"A METAPHOR FOR THE IMPOSSIBILITY OF TOGETHERNESS": EXPANSION PROCESSES IN GUBAIDULINA'S FIRST STRING QUARTET

Cara Stroud, B.Mus.

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APPROVED:

David Schwarz, Major Professor Daniel Arthurs, Minor Professor Thomas Sovik, Committee Member James Scott, Dean of the College of Music James D. Meernik, Acting Dean of the Toulouse Graduate School Copyright 2012

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CHAPTER 1

INTRODUCTION

According to Michael Kurtz's biography, Sofia Gubaidulina wrote her First String Quartet in 1971, during a time in her life when her music was not actively performed in the USSR.¹ Although Gubaidulina is known for her compositions written during the 1980s, such as Sieben Worte and Offertorium, I believe the First String Quartet to be a "desk drawer" work of sorts, written to satisfy personal creative needs. Few performances have been made of the quartet, and even fewer scholarly articles have been written about this particular work. Since 1980, Gubaidulina has favored numerical series or religious concepts to organize her compositions, and the First String Quartet provides insight into the composer's journey toward using these organizational principles. This thesis illustrates how I hear processes of expansion organizing musical materials in the First String Quartet. Gubaidulina's use of expansion in pitch, rhythmic, and formal structures in the piece provides coherence in a seemingly episodic form. Episodes involving, for example, rhythmic augmentation and those involving increasing pitch intervals can both be understood as different aspects of the expansion process. Gubaidulina's use of expansion processes, embodied in pitch, rhythm, form, and physical space,² unifies the episodic materials of the First String Quartet. Pervasive expansion processes in the First Quartet also convey the composer's ideas about the

¹ Michael Kurtz, *Sofia Gubaidulina: A Biography*, trans. Christoph K. Lohmann, ed. Malcolm Hamrick Brown (Bloomington: Indiana University Press, 2007), 96.

² That is, how the performers embody expansion through their physical position and movements on the stage.

piece as a "metaphor for the impossibility of togetherness."³ In addition to providing a continuous thread throughout the work, expansion processes illustrate the composer's philosophical approach to the piece, and provide a new perspective on writings about religious symbolism in Gubaidulina's other works.

Literature Review

Existing scholarship on Gubaidulina's works extensively covers her use of religious symbols, but few published documents discuss the First String Quartet in detail. Michael Kurtz's biography of the composer discusses the circumstances surrounding the composition of the piece and quotes the composer's ideas about the First Quartet. Joseph Williams has explored some aspects of pitch and rhythmic expansions in the First String Quartet, but he has not connected them to the symbolic understanding of the First Quartet suggested by Swetlana Sarkisjan and by the composer.⁴ Michael Berry, Jennifer Milne, Young-Mi Lee, and Fay Neary have explored extramusical symbolism in Gubaidulina's later works and they provide a framework for understanding Gubaidulina's use of pervasive expansion processes to support a metaphor in the First String Quartet.⁵

³ Kurtz, 97.

⁴ Joseph Williams, "Discontinuous Continuity?: Structural Analysis of Sofia Gubaidulina's String Quartets" (master's thesis, University of Cincinnati, 2007); Swetlana Sarkisjan, "Die Streichquartette Sofia Gubaidulinas als Veruch der Erschliessung des sonoristichen Raumes," *International Review of the Aesthetics and Sociology of Music* 36, no. 2 (December 2005); Kurtz, 97.

⁵ Michael Berry, "The Importance of Bodily Gesture in Sofia Gubaidulina's Music for Low Strings," *Music Theory Online* 15, no. 5 (October 2009),

http://www.mtosmt.org/issues/mto.09.15.5/mto.09.15.5.berry.html (accessed September 21, 2011); Jennifer Milne, "The Rhythm of Form: Compositional Processes in the Music of Sofia Gubaidulina" [PhD diss., University of Washington, 2007); Young-Mi Lee, "Musical Contents and Symbolic Interpretation in Sofia Gubaidulina's "Two Paths: A Dedication to Mary and Martha" (DMA document, The Ohio State University, 2007); Fay Neary, "Symbolic Structure in the Music of Gubaidulina" (DMA document, The Ohio State University, 1999).

Biographical Study

In his biography of the composer, Michael Kurtz briefly describes the

circumstances surrounding the composition of Gubaidulina's First String Quartet and

quotes the composer's ideas about the piece. Gubaidulina connects expansion

processes in the melodic materials of the quartet with "expansion" of the performers on

the stage, relating them both to the "metaphor for the impossibility of togetherness."

Kurtz quotes Gubaidulina's comments from the Kholopova and Restagno biography of

the composer:

The idea of disintegration, dissociation, lies at the heart of the First [String] Quartet. I have to say that there is a certain amount of pessimism in it, a metaphor for the impossibility of togetherness, of understanding one's neighbor, a metaphor for the utter deafness of humanity (life itself in those years was so dark, so sad and hopeless . . .). The work grows out of a single pitch, from a common point. But various aspects of the musical material—the rhythmic and melodic successions, the types of articulation, and the dynamics—gradually begin to contradict one another. This dissention within the tonal material is emphasized visually as well. At the beginning the four instrumentalists are in center stage, grouped all together. Then the musical events drive them apart, in ever increasing distance from each other, to the four corners of the stage, where each player concentrates only on his/her own playing, already entirely unable to hear the others. Utter isolation to the point of madness.⁶

The ideas of "disintegration" and "dissociation" appear to inform the pervasive

expansion processes in the First String Quartet.

Kurtz places the composition of the quartet in a particularly ascetic period of the

composer's life. Gubaidulina had just returned from abroad, and spent the fall and

winter of 1971, the time she was writing the First Quartet, at Sortavala, a summer resort

⁶ Kurtz, 97. This quotation was originally printed in a biography of and collection of interviews with the composer by Enzo Restagno, in Italian. Kurtz translated this source and printed this quotation in German in his biography of Gubaidulina. Here, I cite the English translation of Kurtz's biography, translated by Christoph K. Lohmann. It is entirely possible that some meaning has been lost in translation, but, having consulted the original Italian source, I believe that the English translation of the Kurtz biography is true to the original meaning of this statement by the composer. For original source of quotation, cf. Enzo Restagno, *Gubajdulina*, (Torino: EDT, 1991), 44.

on Lake Ladoga. She was completely alone, and took "moonlight swims" in the freezing water. Gubaidulina's concept of "utter isolation to the point of madness" may have been inspired by her life at that time. Although the particular pessimism the composer describes might not be immediately apparent for all listeners, the effects of that concept are recognizable in the expansion ideas permeating the entire work. Thus, the "impossibility of togetherness" begins to take form as performers continuously move away from each other on the stage, or as a single pitch expands into a much larger pitch interval.

Studies of Gubaidulina's String Quartets

Joseph Williams is the first to describe "expansion processes" in Gubaidulina's First String Quartet in his master's thesis on Gubaidulina's four string quartets.⁷ Williams discusses examples of expansion processes in pitch and rhythm in the First Quartet, and categorizes the expansions in two ways, namely: wedge expansions in pitch and additive expansion processes in rhythm or interval content.

According to Williams, Gubaidulina's use of wedge expansion involves gradually increasing intervals, climbing up and down from a central pitch. Williams notes that Gubaidulina avoids exact wedge expansions, instead conveying the general idea of symmetry about a given area. For example, the opening motive in the second violin begins with the "center pitch C-half-#5"⁸ and "gradually expands outward in quarter-tone intervals until reaching D-half-#5 in the ascending direction and B4 in the descending

⁷ Williams, 24.

⁸ Williams uses pitch designator C4 for middle C. Thus, Williams' "C-half-♯5" is the pitch a quarter-step higher than the C above middle C.

direction."⁹ Example 1 shows part of Williams' Figure 2.3. I have added upward stems and a thin beam to connect the notes on the "expanding higher" side of the wedge, and downward stems and a thin beam to connect the notes on the "expanding lower" side of the wedge. The first note, marked *piano*, is the center point of the wedge.



Example 1: Violin II, mm.1-2, from First String Quartet¹⁰

Thus, the upper melodic line has ascended from C-half-#5 to D-half-#5 while the lower line has descended from C-half-#5 to B4, creating a wedge. Williams notes that this melodic expansion, occurring in the very first measures of the piece, sets up a paradigm of expansion for the rest of the work.

Williams also describes additive expansion, in which intervallic size or rhythmic duration increases from note to note. He asserts that, although Gubaidulina uses wedge and additive expansion processes throughout the guartet, the sections are "texturally distinct and display relatively little surface-level commonality."¹¹

I will extend Williams' ideas about expansion processes in the First String Quartet beyond the "wedge" and "additive" expansion processes to other types of expansions in rhythm, pitch, and physical space, and also to the small- and large-scale

⁹ Williams, 27. ¹⁰ Adapted from Williams, 91.

¹¹ Williams, 26.

form of the First Quartet. Additionally, I will connect the pervasive expansion processes in the First String Quartet to the composer's comments in the Kurtz biography about the origin and symbolism of the piece to reveal that the purpose of these expansion processes is to create a metaphor for "the impossibility of togetherness."

Swetlana Sarkisjan takes a different approach to the First String Quartet in her article about the aesthetics of Gubaidulina's string guartets. While Sarkisjan notes "die zeitlich-strukturellen Verdichtung und Ausdehnung," (temporal-structural contraction and expansion) as a critical element of Gubaidulina's style, she focuses on the First Quartet as a symbolic work, representing a catechism of compositional methods and referencing Russian folk instruments. Referring to Gubaidulina's religious beliefs, Sarkisjan asserts that even the string quartets, which have no overt program, have a religious meaning for the composer, whose religious viewpoint informs all of her compositions.¹² For Sarkisjan, the First String Quartet, in particular, can be interpreted as a sort of "Katechismus," (catechism) of the composer's compositional methods, with G[#] fulfilling an important role as a component of melodic and harmonic structures.¹³ Sarkisjan finds that the viola's pizzicato section, at rehearsal number 40 before the reprise, links the structurally important G[#] with the sound of a traditional Russian instrument, the domra.¹⁴ According to Sarkisjan, Gubaidulina's interests in religion and folk music influence the timbre, rhythm, form, and pitch of the string guartets, which had been understood as works of "absolute music."

¹² Sarkisjan, 272-273.

¹³ Sarkisjan does not explain why she finds the G[#] structurally important, although one might speculate that the second violin and viola unison G[#]4 at rehearsal number 40 is significant to Sarkisjan because it references the "unison" G[#]3 at the beginning of the work.

¹⁴ Sarkisjan, 282.

Sarkisjan's structurally important G[#] is a participant in a large-scale, formal expansion that is crucial to understanding the overall form of the work. Sarkisjan connects this structurally important G[#] to material evoking Russian folk timbres, but the expansion processes in the First Quartet, like the one instigated by the G[#], also connect with Gubaidulina's ideas about the metaphorical meaning of the First String Quartet and provide a common thread through episodic materials.

Studies of Gubaidulina's Symbolism

Michael Berry's article "The Importance of Bodily Gesture in Gubaidulina's Music for Low Strings" provides a basis for understanding Gubaidulina's use of physical gestures as a symbol in her compositions. Moreover, Milne, Lee, and Neary's writings about musical symbolism in Gubaidulina's works after 1979 also provide a basis for understanding symbolism in the First String Quartet, which was written in 1971.

While performing the First String Quartet, the performers must move their chairs across the stage, away from each other, until, at the end of the work, the performers are in the corners of the stage. The composer's instructions for the performers to move their chairs across the stage translate musical expansion processes into the dimension of physical space and symbolize Gubaidulina's ideas about the "impossibility of togetherness." Michael Berry writes about a similar use of "bodily gestures" as an extension of Gubaidulina's musical symbolism. Berry describes a "cross" motive that Gubaidulina uses in *Sieben Worte* for cello, bayan, and strings,¹⁵ and goes on to describe the symbolism of bodily gestures in Gubaidulina's music for low strings,

¹⁵ Berry, Example 5.

including cross motives also present in the Sonata for double bass and piano,¹⁶ and a visual representation of the cross created by putting on and taking off the mute in Ten Preludes for Cello Solo.¹⁷ Berry also discusses Gubaidulina's use of physical gesture as a symbol in some of her other works, including *Galgenlieder* and *Stimmen...* Verstummen...,¹⁸ but not the First Quartet. While Berry explores Gubaidulina's use of physical gestures as they relate to extramusical ideas, such as the cross, his ideas about the composer's use of physical gesture as a symbol can be extended to the First String Quartet. The performers' movements across the stage during performance of the guartet exemplify an aspect of the expansion processes that dominate the work, the expansion processes that, together, embody Gubaidulina's "impossibility of togetherness."

Several authors discuss Gubaidulina's use of religious symbolism, including Kholopova,¹⁹ Milne, Lee, and Neary. Milne's doctoral dissertation divides Gubaidulina's work into three stylistic periods. Milne's first division of Gubaidulina's output, works composed from 1965 through the 1980s, involves a focus on new timbres and instruments while the composer continues to loosely use traditional forms to provide structure and to experiment with pitch and intervals to organize some formal areas.²⁰ The First String Quartet falls in this stylistic period. Milne places the beginning of Gubaidulina's second stylistic in 1983. According to Milne, the composer's works from this time involve a fascination with mathematical series as a means of providing large-

¹⁶ Berry, Example 6.
¹⁷ Berry, Example 9.
¹⁸ Berry, Examples 13–15.

¹⁹ Valentina Kholopova and Enzo Restagno, Sofiia Gubaidulina: monografiia (Moscow: Izd-vo "Kompozitor," 2008).

²⁰ Milne 21–22.

and small-scale form. Milne begins the third stylistic division with the extensive use of microchromaticism for symbolic purposes in the Fourth String Quartet. After discussing stylistic division of Gubaidulina's works, Milne's dissertation focuses on the use of mathematical series in works from Gubaidulina's second period, *Silenzio* and *Meditation on the Bach Chorale "Vor deinen Throm tret ich hiermit.*"

Lee's doctoral dissertation describes musical symbols relating to the cross, transfiguration, and the dichotomy of heaven and earth in *Two Paths: A Dedication to Mary and Martha*. In her doctoral dissertation, Neary also studies a later Gubaidulina work. Neary analyzes the extent of musical symbolism in the pitch organization, overall form, rhythm, timbre, and phrase structure of *In Croce* and *Garten von Freuden und Traurigkeiten*. Neary also presents translations of some interviews with the composer in an appendix to the dissertation. At the time of writing, few English-language resources existed for Gubaidulina scholars, and Neary's translations provide access to important interviews.

Williams has codified wedge and additive expansion processes in the First Quartet and Sarkisjan has written on the symbolic associations of some of the musical materials in the quartet, but the link between the expansion processes and their symbolism remains unexplored. Michael Kurtz's biography contains a powerful insight into the composer's inspiration for the piece. Berry, Milne, Lee, and Neary have extensively studied the composer's use of symbolism in her later works. Sofia Gubaidulina's use of varied forms of expansion processes in the First String Quartet both unifies disparate episodes in the quartet and connects the musical materials to a non-musical metaphor. In Chapter 2, I move the idea of the expansion process beyond

wedge and additive expansion processes to include more organic expansions in pitch, rhythm, form, and texture. In Chapter 3, I focus on the final episode of the First Quartet to analyze the consequences of earlier expansion processes. I hope to expand the scope of current research in Gubaidulina's works by analyzing the full extent of the composer's treatment of the idea of expansion in her First String Quartet.

CHAPTER 2

DEFINING GUBAIDULINA'S EXPANSION PROCESSES

In Sofia Gubaidulina's First String Quartet, the composer appears to elaborate "the impossibility of togetherness" with processes of expansion. However, a thorough understanding of the process itself is necessary before any detailed analysis can explicate the workings of the process or relate the process to Gubaidulina's metaphor. A sensation of expansion, of increasing distance between points, can occur in different contexts. Expansion can be created by contrary motion in voice leading, similar to the symmetrical chromatic wedge technique employed throughout the 20th century, especially in the music of Webern.²¹ In Example 2, I provide an abstract model of the chromatic wedge.

Example 2: Abstract Chromatic Wedge



The abstract model of the chromatic wedge in Example 2 will serve as a model for understanding Gubaidulina's expansion process in pitch. Beginning from C5, a higher-moving edge and a lower-moving edge are differentiated as an upper voice and a lower voice begin to move higher and lower, respectively, by half step. The expanding

²¹ Gubaidulina's use of the symmetrical chromatic wedge technique is likely influenced by her interest in Webern's music. However, the use of chromatic voice leading in contrary motion happens much earlier in musical history than Webern. I credit Thomas Sovik with the idea that this voice-leading technique stems from 9th century organum practices.

pitch space between the upper and lower edges of the wedge lends this chromatic wedge example a sensation of expansion, as the two boundaries of the wedge move further and further in opposite directions from their common point of origin. It is possible to extend the chromatic wedge expansion to pitch-class space, but the sensation of expansion in pitch space (two pitches moving apart from each other) is quite different from the sensation of expansion in pitch-class space.²²

Expansion need not necessarily occur only in pitch space. A sensation of expansion can also be created in time, with expanding intervals of time between events. Considering the long history of rhythmic augmentation as a compositional technique (especially in contrapuntal compositions!), a complete description of its applications is beyond the scope of this thesis, but the abstract model in Example 3 provides a simplified example for a point of reference.²³

Example 3: Rhythmic Augmentation



The first measure 3 in this example provides a basis for understanding what comes next. Considering that the eighth-note pulse remains constant throughout the example, we hear the second note in the second measure happen twice as late as the second

²² Arguably, perception of expansion at the pitch level is more apparent from a surface-level hearing than is the perception of expansion at the pitch-class level. In the First String Quartet, Gubaidulina seems to prioritize the timbral changes that occur in different registers over pitch-class, so I will prioritize the pitch level over the pitch-class level in my analyses of expansions.

²³ I credit Thomas Sovik for the idea that Gubaidulina's rhythmic augmentation techniques can be traced back to those used by the composers of the Second Netherlands School. Clearly, Gubaidulina's pitch and rhythmic materials in the First Quartet are heavily informed by early compositional techniques, which I believe she distilled from the music of Webern.

note in the first measure and conclude that the initial pattern has been stretched to twice its original duration. When we hear the third measure, we can conclude that this same process has occurred again, elongating quarter notes into half notes. The notes in the melody demarcate sections of time that grow larger. This sense of pitches interrupting an abstract, constant time is suggested by the way that notes occur on a page, for example, with half notes a measured distance further away from each other than eighth notes. However, rhythmic augmentation can create not only a sensation of expansion in the amount of time between events, but also a sensation of expansion in time itself. Although a complete discussion of the chromatic wedge and the rhythmic augmentation technique is beyond the scope of this thesis, the chromatic wedge and rhythmic augmentation techniques as a subset of the expansion processes that form the underlying theme of the First String Quartet.²⁴

Williams' Interpretation of Expansion Processes

In his master's thesis on Gubaidulina's string quartets, Joseph Williams is the first to describe expansion processes in pitch and rhythm in the First Quartet. Williams names these processes "wedge" and "additive" expansion processes, and tethers the processes to a rigorous model, such as the models of the chromatic wedge and the rhythmic augmentation provided in Examples 2 and 3. However, Williams does allow for some flexibility in the application of the wedge expansion and additive expansion. In a

²⁴ The reader should be aware that, because the First String Quartet does not have measure numbers and because of the difficulty in assigning measure numbers due to indeterminate sections, Gubaidulina makes extensive use of rehearsal numbers in the score, and these rehearsal numbers also serve as an excellent reference point and formal marker. Henceforth, I will reference sections by rehearsal number (abbreviated R); for example, R9 references rehearsal number nine. Through most of the quartet, counting measures is not impossible and I will indicate specific measures of rehearsal numbers as necessary; R9+10 references the tenth measure of rehearsal number nine. Additionally, I will use an octave designation system with pitch designator C4 for middle C.

footnote, Williams remarks that the "wedge expansion principle is not bound by temporal placement."²⁵ Williams illustrates the additive expansion process, the wedge expansion process, and the "atemporal" quality possible in the wedge expansion in his Figure 2.13, which begins with the first violin gesture at R42. This gesture is shown here in Example 4.





The first violin plays a figure with "higher" expanding pitch in conjunction with expanding rhythm (additive expansions in pitch and rhythm). Here, additive changes occur in pitch-interval from one interval to the next. Directed pitch-intervals are: [+1 +3 +6 +8 +11 +14].²⁷ Pitch-intervals increase in size through a loose additive expansion, and the changes in pitch-interval as [+2 + 3 + 2 + 3 + 3]²⁸ Even though the additive expansion in pitch-interval is not regular, it is still easily perceived in the steep increase in pitch-interval. As pitch expands higher, each note is also a longer duration than the previous note. The ordered increases in duration are [+1/16 +1/16 +1/8 +1/8 +1/4 +1/41.²⁹ In Williams' argument, the additive changes in pitch-interval and additive

 ²⁵ Williams, footnote to page 30.
 ²⁶ Unless otherwise noted, examples feature a best attempt at exact transcription from the score.

²⁷ Williams does not described this in his thesis.

²⁸ Williams, 106.

²⁹ Ibid.

changes in duration correlate with each other, with the melodic line "expanded exponentially in both pitch space and temporal space."³⁰

Although Williams notes the additive changes in pitch-interval (i.e., the measured increases not only from one pitch to the next, but also the measured increase in the amount that the pitches move higher), he does not explain how these additive changes in pitch interval correlate with the additive changes in duration, or how these changes are modeled "exponentially." The durations in Example 4 are increasing, but they are also increasing at a measured rate, similar to the measured rate of increase in pitch interval. Williams does note that the "additive constant" is doubled twice in the rhythmic expansion, and I suggest that the additive expansion not only in pitch and duration but the additive increase in *rate of change* of rhythm are what distinguish this process in R42 from other additive expansion processes throughout the quartet. In R42, three different types of additive expansion occur at the same time: (1) irregular/loose additive expansion in pitch, (2) strict additive expansion in rhythm, which is augmented by (3) linear (as opposed to exponential) increase in rate of change of rhythm. The cello immediately follows the example set by the first violin in R42, as shown in Example 5.



³⁰ Williams, 36.

Immediately following the violin gesture in R42, the cello plays a gesture with "lower" expanding pitch in conjunction with expanding rhythm. This cello figure follows the same model as the violin figure, but with an opposite trajectory in pitch.

In each example, every pitch is higher (violin) or lower (cello) than the previous note in the phrase, and every duration is longer than the previous duration. However, the cello gesture happens after the violin gesture, so while the additive expansions in both rhythm and in pitch are apparent as they happen, the wedge expansion only appears after the completion of the cello gesture. At that point, the listener can compare the steep "expanding-higher" trajectory of the previous violin gesture with the steep "expanding-lower" trajectory of the just-heard cello gesture. When compared with each other, the gestures criss-cross in pitch space, forming a wedge. The first violin figure and the cello figure expand pitch space from a common register (G3 for the violin and $B \downarrow 5$ for the cello) to the pitch extremes for each instrument (D7 for the violin and $E \downarrow 2$ for the cello). Both the first violin and the cello articulate additive expansion in pitch and rhythm in Example 6.



After hearing the dimension of the pitch expansion in the cello gesture, the listener can also interpret a wedge expansion in R42-43 by comparing the pitch space outlined by the violin gesture in R42 with the pitch space outlined by the cello gesture in R43. Although the additive expansions happen in the temporal space of the performance, I hear wedge expansion outside of performance time here, after hearing or beginning to hear the second gesture, when I compare the two gestures outside of the temporal space of the performance.

First, the listener hears the violin articulating additive expansion in rhythm and "upward-moving" additive expansion in pitch. Next, the cello articulates additive expansion in rhythm and "downward-moving" additive expansion in pitch. Finally, the listener compares the violin figure with the cello figure and notices they are articulating expansions in *opposing directions*, creating a cross or wedge expansion. This final perception necessarily happens after hearing both the violin figure and the cello figure. The retrospective hearing that I suggest requires the conflation of two gestures that happen sequentially, conflation which occurs as I process and compare events that I have just heard.

Example 6 describes a wedge expansion in which two voices eventually move away from each other (although they begin by moving toward each). Each voice has a defined beginning pitch and ending pitch, even though they began the wedge expansion by moving toward and then crossing a common point of origin. This suggests that a defined, single, beginning pitch is not necessary for a wedge expansion process to occur. When describing "wedge" and "additive" expansions, Williams notes that:

The possibility of *rhythmic* organization utilizing a wedge formation is difficult to imagine since rhythms are limited to temporal space. Not only must temporal aspects occur in sequence whereas pitches can occur simultaneously, pitches have an added benefit of being perceived on "vertical" levels in space corresponding to a listener's impression of high and low.³¹

As described in Example 6 with the theoretical combination of R42 and R43, it is possible to reinterpret musical materials after hearing them, and to hear a wedge expansion outside of the time constraints of a musical performance. If one hears wedge expansions in materials that happen in sequence and not simultaneously, for example in R42 and R43, then I disagree with Williams about the possibility of hearing a rhythmic wedge expansion. As shown in Example 7, two sides of a wedge are differentiated with timbre in R5; here, Gubaidulina creates a rhythmic wedge expansion with tremolo and non-tremolo chords.

³¹ Williams, 33.



Example 7: R5, Non-Tremolo and Tremolo Chords³²

In the second measure of the above example, the first boxed section after the strings establish a stack of natural-harmonic double-stops, the second violin begins a tremolo while the other players continue the established drone. In this manner, tutti non-tremolo drones continue to alternate with solo tremolos. Note that, as the duration of the singleplayer tremolo increases, the duration of the unison non-tremolo decreases. By

³² Note again that this example is an exact transcription from the score; I have only added boxes around the solo tremolo sections for clarity. Although Gubaidulina's notation is often idiosyncratic and without clarification, she appears to be distinguishing slurs without bowing change (indicated with normal slurs) and the suggestion of a slur with a bowing change (indicated with dotted lines).

alternating the single-player tremolo texture with the tutti non-tremolo texture, Gubaidulina creates two "sides" of a rhythmic wedge, as seen in Example 8.

Example 8: R5, Reduced to Rhythmic Wedge



Example 8 shows the duration of each texture in R5, which was given in full in Example 7. Note the decreasing duration in the non-tremolo texture. The first segment of the non-tremolo section has a duration of 6 quarter notes, the next has a 5 quarter note duration, then 4, 3, and finally, the last segment of the non-tremolo texture has a duration of 2 quarter notes (this phrase is set off by rests). As the non-tremolo texture decreases in duration at each instance, the solo tremolo texture increases. The single player tremolo, beginning with the second violin, lasts for 2 quarter notes in its first instance. The next solo tremolo has a 3 quarter note duration, and the solo tremolo duration increases to 4 quarter notes and finally to 5 quarter notes. As shown in Examples 7 and 8, at R5, texture delineates the two edges of a wedge expansion: the duration of non-tremolo chords decreases while the duration of single tremolo chords increases. Example 8 demonstrates that rhythmic expansion processes are not limited to additive procedures if, for example, two sides of a wedge can be delineated by different timbres.

Expansion Processes as a Unifying Feature

The processes of expansion that figure so prominently in Gubaidulina's First String Quartet might initially appear to be connected to contrapuntal techniques, such as the chromatic wedge or rhythmic augmentation procedures described in Examples 1 and 2. In later interviews, Gubaidulina cites Bach and the composers of the Second Viennese School as a particular influence.³³ One might initially consider Gubaidulina's pitch and rhythmic expansions to be based on contrapuntal and rhythmic models provided by Bach and Webern. However, understanding Gubaidulina's pitch and rhythmic techniques as "simply" contrary motion or rhythmic augmentation, without also linking them as expansion processes, precludes the possibility of comparing expansion processes in physical space and musical structural elements to expansion processes in pitch and rhythm, and it precludes the possibility of examining (chromatic) contrary motion and rhythmic augmentation as related aspects of the same process.

Williams describes the wedge expansion and additive expansion as they work in the quartet. However, focusing solely on contrary motion (wedge expansion) and rhythmic augmentation (additive expansion) glosses over less rigorous uses of the expansion process, such as the rhythmic wedge in Example 8. I interpret the use of rigorous contrary motion, the use of timbre as a means of suggesting expansion, expanded space between performers, and other procedures in the First Quartet as different types of expansion processes in order to reveal and explore the workings of a structuring procedure. The expansion process gives the First String Quartet some

³³Vera Lukomsky and Sofia Gubaidulina, "Hearing the Subconscious': Interview with Sofia Gubaidulina, " *Tempo*, New Series, 209 (July 1999): 27.

structural uniformity, and the pervasiveness of the procedure strengthens Gubaidulina's suggestion of the piece as a metaphor for the "impossibility for togetherness."

Selected Proposed Expansion Processes in the Quartet

The opening gesture of the work, performed by the viola, creates a sensation of expansion and sets a precedent for the work, as seen in Example 9.

Example 9: Opening Gesture, in Viola



The piece opens with the viola G # 3. A wavy line over the G # 3 indicates increasinglylarge vibrato, referencing pitches further and further away from G # 3, although the distance of the pitches away from the G # 3 is indeterminate and determined in performance by the violist, the shape of the line is clear, and the listener perceives the G # 3 "expanding" into the pitch space around it. Although the transition to the next segment of this phrase is partially determined by the size of the violist's increasinglylarge vibrato, this sensation of pitch-expansion is confirmed again when a triplet and following tremolo articulate an oscillation between A3 and G# 3. The expansion process continues as the oscillation between A3 and G# 3 expands into the oscillation between A3 and G3 (through G guarter # 3). Thus, a process that began by articulating a single pitch creates a sense of expansion as increasing-vibrato and tremolo oscillations articulate an increasingly large pitch-interval around G #. If the violist were to increase the size of his or her vibrato very substantially, for example, to pitches higher than A3 and lower than G3, this might create a sudden contraction when the triplet initiates expanding oscillations around G#3. Both the increasing-vibrato segment and the oscillation segment emphasize expansion, and the violist's interpretation of the vibrato directions adds an organic element of indeterminacy to these expansion processes.

In Example 9, a process articulates the expansion from G#3 to a pitch-interval around it, G3 to A3. In this example, a single "point of origin" (G#3) expands into two points equidistant from it in pitch space (G3 and A3) across the time-span of seven quarter notes. The viola gesture in Example 9 is symmetrically divided by the triplet figure. The first three quarter notes are devoted to the increasingly-large vibrato, which, on the fourth quarter note of the measure, is interrupted by the triplet figure that then initiates the expanding oscillation figure (a contracting oscillation figure then follows the expansion, which is not shown in the example). In the introduction to the First Quartet, each player repeats a version of this expansion from a single pitch (G#3) after the initial expansion is introduced by the viola. However, a sensation of expansion can also be created without requiring a single specific "point of origin" which expands to two equidistant points in pitch space. As shown in Example 10, the first violin melodic line at R33 creates a sense of expansion through a series of extreme registral shifts.



Example 10: First Violin Melodic Line at R33³⁴

In Example 10, short downward stems designate the opening figure of the melody, which is a point of reference for increasingly large registral shifts. A short downward stem also marks the E5 in the tenth measure of the example; this E is an "intermediate note" and links the register of the <F4 D4> gesture with the register of the <B6 C7> gesture. Notes with normal-length, downward stems are participating in the expansion into the lower register (in reference to the opening gesture), and notes with upward stems are participating in the expansion into the higher register (in reference to the opening gesture).

³⁴ Except for the modified stems in this example, it is an exact transcription from the score. Gubaidulina does not indicate this in a note, but the triangle at the end of the example is probably instructing the violinist to play his or her highest possible pitch. Additionally, Gubaidulina does not indicate the function of accidentals, although their placement and a performance by the Danish Quartet would suggest that accidentals apply only to the pitch they are in front of.

opening gesture). Expansion from the register of the initial figure into lower and higher registers is more apparent when the expansion into lower pitch space and the expansion into higher pitch space are considered in isolation, as illustrated in Example 11.



Example 11: First Violin Melody at R33, Isolated Lower Expansion and Initial Tetrachord

The lower melodic line shown in Example 11 expands by gestures without the necessity of every single note having a lower pitch than the previous one. Note the <A4 F4 F \pm 4> gesture in the eighth measure of the example precedes a <F4 D4> gesture. Although the F \pm 4 happens after the F4 and appears to be a move in a higher direction, the next gesture in the series continues the expansion to a lower register (to C \pm 4). Because of the extreme registral shifts, a sense of overall movement toward lower pitches is created. Minor deviations in the overall downward motion of this portion of the wedge

expansion lend a quality of ebb and flow to the melody, providing a break from constant movement in a single direction. A similar isolation of the upper side of the expansion and the same initial tetrachord is shown in Example 12.



Example 12: First Violin Melody at R33, Isolated Upper Expansion and Initial Tetrachord

In Example 11, the lower expansion is revealed when pitches from the upper expansion are replaced with rests, while in Example 12 pitches from the lower expansion have been replaced with rests to reveal the higher expansion. In both examples, the intermediary E5 has been replaced with a rest in order to isolate only the expansion process. Although I hear this E5 as crucial in lending an organic, imprecise quality to this expansion, it does not have a place in either the isolated upper expansion or the isolated lower expansion. If one were pressed to choose a "point of origin" for this expansion process, C6 would be a good choice – it is the first note in the melody (after several measures of rest prior to R33, not shown in the examples) and it is equidistant between B b 5 and D6 in the initial gesture of the melody. However, the construction of the expansion undermines the necessity of this initial C6 as a point of origin. Pitch space gradually expands by gestures, not by specific pitches, as was the case in Example 9. For example, the A #6 in measure 7 of the expanding-higher melodic line is followed by lower notes, G6 and A6 in measure 9. However, because each gesture in the melodic line rises higher and higher in pitch, the sensation of a rising melodic line remains.

Also evident in Example 12 is that ever-higher pitches dominate the latter part of the phrase, which ends with a glissando to the violinist's highest possible pitch. This necessarily indeterminate end-point ("highest possible pitch") and the lowest pitch in the wedge (C#4, shown in Example 11) are not equidistant from the point-of-origin, but the suggestion of increasing distance remains. This melody creates a sense of expansion in pitch, of increasingly large pitch-intervals, without a fixed point of origin and without end-points equidistant from the point of origin.

The expansion processes in Examples 9 and 10 involve a sensation of an increasing interval between two pitches. Although pitch is a unique parameter in music, with a distinct behavior separate from that of rhythm, or that of form, a sensation of

increasing intervals in time is perceived as a similar expansion process, as is shown in Example 13.





In Example 13, each subsequent glissando is augmented by one sixteenth-note.³⁶ In the score, Gubaidulina appears to carefully indicate the duration of each glissando by writing fixed pitches tied to notes followed by a glissando indication. Note that fixed pitches in Example 13 usually have a sixteenth note duration (the <A3 G \ddagger 4 C4 E \flat 4 D5> figure), and only the notes with glissando indications after them participate in the rhythmic expansion. By increasing the duration of each glissando, Gubaidulina appears

to create a sensation of expansion in time.

This expansion in temporal space happens simultaneously with a general impetus toward higher pitches. Although movement to higher pitches happens gesturally, in fits and starts; the phrase as a whole moves to a C6 at the end of the phrase, as shown in Example 14, below. This expansion to a higher register in pitch does not qualify as additive expansion, as neither pitch, nor pitch-interval, nor pitch-class are participating in any additive process. The pitch expansion in Examples 13 and

³⁵ The Violin I is transcribed exactly from the score; I have added the durations of the glissando notes below.

³⁶ Williams, 34. Williams labels this as the ADD16th expansion process.

14 are also not a wedge expansion, as there is no "expanding lower" melodic line to balance the line moving higher. However, the rigorous, additive rhythmic expansion in conjunction with the overall movement to a higher register in pitch emphasizes the effect of expansion in both the temporal and pitch dimensions. In addition to the first violin's material at R1, the other players also articulate expansion processes in rhythm during this episode. Examples 14 reveals the entire quartet participating in rhythmic expansion processes at R1.



Although the specific pitch and rhythmic content of each voice is quite different at R1, each voice is participating in pitch and rhythmic expansion processes similar to those in the first violin. See Example 15 for a reduction of R1 to emphasize the rhythmic expansion in the duration of glissandi.

Example 15: Content of R1 Reduced to Rhythmic Expansions in Glissandi, with Number of Sixteenth Notes Indicated



The rhythmic expansions in the second violin, viola, and cello do not align with those in the first violin, and they do not follow the same trajectory of rhythmic expansion. For example, the second violin begins its glissandi line with a dotted-eighth duration before beginning a rhythmic expansion that repeats the dotted-eighth duration glissandi before finally reaching a quarter note duration glissando at the end of the phrase. Both the viola and cello begin their glissando rhythmic expansions with an eighth-note-duration glissando instead of the sixteenth-note duration glissando in the first and second violins, and because the viola begins its melody before the cello, it reaches a longer duration of glissando at the end of the phrase than does the cello. Each voice in R1 works out a different trajectory of additive rhythmic expansion in the duration of glissandi, but the voices work together to create a sense of rhythmic expansion.

Although the sensation of expansion in rhythm (or perhaps in time) is distinctly different from a sensation of expansion in pitch, both the rhythmic expansion in Example 13 and pitch expansions in Examples 9 and 10 articulate points moving away from each

other in a dimension (time or pitch space). By understanding these processes as different aspects of the same organizing principle (the expansion process), I suggest that expansion processes in rhythm can be linked to expansion processes in pitch, as well as expansion processes in formal procedures, revealing more information about the large-scale structure created by the expansion process and the implications of largescale expansion processes, which I discuss in Chapter 3.

At R9, Gubaidulina increases the durations of gestures in a series and creates a larger version of the expansion process described in Examples 13 and 14. This expansion happens over a span of nearly 27 measures of 4/4 time, and begins to suggest an expansion in phrase-length as the expansion is not created by rhythmic augmentation of single pitches, but by an increasingly large series of notes, delineated by rest, as seen in Example 16.

Example 16: R9



Each collection of pitches in this phrase follows a rigorous expansion process tied to the number of sixteenth notes. Rests delineate the pitches into groups. The first collection is 8 notes long, followed by a 16-note group, then a 32-note group, a 48-note group; a 96-note group completes the expansion in the duration of the series.

Following the "fully-expanded" 96-note group (shown in the third, fourth, and fifth lines of the example), the gestures follow the same rules as they return to the short starting series: a 48-note group, a 32-note group, a 16-note group, and finally an 8-note group, resulting in a rough palindrome. Note the 3/16 measure before the final 2/4 measure: this very short measure of rest prevents this phrase from being an exact metric palindrome. While the series of pitches in Example 16 does not follow an organized pitch expansion as described in Examples 3 and 4, the pitches do gradually descend from the initial F #6 to the lowest register of the violin. This gradual expanding-lower-in-pitch process is representative of the rough, gestural type of pitch expansion outlined in Example 3. The gradual descent to the lowest register of the violin is heard over the entire example, while the rhythmic/phrase expansion expands fully to a 96-note group and then contracts back to an 8-note group. The descent in pitch and expansion/contraction in phrase duration happen simultaneously on different trajectories happening simultaneously, expanding even the idea of expansion by providing two nuanced types of expansion processes at once.

Although the composer appears to have taken care to avoid the suggestion of rigorous sixteenth notes by extending beams across bar lines and by connecting the beams of all the notes in a group at R9, the expansion process at work in the second violin appears to be tied to these sixteenth notes: 2 "beats" (8 sixteenth notes) are added to the duration of the first set, and 4 "beats" or multiples of 4 "beats" (or, measures of 4/4 time) are added onto the subsequent series of notes. While this expansion process is not overtly based in a numerical series or exponential series (such as 2ⁿ), Gubaidulina's insistence on expanding the number of notes in each set by an "even beat" (a group of eight sixteenth notes) lends a sort of metric rigor to this expansion process: Because the rests demarcate the gestures, they participate in the expansion process: the rests are moving further away from each other in time (they are separated by more sixteenth-notes as the process develops). Thus, the expansion in

Example 16 could be interpreted either as a process of expanding structures within a phrase (by counting an increasing number of notes for each collection), or as a rhythmic expansion of the duration between rests.

Accretion

The expansion process in Example 13 aligns in some ways with the rhythmic expansion in Example 16: both present expanding durations. The durations in Example 13 are actual notes, while the durations of elements in Example 16 are not single notes but the durations of short sections, which are marked by rests. Indeed, while both examples present points moving further apart in time, the points in Example 13 are specific pitches and the points moving further apart in Example 16 might actually be the rests that define the growing sections. We might first hear the notes in this episode at R9, and after hearing the notes, a more retrospective interpretation reveals the rests happening further and further apart. The expansion process, as defined by points (rests) moving apart from each other in a dimension (time), describes the events of the second violin part at R9, but this process is somewhat sent into the background by a more immediate process: the increasing number of pitches between each rest. As the interval between rests increases or expands, an increasing number of notes are filling that interval. This is not an expansion of rhythmic duration, or augmentation, but the accretion of notes seems inextricably tied to the process of expansion in Example 16.

Gubaidulina also creates a sense of expansion without relying on musical parameters such as pitch, rhythm, or phrase structure. The composer instructs the performers to gradually move away from each other during the performance of the

Quartet. The composer's German instructions to the performers are found on page eleven of the score:

At this moment, each performer uses the given pause to take his or her chair and place it, lightly and as imperceptibly as possible to the audience, in the direction of the corners of the stage. At the end (by step 5), the players are in the different corners of the stage.³⁷

Gubaidulina's instructions place the performers' bodies in an expansion process. During performance, the players embody an expansion by moving themselves across the stage. Gubaidulina isolates the idea of expansion in the physical space of the musical performance, drawing attention to the centrality of the expansion process for the piece. This expansion process is worked out over the course of the work, with the performers in standard arrangement at the beginning of the quartet and only completing the final steps of the expansion in the final episode. More than any other expansion process, this expansion of the physical (and perhaps personal) distance between the performers contributes substantially to the narrative arc of the piece.

In an interview with Enzo Restagno, Gubaidulina discusses the ways in which she believes what I have described as expansion processes influence the progression of the piece. She describes the work growing "out of a single pitch," and then expansion happens as "various aspects of the musical material ... gradually begin to contradict one another." I interpret this contradiction in, for example, the wedge expansion: the higher-moving melodic line "contradicts" the lower-moving melodic line. Gubaidulina discusses the trajectory of the players' movements, "in center stage, grouped all

³⁷ Sofia Gubaidulina, *Streichquartett Nr. 1*, (Hamburg: Musikverlag Hans Sikorski, 1991), 11. Author's translation of German note in the score: "Ab diesem Augenblick nimmt jeder Spieler während der angegebenen Pausen seinen Stuhl und setzt ihn sehr leise und nach Möglichkeit für den Zuhörer unbemerkt schrittweise in Richtung einer der Bühnenecken, so daß sich die Spieler am Ende (beim 5. Schritt) in den verschiedenen Ecken der Bühne befinden."

together" at the beginning of the work, gradually moving apart from each "to the four corners of the stage, where each player concentrates only on his/her playing, already entirely unable to hear the others."³⁸

Although the specific ways in which pitch and rhythm are developed in Gubaidulina's First String Quartet should not be unnecessarily glossed over, processes in parameters such as pitch, rhythm, and phrase structure are similar enough that we can group them under a loose category defined by expansion. An expansion process need not function around a defined center or follow a strict path. As the above examples demonstrate, the expansion process can occur in any parameter, provided that points (or areas) move away from each other in some dimension. Additionally, the examples provided in this chapter illustrate the extreme variety of ways in which an expansion process can function in the First Quartet. Some expansion processes are rigorous, holding fast to the models of wedge expansion and additive expansion, as in examples 6,7, and 9. Other expansion processes are looser, expanding more by gesture than by individual notes, as in example 10. Different expansion processes can often be understood acting on different parameters at once, for example, the expansions in phrase duration and pitch in example 16. Indeed, the pervasiveness of expansion processes throughout the quartet give the listener a common motive to search for in each episode, and the near-constant tension between expansion processes and their opposite, contracting forces, gives the piece strength to resist explosion after the first expansion. One might imagine the possibility of infinite expansion in an alternate quartet without some balancing force of contraction: an upper melodic line grows ever higher, while a lower melodic line grows ever lower, and rhythmic durations increase additively

³⁸ Kurtz, 97. See footnote 6 for more information about the source of this quotation.

until they are no longer perceived! Although the expansion processes in the work are tempered somewhat by organically ebbing and flowing gestures of expansion and contraction, the balance of the First Quartet is ultimately tipped in favor of expansion. Expansion process after expansion process separates the musical materials until they have drifted significantly away from each other in the concluding episode.

CHAPTER 3

ANALYSIS OF THE FINAL EPISODE

All of the episodes in Gubaidulina's First String Quartet present some variation of the expansion process. The final episode is perhaps the "most expanded" of the episodes in the quartet: at this point in the performance, the players have finished moving away from each other, and they are now sitting in opposing corners of the stage. Various additive, wedge, rhythmic, metric, timbral, and phrase expansion processes have been introduced and developed. In many ways, the final episode is the antithesis of the beginning. The players all begin playing a similar gesture from G*#*3, and they imitate each other in turn. At the end of the piece, each player has dissimilar melodic materials; suggestions of canonic imitation, seen earlier in the work, are gone. The players are each given the same tempo marking at the beginning of the work: J=48. At the end of the work, each player is given a different approximate tempo marking, and the music is entirely non-metered.

Analysis of the final episode reveals the full extent of the slowly acting, inexorable effects of the expansion process: the pitch materials have been through so much expansion that the different voices no longer relate to each other, and the meter and tempo have been expanded so much that they can no longer unite the voices in a common time. The work disintegrates into quiet sounds and then, empty silence.

Structure of the Final Episode

The final episode begins with a single pitch, B4, held by the second violin.³⁹ This drone references the opening of the piece, which features a G#3 drone. After an indeterminate pause, the cello enters with a wedge expansion of sorts as the second violin continues to play B4. See Example 17 for this first melodic gesture of the episode.

Example 17: Page 47, System 2, Opening Cello Gesture in the Final Episode



Interestingly, Gubaidulina chose to group this opening gesture as a rhythmic palindrome: a single eighth note followed by a pair of eighth notes, then a set of five notes followed by a pair of eighth notes and a single eighth note. Considering that the given tempo is an approximation, that the cello enters after an indeterminate pause, and that feathered beams lend a quality of indeterminacy to the inner group of pitches, the symmetrical rhythmic groupings are revealed only by visually observing the score. This symmetrical arrangement also contributes to a "hidden" expansion process: the feathered beams and crescendo-decrescendo pair ("hairpin") align over the center of the figure, which features the largest group of pitches.⁴⁰ Gubaidulina opens the final

³⁹ In the penultimate episode, the first violin, viola, and cello emphasize B4 while the second violin is silent. The second violin's opening B4 in the final episode emphasizes its silence during the prior episode.
⁴⁰ I describe the coincidence of the feathered beams with the crescendo-decrescendo pair as a hidden expansion because it is unlikely that a listener would perceive this as an expansion process. Although the

episode with an expansion process, but she hides it from the listener. The composer has separated the performers from each other, and now the listener is also separated from the performer by a visual expansion process that is mostly seen only in the score – the symmetrical rhythmic gesture in conjunction with the feathered beams and crescendo-decrescendo figure.

The chromatic wedge expansion suggested by the opening cello gesture, however, is not hidden from the listener. Example 18 identifies the upper and lower portions of the wedge with upward- and downward-facing stems (respectively), and reveals the context of this opening gesture.



Example 18: Opening cello gesture with upper and lower portions of wedge identified⁴¹

While the abstract model of the chromatic wedge involves all twelve chromatic pitches emanating from a central pitch (see Example 2), the wedge expansion in Example 18 is not symmetrical, although the first portion of the expansion is

listener would likely perceive the tempo change (slow-fast-slow) and dynamic change (soft-loud-soft), there is nothing to suggest expansion, or points moving apart from each other in some dimension.

⁴¹ Except for the direction of the stems in the cello part, this is an exact transcription from the score, including the idiosyncratic dotted slur over the second violin B4. I interpret this dotted slur to mean that the second violinist should hold this note as long as he or she deems necessary, possibly until the next note change.

symmetrical. The cello's initial B \flat 4 marks the half-step descent from the second violin's initial B4, and the C5, A4, D \flat 5, and A \flat 4 continue the typical chromatic wedge procedure. The lower portion of the wedge then continues with a precise chromatic descent: <A \flat 4 G4 F \sharp 4 F4 E4 E \flat 4 D4>. Although this wedge expansion does not exactly align with the abstract chromatic wedge expansion, the opening gesture still incorporates all twelve chromatic pitches:⁴² the opening B4 provided by the second violin and not found in the cello figure, <B \flat 4 C5 A4 D \flat 5 A \flat 4 G4 F \sharp 4 F4 E4 E \flat 4> in the opening cello gesture (with C5 repeated) and the final pitch, D4, begins the next gesture in the cello melody.

The beginning of the final episode presents a complete set of the twelve chromatic pitches, a held pitch referencing both the beginning of the piece and the previous episode, a hidden wedge expansion visible only from the score, and a pitch expansion similar to those found throughout the work.

Although the beginning of the final episode is defined by the players entering one-by-one and references to previous material and techniques, each performer presents distinct musical materials, and the voices have little interaction with each other throughout the final episode. For this reason, I will present my analyses of the individual parts separately, in order of appearance, beginning with analysis of the second violin part.

⁴² In fact, the quarter-tones present throughout the work are conspicuously absent throughout the final episode. This is perhaps due to the consistent presence of glissandi in the second violin and viola.

Analysis of the Second Violin Part

In the final episode, the second violin creates a slithering, unstable background of glissandi and tremolos. As discussed above, the second violin begins the episode with a sustained B4, the pitch emphasized in the previous episode by the first violin, viola, and cello. After the cello completes its initial figure, the B4 is followed by a slow, tremolo glissando up to F \sharp 6. This glissando sets the pattern for the second violin's role in the final episode. Following additional slow glissandi to F6 and to B5, the second violin begins a low, fingered tremolo on the first system of page 49, with the tempo marking J \approx 78. In the second system of page 49, the second violin has an unusual amount of activity, as shown in Example 19.

Example 19: Fingered tremolo in second violin, second system on page 49



Several elements previously introduced in the quartet interact in Example 19. The oscillation-expansion, introduced in the introduction (see Chapter 2, Example 9), returns here to participate in a subtle move from A3-B3 oscillation to B3-C#4 oscillation. In addition the to the subtle movement in pitch, a crescendo-decrescendo figure similar to the "hairpin" found in the cello opening figure emphasizes the end of the figure (which is followed by a rest of indeterminate length, not shown in the example). Again, while the listener would surely hear the soft-loud-soft gesture, and the listener might possibly link this to an expansion process, the crescendo-decrescendo figure undoubtedly references expansion (and contraction) on a visual level.

Following this extended fingered tremolo, the second violin returns to slow glissandi punctuated by rests of indeterminate length. Similar to Example 19, the second violin has fixed values for pitches and rests in the second and third systems of page 50, as shown in Example 20.



Neither the duration of the elements in this example nor the pitch content appears to be generated by an expansion process or another organizational system. At this moment, right before the end of the work, even the expansion processes have ceased to organize and structure the musical materials. Regardless of systematic organization (or lack thereof), the glissando is the primary feature of the second violin part in the final episode, and varying levels of specificity are applied to the duration and pitch content of the glissando. The glissando implies a level of indeterminacy in the pitch content of the second violin part. This indeterminacy seems to correspond to the lack of meter in the final episode and the approximate tempo indications. I suggest that the indeterminacy, seemingly random pitches, and lack of meter are a consequence of the previous

⁴³ Although the placement of normal-size note heads and small, glissando goal pitches appears somewhat arbitrary, this is an exact transcription from the score, where the small, glissando goal pitches are also surrounded by parentheses.

expansion processes; the piece has expanded so much that it is beginning to fall into chaos.

Analysis of the Cello Part

Although the cello and second violin present a wedge expansion in the opening of the final episode, the cello quickly moves on to pitch material unrelated to the wedge expansion. Example 21 shows Gubaidulina's use of crescendo-decrescendo markings in conjunction with feathered beams, a feature common throughout the cello part in the final episode.

Example 21: Crescendo-Decrescendo in Conjunction with Feathered Beams in the Cello Part, Second and Third Systems of page 48



The cello figures from the second and third systems of page 48 present a typical usage of feathered beams and crescendo-decrescendo figures in the cello part of the final episode. Note that, although the crescendo-decrescendo figure does not always occur in concert with the feathered beam, when a crescendo-decrescendo figure does occur, it has the same shape as the feathered beam (for example, a widening feathered beam correlates with a crescendo, and a narrowing feathered beam correlates with a decrescendo). As noted in the discussion of Example 16, this feature is a mostly visual expansion process, and this process is unique to the cello part of the final episode of

the piece. This type of expansion process occurs throughout the cello part of the final episode, with a few notable exceptions. One exception is shown in Example 22.





The cello materials in system two of page 49 are notable for three reasons. Interestingly, the decrescendo-crescendo figure is reversed in relation to the feathered beams. For most of the episode, the cello repeats the feathered beam figure in conjunction with a crescendo-decrescendo figure. As discussed after Example 16 and Example 21, the correlation of the crescendo-decrescendo figure with the feathered beams throughout the episode can be interpreted as a visual presentation of expansion, if not an aural presentation. The reversed "hairpin" shape could be interpreted as a sort of "hyperwedge" process; contraction and expansion are happening at the same time in different dimensions. As the speed of notes increases or expands, the dynamics decrease, or contract; in the second half of the process, the speed of notes decreases as the dynamic increases. Although a typographical error cannot be ruled out here, the presence of other distinguishing marks suggests that the "hyperwedge" marks a significant moment.

Also significantly, the pitches in this segment, as shown above in Example 22, are closer together in this fragment than in other fragments of the cello part in this

episode. Except for the minor third in the middle of the group and the augmented fifth at the end, this group is composed of entirely half and whole steps. Finally, this fragment is very long. At 18 notes long, this is the longest group of notes that the cello plays in the final episode.

Also note that an unusual moment in the second violin materials happens at this same location as this unusual moment in the cello part: as shown in Example 19, the second violin also has an unusually active part at this moment. However, with each instrument given a different approximate tempo marking and no meter, it is unlikely that the players will perform these unusual moments at the same time. Because of the metrical differences between the parts, the cello ends the piece with a quiet solo on page 53, seen in Example 23.

Example 23: Cello Solo at End of Final Episode, Page 53



At the end of the episode, the cello introduces material different from its standard material as established earlier in the episode. Instead of feathered beams indicating imprecise rhythms for seemingly random pitches, specific rhythmic patterns organize pitches that largely move by half step (or displaced half step). From the second C \ddagger 3, the final 6 pitches move entirely by ascending half step (ascending minor 9th). Because the cellist is instructed to perform the entire movement *pizzicato*, plucking the strings, the final artificial harmonics are very difficult to produce. The physical act of producing

the artificial harmonic by plucking the string produces a significant amount of noise in addition to the actual pitch. The sound of the player's skin rubbing against the string becomes louder in relation to the volume of the pitch as the cellist follows the indicated decrescendo. Thus, the movement ends with organized pitches fading into noise.

The rests between the pitches are also gradually expanding in duration, following a rigorous additive procedure. Each consecutive rest is exactly one sixteenth-note longer than the previous rest, with the exception of the final half rest (which would have been a half rest plus a sixteenth rest). Therefore, as the pitches are passing into the threshold of human-produced noise, they are also moving apart from each other in time. The upper strings have stopped playing, and the piece disintegrates into noise and emptiness as the isolated cellist finishes the quartet.

Analysis of the First Violin Part

The additive rhythmic pattern in the final phrase of the cello part is not the first occurrence of this pattern in the final episode. The first violin enters with this rhythmic pattern and then repeats the additive pattern of rests throughout the movement, with some modifications in pitch and rhythm at each occurrence of the pattern. Compare the identical durations of rests (not notes) in Example 23, above, and Example 24, below.





⁴⁴ Other than the numbers I have added below the staff, this is an exact transcription.

Example 24 lists the number of sixteenth notes contained within each rest. Note that each rest is exactly one sixteenth-note longer in duration than the previous rest. This additive expansion in the duration of rest exactly fits the "ADD16th" model.⁴⁵ The pitch content in the first violin's opening gesture does not appear to be generated from a wedge expansion. Like the opening wedge expansion in the second violin and cello in Example 18, this gesture contains all twelve chromatic pitches and a vague suggestion of a disordered wedge expansion. I do not interpret a wedge expansion in Example 24 because the intervening rests seem to interrupt the possibility of hearing a wedge expansion, as well as the increasing disorder of the supposed wedge. Fittingly, the first violin opens the final episode with this "almost wedge" figure. The first violin's subsequent materials in the final episode are variations of the model provided by the pitch and rhythmic material of this first gesture.



Example 25: First Violin, First and Second Iterations of Rhythmic Pattern

In Example 25, note the subtle pitch differences between the two iterations in addition to the differing notation choices for rests of the same duration. Except for the

⁴⁵ Williams, 34.

first and third notes of the series, every pitch in the second iteration has been altered either up or down by one half step. These alterations adjust the pitch content of the gesture as a whole, creating another wavering "almost wedge" when comparing the differences in pitch between the two iterations. As discussed after Example 24, the adjustments in pitch described in Example 25 do not follow an expansion process as defined earlier in the piece, but they seem to suggest a remnant of the order present earlier in the quartet.

Again, because the final episode contains no absolute tempo markings or measures, the realization of the rigorous nature of this rhythmic ostinato is dependent on the performance. Considering this and the indeterminacy of the final feathered beam figure in the ostinato, a sensation of expanding silence is perceived more than exact nature of the written rhythmic expansion. Indeed, the duration of each rest in the series increases throughout the episode, as illustrated in Example 26.



Example 26: Iterations 2-6 of First Violin Rhythmic Ostinato in Final Episode

Having already noted the increasing duration of rests within the ostinato pattern in Example 25, we can also observe in Example 26 an increase in the duration of rests from one ostinato pattern to the next, and the addition of a single, artificial harmonic sixteenth note from the second to the third iteration (the top two iterations in Example 26). Also having noted the changes made from the first iteration to the second in Example 25, we can observe the continuing changes in pitch content from iteration to iteration. Although the changes in pitch content are not as organized as the changes in rhythm, the number of repeated notes and the intervallic distance between each pitch generally increases from iteration to iteration. At the end of the episode, the first violin plays a group of two notes instead of a full iteration of the rhythmic ostinato, suggesting both a fading away as the time between pitches increases exponentially and a disintegration as even the organizational forces behind the rhythmic ostinatos are expanded beyond the point of no return. Because the rhythmic ostinato features expanding silence instead of expanding sound or pitch durations, the sensation of sound being dwarfed by silence and that of time expanding are particularly potent in the final episode. By picking up the first violin's rhythmic ostinato pattern at the end of the movement, the cello continues the expanding rhythmic pattern, and silence overtakes the most prominent and organized expansion idea of the final episode.

Analysis of the Viola Part

The viola is the last instrument to enter in the final episode, and it has the slowest tempo indication: J≈60. Like the second violin part, the viola part is dominated by glissandi in the final episode, and ricochet glissandi characterize the majority of the slithering background provided by the viola. Unlike the second violin glissandi, the viola's glissandi emphasize short segments of the chromatic scale. The viola part does not employ any overt expansion processes, and its quiet ricochet glissandi serve more of a textural purpose than a developmental purpose. It is the last instrument to enter the episode, and it is the first instrument to stop playing as the end approaches. The viola's final notes are characteristic of its role throughout the final episode, as shown in Example 27.





In its final gesture, the viola plays two ricochet glissandi, with the second moving to a pp dynamic and the instrument's highest possible note. The viola part in the final episode is sparse and not heavily marked with dynamics, so the pitch shape and dynamic shape made as the viola ends its part seem significant. As pitch grows higher and higher, eventually skittering into the violist's highest possible note, the dynamic level decreases from mp, then to p, and finally to pp. If one considers loud dynamics to be more fully expanded than soft dynamics, then one could map the changes in dynamic level across this final gesture as a movement from somewhat expanded dynamic to an almost fully contracted dynamic.⁴⁶

Throughout the piece, a melodic gesture to a higher pitch is correlated with an expansion process, specifically a wedge process.⁴⁷ Taking these considerations into account, this final viola gesture could be a final wedge expansion, with the upper portion of the wedge (expanding higher) occurring the dimension of pitch and lower portion of the wedge (becoming more contracted) in volume.

⁴⁶ This observation would be supported by measuring the changes in signal amplitude in the violist's performance at this moment.

⁴⁷ See examples 2,4,6,10,12,17, and 18.

The second violin and cello have similar gestures as they play their final material: movement into a very high register with a decrescendo. Although the first violin is also playing very high, very quiet pitches at the end of the piece, the first violin's last two very high notes, shown in Example 28, seem out of place in the context of the established rhythmic ostinato scheme.

Example 28: Final Notes of First Violin Part, System Two, Page 53⁴⁸



The eighth note rest between the final two notes in the first violin suggests the beginning of the first violin's rhythmic ostinato, not the end.⁴⁹ Even as the cello takes the first violin's rest ostinato to the end of the piece, the first violin plays a rest as if to restart the ostinato! We are left wondering if the violin will play again to finish the pattern that it established throughout the final episode, and when the first violin does not complete this pattern, we can interpret this final dissidence as a dissolution of even the pattern firmly established in the final episode.

All of the players' final gestures fade into oblivion, and the end of the final episode reveals the consequences of the expansion processes present in the rest of the piece. The musical materials and the performers have expanded so far from where they

⁴⁸ The artificial harmonics in Example 28 would technically sound two octaves and a perfect fifth higher than the fundamental (here, producing sounding pitches F7 and G7), and Gubaidulina does specify these pitches in the score. However, the next higher partial is less than a full half-step down from a minor third (i.e., partial 6 is a "just" minor third above the fundamental, partial 7 is slightly less than a minor third above the fundamental), so artificial harmonics at the minor third are notoriously difficult to produce with any clarity on the violin. This adds to the increasing amount of "noise" (as opposed to sound organized as pitch) in the conclusion of the final episode.

⁴⁹ See Example 26.

began, in different directions, that they can no longer hold together. The music slowly fades out, player by player.

CHAPTER 4

CONCLUSION

By expanding models of wedge and additive expansions beyond the bounds of specific voice-leading or rhythmic augmentation procedures, expansion processes can be understood in each of the varied episodes of Sofia Gubaidulina's First String Quartet. Although the specific voice-leading and rhythmic augmentation procedures mentioned above can be used to describe certain aspects of the work, a global understanding of applications of and interactions between expansion and contraction processes and the way they develop over time requires a flexible approach, which I have sought to demonstrate. For example, Gubaidulina elaborates the idea of expansion with successive phrases that increase in duration, with registral shifts of increasing size, and even with the narrative trajectory of the work. Gubaidulina uses specific musical ideas (the expansion processes) to tell a story in the First Quartet. The expansion idea is developed organically over time, both by balancing expanding forces with contracting forces and by exploring the multitude of possible applications of expansion. By interpreting expansion processes across musical parameters such as rhythm, pitch, and form, we can better understand the organic way in which the piece develops. With a natural ebb and flow, small expansion ideas mingle with each other, merge into larger expansion ideas, and finally coalesce into the expansion trajectory present in the piece as a whole.

In the First String Quartet, contraction appears as a necessary counterpart to expansion processes. The piece would immediately "explode" if an expansion process

were to reach its fullest realization at the beginning of the work! Although the work does not seem to "explode" until the final episode, a measured amount of contraction balances the expansion forces and extends the trajectory of the quartet. However, this balance is necessarily in favor of expansion: the end of the First Quartet would be quite different if expansion were completely balanced by contraction!

At the beginning of the piece, the four players sit together and play the same musical materials and the same pitches, but the expansion processes already inherent in the materials of the introduction pave the way for what is to come. Expansion processes in subsequent episodes develop the idea of expansion, and gradually materials become less similar, meter fades away, the players drift apart from each other in the performance space. This happens gradually throughout the piece, so gradually as to be almost imperceptible. Lack of continuous thematic material (other than the idea of expansion or moving apart, itself) from episode to episode destabilizes the possibility of a traditional, continuously developed narrative, but the pervasiveness of expansion processes and the trajectory from the beginning of the piece (unison) to the end of the piece (dissolution) unifies the work around the central narrative of ever-increasing separation.

Understanding the true extent of expansion processes in the First Quartet first requires moving the basic concept of wedge voice-leading and rhythmic augmentation to other musical parameters. By mapping expansion onto parameters such as pitch, rhythm, silence, form, physical space, texture, and dynamic, I sought to reveal Gubaidulina's unique method of developing this extra-musical idea and uniting these parameters in service to a central narrative. In this thesis, I have sought to understand

different musical parameters can illustrate an extra-musical concept in different. From some archival study at the Paul Sacher Stiftung, I believe that Gubaidulina composes many of her pieces in this way, where musical materials stem from a central, purely gestural idea. I hope to see more research in the way that extra-musical ideas influence thematic development in her works and those by other composers, especially composers of the twentieth-century.

The First String Quartet is rarely performed: the composer does not write many performance notes in the piece, leaving many decisions about realizing the Gubaidulina's idiosyncratic notation up to the performer. The score is difficult to read, especially because of the way quarter-tones are notated. A new edition of this piece would be a boon to this early Gubaidulina work, and more awareness of this work would bring attention to the composer's works from the 1970s. Gubaidulina's later works often have a strong element of religious narrative and symbolism. Remarkably, this quartet and other Gubaidulina compositions from the 1970s focus on musical development of an abstract philosophical (but not religious) idea. Understanding the composer's use of the expansion process in service to the story of separation in a work from 1971 provides greater insight into her growth as a composer.

APPENDIX









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