	2	1		2	1		2	1	4		3	3	1	2			
Suite from "Le Pas d'Acier"	1926	41bis	1	2	2	1	1	2	1		2	1	4		4	3	1		1		
Suite from "The Prodigal Son"	1929	46bis	1	2	2	1		2	1		2	1	4		2	3	1				
Suite from "The Gambler"	1931	49	1	2	2	1		2	1		2	1	4		3	3	1	2	1		
Suite from "On the Dnieper"	1933	51bis	1	2	2	1		2	1		2	1	4		2	3	1				
Suite from "Lieutenant Kije"	1934	60	1	2	2			2		1	2		4	1	2	3	1	1	1	1	
Suite from "Egyptian Nights"	1938	61	1	2	2	1		2	1	1	2	1	4		2	3	1	1	1		
Romeo and Juliet Suite No. 1	1936	64bis	1	2	2	1		2	1	1	2	1	4	1	2	3	1	1	1		
Romeo and Juliet Suite No. 2	1936	64ter	1	2	2	1		2	1	1	2	1	4	1	2	3	1	1	1	1	
Romeo and Juliet Suite No. 3	1946	101	1	2	2	1		2	1		2	1	4		3	3	1	1	1	1	
Suite from "Semyon Kotko"	1941	81bis	1	2	2	1		2	1		2	1	4		3	3	1	2		1	
Cinderella Suite No. 1	1946	107	1	2	2	1		2	1		2	1	4		3	3	1	1	1		
Cinderella Suite No. 2	1946	108	1	2	2	1		2	1		2	1	4		3	3	1	2	1	1	
Cinderella Suite No. 3	1946	109	1	2	2	1		2	1		2	1	4		3	3	1	1	1		
Waltz Suite	1946	110	1	2	2	1		2	1		2	1	4		3	3	1	1	1		
Summer Night	1950	123	1	2	2	1		2	1		2	1	4		3	3	1	1			
Wedding Suite from "The Tale of the Stone Flower"	1951	126	1	2	2	1	1	2	1		2	1	4		3	3	1	1	1		
Gypsy Fantasy from "The Tale of the Stone Flower"	1951	127	1	2	2	1	1	2	1		2	1	4		3	3	1	1	1	1	
Urals Rhapsody from "The Tale of the Stone Flower"	1951	128	1	2	2	1	1	2	1		2	1	4		3	3	1	1	1		

Table 1. Instrumentation of Prokofiev's Symphonies and Symphonic Suites, green denoting infrequent inclusion and red denoting rare exclusi

## PROKOFIEV AS AN ORCHESTRATOR

Prokofiev's melodic writing often gets praised alongside his unique harmonies. Robert S. Clarke commented that the score of Prokofiev's fifth opera, *Semyon Kotko*, written in the late nineteen-thirties, "testifies to Prokofiev's lyrical gifts."<sup>14</sup> Alexander Werth also described Prokofiev's Seventh Symphony as being "received by the Soviet press with unanimous enthusiasm, the writers commenting on the marvelous lyrical genius of Prokofiev."<sup>15</sup> This gift for lyricism in his music also came naturally to him. Mark Aranovsky likened Prokofiev's gift for composing melodies as conjuring sound worlds from thin air: "thematic material is borne of its own accord, without an a priori plan, as an independent musical phenomenon. Such was Prokofiev's craftsmanship. He was first and foremost an inventor of abstract musical material, a composer in the literal etymological meaning of the term. He formed worlds from accumulated islands of sounds."<sup>16</sup>

There are few such laudatory appraisals of Prokofiev's orchestration skills. Yet orchestration and melody writing are symbiotic in nature. A sublime melody in his orchestral work benefits from a certain finesse in orchestration to bring out further its moving qualities. Thus, I propose a deeper investigation into Prokofiev's work and development as an orchestrator.

Prokofiev received his earliest lessons on orchestration from his composition teacher Reinhold Glière. In his autobiography, Prokofiev recounted:

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<sup>14</sup> Robert S. Clarke, "The Prokofiev Marathon," *The Hudson Review*, Vol. 56, No. 3 (2003): 532.

<sup>15</sup> Donald Mitchell, "Prokofiev," *The Musical Times*, Vol. 94, No.1323 (1953): 226.

<sup>16</sup> Mark Aranovsky, "Observations on Prokofiev's Sketchbooks," in *Sergey Prokofiev and His World*, ed. Simon Morrison (Princeton and Oxford: Princeton University Press, 2008), 403.

“Glière would give me a rough outline of sonata form, and whenever we came across a phrase characteristic of one or another instrument in a symphony orchestra, he would say, ‘Now this melody could be played by a flute; the fanfare could be given to the trumpet, and in a lower register to two French horns,’ etc. Of course, this was only a preliminary introduction to orchestration, but many of the examples he gave me remained in my memory, so that when I went to town that autumn and heard a symphony orchestra I was already able to distinguish the different timbres.”<sup>17</sup>

Despite this early start in his orchestration education, Prokofiev, as a budding composer at the St Petersburg conservatoire, struggled with orchestration due to the rigid course curriculum. Rimsky-Korsakov, who taught Prokofiev orchestration at the conservatoire, once remarked, “Instead of using your head you simply guess on your fingers – oboe or clarinet,” and labelled in a report that Prokofiev was “gifted but immature”.<sup>18</sup>

He was, however, an extremely gifted pianist and writing for the piano came naturally for him. He featured regularly as a composer-pianist in the *Evenings of Contemporary Music*, a concert series held in St Petersburg that came into existence in 1901, showcasing contemporary works of composers from Russia and abroad.<sup>19</sup> Early works that he performed there included *Sarcasms*, Op.17 and *Four Études*, Op. 2, pieces that were technically challenging and had a modern edge to them. It was in this capacity that he earned himself the reputation of *enfant terrible* in his conservatory circle at St

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<sup>17</sup> Sergei Prokofiev, *Soviet diary 1927 and Other Writings*, trans. and ed. Oleg Prokofiev, (London: Faber and Faber, 1991), 232.

<sup>18</sup> Prokofiev, *Soviet diary 1927 and Other Writings*, 237.

<sup>19</sup> Minturn, *The Music of Sergei Prokofiev*, 7-8.

Petersburg. His prodigious talents on the piano provided him a medium in which he could fully express his own compositional voice. In fact, his piano compositions would even exceed the standard sonic palette of the piano and reflect the sonorities of the orchestra. Prokofiev made his piano recital debut in the United States in November 1918, playing among other works his Second Sonata. Richard Aldrich of the *New York Times* noted “the astounding harmonies gentle Serge extorted from his suffering pianoforte,” and wrote that “the young man’s style is orchestral, and the instruments of percussion rule in his Scythian drama.”<sup>20</sup> Yet his orchestral works that were written in the St Petersburg years were starkly different. His *Dreams*, Op. 6 and *Autumnal Sketch*, Op. 8, both written in 1910, suggest that, as music historian Christina Guillaumier writes, “Prokofiev had not outgrown Straussian, Wagnerian, and Scriabin-esque influences. The sumptuous orchestration and chromatic harmony of *Autumnal Sketch* is in direct contrast to the biting sonorities, unexpected cadences and dissonant harmonies that occur in the piano works of the post-Conservatory phase.”<sup>21</sup> This schism in compositional styles between Prokofiev’s piano and orchestral works was due, by his own admission, to his lack of experience in writing for the symphony orchestra. In a revealing interview with Federich H. Martens from 1918 about his orchestral works, he self-diagnosed in hindsight, “I had so many ideas, and not enough technique to express them as I wished.”<sup>22</sup> The technique referred to here most certainly included his ability to orchestrate. The late-Romantic influences and relative lack of originality in his two earlier orchestral works, *Dreams* and

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<sup>20</sup> Stephen D. Press, “I Came Too Soon,” in *Sergey Prokofiev and His World*, ed. Simon Morrison (Princeton and Oxford: Princeton University Press, 2008), 340.

<sup>21</sup> Guillaumier, “Ambiguous Modernism: The Early Orchestral Works of Sergei Prokofiev,” 26.

<sup>22</sup> Guillaumier, “Ambiguous Modernism: The Early Orchestral Works of Sergei Prokofiev,” 27.

*Autumnal Sketch*, were perhaps further evidence of this underdeveloped ability in orchestration. In the same interview he further explained that “it took him years of what he termed ‘unremitting struggle’ before he was to realize his own ‘salvation in composition’ as he saw it.”<sup>23</sup> Perhaps, it might have been this early struggle with orchestration which reduced scholarly interest in his orchestration abilities. Nevertheless, his ‘unremitting struggle’ to improve his orchestration abilities ultimately yielded results. The biting sonorities, unexpected cadences and dissonant harmonies of his early piano music started to infiltrate his orchestral works in the following decades. His *Scythian Suite*, Op. 20 (1914-1915), *Seven, They are Seven*, Op. 30 (1917) and Symphony No. 2, Op. 40 (1924-1925) are all in their own rights, *tour de forces* from his oeuvre. The orchestration in these works would prove that Prokofiev’s abilities were up to his very own high standard, and he was finally comfortable enough to express his music through the orchestral medium. As early as in 1919, during his first trip to the United States, Prokofiev worked consistently on his *Three Oranges* opera in an attempt to push for its premiere. “By the end of the month he was producing five to six pages of orchestration a day. September found him immersed in the scoring of Act 4. At 2 p.m. on the day of the deadline – October 1 – Prokofiev turned out the last page, boasting how he had calculated everything accurately.”<sup>24</sup>

The ease in which he found himself orchestrating his compositions translated to speed as well as finesse. The confidence in his own orchestration abilities is further felt in his earlier correspondences with his lifelong friend and composer Nikolai Miaskovsky,

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<sup>23</sup> Guillaumier, “Ambiguous Modernism: The Early Orchestral Works of Sergei Prokofiev,” 27.

<sup>24</sup> Stephen D. Press, “I Came Too Soon,” 345.



“Prokofiev notes that in the ballet (*Ala i Lolli*, which was later mostly incorporated into the *Scythian Suite*) he indulged his penchant for ‘orchestral tone-painting’ and during its composition he took ‘pleasure in every kind of instrumental combination.’”<sup>25</sup> Prokofiev added details about his *Scythian Suite* and his readiness for innovations in orchestration, “By this time I knew enough about orchestration to be able to write for full orchestra and I had a few ideas of my own which I wished to try out.”<sup>26</sup> Moving from “unremitting struggle” to “pleasure in every kind of instrumental combination,” Prokofiev’s shifting stance on orchestration suggests that a marked improvement in orchestration had been achieved between the years of 1910 to 1918, at least in his own estimation.

By tracing his developments in orchestration, Prokofiev’s deliberate process of writing for symphonic instruments can be recognized. Even though composing first on the piano and jotting down thematic ideas in his sketchbook during his travels was still his modus operandi throughout his life as a composer,<sup>27</sup> the step from expanding the piano score to a full orchestral score proved to be a very serious endeavor for Prokofiev. Thereby, his orchestration process warrants further discussion.

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<sup>25</sup> Guillaumier, “Ambiguous Modernism: The Early Orchestral Works of Sergei Prokofiev,” 29.

<sup>26</sup> Prokofiev, *Soviet diary 1927 and Other Writings*, 252.

<sup>27</sup> Mark Aranovsky, “Observations on Prokofiev’s Sketchbooks,” 404-22.

## ORCHESTRATION AND HARMONY IN RELATION TO TIMBRE

The study of harmony and orchestration together is directly related to the study of timbre. Musicologist Emily Dolan has spoken about how the study of timbre cannot ignore the study of orchestration and harmony, “it does not make sense to isolate timbre from everything else we are talking about – text-music relations, harmony, accompaniment techniques, texture, vocal lines and so on. To talk about timbre here [during the 2018 “Timbre is a Many-Splendored Thing” conference], will be to discipline something unruly.”<sup>28</sup> The theory of timbre is a field of study in musicology and music theory that has gained momentum over the past decade. Yet, according to Dolan, it is the “least understood and theorized element of music. The birth of timbre as a concept, corresponded to much broader shifts in the history of aesthetics, to radical transformations into how people thought about instrumental sounds, its meaning, and its effect.”

In the first quotation in the preceding paragraph, Dolan states that music texture and harmony can help us make sense of the study of timbre and vice versa. Although orchestration was not mentioned explicitly as one of the elements, it ties in closely with musical texture. Furthermore, the study of orchestration has often served as the starting point for the study of timbre.<sup>29</sup> Stephen McAdams also highlights the crucial role orchestration plays in the study of timbre, writing, “timbre is a powerful structuring force and a vehicle for musical expression, an emotion realized through orchestration, and

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<sup>28</sup> [https://youtu.be/cW3b3SZ\\_W0M](https://youtu.be/cW3b3SZ_W0M)

<sup>29</sup> Sandell. “Concurrent timbres in orchestration: A perceptual Study of factors determining ‘blend’”.

depends on all the perceptual properties that give rise to sonic richness.”<sup>30</sup> If the theory of timbre is hard to codify, the theory of orchestration has posed similar problems for a much longer time. McAdams remarks, “At this point, orchestration studies are oftentimes very much based on hundreds and thousands of examples and then drawing your own conclusions about it, without a whole lot of basic principles behind those things.”<sup>31</sup>

Both the study of orchestration and of timbre have been riddled with problems caused by the highly individualized manner in which listeners aurally perceive music. The acoustical properties of sound do not always account for how a sound is perceived. In an attempt to provide more clarity to both the study of orchestration and the study of timbre, Meghan Goodchild and McAdams provide a possible explanation of the relationship between the two elements. They argue that “orchestration practices, as revealed through analysis of orchestration treatises and scores, are related to auditory grouping principles.”<sup>32</sup> These auditory grouping principles provide a possible bridge between the gap of sound properties and its resultant perceptual orchestral effects. Similar to Gestalt Theory, rather than distinguishing individual sound properties and frequency components, our brains evolved to perceive sound and events as auditory images – mental representations of sound entities that exhibit coherence in acoustic behavior.<sup>33</sup> While listening to music, a listener will first perceive individual sound events

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<sup>30</sup> <https://www.youtube.com/watch?v=cYlryLxJZqw>

<sup>31</sup> <https://www.youtube.com/watch?v=cYlryLxJZqw>

<sup>32</sup> Meghan Goodchild and Stephen McAdams, “Perceptual Progresses in Orchestration,” in *The Oxford Handbook of Timbre*, ed. Emily I. Dolan and Alexander Rehding (Oxford Handbooks Online, Jun 2018), 3. <https://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780190637224.001.0001/oxfordhb-9780190637224-e-10>.

<sup>33</sup> Stephen McAdams, “The Auditory Image: A Metaphor for Musical and Psychological Research on Auditory Organization,” in *Cognitive Processes in the Perception of Art*, ed. W. Ray Crozier and Anthony J. Chapman. North-Holland (Amsterdam: Elsevier, 1984), 289-323.

and properties, which leads to a continuous stream of events and a chunking of these event streams into larger perceptual units. The authors provided the following figure to further outline their argument. In Figure 2, these grouping processes of sounds are categorized by length into concurrent, sequential and segmental groups.

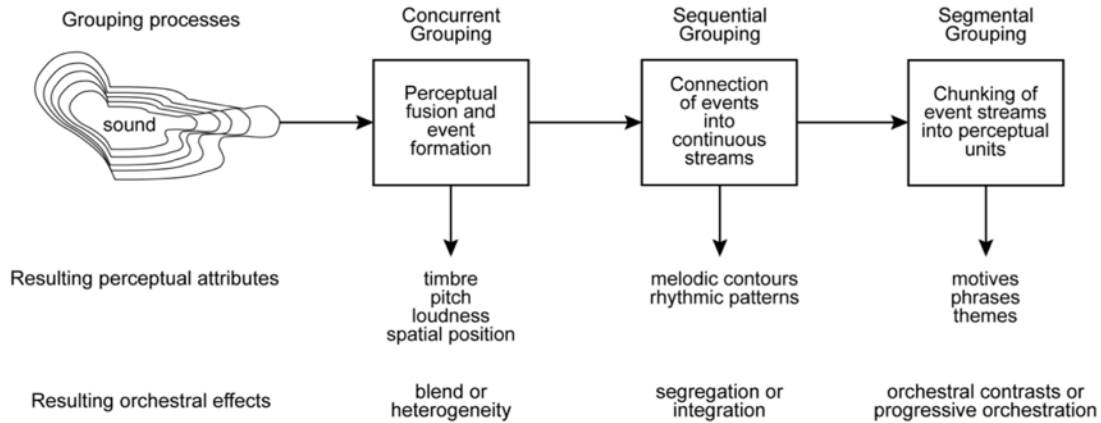


Figure 2. Auditory grouping processes and the resulting perceptual attributes and orchestral effects. (Goodchild, McAdams)

Each of these groupings may account for how we perceive the resultant perceptual attributes and orchestral effects as listeners. The individual sound events and properties allow attributes such as timbre, pitch, loudness, and spatial position to be perceived. These perceptual attributes can create either a homogeneous or heterogenous blend in the sound event. However, orchestral works are appreciated not only for their individual chords, but how these fit together to form larger sections. These individual sound events are connected into continuous streams, causing melodic contours and rhythmic patterns to be perceived. Again, the orchestral effect can be a segregation or integration of said continuous stream. When repeated, these continuous streams could be chunked into

larger perceptual units such as motives, phrases, or themes.<sup>34</sup> These larger perceptual units create orchestral effects such as timbral contrasts or progressive orchestration.

Progressive orchestration occurs when “composers make use of gradual changes in instrumental color to provide a sense of timbral continuity.”<sup>35</sup> “Therefore, auditory grouping processes based on perceptual principles provide insight into implicit knowledge about orchestra.”<sup>36</sup>

Examples provided by Goodchild and McAdams of a concurrent grouping process includes the one-movement orchestral piece based on a Spanish dance, *Bolero* by Maurice Ravel, a composer widely renowned for his orchestration techniques. Ravel begins the theme with solo wind instruments, and subsequently adds layers of instruments on top of the theme based on the harmonic series (an octave first, followed by a fifth and a tenth an octave above the original theme, and so on) throughout his composition. The instruments start and stop together in regular phrase structures and move in parallel in terms of pitch and dynamics, resulting in an ever-increasing heterogeneity in timbre as the music progress. Sequential grouping processes occur when there are multiple lines being played simultaneously in the music. These lines in Goodchild and McAdams’s terminology, are events that are being perceived as continuous streams in the listener’s minds based on their respective voice-leading,<sup>37</sup>

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<sup>34</sup> Elizabeth H. Margulis, *On Repeat: How Music Plays the Mind* (New York: Oxford University Press, 2013), 7-13. Margulis found that listeners recognize longer mean length of repeating units better when exposed more times to the music excerpt.

<sup>35</sup> Goodchild and McAdams, “Perceptual Progresses in Orchestration,” 24.

<sup>36</sup> *Ibid.*, 4.

<sup>37</sup> David Huron, *Voice Leading: The Science Behind a Musical Art* (Cambridge, Massachusetts: MIT Press, 2016), 97-119.

melodic contours and rhythmic patterns. Depending on how the continuous streams are orchestrated, the resultant orchestral effects could be a textural segregation, integration, or stratification of the continuous streams. Lastly, segmental grouping processes are comprised of event streams that are larger perceptual units, such as motives, phrases, or even themes. These motives, phrases, or themes could undergo two main forms of orchestrational treatment: 1. a contrasted segmental grouping or progressive orchestration, or 2. a contrasted segmental grouping as a result of musical phenomena such as general timbre contrasts, antiphonal contrasts, timbre echoes, timbre shifts, or sectional boundaries.<sup>38</sup> An example provided by Goodchild and McAdams of continued or progressive segmental grouping is *Farben*, the middle movement of Arnold Schoenberg's *Five Pieces for Orchestra*, Op. 16. "In *Farben*, Schoenberg minimizes the harmonic and melodic progression, bringing the subtle shifting among orchestral colors to the fore."<sup>39</sup> The *Farben* chord from the opening of the movement undergoes gradual timbre modulations, and continuity is created by the undulating switch between different instrumental timbres.

Goodchild and McAdams have provided us a concrete link from the theory of timbre and orchestration to the actual resulting orchestral effects perceived by the listener. This link is important because there is still a gap between the "physical and perceptual worlds" of timbre.<sup>40</sup> There is still much explanation and theorization to be done to explain the physical phenomenon of timbre and how it directly affects how we

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<sup>38</sup> Goodchild and McAdams, "Perceptual Progresses in Orchestration," 22-25.

<sup>39</sup> *Ibid.*, 25.

<sup>40</sup> Engebretsen, "Minding the Gap: Conceptualizing "Perceptualized" Timbre in Music Analysis," 17.

perceive it. This paper proposes to take Goodchild and McAdams's theory of timbre and orchestration a step further. By including harmony into the equation, it is possible to look at the same relationships through a different lens. A listener would perceive the aforementioned auditory grouping processes in an additional plane when there is a modulation of keys. For example, a repeated motif or theme in an orchestral piece might traverse different keys with almost identical orchestration. In that case, the relationship between timbre and orchestration remains the same whether it involves orchestral contrasts or progressive orchestration effects. However, the listener's aural experiences are different because the motif or theme is presented in totally different keys. The white back drop of Figure 2 might be visually re-interpreted with a background of a different color later on in the paper, as in Figure 4. This opens up the possibility for new relationships to be explored between the trinity of timbre, orchestration, and harmony, using Figure 2 as a guide for analysis. After all, as Dolan observed, "because of the challenges that timbre poses, it demands historical specificity, scientific precision and inventive analysis. It resists abstraction and begs for critical reflection."<sup>41</sup> The Goodchild and McAdams auditory grouping processes model will now be applied and expanded in the first case study, analyzing one of Prokofiev's orchestral works.

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<sup>41</sup> [https://youtu.be/cW3b3SZ\\_W0M](https://youtu.be/cW3b3SZ_W0M)

## CHAPTER 2

### CASE STUDY NO. 1: *LIEUTENANT KIJÉ* SUITE OP.60,

#### AN INVENTIVE ANALYSIS

The first case study examines the theme from *Kijé's Wedding* from Prokofiev's film-derived symphonic suite *Lieutenant Kijé*. He told the producers of the same-titled film which reached Russian screens in 1934, "What is important to me is the era, the internal meaning of each event, the personality of each hero," and warned them not to expect mere musical illustrations.<sup>42</sup> It is this exact commitment to the narrative and characters of the film that potentially allowed Prokofiev to re-orchestrate music taken from the film into a concert piece, given the abundance of thematic materials. Ironically, there is not a theme written for *Lieutenant Kijé*, as the main character himself is fictional in the story. Furthermore, as Aranovsky observes, "Prokofiev's belief in the potential polyvalence of a theme informed his treatment of form. He did not interpret theme and form as codependent entities, having a deterministic cause-and-effect relationship. Rather, he demonstrated that a melodic, harmonic, or rhythmic idea could, when transplanted from one score to another, serve multiple contexts, and that it could traverse the borders of genre."<sup>43</sup> Resembling the development of different narratives or characters in the film, the themes in the music from the suite are repeated in multiple contexts under various guises of orchestration, harmony, and motivic developments. Ultimately spurred by the alterations made to the ending of the film during its editing process, resulting in a

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<sup>42</sup> Harlow Robinson, *Sergei Prokofiev, A Biography* (Plunkett Lake Press, December 2018), 278.

<sup>43</sup> Mark Aranovsky, "Observations on Prokofiev's Sketchbooks," 404.



“confused and heavy”<sup>44</sup> final product, Prokofiev decided to preserve the music in the form of a symphonic suite. There were two songs – “Pavel’s Song” and “Gagarina’s Song” that were edited out from the film and they returned in the symphonic suite.<sup>45</sup> Prokofiev took much care in the re-orchestration of the suite. “For Prokofiev, writing the *Lieutenant Kijé Suite*, Op. 60, proved more difficult than the original film score,” Harlow Robinson writes, “he had to create an appropriate form, re-orchestrate many passages, redo some of the themes and link them all together.”<sup>46</sup> The result was an interesting inter-connectedness between the orchestration and the film’s narrative. Musicologist Simon Morrison wrote, “The choice of timbre (in *Lieutenant Kijé Suite*) is perhaps the most crucial element of the score: the flute, a conventional bearer of sincere feelings, can be interpreted as maintaining the fiction of Kijé’s existence while the mocking, disrupting alto saxophone, on which Prokofiev lavished great care, seeks to expose it.”<sup>47</sup>

At this stage of his career, while scoring for the film, Prokofiev was also undertaking a shift in compositional style. As Robinson stated, “He experienced an aesthetic and creative breakthrough exactly halfway through his career.” He continued, “Prokofiev labelled this breakthrough ‘new simplicity,’ but the term hardly captures the seriousness of the shift and the significance of its spiritual underpinnings.”<sup>48</sup> This breakthrough was spurred by his earlier formed intent to compose more accessible music for the general public, a stark difference in direction to his earlier highly chromatic

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<sup>44</sup> Simon Morrison, *The People’s Artist, Prokofiev’s Soviet Years* (New York: Oxford University Press, 2009), 22.

<sup>45</sup> *Ibid.*, 21.

<sup>46</sup> Harlow Robinson, *Sergei Prokofiev, A Biography*, 280.

<sup>47</sup> Simon Morrison, *The People’s Artist, Prokofiev’s Soviet Years*, 22.

<sup>48</sup> Mark Aranovsky, “Observations on Prokofiev’s Sketchbooks,” 402.

works. In 1929 in Paris, Prokofiev mused to his colleagues about how he was going to achieve this goal: “We shall use simpler means of instrumentation, write less fully, but still retain the best, the most potent and most poignant and most expressive of modern harmonization... Thus I have grown simpler in form, less complex in counterpoint and more melodic in my musical evolution, which I call a new simplicity.”<sup>49</sup> The *Lieutenant Kijé* symphonic suite falls under this self-proclaimed compositional phase of “new simplicity.” This “new simplicity” aesthetic would rid the score of overwhelming thematic developments and instead, bring forth Prokofiev’s simple yet inventive use of instrumentation and harmony. This provides an ideal opportunity to test an expanded version of Goodchild and McAdam’s model (see fig. 1), as the focus can now be cast upon Prokofiev’s orchestrational and harmonic techniques.

The wedding theme is first introduced in the third movement of the symphonic suite, “Kijé’s Wedding.” It repeats itself seven more times after the original presentation in the third movement and a total of fifteen times through the rest of the symphonic suite. Before diving into some of these different renditions of the theme, the original theme will first be analyzed.



Example 1. Wedding Theme from Prokofiev’s *Lieutenant Kijé’s Suite* Op. 60

<sup>49</sup> Kevin Bartig, “Lieutenant Kizhe: New Media, New Means,” in *Sergey Prokofiev and His World*, ed. Simon Morrison (Princeton and Oxford: Princeton University Press, 2008), 380.

The theme appears in two phrases that both end in half cadences. It is very clearly in the key of E-flat major with two instances of the raised fourth scale degree – A natural – suggesting a lean toward the secondary dominant key of B-flat major. The flattened seventh scale degree – D flat – also appears twice in the second phrase suggesting a lean toward the subdominant key of A-flat major. These chromatic notes, although closely related harmonically, inflect the melody and serve as a harbinger for the multiple different keys it will appear in later on in the work. Having analyzed the wedding theme for its potential for tonal shifts, I will now discuss the orchestration and key modulation processes in the third movement.

III  
KIJÉ'S WEDDING

**26** Allegro fastoso  $\text{♩} = 84$

Picc.  
Fl.  
Ob.  
Cl.  
Bns.

**26** Allegro fastoso  $\text{♩} = 84$

Trpts. I  
II  
Hns. I  
II  
III  
IV  
Trbn. III  
Tuba  
B. Drum  
Cymb.

**27** Più animato  $\text{♩} = 104$

Cornet  
Hns. I  
II  
III  
Tuba

*Solo*  
*p con grazia*

Score for page 25, measures 1-4. Instruments: Cornet, Hns. I, II, III, Tuba, B. Drum. Dynamics: *mp*, *p*.

Score for page 25, measures 5-8. Instruments: Fl., Cl. I, Cornet, Hns. I, II, III, Tuba, B. Drum. Dynamics: *mp*, *p*. A red box highlights measures 6-8, containing a *Solo* for Fl. and *p dolce* for Cl. I.

Score for page 25, measures 9-12. Instruments: Fl., Cl. I, Cornet, Hns. I, II, III, Tuba, B. Drum. Dynamics: *p*, *mp*. A red box highlights measures 9-10, showing a *Solo* for Fl. with notes marked *a2* and *b<sup>b</sup>a*.

26

29

Fl. I

Fl. II

Cl. I

Cl. II

Cornet

Hns. I

Hns. II

Hns. III

Tuba

B. Drum

*p*

*mp*

Detailed description: This block contains the first system of a musical score, measures 26 through 29. It features staves for Flute I and II, Clarinet I and II, Horns I, II, and III, Tuba, and Bass Drum. The key signature has two flats, and the time signature is 3/4. Measure 26 is marked with a circled '29' and a dynamic of *p*. Measure 27 has a circled '30' and a dynamic of *p*. Measure 28 has a dynamic of *p*. Measure 29 has a dynamic of *mp*. The flute parts play a melodic line with eighth notes and quarter notes. The clarinet and horn parts provide harmonic support with similar rhythmic patterns. The tuba and bass drum play a steady, low-frequency accompaniment.

30

Fl. I

Fl. II

Ob. I

Cl. I

Cl. II

Bns.

Cornet

Hns. I

Hns. II

Hns. III

Trbn. III

Tuba

B. Drum

*p*

*mp*

*p*

*mp*

*p*

*mp*

*p*

*mp*

Detailed description: This block contains the second system of a musical score, measures 30 through 33. It features staves for Flute I and II, Oboe I, Clarinet I and II, Bassoon, Horns I, II, and III, Trumpet III, Tuba, and Bass Drum. The key signature has two flats, and the time signature is 3/4. Measure 30 has a dynamic of *p*. Measure 31 has a dynamic of *p*. Measure 32 has a dynamic of *mp*. Measure 33 has a dynamic of *mp*. The flute parts continue their melodic line. The oboe and clarinet parts enter in measure 32. The horn and trumpet parts provide harmonic support. The tuba and bass drum continue their accompaniment.

Example 2. Opening of 3<sup>rd</sup> movement of Lieutenant Kijé Suite, Op. 60

The analytic model in Figure 2 will now be applied to the section of music from rehearsal 26-30. The movement begins with a slow march scored for the woodwind and brass players in the orchestra. After the introduction, the tuba and horns enter with an ostinato bass accompaniment that will remain a constant feature throughout this movement. The cornet enters with the original presentation of the wedding theme. Up until rehearsal 28, except for the two isolated bass drum hits, the timbre of the ensemble remains fairly unified with only brass instruments involved, creating a homogeneity of timbre. However, as the 1<sup>st</sup> clarinet enters in rehearsal 28, highlighted by the red box, different auditory grouping processes and their resultant orchestral effects are being triggered, as seen in Figure 3. The introduction of the clarinet timbre in its high register creates heterogeneity in timbre against the cornet solo in its middle-low register.<sup>50</sup> There is also a segregation of orchestral texture, caused by the clarinet entrance, as a new continuous stream is added. The original melody and accompaniment texture are disrupted here by a counter-melody.

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<sup>50</sup> Sandell, "Concurrent timbres in orchestration: A perceptual Study of factors determining 'blend.'", 213. The high clarinet timbre is found to have a high centroid width which reduces its blend with other instruments.

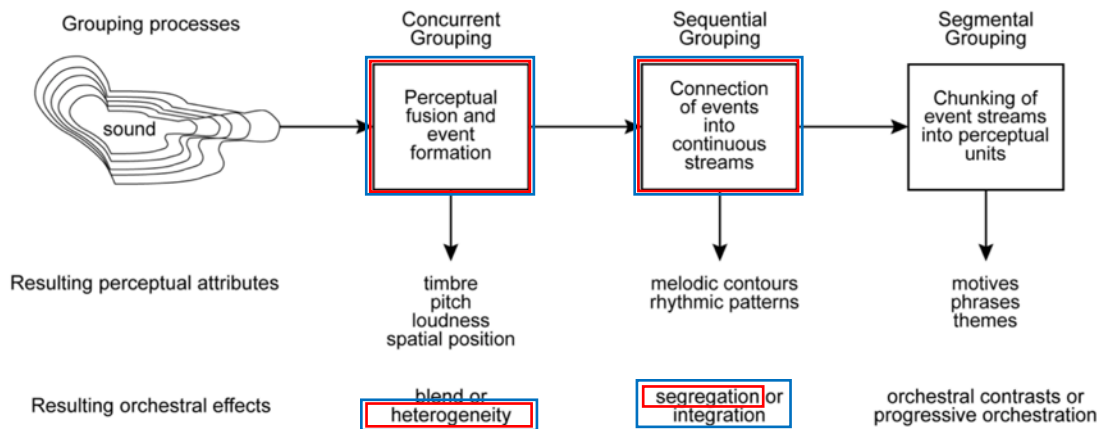


Figure 3. Auditory grouping processes as a form of analysis for Prokofiev's wedding theme from Lieutenant Kijé Suite.

Right after the introduction of the clarinet's countermelody, the wedding theme goes through another transformation in orchestration at rehearsal 29. The cornet solo plays an articulated staccato version of the theme, augmented by the alternating melodic fillers in the flutes and clarinets, highlighted by the blue box. Again, the concurrent and sequential auditory grouping processes are triggered with this new orchestration of the wedding theme, again seen in Figure 3 with the corresponding highlighted boxes. There is greater heterogeneity in the timbre of the theme as we experience a combination of the flute, clarinet, and cornet timbres. It is of note that the clarinets are playing in their chalumeau register here and they thus blend better with the cornet in its middle-low register. The accented-staccato articulations of the cornet juxtaposed against the slurs in the flutes and clarinets also create a dislocation in timbre of the attack and that affects the blending of instruments as well.<sup>51</sup>

<sup>51</sup> Sandell, "Concurrent timbres in orchestration: A perceptual Study of factors determining 'blend.'", 163.



As for the sequential grouping processes involved, there is both an integration and segregation of streams. First, on the macro-level, there is a “timbral augmentation”<sup>52</sup> in the wedding theme. The presence of the wedding theme is further reinforced in the foreground of the music because of the added woodwind timbres and the aggressive articulation in the cornet. Whereas on the micro-level, even though the flutes and clarinets are outlining the contour of the melodic theme, there is a segregation of the streams into higher and lower register within the woodwind section. As explained by Goodchild and McAdams,<sup>53</sup> the separation into two clear streams of high and low notes in the flute and clarinet parts is a segregation of orchestral effect. The higher stream of the flute parts augments the wedding theme while the lower stream of the flute parts and both the higher and lower streams of the clarinet parts provide harmonic tones belonging to the overall harmony. This orchestral effect of segregation within an integration of melodic theme adds even more interest to the overall texture and creates an opportunity for an intriguing auditory grouping process to be perceived by the listener.

From rehearsal 27 to 30, the buildup of orchestral activity and a segmental grouping process can be perceived. The streams are linked by a thread created by the repeated chordal progression as well as the ever-present timbres played by the bass drum, tuba, horns, and cornet. With these constants in play, the added colors in the winds at

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<sup>52</sup> Stephen McAdams and Bruno Giordano, “The Perception of Musical Timbre,” in *The Oxford Handbook of Music Psychology*, ed. Susan Hallam, Ian Cross and Michael Thaut. (Oxford University Press, 2016), 120. Timbral Augmentation: One instrument embellishes another one that perceptually dominates the combination.

<sup>53</sup> Goodchild and McAdams, “Perceptual Progresses in Orchestration”, 18.

rehearsal 29 serve as a form of progressive orchestration effect, through a gradual additive change in orchestration.

28

Musical score for rehearsal 28, measures 28-31. The score includes parts for Flute (Fl.), Tenor Saxophone (Ten. Sax.), Bassoon (Bns.), Trumpet III (Trbn. III), Bass Drum (B. Drum), Violin I (Viol. I), Violin II (Viol. II), Viola, Violoncello (Vc.), and Bass. The key signature is one flat (B-flat major or D minor). The time signature is 4/4. The score shows a gradual additive change in orchestration. Dynamics include *p*, *mp*, and *f*. Performance instructions include *arco* and *unis.*

Musical score for rehearsal 29, measures 32-35. The score includes parts for Flute (Fl.), Clarinet I (Cl. I), Cornet, Horns II and III (Hns. II, III), Tuba, and Bass Drum. The key signature is one flat. The time signature is 4/4. The score features a solo for the Flute and Cornet. Dynamics include *p* and *mp*. Performance instructions include *Solo*, *p dolce*, and *p con grazia*.

Musical score for rehearsal 30, measures 36-39. The score includes parts for Violin I (Viol. I), Violin II (Viol. II), Viola, Violoncello (Vc.), and Bass. The key signature is one flat. The time signature is 4/4. The score shows a gradual additive change in orchestration. Dynamics include *p* and *mp*.

Musical score for measures 32-33. The score includes parts for Flute (Fl.), Cornet, Horns (Hns. I, II, III), Tuba, Bass Drum (B. Drum), Violin I (Viol. I), Violin II (Viol. II), Viola, Violoncello (Vc.), and Bass. Measure 32 features a flute solo with an *az* marking. Measure 33 begins with a **33** rehearsal mark and includes *con sord* and *con sord arco* markings for the strings, along with *pp* dynamics.

Continuation of the musical score for measures 34-37. The score includes parts for Cornet, Horns (Hns. I, II, III), Tuba, Bass Drum (B. Drum), Violin I (Viol. I), Violin II (Viol. II), Viola, Violoncello (Vc.), and Bass. The music continues with various dynamics and articulations.

34 *Meno mosso, come prima*  $\text{♩} = 84$

Fl.  
Ob.  
Cl.  
Bns.

Cornet  
Trpts. I  
Trpts. II

I  
II  
Hns.  
III  
IV

Trbn. III  
Tuba

B. Drum  
Cymb.

Viol. I  
Viola

34 *Meno mosso, come prima*  $\text{♩} = 84$

Picc.

Fl.  
Ob.  
Cl.  
Bns.

Trpts. I  
Trpts. II

I  
II  
Hns.  
III  
IV

Trbn. III  
Tuba

B. Drum  
Cymb.

35 *Poco più mosso della prima volta*  $\text{♩} = 116$

35 *Poco più mosso della prima volta*  $\text{♩} = 116$

Example 3. Lieutenant Kijé Suite, Rehearsal 32-35

Staying in the third movement of the suite, after a short solo tenor saxophone solo interlude in the key of A minor in contrast to the keys and timbres heard earlier in the movement with an entirely different theme, the wedding theme returns in E-flat major at rehearsal 32. It begins with the cornet solo juxtaposed against the clarinet solo as seen earlier in rehearsal 28. The music is almost identical to the previous appearance at rehearsal 28. Similar to its earlier appearance, the flutes take over the solo clarinet part in the second phrase. This change in instrumentation the second time anticipates a change in harmonic direction one measure before rehearsal 33. A quick shift to an A major chord leads the music to the key of D major at rehearsal 33. The orchestral texture remains exactly the same as at rehearsal 29, but both the timbre and harmony have changed. The 1<sup>st</sup> violins and violas replace the alternating flutes and clarinets from earlier. The orchestration is only slightly changed but the auditory grouping processes are being perceived in a different dimension because of the modulation in key. The key of E-flat major with three flats is replaced with the brighter key of D major with two sharps.<sup>54</sup> These two keys are distantly related and the contrast in key areas is rather pronounced. This change in harmonic dimension from rehearsal 33 to 34 can be represented by the change in the color backdrop of the Goodchild and McAdams model of auditory grouping processes as seen below.

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<sup>54</sup> Maho A. Ishiguro, "The affective properties of keys in instrumental music from the late nineteenth century and early twentieth century" (PhD diss., University of Massachusetts Amherst, 2010), 33-34.

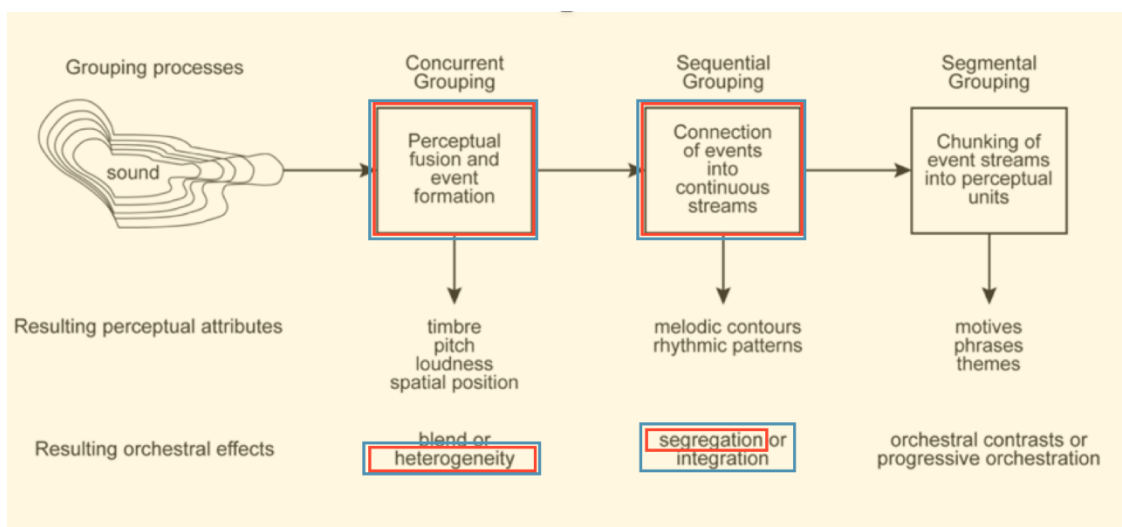


Figure 4. Auditory grouping processes being experienced in a different key/harmonic dimension.

In fact, this change in color backdrop, or the alternation of keys between E-flat major and D major, continues to occur throughout the third movement in this symphonic suite, triggering different auditory grouping processes along the way. It alternates for another four times in this relatively short movement. The constant shifts in keys and orchestration provides moments of interest for the listener in an otherwise thematically underdeveloped passage of music. This expanded Goodchild and McAdams model used in this analysis extensively represents the perceived timbre qualities, orchestral effects and harmony at the same time.

61 *Solo*

Cornet

I

II

Hns.

III

Tuba

Mil. Drum

61 *mp espress.*

Viol. I

Viol. II

Viola

Vc.

Bass

*unis.*

Cornet

I

II

Hns.

III

Tuba

Mil. Drum

Viol. I

Viol. II

Viola

Vc.

Bass

62

Picc. *mp espress.*

Fl. *mp espress.*

Ob. *mf espress.*

Cl. *mf espress.*

Trpt. II *con aord. Solo*

Hns. I *p*

Hns. II *p*

Hns. III *p*

Tuba *p*

62

Viola *p*

Vc. *p*

Bass *p*

Picc.

Fl. *a2*

Ob. *a2*

Cl. *a2*

Cornet *Solo*

Hns. I *p*

Hns. II *p*

Hns. III *p*

Tuba *p*

Mil. Drum *pp*

Viola

Vc.

Bass

Example 4. Last movement of Lieutenant Kijé, Burial of Kijé, Rehearsal 61-62.



Prokofiev takes this play of orchestration and keys one step further in the last movement of the symphonic suite, “The Burial of Kijé”. In this movement, the theme first introduced in the second movement titled “Romance,” is recapitulated. At rehearsal 61, this Romance theme continues in G natural minor, or G Aeolian mode, played by the string section. The wedding theme interjects unexpectedly, again in the cornet, in the key of F major with its usual brass accompaniment. These two themes are not only contrasted by instrumental families, but the heterogeneity in timbre is also further heightened by the contrasting keys. The juxtaposed keys become a new factor in the concurrent auditory grouping process. In the ensuing section of music at rehearsal 62, a new combination of timbre and keys is created. The woodwind section takes over the Romance theme from the violins in the key of F# natural minor, or F# Aeolian mode. The muted trumpet, a more nasal and piercing equivalent of the cornet, plays the wedding theme in the key of E major. The lack of development in the motivic material and similar major 2<sup>nd</sup> interval relationship<sup>55</sup> between the juxtaposed keys further highlights the play in timbre and orchestral color by Prokofiev.

In conclusion, Goodchild and McAdam’s model for auditory grouping processes provides a connection between timbre and orchestration, as well as a possible mean to methodically analyze timbre perception. However, by including key modulations into the model, a more intricate analysis that might account for more of the timbral effects present in the music is found. Thereby, the *Lieutenant Kijé* symphonic suite, although “simpler in

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<sup>55</sup> Such polytonal juxtaposition by the interval of a Major/Minor 2<sup>nd</sup> is common in Prokofiev’s music, especially in his 2<sup>nd</sup> Symphony and 5<sup>th</sup> Symphony.

form, less complex in counterpoint and more melodic,” reveals a sophisticated interaction between orchestration and harmony.

## CHAPTER 3

### CASE STUDY NO. 2: SYMPHONY NO. 2, OP.40

#### A DELIBERATE PROCESS

In this next case study, we turn to Prokofiev's deliberate methods to highlight his twelve-tone harmonies through orchestration. Symphony No. 2 in D minor, Op. 40, in D minor was finished in late May of 1925 after almost a year of rigorous work, which included starting orchestration for the symphony in December the year before.<sup>56</sup> The symphony is dedicated to the famed conductor, impresario, and proponent for contemporary music, Serge Koussevitsky. It was premiered on June 6, 1925, in Paris. This symphony was a direct contrast to Prokofiev's Symphony No. 1, Op. 25 and was "remarkably aggressive in rhythms and dynamics, unwieldy, dense and scored for an oversized orchestra." The orchestration has also been described as "perversely complex and polyphonic." In Prokofiev's own admission, this work stemmed from his desire to write a work of "iron and steel."<sup>57</sup> This symphony has been a common case study for theoretical analysis.<sup>58</sup> It is one of the small number of works that include chords containing all twelve pitch classes. Prokofiev's approach to twelve-tone harmonies has been scrutinized by many theorists, particularly Yuri Kholopov. Kholopov, a fervent supporter and admirer of Prokofiev's music, hailed Prokofiev as the "sunny genius of Russian music."<sup>59</sup> He viewed Prokofiev's twelve-tone chromatic system, albeit

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<sup>56</sup> Harlow Robinson, *Sergei Prokofiev, A Biography*, (Plunkett Lake Press, December 2018), 471.

<sup>57</sup> *Ibid.*, 462.

<sup>58</sup> Christopher Segall, "Prokofiev's Symphony No. 2, Yuri Kholopov, and the Theory of Twelve-Tone Chords," *Music Theory Online*, Vol. 24, No. 2 (2018).

<sup>59</sup> Peter Schmelz, "After Prokofiev," 516.

controversially, as the “true innovation of twentieth-century aggregate-based composition.”<sup>60</sup> The passage of music in question comes from the end of Variation II in the second movement as seen in Example 5.

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<sup>60</sup> Christopher Segall, “Prokofiev’s Symphony No. 2, Yuri Kholopov, and the Theory of Twelve-Tone Chords,” 1.

This musical score page contains measures 98, 99, and 100. The instruments are arranged as follows:

- Woodwinds:** Piccolo (Picc.), Flute (Fl.), Oboe (Ob.), Oboe/English Horn (Ob. e-a.), Clarinet (Cl.), Clarinet Bass (Cl. b.), Bassoon (Fag.), Bassoon/Contrabassoon (C-fag.), Trumpet (Tr-be), and Cor Anglais (Cor.).
- Brass:** Trombone (Tr-ni e) and Tuba.
- Percussion:** Timpani (P-tti).
- Piano:** Piano (Piano).
- Strings:** Violin I (V-n I), Violin III (V-n III), Viola (V-le), Violoncello (V-o.), and Contrabass (C-b.).

Measure 98 features a melodic line in the woodwinds and strings. Measure 99 is marked with a box containing the number '99' and includes dynamic markings such as *mf* and *ff*. Measure 100 continues the orchestral texture with various dynamics and articulations. The score includes detailed notation for notes, rests, and performance instructions.

9. Прокофьев

This page of a musical score, numbered 130, contains the following parts and staves:

- Fl.** (Flute): Staff 1, treble clef, 2/4 time signature.
- Ob.** (Oboe): Staff 2, treble clef, 2/4 time signature.
- Ob. o-a.** (Oboe da caccia): Staff 3, bass clef, 2/4 time signature.
- Cl.** (Clarinet): Staff 4, treble clef, 2/4 time signature.
- Cl. b.** (Bass Clarinet): Staff 5, bass clef, 2/4 time signature.
- Fag.** (Bassoon): Staff 6, bass clef, 2/4 time signature.
- C-fag.** (Contrabassoon): Staff 7, bass clef, 2/4 time signature.
- P-tti** (Percussion): Staff 8, with a snare drum symbol.
- V-ni I** (Violin I): Staff 9, treble clef, marked "div. in 3".
- V-ni II** (Violin II): Staff 10, treble clef, marked "div. in 3".
- V-la** (Viola): Staff 11, treble clef, marked "div. in 3".
- V-c.** (Violoncello): Staff 12, bass clef, marked "div. in 3".
- C-b.** (Contrabasso): Staff 13, bass clef, marked "div.".

The score is written in a key signature of two flats (B-flat and E-flat) and a 2/4 time signature. It features complex rhythmic patterns, including triplets and sixteenth-note runs, with various articulations and dynamics markings throughout.

131

Fl.

Ob.

Cl.

Cl. b.

Fag.

C.fag.

V-ni I

V-ni II

V-le

V-c.

C-b.

100

Ob. o-a.

Cl.

Cl. b.

Fag.

C.fag.

Archi

9\*

Example 5. Movement II of Symphony No.2, Variation II, Rehearsal 99 to end.

## 12-NOTE ORCHESTRAL EFFECT

Symphony No. 2 was modelled after Beethoven's last piano sonata, Op.111. It is in an unusual two-movement structure: an opening *Allegro ben articolato* movement followed by a theme and variations second movement. In Example 5, starting from rehearsal 99, every sixteenth note in the string section comprises of a chord consisting of all twelve pitch classes. As the music moves quickly ahead, the twelve pitch classes are not heard as crunching harmonies, but as a sound mass. The entire string section also moves in a parallel fashion, each note having a fixed position in the chord, forming an overwhelming sound mass moving in a set direction. Pit against the string section, the wind instruments move in contrary motion against their string counterparts. As not all twelve pitch classes are accounted for in the woodwind parts, the instrumental group acts as a mirage of the string section, a lesser form or merely a reflection. The resultant effect is a cacophony of sounds and colors split between two instrumental families, rather than discernible individual notes. The orchestration of the instruments is deliberately placed in the high register as well. The violins go as high as C<sub>7</sub> while the cellos never play lower than the F<sub>3</sub>. This leaves room for the ever-repeating A-E motion in the double basses and contrabassoon, anchoring the mass of sound above them with a plagal motion and slight semblance of a tonal center. The storm eventually subsides through a diminuendo beginning from the third measure of rehearsal 99 and eventually reaching pianissimo one measure before rehearsal 100. The viola line remains alone at rehearsal 100 playing in the E Aeolian mode. As the huge fog of harmonic smearing clears, harmonic function returns



in the English horn, clarinets, and bassoons. Here the chords move from F-sharp minor → G minor → A major. The variation then concludes on a suggested plagal cadence on E.

Kholopov “characterizes Prokofiev’s twelve-tone chord, with its sixteenth-note planing, as producing a swirling sound mass, relating the technique to avant-garde sonority.”<sup>61</sup> This early usage of the sound mass relates to the “positional twelve-tone chord” technique, a term coined by music theorist Martina Homma.<sup>62</sup> In this theory, the position of each pitch class in the twelve-note chords is fixed and it remain in its assigned register as the chord moves across a section of music. These positional twelve-tone chords can be found “as background structures”<sup>63</sup> in the music of later composers such as Witold Lutosławski, Elliot Carter, Magnus Lindberg, and Alfred Schnittke. Unlike the previous example, in which Prokofiev sustained interest in a melodic theme through timbre changes amplified by key modulations and orchestration manipulation, this “positional twelve-tone” technique showcases Prokofiev’s daring way to conclude a passage of music, or more particularly a variation. Not known as a dodecaphonic composer,<sup>64</sup> Prokofiev innovated by accommodating a twelve-tone chord in this early symphony of his, using a quick tempo and orchestration (pitch-positioning) to ease, instead of maximalize, the harshness of a twelve-tone harmony. Through this example, he was able to create a colorful sound mass orchestral effect that was never heard before this time, achieving this through an ingenious way of combining orchestration with harmony.

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<sup>61</sup> Christopher Segall, “Prokofiev’s Symphony No. 2, Yuri Kholopov, and the Theory of Twelve-Tone Chords,” 17.

<sup>62</sup> Ibid., 21.

<sup>63</sup> Ibid., 21.

<sup>64</sup> Ibid., 63.

This kind of sound-mass thinking that blurs the line between harmony, texture, and timbre became prevalent in the music of György Ligeti, Krzysztof Penderecki, and Iannis Xenakis, among others.

This concluding section will compare three recording examples with differing interpretations of the 12-note orchestral effect. In the 2006 performance conducted by Valery Gergiev with the London Symphony Orchestra released by Decca, the plagal motion in the double bass and contrabassoon can be heard clearly and it contrasts audibly with the 12-note orchestral effect played in the rest of the string section. However, the mirage effect in the wind instruments is less pronounced and better blended with the sound mass in the string section. The second recording is performed by Walter Weller and the London Philharmonic Orchestra, also released by Decca, but later in 2013. In this recording, the 12-note orchestral effect comes to the fore and the plagal motion in the bass is submerged by the sound mass. In contrast to the first recording, the timbres of the wind instruments here are more discernible. The opposing timbral forces of the wind and string instruments are pit in a more balanced manner against one another to create a more colorful rendition of the 12-note orchestral effect. Finally, in a much earlier recording performed by Neeme Järvi and the Royal Scottish Orchestra in 1985, released by Chandos, the tempo taken by the conductor is much slower than either of the Decca recordings. The difference in tempo has significant implications for the resultant orchestral effects. As the sound mass moves less quickly, the individual notes and timbre of each instrument can be better perceived by the listener. Therefore, the juxtaposition between the wind and string timbres is even more starkly contrasted than in the 2013

recording. This short comparison of recordings brings to light the wide array of interpretation choices that can be made by performers in terms of orchestral balance and instrumental timbral contrasts in a passage of music, and the impact of those choices on the perception of key harmonic moments.

## TIMBRE CRESCENDO

Prokofiev's deliberate process for manipulating orchestration and harmony in combination can be found in another passage of music from this symphony. From rehearsal 24 to rehearsal 25 of the Second Symphony's first movement, shown in Example 6, there is an intensification of tension through gradual expansion in orchestration, pitch classes, and pitch range. This climactic passage of music signals the end of the exposition of this movement.<sup>65</sup> This increase in tension ultimately climaxes one measure before rehearsal 25, on the octave low E played by the horns, trombones, and tuba, with the timpani joining right at the end for the arrival. This octave low E caps off a theme that began around a tonal center of B-flat, a tritone apart, at rehearsal 24, played by the same set of instruments. Prokofiev adds instruments and pitch classes, and increases the pitch range from the second quarter note beat of the third measure of rehearsal 24 onwards. These additions of instruments are kept at least an interval of a fourth above the theme played by the horns, trombones, and tuba in the lower register. This segregation of texture creates two distinct layers in the music and clearly defines the role of these entering instruments as supplementary to the theme.

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<sup>65</sup> Brown, "The Symphonies of Sergei Prokofiev," 74.

42

ri - te - nu - to [24] *Meno mosso*

[25] *Tempo primo*

[26] *Tempo primo*

Example 6. Movement I of Symphony No.2, end of exposition, Rehearsal 24 to 25.

The way Prokofiev orchestrated and harmonized the supplementary chords played by the muted trumpets, strings and woodwind instruments is deliberate. A harmonic analysis of this exact passage can be found in Malcolm Brown's 1967 dissertation on the symphonies of Prokofiev. In his analytical approach, Brown rearranged the polyharmonies of these measures, and reduced them to juxtaposing triads with modal modulation relationships. Despite the clarification of functions provided for these complex harmonies, Brown admitted that these supposed juxtaposing triadic harmonies

are difficult to hear and “aurally indistinct”.<sup>66</sup> Instead, the increase in unique instrumental timbres, the crunching of more pitch classes on top of one another, and the expanding of pitch range through these two measures are more salient than the polymodality. I argue that Prokofiev was not composing with harmonic functions in mind but was manipulating timbre complexities. The number of unique instruments, pitch classes, and pitch range on each quarter beat starting from rehearsal 24 to 25 is tabulated below to illuminate my point.

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<sup>66</sup> Brown, “The Symphonies of Sergei Prokofiev,” 88-89.

Quarter Beats after Rehearsal 24	Unique instrument timbre (from top-bottom in score)	Pitch classes (from bottom-top in score)	Pitch range
1-4	Horns, Trombones, Tuba, and Bass drum	B-flat	B-flat1 – B-flat2
5-6	Horns, Trombones, Tuba, and Bass drum	F	F2 – F3
7-9	Horns, Trombones, Tuba, and Bass drum	B-flat	B-flat1 – B-flat2
10	Muted Trumpets, Horns, Trombones, Tuba, Bass drum, Violins, Violas, and Cellos	E,C, A-sharp, B	B1 – B3
11	Muted Trumpets, Horns, Trombones, Tuba, Bass drum, Violins, Violas, and Cellos	E-flat, A, F, D, A-flat	A-flat1 – D4
12	Flutes, Bassoons, Muted Trumpets, Horns, Trombones, Tuba, Bass drum, Violins, Violas, and Cellos	D, B, G, E-flat, F, A-flat	A-flat1 – F5
13	Piccolo, Flutes, Clarinets, Bass Clarinet, Bassoons, Muted Trumpets, Horns, Trombones, Tuba, Bass drum, Violins, Violas, and Cellos	D-flat, F, B, G, D, G-flat, B-flat	G-flat1 – B-flat5
14	Piccolo, Flutes, Oboes, Clarinets, Bass Clarinet, Bassoons, Muted Trumpets, Horns, Trombones, Tuba, Bass drum, Violins, Violas, and Cellos	E-flat, C-flat, G, E, C-sharp, G-sharp, F-sharp, B-flat	B-flat1 – G-flat6
15	Piccolo, Flutes, Oboes, English horn, Clarinets, Bass Clarinet, Bassoons, Muted Trumpets, Horns, Trombones, Tuba, Bass drum, Violins, Violas, and Cellos	D, C, F-sharp, E, D-sharp, B, G-sharp, A-sharp, F, G	F1 – B-flat6
16	Piccolo, Flutes, Oboes, English horn, Clarinets, Bass Clarinet, Bassoons, Muted Trumpets, Horns, Trombones, Tuba, Bass drum, Violins, Violas, and Cellos	A, F, D-flat, B-flat, D, B, F-sharp, D-sharp, G-sharp, B-sharp, E	A1 – E7
17	Horns, Trombones, Tuba, Timpani, and Bass drum	E	E1 – E2

**Table 2. Table of different music element changes for each quarter note beats of rehearsal 24 to 25.**

Using the above tabulated data, the following graphs are plotted to provide a more useful tool for analyzing the timbral, harmonic and registral behavior of this particular passage of music.

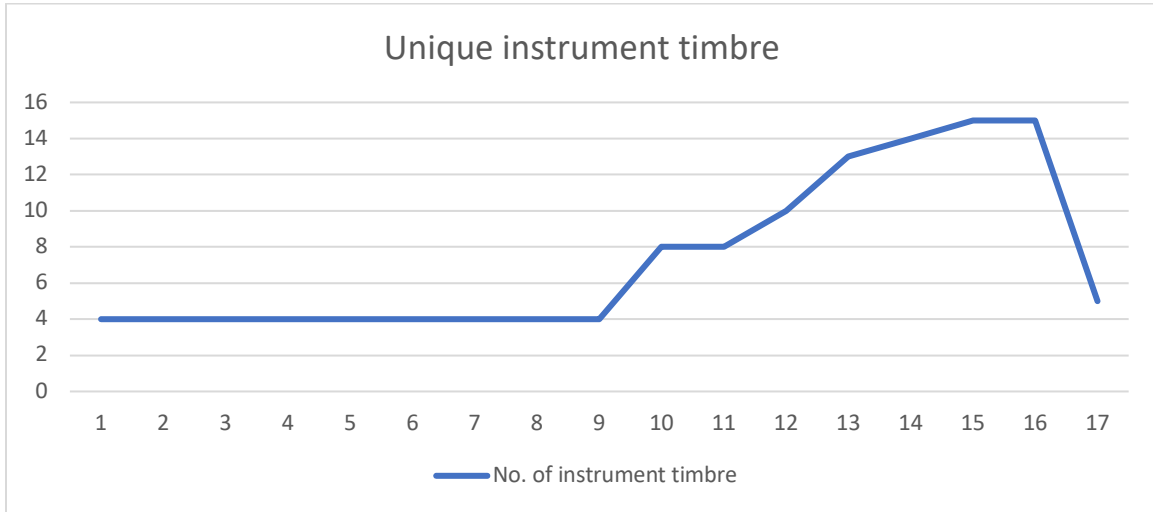


Figure 5. Graph indicating number of unique instrument timbre to quarter note beats of rehearsal 24 to 25.

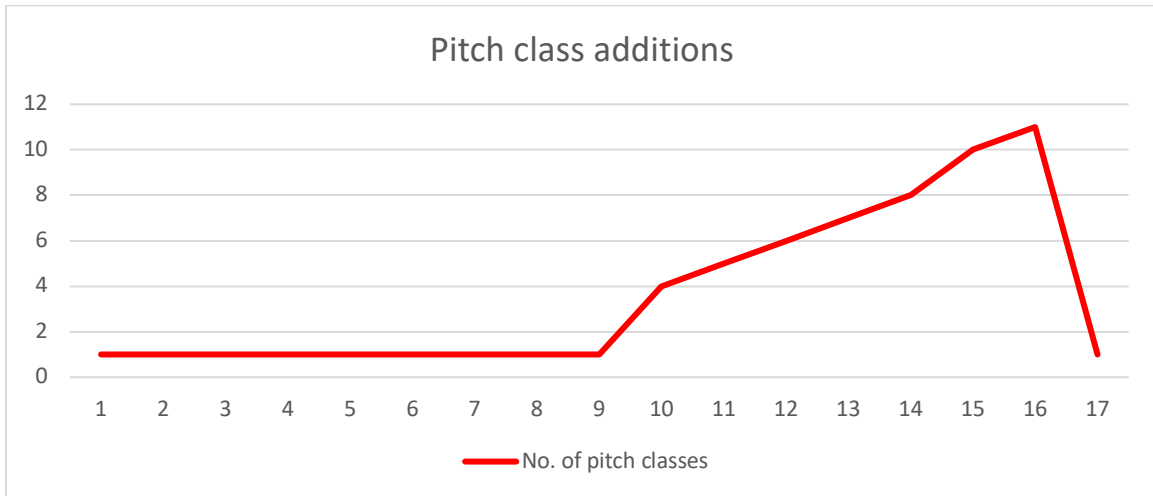


Figure 6. Graph indicating number of unique pitch classes to quarter note beats of rehearsal 24 to 25.



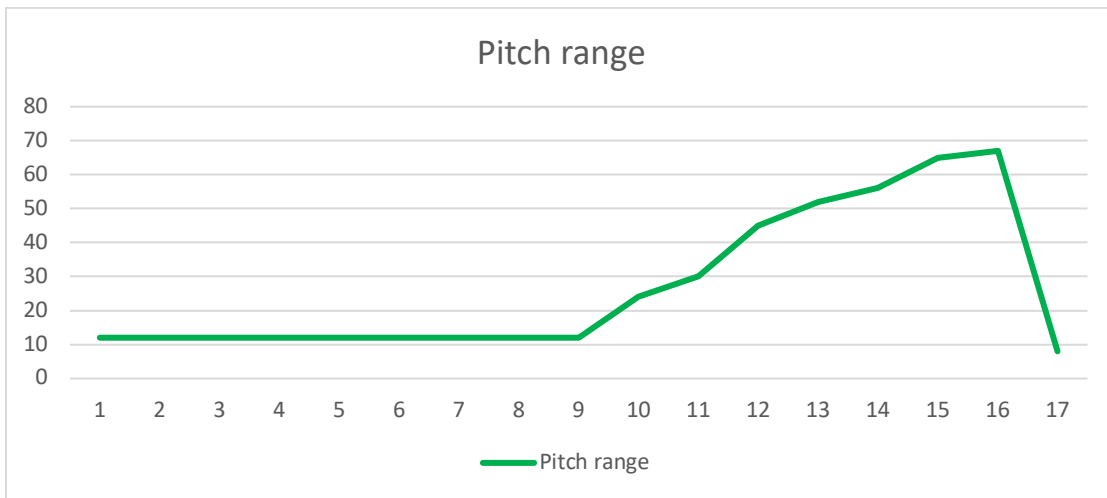


Figure 7. Graph indicating pitch range (in semitone intervals) to quarter note beats of rehearsal 24 to 25.

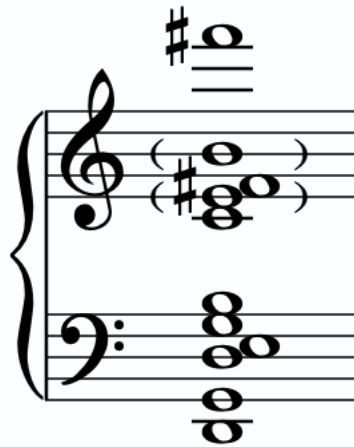
The three graphs illustrate the relationship between the respective musical elements across each quarter note beat of rehearsal 24 to 25. The addition of all three musical elements begins on beat 9 and increase consistently through beat 16, with a sudden drop right at the end of each graph that reflects the octave low E note. All three graphs behave very similarly, and their linear increment is extremely consistent. This reveals Prokofiev’s deliberate attempt at intensifying all three music elements simultaneously. It is also safe to assume that with the increase in number of instruments as well as pitch range, topped with Prokofiev’s musical instruction of *crescendo* in the fourth measure of rehearsal 24 from *forte* to *fortissimo* as shown in the score, there is also an increase in the volume of the music. Furthermore, the accented notes in the woodwind and brass instruments, double-stops in the strings, as well as all down-bow strokes in the strings add further intensity to the passage of music. The combination and synchronization of all these elements together create a consistent increase in the timbre complexity from beats 9 through 16. As in the passage of music from Example 5, this

compositional technique of increasing timbre complexity through orchestration and harmony reveals Prokofiev's deliberate methods of creating colorful orchestral effect that is extremely innovative and powerful in its effect.

## UNIQUE CHORDS AS FORM DEMARCATORS

Prokofiev also uses a very unusual chord as a marker for important structural arrivals in this symphony. The usual routing of key relations to achieve tonal goals is obscured in this harmonically complex piece. In order to achieve an effect of recapitulation or feeling of return of a specific section of music, certain elements in music must first be made familiar to the listener, then subsequently repeated to achieve an effect of reprisal. In the case of Prokofiev music, orchestration and harmony are combined to form unique sounding chords that serve as demarcations for the form of the piece. These unique chords have singular harmonies, instrumentations, and chord spacing.

In the first movement of his Second Symphony, Op.40, a recurring quartal-harmony chord appears in the first theme at rehearsal 2 and acts as a marker in this movement's sonata form.



Example 7. Recurring chord starting from Fig. 2, Prokofiev's Symphony No. 2.

This chord consists of harmonies built upwards upon a D note in the bass, and can be rearranged to spell, D-G-C-F sharp-B-E, a sequence of perfect fourths. The actual arrangement of the notes however, does not strictly follow this sequence. Although, the spacing between the chords do highlight some of these intervals of perfect fourths. D to G in the double basses, contrabassoon, bass trombone and tuba, as well as the interval of C to F-sharp played by the viola, English horns and horns. Another highly distinguishable feature of this chord is the F-sharp<sub>6</sub> played one and a half octaves higher than the next highest note, B<sub>4</sub>, played by the piccolo, flutes, oboes, clarinets, and violins. All these qualities give the chord a striking high-pitched top note supported by well-spaced harmonies. This particular chord is repeated in almost identical configuration three more times in the first movement, from rehearsal 2 (the first theme section of the sonata form) until rehearsal 7 (the second theme section). This chord appears at rehearsal 5 and twice more two measures before rehearsal 7, with the same characteristics in arrangement of notes and voicing, albeit in a thicker orchestration with trombones, percussions, piano, and extra string voices added. This prominent chord features again in the recapitulation of the sonata form<sup>67</sup> at rehearsal 51. Additional pitches, E<sub>4</sub> and B<sub>4</sub>, are also added to the recurring chord in these later appearances, as represented by the bracketed notes in Example 7. Identical chords appear at rehearsal 52, and once again, twice more two measures before rehearsal 54. The re-occurrences of the chord are further distinguished by a crescendo into the chord every single time, turning the recurring chords into a recognizable gesture. These repeated gestures serve as a connection between the different

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<sup>67</sup> Brown, "The Symphonies of Sergei Prokofiev," 74.

appearances of the first theme sections in the exposition as well as the recapitulation. Thus Prokofiev used a fixed timbre to frame the structure of a sonata form, bringing both aural coherence and recognition to the listener in an otherwise harmonically complex piece.<sup>68</sup>

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<sup>68</sup> Margulis, *On Repeat: How Music Plays the Mind*, 15-16. Margulis found that listeners enjoyed challenging contemporary art music (atonal pieces by Luciano Berio and Elliot Carter) better when segments of the music are repeated, through Immediate Repetition(IR) and Delayed Repetition(DR), against the directions of the composers' original scores.

## CHAPTER 4

### CASE STUDY NO. 3: *ROMEO AND JULIET* SUITES OP. 64BIS, 64TER & 101, “WRONG NOTE” HARMONIES AND THE *PROKOFIEV DOMINANT*

Prokofiev’s music has long been associated with the notion of “wrong-note” harmonies. This origin of this description of his music most likely came from an anecdote as recounted in his autobiography. In the summer of 1902 when Prokofiev was eleven, he was working on a juvenile four-movement symphony in G major, a compositional exercise assigned by his composition teacher Reinhold Glière. He showed the work to his other composition teacher in Moscow, Sergei Taneev. Despite praising the counterpoint embedded in the symphony, Taneev remarked that the harmony was a little crude.

Prokofiev remembered:

“‘Mostly I, IV, and V,’ he said, and laughed. I was deeply offended. Not that I cried or lost any sleep over it, but somewhere the thought that my harmony was crude rankled. The seed had been planted and a long period of germination began. It was not until four years later that my harmonic experiments began to be noticed, and when some eight years after I played Taneev my *Etudes*, Op. 2, and he grumbled, ‘Far too many wrong notes,’ I reminded him of what he had said that time. Clutching his head in mock horror, he exclaimed, ‘So it was I who launched you on that slippery path!’”<sup>69</sup>

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<sup>69</sup> Prokofiev, *Soviet diary 1927 and Other Writings*, 232.

Since then, music theorists have latched onto this notion and described his music, particularly piano works, as such.<sup>70</sup> Neil Minturn, in his *The Music of Sergei Prokofiev*, went a step further by arguing that the wrong notes in Prokofiev's music are not mere accessories, but important to the underlying harmonic functions and structures. Using set theory, he attempted to "demonstrate that the wrong notes are not haphazardly added embellishments but integral structural components."<sup>71</sup>

Similar to "wrong-note" harmonies, the *Prokofiev Dominant* can be viewed as part of a cadence gone wrong. The *Prokofiev Dominant* was first named by Russian music theorist Viktor Berkov in his 1945 essay on Prokofiev's first four piano sonatas and later on in his 1958 article on harmony.<sup>72</sup> Berkov used the term to refer to a dominant chord that is altered in a way which was popularized by Prokofiev: "We are dealing with a replacement of the ordinary dominant or dominant-seventh chord on scale degree 5 with a major or minor triad lying a semitone below scale degree 1 (or scale degree 5)."<sup>73</sup> Examples include replacing a G-major triad chord, the dominant in the key of C major, with a B major, B minor, F-sharp major or F-sharp minor triad chord. The *Prokofiev Dominant* can also be found in the music of other Russian composers such as Rachmaninoff and Shostakovich. A common utilization of the *Prokofiev Dominant* in Prokofiev's music is to juxtapose the original dominant, or part of it, with the altered dominant, creating dissonances through semi-tonal relationships in the harmonies.

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<sup>70</sup> Harley, "Harmonic Function in the Music of Sergei Prokofiev", 12-20. Harley provides a survey of different music theoretical analyses of Prokofiev's works which broached upon the topic of wrong-note harmonies.

<sup>71</sup> Minturn, *The Music of Sergei Prokofiev*, 19.

<sup>72</sup> Harley, "Harmonic Function in the Music of Sergei Prokofiev", 2.

<sup>73</sup> Harley, "Harmonic Function in the Music of Sergei Prokofiev", 2.

Berkov used Prokofiev's piano sonatas primarily as examples in his articles, but several examples of the *Prokofiev Dominant* can be found in his orchestral music as well. In this case, music from all three of Prokofiev's *Romeo and Juliet* suites will be used to highlight how Prokofiev uses orchestration to accentuate these "wrong-note" harmonies.



## LINEAR “WRONG” NOTES

In the fourth movement, “Dance,” of Prokofiev’s *Romeo and Juliet* Suite No. 2, the music begins with an ostinato F note in the bass, suggesting a tonal center around that pitch. However, the constant alteration between B-natural and A-sharp/B-flat in the violas and cellos introduces tonal ambiguity and makes it difficult for the listener to discern whether the B-natural or the B-flat is part of the harmony. The same tonal ambiguity occurs later at rehearsal 26 in the oboe solo with a similar alteration between B-natural and B-flat note in the melody. At rehearsal 35, there is a striking clash in harmony and timbre between these two notes amplified by the orchestration. The clarinets and first violins play the A-G sharp-A-B flat motive, immediately taken over by the cornet playing the same melodic motive a measure after, B-A sharp-B-C, a semitone higher but an octave lower. Subsequently, the last notes of the violins and clarinets overlap with the first note of the cornet by a semitone interval. The same pattern continues into the bassoons and cellos the next measure, playing C sharp-C-C sharp-D, creating a sequence in the melody. There is a perceptual contrary motion in this sequence – ascending chromatically from A-B flat-B-C-C sharp but descending across three different octaves. The morphing of instrumental timbre from one group to the other overlapping with the minor 2<sup>nd</sup> clash creates even more interest in this passage. All three groups of instruments are orchestrated in their respective middle to high register, the optimal tessitura for clarity and projection.<sup>74</sup> The clarinets and violins play between the range of A5-B flats, the cornet plays between B4-C5, and the bassoon and cellos playing

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<sup>74</sup> Nikolai Rimski-Korsakov, *Principles of Orchestration with Musical Examples Drawn from His Own Works*, 33-35.

between C sharp<sup>4</sup>-D<sup>4</sup>. This sequence is played above *gettando l'arco* (extremely energetic and staccato) eighth notes in the second violins, violas and double basses, with the tambourine providing constant quarter notes throughout the first four measures from rehearsal 35. They outline the harmonies of Dm → G7 → A7 → B-flat. The A dominant seventh chord is an example of the signature *Prokofiev dominant* chord resolving into a B-flat harmony. Unlike the melodic material, the harmonies are not sequential and behave more functionally, with a cadence at the end of the fourth measure. The difference in harmonic behavior between the melody and accompaniment results in an orchestral texture that further highlights the melodic content. Overall, the “wrong-note” harmonies, foreshadowed in the tonally ambiguous opening of the movement, are manipulated with timbre modulations, creating a unique orchestral effect.



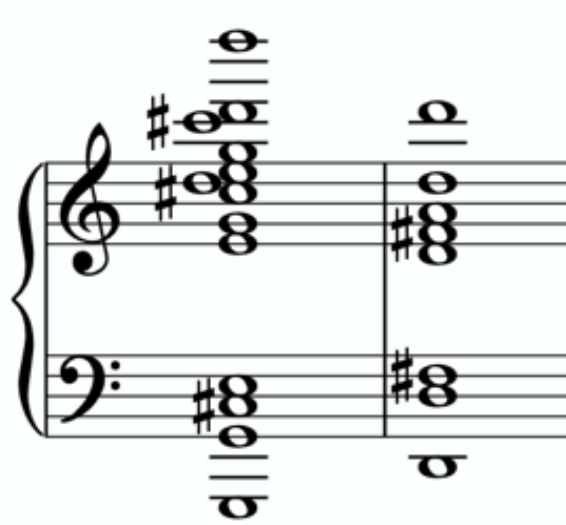
## VERTICAL “WRONG” NOTES

The wrong-notes are also used harmonically. In the first movement, “Folk Dance,” of Prokofiev’s *Romeo and Juliet* Suite No. 1, the music ends with an abrupt cadence. As seen in Example 10, this cadence interrupts the fading melody in the bass clarinet, violas and cellos. The penultimate chord is a C-sharp diminished chord in second inversion, with an added D “wrong” note in the high registers of the piccolo, flute and first trumpet. This D is an anticipation of the final tonic D major chord. Other than the dissonance created between the minor seconds, C-sharp and D, the spacing of the first chord is much denser and packed than the second (see Example 9).<sup>75</sup> It also encompasses a much wider pitch range than the last D major chord. This effect is a result from an unconventional manner of voice-leading in this cadence. None of the C-sharps, the leading-tone in the key of D major, resolve upwards by a semitone, as they should, to the D. There are also significantly wide leaps in the woodwinds and brasses creating contrasting timbre qualities in their respective registers, resulting in a stark timbral difference between the two chords, and this timbral contrast emphasizes the harmonic surprise. This significant contrast in timbre and out-of-context penultimate chord subverts the listener’s expectations through the use of clashing harmonies, unconventional voice-leading principles and orchestrational contrast. The tempo marking of the movement—120 beats per minute to the dotted-quarter along with the indication of *Allegro giocoso*—causes the timbral and harmonic distortions to occur rather quickly in a performance.

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<sup>75</sup> Walter Piston, *Orchestration*, (New York: W.W. Norton and Company, 1955), 447-48. Piston explains the relationship between overtones in a chord and how they might be orchestrated for optimal effects.

Therefore, it must be stipulated that the harmonic qualities of the chord and orchestration manipulations are not easy to perceive fully. Additionally, the unpitched cymbals further obscures the harmonic and timbral identification. Similar to the *timbre crescendo* example discussed in Case Study No. 2 where harmonic functions are secondary to timbral effects, I argue that Prokofiev intended to create an explosive timbre spectacle with the *fortissimo* chords to bring the folk dance to an abrupt end, leaving listeners bemused.



Example 9. Spacing of the last two chords from Prokofiev's *Romeo and Juliet Suite No. 1, Mvt I "Folk Dance"*.

22

Picc.  
 Fl.  
 Ob.  
 C.ingl.  
 Cl. b.  
 Sax.  
 Fas.  
 C-fas.  
 C-ito  
 Tr-be  
 Cor.  
 Tr-ni  
 e  
 Tuba  
 Timp.  
 Tr-lo  
 P-ti  
 C.  
 Archi

div. pizz.  
 senza sord. pizz.  
 (pizz)  
 arco  
 unis. arco  
 pizz.  
 (arco)

Example 10. Movement I "Folk Dance" from Romeo and Juliet Suite No. 1, Rehearsal 22 - End.

## PROKOFIEV DOMINANT

In his 2014 dissertation,<sup>76</sup> Konrad Harley provided numerous examples of the *Prokofiev Dominant* from both Prokofiev's piano and orchestral outputs. Kyoung-Jin Song's 2019 dissertation<sup>77</sup> also analyzed the ubiquitous variations of the *Prokofiev Dominant* in the ballet suite of *Romeo and Juliet*. Yet in both dissertations, the examples were illustrated as piano reductions so as to highlight the harmonic functions of the cadential chords. A deeper dive into the full orchestral score reveals how orchestration further accentuated the harmonies of the *Prokofiev Dominant*. The following section concentrates on two examples from *Romeo and Juliet* Suite No. 3.

The first example is taken from the end of the first movement of *Romeo and Juliet Suite No. 3*, "Romeo at the Fountain." As the music approaches the end in F major, there is a standard IV → V → I cadential motion in F major as suggested by the bass in the last four measures as seen in Example 11. However, the dominant chord, in the third last measure, is altered into an E major chord, *Prokofiev Dominant*, above the fifth scale degree note, C, played by the lower strings. The major seventh interval between the C and the B adds tension into the harmony of the chord. The juxtaposition is further accentuated by the stratification of the E major triad into the higher registers of the flutes, clarinets, piano and higher strings, and the low C note delegated to the cellos and double basses. This particular orchestration allows the E major sonorities to be heard distinctly from the C note in the bass, thus delineating the contrast between the *Prokofiev Dominant*

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<sup>76</sup> Harley, "Harmonic Function in the Music of Sergei Prokofiev", 3.

<sup>77</sup> Kyoung-Jin Song, "Altered Dominant Chords with #2 and #4 in Prokofiev's *Romeo and Juliet*, Op. 64" (PhD diss., University at Buffalo, SUNY, 2019).

and the bass note of the original non-altered dominant. The contrast in orchestration and range creates the conditions where both the original dominant and the *Prokofiev Dominant* co-exist, perceptually, at the same time.



poco meno mosso

Fl. *f* *pp* *pp*

Ob. *sol.* *f*

Cl. *f* *pp* *pp*

Cl. b. *p* *f* *pp*

Fag. *f*

Timp. *mf*

Arpa *p*

Piano *pp*

Archi *p* *pp dolce* *div.* *arco* *pp dolce* *div. arco* *pp* *univ. arco* *pp* *univ. pizz.* *p* *pizz.* *p* *pizz.* *p*

poco meno mosso

Example 11. Movement I "Romeo at the Fountain" from Romeo and Juliet Suite No. 3, last 8 measures.

A second example of how orchestration makes the *Prokofiev Dominant* alteration even more pronounced can be found at the very end of the last movement of *Romeo and Juliet Suite No. 3*, “The Death of Juliet.” In this example, instead of using orchestration to highlight the *Prokofiev Dominant*, Prokofiev uses the orchestration to expertly alleviate the tension in the resolving tonic chord<sup>78</sup> created by the *Prokofiev Dominant*. As seen in Example 12, Prokofiev prepares the close of the suite by introducing the dark and nasal tone colors<sup>79</sup> of the contrabassoon and muted trombones in the second-to-last measure. The *Prokofiev Dominant*, F-sharp minor triad, is introduced in the second-to-last chord, played by the English horn, bass clarinet, contrabassoon, muted trombones and double basses. As in the previous example, the oboe holds a non-chord tone, C natural, a major seventh interval above the C-sharp in the English horn. Instead of employing the *Prokofiev Dominant* in the high registers, as at the end of the first movement, it appears here in the low registers. The C pitch in the oboe acts as an anticipation of the resolving tonic chord.

The orchestration of this particular *Prokofiev Dominant* is noteworthy. In the very last measure, there is an expansion of pitch range with the introductions of the tuba playing the low C<sub>1</sub> doubling the lower double basses and the four isolated first violins playing high C<sub>6</sub> notes. This expansion of pitch range with the octaves C spread across five different octaves, coupled with the fact that the third and fifth of the triad played by the muted trombones in the middle register, renders the chord extremely sparse. This

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<sup>78</sup> David Huron, *Sweet Anticipation: Music and the Psychology of Expectation* (Cambridge, Massachusetts: MIT Press, 2006), 311. Huron refers to the return of the tonic chord as a low-tension event.

<sup>79</sup> Zachary Wallmark, “A corpus analysis of timbre semantics in orchestration treatises,” 593.

creation of intervallic space in the last chord acts as a vacuum that further removes the tensions created by the preceding chord. The stark difference in orchestration between the dominant and resolving tonic chords highlights the sonorities of the *Prokofiev dominant* retrospectively.



## CHAPTER 5

### CONCLUSION

This research project has focused on three different case studies drawn from Prokofiev's orchestral music, each with its unique theoretical approach to highlighting the significant ties between harmony and orchestration. The musical examples discussed above are not exhaustive, and there are certainly other possible examples from Prokofiev's orchestral music output that showcased similar interactions between harmony and orchestration to varying degrees. For instance, examples from the highly chromatic *Scythian Suite*, *Le Pas D'Acier Suite*, and Symphony No. 5 could have been used to illustrate points in case study No. 2 as well as the polytonal and orchestration juxtaposition in case study No. 1. Furthermore, the use of the *Prokofiev Dominant* and "wrong-note harmony" are widespread across Prokofiev's symphonic suites and symphonies.

Despite the select number of examples, the impressions and conclusions from this research are significant. The link between harmony and orchestration is inextricable in most composers' compositional process, and especially so in Prokofiev's music. This method of analysis is particularly effective when applied to the music of composers who were inventive and innovative in their search for expressivity in their harmonies and orchestration. Prime candidates for possible future research include Gustav Mahler, Claude Debussy, and Richard Wagner amongst others. Similar harmonic and orchestrational analyses of the abovementioned composers should yield further correlations between the two music elements. Furthermore, it is hoped that this research has

also contributed to rendering the ever-elusive studies in orchestration and timbre more concrete and tangible by binding them to the added perspectives provided by harmonic analyses. These new perspectives may allow for more deeply informed performances of Prokofiev's orchestral works through a clearer understanding of the construction of his orchestral music. For example, an orchestral rehearsal tackling the passage from his Symphony No. 2, from Example 6, would benefit from understanding the timbral effects Prokofiev was striving for, rather than potentially getting bogged down by the complex harmonies. Similarly, conductors might also suggest to their musicians to further emphasize the accents in *Romeo and Juliet* Suite No. 2, shown in Example 8, with the aim of ensuring that the clashing timbre of the juxtaposing instruments and the minor second dissonances are pronounced clearly enough over the accompaniment texture. Ultimately, by investigating Prokofiev's music through a myriad of new analytical angles, it is hoped that these case studies can further serve as a reminder of the difficulty involved in defining Prokofiev's style as a composer, and perhaps, further bring to light his never-ending desire to improve and innovate throughout his illustrious career.

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