UCLA
UCLA Electronic Theses and Dissertations

Title

Instrument and Implement Selection and Setup, Performance Strategies, Structure, and Interpretation in Helmut Lachenmann's Intï¿½rieur I

Permalink

https://escholarship.org/uc/item/7n9677t7

Author

Smith, Gary

Publication Date

2016

Peer reviewed|Thesis/dissertation

eScholarship.org Powered by the California Digital Library
University of California

UNIVERSITY OF CALIFORNIA

Los Angeles

Instrument and Implement Selection and Setup, Performance Strategies, Structure, and Interpretation in Helmut Lachenmann's *Intérieur I*

A dissertation submitted in partial satisfaction

of the requirements for the degree of

Doctor of Musical Arts

by

Gary Smith

2016

© Copyright by

Gary Smith

2016

ABSTRACT OF THE DISSERTATION

Instrument and Implement Selection and Setup,
Performance Strategies, Structure, and Interpretation in
Helmut Lachenmann's *Intérieur I*

by

Gary Smith
Doctor of Musical Arts
University of California, Los Angeles, 2016
Professor Theresa Anne Dimond, Co-Chair
Professor David Samuel Lefkowitz, Co-Chair

Helmut Lachenmann is the source of much discussion, particularly concerning aesthetics and dialectic theory, but little has been written about how to interpret his music. Interpretation is examined in this dissertation using the multiple percussion solo *Intérieur I*. The challenges for the performer are to select and set up instruments and implements, identify appropriate performance strategies, and effectively articulate the underlying structure in a way that aligns with the notation, performance practice, and *musique concrète instrumentale* aesthetic. This study provides suggested solutions to these challenges, including appropriate instrument selection, implement selection, setup, implement changing strategies, technical strategies, and recommendations for effectively articulating the structure.

An additional challenge to interpreting Lachenmann's music is his rejection of musical conventions, particularly structure. To accommodate for this, a structure was defined by examining discontinuities in density, timbre (instrument, implement, and technique), tessitura, dynamics, texture, time, and qualitative parameters. An arc diagram was constructed that can assist performers in effectively articulating the structure of *Intérieur I*.

The dissertation of Gary Smith is approved.

Michael S.Y. Chwe

Douglas H. Masek

Neal H. Stulberg

Theresa Anne Dimond, Committee Co-Chair

David Samuel Lefkowitz, Committee Co-Chair

University of California, Los Angeles

2016

Dedication

To my loving wife, Katie Heaton-Smith.

Table of Contents

1 Chapter 1. Introduction

3 Performance Problems Overview

4 Chapter 2. Helmut Lachenmann

4 Biography of Helmut Lachenmann

5 *Musique Concrète Instrumentale*

7 Chapter 3. Notation

11 Chapter 4. Instrument and Implement Selection, Setup, and Performance Strategies

11 Instrument Selection and Setup

22 Implement Selection

28 Implement Setup and Strategies

33 Implement Techniques

34 Performance Strategies

39 Chapter 5. Organization

54 Structure

57 Interpreting Discontinuities and Related Sections

60 Chapter 6. Summary, Conclusion, and Avenues for Further Research

63 Appendix 1. Map of Implement Changes

65 Bibliography

Figures

10 Figure 1. Notation in *Intérieur I*

12 Figure 2. Recommended setup by Lachenmann printed in the score

13 Figure 3. Necessary instruments and recommendations

15 Figure 4. Notated Section 15

19 Figure 5. Low tom-tom and timpano duet in Notated Section 11A

21 Figure 6. Strapped saddle sandbag on vibraphone pedal

24 Figure 7. Table of implements and suggestions

25 Figure 8. Excerpt from Notated Section 6C in which a timpani mallet should be used

27 Figure 9. Scratch tone on timpano

28 Figure 10. Transition from *fingerspiel* to a different implement in Notated Section 7

30 Figure 11. Notated Section 10A with indicated mandolin rolls

31 Figure 12. Notated Section 13 with indicated mandolin roll

32 Figure 13. *Arpeggiated* gesture

34 Figure 14. Mallet Positions

35 Figure 15. Gesture in Notated Section 14A in which a timpano *glissando* is executed after a bongo note

36 Figure 16. Percussion *glissando* in Notated Section 8

37 Figure 17. *Glissandi* in Notated Section 11A with suggested sticking and dynamics

41 Figure 18. Parameter, characteristic, and code

43 Figure 19. Description of Sections

45-46 Figure 20. Quantification of Parameter Changes

47 Figure 21. Timbre (Instrument) Percentage per Section

48 Figure 22. Timbre (Implement) Percentage per Section

49 Figure 23. Timbre (Technique) Percentage per Section

50 Figure 24. Tessitura Percentage per Section

51 Figure 25. Average Dynamic per Section

52 Figure 26. Density per Section

53 Figure 27. Texture per Section

55 Figure 28. Number of Discontinuities

56 Figure 29. Arc Diagram

57 Figure 30. Chart of related Notated Sections

Appendices

63-64 Appendix 1. Map of Implement Changes

Vita

Gary Heaton-Smith holds a BA Cum Laude in percussion performance and an MA with Highest Honors in composition from California State University, Fresno. His percussion teachers have included Raynor Carroll, Theresa Dimond, and Matthew Darling; his composition teachers have included Kenneth Froelich and Benjamin Boone.

A percussionist with a versatile musical background, Mr. Heaton-Smith regularly performs music with unique personalities. In 2010, Mr. Smith won the California State University Fresno Concerto Competition for his performance of the trio concerto *The Glory and the Grandeur* by Russell Peck. In 2013, Mr. Smith premiered *Qui Vem* by Paulo Rios Filho with the Orpheus Chamber Ensemble—the leading contemporary ensemble in California's Central Valley. In the last two years, Mr. Heaton-Smith has performed frequently as a substitute percussionist with the Los Angeles Philharmonic. In 2015, Mr. Heaton-Smith worked directly with Kaija Saariaho and Jean-Baptiste Barrière on a revised work for solo multiple-percussion and electronics. This work was performed at the Beyond Music: Composition and Performance in the Age of Augmented Reality festival.

In 2012, Mr. Heaton-Smith's own work *Between These Walls* was selected for performance by the Fresno State Symphony Orchestra, the premiere of which was greeted with critical acclaim. In 2016, the Impetus Percussion Quartet performed his work North of Nysa at the Central California Day of Percussion. Many of his other works have been performed nationwide.

A sought after teacher, Mr. Heaton-Smith has lead groups to winning five national marching band and winter percussion championships. He has also served as front ensemble

coordinator for the Modesto Fever Drum and Bugle Corps and Sacramento Mandarins Drum and Bugle Corps. Currently, Mr. Heaton-Smith is on faculty at Antelope Valley College.

Chapter 1. Introduction

Helmut Lachenmann is often regarded as an antagonist in twentieth- and twenty-first-century music. The corrosiveness of his dialectic music has led respectable twentieth-century composers—such as Hans Werner Henze—to refer to Lachenmann's music as *musica negativa*. Lachenmann himself defines beauty as the "rejection of convention," [1] and has said that finding a listener who does not believe his work is music would be "wonderful."[2] Despite his reputation for discarding tradition and accepting the abnormal, it cannot be denied that Helmut Lachenmann has been an important figure in contemporary music since the 1960s.

The work of Lachenmann has been the source of much discussion, particularly concerning aesthetics and dialectic theory. There are currently numerous articles in the *Contemporary Music Review*,[3] a book of collected essays written by Lachenmann,[4] and countless journal articles concerning his music. However, very little has been written about how to interpret his work.

Lachenmann's solo multiple-percussion work, *Intérieur I,* was written in 1966 and premiered by Michael W. Ranta in Santa Fe, New Mexico in August, 1967. Christoph Caskel

[1] Helmut Lachenmann, "An Open Letter to Hans Werner Henze," trans. Jeffrey Stadelman, *Perspectives of New Music* 35 No. 2 (1997): 189.

[2] Paul Steenhuisen, "Interview with Helmut Lachenmann—Toronto, 2003," *Contemporary Music Review* 23 No. 3/4 (2004): 11.

[3] The three parts are Vol. 23, No. 3/4, and Vol. 24, No. 1 of *Contemporary Music Review.*

[4] Helmut Lachenmann and Josef Häusler, *Musik als existentielle Erfahrung: Schriften 1966-1995* (Wiesbaden: Breitkopf & Härtel, 1996).

gave the European premiere in September, 1967.[5] Since its premiere, the work has been marginalized in the percussion community. A search on Percussive Arts Society's performance program database yields no results of this piece being performed,[6] yet the infrequency of solo multiple-percussion literature in the 1960s meant that this work alone increased the repertoire by nearly twenty-percent.[7] The work's current unpopularity is surprising considering the significance of its creation in 1966.

One may speculate why this work is not being performed; I believe it is related to the challenges of interpretation. This work contains unique interpretive issues that if not addressed, could deter a performer from playing the work. Some of these issues are common to the multiple-percussion solo repertoire, while others are exclusive to Lachenmann's language. The intention of this paper is to discuss interpretive issues in *Intérieur I* as they relate to both the aesthetic of Lachenmann's music and technical demands specific to the piece. Through this paper, performers will hopefully be able to better understand Lachenmann's intent and thereby present a more effective performance.

The procedure for this study is as follows: first, to identify and define the interpretive issues that need to be addressed. Second, the issues can be resolved through a synthesis of information from sources about Lachenmann's music, associated aesthetics, and percussion

---

[5] Helmut Lachenmann, *Intérieur I* (Berlin: Ricordi, 1967), front material.

[6] "Composition Research," Accessed February 17, 2016, http://www.pas.org/resources/research/ResearchCompos.aspx

[7] *Intérieur I* is the seventh work written for solo multiple-percussion. The other works include John Cage's *27' 10.554*" (1956), Karlheinz Stockhausen's *Nr. 9 Zyklus* (1959), William Kraft's *French Suite* (1962), Morton Feldman's *King of Denmark* (1964), Rick Tagawa's *Inspiration Diabolique* (1965), and Charles Wuorinen's *Janissary Music (1965).*

performance. Finally, the resolution will be a comprehensive guide to successfully performing *Intérieur I*.

PERFORMANCE PROBLEMS OVERVIEW

Percussionists are faced with three types of performance problems. They are:

1. Instrument and implement selection, setup, and strategies for changing implements.
2. Performance strategies. This includes sticking, grip type, stroke type, and body position as they relate to dynamic realization (execution of written and implied dynamics), tempi realization (execution of written and implied tempi), and articulation realization (execution of written and implied articulations).
3. Organization. Effectively articulating the material that bind sections of music together, or distinguish sections of music from each other, can inform the audience of an underlying structure, enhancing the overall performance.

In each case, notation, composer style, and performance practice should be considered when making these decisions.

Chapter 2. Helmut Lachenmann

BIOGRAPHY OF HELMUT LACHENMANN

Helmut Lachenmann was born in Stuttgart, Germany on November 27, 1935. At age 11, Lachenmann joined the choir at a Protestant church where he sang music of the fifteenth and sixteenth centuries. He wrote his first composition soon after moving to Tuttlingen in 1948. Between 1955 and 1958, Lachenmann attended the *Musikhochschule Stuttgart*, studying piano with Jürgen Uhde and music theory with Johann Nepomuk David. He met his most influential teacher—Luigi Nono—at Darmstädter Ferienkurse in 1957. Lachenmann was Nono's student for two years after he moved to Venice in 1958.[8]

Lachenmann attended composition seminars with Frederick Rzewski and Karlheinz Stockhausen in Cologne between 1963 and 1964. It was in this time that he met percussionists Christoph Caskel and Michael W. Ranta who would have an enormous impact on his compositional output and influence his knowledge of percussion. Lachenmann worked in the electronic music studio at the University of Ghent in 1965, where he grew increasingly unimpressed with the *musique concréte* philosophy (stating that he felt that electronic music was imprisoned and limited by the electronic speaker); he set out to create a body of work that encompassed a similar principle, but with acoustic instruments. Lachenmann developed his *musique concréte instrumentale* style between 1965 and 1968.[9] Lachenmann describes

[8] Dan Albertson and Eberhard Hüppe, "Brief Biography," *Contemporary Music Review* 23 No. 3/4 (2004): 7.

[9] Dan Albertson and Eberhard Hüppe, "Brief Biography," *Contemporary Music Review* 23 No. 3/4 (2004): 7.

Intérieur I as his "Opus One" and the work that first truly embodied the *musique concréte instrumentale* style.[10]

Lachenmann has received many honors, including the Bach-Preis Hamburg (1972), an honorary doctorate from the Musikhochschule Hannover (2001), and the Royal Philharmonic Society Music Award for Chamber-Scale Composition (2004). Since 1972, Lachenmann has been a regular lecturer at Darmstadt and is highly sought after for his lectures on aesthetics and the philosophy of art.[11]

MUSIQUE CONCRÈTE INSTRUMENTALE

Lachenmann describes *musique concrète instrumentale* as

> music in which the sound events are chosen and organized so that the manner in which they are generated is at least as important as the resultant acoustic qualities themselves. Consequently those qualities, such as timbre, volume, etc., do not produce sounds for their own sake, but describe or denote the concrete situation: listening, you hear the conditions under which a sound- or noise-action is carried out, you hear what materials and energies are involved and what resistance is encountered.[12]

Lachenmann coined the term *musique concrète instrumentale* as both a reaction and an homage to Pierre Schaeffer's *musique concrète*. *Musique concrète* uses recordings of everyday noise to create a collage of sound. While *musique concrète* transformed noise or sound into a palpable mosaic, *musique concrète instrumentale* used the context of noise or

---

[10] La Folia. "Thinking About Helmut Lachenmann, with Recommended Recordings." Accessed on May 5, 2016. http://tinyurl.com/zo2u9se

[11] Dan Albertson and Eberhard Hüppe, "Brief Biography," *Contemporary Music Review* 23 No. 3/4 (2004): 7-8.

[12] "Musique Concrète Instrumentale." Accessed May 4, 2016. https://slought.org/resources/musique_concrete_instrumentale

sound as a primary mode of expression.[13] This is the first point of departure for *musique concrète instrumentale*. According to Lachenmann, the origin of noise—particularly as the listener understands it—is part of the listener's experience. Without knowing the origin of sound, a listener cannot understand the transformation of that sound.

The second point of departure from *musique concrète* is the use of acoustic instruments instead of electronic instruments. Lachenmann's argument is that orchestral instruments are overtly contextualized (e.g. a violin has sounded like a violin for 300-years, and therefore is expected to sound like a violin), so the manipulation of physical sound—as it relates to and challenges the listener's expectations—is a prime source of interest.

Lastly, the *musique concrète instrumentale* style suggests that all of the concrete elements that surround the production of the sound are part of the listener's experience, negating the idea that a piece of music can be heard on recording or without being able to see the performance with the same affect.[14] This is particularly important for percussionists, as the production of sound is so palpably physical.

---

[13] Paul Steenhuisen, "Interview with Helmut Lachenmann—Toronto, 2003," *Contemporary Music Review* 23 No. 3/4 (2004): 9-11.

[14] Ibid.

Chapter 3. Notation

Intérieur I is written so that the sheet music is to be placed on three music stands situated around the setup (left, middle, and right). Lachenmann wrote the piece out of order so the performer did not have to cut the music, but rather would place the music on the appropriate stand and follow the notated road map (indicated by section numbers and directions about which music stand to face once a section is over).[15] This makes the initial perusal of the score deceiving and difficult. The demanding choreography coupled with the unusual notation make the work challenging to read and play. However, the distinct choreography makes it easy to memorize. For this reason, I recommend that the performer cut the notation and reorder the pieces in performance order while it is being learned to best understand the flow of the work. If the performer does not intend to memorize the work, I recommend acquiring two copies of the piece: one for cutting and reordering as described above, and the second for placing on the three music stands for performance. Additionally, it is recommended that Notated Section 5 be rewritten to accommodate the rhythmic content. Extending each stem to intersect with the note head was helpful in reading the notation in this section.

Although traditional notation symbols are used, their meanings are not traditional. For example, the type of note head does not indicate duration, but mallet type (this is discussed further in the "Implement Setup and Strategies" section in "Chapter 4. Instrument and Implement Selection, Setup, and Performance Strategies"). Beams also do not indicate duration, but show a connection of successive notes. Feathered beams and beams with a diagonal slash in the upper left hand corner have their traditional meanings (feathered beams indicating an *accelerando* or

[15] Helmut Lachenmann, *Intérieur I* (Berlin: Ricordi, 1967), front material.

ritardando; the diagonal slash in the upper left hand corner of the beam indicates the gesture should be played rapidly, as if the gesture were a series of grace notes prior to the arrival of the next "main" note).[16]

There are four primary sound production methods notated throughout *Intérieur I*, each of which could be played with any implement. The sound methods are 1) normal stroke, 2) tremolo, 3) scratch tone, and 4) scratch tremolo. The normal stroke and tremolo are self-explanatory and are notated in the traditional way (three slashes for the tremolo). The scratch tone is achieved by rubbing a section of the implement across the body of the instrument and is notated with a thick black line extending horizontally from the note head. The scratch tremolo is similar to the scratch tone but one rapidly moves the implement back and forth. This is notated like the scratch tone, but with the three slashes across the beam.[17]

There are four secondary sound production methods notated. The first is a standard orchestral rim-shot (indicated with the text "rim-shot" next to the note). The second is a *glissando* indicated by *"gliss.*" either above or below the gesture. The third is a staccato articulation written over a note, indicating that the sound should be stopped (I recommend using a dead stroke for all of these notes). The last is a scratch tremolo executed on the rim of the timpano. This is notated with a thin line extending either up from the note head (to indicate that the performer should scratch the timpano rim closer to the far tip of the implement), or down (indicating that the performer should scratch the timpano rim closer to the base of the implement).[18]

---

[16] Ibid.

[17] Ibid.

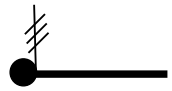
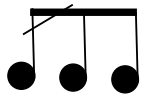
[18] Ibid.

There are four symbols to represent various rests. The symbols are not specifically defined in the score, but Lachenmann frequently places the number of seconds he wishes the pause to be held after each pause. The pauses are generally described in the key.[19] It is recommended that the short breath mark represents the time it would take to quickly take a gasp of air. The long breath should take as long as a slow breath of air. Many *fermati* are defined with temporal indications. Those that are not should last approximately four seconds. This length is my recommendation to indicate a difference between the long breath mark and *fermata*. Unmarked long *fermata*, the longest rest value, should last approximately eight seconds so as to differentiate between the two types of indications.

Suggestions for best executing these techniques are discussed in the "Performance Strategies" section in "Chapter 4. Instrument and Implement Selection, Setup, and Performance Strategies." Figure 1 charts each notation, their meaning, and a description.

[19] Ibid.

Figure 1. Notation in *Intérieur I* (the hard mallet note head is used, but it can appear with any note head).

Symbol	Name	Description
	Normal articulation	Strike the instrument normally
	Normal tremolo	Roll on the instrument normally
	Scratch tone	Rub the implement on the body of the instrument
	Scratch tremolo	Quickly rub the implement on the body of the instrument by alternating from left to right rapidly
rim-shot	Rim-shot	Simultaneously strike the head of the drum and rim with the same implement
gliss.	*Glissando*	Drag the implement across the instrument in the direction of the *glissando*
	Staccato articulation	Stop the sound
	Scratch tremolo on rim of *timpano*	Execute a scratch tremolo on the rim of *timpano*. The thin line up indicates to move the contact area closer to the furthest tip of the implement, while a thin line down indicates to execute the scratch tremolo near the base of the implement.
	Succession of related notes	Play the succession of notes in a similar fashion
	Rapid succession of related notes	Play the succession of notes rapidly and in a similar fashion
	Short breath mark	Rest for length of a fast gasp
	Long breath mark	Rest for length of a slow breath
	Fermata	Rest for approximately four seconds
	Long *fermata*	Rest for approximately eight seconds

Chapter 4. Instrument and Implement Selection, Setup, and Performance Strategies

I played this work on May 6, 2016. Although some suggestions are discussed in this paper that had not yet been discovered when the work was played, many of the following ideas were implemented into my performance.[20]

INSTRUMENT SELECTION AND SETUP

Selecting instruments for *Intérieur I* is the first step before the performer can begin learning the work. Lachenmann provides a specific list of instruments along with a diagram explaining how the instruments should be set up. Lachenmann's setup diagram is idiomatic and it is recommended that the performer follow Lachenmann's directions, although the specific spacing between instruments will be dependent on the instruments selected and the performer's preferences. My instrument selection suggestions are designed to embrace sound transformation and unique colorations when paired with other instruments, as consistent with the *musique concrète instrumentale* aesthetic.[21] Furthermore, the importance of physical gestures in Lachenmann's body of work should be a consideration before making any changes to his recommended setup because changing the setup would alter the physical gestures required to perform the work (Figure 2).[22]

---

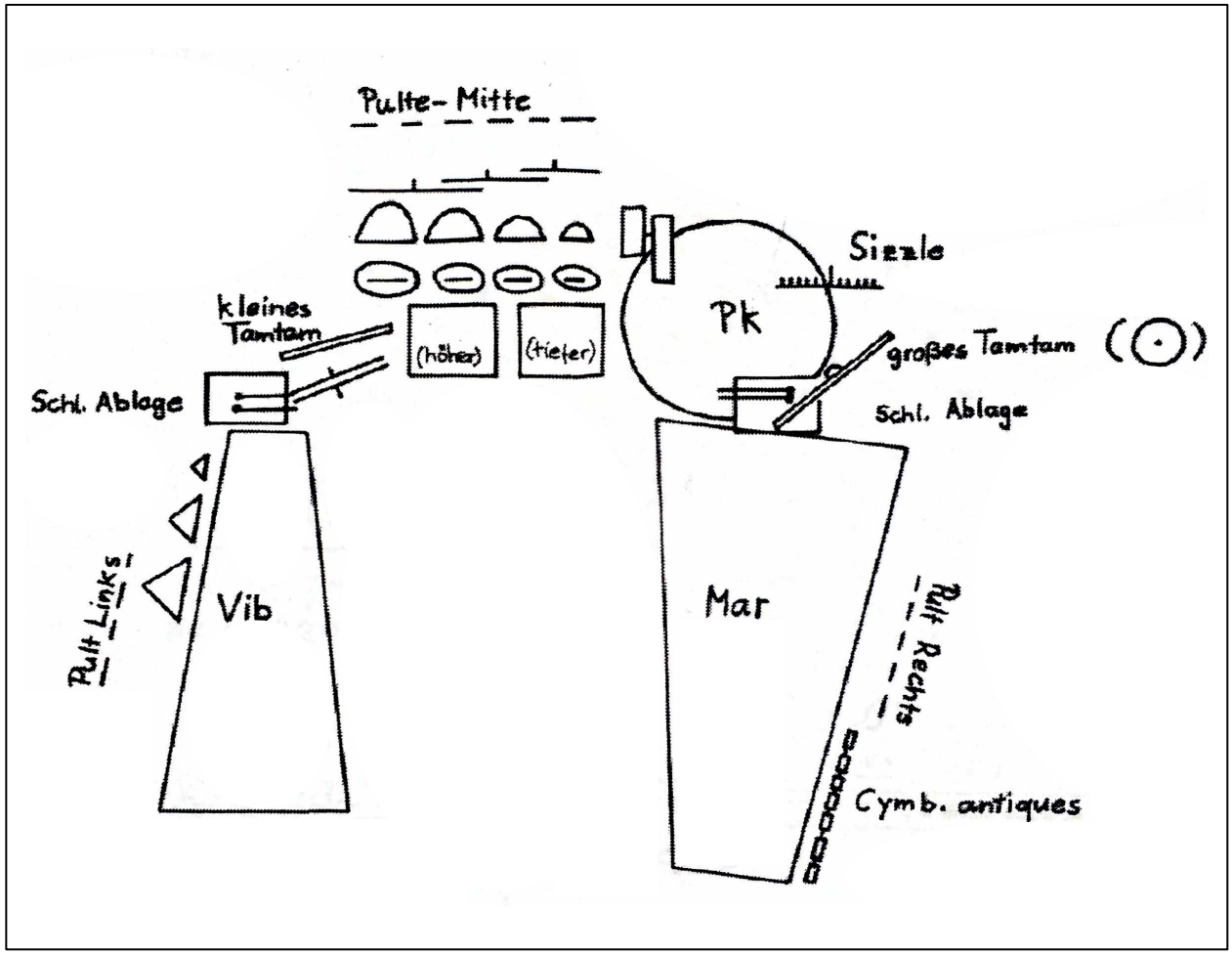
[20] Gary Heaton-Smith, "Helmut Lachenmann's Intérieur I," Filmed May 6, 2016, YouTube video, 14:50 duration, Posted June 30, 2016, https://youtu.be/efwjocJxJ74

[21] Paul Steenhuisen, "Interview with Helmut Lachenmann—Toronto, 2003," *Contemporary Music Review* 23 No. 3/4 (2004): 11.

[22] Tanja Orning, "*Pression*—a performance study," *Music Performance Research* 5 (2012): 14-15.

Fourteen different instrument types are represented in *Intérieur I*, encompassing a total of twenty-four different instruments. The work requires triangles (3), suspended cymbals (3), hi-hat, sizzle cymbal, small tam-tam, large tam-tam, almglocken (4), temple blocks (4), a pair of bongos, two tom-toms, a timpano, a vibraphone, a marimba, and a set of six antique cymbals (Figure 3).[23]

Figure 2. Recommended setup by Lachenmann printed in the score[24]



Lachenmann recommends that the triangles be of different sizes,[25] implying that a difference in relative pitch should exist. The dynamic range notated for triangle extends from

[23] Helmut Lachenmann, *Intérieur I* (Berlin: Ricordi, 1967), front material.

[24] Ibid.

pianississimo to *fortississimo*. A larger set of three triangles are recommended because the dynamic envelope on triangle is limited by its size, and executing a soft dynamic on a large triangle is more feasible than a loud dynamic on a small triangle.[26] The triangles are often played in tandem with vibraphone and should therefore emit a different or contrary color from the vibraphone to avoid confusing the vibraphone and triangle sounds. 6-, 8-, and 10-inch hand hammered bronze triangles work well because of the large relative size and broad overtone production.

Figure 3. Necessary instruments and recommendations

Symbol	Instrument	Quantity	Description in score	Recommendation
	Almglocken	4	Almglocken 3 is half-step below B4, almglocken 2 is half-step above D5	E, A#, D#, A
Cymb.	Antique Cymbals	6	Db7, Eb7, G7, A7, Bb7, C8	Db7, Eb7, G7, A7, Bb7, C8
	Hi-hat	1	Largest possible	14-inch
	Large tam-tam	1	Large	40-inch tam-tam
Mar.	Marimba	1	4.0 octave	4.0 octave with graduated bars
	Pair of bongos	1	[None]	Standard with skin heads
Pk.	Pedal timpano	1	B to F	26-inch balance-action; able to tune A2 to G3
Sizzle	Sizzle cymbal	1	[None]	18-inch crash/ride with equally spaced rivets
	Small tam-tam	1	Small	18-inch tam-tam
	Suspended cymbal	3	Differenct sizes (2 and 3 with long reverberation)	16-, 18-, and 20-inch suspended
	Temple blocks	4	Temple block 3 is half-step below Bb5	A5, B5, C#6, E6
	Tom-toms	2	Medium and deep	12- and 14-inch single headed
	Triangle	3	Different sizes	6-, 8-, and 10-inch hand hammered bronze
Vib.	Vibraphone	1	3.0 octave with motor	3.0 octave with motor

[25] Ibid.

[26] James Blades, *Percussion Instruments and Their History* (New York: Frederick A. Praeger, Inc., 1970), 389.

There are two ways to mount the triangles. The first is to suspend the triangle by its top corner so the bottom bar is parallel to the floor. The second is to suspend it by two corners, so the top bar is parallel to the floor. Two factors must be considered when deciding which way to mount the triangles: 1) how much articulation is required, and/or 2) how much stability is required. Mounting the triangle in one corner maximizes the resonance (and diminishes the articulation), but minimizes the triangle's stability so it is more likely to swing if hit with great force. Hanging the triangle by two corners dampens the sound slightly (maximizing the articulation, but diminishing the resonance) and increases the stability. It is recommended that the triangles be mounted in a single corner because multiple notes on triangle are not articulated in succession (little articulation required) and the added resonance will better match the decay of the vibraphone, with which it is often paired.

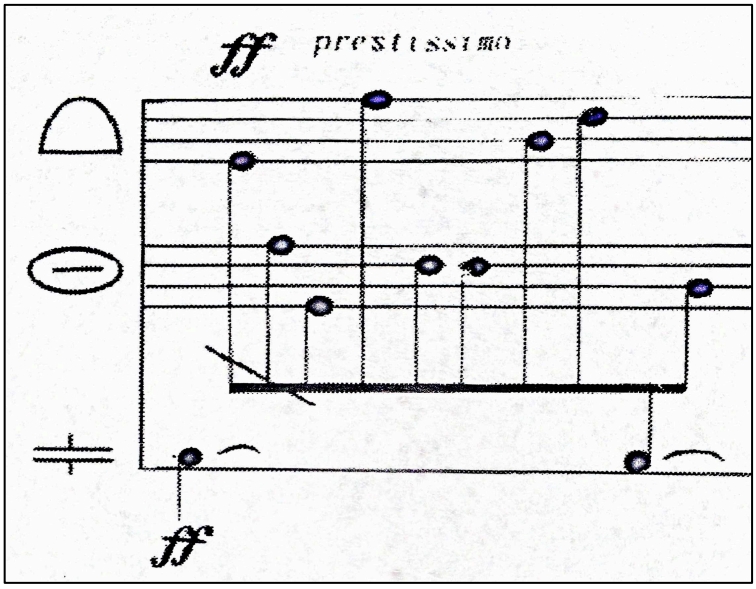
Three suspended cymbals of varying sizes allows for a distinction in sound between the three instruments. Lachenmann does not indicate a desired color for the cymbals, but does specify that Cymbal 2 and Cymbal 3 should have a long sustain.[27] Suspending the cymbals with a gooseneck stand maximizes sustain, but minimizes stability. The cymbals are often articulated in dense rhythmic passages, and therefore, stability should be prioritized over sustain. 16-, 18-, and 20-inch suspended cymbals mounted on straight cymbal stands are recommended.

There are several techniques employed on the hi-hat cymbals. First, the performer must play the instrument open and loud, creating a "sizzle" sound as the two plates lightly touch. Second, the performer must play the two hi-hat cymbals open, or without having them touch. This requires that the hi-hat cymbals be mounted with a large space between them to avoid contact. Third, the performer must crash the hi-hat cymbals together by stomping the foot pedal,

[27] Helmut Lachenmann, *Intérieur I* (Berlin: Ricordi, 1967), front material.

quickly having the cymbals make contact with each other, then releasing the pedal to ensure that the cymbals resonate freely. Last, Lachenmann's notation indicates that the hi-hat cymbals should rub together gently (sizzle) before closing (*tenuto* to *staccatissimo*), or should slowly open to grow from a *staccatissimo* sound to a sizzling *tenuto* sound. A thinner pair of hi-hat cymbals is recommended to ensure that the sizzle is easily activated as the hi-hat closes. Lachenmann recommends the hi-hat cymbals be the "largest possible."[28] However, balance between instrument must be considered. 15-inch hi-hat cymbals (largest pair commercially available) would overpower the almglocken in Section 15 (Figure 4), while a 13-inch (or smaller) pair would contradict Lachenmann's size recommendation.[29] 14-inch medium-thin to medium weight hi-hat cymbals are recommended to achieve the desired sound.

Figure 4. Notated Section 15



[28] Ibid.

[29] Ibid., 18.

There are four considerations applied to selecting a sizzle cymbal: 1) the articulation required between successive notes on the cymbal, 2) the sensitivity required to activate the rivets, 3) dynamic of sizzle cymbal articulations, and 4) relationship of sizzle cymbal to other instruments. Articulation between successive notes is not a consideration because the sizzle cymbal only articulates single strokes throughout *Intérieur I*. The sizzle cymbal is frequently struck at a *pianississimo* dynamic, requiring that the cymbal be responsive to soft dynamic strokes. With this in mind, the rivets on the sizzle cymbal should be equally spaced (as opposed to clustered) and the cymbal should be thin to maximize sensitivity and resonance. Lastly, the size of the cymbal is a consideration as it blends with the other instruments. An 18-inch crash with equally spaced rivets will blend with the color and relative pitches of the other suspended cymbals, will balance with the other instruments, and will have an optimized sensitivity and resonance.

A small tam-tam, with a higher relative pitch than the large tam-tam, ensures that their sounds are distinguishable. Similar to how the cymbals were selected, it is recommended that the small and large tam-tams have a similar color to optimize the blend between these two instruments. An 18-inch *chau gong* (traditional orchestral tam-tam) is recommended because it has a similar sound to the larger *chau gong* discussed below, but the small size provides a distinctive sound. Mounting the small tam-tam is problematic in this piece because it needs to be easily accessible for striking and scraping, but it also needs to have enough space between instruments to account for any ancillary motion that may occur after being struck. It is recommended that a non-square tam-tam stand (like an Adams ASGS) be used for this instrument to maximize both space and stability.[30]

[30] "Adams Gong Stand," Accessed June 8, 2016, http://alturl.com/8fmgy

A 40-inch *chau gong* mounted on a rectangular-stand, tall enough to mount the tam-tam over the timpano, is recommended. Although a 40-inch tam-tam could potentially emit excessive resonance and volume, the lower relative pitch as compared to the small tam-tam allows for two distinct sounds. The potential for excessive resonance and volume is a consideration when deciding how to strike the instrument and should therefore be slightly underplayed in the loud dynamic passages.

The notational key does not indicate the four almglocken pitches. However, Lachenmann provides evidence of his preferred pitch selection later in the work. In Section 14A, Lachenmann indicates that a D5 vibraphone note should be a half step lower than Almglocken 2 (making Almglocken 2 D#5). Likewise, it is indicated that a B4 vibraphone note should be a half step higher than Almglocken 3 (making Almglocken 3 A#4). [31] Given the reoccurring interval class content of a minor-second and a diminished-fifth, selecting A5 for Almglocken 1 and E4 for Almglocken 4 is an appropriate choice.

Lachenmann indicates that the suspended cymbals, almglocken, temple blocks, and tom-toms should be physically located above one another in steps.[32] This description suggests that the almglocken be mounted on a rack to allow for vertical overlap. Furthermore, mounting them on a rack will maximize the resonance and best blend the instrument with the vibraphone, with which it is frequently paired.

Likewise, the temple blocks do not have a pitch designation. Lachenmann indicates that a Bb5 vibraphone note should be a half step lower than Temple Block 3 (making Temple Block

[31] Ibid., 17.

[32] Ibid., front material.

Three B5).[33] Although the other pitches are not specified, modern manufactured temple blocks are typically tuned to an anhemitonic pentatonic scale,[34] making the collection of temple blocks A5, B5, C#6, E6 or G#5, B5, C#6, D#6. Similar to the almglocken, the temple blocks should be mounted on a stand to vertically overlap the tom-toms and maximize resonance.

Lachenmann does not provide any specification of size, pitch, or sound regarding the pair of bongos used in *Intérieur I*. Commercially manufactured bongos are standardized in size (7- and 8.5-inches), but the type of heads (plastic or skin) is a consideration. Plastic heads provide slightly more resonance and a less focused pitch, while skin heads provide more articulation and a more focused pitch. The bongos are frequently used in rhythmically dense passages, so articulation (skin heads) should be a priority. The bongos are also used occasionally to activate the timpano head before performing *glissandi*, and therefore should be mounted so the bongos are vertically overlapping the timpano. The bongos are notated unconventionally, with the pitch of the lower bongo higher on the staff, and that of the higher bongo lower on the staff. This discrepancy is meant to reflect the physical orientation of the bongos (and tom-toms) in the setup, not the pitch, associating a notational ascent with a motion from left to right (as it is on a keyboard instrument).[35]

The two tom-toms required serve as a middle voice in *Intérieur I*, bridging the low and high relative pitched instruments. There are three considerations when selecting whether to use single- or double-headed tom-toms: 1) the clarity of pitch required, 2) the depth desired, and 3) the articulation needed. Single-headed tom-toms have a clear pitch, little depth, and maximum

---

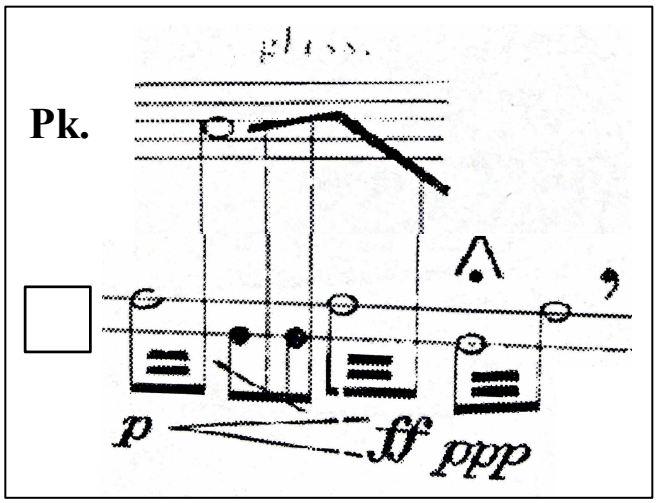
[33] Ibid., 16.

[34] "Blocks Temple Blocks—Set of 5," Accessed May 3, 2016, http://alturl.com/3t67n

[35] Helmut Lachenmann, *Intérieur I* (Berlin: Ricordi, 1967), front material.

articulation. Double-headed tom-toms have a less clear pitch center, maximum depth, and diminished articulation. Lachenmann describes the two tom-toms as "middle and deep," either suggesting that depth is a consideration, or using the word *tief* to indicate a lower sound than the *mittel* tom-tom.[36] The tom-toms are doubled with many instruments, most frequently with the timpano, the layered instruments (cymbals, almglocken, and temple blocks), and the marimba. Perhaps the most profound use of the tom-toms however, is in Section 11A when they are doubled with the timpano (Figure 5).[37] In this section, the low tom-tom and timpano (tuned to C#3) are rolled together before *glissandi* are executed on the timpano. It is recommended that the low tom-tom and timpano match in color and pitch to emphasize the *glissandi*. It is suggested that the high tom-tom is tuned a minor third above C#3 to allow the two tom-tom sounds to be distinguishable. 12- and 14-inch single-headed tom-toms relatively tuned to C#3 and E3 would provide the desired effect.

Figure 5. Low tom-tom and timpano duet in Notated Section 11A (edited by the author for clarity)



[36] Ibid.

[37] Ibid., 13.

The timpano selected should have a range of A2 to G3, although the description on the cover page erroneously states that the timpano needs a range of B2 to F3. This extensive range is extreme for most timpani however, and if the drum selected cannot be tuned to span that range, it should be tuned to get A2 (which is articulated five times throughout the work), and not G3 (which is only articulated twice). A 26-inch drum can be tuned to best accommodate this range. It is recommended that a balance action drum be used to make the *glissandi* easier (and more quiet) to execute.

A vibraphone should be selected which has a working motor and moveable (or extended) pedal. There are many locations in *Intérieur I* in which the percussionist must hold the pedal down while playing other instruments. This is particularly true in Sections 12B and 13 when the pedal is held down for the entirety of these sections.[38] It is recommended that a strapped, saddle sandbag be placed on the vibraphone pedal with one half of the saddle on the pedal and one half of the saddle on the floor (strap perpendicular to the pedal) during these sections (Figure 6). When the instrument needs to vibrate freely, the sand bag will hold the pedal down. When pedaling resumes, the performer can use his foot to lift the bag by the strap and remove it from the pedal, stopping the sound. This is especially important if a modern vibraphone is used. A modern instrument has wider bars than earlier models (ca. 1966) and therefore a greater spacing between the pedal and the other instruments in the setup.[39] A motor is required throughout *Intérieur I*. The percussionist should be cautious that when the motor is not in use, that the fans are resting perpendicular to the bars to allow the maximum amount of sound as possible. Lastly,

[38] Ibid., 13-17.

[39] Hal Trommer, "The Vibraphone, Vibraharp, and Vibes," in *Encyclopedia of Percussion*, ed. John Beck (New York: Garland Publishing, Inc., 1995), 340.

the instrument should have the longest resonance possible and a balanced decay, like that found on mid-century Deagan vibraharps. This is particularly important in Section 6B, when it is notated to mute G#4 after seven additional articulations in a section marked *sempre calmo* (indicating that the seven articulations should not be rushed).[40]

Figure 6. Strapped saddle sandbag on vibraphone pedal

The range of the *marimbaphon* required to perform *Intérieur I* is four-octaves (C3 to C7). Considering Lachenmann's use of the *musique concrète instrumentale* style, the physical gestures required to play the piece inform the listener's experience.[41] It is recommended that an instrument with similar spacing to that required—therefore requiring similar gestures—is used. A second consideration is whether or not to use graduated bars. Non-graduated bars project less

[40] Helmut Lachenmann, *Intérieur I* (Berlin: Ricordi, 1967), 8.

[41] Tanja Orning, "*Pression*—a performance study," *Music Performance Research* 5 (2012): 14-15.

that graduated bars,[42] but non-graduated bars require less space making certain gestures more easily executed. To better match the projection of the vibraphone, it is recommended that a marimba with graduated bars be used. Lastly, it is recommended that a marimba with rosewood bars would best accommodate the highly contrasting dynamics and varying colors. If at all possible, the marimba bars should have a natural, grainy finish (as opposed to a polished finish on Yamaha marimbas) to allow for the scraping and rubbing effects to be heard. The polish finish minimizes the friction between the mallets and the bar while executing scratch techniques, minimizing the volume produced.

Lachenmann requires Db7, Eb7, G7, A7, Bb7, and C8 antique cymbals (crotales).[43] While the crotale pitches are specifically indicated, it is recommended that a stand that holds only six crotales, and therefore takes up less room, be used to help improve accuracy, particularly in Section 11B, when the percussionist must transition from marimba to crotales seamlessly.[44]

IMPLEMENT SELECTION

Lachenmann uses seven different implements in *Intérieur I*, including soft mallets, hard mallets, drumsticks (or rattan/birch shafts), a metal needle, brushes, hands, and a tam-tam beater.[45] The first five implements listed are notated in the score with a specific note head, as

[42] Stewart W Gerber, "Karlheinz Stockhausen's Solo Percussion Music: A Comprehensive Study" (DMA diss., University of Cincinnati, 2003).

[43] Helmut Lachenmann, *Intérieur I* (Berlin: Ricordi, 1967), front material.

[44] Helmut Lachenmann, *Intérieur I* (Berlin: Ricordi, 1967), 14.

[45] Ibid., front material.

discussed in “Chapter 3. Notation.” The use of hands or a tam-tam beater is written into the score by text. Each implement is used on nearly every instrument, demanding that the mallets create a balanced sound on each and every instrument (Figure 7).

There are two approaches to selecting implements for a multiple-percussion solo. First, the percussionist may choose implements that sound best for each musical passage. In this approach, the percussionist may use several different “hard mallets” specific to each individual instruments. For example, a performer would choose a hard marimba mallet in a section that uses marimba, a hard timpani mallet in a section that uses timpani, or a hard vibraphone mallet in a section that uses vibraphone. The problem with this approach is that the sound created on each instrument when “hard mallet” is indicated is not consistent throughout the piece, potentially leaving the work disjointed. The second approach is to select a single “hard mallet” that works—even with a slightly compromised sound—for every section. With this approach, a soft plastic mallet may sound overly hard on marimba and overly soft on crotales, but the “hard mallet” sound is consistent through the entirety of the work. Selecting mallets is a personal decision, however, it is recommended that the latter approach be taken (with several notated exceptions) to help unify the timbre created with specific mallets (see “Chapter 5. Organization” for information on the importance of implement timbre).

Figure 7. Table of implements and suggestions

Symbol	Notehead	Implement	Quantity	Description in score	Recommendation	Exceptions: Section
		Soft mallets	4	Hard vibraphone, wool wound timpani mallet	Heavy core, soft marimba	Soft, light timpani: timpani roll in Section 6C Soft, light timpani: Section 11A
		Hard mallets	2	From horn	Hard rubber	Hard vibraphone: Section 10C
		Drumsticks (rattan/birch shafts)	2	Drumstick	Rattan shafts	None
		Metal needle	1	Long	8mm knitting needle	None
		Brushes	1	Jazz brush	Retractable brush	None
Hands, *Fingerspiel*	[no special notehead]	Hands	2	[None]	Finger tip for isolated notes	Four finger nails: Section 7 ("*mit Hand kreisend")* Thumbnail: page 10 ("Hand gliss.")
Tamtam-Schläelweg		Tam-tam beater	1	[None]	Large, heavy, and soft yarn	None

Soft mallets (*weiche Schlägel: harte vibraphon-Schlägel, wool wound-bis Pauken-Schlägel*) are indicated with an open note head.[46] These mallets must be hard enough to create an appropriate sound on temple blocks at *pianissimo*, but be soft enough to allow for a smooth roll on suspended cymbal and timpani. A hard, heavy core marimba mallet with a large, soft wrap (alpaca-blend) achieves both effects. In Section 11A, Lachenmann explicitly writes that a timpani mallet should be used.[47] It is recommended that the performer change back to the marimba mallet at the end of Section 11B to ensure that the temple blocks can be heard later in Section 12B.

An exception to the marimba mallet should be made in Section 6C where Lachenmann writes a descending timpano *glissando* beginning on D3. He writes "*tremolo kaum merklich unterbrechen"* or that the tremolo should interrupt imperceptibly (Figure 8).[48] A soft, light, and

[46] Ibid.

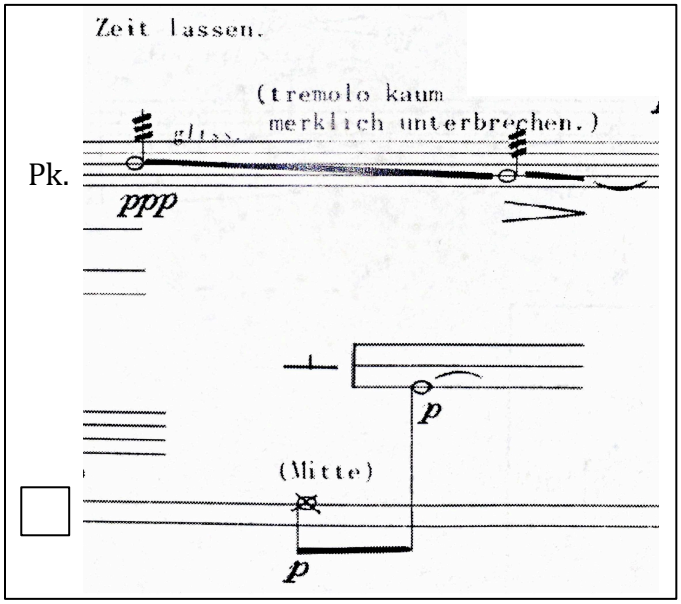
[47] Ibid., 13.

[48] Ibid., 7.

large timpani mallet works well on this roll because the marimba mallet is too heavy to perform a one-handed roll in a way that is both smooth and soft.

Lachenmann indicates *trommestärke, oder stiel* (drumstick or shaft) with a closed square note head.[49] Throughout the work, the performer is required to use the shafts of the hard/soft mallets to accommodate for quick mallet changes between hard/soft mallets and drumstick. To best unify the sound, it is recommended that the percussionist acquire a thin drumstick that matches the sound created when using the shaft of the hard/soft mallets. Using a rattan or birch shaft (without a head, like a timbale stick or dowel) provides the correct sound. A rattan or birch shaft (with a head could suffice, but the odd weight distribution is problematic when trying to execute rolls as found in Section 8.[50]

Figure 8. Excerpt from Notated Section 6C in which a timpani mallet should be used



[49] Ibid., front material.

[50] Ibid., 10.

The metal needle (*lange metall-nadel*) is notated with an open square note head.[51] Although a triangle beater would serve as an appropriate substitution for a large metal needle, it may not be long enough to provide the distance and leverage needed to play *mezzo forte* on almglocken and the double stops between almglocken and suspended cymbal during Section 2A.[52] It is recommended that a 14-inch long, 8-millimeter diameter knitting needle be used.

Jazzbesen (jazz brush) is notated with three diverging lines extending off of the stem.[53] This implement is only used once in Section 9 to scratch the head of the timpano.[54] To project enough sound over the *fortississimo* scratch tone on tom-tom, a retractable brush should be used with the bristles extended half way. The shorter length of the brush makes the wires firmer, creating more resistance against the timpano head.

Listing "hand" or "fingerspiel" next to the note that should be struck with the hand indicates that hands should be used.[55] All single notes to be played with the hand are self explanatory, but the performer is recommended to use only the tip of one finger to best reflect the written dynamic and balance with the surrounding instruments (all of which are notated at a *piano* or lesser dynamic). In Section 7, Lachanmann writes "*mit hand kreisend,*" indicating that the performer should execute a scratch tone on the timpano head with his hands (Figure 9).[56] It is recommended that the performer use four fingernails on a rough surfaced head (like a Remo

[51] Ibid., front material.

[52] Ibid., 2.

[53] Ibid., front material.

[54] Ibid., 11.

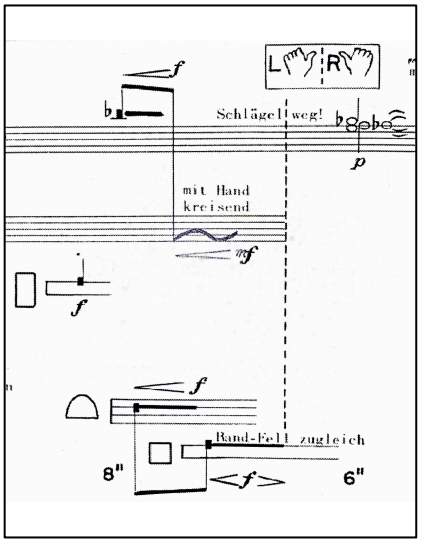
[55] Ibid., front material.

[56] Ibid., 9.

Renaissance head) on this gesture to produce the most sound and best execute an effective *crescendo*.[57] On page ten, the performer must execute a "hand *gliss.*" at *fortissimo* on marimba. Using the thumbnail will produce the volume needed to reflect the written dynamic.

Likewise, Lachenmann defines *fingerspiel* as the fast, improvised running of bare fingers on the marimba. To change the dynamic, it is recommended that the performer practice adding fingers (*crescendo*) and removing fingers (*decrescendo*) while executing a *fingerspiel* passage. In Sections 7 and 11B, one hand must drop out of the *fingerspiel* gesture to pick up an implement while the other hand continues to execute the *fingerspiel* passage (Figure 10).[58, 59] It is recommended that the performer move slowly into the implement change, slowing the *fingerspiel* motion in subsequent gestures so one hand can take over the gesture without disrupting the rhythmic density.

Figure 9. Scratch tone on timpano



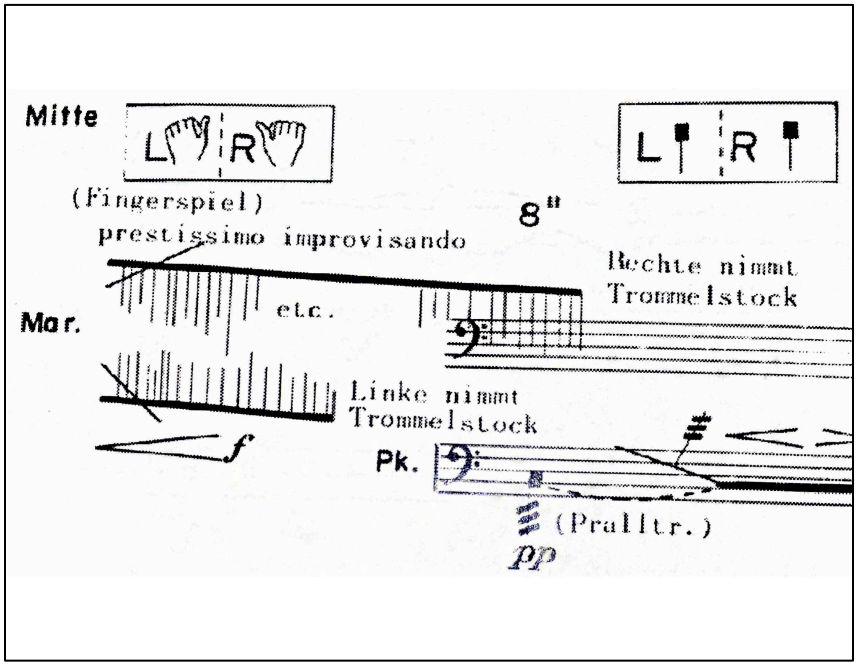
[57] "Remo Renaissance Hazy Timpani Heads—Low Profile Steel Insert," Accessed June 8, 2016, http://alturl.com/z84zd

[58] Ibid., 10.

[59] Ibid., 14.

Only one note in Section 6C is notated to be played with the tam-tam mallet.[60] The note for large tam-tam is at a *piano* dynamic. It is doubled by a timpano *glissando*, written to go up, before the performer plays a second *glissando* to the timpano's lowest note. A large, soft, and heavy yarn tam-tam mallet will provide the lowest fundamental and darkest overtones to best blend with the timpano sound.

Figure 10. Transition from *fingerspiel* to a different implement in Notated Section 7



IMPLEMENT SETUP AND STRATEGIES

Lachenmann shows two stick trays in his setup diagram.[61] As discussed, preserving the indicated setup is important because the physical gestures—according to Lachenmann—play an

[60] Ibid., 7.

[61] Ibid., front material.

important role in the listener's experience. Using only two stick trays aligns with Lachenmann's vision of how implements are changed between sections.

Lachenmann draws symbols throughout the work that indicates which hand should be holding which mallet and how (sometimes the hard/soft mallets are held upside down so they can be used as both a drum stick and a hard/soft mallet). Before discussing the mechanics of implement changes, there are several suggested amendments and additions to Lachenmann's directions that should be addressed. In Sections 2A[62] and 9,[63] the performer must articulate both hi-hat plates simultaneously. To perform this technique, the performer must hold two soft mallets in the left hand. To articulate both hi-hat plates simultaneously, the mallets could either vertically straddle the hi-hat and strike both plates simultaneously by closing the mallet interval, or perform the first two notes of a mandolin roll.[64, 65] Although the plates will not be articulated simultaneously with the latter approach, the articulations are unnoticeably close and allows for more control over the dynamic of the articulation (this technique is executed at both *piano* and *forte* dynamics).

While it is recommended that most cymbal rolls be played with one hand, there are several rolls that require more attention. In Section 10A, it is recommended that the performer hold two soft mallets in the right hand to perform a mandolin roll on several of the cymbal rolls. The first roll should be played as a mandolin roll to allow for a smooth *pianissimo*. It is

---

[62] Ibid., 2.

[63] Ibid., 11.

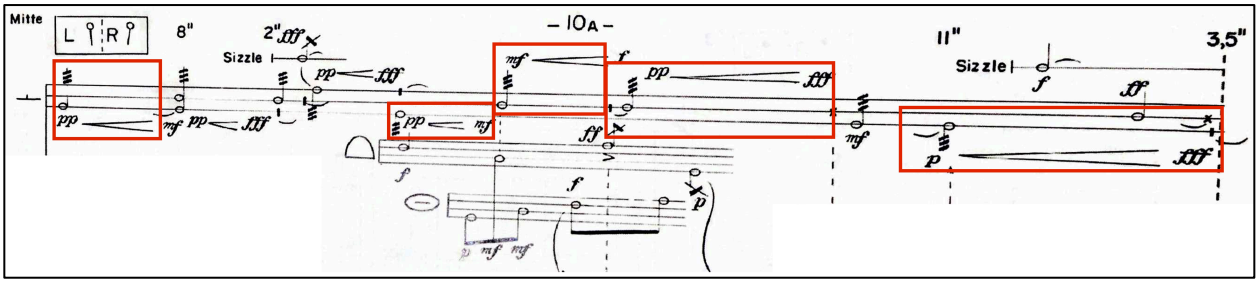
[64] A mandolin roll is when two implements in one hand straddle the instrument to be rolled (one implement above, one implement below) and the hand makes a repeated upward-downward motion, striking the instrument with the inside of the implements.

[65] Gary Cook, *Teaching Percussion* (Belmont, CA: Thomson Schirmer, 2006), 119.

suggested that the fifth roll be played as a mandolin roll after Almglocken 2 has been articulated. This roll can seamlessly transition to the roll on Cymbal 2 (sixth roll in the section), if the performer slides the mandolin roll to the right edge of the cymbal before the transition, to allow the bottom mallet to strike both Cymbal 2 and Cymbal 3. The sixth, seventh, and ninth roll should also be played as mandolin rolls to allow for smooth *crescendi* and free the left hand to articulate the other instruments (Figure 11).[66] The roll on Cymbal 1 in Section 13 should also be played as a mandolin roll to best control the *pianississimo* dynamic (with short hairpin *crescendi* and *decrescendi*) (Figure 12).[67]

There are several hard mallet indications in Section 10B that are not represented by Lachenmann's suggestions. It is recommended that the player place hard rubber mallets in the Number One and Number Four mallet positions[68] to accommodate the B3 and Bb5 vibraphone notes. The two inner soft mallets can then be dropped after the *accelerando* gesture.

Figure 11. Notated Section 10A with indicated mandolin rolls (boxed in red)



In Notated Section 11A, Lachenmann indicates that two notes on high tom-tom should be played with hard mallets. However, he does not indicate that hard mallets should be used during

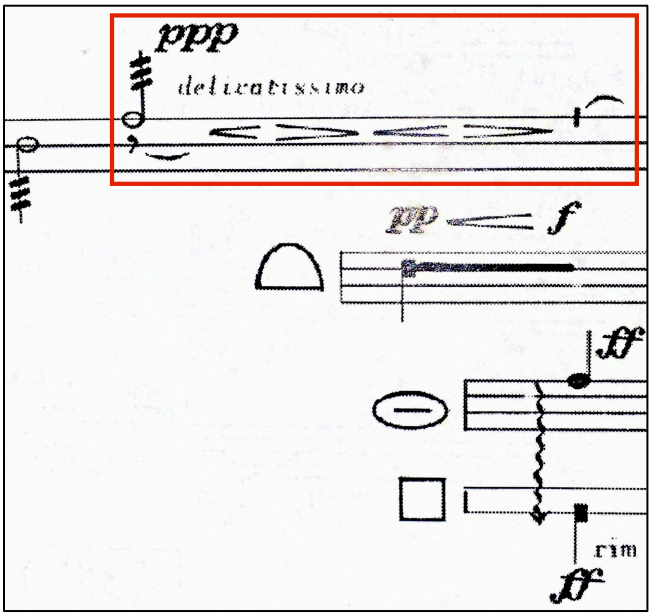
[66] Helmut Lachenmann, *Intérieur I* (Berlin: Ricordi, 1967), 12.

[67] Ibid., 16.

[68] For the purposes of this project, the mallets are labeled from one to four, left to right, when holding four mallets.

this section (this same discrepancy is seen in the hi-hat notes discussed above).[69] The solution to this discrepancy will be discussed later in this section, but no adjustment to Lachenmann's mallet suggestion is needed.

Figure 12. Notated Section 13 with indicated mandolin roll (boxed in red)



The performer is asked to play D3 on marimba with both a soft and hard mallet while also performing a rim-shot on low tom-tom in Section 12B. However, Lachenmann only asks the performer to hold two mallets in this section.[70] It is suggested that the performer hold a soft mallet in the Number Three mallet position through this section to properly articulate that note.

Beginning on the *fortissimo* triangle note in Notated Section 13,[71] it is recommended that the performer hold a soft mallet, drumstick, hard mallet, and soft mallet in the Number One, Two, Three, and Four mallet positions (respectively). By having the drumstick in the Number

[69] Ibid., 13.

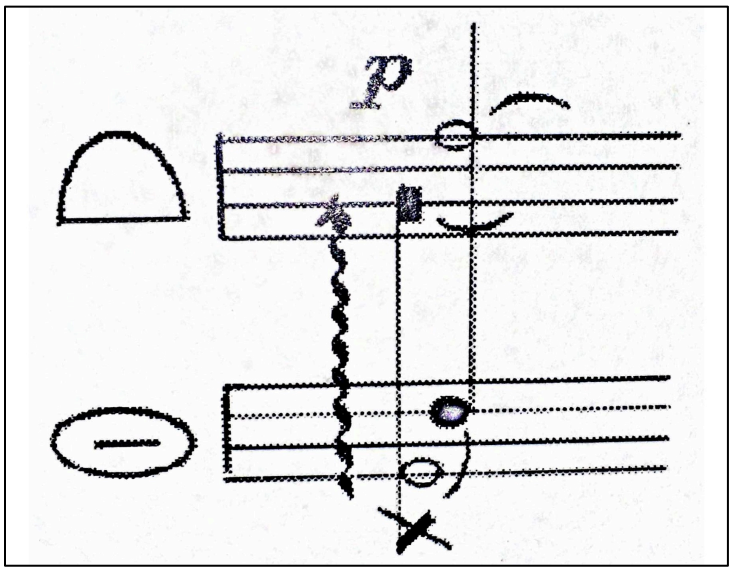
[70] Ibid.

[71] Helmut Lachenmann, *Intérieur I* (Berlin: Ricordi, 1967), 16.

Two mallet position, the performer can execute the *fortissimo* scratch tremolo on the high tom-tom with clarity. Furthermore, the *arpeggiated* Temple Block 4, Temple Block 1, Almglocken 3, and Almglocken 1 passage can be executed at a speed that matches the speed of the previous *arpeggiated* passages. Using the shaft of left hand's soft mallet on Almglocken 3 (as indicated) would leave the *arpeggio* at an unrecognizably slow pace (Figure 13).

Lachenmann does not provide any information about where the mallets should be placed or how they should be picked up or changed throughout the work. However, he does indicate on the cover page that implement changes should be as unnoticeable as possible and should be practiced as an integral part of the piece.[72] Therefore, decisions about how and where to change implements should consider Lachenmann's directions and be as imperceptible as possible. To best articulate directions in this section, the stick tray on the left of the diagram will be referred to as the "Vibraphone Stick Tray" and the stick tray on the right of the diagram will be referred to as the "Marimba Stick Tray."

Figure 13. *Arpeggiated* gesture



[72] Ibid., front material.

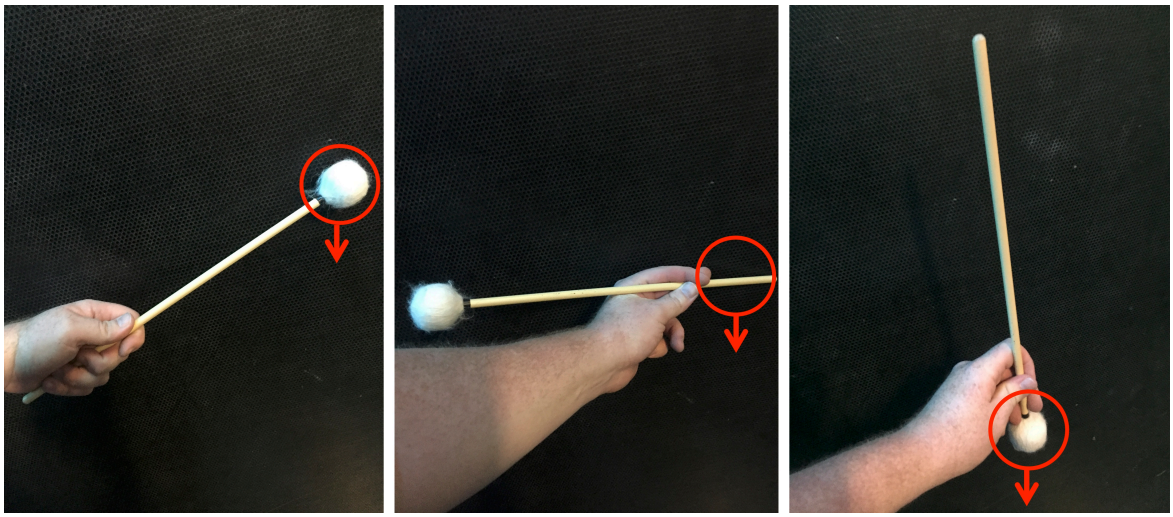
There are four techniques that should be used to best conceal implement changes, including 1) changing during resonance (RES), 2) changing before or after silence (SIL), 3) changing while shifting (SHF), and 4) changing one hand while the other hand is playing (HND). Appendix 2 provides an overview of the implement changes throughout *Intérieur I*.

IMPLEMENT TECHNIQUES

As discussed above, there are places in *Intérieur I* where the percussionist must invert the hard/soft mallets so the shaft can be used as a drumstick while also using the hard/soft mallets. A specific technique should be employed to maximize the quality of sound during these instances.

While executing this technique, the mallets will strike instruments in three different ways. The first way is to strike in the typical fashion (Position 1). The second way is to strike with the section of mallet that is in the hand by fully extending the wrist and reaching the part of mallet that was initially in the hand away from the performer, essentially flipping the implement (Position 2). To best unify the sound of these two positions, the fulcrum should be between the thumb and index fingers for both strokes. The third way is to strike the instrument with the section of mallet that is in the hand by bringing the section down to the instrument vertically (as if the performer is slamming his fist on a table) (Position 3). This is the most difficult technique to execute because the top of the mallet head or shaft strikes the instrument, while the mallet head or shaft typically strikes the instrument on their sides. This creates a thinner sound because less surface area of the mallet is striking the instrument. The performer should therefore play these notes at a slightly louder dynamic to help mitigate this problem (Figure 14).

Figure 14. From left to right, Position One, Two, and Three (red circle indicates the striking surface, arrow indicates the direction of the stroke)



PERFORMANCE STRATEGIES

Glissandi are a common element in Lachenmann's music.[73] There are five types of *glissandi* written in *Intérieur I,* encompassing 59 notated *glissandi*. The types include 1) primary timpano *glissando*, 2) secondary timpano *glissando*, 3) marimba *glissando*, 4) vibraphone *glissando,* and 5) percussion *glissando*.

The primary timpano *glissandi* are executed by striking the head of the timpano and smoothly moving the pedal either forward or backward to change the pitch of the drum while it resonates. This is a standard technique, but it is recommended that the *glissandi* begin soon after the stroke to ensure that the change of pitch can be heard.

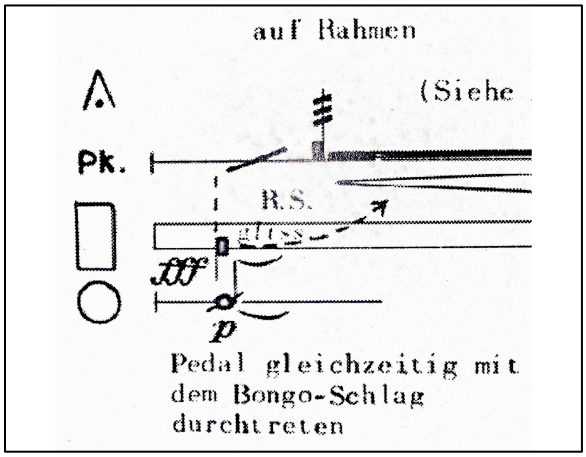
A secondary timpano *glissando* is when an instrument (other than the timpano) is struck and the timpani pedal is moved either forward or backward to change the pitch using the

[73] Christian Dimpker, *Extended Notation: The Depiction of the Unconventional* (Münster: LIT Verlag, 2013), 11-12.

sympathetic vibrations of the second instrument on the timpani head. This is commonly activated by an intense bongo articulation (because the bongos are set up over the timpano) as in Notated Sections 8, 11B, and 14A (Figure 15). Another type of secondary timpano *glissando* is presented in Notated Sections 7, 8, 9, and 14A.[74] In this technique, the rattan/birch shaft executes a scratch tremolo on the rim of the timpano, while the pedal is tilted either forward or backward. The vibration of the rim activates the sympathetic vibration of the timpano head, producing a faint sound.

Producing a marimba *glissando* is a self-explanatory and standard performance technique. Whenever possible, the performer should execute the *glissandi* by reaching across the body with the opposite hand and pulling the hand across and away from the body. To properly execute a *glissando* on the accidental keys, the performer should use a light touch and very fast stroke to avoid the mallet being caught in the resonators.[75] These same principles can be applied to the vibraphone *glissandi*.

Figure 15. Gesture in Notated Section 14A in which a timpano *glissando* is executed after a bongo note

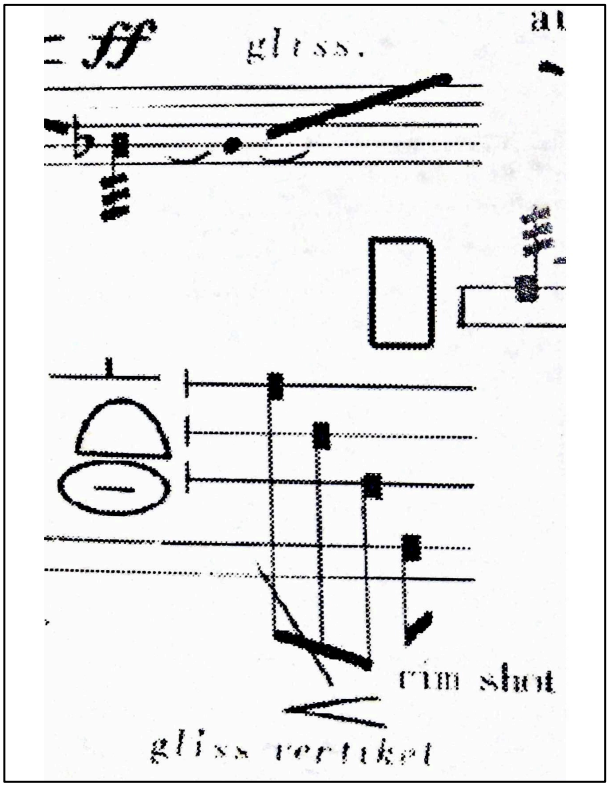


[74] Helmut Lachenmann, *Intérieur I* (Berlin: Ricordi, 1967), 9-17.

[75] Gary Cook, *Teaching Percussion* (Belmont, CA: Thomson Schirmer, 2006), 118.

Lachenmann writes *glissandi* between several percussion instruments in Notated Sections 5, 8, and 11A.[76] The *glissando* in Notated Section 8 is played with one hand because the other hand is executing a scratch tone. The *glissando* should be performed by dragging the rattan/birch shaft from an initial stroke on cymbal towards the player's body. By accelerating the motion, the notated *crescendo* can be heard (Figure 16).

Figure 16. Percussion *glissando* in Notated Section 8

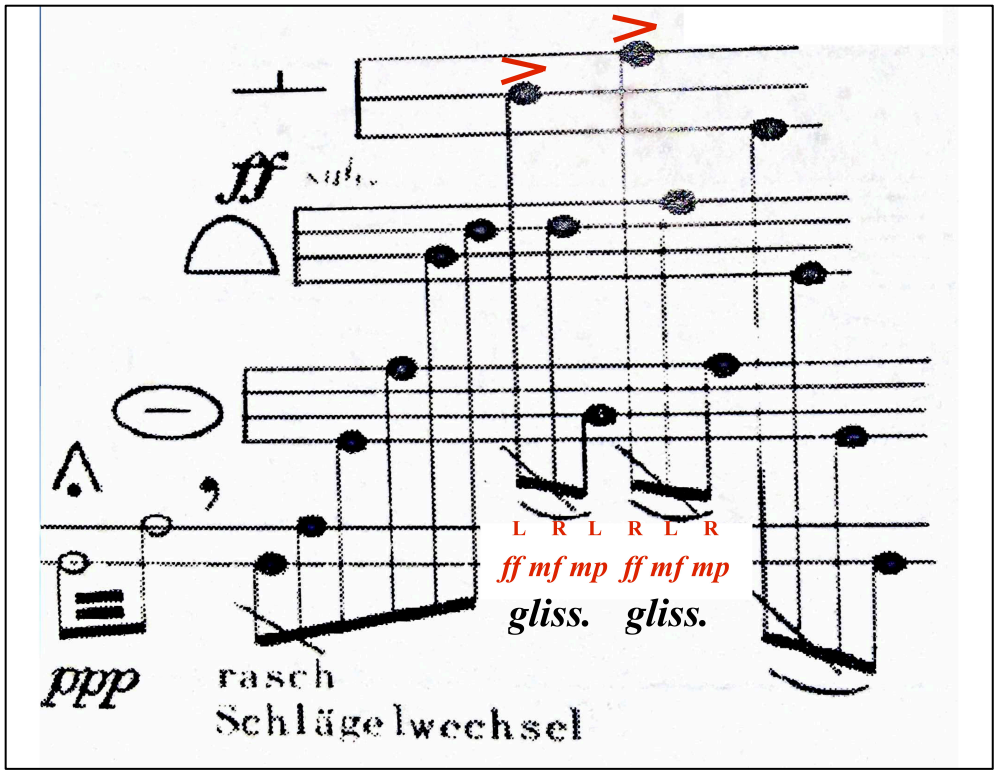


In Notated Sections 5 and 11A, it is recommended that the *glissandi* be played with two hands to help maintain energy and intensity through the passage. However, it is suggested that the performer phrase each *glissandi* to create an appropriate sound. Each *glissandi* should begin with an articulated *accent* and should *diminuendo* as it reaches its conclusion. The speed of the gestures should be faster than the surrounding material to mimic the sound in Notated Section 8.

[76] Helmut Lachenmann, *Intérieur I* (Berlin: Ricordi, 1967), 6-13.

Lastly, after the initial accent the stroke for each gesture should be *legato* to help capture the fluidity of the *glissandi*. Figure 17 displays the *glissandi* in Notated Section 11A with suggested stickings, articulations, and dynamics.[77]

Figure 17. *Glissandi* in Notated Section 11A with suggested sticking and dynamics



As discussed in "Chapter 3. Notation," Lachenmann uses beams to denote a succession of connected notes.[78] These notes should be equally spaced and struck with a similar stroke to demonstrate their connection. Lachenmann notates a diagonal slash through the beam to indicate that the succession of notes should be played rapidly.[79] There are three ways in which this notation could be played. First, the performer could play each gesture as quickly as possible,

[77] Ibid.

[78] Ibid., front material.

[79] Ibid.

taking a slight pause between gestures, if there is more than one group notated in succession. Second, the performer could play each gesture as quickly as possible and connect each successive group. Lastly, the performer could gently alter the *tempo* of each gesture (by using *poco accelerandi* or *ritardandi*), separating each successive gesture slightly, but starting each gesture at the same *tempo* that the last gesture started. The latter recommendation allows for each group to be heard distinctly, but the slight pause between gestures does not diminish the energy (as is possible in the first option). However, it is important to note that Lachenmann uses feathered beams to notate *accelerandi* and *ritardandi*, so the use of temporal manipulation in none-feathered beam gestures should be slight and of contrast to the notated temporal manipulations.

Executing the scratch tone is self-explanatory. It is recommended that a figure-eight pattern be used on marimba to help minimize the space being scratched on the bars. The space required with a circular pattern could cause the mallet to shift off of the indicated bar and on to an adjacent bar, creating an undesired sound. There are many successive and overlapping scratch tones in Notated Section 14B. To help control the mallet from striking adjacent keys, it is suggested that the player scratch the marimba keys in a straight line only away from the performer, being careful not to use so much pressure that a pitch bend occurs.

Much like the scratch tone, the scratch tremolo is simple. To execute the scratch tremolo, the player should scratch the desired instrument quickly from left to right or back and forth. To minimize the space of the scratch and avoid having the mallet slide to an adjacent instrument, it is recommended that the performer scratch parallel to the longest axis of the face being scratched (e.g. the marimba keys would be scratched perpendicular to the frame and executed by having the performer turn his body so it is facing parallel to the length of the instrument).

Chapter 5. Organization

A common challenge to effectively interpreting music is analyzing how the work is organized. Specifically, music in the solo multiple-percussion medium usually lacks the functional harmony that dictates the structure of tonal works. Other parameters need to be used to define sections and overall form in this medium.

Discussing structure in Lachenmann's work is a challenge in itself. In 1962, Lachenmann wrote that he,

> [developed a] musical thinking in which structure was not the means to expressive ends, but instead expressivity, as a pre-existing factor already inherent in the means, became the point of departure for structural adventures.[80]

Furthermore, Lachenmann describes the creation of *Intérieur I* as the "multilayered process of experimenting with superimposed arrangements."[81] These processes are challenging to precisely identify, analyze, and interpret as performers, but sections can be determined and organized by identifying discontinuities of certain musical parameters.

There are nine parameters that can be used to describe the structure and flow of *Intérieur I*: density, instrument timbre, implement timbre, technique timbre, tessitura, dynamics, texture, time, and qualitative parameters (Figure 18). Density is the measurement of articulations per second, as calculated by counting articulations and dividing said articulations by the notated number of seconds in which the gesture is to be performed. Instrument Timbre is identified using instrument types (wood, metal, skin), and resonance (resonant, non-resonant). The choices of

[80] Helmut Lachenmann, *Echo Andante* (Wiesbaden: Breitkopf & Härtel, 1962), front material.

[81] Yvonne Drynda, *Col Legno*, WWE 20511, liner notes.

Implement Timbre are soft mallet, hard mallet, drumstick (birch/rattan shaft), metal needle, brush, hand, and tam-tam mallet. Technique Timbre — the way in which the instrument is played — includes the use of a normal stroke, tremolo, scratch tone, scratch tremolo, rim shot, *glissando*, and notes with a *staccato* articulation. Tessitura is defined as low, medium, and high. Any Dynamic difference is considered a discontinuity, so long as it is not in the middle of a *crescendo* or *decrescendo*. Lastly, Texture is determined per section and is defined as the way the different parts of music are interlaced with one another.[82] Texture is exclusively described in *Intérieur I* as either homorhythmic (monophonic or homophonic), polyphonic (multiple instruments being articulated simultaneously and independent of another), or alternating between homorhythmic and polyphonic within a section. A discontinuity occurs when one of these first seven parameters change.

[82] Lefkowitz, David. "The Emancipation of Texture." In *The Analysis of Post-Tonal Music: A Parametric Approach.* Ch.17, pp. 390-433.

Figure 18. Parameter, characteristic, and code (if applicable)

Parameter	Characteristic	Code
Density (DEN)	Numerical Value (articulations/second)	DEN
Instrument Timbre (INS)	Wood Resonant	WR
	Metal Resonant	MR
	Skin Resonant	SR
	Wood Non-resonant	WN
	Metal Non-resonant	MN
	Skin Non-resonant	SN
Implement Timbre (IMP)	Soft mallet	SM
	Hard mallet	HM
	Drumstick (birch/rattan shaft)	DS
	Metal needle	ND
	Brush	JB
	Hand	HN
	Tam-tam mallet	TM
Technique Timbre (TEC)	Stroke	STR
	Tremolo	TRE
	Scratch Tone	SCR
	Scratch Tremolo	SCT
	Rim Shot	RIM
	Gliss	GLI
	Staccato	STA
Tessitura (TES)	High	H
	Medium	M
	Low	L
Dynamics (DYN)	pianississississimo	pppp
	pianississimo	ppp
	pianissimo	pp
	piano	p
	mezzo piano	mp
	mezzo forte	mf
	forte	f
	fortissimo	ff
	fortississimo	fff
Texture (TEX)	Homorhythmic	HO
	Homorhythmic/Polyphonic	HO/PO
	Polyphonic	PO
Time (TEM)	Use of fermata on a note or between notes	[NA]
Qualitative (QUA)	Expression marking	(Express)
	Timbre characteristic functions differently	(Function)
	Change of rhythmic notation	(Rhythm)

Time contributes to discontinuity when space separates notes (through *fermata* either on a note or during silence). Qualitative Parameters include relevant but latent content that creates discontinuity (like expression markings, an obvious shift in the function of a parameter characteristic, or the blatant alteration of the musical fabric not covered by the other parameters).

There are two ways in which discontinuities can be used. Primary Discontinuities are

calculated by identifying changes in parameters on a note-by-note basis.[83] The more parameters generating discontinuities occurring between notes, the more the music disconnects at that point. A section break occurs where there are five or more Primary Discontinuities. Density and texture are difficult to calculate as a Primary Discontinuity because the identification of a density/texture discontinuity (a change in density of more than 0.5 articulations per second or a change in texture) could define a section break, but the establishment of the section break could change the density/texture. To account for this paradox, density and texture are only calculated when there are three or more discontinuities at a point; if a density/texture discontinuity is present and the number of discontinuities rises to five or more, then a section break is noted. This process was repeated multiple times to ensure that density/texture and section breaks were handled consistently through the entire work. With all of this said, there are eighteen Sections in *Intérieur I*, as described in Figure 19.

[83] Discontinuities cannot occur in a beamed succession of notes because Lachenmann asks that this notation be performed with musical continuity.

Figure 19. Description of Sections

Section	Description	# of Primary Discontinuities Concluding the Section	Primary Discontinuities Concluding the Section
1	Notated Section 1	5	IMP, TEC, TES, TEM, QUA (function)
2	Beginning of Notated Section 2A to end of Notated Section 4	6	INS, TES, DYN, TEX, TEM, QUA (rhythm)
3	Beginning of Notated Section 5 to end of Notated Section 6A	5	DEN, INS, DYN, TEX, QUA (express)
4	Beginning of Notated Section 6B to end of Notated Section 6C	7	DEN, INS, IMP, TEC, TES, DYN, QUA (express)
5	Beginning of Notated Section 7 to the dashed line before the three-note marimba chord played with the hands at the end of Page 9	5	INS, IMP, TEC, TES, DYN
6	Three-note marimba chord played with the hands at the end of Page 9 to the end of the first stanza on Page 10.	5	INS, IMP, TEC, TES, DYN
7	Second stanza of Page 10	5	INS, TEC, TES, DYN, TEM
8	Beginning of Notated Section 9 to dashed line before the *fortissimo* small tam-tam note at the end of Page 8	6	DEN, IMP, TEC, TES, DYN, QUA (express)
9	Beginning of Notated Section 10C to mallet change at the end of Page 12	5	DEN, IMP, TEC, DYN, TEM
10	*Pianissimo* timpani roll at the end of Page 12 to the end of Notated Section 11A	6	IMP, TEC, TES, DYN, TEM, QUA (express)
11	Beginning of Notated Section 11B to *piano* sizzle cymbal articulation at the end of Page 14	5	DEN, INS, IMP, DYN, TEX
12	Piano sizzle cymbal articulation at the end of Page 14 to end of Notated Section 12B	8	INS, IMP, TEC, TES, DYN, TEX, TEM, QUA (express)
13	Notated Section 13	6	INS, IMP, TES, DYN, TEX, TEM
14	First stanza of Page 17	7	INS, IMP, TES, DYN, TEX, TEM, QUA (express)
15	Beginning of second stanza on Page 17 to *Calmando* expression marking	7	DEN, IMP, TEC, TES, TEX, TEM, QUA (express)
16	*Calmando* expression marking to the end of Notated Section 14A	7	INS, IMP, TEC, TES, DYN, TEM, QUA (express)
17	Notated Section 14B	6	INS, TEC, DYN, TEX, TEM, QUA (express)
18	Notated Section 15	[NA]	[NA]

Secondary Discontinuities are calculated by counting parameters within each section (as defined by the Primary Discontinuities) to identify which parameter characteristics are used most frequently (called “Primary Characteristics”) (Figure 20). The characteristics of timbre (instrument, implement, and technique) and tessitura are measured as a fraction of how many articulations of a single characteristic exist in relation to how many articulations exist in the section (expressed as a percentage). Changes in the Primary Characteristics of these parameters are considered Secondary Discontinuities (Figure 21) (Figure 22) (Figure 23) (Figure 24). To calculate Secondary Discontinuities in dynamics, each dynamic is counted within a section. This count was multiplied by a set number (1 for *pppp*, 2 for *ppp*, 3 for *pp*, 4 for *p*, 5 for *mp*, 6 for *mf*, 7 for *f*, 8 for *ff*, and 9 for *fff*), and then divided by the number of dynamic markings to produce an

average dynamic of a section. The average dynamic was graphed and in locations on the graph where the slope of the line changes directions, a discontinuity occurs (Figure 25). Density is graphed similarly to dynamics, establishing discontinuities where the slope of the line changes directions (Figure 26). Because texture was measured to establish Primary Discontinuities in the same way that it would be measured to establish Secondary Discontinuities, it is not evaluated for Secondary Discontinuities (Figure 27).

Figure 20. Quantification of Parameter Characteristics

	Sections and Quantified Parameters																		
Section	1	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18		
Number of Primary Discontinuities between Sections	[NA]	5	6	5	7	5	6	5	5	7	5	9	6	8	8	7	6	[NA]	
Length (seconds)	28	128	62	37	40	27	16	114	10	13	40	36	36	28	7	6	30	10	
Length Percentage	4.19	19.16	9.28	5.54	5.99	4.04	2.40	17.07	1.50	1.95	5.99	5.39	5.39	4.19	1.05	0.90	4.49	1.50	
Density (DEN)	2.3	1.8	2.2	1.6	0.9	0.6	2.1	1.0	9.1	5.5	4.6	1.8	0.9	0.8	1.4	0.8	1.1	1.4	
Density Difference	[NA]	0.5	0.4	0.6	0.7	0.3	1.5	8.1	3.6	0.8	2.8	0.9	0.1	0.6	0.6	0.2	0.3	[NA]	
Timbre (Instrument)	WR	49	3	11	2	11	7	2	0	3	3	174	25	0	7	5	0	26	0
	MR	4	178	40	27	7	2	14	91	36	21	10	23	23	8	5	3	6	9
	SR	12	3	9	16	14	4	14	12	6	34	0	3	3	6	0	1	0	9
	WN	0	14	54	0	0	0	1	6	34	5	0	6	5	1	0	0	0	5
	MN	0	31	17	13	0	0	0	3	12	0	0	8	0	0	0	0	0	0
	SN	0	0	5	2	3	2	2	1	0	8	1	0	1	0	0	1	0	0
Timbre (Instrument) Percentage	WR	75	1	8	3	31	47	6	0	3	4	94	38	0	32	50	0	81	0
	MR	6	78	29	45	20	13	42	81	40	30	5	35	72	17	50	60	19	64
	SR	18	1	7	27	40	27	42	11	7	48	0	5	9	11	0	20	0	0
	WN	0	6	40	0	0	0	3	5	37	7	0	9	16	2	0	0	0	36
	MN	0	14	13	22	0	0	0	3	13	0	0	12	0	0	0	0	0	0
	SN	0	0	4	3	9	13	6	1	0	11	1	0	3	0	0	20	0	0
Primary Instrument Timbre (INS)		WR (75)	MR (78)	WN (40)	MR (45)	SR (40)	WR (47)	MR/SR (42)	MR (81)	MR (40)	SR (48)	WR (94)	WR (38)	MR (72)	WR (32)	MR/MR (50)	MR (60)	WR (81)	MR (64)
Timbre (Implement) Percentage	SM	49	175	118	53	0	0	0	81	0	48	1	24	21	20	1	1	0	0
	HM	16	5	53	0	0	0	0	4	91	23	180	36	5	0	8	1	32	11
	DS	0	22	0	6	26	9	32	26	0	0	1	5	6	2	0	3	0	3
	ND	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	JB	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
	HN	0	12	0	0	9	6	1	0	0	2	4	0	0	0	1	0	0	0
	TM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Timbre (Implement) Percentage	SM	75	76	69	88	0	0	0	72	0	66	1	37	66	91	10	20	0	0
	HM	25	2	31	0	0	0	0	4	100	32	97	55	16	0	80	20	100	79
	DS	0	10	0	10	74	60	97	23	0	0	1	8	19	9	0	60	0	21
	ND	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	JB	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
	HN	0	5	0	0	26	40	3	0	0	3	2	0	0	0	10	0	0	0
	TM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 20 (cont). Quantification of Parameter Characteristics

Sections and Quantified Parameters (cont.)

Section		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Number of Primary Discontinuities between Sections		[NA]	5	6	5	7	5	6	5	6	5	7	5	9	6	8	8	7	6 [NA]
Primary Implement		SM (75)	SM (76)	SM (69)	SM (88)	DS (74)	DS (60)	DS (97)	SM (72)	HM (100)	SM (48)	HM (97)	HM (55)	SM (66)	SM (91)	HM (80)	DS (60)	HM (100)	HM (79)
Timbre (Technique)	STR	50	168	139	39	12	8	12	63	79	58	156	53	22	20	8	3	6	13
	TRE	0	18	10	4	3	3	11	24	8	8	14	2	5	0	0	0	1	0
	SCR	0	7	0	1	16	2	0	3	0	0	0	0	3	0	0	1	25	0
	SCT	4	2	0	1	0	1	1	14	0	0	1	0	2	0	0	1	0	0
	RIM	0	0	0	1	1	0	1	1	0	0	0	2	0	0	0	0	0	0
	GLI	6	3	3	3	3	1	9	7	1	5	15	1	0	1	2	1	0	1
	STA	5	31	19	13	1	0	0	2	0	0	0	7	0	1	0	0	0	0
Timbre (Technique) Percentage	STR	77	73	81	63	33	53	35	55	90	82	84	82	69	91	80	50	19	93
	TRE	0	8	6	6	8	20	32	21	9	11	8	3	16	0	0	0	3	0
	SCR	0	3	0	2	44	13	0	3	0	0	0	0	9	0	0	17	78	0
	SCT	6	1	0	2	0	7	3	12	0	0	1	0	6	0	0	17	0	0
	RIM	0	0	0	2	3	0	3	1	0	0	0	3	0	0	0	0	0	0
	GLI	9	1	2	5	8	7	26	6	1	7	8	2	0	5	20	17	0	7
	STA	8	14	11	21	3	0	0	2	0	0	0	11	0	5	0	0	0	0
Primary Technique Timbre (TEC)		STR (77)	STR (73)	STR (81)	STR (63)	SCR (44)	STR (53)	STR (35)	STR (55)	STR (90)	STR (82)	STR (84)	STR (82)	STR (69)	STR (91)	STR (80)	STR (50)	SCR (78)	STR (93)
Tessitura	H	2	42	17	9	3	2	2	20	12	0	76	19	4	1	7	1	9	0
	M	7	161	112	31	13	8	25	72	75	59	104	35	25	13	3	3	22	14
	L	56	26	7	20	19	5	6	21	4	12	6	11	3	8	0	1	1	0
Tessitura Percentage	H	3	18	13	15	9	13	6	18	13	0	41	29	13	5	70	20	28	0
	M	11	70	82	52	37	53	76	64	82	83	56	54	78	59	30	60	69	100
	L	86	11	5	33	54	33	18	19	4	17	3	17	9	36	0	20	3	0
Primary Instrument Tessitura (TES)		L (86)	M (70)	M (82)	M (52)	L (54)	M (53)	M (76)	M (64)	M (82)	M (83)	M (56)	M (54)	M (78)	M (59)	H (70)	M (60)	M (69)	M (100)
Dynamics	pppp (1)	0	9	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	ppp (2)	9	25	7	10	7	0	2	8	0	2	0	3	9	5	0	0	0	1
	pp (3)	25	51	17	11	5	8	3	11	0	2	2	5	11	12	1	2	1	0
	p (4)	18	64	31	25	8	12	3	7	0	3	11	21	12	5	2	3	30	2
	mp (5)	2	12	4	8	1	0	2	0	0	0	0	6	0	0	0	0	0	0
	mf (6)	3	24	3	2	3	0	1	11	0	0	1	2	0	0	0	0	1	0
	f (7)	1	14	24	3	8	1	10	28	7	0	16	12	5	0	6	2	0	0
	ff (8)	3	28	50	0	1	0	13	53	84	64	80	14	5	0	1	1	0	12
	fff (9)	0	4	0	0	0	0	9	7	0	0	71	2	0	0	0	1	1	0
Average Dynamic (DYN)		3.67	4.46	5.85	3.83	4.48	3.76	6.88	6.61	7.92	7.52	8.09	5.55	4.07	3.00	6.10	5.44	4.18	7.07
Texture	HO	0	3	1	0	0	0	0	1	1	1	1	1	1	1	0	1	0	1
	HO/PO	0	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
	PO	1	2	0	2	1	0	0	2	0	0	0	1	1	0	1	0	1	0
Primary Texture (TEX)		PO	HO	HO	PO	PO	HO/PO	HO/PO	PO	HO	HO	HO	HO/PO	HO/PO	HO	PO	HO	PO	HO

Figure 21. Timbre (Instrument) Percentage per Section

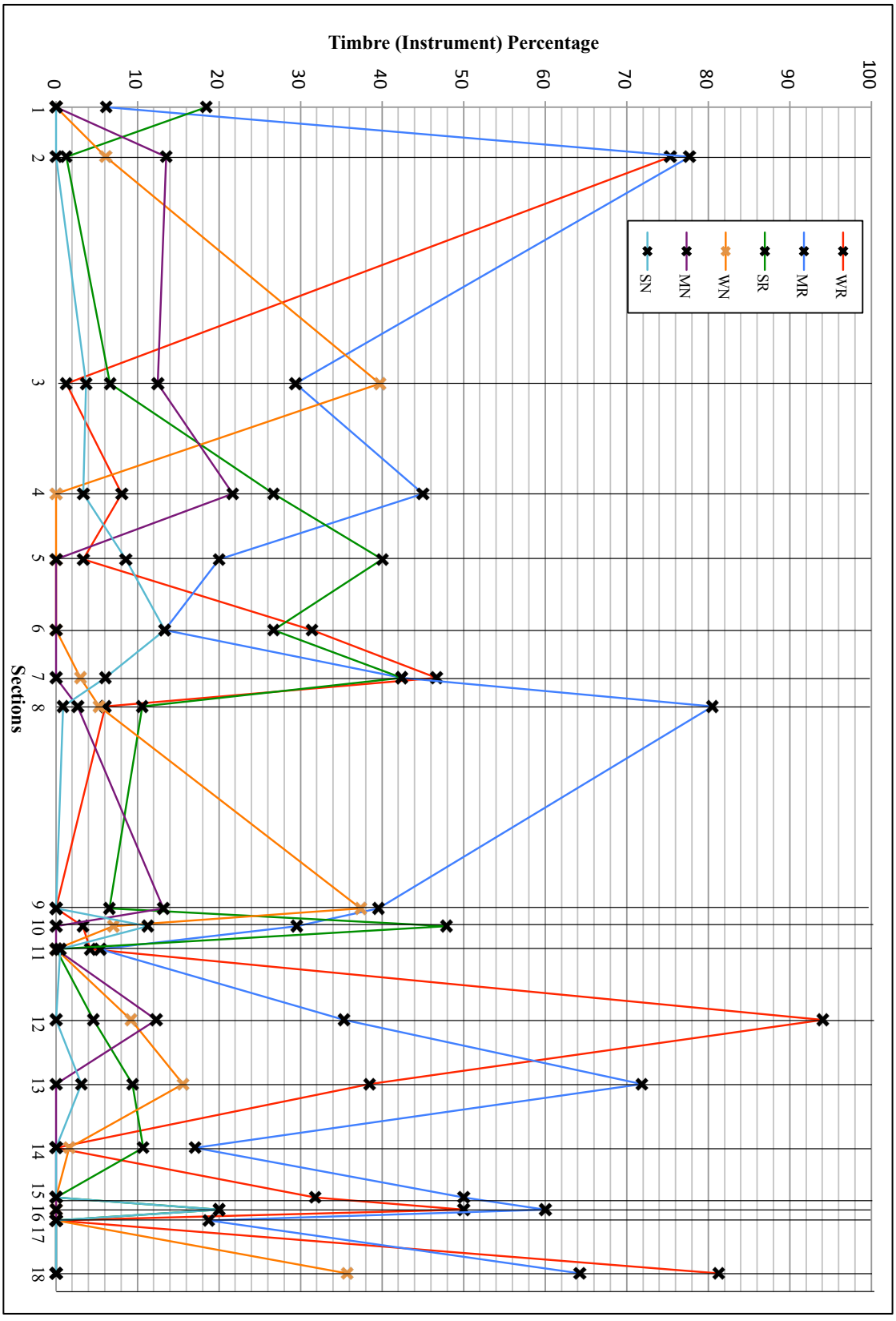


Figure 22. Timbre (Implement) Percentage per Section

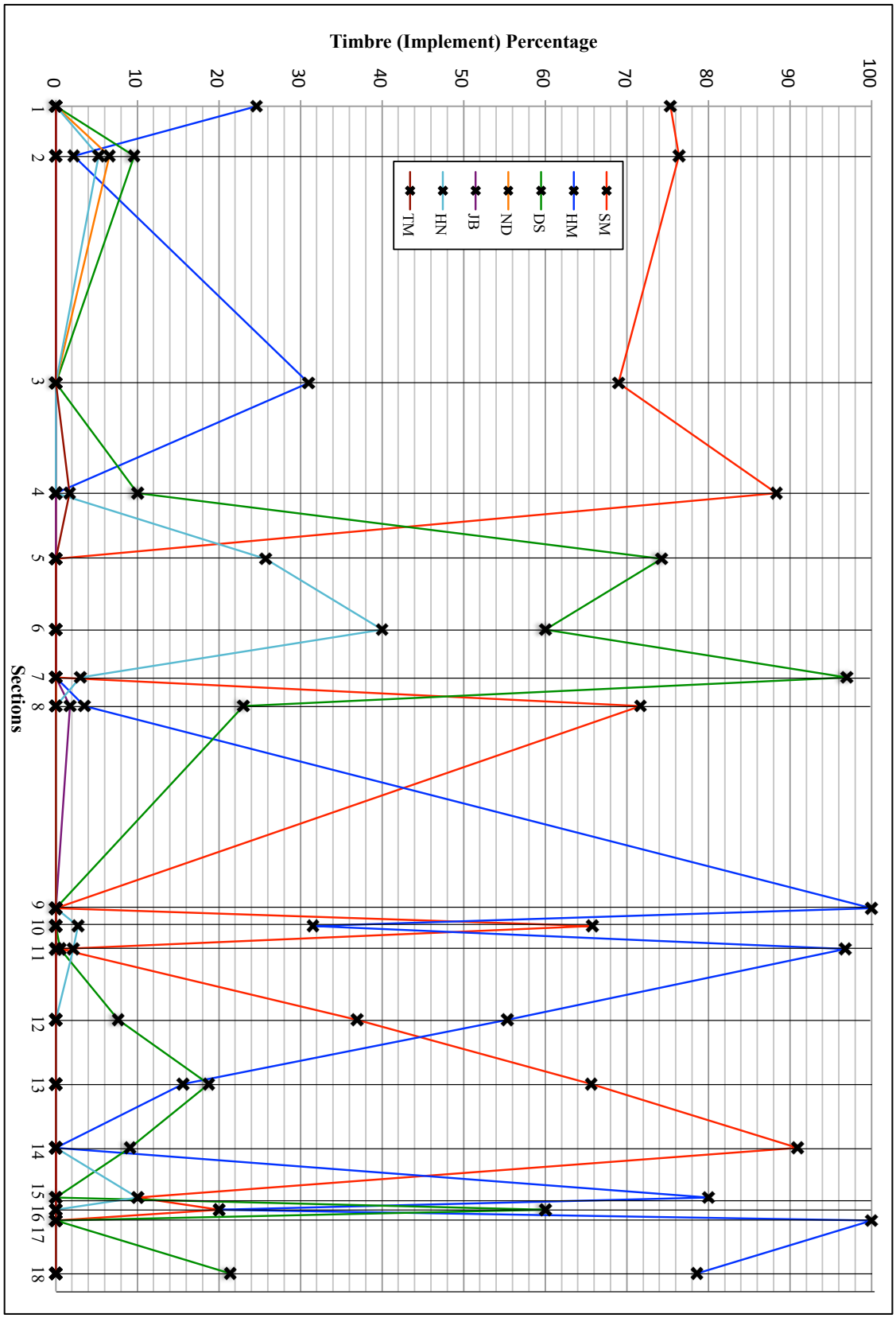


Figure 23. Timbre (Technique) Percentage per Section

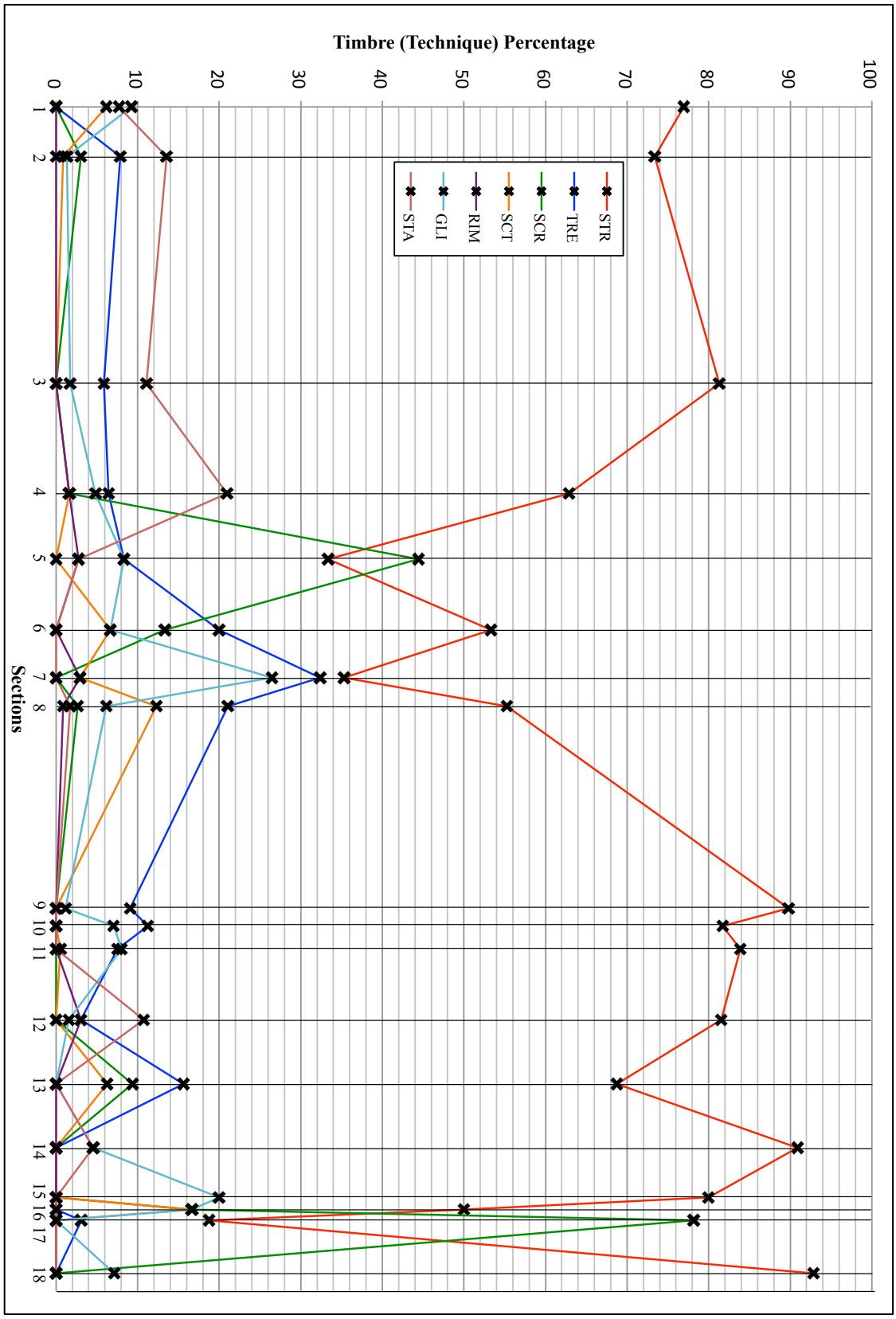


Figure 24. Tessitura Percentage per Section

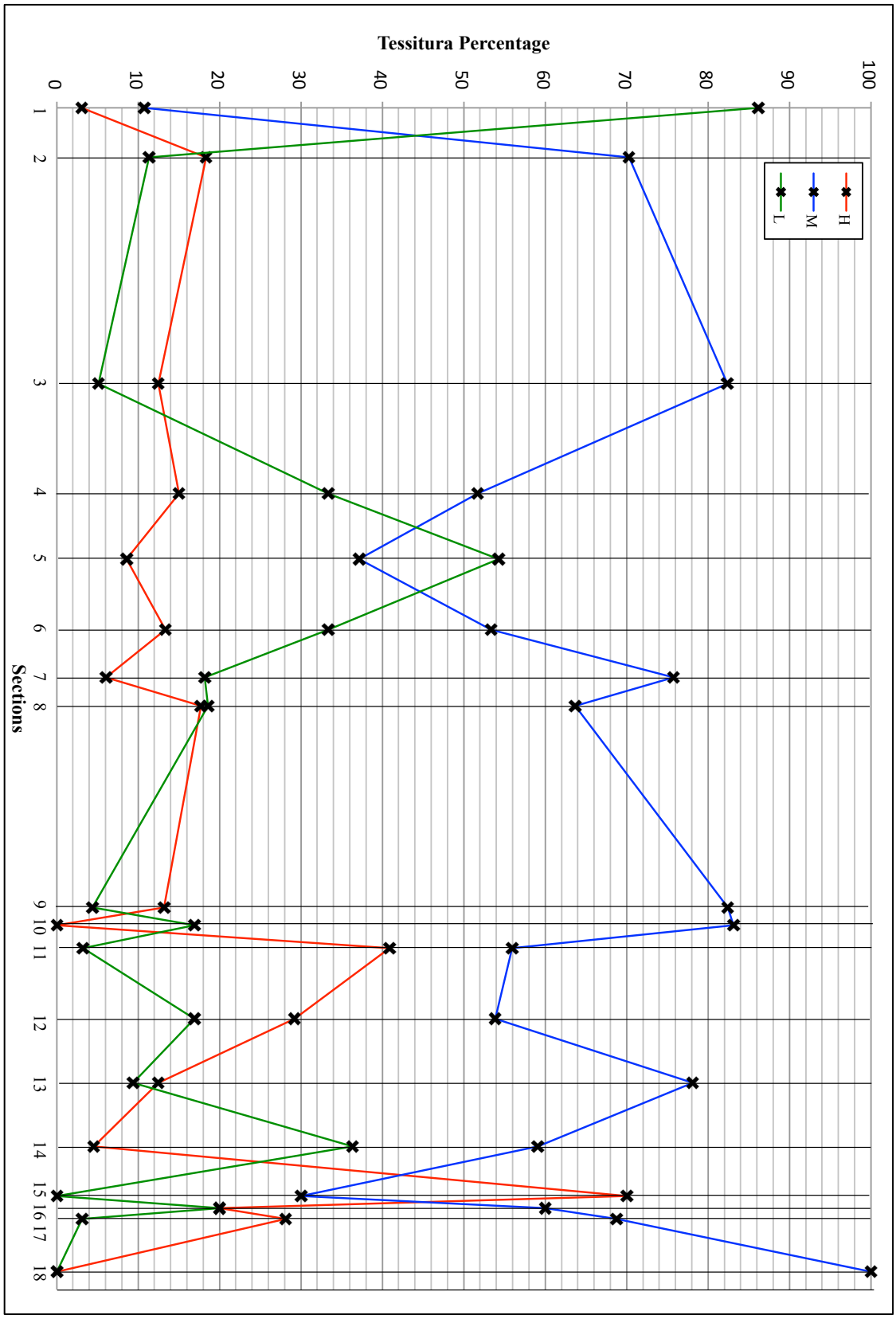


Figure 25. Average Dynamic per Section

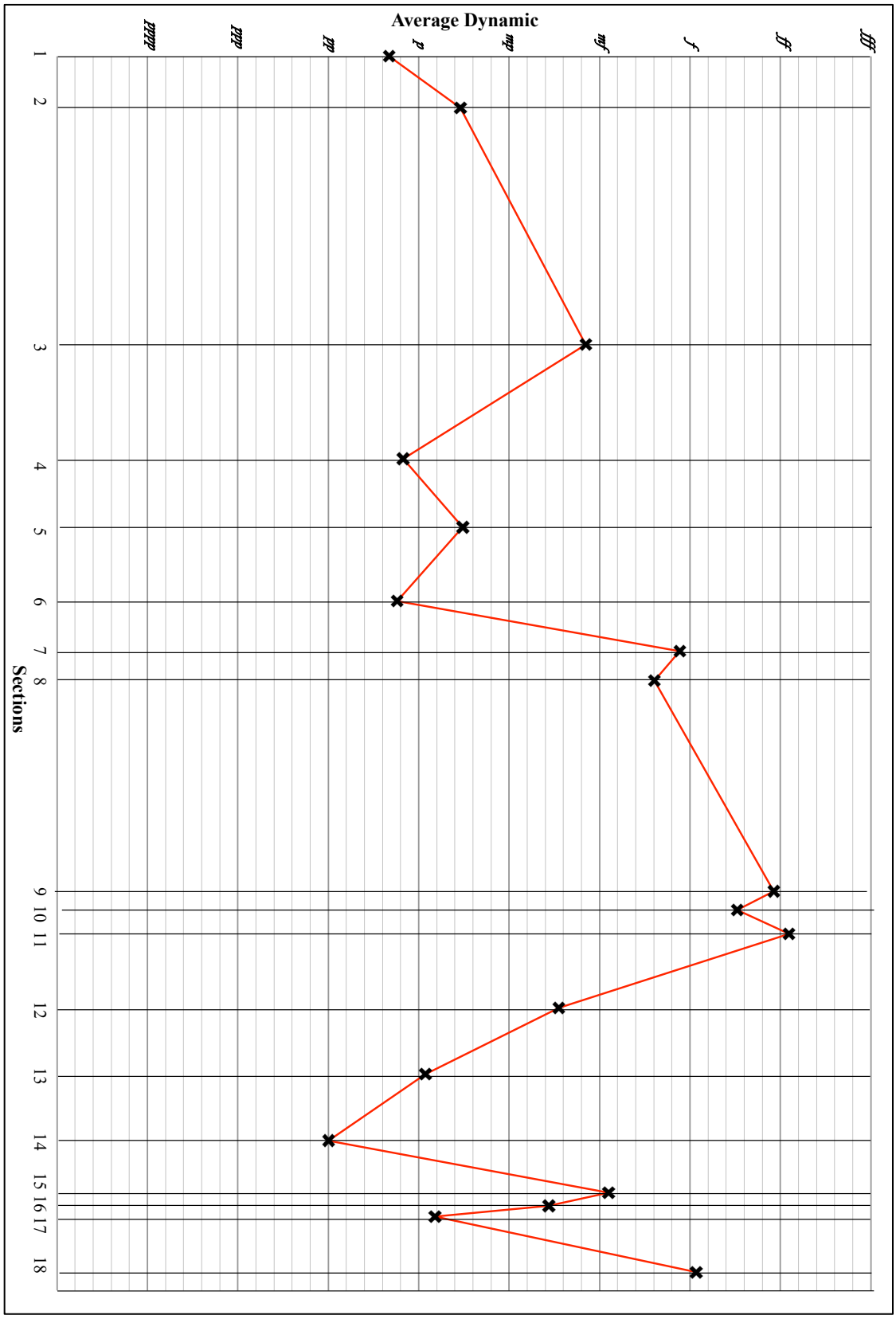


Figure 26. Density per Section

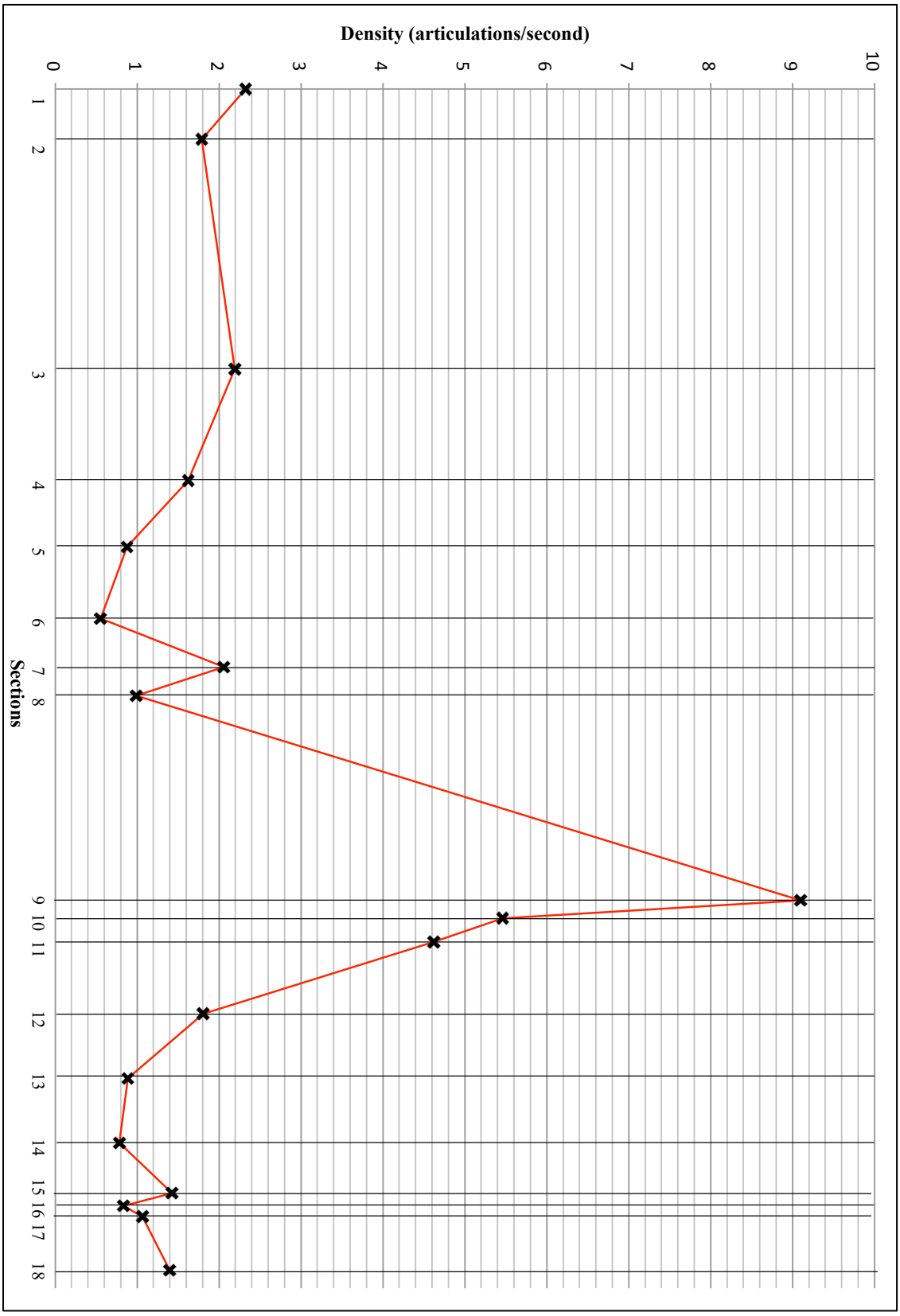
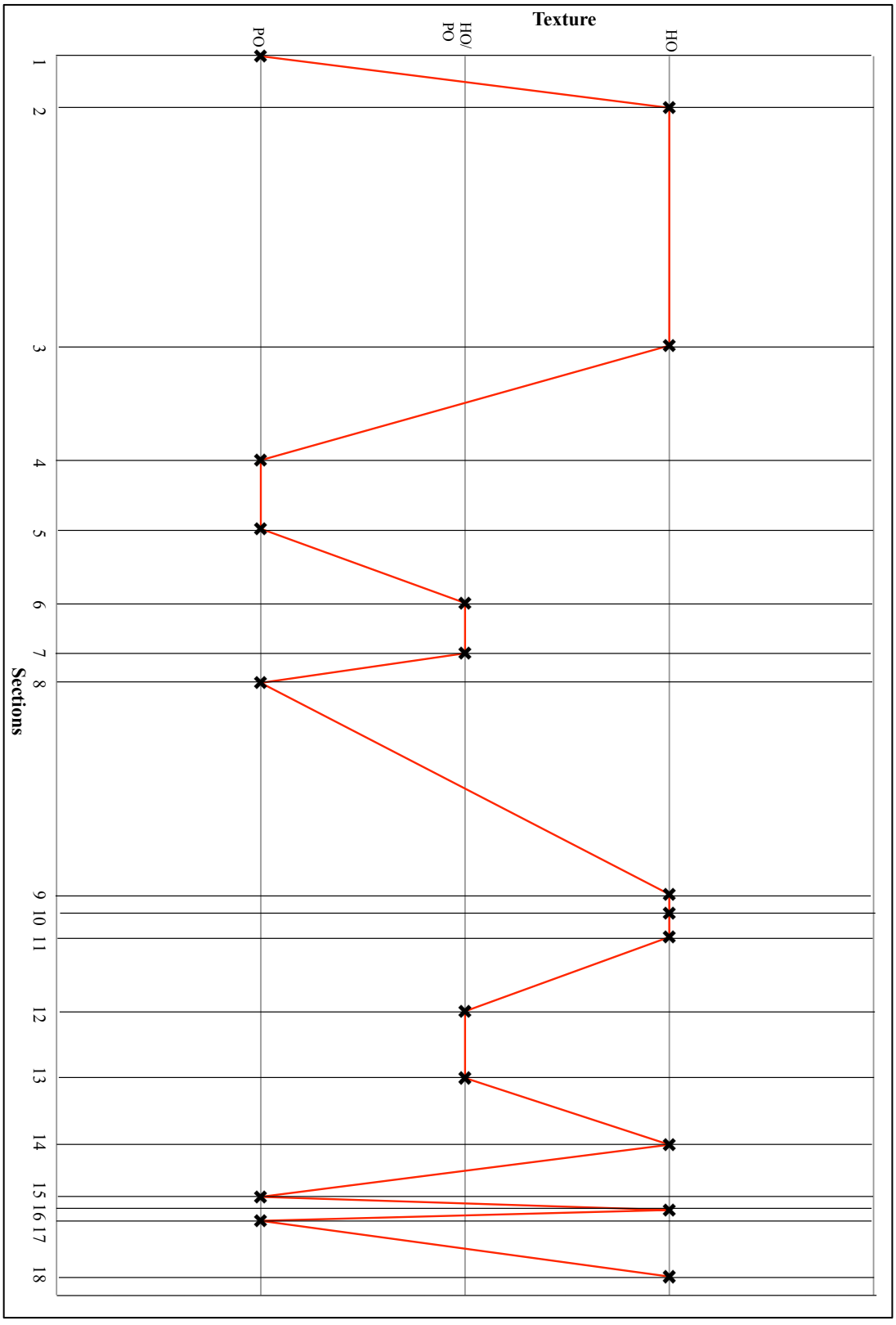


Figure 27. Texture per Section



STRUCTURE

Once all Primary and Secondary Discontinuities are accounted for, the total number of discontinuities can be graphed to demonstrate the disconnection strength (the higher the number of discontinuities, the stronger the disconnect) (Figure 28). Four different levels of disconnect are present in *Intérieur I*. The strongest points of disconnect contain 10-11 discontinuities. The second strongest points of disconnect contain 9 discontinuities. The third strongest points of disconnect contain 8 discontinuities. Lastly, the weakest points of disconnect contain 6-7 discontinuities. Each lower level of disconnect represents a smaller subsection (e.g. sections with 9 discontinuities fit within sections with 10-11 discontinuities). This information can be used to construct an arc diagram of the structure (Figure 29). 10 and 11 discontinuities are combined because of how they are distributed throughout the work: 10 discontinuities are common in the first half of the work but absent in the second half, while 11 discontinuities are common in the second half of the work but absent in the first half. 6 and 7 discontinuities are combined because there is only one point with only 6 discontinuities.

Several notated sections are related that are not represented in these graphs. Figure 30 shows a list of related sections and a description of how they are related. These relationships cut across the structure of the work, and therefore serve to obscure it.

Figure 28. Number of Discontinuities

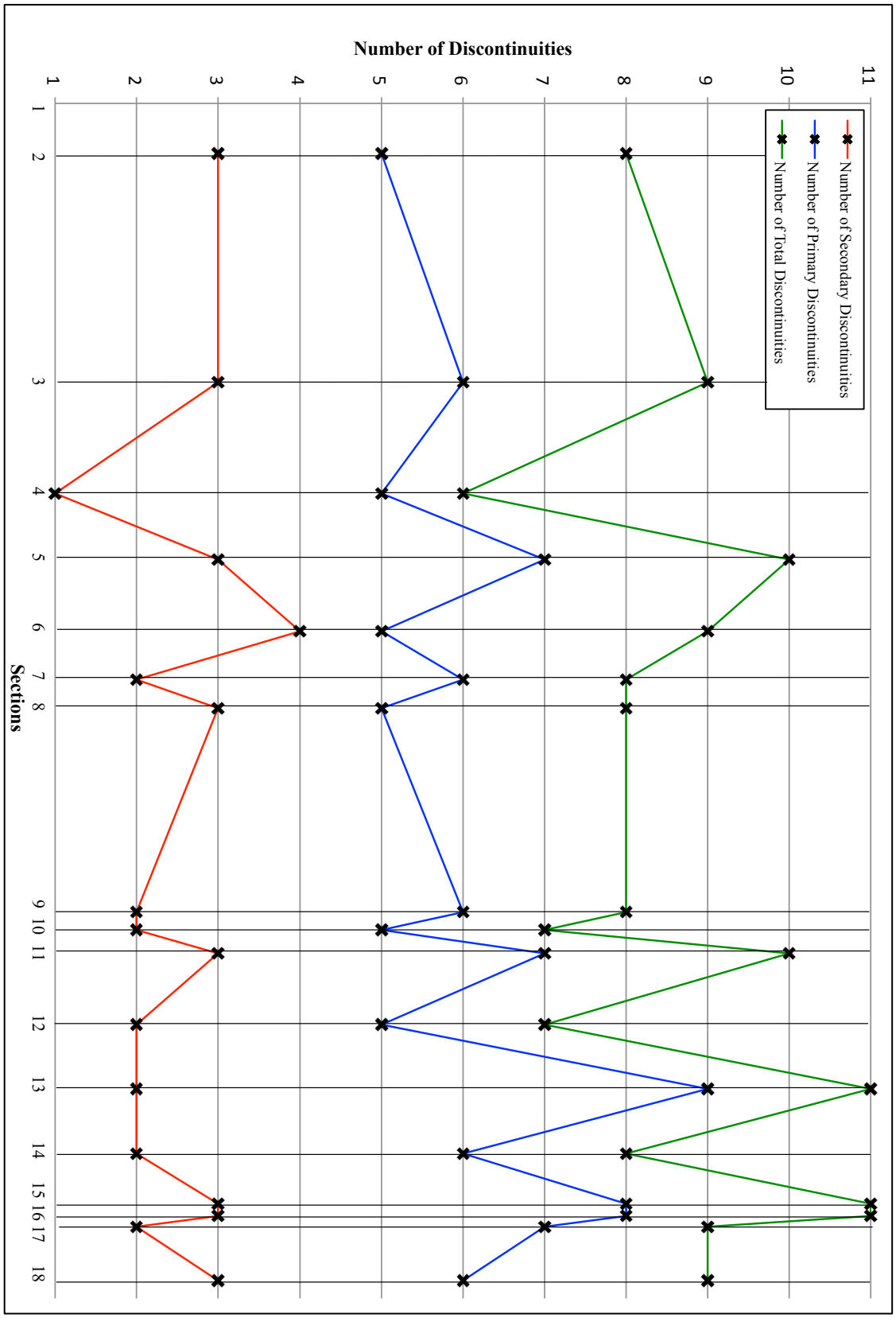


Figure 29. Arc Diagram

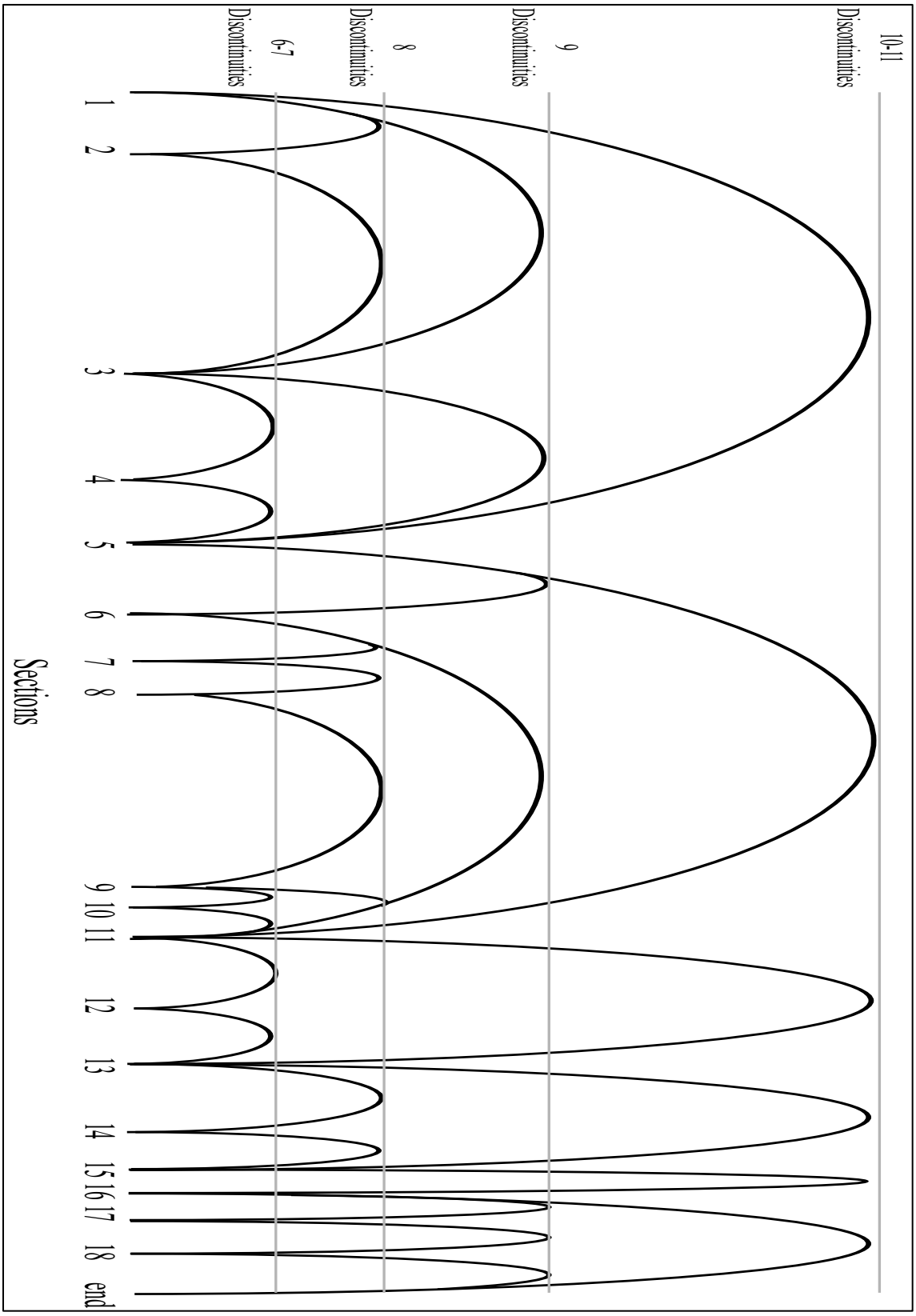


Figure 30. Chart of related Notated Sections

Related Notated Sections	Relationship	Performance Suggestion
1 and 12A	Frequent use of marimba, juxtaposed hard and soft mallets, juxtaposed high and low dynamics	Dynamics should be magnified (*forte* louder, *piano* softer), hard mallets should be played with *staccato* stroke to emphasize the hardness, soft mallets should be played with a *legato* stroke to emphasize the warmth.
2A and 12B	Balanced articulation of varying instruments, juxtaposed hard and soft mallets, juxtaposed high and low dynamics	Instruments should be balanced dynamically and blend in timbre. Dynamics should be magnified (*forte* louder, *piano* softer), hard mallets should be played with *staccato* stroke to emphasize the hardness, soft mallets should be played with a *legato* stroke to emphasize the warmth.
2B and 6B	Frequent use of vibraphone and suspended cymbal. Juxtaposed resonant and non-resonant notes.	Non-resonant notes should be played with a *staccato* stroke to emphasize separation, resonant notes should be played with a *legato* stroke to emphasize connection.
7, 8, 9, 14B	Frequent use of scratch tone and scratch tremolo	Each scratch tone/scratch tremolo should be approached similarly (See Chapter 4. Instrument and Implement Selection, Setup, and Performance Strategies: Performance Strategies)
10A and 13	Frequent use of long, sustained cymbal rolls	The cymbal rolls should be the primary voice in both sections (higher dynamic)
10C, 11A, 11B	Frequent use of rapid succession of notes	Each collection of rapid successive notes should be phrased similarly (See Chapter 4. Instrument and Implement Selection, Setup, and Performance Strategies: Performance Strategies)

INTERPRETING DISCONTINUITITES AND RELATED SECTIONS

The following section of the paper will focus on how to perform the work to best emphasize the structure described above. These suggestions are not specific to each section, but align with each type of discontinuity discussed.

Density discontinuity is most effectively projected by emphasizing the relative density of opposing sections (e.g. less dense material is played slightly slower, more dense material is played slightly faster).

Discontinuities in timbre can be emphasized by identifying the distinctive timbral elements of an instrument, implement, or technique and using a technique that best evokes that timbre. For example, resonant instruments should be played with a *legato* stroke to reinforce the resonance and connectivity of the notes, while non-resonant instruments should be played with a *staccato* stroke to emphasize the separation of articulations.

Using a technique to emphasize the brilliance of the high tessitura (through a fast, *staccato* stroke and by playing near an instrument's nodal point) or the darkness of a low tessitura (through a slow, *legato* stroke) is an effective way to demonstrate discontinuities in tessitura.

Dynamic discontinuity is most effectively interpreted by magnifying the juxtaposing dynamics (e.g. playing the *piano* softer and the *forte* louder). Once the next section has begun, the magnified dynamic can be recalibrated to fit the context of the established dynamics.

Given the unstructured rhythmic content of *Intérieur* I, textural discontinuities can be emphasized through rhythmic interpretation. Polyphonic textures should be played to emphasize the independence between various musical lines. Therefore, it is suggested that each line be played rhythmically detached from the other. Furthermore, polyphony can be accentuated by using different stroke types for each independent line (e.g. *legato* in the main voice, *staccato* in the secondary voice). Homorhythmic textures should be executed to emphasize the connection of successive articulations, and should be played with a single internal pulse and stroke type.

Effectively interpreting temporal discontinuity is achieved by actively resting between sections separated with temporal discontinuity. This is particularly challenging in *Intérieur I* because many moments of temporal discontinuity include making implement changes. As discussed in the previous chapter, the performer should either quickly change implements before

proceeding to acknowledge the temporal discontinuity, or acknowledge the temporal discontinuity before proceeding to change implements. Above all else, using the temporal discontinuity as an opportunity to change implements is distracting from the structure of the work.

Qualitative discontinuities are most effectively expressed by emphasizing the opposing qualities of disconnected sections. For example, if a qualitative discontinuity is the expression marking *Calmando*, then the previous section should be played in an agitated manner (fast *staccato* strokes and disjointed rhythm), while the *Calmando* section is played steadily and with less intensity.

Effectively executing similar sections involves interpreting each related section similarly. Figure 30 (above) lists suggested performance techniques for related sections.

Chapter 6. Summary, Conclusion, and Avenues for Further Research

Helmut Lachenmann is an important figure in twentieth-century music. Lachenmann's challenging notion of how music could be written and heard has led to many negative opinions of his work. Although much has been written about Lachenmann's dialectic philosophy of music, few have written about interpretation. *Intérieur I* has not only been neglected in scholarship, but in performance as well.

Interpreting *Intérieur I* includes identifying performance problems and finding solutions within the parameters of *musique concrète instrumentale*. Many of these solutions involve timbral transformation, an exhibition of Lachenmann's written physical gestures, and an emphasis on the dialectic processes in the structure.

Few solo percussion works have been marginalized the way *Intérieur I* has, but this is not surprising as much of Lachenmann's work has not received critical attention or evaluation. The approach to discussing interpretation in this paper—specifically as it relates to structure—could be applied to other works written by Lachenmann after his invention of *musique concrète instrumentale.* I believe that specifically *Air*[84] and *Mouvement*[85] would benefit from a similar analysis to that of *Intérieur I* in this paper.

Continuing to explore the importance of discontinuity in structure would be greatly useful to performers of Lachenmann's work. It may be beneficial to further define structure in non-tonal music by exploring the strength of different combinations of discontinuities (e.g. dynamic discontinuity with temporal discontinuity may be stronger than tessitura discontinuity with

[84] Helmut Lachenmann, *Air* (Weisbaden: Breitkopf & Härtel, 1983).

[85] Helmut Lachenmann, *Mouvement* (Weisbaden: Breitkopf & Härtel, 1985).

timbral discontinuity). This would help further stratify sections and subsections in Lachenmann's work. Although identifying Primary Characteristics in sections was useful for this study, quantification only accounted for articulation, not duration. For example, the thirteen-second cymbal roll in Notated Section 13 and a single temple block articulation in Notated Section 10C get an equivalent amount of weight. Additional research should aim to weigh duration when looking at Primary Characteristics to achieve a more accurate picture of the form.

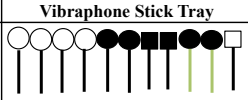
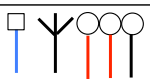
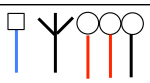
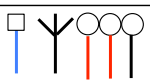
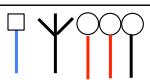
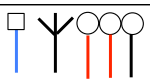
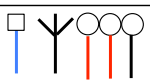
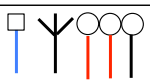
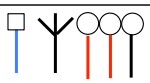
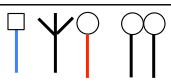
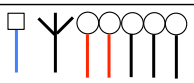
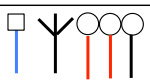
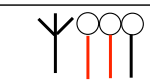
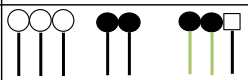
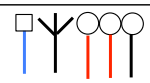
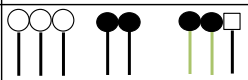
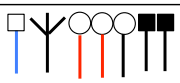
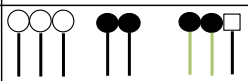
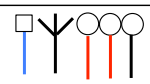
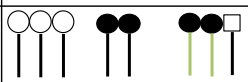
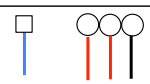
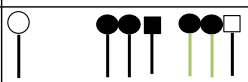
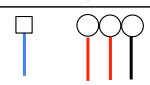
Discovering how structure can exist as a latent process for the composer was a transformative experience. Despite Lachenmann's opposition to traditional musical elements (like structure), structure is still prominent in this work. This makes the content of this project antithetical to Lachenmann's approach to music: despite efforts made to avoid formal processes, formal patterns still emerged. In some ways however, the larger phenomenon aligns with Lachenmann's ideas. Much of his music is built on dialectic processes, pitting one idea against another. The conflict between Lachenmann's intent (no structure) and output (underlying structure) is a source of dialectic conflict and therefore serves his philosophy entirely.

This project has also hopefully given to the percussion community an overlooked tool for evaluating non-tonal music. The structure of a substantial portion of the percussion repertoire has been ignored in scholarship because the means for analysis has not existed (or a need was not assumed). Now that structure has been exposed in a work by a composer who does not actively work with formal processes, it can be assumed that other similar works also contain structure.

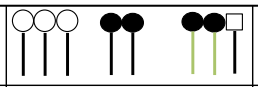
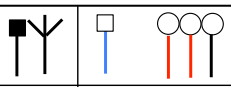
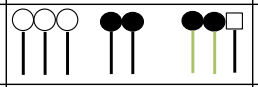
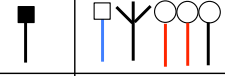
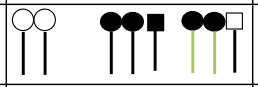
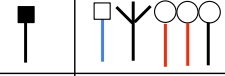
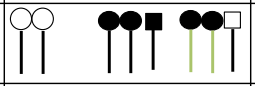
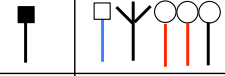
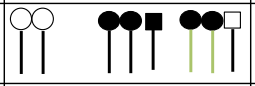
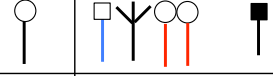
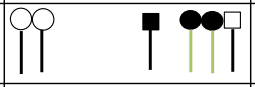
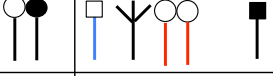
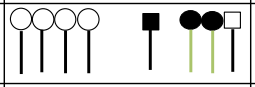
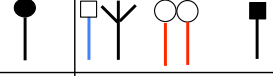
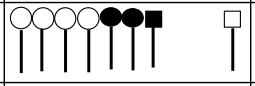
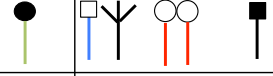
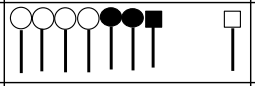
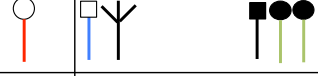
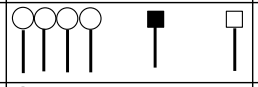
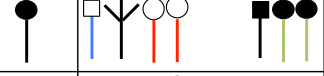
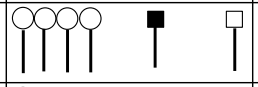
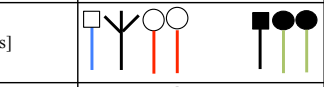
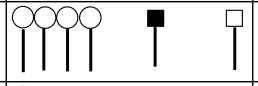
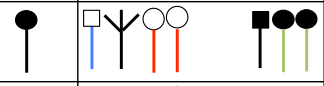
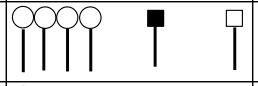
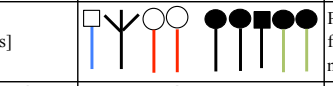
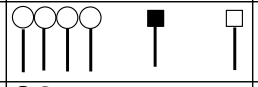
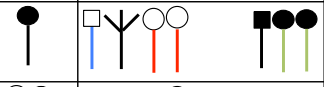
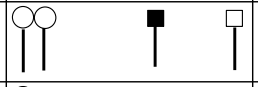
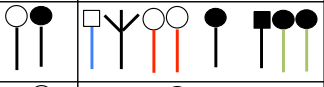
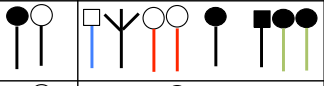
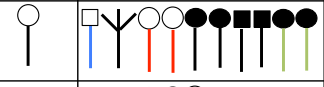
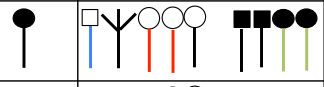
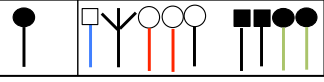
Analysis of form, even when not intended by the composer, may amplify an understanding of performance practice. The instruments, implements, and techniques suggested in this paper align with both the discovered formal process and *musique concréte instrumentale*

aesthetic. These suggestions can therefor be used as a starting point for other works written in same style.

Appendix 1. Map of Implement Changes (green handles: hard vibraphone mallets, blue handle: tam-tam mallet, red handles: timpani mallets)

Other Location	Vibraphone Stick Tray	Left Hand	Right Hand	Marimba Stick Tray	Location of Change	Type of Change
[None]					[Before the work begins]	[NA]
[None]					Section 1, first articulation	HND
[None]					End of Notated Section 1, before the long *fermata*	SIL
[None]					Page 2, end of first stanza	SIL
[None]					Page 2, second stanza, on E6 vibraphone note	HND
[None]					Page 4, first stanza, after F6 vibraphone note	RES
[None]					Page 3, second stanza, after *mezzo piano* low tam-tam note	RES
[None]					Page 5, first stanza, after *pianianissimo* high tam-tam note	HND
[None]					Page 5, second stanza, final note	HND
[None]					Page 7, first stanza, after *fortissimo* sizzle cymbal note	RES
[None]					Page 7, second stanza, after *mezzo piano* high bongo note	RES
[None]		[Hands]			Page 7, second stanza, after *timpano* roll	SHF
[None]					Page 7, second stanza, after *piano* marimba double-stop with hands	SHF
[None]					Page 7, second stanza, immediately before the *tamtam-schlägelweg* note	SHF
[None]					Page 7, second stanza, immediately after the *tamtam-schlägelweg* note	RES
[None]		[Hands]			Page 9, second stanza, after *forte* low tom-tom scratch tone	SHF
[None]					Page 10, first stanza, during *fingerspiel* (left hand), after *fingerspeil* (right hand)	HND
[None]					Page 11, first stanza, after *forte* Cymbal 2 articulation	RES
[None]					Page 11, first stanza, after *fortississimo* scratch tremolo on high tom-tom	HND

Appendix 1 (cont). Map of Implement Changes (green handles: hard vibraphone mallets, blue handle: tam-tam mallet, red handles: timpani mallets)

[None]					Page 11, first stanza, after *forte* hi-hat articulation	HND
[None]					Page 11, first stanza, after *fortissimo* scratch tremolo on high tom-tom	HND
[None]					Page 11, first stanza, during scratch tremolo on low tom-tom	RES/HND
[None]					Page 11, second stanza, after *forte* sizzle cymbal articulation	RES
[None]					Page 11, second stanza, after *fortissimo* Cymbal 1 articulation	RES
[None]					Page 8, second stanza, after *fortissimo* D6 but before the *pianissimo* tremolo *crescendo*	RES
[None]					Page 8, second stanza, after long *fermata* and before *piano glissando* on vibraphone	RES
[None]					Page 8, second stanza, after *fortissimo* high tam-tam articulation	RES
[None]					Page 12, first stanza, after *sforzando timpano* articulation	RES
[None]					Page 13, first stanza, in breath mark following long *fermata* tremolo on both tom-toms	SIL
The two hard mallets should be placed in the performer's armpit area		[Hands]			Page 14, last stanza, immediately following the hand *glissando*	SHF
[None]					Page 14, last stanza, immediately before the *fortississimo* marimba *glissando*	SHF
[None]		[Hands]			Page 14, last stanza, immediately following the *fortississimo* marimba *glissando*	SHF
[None]					Page 14, last stanza, after final *fingerspiel* gesture	SIL
[None]					Page 15, first stanza, after *fortissimo* antique cymbal note	RES
[None]					Page 13, second stanza, after the *fermata*	SIL
[None]					Page 16, second stanza, after the Bb5 vibraphone note	RES
[None]					Page 16, second stanza, after the arpeggiated temple block/almglocken	SIL
[None]					Page 17, first stanza, after the *pianianissimo* high tam-tam note	RES
[None]					Page 17, second stanza, during the scratch tremolo on the *timpano*	HND

Bibliography

Albertson, Dan and Eberhard Hüppe. "Brief Biography." *Contemporary Music Review* 23 No. ¾ (2004): 7-8.

Blades, James. *Percussion Instruments and Their History*. New York: Frederick A. Praeger, Inc., 1970.

Cage, John. *27'10.554": for a percussionist*. New York: Henmar Press, 1960.

Cook, Gary. *Teaching Percussion*. Belmont, CA: Thomson Schirmer, 2006.

Dimpker, Christian. *Extended Notation: The Depiction of the Unconventional*. Münster: LIT Verlag, 2013.

Drynda, Yvonne. *Col Legno*. WWE 20511.

Feldman, Morton. *The King of Denmark*. Glendale, NY: C.F. Peters Corp, 1965.

Gerber, Stewart W. "Karlheinz Stockhausen's Solo Percussion Music: A Comprehensive Study." DMA diss., University of Cincinnati, 2003.

Heaton-Smith, Gary. "Helmut Lachenmann's Intérieur I." Filmed May 6, 2016. YouTube video, 14:50 duration. Posted June 30, 2016. https://youtu.be/efwjocJxJ74

Kraft, William. *French suite: for percussion solo*. Van Nuys, CA: New Music West, 1962.

La Folia. "Thinking About Helmut Lachenmann, with Recommended Recordings." Accessed on May 5, 2016. http://tinyurl.com/zo2u9se

Lachenmann, Helmut. *Air.* Weisbaden: Breitkopf & Härtel, 1983.

Lachenmann, Helmut. "An Open Letter to Hans Werner Henze." Translated by Jeffrey Stadelman. *Perspectives of New Music* 35 no. 2 (1997): 189-200.

Lachenmann, Helmut. *Echo Andante*. Wiesbaden: Breitkopf & Härtel, 1962.

Lachenmann, Helmut. *Intérieur I*. Berlin: Ricordi, 1967.

Lachenmann, Helmut. *Mouvement.* Weisbaden: Breitkopf & Härtel, 1985.

Lachenmann, Helmut and Josef Häusler. *Musik als existentielle Erfahrung: Schriften 1966-1995*. Wiesbaden: Breitkopf & Härtel, 1996.

Lefkowitz, David. "The Emancipation of Texture." In *The Analysis of Post-Tonal Music: A Parametric Approach.* Ch.17, pp. 390-433.

Orning, Tanja. "*Pression*—a performance study." *Music Performance Research* 5 (2012): 12-31.

Percussive Arts Society. "Composition Research." Accessed February 17, 2016. http://www.pas.org/resources/research/ResearchCompos.aspx

Slought. "Musique Concrète Instrumentale." Accessed May 4, 2016. https://slought.org/resources/musique_concrete_instrumentale

Steenhuisen, Paul. "Interview with Helmut Lachenmann—Toronto, 2003." *Contemporary Music Review* 23 No. 3/4 (2004): 10-14.

Steve Weiss Music. "Adams Gong Stand." Accessed June 8, 2016. http://alturl.com/8fmgy

Steve Weiss Music. "Blocks Temple Blocks—Set of 5." Accessed May 3, 2016. http://alturl.com/3t67n

Steve Weiss Music. "Remo Renaissance Hazy Timpani Heads—Low Profile Steel Insert." Accessed June 8, 2016. http://alturl.com/z84zd

Stockhausen, Karlheinz. *Nr. 9, Zyklus: für einen Schlagzeuger*. London: Universal Edition, 1960.

Tagawa, Rickey. *Inspirations Diabolique: for percussion solo*. Hollywood, CA: Try Publications, 1965.

Trommer, Hal. "The Vibraphone, Vibraharp, and Vibes." In *Encyclopedia of Percussion*. Edited by John Beck. New York: Garland Publishing, Inc., 1995.

Wuorinen, Charles. *Janissary Music.* New York: C.F. Peters Corp., 1967.