

Rhythmic intricacies: A study of Lansky, Delécluse, Xenakis, Koppel, and Hamilton

by

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Abstract

The study includes a rhythmic style analysis of compositions that I performed on my master's recital on May 11th, 2019. Jan LaRue's *Guidelines for Style Analysis* is the basis for this study. LaRue's basic components for analytic hypothesis are sound, harmony, melody, rhythm, and growth. The compositions that were studied were *Three Moves for Marimba* by Paul Lansky, Etude 9 from *Douze Études pour Caisse-Claire* by Jacques Delécluse, *Rebonds "b"* by Iannis Xenakis, *Toccata for Vibraphone and Marimba* by Anders Koppel, and *Rituals* by Bruce Hamilton.

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Chapter 1 - Introduction

My master's recital was on Saturday May 11th, 2019. The program included works by Paul Lansky, Jacques Delécluse, Iannis Xenakis, Bruce Hamilton, Anders Koppel, and Tito Puente. Each chapter of this study will include a brief introduction with background information and a theoretical analysis study using Jan LaRue's *Guidelines for Style Analysis* as an analytical process. In this book, LaRue outlines five components that make up his Analytic Hypotheses (sound, harmony, melody, rhythm, and growth). Of the five components, rhythm is the primary parameter considered in this study.

LaRue characterizes rhythm as a reflection of the ambiguities of music. The struggle to categorize rhythm allows the opportunity to explore rhythms compositional implications. Rhythm can be viewed from large, medium, and small perspectives that all relate to each other in many ways. In large dimensions we can see more generalized patterns such as meter and tempo. The medium dimension of rhythm starts to create vocabulary such as continuum, stress, lull, and transition within phrases (Appendix A gives definitions to these terms). The small dimension consists of rhythmic motives or fragments that comprise the work's vocabulary.

Continuum goes beyond meter to represent the hierarchy of expectation and implication in rhythm.¹ This idea of continuum can be observed to see patterns that strengthen the implied movement or break the continuum with certain motives by creating an implied meter within the context of the normal meter, or by actual changes to meter.

Stress, transition, and lull are all interconnected. Stress can be seen as any high-level activity that is not defined by duration, giving it freedom to be seen in any dimension.

¹ LaRue, Rhythm. 90.

Transitions make up the rhythmic activity leading up to or away from stress. This can sometimes be easily translated into the rising and falling of activity. Lull falls on the opposite side of stress and is best represented in periods of stability or low volume rhythmic activity. These three terms, stress, transition, and lull can reaffirm the strengths of the continuum or show how the rhythmic motion moves away from expectation.

The middle dimension can then be studied as a phrase-to-phrase rhythmic motion. The interactions and surface rhythms that can be found in the small dimension will help reinforce the perception of continuum. Each new chapter will include references to these terms in relation to the different styles of compositions.

Three Moves for Marimba by Paul Lansky is a three-movement marimba solo for soloist Nancy Zeltsman composed in 1999. The third movement is titled “Slide” and uses continuous sixteenth notes plus mixed meters that create multiple continuums shifting in and out of focus. Lansky creates these continuums by grouping sixteenth notes or measures together that give implication to a patterned beat. The rhythmic patterns created by Lansky mimic the complex meter in two or three segments creating unequal beat lengths for each bar. The continuum helps the listener find stability in an unstable rhythmic landscape with changing rhythmic motion. The continuums follow a certain pattern within each major section of “Slide.”

Jacques Delécluse’s “Etude 9” from his *Douze Études pour Caisse-Claire* is a collection of snare drum etudes. Continuums in this context come from a steady pattern of rhythms over a beat. Stress, lull, and transition are attached more to changes in dynamics than rhythmic activity. Accents or loud dynamics are characteristics of stress while periods of prolonged low volume activity create lull. Transitions include moments of *crescendos* or *decrescendos* in the direction of an extreme of dynamic range.

Rebonds “b” by Iannis Xenakis is the second movement of a multi-percussion work. The study will show stress, lull, and transition periods over rhythms in the movement. Xenakis uses accents to create stress, which are used in different styles such as double, single, and implied accents. *Rebonds* “b” is in three parts all with different periods of stress and lull functions. Uninterrupted sixteenth notes create the continuum giving more focus on the stress and lull, which are created from ornamentation.

Toccata for Vibraphone and Marimba by Anders Koppel is a duet for two percussionists. This duet provides the two voices to create certain rhythmic textures that bring forth a musician’s technical ability. The texture can be homorhythmic, polyrhythmic, or in a hocket fashion. Koppel creates continuums that are both shared between the two instruments or are different from each other. The continuums are directly affected by the stress, lull, or transitions that Koppel uses.

Rituals by Bruce Hamilton is a five-movement timpani solo. This study will only include analysis of the first two movements. Hamilton uses rhythmic motives to construct both movements. The first movement uses an *ostinato* pattern that solidifies a continuum that is interrupted by the melodic line and rests. This movement does not use any time signature or measures but gives way to implied rhythms in the continuum. Hamilton creates small rhythmic motives that are centered around stress. The second movement is more technical and includes the development of a rhythmic motive. The phrase structure does not follow a pattern, which in turn creates multiple continuums throughout the movement.

Chapter 2 - *Three Moves for Marimba*: Movement III. Slide by Paul Lansky

Three Moves for Marimba was composed by Paul Lansky (b. 1944) in 1998 for marimba soloist Nancy Zeltsman. The third movement of the solo is titled “Slide” and uses mixed meters to portray a constant sense of motion. The use of 6/16, 7/16, 8/16 9/16, 10/16, 11/16, 3/8, 5/8, 2/4, and 3/4 meters give a feeling of a constantly shifting downbeat. Lansky uses groupings of sixteenth notes to create these patterns with a two- or three-beat pattern splitting the bar. These groupings create continuums and Lansky uses the changing time signatures with the different groupings to create an inconsistent beat. The structure that Lansky creates for each major section will begin with the same pattern before branching out into new ideas.

The continuum is not only defined by patterns of three or more consistent beats but can be consistent measures of the same patterns (e.g.. 4+3 4+3 4+3). The patterns are what the measures can be subdivided into. For the purpose of this study, a + will be used to separate the two numbers breaking the measure down by sixteenth notes just like the example 4+3 4+3 4+3. The length of continuum is determined by the pattern created by Lansky. These patterns shift between the sections of the movement. Three-beat patterns do not occur until the second section. New continuums can be found in the middle of a phrase. Repeated continuums can be found at the beginning and end of major sections.

The rhythmic phrase structure is divided into six measures with two exceptions of three or five measures; there were two three-measure tags and one section dividing into five. The graph in Appendix B shows the phrases and each subdivision for every bar. Numbers that are in bold are measures that create a continuum, while numbers with an underline are beats that create a continuum. There is a continuum in every phrase with either a beat continuum or measure

continuum differing in size and occurrence. Measured continuums are generally longer in size with measures using the same breakdown of subdivision. When a measured continuum is consistently of the same number between beats it also creates a beat continuum. This movement's form is a binary AB form with a coda. While the continuum's function stays consistent between sections by including three beats instead of two.

Lansky creates a measured continuum within the first six measures of the movement, all using a 4+3 subdivision. (7/16 can equate to 7/8 in regard to subdivision) This continuum is only repeated fully one time at the beginning of letter A, while part of the continuum is used at different lengths for other letters. This motivic structure is instantly broken when the 4+3 pattern is broken. Letter D and part of letter F include the same notes of the original measured continuum. Other instances are created around a different key. Figure 2.1 contains mm.1-3 and the phrase structure from appendix B that creates the first measured continuum.



Figure 2.1. *Three Moves for Marimba: "Slide"* by Paul Lansky, mm. 1-3

In this composition, the groupings of subdivisions are clearly indicated in the beaming of the notes, as well as overarching phrase markings. These first two measures do not sound like a subdivided 4+3, but rather as the full grouping of seven sixteenth notes. The continuum here is merely an implication of the music. The breakdown can be understood by dividing the bar into two rather than keeping it in one. The first major section is defined by simple two beat subdivisions structured with continuums in six-measure rhythmic phrases.

Lansky creates moments where downbeats are easily discernable through a sequence of groupings that either uses the same amount of sixteenth notes (4 or 3) or alternate between 4+3 and 3+4. This is not to be confused with a continuum as the implied beat would not be in a pattern. A great example of this can be found in Figure 2.2 which shows mm. 60-64, in which the pattern alternates between 4+3 and 3+4 until it moves into 3+3 for three measures to create a continuum.

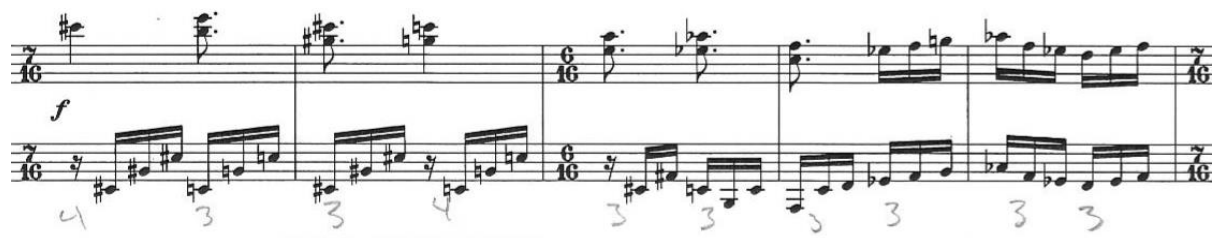


Figure 2.2. *Three Moves for Marimba: “Slide”* by Paul Lansky, mm. 60-64

These patterns create a sequence with double stops on the downbeats. These downbeats are unstable from a listener’s standpoint, since it is not an even pattern until m. 62 where the meter transits into 6/16. Both types of continuum are present with the repeating 3+3. Lansky places double-stop dotted eighth or quarter notes in the right hand as the melodic contour, where it also acts as the downbeat. Each time Lansky uses this technique with recurring subdivisions, the implied beat is amplified by doubling the notes played on downbeats. Voices together create a louder sound giving more consistency with time when double stops are present.

Lansky ends each letter with groupings of four sixteenth notes in two different ways. He uses ascending and descending scalar patterns with notes changing within the pattern. These endings are the same structure that changes pitches but uses the same subdivision. Lansky uses the same rhythmic structure but, instead of using a single line, he writes for both hands to play together and alternate double stops. This makes the endings of each letter the most stable

measures of the movement. Figure 2.3 shows the two examples, the first from mm. 20-21 showing the scalar pattern and the second example from mm. 105-106.



Figure 2.3. *Three Moves for Marimba*: “Slide” by Paul Lansky, mm. 20-21 and 105-106

Mm. 105-106 are repeated a second time in mm. 137-138, which ends the second major section. Both figures using the subdivision of four create a stabilized continuum at the end of each letter. All the letters have a stable ending except for letter B. Mm. 77-80 are in 2/4 time signature with the following measure ending in a 6/16 before preceding to letter C.

The second major section of “Slide” occurs from letter C to letter F. In letter C, Lansky shifts the two-beat measure system and adds three beats to phrases. Subdivisions such as two, five, and six are more frequent through this section. Each letter in this section comprises different structures for phrases. After letter C uses a double stop that helps control the subdivision. Letter D is the most stable section of the movement, and the continuums flow from one into the next. Letter E includes five-measure rhythmic phrases instead of six.

Letter C is the first time Lansky creates a measure of subdivided three instead of two. After the small repeat of the beginning, the rhythmic structure becomes dependent on the double stops. The pattern is always a double stop written as an eighth note in the top staff followed by a sixteenth note in the bottom staff. In this section, the listener may better perceive time (continuum); it is still uneven as Lansky uses a multitude of 3+4+5 groupings of sixteenth notes in the measures along with the added two at the end of each bar. Figure 2.4 shows how the double stops along with the underlying sixteenth notes breaks up the subdivisions.

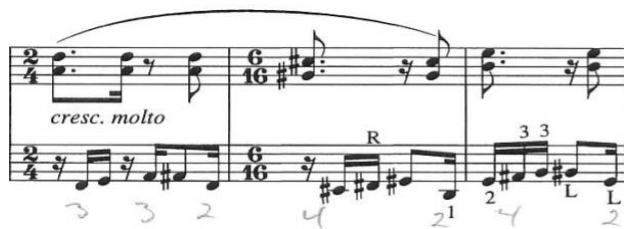


Figure 2.4. *Three Moves for Marimba: “Slide”* by Paul Lansky, mm. 93-95

Groupings of five and two are uncommon in “Slide” and can be generally found in letter C with a few examples toward the beginning. This arrangement of double stops does not create stable patterns. Certain measures that use the same pattern can create a continuum but only have one occurrence every rhythmic phrase. Figure 2.5 shows how the double stop pattern can create an unstable beat across measures.



Figure 2.5. *Three Moves for Marimba: “Slide”* by Paul Lansky, mm. 102-104

These groupings of five sixteenth notes lend special value to the movement by displacing the beat just a sixteenth note further than before. In many forms of Western music, normal subdivisions will have groupings of four or three, which is what Lansky mainly uses. By using a grouping of five, however, he is pushing the beat further away from the listener. This section is characterized by lone double stops. Anytime this musical event happens, Lansky is resetting the grouping of sixteenth notes.

Stability in rhythm leads to implied rhythms maintaining a pattern to create a continuum. While letter D is not one long continuum, the continuums do flow from one into the next making

it one of the more stable sections of the movement. Letter D starts with an exact three-measure repeat of mm. 1-3 before moving into a four-measure continuum of a two-measure pattern (4+4 4+3).

The next continuum in mm. 114-116 uses a subdivision of four until the last beat of six sixteenth notes. M. 117 is a stand-alone section of new material. Here, Lansky begins the phrase with four measures of 4+4 groupings in 2/4 time signature. The double stops are not like those found in Figure 2.3, in the sense that they are placed in different parts of the groupings of four to create this sense of abandonment as the music suggests. In Figure 2.6, new material includes sporadically placed double stops while creating an even distribution of rhythms.



Figure 2.6. *Three Moves for Marimba: “Slide”* by Paul Lansky, mm. 117-120

These double stops do not act in the same manner of being used as the main melodic content; this time they are mixed into the overall content.

Letter E has an odd rhythmic phrase structure using five measures instead of six. Here, Lansky uses the same rhythmic structure as the opening phrase for the first five measures. The second half uses the ending material from letter C. This exact repeat signifies the end of the second major section. The first time this ending happens, letter D opens with a small repeat of the first three measures, implying a return almost making it seem like a return to the beginning. This repeat gives more weight to the ending since Lansky does not repeat material except for the opening phrase.

Letter F is a coda starting with new material from mm. 139-154. During this section, Lansky uses mm. 139-141 in a five-bar phrase to create a strong sense of the downbeat by using arpeggiated passages along with double stops on large subdivisions or at the very end of the subdivision. Mm.144-145 are a little different in that the first double stop is on the second of three sixteenth notes in the first grouping. This immediately changes the perception of the beat where the subdivision is. This five-bar pattern happens three times, each with small rhythmic and melodic changes. As the phrase repeats, Lansky adds an eighth note each time to the end of the second measure of the phrase. Eighth notes hold greater value among a continuous flow of sixteenth notes.

Most of the same motivic ideas that Lansky uses are of the same rhythmic structure with a different pitch center. The end of the movement is in this same format with a repeat of the beginning material in m. 154. Not only does Lansky use this original material to start this last phrase, but he also uses the same opening notes in the first measure to create the last sixteenth note pattern. The last two measures use a scalar pattern that moves up from the original six notes of the piece, beginning two octaves above and then back down to the same Ab to end the piece.

By naming this movement “Slide,” Lansky is allowing the music to reflect to this word. Throughout this movement, the time signatures and implied subdivisions by Lansky shift or slide into a new pattern. Lansky revisits ideas centered around different keys but using the same rhythmic structure. This rhythmic structure is used at the beginning of every main section to establish some stability, then uses the second phrase to introduce a new idea or structure. The continuums that Lansky creates help (continuums help) the new ideas to cause a little chaos. New ideas that Lansky creates sometimes break continuums causing the rhythmic stability to

find a new pattern. Lansky also uses subdivisions of four sixteenth notes to create stability at the end of each major section.

Chapter 3 - “Etude 9” by Jacques Delécluse

Jacques Delécluse (1933-2015) was a large influence in the percussion world through his performances, teachings, and his published pedagogical resources. Delécluse attended the Conservatoire de Paris where he studied piano and percussion, winning first prizes in competitions for both instruments. He subsequently took part in the creation of the Domaine Musical with Pierre Boulez. Delécluse played for the Opéra de Paris and the Orchestre de Paris playing both piano and percussion and was also a professor at the Conservatoire de Paris.² In 1964, Delécluse published *Douze Etudes pour Caisse-Claire*. Through these etudes, Delécluse has revolutionized the pedagogical canon that prepares percussionists to perform advanced solo and/or orchestral literature for snare drum.

Percussionist Rob Knopper has published *Delécluse Starter Stickings*, a set of transparencies made to overlay the original etudes. The transparencies only include recommended stickings and roll notations. The overlay stickings were where I started with this etude, slowly applying them and making any modifications to fit my hands comfortably. Delécluse in an interview by Knopper said, “Etude 9 has close similarities to *Capriccio Espagnol* by Nikolai Rimski-Korssakov and, the fourth movement. Both works are written in 6/8 and require the same tempo. The rhythmic figure that begins the etude is also the rhythmic motive seen in the percussion parts of the fourth movement of *Capriccio Espagnol*.”³ Etude 9 is in a ternary form of ABA’. In his dissertation, Brian Stackhouse provides a detailed analysis of all

² Frederic Macarez, *Jacques Delécluse*. (Percussive Arts Society, 2019).

³ Jacques Delécluse interviewed by Rob Knopper August, 2014. *Day 12: My Interview with Jacques Delécluse and the Album’s Release Day is Here* (Blog: Percussion Hacker, 2019).

twelve etudes from this collection. Stackhouse compares the similarities between the etude and the orchestral excerpt.⁴ This analysis was used as a basis for my study to incorporate LaRue's method of rhythmic analysis.

♩ = 69 is the tempo set for the etude, creating an expectation that the meter of 6/8 will have two large beats. This creates a two-beat continuum that holds firm through most of the etude, except for a three-measure buzz roll. Stress and lull will be categorized by dynamics and accents rather than rhythm. Stress is created by a sudden loud change in dynamics or arrives at *forte/fortissimo* after a transition. Accents will add to large stress points but will not create stress by itself. Grace notes function in the same manner, adding weight to the initial note without creating stress. Lull will be categorized by soft dynamics for at least one measure. Transitions are created from *crescendos* and *decrescendos* with lengths ranging from a quarter note to two full measures.

This opening passage reflects the start of fourth movement of *Cappriccio Espagnol* by Nikolai Rimski-Korssakov by using the same rhythm and tempo. This comparison can be seen in Stackhouse's analysis. The etude begins with *piano* dynamics with low rhythmic density, creating a state of lull. The introduction of the first buzz roll in m. 4 creates a rising transition with the *crescendo* written below it. The release of this transition does not happen until the end of m. 6 with the accented buzz roll over two dotted eighth notes, which can be seen in Figure 3.1.

⁴ Brian Stackhouse. "Jacques Delécluse *Twelve Studies For the Drum*: A Study Guide and Performance Analysis." 84-91, University of Oklahoma.



Figure 3.1. “Etude 9” by Jacques Delécluse, mm. 6-7

This buzz roll creates stress before a *subito piano* in m. 7 moving back into a lull state. Delécluse releases stress sometimes instantly with *subito pianos* but never creates sudden stress in the A section. All forms of stress in the A section are following rising transitions. Delécluse creates this landscape of rising and falling transitions that categorizes the A section (mm. 1-24).

One of the rhythmic tools that Delécluse uses is palindromes, as shown in Appendix C will show all examples of palindromes from “Etude 9.” These rhythmic figures are used in all aspects of stress, lull, and rising/falling transitions. Their length also ranges from multiple measures to one measure. M. 14 is another rising transition palindrome with triplets surrounding thirty-second notes. M. 17 uses a variation on grace notes but outlines sixteenth notes with thirty-second notes. Most of the palindromes appear in the A section with a few examples found in the B section. The end of the A section has the longest falling transition into a lull which can be seen in Figure 3.2.



Figure 3.2. “Etude 9” by Jacques Delécluse, mm. 22-24

In Figure 3.2, the tension built from the previous stress is released on the release of the buzz note in m. 24. Delécluse concludes the first section with rests in a lull state.

The B section is mm. 25-42. Delécluse uses swift dynamic changes between *forte* and *piano* changing the relationships of stress and lull. In mm. 25-26, Delécluse alternates between the two dynamics every dotted quarter note. The stress hits on every *forte* suspending the duration but does not switch into lull until the end of m. 26. The accents in m. 28 add to the weight of stress. There are four rising transitions in the B section, all of them lead into stress with the last transition (mm.38-39) reaching the peak of the etude in m. 40 which can be seen in Figure 3.3.



Figure 3.3. “Etude 9” by Jacques Delécluse, mm. 38-39

The rising transition in m. 38-39 creates this motion both rhythmically and dynamically. The rhythmic motion is created from sixteenth, sixteenth triplets, and thirty-second notes moving from slow to fast. The motion moves into a striking stress over a buzz roll that is released with a *decrescendo*. The three-measure buzz roll in mm. 40-42 is a transition back into the last section of the etude.

Mm. 43-50 is the A prime section with a repeat of the first three measures of the etude. Mm. 47-48 has a rising transition with an increase in rhythmic movement to arrive at the last stress in m. 49. This is reflective of mm. 38-39 with the moving rhythmic motion. The etude does not end on a stress point but rather returns to *piano* to finish with the opening rhythm and dynamic. The landscape is reminiscent of the transitions from the first A section.

Delécluse uses dynamics to distinguish the ABA' form. Both A sections use transitions to create and release tension. In the B section, he uses *subito* dynamics to shift between stress and lull. The characteristics of stress and lull are explored through both means in this etude by following transitions or creating stress instantly with dynamics. Delécluse uses heavy rhythmic density throughout the piece creating a shift on how stress and lull are interpreted. Stress and lull can be interpreted by rhythmic density, but not in this case. Through rhythms ranging from sixteenth to thirty-second notes, Delécluse defines and supports the function of the work's continuum. Delécluse uses rhythmic palindromes that are used in all aspects of stress, lull, and transition making it a diverse rhythmic tool.

Chapter 4 - *Rebonds* “b” by Iannis Xenakis

Iannis Xenakis (1922-2001) was a Romanian-born French composer, architect, and mathematician. Xenakis studied music composition at the Conservatoire de Paris under Olivier Messiaen. Using mathematical concepts, Xenakis became a strong force in avant-garde⁵ music after World War II. Xenakis composed several works for percussion. *Rebonds* is a two-movement work written for instruments with wood and skin qualities. *Rebonds* “b” is scored for bass drum, tom, conga, bongo, and five woodblocks. Xenakis uses the mixture of tones to create a mathematical composition showcasing technique and timing.

Rebonds “b” is set to 60 BPM but does not have a time signature. Xenakis implies common time only by visual representation of the music. However, Xenakis’ patterns do not conform strictly to bar lines. The implication of meter starts to break down as phrases cross the previously implied meter. Phrase structure is not conducive to the normal tonal music structure. The phrasing follows the ornamentation pattern as it moves around instruments. This movement is through-composed into three major sections (mm. 1-87, mm. 88-191, mm. 192-338), each of which has distinct combinations of timbre and ornamentation. The first two major sections use a sixteenth-note *ostinato* with other skin voices acting as melodic content. (The bongos, conga, tom, and bass drum will be referred to as skins and the temple blocks will be referred to as the woods.) The third section includes a mixture of the two timbres in thirty-second notes. There are two levels of phrase structure: 1) a small dimension that follows the contour of the skin voices as they repeat, and 2) the middle dimension made up of implied measures.

⁵ Brian C. Tinkel. *Rebonds by Iannis Xenakis: Pedagogical Study and Performance Analysis* (University of Oklahoma, 2009).

The sixteenth notes are the driving force behind this movement; certain passages use thirty-second notes for transitions and the entire movement only has a few breaks in time (e.g., rests). Xenakis uses single and double accents in two sections of this movement, which can be seen in Figure 4.1.



Figure 4.1. *Rebonds* “b” by Iannis Xenakis, m. 1

These ornaments can be referred to as stress with the inclusion of grace notes and drastic changes in dynamics. The double accents seen in Figure 4.1 above are the beginning of a pattern following the bottom four notes on the staff. Short periods of rolls or sixteenth notes without accents will be referred to as lull moments. Thirty-second notes followed by notated rolls are moments of transition between phrases and create moments of intensification and deintensification. The thirty-second notes build the tension with intense rhythmic activity and are released following rolls. The *ostinato* on the bongo creates a continuum only on the basis that the sixteenth notes are not interrupted by different rhythmic values. The continuum only functions as the melodic pattern of skins vary.

On the large scale, Xenakis uses both types of accents, with single accents having more regularity in the first section. The use of accents dominates stress while grace notes have a smaller presence. The second section only consists of double accents and the third section starts

with only one double accent. Occurrences of single accents, double accents, and grace notes may be seen in Table 4.1.

Table 4.1. Xenakis Accent Grid Large Scale for *Rebonds* “b”

	Total	First Section	Second Section	Third Section
Single Accent	112	112	0	0
Double Accent	105	47	57	1
Grace note	184	82	70	32

Source: Data from Iannis Xenakis, *Rebonds* “b”

Xenakis creates three completely different textures with his use of accents. The first section from mm. 1-47 consists of a high ratio of single accents to double accents. Xenakis only places these single accents on two skin voices, the high bongo and low bongo. The double accent is only voiced on the tom. During the second section from mm. 48-67, the double accent is used across all skin voices. The third section, mm. 68-87, uses the only double accent on the wood voice to start the section. Here, Xenakis adds ornaments such as grace notes to create stress.

As noted, grace notes can be another form of stress. The two accent types that are found in the first section create enough stress overall that the grace notes do not appear in the foreground. In the second section Xenakis writes grace notes with double accents starting in m. 58. This may be observed as a transition for the types of stress as the grace notes are the only constant through all three sections.

Closer inspection of Xenakis’ use of accents reveals a middle ground with rhythmic patterns, showing each frequency of accents in each voice, as shown in Table 4.2.

Table 4.2. Xenakis Accent Grid Middle Scale for *Rebonds* “b”

	Total	H Bongo	L Bongo	Conga	Tom	Bass Drum	Woodblock
Single Accent	112	63	48	0	0	0	0
Double Accent	105	20	10	13	56	5	1

Source: Data from Iannis Xenakis, *Rebonds* “b”

The high bongo and low bongo are the only two voices that are given single accents; the single accent is placed on top of the note for the high and under for the low bongo which can be seen in Figure 4.1. These all occur within the first section totaling 112 single-accented notes. It is a 56:44 relationship, with the high bongo having the higher frequency. Xenakis seems to favor the high voicing of the skins over all the voices, with the high bongo having a 36% occurrence throughout the entire piece. The low bongo and tom voicing have roughly the same occurrence (around 25%). The three remaining voices have an occurrence of 5% or lower. The second section moves the double accent around the skin voices with similar frequency across all voices. The rough break down would be high bongo (35%), low bongo (18%), conga (23%), tom (15%), and bass drum (9%). Generally, Xenakis uses the higher frequency tones in more abundance than the lower frequency tones. The wood voice is used once making it less significant than most notes, even though it starts the third section.

We can better understand how Xenakis uses accents in different voices by examining a smaller set of accents, as well as individual examples within those sets. On this level we can focus on stress, lull, and transition. Each accent can be observed as a type of stress. In the first section, Xenakis uses the same pattern of moving notes (skins excluding high bongo) which is tom, bass drum, low bongo, conga, and bass drum. Xenakis uses only the tom voice for double accents, which happen every time the tom voice appears under the high bongo voice. The single

accent is only put on the low bongo for the first section but just like the tom voice, the single accent appears on every low bongo that is voiced under the high bongo in the pattern. The high bongo accent occurs in almost every pattern in the first section. It happens at least once and can occur up to three times within one rotation of the pattern which can be seen in Figure 4.2



Figure 4.2. *Rebonds “b”* by Iannis Xenakis, mm. 3-6

As a developmental tool, Xenakis varies the number of sixteenth notes in patterns or displaces the notes to different rhythmic intervals within the pattern. The single accent on the high bongo overlaps with both the low bongo accent and the tom double accent at certain times. We can see in the figure above how each melodic note in the pattern changes which sixteenth note it falls under, the timing between the notes stays the same.

Each of these patterns are full of stress activity creating a unique accent melody while the tones of the skins move around. This pattern happens a total of thirty-eight times before Xenakis introduces the first lull and transition moments. There are two, two-measure patterns that move the melodic skin voices into the rhythmic frame which occurs in mm. 8- 9 and mm. 16-17. These transition periods allow the pattern to return with some variation each time, which can be seen in Figure 4.3.



Figure 4.3. *Rebonds “b”* by Iannis Xenakis, mm. 8-10

In mm. 9-10 there is a small difference in rhythmic timing giving an extra sixteenth note beat to the first bass drum voice; this is the last note of m. 9.

With pickups into m. 31, Xenakis employs the woods for the first time with thirty-second notes followed by a notated roll on the high bongo. This is the first time that the sixteenth note pulse is broken into a double-time feeling. Mm. 31-34 are a period of lull with no accents occurring. This can also be seen as a transitional period between ideas in the first section. Mm. 35-43 are closely related to the pattern at the beginning but do not use all the voices from the original pattern which can be seen in Figure 4.4.



Figure 4.4. *Rebonds “b”* by Iannis Xenakis, mm. 35-36

The new phrase creates a different order of notes but keeps the tom voice as the beginning of the pattern. With this phrase being much shorter than the first thirty measures, it starts to lose the high bongo accent on the last two measures (42 and 43). The next measure is the second lull and transition period which happens during mm. 44-47. This lull is like mm. 31-33 but is voiced on skins rather than woods. It still uses thirty-second notes followed by a notated roll on a skin. The transition this time leads into the second section of the piece starting with pickups into m. 48.

The musical notation consists of two staves. The upper staff contains three measures of music, each starting with a forte (*fff*) dynamic marking followed by a mezzo-forte (*mf*) marking. The lower staff contains corresponding accompaniment notes.

The dynamics shown on the top of the staff are indicative of accents. Here, the pattern contains a fair amount of stress like the first section, but only contains double accents. Mm. 54-56 include a buzz gesture on each note, while maintaining the double accent voice. This creates a new variation on a pattern found in mm. 8-9. Mm. 56-58 contain the first lull and transition moment in the second section. After this transition, Xenakis creates a new idea where the high bongo is no longer playing constant sixteenth notes but for six beats at a time. The frequency of double accents is increased through mm. 58-63, being utilized across all skins. The double accents through these measures utilize grace notes as a form of transition of stress into the final section. The frequency of the double accents increases until all notes have them, which can be seen in Figure 4.6.



At the end of m. 63, the double accents stop while the frequency of the grace notes continue.

Mm. 65-67 indicate the last transition before the third section; the voicing is across the woods, which acts as an anticipation.

The final double accent happens on the top woodblock on the eighth sixteenth note of the measure. Mm. 68-70 still has a small amount of stress activity with the grace notes on the top woodblock. Grace notes replace accents as a form of stress. These stresses interrupt buzz notes with a ripple creating a contrast in timbre. In these three measures, Xenakis creates a moment of stress where the dynamic jumps from *piano* to *fortissimo*, in a manner that is reminiscent of the first phrase of the movement. The dynamic shift on the notated rolls in mm. 72-74 is the last change in this movement, alternating between *fortissimo* and *pianissimo*. This can also be understood as the final transition period and the only one in this section, still similar to all other transitions.

Xenakis has crafted a mathematical beauty that can be looked at from different angles. On the large scale, Xenakis uses accents and double accents that are unique to each section. The first section contains both with the double accent signifying the start of a pattern. Xenakis applies double accents freely in the second section. The third section has one accent but uses dynamics to initiate stress. The middle ground is the rhythmic pattern that Xenakis uses, which can be seen as phrases. Even as Xenakis moves away from the notated pattern, the ideas that are presented are all similar in length. Xenakis uses one pattern but slowly changes it after interrupting the pattern with buzz rolls and thirty-second note interjections.

Chapter 5 - *Toccata for Vibraphone and Marimba* by Anders Koppel

Toccata for Vibraphone and Marimba was composed by Anders Koppel (b. 1947) in 1990 for the Safri Duo, who released a recording of the work on their first album in 1994. This duet is in every sense a *toccata* with virtuosic elements that showcase both performers' technical and musical abilities. It has multiple sections with the first major section repeating material later in the piece. The focus of this chapter will be the middle dimension of rhythm and how Koppel uses multiple continuums in different fashions. The stress, lull, and transition will affect certain phrase stability within the continuum. Continuums can be defined by a stable pattern. Between the performers, continuums are both homogenous or separate from each other throughout the composition.

Koppel uses the rhythms within meter to establish different continuums. The first section is from mm. 1-86 and creates a sporadic set of continuums at the phrase level. The first continuum is the expected 4/4 in mm. 2-5. M.1 is set at a different tempo making it incompatible with the continuum, and the quarter note pulse in even amounts gives normalcy. In mm. 6-10, Koppel creates a subdivided 9/8 bar that divides into 2+2+2+2+1 between both players shown in Figure 5.1.



Figure 5.1. *Toccata for Vibraphone and Marimba* by Anders Koppel, mm. 6-7

This division gives a similar feeling to 4/4 until the extra eighth note appears at the end. The sixteenth-note groupings in the vibraphone voice or the rests in the marimba show how the measure is divided from a normal 3+3+3 9/8 meter. The continuum could be defined for these measures as 4/4 + 1/8. The next phrase changes immediately in mm. 10-13, Koppel uses a new continuum in both voices (different continuums). The vibraphone uses a 3+2+2+2 while the marimba voice uses the same continuum from before, which can be shown in Figure 5.2.



Figure 5.2. *Toccata for Vibraphone and Marimba* by Anders Koppel, mm. 10-11

Koppel creates this façade with the meter, which would be considered breaking the continuum. The expectation that voices would be the same has to be a given for the continuum, so by having the voices use two different structures, he breaks the mold of the continuum. Koppel then puts a normal 4/4 continuum for one phrase before repeating mm. 6-13 again.

Then, Koppel returns to 4/4 with pickups into m. 27 and the continuum moves back to 4/4. The syncopation in mm. 33-34, seen in Figure 5.3, reinforces this 4/4 continuum.



Figure 5.3. *Toccata for Vibraphone and Marimba* by Anders Koppel, mm. 33-35

There is a transitional period into the downbeat of m. 35 when the marimbist plays straight eighth notes and the vibraphonist only plays upbeats. The upbeat of beat 4 in m. 34 and the downbeat of m. 35 create stress which reaffirms the continuum and its expectation. The simplified rhythm with the growing intensity of volume creates a strong stress that ends on the downbeat reaffirming the 4/4 pulse. The next few phrases from mm. 35-54 keeps the 4/4 continuum.

A disruption begins on beat 3 of m. 54 in the vibraphone voice of 4/4 by starting with two quarter notes and a whole note. The vibraphone then has a repeating figure in 4/4 but starts on an upbeat and ends on an upbeat. This happens twice in mm. 56-59, which can be found in Figure 5.4.



Figure 5.4. *Toccata for Vibraphone and Marimba* by Anders Koppel, mm. 58-59, 61-64

Koppel then breaks the continuum again with the vibraphone voice in mm. 61-62 giving a 6/4 pattern across the bar line. The last break is in mm. 63-64 in the vibraphone line using seven

beats within two 4/4 measures. The 4/4 continuum is restored in m. 65, and continues as expected until the new phrase at m. 74. This continuum happens once more in mm. 274-292, there is no rhythmic difference except for a few measures. These measures do not create a dissonance against the continuum.

The second section occurs from mm. 88-187, where the meter is 3/4 at 220 BPM. This creates a new expectation for the listener. The continuum is relatively close to 3/8 meter and is felt in one. The hierarchy for this continuum can be interpreted by the use of continuous quarter notes that switch between the two parts. The small-scale rhythms that play above the quarter notes have no contribution to the continuum. Mm 132-135 represent the only occurrence of the quarter note continuum being broken by using half notes and rests which can be seen in Figure 5.5.



Figure 5.5. *Toccata for Vibraphone and Marimba* by Anders Koppel, mm. 132-139

These four measures lack the driving quarter-note “motor,” which defines the continuum in this section. M. 136 puts the quarter notes back in the marimba voice putting the continuum back in

motion. Mm. 188-191 can be seen as transitional material back into the third section. While Koppel does not put quarter notes in either part, they are homogenous in triplet rhythms which conveys a quarter note pulse.

Mm. 192-203 and mm. 245-274 comprise repeated material from the beginning of the piece, where each continuum acts in the same manner as it did in the first section. M. 204 marks another change in tempo and meter marked *adagio* 70 BPM in 3/4. The continuum is the simple quarter note pulse in mm. 204-222. The continuum in this section stops with two or more quarter-note rests. In Figure 5.6, note the stoppage of continuum with two beats of silence.



Figure 5.6. *Toccata for Vibraphone and Marimba* by Anders Koppel, mm. 204-206, 209, and 220

The first example in mm. 204-209 shows the continuum functioning with quarter notes whether they are played together or separately in a continuous motion; the one exception would be a single rest. While the rest holds silence, there is implied stability if immediately followed by a quarter note. Mm. 223-244 solidifies the 3/4 continuum by adding eighth notes. The continuum functions without any disruption until returning to beginning material in m. 245.

Mm. 293-308 includes new material but has a normal continuum without any interruptions; the continuum is continued in 4/4 from the previous phrase. Koppel uses continuous sixteenth notes as the motor, which can be seen in Figure 5.7, mm. 301-303.



Figure 5.7. *Toccata for Vibraphone and Marimba* by Anders Koppel, mm. 301-303

This phrase repeats with the two voices switching parts. The next two measures, 309-310, are a transitionary period where the 4/4 continuum is less stable due to the syncopation.

Koppel changes meter and tempo to *allegro molto* 142 BPM in 7/8. The continuum is a divided 2+2+3 for mm. 311-326. An interesting side note about this continuum is the voices are in a canonic style but do not deny the expectation. The next phrase has another tempo and meter change back to the original tempo in 9/8. In mm. 327-329, Koppel creates both stable and unstable continuums. In these measures, the vibraphone voice is heavily syncopated, creating an unstable continuum, which the marimbist performs a stable 3+2+2+2, as shown in Figure 5.8.



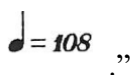
Figure 5.8. *Toccata for Vibraphone and Marimba* by Anders Koppel, mm. 328-330

The vibraphone voice then stabilizes with sixteenth notes beginning in m. 330. In m. 331, Koppel adds sixteenth-notes to the marimba voice in alignment with the vibraphone voice, solidifying the continuum between the two.

Koppel uses multiple continuums and different techniques (e.g., homophony, hemiolas, and canonic structures) to strengthen or break the flow of normalcy. The constant change of meter creates this shapeless motion that showcases multiple styles. The vibraphone and marimba voice complement or become independent from each other to create one or two continuums at the same time. The number of continuums reflects the nature and the length of the *toccata*, giving unique circumstances for rhythms to flourish. Koppel creates sections that place similar continuums together. Each continuum that is created has a point that breaks the expectation. Koppel generally uses rests to achieve this affect.

Chapter 6 - *Rituals* by Bruce Hamilton

Bruce Hamilton (b. 1966, Philadelphia) composes and performs music in a variety of genres. He has performed as a percussionist, improviser, and electronic musician for over thirty years.⁶ In 1998, Hamilton composed a five-movement timpani solo titled *Rituals* for Tim Adams. The solo calls for four drums and the movements can be performed individually or in combination with each other. Each movement is through-composed and the analysis over two movements will include observations of rhythmic activity. For this study, the reference of rhythmic motives is used as a framework to show how each movement utilizes certain rhythmic elements. This chapter will only include the first two movements, “Steady, Resonating” and “



“Steady, Resonating” includes an eighth-note *ostinato* that is interrupted by rests and other rhythms. The *ostinato* is set as a drone on the pitch D on the 32” drum. Other pitches that are found in this movement are A on the 29” drum, C, D, and E on the 26” drum, and F#, G, and G# on the 23” drum. This movement does not have a time signature or measures so reference will be by line and beat. The continuum can be defined as a quarter note pulse with no implication of meter. Hamilton only uses one or two beats to disrupt the *ostinato* and places rests at peaks and valleys of activity of rhythm.

Crescendos/decrescendos will be considered rising or falling transitional periods that lead into stress and lull. Transitions can be categorized by two different lengths of time; a small transition is three quarter note beats or less and a large transition is four quarter note beats or

⁶ Hamilton, Bruce. “About Bruce Hamilton.” <http://brucehamilton.info/bio.html> (accessed March 5, 2020)

more. The rise and fall follow the volume contour rather than note movement which can be seen in Figure 6.1.



Figure 6.1. Movement 1 *Rituals* by Bruce Hamilton, line 4 beats 11-18

Figure 6.1 shows two different lengths of rising transitions as well as one falling transition. The *ostinato* is maintained on one drum. Transitions consist of more than half the movement occupying 124 beats out of 229. Within transitions, Hamilton's use of triplets in different forms supports the rise and fall of the *crescendos* and *decrescendos*. Hamilton supersedes triplets with an eighth note except for the first occurrence, which ends with a quarter note.

Stress has two forms; the first is from accents and the second comes at the end of transitions. Lull will be considered a period of low volume with no accents at the end of falling transitions. Looking at Table 6.1, there are five rhythmic motives that make up the stress and lull patterns found throughout the movement.

Table 6.1. Movement 1 *Rituals*, multiple beats showing rhythmic motives

Rhythmic Motive 1	Rhythmic Motive 2	Rhythmic Motive 3	Rhythmic Motive 4	Rhythmic Motive 5
				
Line 1 beat 4	Line 1 beat 7	Line 1 beat 16	Line 2 beat 1	Line 2 beat 5
Eighth note on downbeat	Eighth note on upbeat	Dotted eighth + sixteenth note	Quarter note	Dotted eighth note

Source: Data from Bruce Hamilton, “Steady, Resonating,” *Rituals*

All motives in the table above are introduced following a rising transition and are stress points. The accent that is on the first part of motive one can be considered short stress. Without any grace note or accent, the motive will be considered by the dynamic marking. All rhythmic motives Hamilton introduces are found on the bottom drum, this can be seen in the figure above where all five motives are on D2. Rhythmic motive one and two are separated where the transition ends on the downbeat or upbeat. If the transition ends on the downbeat but has an accent on the following upbeat, the rhythmic motives are joined. Motive 3 has variations depending on where the accent is placed, but it does not occur enough to be separated into two. The rhythmic motives create small stress points as the movement follows the contour of swells.

There are only four large stress points found in this movement, all differing in length and content. On beat fourteen of line three, Hamilton creates a large stress point that lasts three beats. These three beats can be considered a large stress by spanning three or more beats following a rising transition. This is the first instance where two rhythmic motives appear between transitions, which can be seen in Figure 6.2.



Figure 6.2. Movement 1 *Rituals* by Bruce Hamilton, line 3 beats 14-16

The second occurrence where two motives can be found together is on line seven beat 10 and is 16 beats long. All five rhythmic motives are present under one large stress, this is the longest stress that Hamilton writes. The third stress is found on the eighth line beat 12 and is five beats. This stress is followed by a *crescendo* instead of a *decrescendo*. This leaves an unresolved stress until the next *decrescendo*, which happens on the next line. The last stress is on line nine beat 15 and is ten beats; this can be considered the peak of the movement. Figure 6.3 shows the start of the stress that is unusual by not using one of the rhythmic motives but instead by using quarter note triplets.



Figure 6.3. Movement 1 *Rituals* by Bruce Hamilton, line 9 beats 15-20

Every other group of quarter note triplets in this movement occurs during transitions. Hamilton has used triplets to lead into eighth notes that are the stress point or right before. Motives two and three are the only two motives present in this stress.

Lull is not defined by length but rather volume and absence of accents. After the peak of the movement, lull becomes more apparent as the dynamics begin to fade. There are only four small stress points before diminishing almost to nothing. Figure 6.4 shows the last two lines of the movement, indicating the period of lull starts after the falling transition that follows the last rising transition of beat 2-3.



Figure 6.4. Movement 1 *Rituals* by Bruce Hamilton, lines 11-12

Hamilton uses a triplet to lead into the last rhythmic motive and stress, then uses four falling transitions. At this point, the piece seems to digress in volume until fading into nothing. The movement ends with four groupings of quarter note triplets spread out. These groupings depart from any implication of beat or *ostinato*. Rests in this movement are predominantly used between transitions; they can be found before the start of a new dynamic or at the end of a rhythmic motive. Hamilton can use rests to create a dynamic shift without a transition by using a new dynamic after a quarter note rest. Eighth note rests are used in all aspects of the piece, during stress, transition, and lull. Quarter note rests are most found right before the beginning of transitions and other occurrences do not happen frequently enough, making them minute.

Movement two uses the tetra chord Gb-C-F-Ab. This movement has multiple notation marks (i.e., C means play in the center, N means normal playing, or E means play on the edge) that brings out different timbres in the timpani. The rhythmic content found in each phrase

correlates only to that phrase besides a rhythmic motive that can be found throughout. The difference between motivic rhythms and rhythmic content is the number of times the specific rhythmic figure is found; three or more appearances found in more than one phrase will create a motive.

There is one rhythmic motive that appears throughout the movement. Appendix D has all examples of the motive and its various forms. There are slight variations to the motive like an eighth note instead of a quarter note. The initial rhythms for the motive are not used again, instead the next common form is m. 2 where the last three rhythms are simplified into an eighth note with two sixteenth notes. Such substitutions do not detract from the overall motive. In some cases, the motive is at the very end of high rhythmic activity such as m. 8 and m. 22. I included all of m. 17 as I viewed both groupings as expanded rhythms to this motive. M. 17 and m. 33 are the only two variations that do not use sixteenth notes but a slower rhythm.

The continuum in this movement is abnormal between phrases. Phrasing in this movement are abnormal compared to standard western music where phrases follow a structure. The phrases that Hamilton creates in this movement can be determined from the rhythmic content. The movement uses multiple time signature changes along with rhythmic schemes that transgress bar lines. By changing meters at various times, the continuum cannot stay consistent in implying a meter in a single phrase. Phrases do not always start at the beginning of measures and will not equal each other in terms of length.

The first phrase comprises the first fourteen measures; this phrase includes one motive with two meter changes. The phrase begins with a large stress with the opening motive being played twice with an expansion. The dynamic shift to *piano* does not create a lull but instead can be interpreted as a transition in m. 4. The accents in this phrase create small stress notes that pop

out of the rhythmic activity as volume grows. The rhythmic activity along with the dynamic volume at the end of mm. 7-8 creates another large stress. M. 9 is the start of a long lull as the dynamic falls to *mezzo piano*. The rhythmic activity here is still a little active but is dwindled into nothing with the roll in mm. 12-14.

The next phrase contains six meter changes along with odd rhythmic groupings from mm. 15-22. The continuum is never set in this phrase, which lacks firm implication of the beat and has a meter change in nearly every measure. One example of that is m. 17, where the meter is 6/4 and Hamilton uses two two-beat five note patterns. Five notes over two beats are not a stable rhythm, making four beats of it absent of a continuum. Dynamics are also shifting as much as meter in this phrase, creating short lull and stress moments. In mm. 21-22, the fast rhythmic passage creates a large stress with the use of different sixteenth notes over six beats.

Mm. 22-38 is the next phrase; it starts with beat six of m. 22 on the notated roll. The first half of this phrase is a large lull with the dynamic being *pianissimo* with low rhythmic activity. Small accents here give a few small stress points within the lull. From mm. 24-30 and mm. 32-38, the beat is stabilized into 4/4, leading to a continuum that matches the time signature of the movement. There are small breaks in the continuum. In measure 29, for example, beats two and three have a heavily syncopated rhythm of five and three that stops an implication of beat but is resumed in beat 4. The continuum switches to 3/4 in m. 36. M. 34 has the shortest large stress point with dynamics and three beats of fast rhythmic activity.

In mm. 39-46, there are two rhythmic ideas that are used in this phrase. The first occurs in m. 39 and m. 45, with the thirty-second notes being played in a two-note fashion. The second is a five-note pattern that uses a triplet with three notes starting high, low, and then middle with the last two notes either staying on the same note or going above. The dynamics are constantly

shifting between *fortissimo* and *piano* almost giving the extreme ends of the dynamics. These kinds of shifts create a stress and lull back and forth without any transitional material. The rhythmic activity in this phrase does not create stress but uses accents to create small stress points.

The last phrase is mm. 48-58. Here, Hamilton calls for the dampening of notes rather than letting the natural decay occur. This added space between notes make it harder to perceive the continuum. Muting becomes an aspect of rhythm as both the hand moving to the drumhead and cutting off the sound effect the overall rhythm. This phrase uses heavy syncopation making it difficult for a continuum to exist. Rests in this phrase add the level of syncopation, and the silence does not allow for implied time.

M. 60 to the end is more of a *codetta* rather than a phrase. The use of sixteenth note triplets under one eighth note reflects the opening rhythmic figure. With the last three measures being at *fortissimo*, this would be considered the longest stress point of the movement. With most of the rhythmic activity being sixteenth note triplets, this is more of a stretched idea rather than a phrase. The entire *codetta* is also one large stress point.

Certain rhythms have better implications of time such as duple rhythms like eighth notes, sixteenth notes, and thirty-second notes. Hamilton's use of triplets along with odd groupings of notes such as groupings of five destroy any implication of time. The odd number of notes besides triplets are not as frequent in common practice music, this goes against continuum as unexpected rhythms can stop any implication of time.

The dynamics in this movement are characterized by sudden changes in extremes such as *forte* to *pianissimo*. These shifts in dynamics are only from loud to soft and can be found in a few different combinations. Stress in this movement can be seen in two different manners; the first is

by accents and how frequently they are used in a phrase. A single accent or even a few might constitute a small stress while multiple accents within two or more beats will create a large stress. The second form of stress is any prolonged rhythmic activity of sixteenth notes or higher activity. Lull is low rhythmic activity as well as low dynamic volume. Rolls that are more than two beats can be considered lull as the rhythmic activity has stopped while playing a drone. This movement also creates large moments of silence, which constitute lulls.

Hamilton uses certain rhythmic material to help define continuums. This can look different in each movement. In “Steady, Resonating,” Hamilton uses longer rhythmic values to disrupt a steady continuum. The movement uses an eighth-note drone, and any rest or large rhythm would stop a continuum. This could act as an indication to any sort of phrasing if it held any consistency, although it may be considered as one continuum with multiple disruptions. These disruptions allow reoccurring rhythmic structures to function as motives. In the second movement, the continuums are not repeated, as Hamilton uses multiple meter changes throughout to vary the continuums slightly. Phrases in this movement are not in a standard even phrasing. Each phrase is a different length.

Chapter 7 - Conclusion

Studying five different compositions with the focus on rhythm shows the complexity with which each work created different circumstances for the same terms. One composer could use continuums in the middle dimension to show contrast between two parts. Another composer can define a continuum by a steady pattern. Stress, lull, and transition were a little less flexible in following the same definition for most chapters. Stress was determined by different factors such as rhythmic density, ornamentation, accents, and volume. Lull is characterized by stability and low rhythmic density or volume. Transitions are periods leading up to stress or lull. The focus uses all rhythmic aspects as well as borrowing from dynamics and sound to create a landscape that helps bring some of the mystery of rhythm into view. Each composer would have a different aspect to focus on, whether that be the continuum(s) or the relationship between stress and lull.

“Slide” in *Three Moves for Marimba* by Paul Lansky is a continuous flurry of sixteenth notes with shifting meters that creates an uneven beat throughout the movement. There are two beat patterns or repeating measure structures that will create a continuum. These continuums are short lived but exist throughout, creating expectations that are broken by meter changes. Lansky groups patterns together that are like each other in major sections. Major sections use the same opening continuum to start and then will introduce new material in a following phrase. Even though they use the same continuum, Lansky will use new musical content when creating a new section.

“Etude 9” by Jacques Delécluse has an ABA’ form. Delécluse uses rising and falling transitions with *crescendos* and *decrescendos* in the A section to give strength to stress and lull. The B section is filled with dynamics shifts rather than transitions to move from stress to lull and

vice versa. The A prime section uses one rising transition to hit the final stress. Stress is heavily related to dynamics in this chapter in how it is achieved by building up to it or an instant strike.

Rebonds “b” by Iannis Xenakis is the second movement in a multi-percussion solo. There are three major sections all with distinct uses of stress and timbres. Xenakis uses a single and double accent to signify patterns or stress. In the first section, Xenakis uses double accents to start patterns. These double accents are then used freely in the second section. The third section uses dynamics to initiate stress rather than accents. Rhythmically, the movement’s sixteenth notes, thirty-second notes, and buzz rolls are never interrupted by rests. The ideas presented from Xenakis both phrases and transitions are short lived with variations.

Toccata for Marimba and Vibraphone by Anders Koppel uses the two voices in multiple fashion to show off rhythmic complexities. The two players will use different variations of continuums throughout the composition. Between the players, these continuums can be shared or independent. The common continuum is playing what the meter says together. There are times when the players are using two different subdivision patterns within the same meter creating two different continuums. There is also one example of a canonic continuum, in which one player waits for the other before entering. The *toccata* creates many different styles of continuums, but breaks all of their expectations with rests.

Rituals by Bruce Hamilton is a five-movement timpani solo. The first movement uses a drone of eighth notes to create a continuum. Hamilton then uses different rhythmic motives to create stress and lull that are placed above the drone. These stress and lull moments are created from continuous rising and falling transitions. Stress and lull land on rhythmic motives that either reinforce the continuum or disrupt the flow. The second movement creates unique phrases in length by starting or stopping in the middle of measures. This movement is constantly

changing meters, which disrupts any continuum from repeating. Hamilton does create a rhythmic motive throughout.

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Appendix A - Terms and Definitions from Jan LaRue's *Guidelines*

for Style Analysis

Continuum – Goes beyond meter to represent the whole hierarchy of expectation and implication in rhythm, the consciousness of a continuing pulse from which we infer a multidimensional structure of motion that carries through sustained notes or intervals of silence.

Stress – High levels of activity from any source may produce a stress of any duration, the variety of durations of rhythmic intensification can be from an accent to a phrase.

Lull – A condition of relative stability or rest obviously results from low levels of rhythmic activity; it is merely temporary stability that more accurately reflects the continuing flow of varying intensities.

Transition – Is coasting smoothly to rest or preparing for a situation of stress, can occur in different directions depending on what proceeds it.

Appendix B - Lansky's *Three Moves for Marimba*: Slide Continuum

Table

Table B.1. Continuum table for *Three Moves for Marimba*: “Slide” by Paul Lansky

Letters	Measure #s	Metric subdivision	Continuum
	M1-M6	4+3 4+3 4+3 4+3 4+3 4+3	Y
	M7-M12	4+3 4+3 4+3 <u>3+3</u> 3+4 3+5	Y
	M13-M18	4+4 3+3 <u>4+4</u> <u>4+5</u> 5+3 4+3	Y
	M19-M21	4+4 4+4 4+4	Y
A	M22-M27	4+3 4+3 4+3 4+3 4+3 4+3	Y
	M28-M33	3+3 3+3 3+3 3+3 4+4 4+4	Y
	M34-M39	3+4 3+3 3+3 3+3 4+3 4+3	Y
	M40-M45	3+4 <u>3+3</u> 3+4 4+4 4+4 4+4	Y
B	M46-M51	4+3 4+3 4+3 4+3 4+4 4+4	Y
	M52-M57	<u>4+4</u> 4+3 3+4 3+3 4+3 4+4	Y
	M58-M63	3+4 <u>4+4</u> 4+3 3+4 <u>3+3</u> <u>3+3</u>	Y
	M64-M69	3+3 4+3 4+3 3+4 2+4 <u>4+4</u>	Y
	M70-M75	<u>3+3</u> <u>3+3</u> 4+3 <u>4+4</u> <u>4+4</u> 3+4	Y
	M76-M81	3+4 4+4 4+4 4+4 4+4 3+3	Y
C	M82-M87	4+3 4+3 4+3 <u>4+4</u> 4+3+3 4+4	Y
	M88-M93	3+3+2 5+2 5+2 5+2 4+2 3+3+2	Y
	M94-M99	4+3 4+3 4+3 3+4 3+4 4+5 4+3 3+4 5+3 5+5 2+4 4+4	Y
	M100-M106	4+4+4	Y
D	M107-M113	4+3 4+3 4+3 <u>4+4</u> 4+3 4+4 4+3	Y
	M114-M116	<u>4+4</u> <u>4+4</u> 4+6	Y
	M117-M122	4+4 4+4 4+4 4+4 4+3 4+3	Y
	M123-M128	3+3 <u>4+4</u> 4+3 3+4 3+4 4+3	Y
E	M129-M133	4+3 4+3 4+3 4+3 4+4	Y
	M134-M138	3+4 4+4 4+4 4+4 4+4+4	Y
F	M139-M143	<u>4+4+4</u> 3+3 4+3+4 3+3 4+3	Y
	M144-M148	<u>4+4+4</u> 3+4 4+3+4 3+3 4+3	Y
	M149-M153	<u>4+4+4</u> 3+3+4 4+3+4 3+3 4+3	Y
	M154-M159	4+3 4+3 4+3 4+3 4+4+4 4+4+6	Y
	M160-M165	3+4 3+4 3+3 4+4+4 4+4+4 4+4	Y

Source: Data from Paul Lansky's *Three Moves for Marimba*: “Slide”

Appendix C - Delécluse Etude 9 Rhythmic Variations of Palindromes

Rhythmic Palindromes:



Figure C.1. “Etude 9” by Jacques Delécluse, m. 5



Figure C.2. “Etude 9” by Jacques Delécluse, m. 9



Figure C.3. “Etude 9” by Jacques Delécluse, m. 14



Figure C.4. “Etude 9” by Jacques Delécluse, m. 17

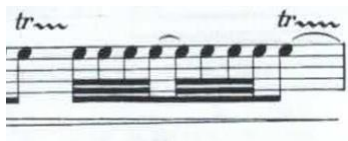


Figure C.5. “Etude 9” by Jacques Delécluse, m. 23



Figure C.6. “Etude 9” by Jacques Delécluse, m. 24

Movement 2 Motives:

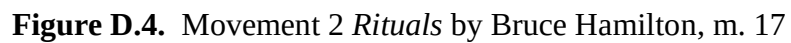
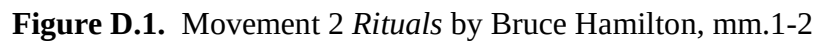




Figure D.5. Movement 2 *Rituals* by Bruce Hamilton, m.19

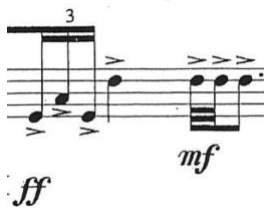


Figure D.6. Movement 2 *Rituals* by Bruce Hamilton, m. 22



Figure D.7. Movement 2 *Rituals* by Bruce Hamilton, m. 26



Figure D.8. Movement 2 *Rituals* by Bruce Hamilton, mm. 32-33



Figure D.9. Movement 2 *Rituals* by Bruce Hamilton, mm. 39-40