UNIVERSIDADE FEDERAL DE MINAS GERAIS
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Levy Pacheco de Oliveira Neto

REPETITION AS A STRUCTURAL AND EXPRESSIVE RESOURCE

A study applied to Musical Composition

Belo Horizonte
2022

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Orientador: Prof. Dr. João Pedro Oliveira

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"The essence of the beautiful is unity in variety"

Felix Mendelssohn Bartholdy

RESUMO

A presente pesquisa visa compreender quais são as consequências cognitivas advindas da utilização de elementos repetitivos em música sobre os ouvintes para, posteriormente, estudar como tais elementos podem ser manipulados por compositores para otimizar a transmissão de suas intenções musicais ao público. Para tal, tendo como principal referência bibliográfica o trabalho realizado por Elizabeth Margulis e David Huron, após uma primeira fase analítica, serão compostas peças originais utilizando as técnicas analisadas durante a fase teórica deste estudo.

Palavras chave: composição, desenvolvimento motívico, articulação formal, cognição musical.

ABSTRACT

The current research aims to understand what are the cognitive consequences that arises from the use of repetitive elements in music to, posteriorly, consider how these elements might be manipulated by composers to optimize the transmission of their musical intensions to the audience. In order to do that, using as our main reference studies conduct by Elizabeth Margulis and David Huron, original pieces will be composed applying the analyzed techniques discovered in the theoretical part of this research.

Keywords: Musical Composition, Motivic development, formal articulation, Musical Cognition.

LIST OF FIGURES

LIST OF TABLES

TABLE OF CONTENTS

VOLUME I

VOLUME II

SCORES

***Asterion's Labyrinth* (2019):** for solo percussion and ensemble.

***Mysteries of the Unseen* (2019):** for flute, B-flat Clarinet, piano, violin, cello, electronics and light operator.

***Rock On* (2020):** for flute, alto sax, guitar, drums, piano and electronics.

***Towards the Unknown Island* (2020):** for flute, violin, percussion and electronics.

***Arapuca* (2020):** for flute, classical guitar, cello and electronics.

***Comigo me Desavim* (2021):** for vocalizing pianist and electronics.

1) INTRODUCTION[1]

The use of repetition in music is widespread and it has a central role in the musical practice of many cultures. Although there is some sort of agreement on the importance of repetition to musical expression, the concept of repetition is hard to grasp and its definition has been discussed in many treatises by musicians and philosophers. Although my main goal in this dissertation is not to problematize and discuss each of these concepts or try to find a concept that better suits my purposes, I believe that it is important to go through some of these definitions to clarify to the reader what will be considered as repetition here.

I will classify as musical repetition every auditory stimulus that can be recognizable as equal (or similar) to a previously heard stimulus. Figure 1 shows the first measures of my piece *Asterion's Labyrinth.* As one can notice, the initial gesture performed by the soloist and the pianist in the last quarter of the first measure is performed with no modifications in the last quarter of the third measure (red square – Figure 1). This is an example of an exact repetition, where the same musical motif is re-exposed without changes.

Figure 1 – *Asterion's Labyrinth* (m. 1-4)

[1] This research was financially supported by CAPES.

In addition to this kind of repetition, we can have an auditory stimulus that is close related to a previous stimulus, nevertheless, it has some degree of variation. Figure 2a, 2b and 2c show three musical gestures (extracted from the flute part of my piece *Arapuca*) that can be easily related to one another as a restatement, although it presents considerable modifications.

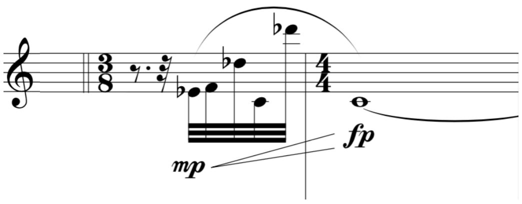

Figure 2a – Flute melody in *Arapuca* (m. 24-25)

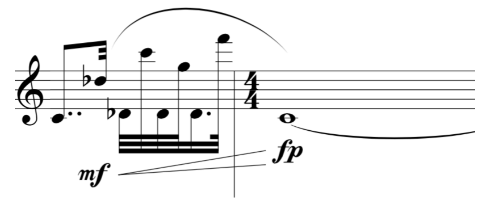

Figure 2b – Flute melody in *Arapuca* (m. 27-28)

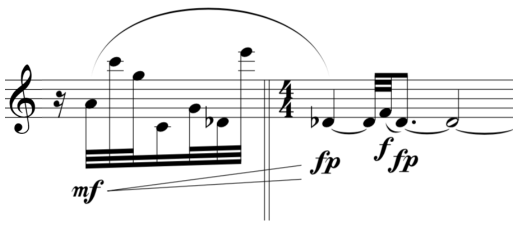

Figure 2c – Flute melody in *Arapuca* (m. 31-32)

Although these three melodies are not exact reiterations, it is still possible to highlight many instances of repetition present in their construction: 1) The pitch content is very similar in all of them (C, D-flat, E-flat, F and G) 2) All melodies are based in large interval leaps 3) They are played in legato 4) The flux of the gestural energy is very similar (in this case, we have almost an exact repetition: All of them start with a lower level of energy – dynamic *mp* or *mf* - that increases throughout the melodic development until it subtly loses its energy – *fp* in the long note). This type of repetition is what Antares Leah Boyle calls as Maximalist repetition. According to her, this kind of repetition is often found in “a late post-tonal idiom that uses all twelve pitch classes and diverse rhythms that often thwart conventional metric interpretations” (2018, p. 2).

Both examples (figure 1 and 2) demonstrate how these concepts might be applied in the microstructure of a piece. In this dissertation, I will also analyze the influences of repetition in the macrostructure. Different classical structures, such as the Sonata form, Theme and Variation and Rondo use repetition with different purposes.[2] It is important to remember that – also in the macrostructure – repetitions can be exact or not. Variations in the macrostructure

[2] See p. 24 and 25.

can cause interesting consequences related to the listener's expectations. These characteristics will be explored more deeply later.

Furthermore, it is also important to notice that the perception of repetition might happen in many levels. Silvio Ferraz, inspired by Gilles Deleuze's book *Repetition et Difference*, creates a parallel between repetition and difference. According to Ferraz, "difference, such as repetition, is deduced from the degrees of resemblance and analogy that allow us to recognize the differences in relation to a fixed object". According to the author, the resemblance between repetition and difference can explain how different composers from the 20th century applied repetitive procedures in their music and how these musical styles demands a different type of listening attitude from their audience.

Ferraz stresses that the compositional thought of Minimalist composers, such as Steve Reich, seeks to "reveal the difference" (FERRAZ, 1998, p. 4). In this kind of music, short musical gestures are sequenced in time and restated over and over, inviting the listener to perceive the small differences between each restatement. As we will see further, this procedure is also usually applied in pop songs.

In another direction, serial composers explored a different kind of repetition; the repetition of a concept (FERRAZ, 1998) – in this case, the repetition of the tone-row. Although the musical material is varied and exact repetitions are rarely explored in sequence, the internal structure of the tone-row ensures some degree of repetition that provides coherence to the musical development. According to Ferraz (1998), while listening to serial music, the listener should concentrate on perceiving the elements that brings unity to the discourse - that is, elements that reveal the repetition, not the difference.

These two approaches – that, as stated by Ferraz, requires a different listening attitude from the audience – might explain why repetition has become such a controversial subject during the 20th Century. Although the advent of serial music has shed more light into the discussion on musical repetition, a negative view towards it can be found even earlier. Ferdinand Praeger stated in 1883:

> Would ever a poet think of repeating half of his poem; a dramatist a whole act; a novelist a whole chapter? Such a proposition would be at once rejected as childish. Why should it be otherwise with music? (p. 2).

During the twentieth century, as a matter of fact, this kind of thinking was contested not only by minimal composers. Ligeti also notice that the lack of repetition in a musical piece could create structural problems. According to Ferraz,

> In the end of the fifties, Ligeti stressed how the fetish for diversity, occurred in electronic and serial music, created an instability of the musical system; An instability between the necessity of formal clarity and the amount of material that drowns the listener in an undifferentiated space. The experienced listener can still listen to pieces such as Stockhausen's *Ziklus* and notice its form, nevertheless, for the common listener, the details accumulate in a sequence without form or unity (FERRAZ, 1998, p. 25)[3]

In his text *Metamorphoses on musical form*, Ligeti makes an interesting analogy to demonstrate his thought. According to him, the problem of too much diversity in music is similar as

> playing with plasticine. The distinct lumps of the various colours gradually become dispersed the more you knead the stuff; the result is a conglomeration in which patches of the colours can still be distinguished, whereas the whole is characterised by lack of contrast. Knead on, and the little patches of colours disappear in their turn and give space to uniform grey. This flattening-out process cannot be reversed. Similar symptoms can be discerned in elementary serial compositions (LIGETI, 1958, p. 10).

Thus, it is noticeable that repetition presents contradictory characteristics, being classified as childish and as essential to a musical work. According to Deliège and El Ahmadi (1990),

> When the music is overburdened with repetitive structures, as in minimalistic music, time becomes static (…) Inevitably, when no effort is required, attention progressively relaxes and listening slides into the most complete passivity. In contrast, when recognition of cues is made difficult by a too rapid accumulation of information as well as by too few periodic structures, perpetually mobile time offers no signposts nor rest, and the listening process gradually stifles because of the impossibility of handling too much information within the time frame of audition (p. 22)

Studies developed in the field of psychoaesthetics show how repeated stimuli might affect a person's aesthetics preferences,[4] and their outcomes reinforce these contradictory characteristics of repetition. The Wundt Curve[5] (Figure 3) shows that familiarity (created through repeated exposure to a repetitive stimuli) might lead initially to high rates of pleasure (hedonic value), however, the same repetitive stimuli for long periods of time (without variation) may become unpleasant.

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[3] Our translation.

[4] Among these studies are: Berlyne (1971), Hargreaves (1984), North and Hargreaves (1995).

[5] Proposed by Wundt and adapted by Nerline (1971).

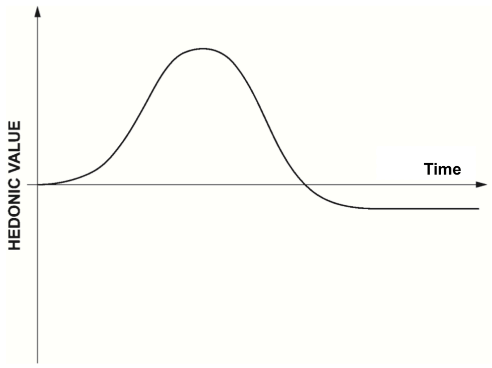

Figure 3 – The Wundt Curve

Margulis arguments that

> Two mechanisms have been posited to account for the inverted U-shaped preference response across repeated exposures (for an excellent overview, see Szpunar, Schellenberg, & Pliner, 2004). The perceptual fluency model (Bornstein & D'Agostino, 1994) explains that people misattribute the processing facilitation associated with a familiar stimulus to some positive attribute of the stimulus itself (Mandler, Nakamura, & Van Zandt, 1987) (…) Berlyne (1971) proposes a different explanation for the inverted U: repeated contacts assure the observer that the stimulus is non-threatening (MARGULIS, 2013, p. 46)

It is important to stress that the Wundt Curve will not hold true for music that aims to create a state of trance in their listeners. In such scenario, an auditory stimulus is consistently repeated through long spans of time and, although highly repetitive, many people would classify the experience of listening to it as pleasant. Further in this text, we will see that the *Theory of Habituation* might help to explain why the inverted U-shaped preference does not apply to trance music.[6] Nevertheless, since my composition portfolio does not intend to evoke states of trance, I will not give emphasis to trance-related experiences and I will consider the inverted U-shaped preference as a valid conclusion. I believe its relevance can be better assessed in an experiment conducted by Elizabeth Margulis in 2013.

In this experiment, excerpts of important works of the twentieth century[7] were presented to thirty-three people (most of them without any experience with contemporary music). The excerpts were presented randomly in three conditions: 1) Original (unmodified); 2) Immediate repetition (IR), "in which repetition of segments were interpolated immediately after their firsts statement" (Margulis, 2013, p. 50); 3) Delayed repetition, "in which repetitions of segments were interpolated later in the excerpt" (Margulis, 2013, p. 50) (Figure 4).

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[6] See p. 17.

[7] The presented excerpts were from pieces such as Luciano Berio's *Sequenza I, III, V e IX* and Elliot Carter's *Scrivo in Vento, Steeps Steps, Rhapsodic Musings* and *Figment I.*

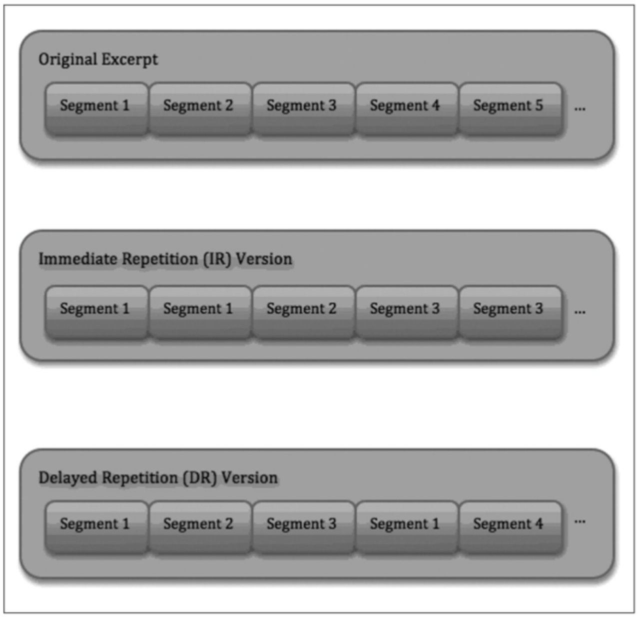

Figure 4 – Margulis' experiment
Source: Margulis, 2013, p. 50

The listeners were instructed to rate the excerpts in three categories (in a scale from one to seven): 1) Enjoyment; 2) Interest and 3) Artistry.[8] As a result, the modified excerpts received better ratings in all categories. This result is even more incisive considering that the modifications of the excerpts were created "naively, without regard to musical content" (Margulis, 2013, p. 54). This factor, as stressed by Margulis,

> should only serve to stack the deck in favor of the originals, which are, after all, much-respected and valued examples of 20th-century concert music. Therefore, it is particularly noteworthy that listeners in this study tended to react more positively to music in the two repetition conditions (delayed and immediate repetition) than to music in the original version (MARGULIS, 2013, p. 54).

The results found by Margulis show that within-piece repetition might be decisive to help listeners in the development of aesthetic preferences. In 1979, Lidov had already stressed how repetition could increase the familiarity of a listener to an unfamiliar musical style. According to the author, "innovations which lack the support of an established musical language can appeal to repetition to clarify their vocabulary and procedures" (Lidov, 1979, p. 27). According to Huron (2007), "the more an opus-distinctive pattern deviates from an established schema, the more repetition is required to ensure that a dynamic expectation takes precedence" (p. 230).

It is also important to notice that music takes place in time and, as stated by Stambaugh

[8] Rate 1 in Artistry meant that the piece was randomly generated by a computer and the rate 7 meant it was written by an artist.

(1964), “The temporal aspect of music differentiates it from the visual arts of architecture, sculpture, and painting, and sets it in a certain relationship to drama, poetry, and the dance” (p. 265). According to Brower,

> The spacing of musical events in time is controlled not by the listener, but by the composer or performer. We cannot stand back from the music, as we can from a painting, to bring an entire piece within our perceptual horizon. As listeners, we have no choice but to take in musical events at the rate at which they are presented to us (BROWER, 1993, p. 19)

Brower (1993) also argues that

> When we listen to an ongoing stream of auditory information such as speech or music, we have no opportunity for rehearsal, since we are constantly processing new information. Under these circumstances, short-term retention can be related to the notion of the psychological present. As William James first noted in 1890, we do not experience the present as a point, but as a span of time, made up of those events of the past that are still part of our conscious awareness (p. 22).

Although musical stimuli are compared to speech by Brower, music has a characteristic that differentiates it from language:

> If you hear an orator speak, or if you hear the first act of a drama, it is in a language intelligible to all; every word conveys a distinct and definite impression at once. There is no occasion to repeat that; you know perfectly well the first time what the orator has said; but music is a much more vague and indefinite language. (PRAEGER,1883, p.6-7)

The fact of music being “a more vague and indefinite language” makes the musical discourse harder to grasp and repetition can be a valuable procedure to increase musical clarity. For Margulis (2014), repetition is used in music as a compass to help the listener to ‘navigate’ the piece. According to her, “music repetition might also be profitably conceptualized as a way to teach people how to listen to the piece at hand-to guide them to the proper level of attention and to underline the entities considered important” (2014, p.20).

The repetitive characteristic of music has been widely reported by different authors. According to Lidov (1979), “although all artistic and communicative media have aspects of repetition, (…) any other, with the possible exception of dance, so regularly tolerates – or should we say requires – the degree of literal repetition which is normal to music” (p. 26). David Huron also states that “Music is extraordinarily repetitive compared with other stimuli in our lives” (2007, p. 229).

One of the most important roles of repetition in music is the creation of form. According to Huron:

> The subject of musical form can be pretty complicated with lots of elements and lots of different perspectives. Although there is plenty of things that scholars have disagreed about, perhaps one concept that people do agree is the centrality of the idea of repetition. Musical form depends on some sort of patterning in the way musical passages are repeated either verbatim or in some varied way (verbal information)[9]

Hence, we know that music is a temporal art and its form may be delineated by musical repetition. Saariaho and McAdams stress the role of memory in the discernment of musical form. According to them (1985), “one important characteristic of musical form is that it is accumulated in memory across time. This implies that if some element is easily remembered, its potential contribution to a form is greater than another element which is very difficult to remember” (p. 367). Repetition might be a primal factor to enhance our memorization.

> One key for retaining a pattern in short-term memory is repetition (…) The more often one activates a pattern in short-term memory, the greater the likelihood that it will pass into so-called intermediate-term memory (ITM), and then potentially into long-term memory (…) Repetition in music causes the repeated musical patterns to make the transition from short-term to intermediate-term memory. Musical repetition acts like an involuntary form of conscious memorization. (HURON, 2007, p. 228)

This characteristic reinforces the importance of repetition in our musical experience and potentially introduces it as a crucial element to the consolidation of musical form: it delineates the musical structure and also improves our memorization of the musical material. Hence, if repetition displays all these bright sides, should all music be highly repetitive? Sadly, it is not that simple. At the same time within-piece repetition might help to increase familiarity to a piece of music, it can possibly also be harmful in the long run. Studies have shown that “highly repetitive music would bear fewer repeated listenings, but highly nonrepetitive music would bear more” (Margulis, 2014, p. 79). In fact, experiments have confirmed this statement is also valid for our visual perception. According to Reber, Schwarz and Winkielman (2004), “studies found that mere-exposure effects[10] were more easily obtained for complex than for simple visual stimuli” (p. 372).

Taking into consideration the discussion above, the current research main questions are: How can this discussion about musical repetition find practical application in

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[9] From David Huron’s lecture “Musical Form: A psychological Perspective”. Available on: https://vimeo.com/35912513

[10] The mere-exposure effect is a psychological phenomenon in which people tend to prefer stimulus that are more familiar to them. This familiarity is created via repeated exposure.

contemporary musical composition? How can we find a middle ground where repetition brings familiarity without wearing on the listener in unbeneficial ways?

While trying to answer these questions, we are dealing with aesthetic preferences and we know for a fact that it is a subjective matter. Different people will be prone to enjoy different kinds of music depending on innumerous cultural aspects. To illustrate this wide range in use of repetition, Huron (2013) created a schematic figure (figure 5) showing how each musical style uses repetition.[11] Through the analysis of this graph it is possible to assess how long the repetition usually lasts in each genre (x-axis) and whether the style uses verbatim repetition[12] or it is through-composed[13] (y-axis).

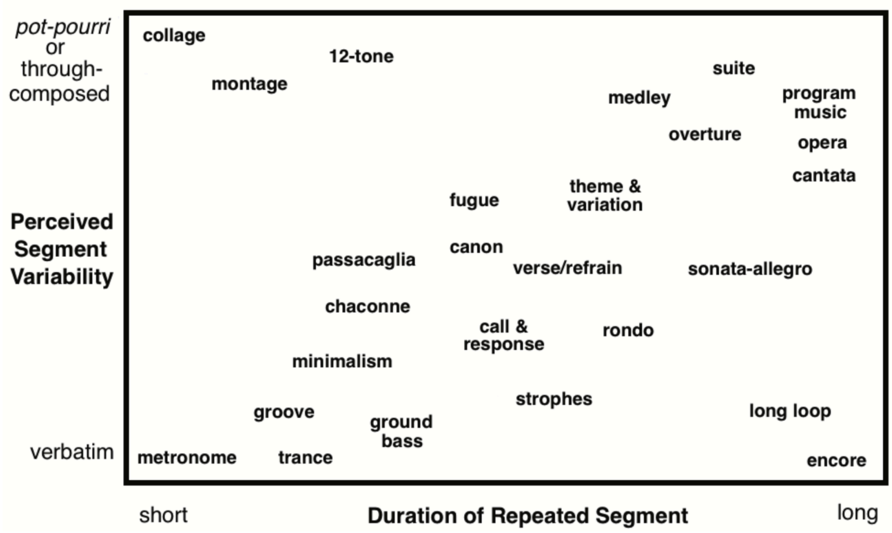

Figure 5 – Musical styles and repetition
Source: Huron, 2013, p. 28

As we can see, there is no right answer. Musical genres differ dramatically in their use of within-piece repetition. Despite this fact, all of these styles find people interested in listening to them, making it nearly impossible to find an objective answer to the questions of this research. However, there are some studies that we can use to guide our quest.

Experiments in the field of musical cognition have been testing how our brain assimilates and reacts to auditory stimuli and it has shown that our brains might present a tendency to prefer some types of stimuli rather than others. For example, in general, and across

[11] The intention of the graph is not to say that all canons, for example, will use the same amount of repetition. The idea here is to show that the kind of repetition usually found in a canon (placed in the middle of the graph) will be different from the kind of repetition usually found in musical styles that are placed in the corners of the graph (such as groove, 12-tone music, program music and long loop).
[12] Repetition without any variation.
[13] Repetition with variation.

cultures, musicians are more likely to use early-form repetition[14] (Huron and Ollen, 2003).[15] Huron and Ollen followed this study up with a perceptual study where they composed modernist-like excerpts on the piano and then structured these excerpts in different patterns (2004). When they played these excerpts to twenty-nine participants, they found the same result. The participants preferred the excerpts structured with early repetition.

Although these studies do not guarantee that everyone will develop the exact same aesthetic preference to an auditory stimulus, they exhibit some general preferences that might be interesting when applied to a composer's practice. In Huron and Ollen's early-repetition experiment, not only was a cross-cultural preference discovered when analyzing excerpts from different cultures but it was also found that, out of 896 trials, people preferred in 510 occasions the excerpt structured with early repetition.

Therefore, the first chapter of this dissertation will discuss some findings of musical cognition researches. Our goal is to create a better understanding on how our brain might reacts to music. Although "there is a clear ambition in cognitive theory to try to understand to what extend human phenomena are defined by universal and biological dimensions" (Bondebjerg, 2014, p. 13), it is important to stress that the research presented in this dissertation does not aim to diminish the importance of cultural and social relations that come into play when we talk about music perception and aesthetical preferences.[16] My approach, as stated by Bondebjerg (2014, p.14), understands that "society and culture shapes the human mind, but our brain and body – our whole biological structure – comes with structures, dispositions and biological functions and mechanism that also, to a large degree, influence the way we experience reality and communicate about it". Therefore, I believe that the cognitive theory does not exclude the necessity of cultural and social research, but complements it. In the scope of this research, I will focus mainly in the cognitive approach. It is also important to notice that, although I will use as a main reference music cognition studies, this research *per se* is not a research in the field of music cognition, as I will not be conducting experiments to evaluate

[14] Preference for structuring repetition in the beginning of formal structures. Therefore, structures such as AAAB are more common than ABBB.

[15] They analyzed samples of "fifty recorded works including Calypso music, Inuit throat singing, Japanese New Age, Estonian bagpipe, Punjabi pop, Chinese guqin, Navaho war dances, Ghanaian drumming, Spanish Flamenco, Australian didjeridu, Hawai'ian slack key, Kalimantan ritual music, North African Berber music; Macedonian, Tuvan, Turkish, Ugandan, Gypsy (Romani), Malagsy musics; as well as a selection of overtly Western genres, including a Baroque flute sonata, Haydn string quartet, Sousa march, Ginastera piano music, Miles Davis jazz, Romanian foxtrot, British war song, American Bluegrass, Cajun music, Norwegian polka, easy listening, plus twenty similarly diverse culture sources" (Huron, 2013, p. 24).

[16] In fact, as we will see further, many of the theories I will be referencing reinforces the fact that cultural background is extremely important in defining our musical expectations and processing fluency.

if people, in fact, agree with my analysis. This research is focused in Musical Composition and my goal is to reflect how conclusions and observations from the field of musical cognition can be used to improve compositional techniques.

To examine how our brain processes auditory stimuli, I will use as a main reference Huron's lecture *Musical Form: A Psychological perspective* (2013) and his text *A Psychological Approach to Musical Form: The Habituation-Fluency Theory of Repetition* (2013). At this point, terms such as Habituation, Spontaneous Recovery, Potentiation of Habituation, Dishabituation, Stimulus Generalization and Processing Fluency will be the focus of the discussion and, as we will see, repetition plays an important part on each of these aspects. To finish this topic, I will analyze music from different styles and cultures to see what strategies different composers use to create habituation, dishabituation and processing fluency in their pieces.

Since this study is concerned with musical perception, my main reference to analyze the pieces will be my own ears. The scores will serve only to enhance the understanding on why my ears reacted to the music in the manner it did. Therefore, the analysis of the score will be used as a means to explain why I listen to some excerpts in the way I did and not as a means to make me listen to more details in the same excerpt. I believe this method will help me to avoid finding musical patterns or motives that look convincing in the score, but do not sound convincing to the ears. I will prefer to have my ears leading the score analysis instead of having the score leading my ears. Furthermore, as stated by Saariaho and McAdams (1985), "many experiments in the Twentieth Century have shown that structuring in itself is not enough if it cannot be apprehended or decoded for various reasons, including biological or psychological limits on the processing of optical or acoustic structures" (p. 367).

Furthermore, it also important to state that the analysis conducted here does not aim to be a generalization of how every single person would react to the analyzed music. Its purpose is to be a guide to inspire my own creative work and, hopefully, the creative work of other composers interested in the subject. Although I will be analyzing music from different genres and cultural backgrounds, my goal is not to develop a musicological or theoretical analysis. Therefore, I will not be concerned with the function of each music on their own communities and I will not try to find documents or interviews that prove that each analyzed composer agreed with my conclusions concerning their work. Gubernikoff (2008) affirms that when Boulez analyzes Stravinsky's *Rite of Spring*, his analysis says more about Boulez' interests in music than Stravinsky's. I would like to argue that most analysis allow us to draw more conclusions about the person analyzing the object than about the object itself. I firmly believe this will hold true for the analysis found in the scope of this research. Therefore, my approach should not be seen as a way of misleading artistic views or as a reductionist attitude towards each artist's real ideas,[17] but as a tribute to musicians and creators that inspired and helped me to achieve a better understanding of my own ways of thinking about musical composition. As my guitar teacher Teodomiro Goulart used to say: "Sometimes, learning something wrongly can path the ways to new discoveries".[18]

In Chapter 2, I will discuss the relation between music repetition and expectation. At this point, I will use Huron's *ITPRA Theory* (2007) as my main reference. *ITPRA* stands for imagination, tension, prediction, reaction and appraisal. According to Huron, we are exposed to all these phases when dealing with expectation. First, we imagine what is going to happen (Imagination), then, we have a biological reaction, in which our muscles get tense (Tension) and our attention is more focused to react properly to whatever outcomes we might have to face. At this moment, we will try to predict the results (Prediction) to react in the best possible way (Reaction). When we finally discover what has happened, it is the appraisal phase, in which we evaluate the outcome.

In this theory, Huron defines that the way we react to music is closely related to the way our antecessors reacted to different stimuli in the beginning of the development of our species. Therefore, according to the author, "any theory of musical expectation will also be a general theory of expectation (…) The *ITPRA Theory* is intended to provide such a general theory. The theory is ambitious in scope and aims to account for all of the main psychological phenomena related to expectation" (Huron, 2007, p. 3). One of the most interesting aspects of *ITPRA Theory* is the relation created between these five different aspects of expectation and our emotions. Huron argues that "the theory attempts to explain how expectations evoke various feeling states" (2007, p. 3). Therefore, the use of *ITPRA Theory* might be crucial to assist a composer to guide reactions in the listeners.

After finishing this first theoretical study, I will analyze how the discussed theories have been applied in distinctive realms of artistic manifestations and human interactions. There are interesting examples in the work of screenwriters, film directors, writers, comedians, sportsman and others. Is it possible to apply the same techniques found in other fields to the music composition? Have any of these examples already been applied in the music of classical

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[17] I would like to add that I have a profound and utmost respect for all music analyzed here and I hope that the composers and performers quoted throughout this text understand that, even if they do not agree with my analysis, they have served as an influence to inspire my own artistic work.

[18] Oral information.

composers, songwriters and pop musicians? This analysis will help us to answer these questions and it will be important to define distinctive ways to generate expectations and how to subvert them.

Lastly is the question: How can a composer apply all this information in his practice? To answer this enquiry, the third chapter will demonstrate how this research has impacted my own artistic work, analyzing how the techniques discussed here were applied in musical pieces I composed during the four years of my doctoral research. The pieces are:

1) *Asterion's Labyrinth* (2019): for solo percussion and ensemble.

2) *Mysteries of the Unseen* (2019): for flute, B-flat Clarinet, piano, violin, cello, electronics and light operator.

3) *Rock On* (2020): for flute, alto sax, guitar, drums, piano and electronics.

4) *Towards the Unknown Island* (2020): for flute, violin and percussion.

5) *Arapuca* (2020): for flute, classical guitar, cello and electronics.

6) *Comigo me desavim* (2021): for vocalizing pianist and electronics.

While the analysis of my pieces will serve to illustrate a practical application of the theoretical discussion conducted throughout this dissertation, it does not intend to exhaust all possibilities that might arise from the theories here exposed. I hope that the use of these techniques in my own work serve only as a small introduction to shine some light in the subject and I hope that this discussion enables the reader to broaden the application of these techniques in his own compositional practice.

Moreover, this study aims to achieve a better understanding of how musical repetition can be used to improve contemporary compositional practice, while increasing the bibliography concerning the study of within-piece repetition and its cognitive consequences. Jonathan Dunsby (1986) laments the existing gap between the importance of repetition inside the same piece and its lack of scholarly attention:

> The music of many cultures is characterized by lengthy musical repetitions, especially where ceremony, text and dance determine the amount of music needed. In Western Classical music, formal repetition is an especially prominent feature. Considering the number of pieces in the customary concert repertoire which include repeats, even the casual observer may be surprised to see only a dozen column inches devoted to the topic in The New Grove Dictionary of 1980, with only five bibliographical references (…) (p. 196).

Although it has been almost forty years since Dunsby's statement, the argument seems to be still valid. According to Margulis (2014, p.1), “It’s hard to understand why this fundamental puzzle (within-piece repetition) has not been investigated with more fervor”. I believe that the solving of this puzzle can represent an important step in creating contemporary classical music that is more relatable to a broader audience while not falling in old clichés and traditions of the past.

2) HOW DOES OUR BRAIN ASSIMILATE MUSIC?

Habituation and processing fluency are two psychological phenomena much studied in the field of psychology and both are, in a way, related to the processing of repetitive stimuli by our brains. As previously discussed, repetition plays a significant role in our musical experience and, therefore, it will be important to understand both terms to afterwards analyze how composers from different musical styles might use it to increase the expressivity of their music.

2.1) Habituation

When we are exposed to a repetitive stimulus, our brain creates familiarity with it. If this stimulus is not associated with a dangerous situation, our brain realizes that there is no reason to be concerned about it anymore, consequently, our body faces "a decrease of responsiveness resulting from the repeated presentation of an eliciting stimulus" (Huron, 2013, p. 9). This process is called habituation. According to Huron (2013),

> With successive repetitions of the same sound or sound–pattern, a listener becomes progressively less responsive to the stimulus. In neurological terms, habituation is considered a central process rather than a peripheral process. That is, habituation happens in the brain, not in the ear or the eye. Habituation should not be confused with sensory fatigue or sensory adaptation. It is not that certain neurons in the cochlea, for example, reduce their rate of firing because of repeated stimulation. Habituation is an attentional process; it is the brain simply ignoring particular sensory inputs (p. 9).

Many everyday situations can be used to illustrate how habituation changes the perception of our environment. For example, when we get into a classroom with an old and loud air conditioning system, at first, the noise produced by the system might bother us. Nevertheless, after a few minutes, we will habituate to it and our brain will ignore that auditory information. The same effect can be noticed in people that live nearby busy streets, airports or factories. While the noise present in their house might sound unbearable for visitors, the homeowners are not bothered by it. Huron (2013) stresses some characteristics that might influence the rate in which habituation takes place. The following figure summarizes this information:

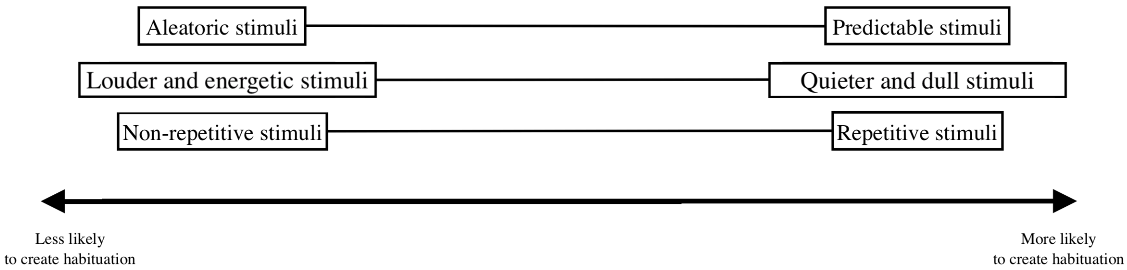

Figure 6 – Rate of habituation

Therefore, going back to the air conditioner example, the speed required for habituation to take place (that means, the time needed for our brain to start ignoring the auditory stimuli) will be, for instance, shorter if the stimulus is quieter and longer if it is louder. Predictability, complexity and repetitiveness will also influence the rate of the process. Applying this information to music, it is possible to infer that complex musical passages played in fortissimo will tend to take a longer time to create habituation in the listener than a simple soft musical passage. In the same way, a less repetitive music will, most likely, take a longer time to create habituation than a highly repetitive one. Even though it might take longer, the listener will eventually habituate to the stimuli and, after that happens, if the brain ceases to be exposed to it, the stimuli will eventually be forgotten. This process is called spontaneous recovery.

> Suppose that an animal habituates to a sound after nine presentations. The animal is then left alone for some period of time—perhaps an hour, or an entire day. After the elapsed time, the experiment is then repeated. Typically, the animal will have regained its responsiveness to the sound (…) This regaining of responsiveness is referred to as spontaneous recovery (HURON, 2013, p. 10)

While spontaneous recovery happens naturally due to the passage of time, it is also possible to accelerate the process of dishabituation by exposing the habituated animal or person to a new auditory stimulus. This new information will provide more elements to be processed by the brain and the listener will dishabituate to the previously habituated stimuli faster. Concerning this subject, Huron (2013) says:

> After habituating to a sequence of identical stimuli, the introduction of a single novel stimulus—expressed schematically as A A A A A A A B—will tend to cause the listener to re–orient to the stimulus stream. Moreover, the presence of the novel stimulus may cause a listener to lose his/her habituation to the first stimulus. Consequently, an ensuing return to the initial stimulus will tend to cause the listener to respond as though he/she had not habituated to it. This phenomenon is known as dishabituation, and the novel stimulus is referred to as a dishabituating stimulus (p. 10-11).

It is important to consider that each time we are re-exposed to an auditory stimulus we have once habituated, we will habituate to it again faster. This ability is known as potentiation of habituation. "In formal terms, potentiation of habituation may be defined as the facilitating effect on habituation due to a past history of habituation. In short, habituation becomes easier when we have habituated to something in the past" (Huron, 2013, p. 10).

At the same time, once one stimulus has been used to produce dishabituation, it will also lose its dishabituating strength. Huron (2013) calls this phenomenon "habituation of dishabituation" (p. 11). Therefore, if two contrasting stimuli are presented in an A B A B A B A B pattern, B will have a strong dishabituating role in its first appearance, however, each time it is re-exposed after A, it will generate less dishabituation.

From these considerations, we comprehend that repetition leads to a faster habituation and, therefore, the more repetitive a stimulus is, the faster our brains will stop paying attention to it. This characteristic might be desirable in trance-inducing music. According to Huron:

> The whole point of habituation is to free the mind from having to attend to redundant stimuli. When an environment ceases to be informative, the principal source of attention and stimulation switches to one's own thoughts; in the face of highly repetitive sounds, the listener necessarily turns his/her attention inward. The ensuing experience therefore depends critically on the individual's internal state including his/her cognitive interpretation of the experience. If a listener's physiological arousal is already relatively low, then extreme habituation is apt to lower the arousal further. This can provoke nature's most common response to a sustained changeless environment—sleep. Alternatively, the listener may experience one of several relaxed unfocussed states commonly described as reverie, dreamy, or hypnotic. Conversely, if the listener's physiological arousal is high, extreme habituation might lead to trance, hypnotic stupor, or daze (2013, p. 22).

It is important to consider that this explanation is a "parsimonious account of the trance experience" (Huron, 2013, p. 9). Huron argues that "studies of music-induced trance emphasize the importance of cultural context and cognitive interpretation in defining the experience" (2013, p. 23). Nevertheless, since my focus here is not the trance experience, I will not go deeper into this discussion[19] and will consider the loss of attention that arises from habituation as not desirable for music. Therefore, later on, I will analyze what strategies are employed by different composers in their own music to circumvent the problems associated to the habituation process.

[19] If the reader is interested in this subject, please, refer to studies conducted by Becker (2004) and Herbert (2011).

2.2) The Processing Fluency Theory of Aesthetical Pleasure

As previously stated, repetition increases our familiarity to an auditory stimulus and many studies show that familiarity plays an important role in our aesthetical preferences. There is a vast bibliography supporting this idea. Zajonc (1968) showed that people and animals prefer to be exposed to familiar stimuli. This effect is well-known as the mere-exposure effect. Further studies proved that this effect influences our preference for environments, people, music, books, objects etc. Supported by these researches, Rolf Reber, Norbert Schwarz and Piotr Winkielman (2004) proposed *The Processing Fluency Theory of Aesthetics Pleasure*.

The authors (2004) "suggest that aesthetic experience is a function of the perceiver's processing dynamics: The more fluently the perceiver can process an object, the more positive is his or her aesthetic response" (p. 365). According to them, high level of fluency might be aesthetically rewarding because of two reasons. First, "it is associated with progress toward successful recognition of the stimulus, error-free processing, or the availability of appropriate knowledge structures to interpret the stimulus" (Reber, Schwarz and Winkielman, 2004, p. 366). Secondly, "high fluency may also feel good because it signals that an external stimulus is familiar, and thus unlikely to be harmful" (Reber, Schwarz and Winkielman, 2004, p. 366).

From this perspective, it is possible to infer that aesthetic experience is highly influenced by the person's cultural background and previously acquired knowledge. The following example (figure 7), inspired by an example found in Leonard Meyer's book *Emotion and Meaning in Music*, illustrates how important cultural background and previously acquired knowledge is in our processing dynamic. Figure 7 shows three possible ways of organizing a set of seven letters.

TRESLET
ELESTRT
LETTERS

Figure 7 – LETTERS experiment

An English speaker will process the third organization faster, because his eyes are trained to recognize English words. Nonetheless, a Portuguese speaker might process the first two instances faster, since it has Portuguese words inside of them: TRES means "three" and ELES means "they". This example shows the influence culturally acquired knowledge has in our processing dynamic. We decipher a stimulus faster, because we are previously trained to do so. If Reber et al (2004) are correct, we will be prone to consider the stimuli easier for us to process as more aesthetically rewarding. In fact, many experiments confirm this assertion might be true and, more interestingly, this effect also influences our judgement of environments, threat and even truth. According to Huron:

> Fictional purported food additives are rated as less harmful when their names are easy to pronounce than when their names are difficult to pronounce (Song and Schwarz 2009). People judge sayings or aphorisms as more truthful when they rhyme than when they do not rhyme (McGlone and Tofighbakhsh 2000). For example, the rhyming aphorism "What sobriety conceals, alcohol reveals" is judged more truthful than its logical synonym "What sobriety conceals, alcohol unmasks." People prefer pictures when preceded by a related word. For example, when primed with the word "father," people tend to prefer a picture of a baby compared with a picture of a bridge. Conversely, when primed with the word "road," people tend to prefer the picture of a bridge compared with the picture of a baby (2013. P. 16)

Translating this to music, it is expected that certain musical patterns will be more easily processed by a person – and, for consequence, more rewarding aesthetically – depending on how often these patterns appear in the musical background to which they have been exposed.[20]

If, on the one hand, an individual's aesthetic preference may depend on his/her own cognitive preparation, on the other hand, Reber et Al (2004) argues that the aesthetic preference might also be dependable on the stimulus itself. Some stimuli are inherently easier to be processed than others. Visual symmetry, for instance, reduces the quantity of information the brain must process, thus, most people tend to prefer symmetrical imagery than non-symmetrical ones. Renaissance painters, architects and movie directors often use the facilitating effect of symmetry to increase the audience's aesthetical pleasure. As an example, we might cite the Temple of Artemis (constructed around 550BC) (figure 8), Leonardo Da Vinci's *The Last Supper* (a late 15th century mural) (figure 9) and a scene from Stanley Kubrick's *2001: A Space Odyssey* (a 1968 film) (figure 10).

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[20] Therefore, it is important to say that all the musical analyses developed in this dissertation will be directly influenced by my own musical experiences and cultural background: I have studied electric guitar in my youth, mainly focusing on 70's British Rock n' Roll music. I am Brazilian, therefore, the contact with Brazilian popular music has been constant since I was born. In my teen years, I started to listen to western classical music more often and decided to study musical composition in college level. This background has shaped my interests in music and it will directly influence how the analyses in this dissertation are developed. As previously stated, my analysis will not focus in a musicological approach, my goal is to study different sources of musical material and try to find my own ways of interpreting them to creatively apply its procedures in my own compositional language, accordingly to my own interests in music.

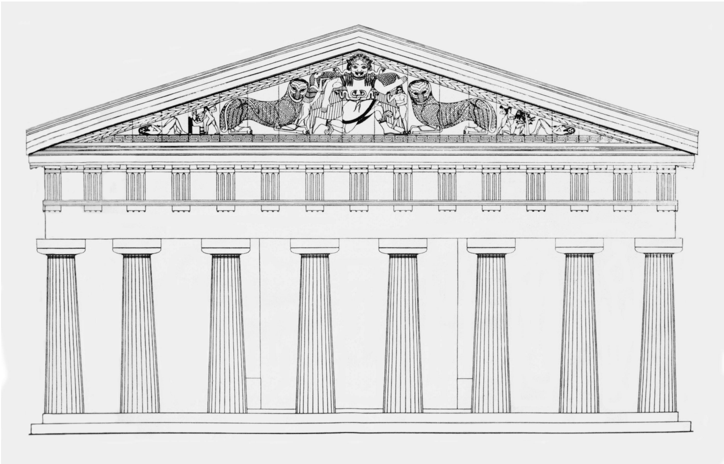

Figure 8 – Temple of Artemis (Corfu, Greece)

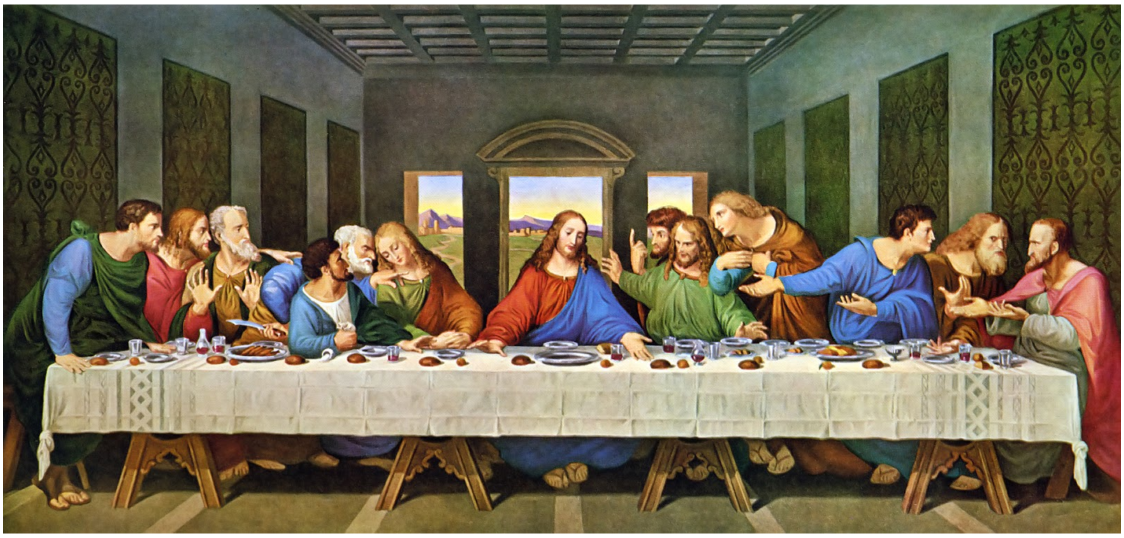

Figure 9 – Leonardo da Vinci's *The Last Supper*

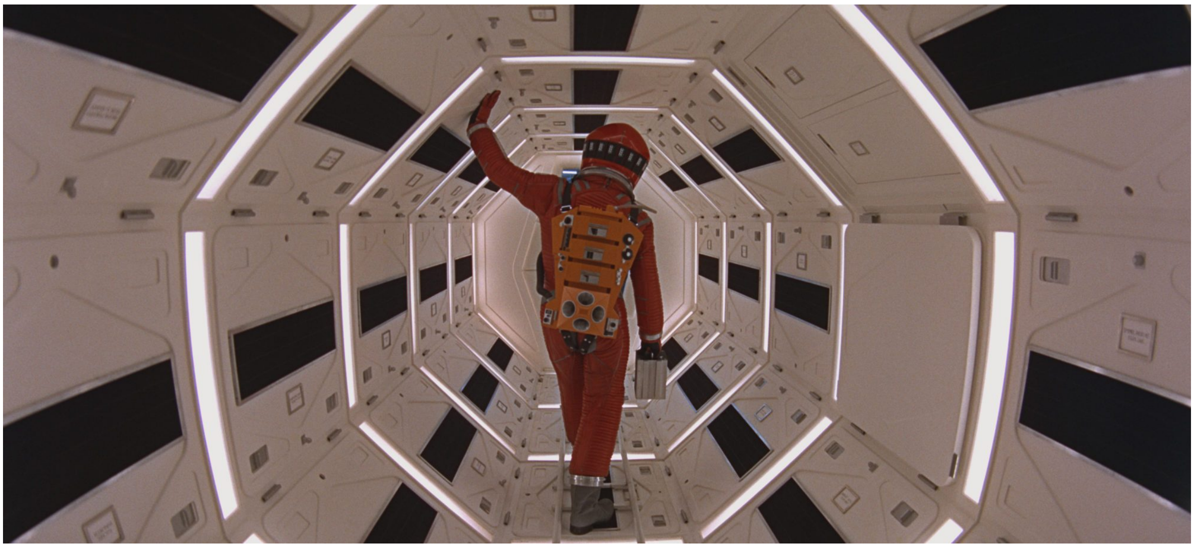

Figure 10 – Stanley Kubrick's *2001: A Space Odyssey*

Reber, Schwarz and Winkielman stress that high figure-ground contrast, for instance, also facilitates the recognition of an image and therefore influences the aesthetic pleasure it might cause. According to them, "in one study we manipulated perceptual fluency by varying the figure-ground contrast of circles presented for 1 sec. As expected, circles with high figure-ground contrast were judged as prettier (…) than circles with low figure-ground contrast" (Reber, Schwarz and Winkielman, 2004, p. 369). Lightning is often used in cinema, TV shows, theater and photography to increase the contrast between the main subject of a scene and its background. Many examples of this technique can be found in promotional photos of different movies and TV shows. Figure 11 shows a promotional photo of Netflix series *Better Call Saul*. The lightning is positioned above the characters' back to create a framing effect that heightens the contrast with the background.

Figure 11 – *Better Call Saul's* promotional photo

At this point, it is very important to state that *The Processing Fluency Theory of Aesthetics Pleasure* does not imply that only symmetrical or easily processed imagery will be aesthetically rewarding. The theory also accounts that, in many cases, people might prefer complex stimuli over simpler ones. Reber et al (2004) explains that novices and experts, for example, tend to show a different assessment concerning aesthetical pleasure. Novices are prone to judge more simple and symmetrical forms as more rewarding, while experts tend to prefer complex and asymmetrical forms.[21] According to Reber this might happen because

> Repeated exposure to complex stimuli results in higher perceptual fluency, and training in arts gives meaning to complex structures in paintings, poems, or music, which results in an additional increase in processing ease. Accordingly, the observation

[21] For more information, refer to McWhinnie (1968) and Smith and Melara (1990).

> that experts have higher preference for complex stimuli than novices may itself reflect fluency effects (2004, p. 374)

Repeated exposure might also explain why asymmetry (in visual arts) and dissonance (in music) have gradually become more accepted throughout history:

> In the history of western music, more complex musical intervals were gradually introduced and then accepted by an initially reluctant audience, potentially reflecting increased fluency through repeated exposure. In fact, Roederer (1973) suggested that more complex musical intervals require more complex information processing, a skill that the audience acquires with increasing familiarity (REBER ET AL, 2004, p. 374)

Furthermore, Reber et al (2004) also argues that processing fluency will only be aesthetically rewarding if it is unexpected. That means, if someone is aware of the reasons why certain stimuli is easily processed, no pleasure will arise from this experience. According to the authors:

> Salient causes of fluency (e.g., an obvious repetition scheme, a very simple pattern, predictive context) allow participants to formulate accurate expectations regarding the processing fluency of the target stimuli and thus reduce the likelihood that fluency will elicit a subjective experience (2004, p. 372)

Therefore, if a piece of music is easily understandable, but the audience associates this simplicity with lack of sophistication or feels as if the artist was patronizing them, the work may not cause aesthetical pleasure. For that reason, in my practice as a composer and in my experience as an art consumer, I believe that recurring only to simple imagery or simple harmonic progressions might also have a negative effect towards aesthetic pleasure. The artist is, therefore, constantly walking on a tightrope between complexity and intelligibility. If we lean too abruptly to either side, we might lose the audience's interest.

In my opinion, since contemporary classical music tends to be complex, the use of repetition might be a powerful tool to provide intelligibility and, as a consequence, increase the piece's aesthetic pleasure. According to Reber, Schwarz and Winkielman (2004), a study conducted by Gentner and Hulse (1998) shows that "in the auditory domain, recognition of a melody is facilitated through multiple embedding of redundant patterns" (Reber, Schwarz and Winkielman, 2004, p. 374). As a matter of fact, when we analyze the most played songs in the past years, it is easy to perceive how repetition constantly plays an important role in their structures and, moreover, most of them are loop-based compositions. In order to exemplify that, let us briefly analyze the many instances of repetition found in the pop song *Blinding Lights* by *The Weeknd*.

The rhythmical pattern in the drums, as in most pop songs, is loop-based (figure 12):

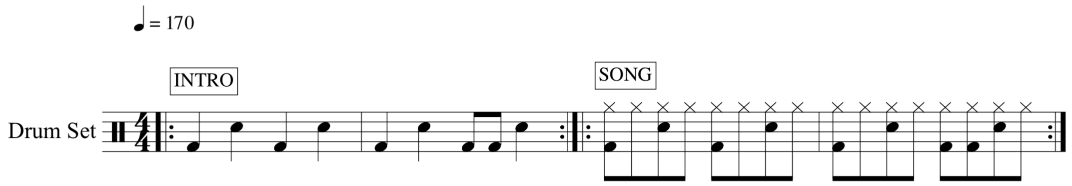

Figure 12 – *Blinding Lights'* Drum pattern

The melody is also quite repetitive. The Intro has the following melody played by a synthesizer:

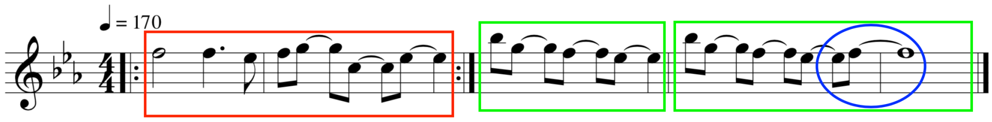

Figure 13 – *Blinding Lights'* Intro

The melody begins with an exact repetition (red square – Figure 13), followed by a contrasting melody that is also repeated (green squares – Figure 13), but now, with a minor variation toward its ending (blue circle – Figure 13). Moreover, both melodies (green and red square – figure 13), although melodically contrasting, have the same syncopated rhythm.

The verse has four melodic phrases (red square – figure 14) and also has plenty of repetitions:

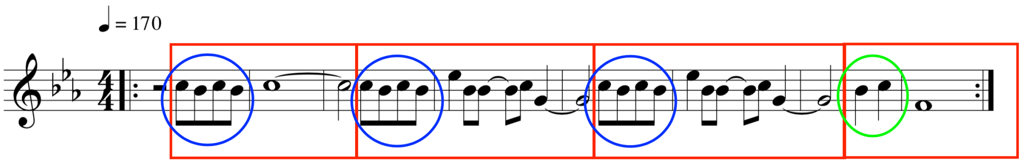

Figure 14 – *Blinding Lights'* Verse

The second and third phrases are exact repetitions. Furthermore, all musical phrases start with the same melodic gesture[22] (blue circle – figure 14). The beginning of the last one (green circle – figure 14) is performed in quarter notes to stress the ending, but still can be felt as a varied repetition. A similar repetitive structure is also found in the pre-chorus and chorus (Figure 15 and 16). Notably, the ending of the chorus repeats the intro melody (figure 13),

[22] As we will see further, this type of repetition is a rhetorical device called *Anaphora*.

preparing the listener to the repetition of the introduction.

Figure 15 – *Blinding Lights'* Pre-Chorus

Figure 16 – *Blinding Lights'* Chorus

This analysis, although brief, shows how widespread repetition might be in a pop song nowadays. Although this specific song is not aesthetically rewarding for me,[23] there is no denying that it has an enormous mass appeal. Besides having the first place in the Billboard 2020's *The Hot 100 Songs Chart*, *Blinding Lights* is, currently (until October 4th, 2021), the second most streamed song in *Spotify,* emphasizing the rewarding aesthetical experience it has on a large number of people. Similar amounts of repetition are normally also found in other big hits.

2.3) Processing Fluency Vs. Habituation

Through processing fluency and habituation, musical repetition has the potential to cause a conflict in our brain. According to Huron (2013),

> On the one hand, repetition leads to processing fluency and so increased liking for the repeated stimulus. On the other hand, the research also suggests that repetition leads

[23] Referencing *The Processing Fluency Theory of Aesthetics Pleasure,* I would argue that this song is not aesthetically rewarding for me because I believe it uses cliché and highly commercial patterns of music making. As we have discussed before, if the listener is aware of why the stimulus is easily processed, the experience will not be considered as rewarding.

> to habituation, in which familiar stimuli lead to a reduction in responsiveness. At face value, the research suggests a sort of entanglement in which the two processes inevitably contradict each other (…) Repetition is both good and bad. However, processing fluency and habituation are not simply mirror images of each other. They are quite different mental processes with their own distinctive properties. By paying attention to these properties, we might suppose that it is possible to create patterns of repetition that take advantage of the positive hedonic effects of processing fluency while minimizing habituation. (HURON, 2013, p. 18)

In fact, western's music most common formal structures are arranged in a manner that processing fluency is maximized and habituation is minimized. Huron uses as example the Variation and Rondo form. According to the author (2013), the Rondo form (schematized as A B A C A D A) uses the repetition of the first theme to create familiarity, while employing a dishabituating stimulus among this repetition:

> The rondo strategy involves sequences of repetition that grow shorter over the course of the work, with new material introduced sparingly. According to the theory, the rondo strategy hinges on the phenomenon of dishabituating stimuli. That is, new material is introduced at critical moments in order to forestall habituation, with the result that familiar material can be reused—with the attendant benefit of processing fluency (Huron, 2013, p. 30)

The Theme and Variation form appeals to a procedure called stimulus generalization. According to Huron (2013):

> In practice, researchers find that there is a range over which the animal will deem the stimulus to be sufficiently similar that it will respond (or not respond) accordingly (Sharpless and Jasper 1956). Moreover, if a little bit of variety is introduced during the initial training or exposure period, it is especially likely that the animal will treat modified stimuli in the same way. Consequently, rather than regarding a stimulus as a single item, it is more appropriate to view it as a class or range of stimuli that will all evoke similar responses. This phenomenon is referred to as stimulus generalization (HURON, 2013, p. 11).

In the specific case of the Theme and Variation structure, each variation is composed in a way that the listener is still able to recognize the main theme but, at the same time, it has changes to prevent habituation. These strategies are used not only in the traditional western forms, but it can also be found in pieces from different cultures and time periods. Let us evaluate how different composers (working in distinct genres) deal with the problems of habituation and processing fluency. In order to do that, I will analyze five pieces:

1) Maurice Ravel's *Bolero*: a piece that follows the rules of western tonality,
2) Harrison Birtwistle's *The Axe Manual*: an atonal piece of music
3) J. J. Cale's *Cocaine*: Rock and Roll music
4) The Azerbaijani folk song *Bugün Ayın Üçüdür*
5) The Indian song *Binati Mano*

2.4) Ravel's *Bolero*

Ravel's *Bolero* is well-known worldwide and it has a straightforward structure. It is based in two melodies. These two melodies (A and B – figure 17) are always repeated two times, with two measures of pause separating them (2P – figure 17). This cycle is repeated four times and, in the fifth and last repetition, the first melody is not repeated and the second melody appears varied. Therefore, we have the following structure:

A (2P) A (2P) - B (2P) B (2P)

A (2P) A (2P) - B (2P) B (2P)

A (2P) A (2P) - B (2P) B (2P)

A (2P) A (2P) - B (2P) B (2P)

A (2P) - B'

Figure 17 – Ravel's *Bolero* structure

Both melodies are never repeated in the exact same instrument, therefore, their timbre is always different. In table 1, we can follow all instrumental variations and their register:[24]

	A	**A**	**B**	**B**
1	- Flute (C4)	- B-flat Clarinet (C4)	- Bassoon (B-flat3)	- Eb Clarinet (B-flat4)
2	- Oboe d'amore (C4)	- Flute (C5) - Trumpet (C4)	- Sax Tenor (B-flat4)	- Soprano Sax (B-flat5)
3	- Piccolo (C6) - Flute and Celesta (C5) - Horn and Celesta (C4)	- Oboe and B-flat Clarinet (C5) - Oboe d'amore (G4) - English Horn and B-flat Clarinet (C4)	- Trombone (B-flat3)	- Piccolo (B-flat5) - Flute (G5) - Flute (E5) - Oboe, B-flat Clarinet and Sax Tenor (B-flat4) - Oboe (G4) - English Horn (E4) - B-flat Clarinet (B-flat3)

[24] Middle C is C3.

4	- Piccolo (C6) - Flute, oboe, B-flat Clarinet, Violins (C5) - Flute, oboe, B-flat Clarinet and violins (C4)	- Piccolo (C6) - Flute (G5) - Flute (E5) - Oboe, B-flat Clarinet and violins (C5) - Oboe and violins (G4) - B-flat Clarinet and violins (E4) - English Horn and violins (C4)	- Piccolo (B-flat5) - Violins I and II, oboe and flute (B-flat4) - Violin I and II, trumpet, English horn (B-flat3)	Piccolo (B-flat5) - Flute (G5) - Sax soprano and Flute (E5) - Violin I and II and Oboe (B-flat4) - Violin I and II, B-flat Clarinet and oboe (G4) - Viola, B-flat Clarinet and English Horn (E4) - Cello and Trumpet (B-flat3)
5	- Piccolo (C6) - Flute (G5) - Flute (E5) - Sax Soprano, Trumpet and Violins (C5) - Trumpet and violin (G4) - Trumpet and violin (E4) - Trumpet and violin (C4)	—	- Piccolo (B-flat5) - Flute (G5) - Flute (E5) - Sax, trumpet and violin (B-flat4) - Trumpet and violin (G4) - Trumpet and violin (E4) - Trombone, trumpet and violin (B-flat3)	—

Table 1 – Instrumental entrances in Ravel's *Bolero*

The music starts soft and increases in density to finally end with a big climax. Huron (2013) argues that Ravel takes advantage of the fact that we are less likely to create habituation for energetic stimuli (see figure 4) and delineates his structure in a crescendo fashion. According to the author, the same approach can be found in some pop genres.[25]

At first glance, it is easy to say that the timbre plays the most important role in avoiding habituation in Ravel's *Bolero*. Ravel creates a diverse gamut of correlations between instruments, maintaining a freshness in the sound color of the melody. Nonetheless, the composer made a piano reduction of the piece that is also effective and he does not change the piece's formal structure. Since the timbre pallet for the piano reduction is not as rich as the orchestral, what strategy does Ravel use to avoid habituation? To answer this question, let us first analyze how both melodies are constructed.

Melody A and B are contrasting. Melody A (figure 18) is diatonic and it is based on a C major scale, whereas melody B (figure 19) uses flattened notes often and a Phrygian scale to cadence in C again. The color coding will be explained later.

[25] Huron gives *Led Zeppelin*'s *Stairway to Heaven* as an example.

Figure 18 – *Bolero's* melody A

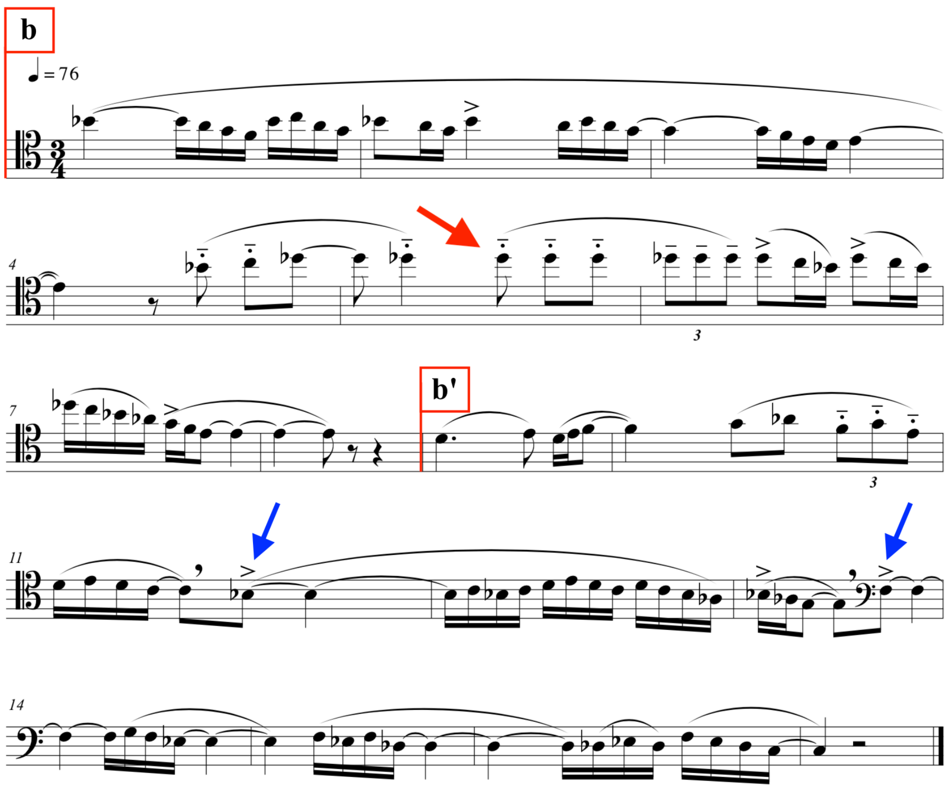

Figure 19 – *Bolero*'s melody B

Ravel uses melody B as a dishabituating stimulus for melody A and, in the development of the piece, when A comes after B, melody A also works as a dishabituating stimulus for B.

It is also important to notice that both melodies have contrasting characteristics inside their own structures. Melody A's first section (*a* in figure 18) has long phrases played in legato, while its second section (*a'* in figure 18) presents new ideas such as a same-pitch repetition (green arrows – figure 19). Moreover, the second section begins with a long D4 that is the highest note of the melody,[26] therefore, its climax.

Equally, melody B also has contrast inside its own structure. Most part of melody B's first half (*b* in figure 19) is based in the repetition of the same pitch. The second part (*b'* in figure 11) is played mostly in legato without any repeated notes. Therefore, the contrast found between melody A and B is also found in their own internal structures. Ravel's *Bolero* has *a'* as a dishabituating stimulus for *a* and *b'* as a dishabituating stimuli for *b*.

It is also noticeable that *b'* is more similar in its structure to *a* and *a'* is more similar to *b*. Their ordering follows this compatibility, *b'* is followed by *a* and *a'* followed by *b*. Ravel's melodies slowly move further away from its initial motive and then return to it. This gradual development avoids habituation by the slow addition of new musical material while giving enough time for our brain to process the new information.

Therefore, Ravel uses the rondo strategy and the variation strategy[27] in the construction of his *Bolero*. We might also argue that the duration of both melodies is an important feature to help our brain to dishabituate to the exposed stimuli. Melody A's duration (using as reference quarter note equal to 76 BPM) is one minute and twenty-five seconds long. While melody B lasts forty-three seconds. It means that from the moment melody B is finished it will take almost three minutes until it is heard again. Even if our brain was not exposed to a dishabituating stimuli, this might be enough time for the spontaneous recovery to take place.

After analyzing all these features of *Bolero's* melodies, it is easily understandable why this piece is also effective on its piano reduction. Ravel's choosing of certain features such as contrasting musical motives and their timing might have been more crucial for the success of the work than the orchestral instrumentation itself. Although, there is no doubt that the exploration of the orchestral timbre has an immense effect on the piece's final results. Let us now analyze how these aspects might be found in *The Axe Manual*, an atonal piece, written by English composer Harrison Birtwistle.

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[26] It is important to consider that D4 had been performed before, nonetheless, in its first appearance (in m. 1), it is played very fast (in sixteenth notes).

[27] See p. 24-25

2.5) Harrison Birtwistle's *The Axe Manual*

The Axe Manual, composed in 2000, by the English composer Harrison Birtwistle, is a piece for piano and percussion. The piece is fairly long (circa 23 minutes), therefore, I will analyze here only its first section (m. 1-58). Since the beginning of the piece, in my opinion, repetition plays an important role. From m. 1-58, we have three main motives: 1) A rhythmic pattern starting in the low register (m. 1-21, 23, 25, 27-28, 29-30, 32-33 – figure 20);[28] 2) a rapid change of chords in the high register (m. 22, 24, 26, 28-29, 31, 34, 35-36, 38-40, 41-43 and 44-47 - figure 21) and 3) an arpeggio in the high register (m. 35, 36-37, 40-41, 43-44 and 47-58 – figure 22).

Let us initially analyze the piece's pitch organization. The piano starts playing four different pitches with fixed register. The pitches and its registers are respectively: A-flat0, E-flat1, A1 and D2. In m. 3, the marimba plays a C1. Other pitches are slowly added on the piano part in m. 9, 10 and 13. They are: B-flat1, E2 and B1. When E2 is added (in m. 10), it becomes the highest pitch we hear (D_2 was the highest pitch until this point). This creates directionality; that is, a movement towards the piano's higher register. This directionality is confirmed, as in m. 16, the pitch A1 is used an octave up and becomes the highest pitch. In my perception, the repetitive nature of the pitch organization in the beginning of *The Axe Manual* helps the listener to get familiar with the way the music sounds. The use of fixed register increases even more the effect of fluency.

Taking this into consideration, the rhythmic organization is extremely important to avoid habituation. While the harmony is repetitive, rhythmically, a different behavior is noticeable. To help me in the rhythmical analysis, I will segment all musical gestures present in the music from m. 1 to 16 (figure 20). My reference to guide the segmentation will be the low A-flat0; its repetition marks the beginning of a new musical gesture. The long reverberant A-flat0 (that initiates the gestures) is always followed by fast staccato attacks and another long reverberant note (D2 in segments A to F – figure 20; E2 in segment G to K; and A2 in segment L).

[28] The categorization of the motives and the color coding in figure 20 will be explained later.

Figure 20 – Segmentation of Birtwistle's *The Axe Manual*

Figure 21 - *The Axe Manual's* motif 2

Figure 22 – *The Axe Manual's* motif 3

The fast staccato attacks (that come after the reverberant A-flat0) consist of a combination of one accented chord (blue – figure 20), one attack in sixteenth note (red) or a double attack in sixteenth notes (green) are rhythmically organized in each segment in different ways, therefore, the resulting rhythm is never the same. The marimba might also help to create more unpredictability, because, although it plays only two pitches throughout the whole passage, its rhythm never coincides with the piano attacks.

This rhythmic variety is essential to the interest of this excerpt, because it breaks our expectation. Birtwistle gives us a predictable harmonic pallet, nonetheless, he creates a complex rhythmic development. As a result, the listeners can predict the pitch content they will hear, but their timing is uncertain. The rhythmic complexity will hopefully postpone the effects of habituation (see figure 4), while the repetitive harmony might help to create familiarity and make the processing fluency of the auditory stimuli easier. Nevertheless, as time passes, habituation takes place and the composer seems to feel the necessity of adding new musical material as a dishabituating stimulus. In m. 22, Birtwistle adds a contrasting motive (figure 21). It is used briefly and, in m. 23, the musical development is based again in the initial motive.

Although the development of the first motive is interrupted in m. 22, its directionality is not. When it restarts (in m. 23), it keeps moving towards the high register. In m. 29, D2 moves an octave up to D3 and it will be the highest pitch achieved in the development of the piece's first motive until it stops being used after m. 34. This interpolation between motif 1 (figure 20) and motif 2 (figure 21) will be explored until m. 33.

Motif 2 involves a rapid alternation between two chords. Its first appearance, as stated before, happens on m. 22. It is slightly varied in m. 24 and repeated in m. 26. From this point, the motive will expand each time it is presented. More chords are used and its rhythm gets more complex. Until m. 34, motif 2 will serve as dishabituating stimulus for motif 1, nonetheless, as discussed before, the continuous alternation between two stimulus decreases the second motive's dishabituating strength, therefore, this might explain why Birtwistle presents a new motif, motif 3 (figure 22), that is closely related to motif 2. It sounds like an arpeggio of the chords played in motif 2. Besides all similarity, motif 3 will serve as a dishabituating stimulus for motif 2. Both motives will be interpolated until the end of the section (m.58). Both present a similar directionality. It gets louder and larger as the music develops. This increase of complexity will emphasize the ending of The Axe Manual's first section. A new musical idea begins in m. 59. During the interpolation of those motives on the piano, the marimba starts a loop (figure 23) that will only be broken when the section ends.

Figure 23 – Musical material looped on the marimba

The use of a loop on the marimba helps to keep the listener focused in the changes happening on the piano. According to Margulis (2014), "Repetition can function similarly to silence in some contexts, in the sense that they both relieve the burden of processing new information. So that some other thing can be attended to" (p. 41). This technique is frequently employed in pop music. Some instruments will play repetitive patterns to serve as background for something considered as more important by the composer – most often, the lyrics being sung by the main singer or an instrumental solo. Having that in mind, let us now analyze three examples that comes from distinct pop or folk genres: J. J. Cale's *Cocaine*, the Azerbaijani folk song *Bugün Ayın Üçüdür* and the Indian song *Binati Mano*.

2.6) *Cocaine*, *Bugün Ayın Üçüdür* and *Binati Mano*

Cocaine was composed by the American Guitarist J. J. Cale and first released in his 1976 album *Troubadour*. It became well-known worldwide after it was recorded in Eric Clapton's 1977 album *Slowhand*. Since the song structure is not changed in Clapton's version, the discussion conducted here, although focused on J. J. Cale's version, might also be valid for Clapton's recording. The piece form is straightforward and highly based in repetition. The lyrics will help us to better understand it (figure 24).

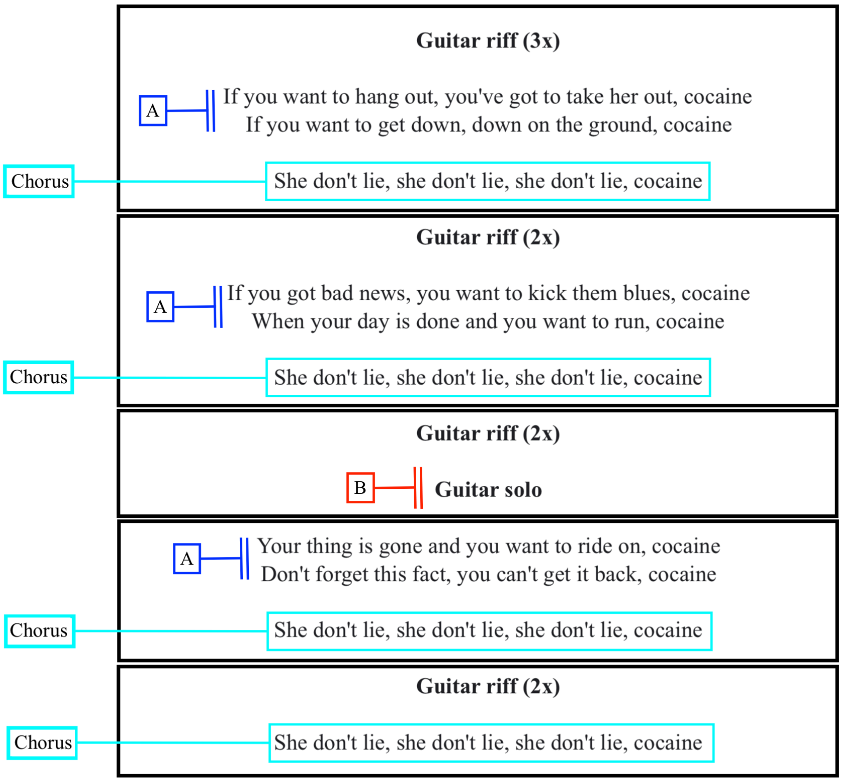

Figure 24 – *Cocaine's* lyrics and structure

The song is divided in five main blocks (marked in black – figure 24). The first two blocks share structural similarities. Both begin with the same guitar riff (repeated for three times in the first block and two times in the second).[29] The guitar riff is then followed by two repeated melodic phrases (*A* – figure 24) and the song's chorus. In this beginning, the use of a new stimuli creates dishabituation. 'A' serves as a dishabituating stimuli for the guitar riff and the chorus as a dishabituating stimuli for *A*.

Such as in the first two blocks, the third one also starts with the same guitar riff, but it is now followed by another stimulus, a guitar solo. The fourth block goes back to the initial organization. It starts with *A* and it is followed by the chorus. Since the rhythm guitar has played the initial guitar riff as an accompaniment during the whole guitar solo, it is not performed again in the opening of the fourth block. In the fifth block, the guitar riff returns and it is followed by the chorus. *A* is now omitted.

[29] The guitar riff is only repeated for three times in its first appearance. Afterwards, it will always be repeated two times. It confirms the tendency of early-repetition in music (see p. 10).

Aside the use of dishabituating stimuli, in the specific case of pop and folk songs, Huron (2013) stresses the importance of what he calls strophic strategy. This strategy comes normally with a singing text. The melodies used in different sections of the music are often repetitive, focusing the listener attention on what is changing, in this case, the lyrics. According to the author (2013), "if the lyrics represent the principal point of interest—and therefore the principal focus of a listener's attention—then the mental effect will be similar to a variation strategy" (p. 23).

Such as in the Birtwistle's marimba loop, in my analysis of J. J. Cale's song, repetition is also used as a tool to deviate the focus of the listener to an aspect of the music the composer considers to be more important. Lidov names it as textural repetition. According to him (1979),

> Textural repetition occurs with the continuing repetition of an idea more than three or four times, which cancels out its own claim on our attention and thereby refers our focus elsewhere, to another voice or to a changing aspect. The figure maintains, nevertheless, a background influence on our musical consciousness (p. 35).

In J. J. Cale's song, drums, guitar and bass assumes highly repetitive patterns, possibly bringing the attention of the listener to the singer and, in block 4 (figure 24), to the guitar solo. As stated by Huron (2013), this kind of procedure is normally found in pieces that use the singing voice. Therefore, let us now analyze the Azerbaijani song *Bugün Ayın Üçüdür* and see if it is possible to find similarities.

There are different interpretations of the piece *Bugün Ayın Üçüdür* available in streaming apps such as *YouTube*, *Spotify* and others.[30] In our analysis, I will use as reference Gülay Sezer's performance.[31] The piece is divided in three main sections (marked in black – figure 25). Harmonically and melodically, these three sections are exact repetitions. They are separated by instrumental interludes that are also exact repetitions from one another and its content is an important melodic line in the music. The only variation between these three sections is the text. Therefore, this song also uses the strophic strategy.

[30] Other interpretations might be found https://youtu.be/xmt6_aSSrgY, https://youtu.be/P7KAgn78qhQ and https://youtu.be/H1QD86bZzlQ. As easily perceptible, each performance has its own instrumentation, lyrics variations and structural differences. Nonetheless, we believe the analysis conduct here will also be applicable to any of these interpretations.
[31] Recording: https://youtu.be/sb9cIxKxjJg. Accessed on Jun 21 2021.

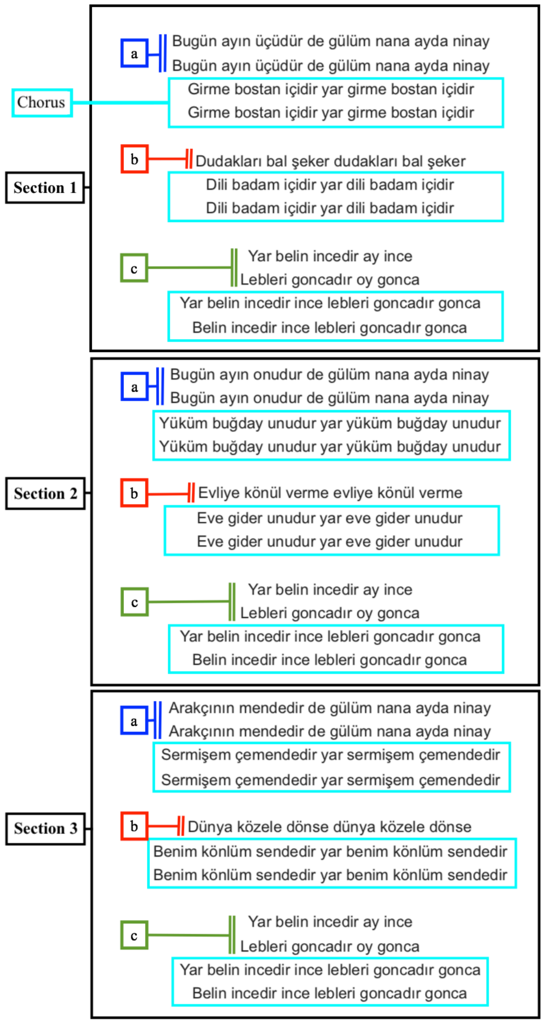

Figure 25 – *Bugün Ayın Üçüdür'*s structure and lyrics

These three main sections are internally structured by four distinct melodies (melody *a*, *b*, *c* and chorus – Figure 25). Melodies *a*, *b* and *c* are always followed by the chorus. The chorus has the same melody as the one played by the instrumental interludes that separates the three main sections of the music. While the macrostructure of the song uses the strophic strategy, the microstructure uses a strategy similar to the rondo strategy, in which a new stimulus – I believe – is presented to dishabituate the listener with the initial musical stimuli. I would argue Melody *b* dishabituates the listener with melody *a* and melody *c* dishabituates the listener with melody *b*. The chorus offers familiarity, being stable from the beginning to the end of the piece.

It is also important to notice that repetitions are also found in the internal structure of melody *a*, *b* and *c*. Melody *a* is always based in the repetition of the same melodic phrase. When we compare the lyrics from melody *a* in its three appearances, ("*Bugün ayın üçüdür de gülüm nana ayda ninay*", "*Bugün ayın onudur de gülüm nana ayda ninay*" e "*Arakçının mendedir de gülüm nana ayda ninay*"), it is noticeable that it shares the same ending ("*ayda* *ninay*"), increasing its similarities. Although short, melody *b* also has two exact repetitions of text and musical structure. In melody *c*, there are always the same melodic line but the lyrics are always different. In the first part of melody *c*, the singer sings "*Yar belin incedir ay ince*" and in its repetition, the singer sings "*Lableri goncadir oy gonca*". Therefore, the strophic strategy is used in melody *c* microstructure.

As it is possible to see, similar strategies are found between the American song *Cocaine* and the Azerbaijan folk song *Bugün Ayın Üçüdür.* Let us now analyze how repetition patterns are employed in the Indian song *Binati Mano*, a song that is based in improvisation. In this analysis, my main reference will be Aryya Banik's performance[32] [33] and I will focus on melodic aspects of it. Because of the complexity of the piece, I will analyze more deeply only its first subsection (figure 26).[34]

Figure 26 – *Binati Mano*'s beginning

[32] Recording: https://youtu.be/BRPvwWA1ezk. Accessed on Jun 21 2021.

[33] Other interpretations might be found https://open.spotify.com/track/6OK82tQ2GbUN96HuTfz0X7?si=wxGO4Ms8Si2nk1vEqVvI1Q, https://youtu.be/YOtyP4gql8c and https://youtu.be/OpZ19f30xbU. As easily perceptible, there is a huge difference between each interpretation. Therefore, we believe that part of the analysis conduct here might also be applicable to any of these interpretations, nonetheless, our focus here will be only Aryya Banik's performance.

[34] Please be aware that the transcription does not represent the rhythmical and melodic richness of the music to its fullness. The purpose of the transcription is to facilitate the reader to follow my theoretical discussion. In the analysis of *Cocaine* and *Bugün Ayın Üçüdür,* the lyrics served to this purpose. I was not able to find the lyrics for *Binati Mano*.

The melody presented in the beginning (figure 26's first system / sound example 1) will be repeated throughout the whole song development in a cyclic pattern. This melody is initially presented three times and it is slightly varied in each repetition (*A*, *A'* and *A"* – figure 26). Afterwards, a contrasting melody is presented (*B* – figure 26), leading the music to a new climatic point in the high (blue arrow – figure 26) and low register (red arrow – figure 26). A return to melody *A* (*A*''' and *A*'''') marks the ending of the section.

From this brief analysis, I would argue that *Binati Mano* uses the variation strategy (the melody *A* is always varied) and the rondo strategy (in which a new stimulus – melody *B* – is added in order to dishabituate the listener with the first stimulus – melody *A*). I believe both strategies are recurrently used throughout the whole performance. Melody *A* keeps being varied in each presentation, a contrasting melodic line is subsequently presented as a dishabituating stimuli and the music returns to *A*.

From the analysis above, it might be possible to conclude that the five pieces here analyzed use some of the strategies proposed by Huron (2013) in its structural organizations. The analysis of only five pieces from different cultural contexts is not enough to sustain that even music of the most differing cultures considers (even if unconsciously) the effects of habituation and processing fluency on their musical language. Nonetheless, I hope that these analysis (supported by the bibliographical discussion) have shown that there are evidences to support the idea that these concerns might have in fact a universal significance and, therefore, it will be extremely important in my composition practice (as it will be shown further ahead).

3) MUSIC REPETITION AND EXPECTATION

At the same time musical repetition accelerates the process of habituation and facilitates our processing dynamics, it is also an important tool to create expectation. Repetitive events tend to have similar outcomes, therefore, while exposed to a repetitive pattern, the listener will most likely create a clear expectation concerning what will happen next in the music. The interruption of these patterns can potentially create surprise and, as a consequence, it will circumvent the process of habituation. To create surprise, at first, we must create predictability.

According to David Huron, there are four basic ways of creating predictability in music: Schematic predictability, dynamic predictability, conscious predictability and veridical familiarity. Veridical Familiarity occurs when a listener hears a musical work more than once. The music will become more predictable in each repeated listening. Conscious predictability is created when "the music is organized so that the observant and knowledgeable listeners will be able to infer future musical events through conscious thought as the music progress" (Huron, 2007, p. 240). As stated by Huron, conscious predictability and veridical familiarity are not effective tools for composers, because "it depends principally on the skill and sophistication of the listener" (Huron, 2007, p. 242), therefore, I will focus here in the schematic and dynamic predictability.

Schematic predictability happens when

> The music is constructed so that it conforms to whatever existing schemas listeners are likely to bring to the listening experience. For western-encultured listeners, an example of this phenomenon might be the learned expectation that a dominant seventh chord will commonly be followed by a tonic chord (HURON, 2007, p. 240)

Huron also mentions that an example involving schematic surprise is the beginning of Stravinsky's *Rite of Spring*. It was not common-place in 1913 to start a piece of music with a solo bassoon. Moreover, the melody occurs in the instrument's very high register, in which the instrument is rarely used. Both of these characteristics make the beginning of the *Rite of Spring* "highly unconventional" (Huron, 2007, p. 270).

Another example of schematic surprise is the deceptive cadence (Huron, 2007, p. 271). As previously stated, western-encultured listeners are used to the fact that a dominant seventh chord will be followed by a tonic chord. The deceptive cadence breaks this pattern. Therefore, it is a schematic surprise.

In Dynamic predictability,

> The music is constructed so that the work itself will evoke accurate work-specific expectations. An example of this phenomenon might be an expectation that the first notes of a motivic figure will be followed by other notes to conform to previously heard instances of that motive (HURON, 2007, p. 242)

Musical repetition is an important tool to create dynamic predictability. According to Meyer (1956), it is

> The relationships obtaining between two tones provide the listener with less basis for specific expectation than the relationships between five, six, or ten tones. Similarly, repetition or seeming repetition of a part arouses more specific expectation than the first statement of the part (p. 49)

Margulis (2014) also stresses the importance of repetition in the forging of expectation:

> When temporal ordering is fixed, repetition welds the distinct component occurrences together into inseparable chunks, such that perceivers "listen ahead," with the expectation for forthcoming events literally alive in the present moment—expectations that are felt and experienced rather than cognized or articulated (p. 72)

Since "each reiteration of a musical pattern increases the listener's ability to predict it" (Taher et al, 2016, p. 316), the interruption of repetition patterns will create surprise and, as a consequence, it might help not only the composer to circumvent the process of habituation, but also to increase the expressivity of his own work. According to Meyer (1956), "affect or emotion-felt is aroused when an expectation - a tendency to respond - activated by the musical stimulus situation, is temporarily inhibited or permanently blocked" (p. 31).[35] Therefore, I will consider that setting up dynamic expectations is an important asset to create remarkable and expressive musical passages. According to Huron, musicians can create expectation in four realms.

> The object of expectation is an event in time. Uncertainty accompanies not only *what* will happen but also *when* it will happen (…) Along with *what* and *when*, brains also predict *where* and *why* (…). For sound stimuli, the *where* expectations are associated with physiologically ancient structures for sound localization. The *why* expectations are associated with physiologically recent structures associated with conscious thought (Huron, 2007, p. 6).

[35] It is important to notice that our goal with our study is not to make the listener completely aware of every technique here discussed. The idea is that, even if unconsciously, the musical organization will be able to create some sort of surprise in the listener. As stated by Brower (1993) in her analysis of Brahms' First Symphony finale, "even a trained listener may have to work to maintain the feeling of syncopation in the passage leading up to the climax (mm. 279-84), yet few would deny the logic, and the aesthetic satisfaction of doing so" (p. 31). Our ultimate goal is to create a similar feeling, in which even an untrained listener would be able to somehow respond to surprising aspects of the musical discourse even if they could not completely explain why they are feeling like that.

In this dissertation, I will refer to each of these reals as follows (1) Why expectation: Implied expectation; (2) *What* expectations: Musical content expectations (timbre, harmony, dynamics, envelopes etc); (3) *When* expectations: Time-related expectations; (4) W*here* expectations: Spatial expectations. Furthermore, I will also discuss another characteristic, that is the expectation associated to the production of a specific sound. This type of expectation, using the same logic of Huron's nomenclature, could be called *how* expectation. Here, nevertheless, I will refer to it as expectation of causation.

3.1) Implied expectations

To better understand how expectations are created, we must initially discuss the idea of music and meaning. Leonard Meyer (1956) defends that "meaning is (…) not a property of things" (p. 33). It depends on a "triadic relationship between (1) an object or stimulus; (2) that to which the stimulus points – that which is its consequent; and (3) the conscious observer" (Meyer, 1956, p. 34). An object or stimulus by itself might have different meanings. As an example, Meyer (1956) argues that:

> To a geologist a large rock may indicate that at one time a glacier began to recede at a given spot; to a farmer the same rock may point to the necessity of having the field cleared for plowing; and to the sculptor the rock may indicate the possibility of artistic creation. A rock, a word, or motion in and of itself, merely as a stimulus, is meaningless (p.34)

Therefore, for something to have meaning, it must be inserted in a given context and, even in this case, it might be understood differently depending on its observer. Therefore, "It is pointless to ask what the intrinsic meaning of a single tone or a series of tones is. Purely as physical existences they are meaningless. They become meaningful only in so far as they point to, indicate, or imply something beyond themselves" (Meyer, 1956, p. 34). Leonard Meyer then argues that "Embodied musical meaning is, in short, a product of expectation" (p. 35), since our expectations will be responsible for connecting a given pitch or rhythm to their subsequent musical motives.

It is also important to notice that the cultural background of each listener will be decisive to define how their expectations are built. Although I believe that "certain musical relationships appear to be well-nigh universal" (Meyer, 1956, p. 63), the techniques discussed here will be focused on listeners used to western classical and pop musical genres. For Leonard Meyer (1956),

> Though the perception of a relationship can only arise as the result of some individual's mental behaviour, the relationship itself is not to be located in the mind of the perceiver. The meanings observed are not subjective. Thus the relationships existing between the tones themselves or those existing between the tones and the things they designate or connote, though a product of cultural experience, are real connections existing objectively in culture. They are not arbitrary connections imposed by the capricious mind of the particular listener (p. 34)

Taking into consideration the discussion above, Leonard Meyer defines that when we talk about musical meaning – and therefore, expectation, the listener is trying to discover what musical event will come next. According to the author, the consequent musical event happens in three different states: 1) "Hypothetical meanings are those which arise during the act of expectation" (Meyer, 1956, p. 37) 2) "Evident meanings are those which are attributed to the antecedent gesture when the consequent becomes a physico-psychic fact and when the relationship between the antecedent and consequent is perceived" (Meyer, 1956, p. 37) and; 3) "Determinate meanings are those meanings which arise out of the relationships existing between hypothetical meaning, evident meaning and the later stages of musical development" (Meyer, 1956, p. 38). On evident meanings, Meyer also says that "it is coloured and conditioned by hypothetical meaning. For the actual relationship between the gesture and its consequent is always considered in the light of the expected relationship" (Meyer, 1956, p. 38).

With our study, we envisage to find ways of reducing the hypothetical meanings to a minimum. On doing that, we increase the certainty in which a listener will be expecting a musical event to happen. When the composer is able to ensure that, he has a powerful tool to create surprise. Furthermore, according to Spitzer:

> When music starts to build to the climax during the anticipation phase, dopamine pours into the dorsal striatum. When the musical climax arrives, it triggers an emotional reaction in the ventral striatum. This is why listeners experience as much pleasure in imaginatively 'moving' towards the musical goal as when they reach it. The job of a composer, then, is to manipulate the anticipations of the listener (SPITZER, 2021, position 2011)

A technique frequently used by composers to create dynamic predictability in their music is the repetition of the same gesture or musical motive three times. The first two expositions serve to establish a pattern and the last one breaks this expectation. Samuel Adler stresses that "as a general rule, (although there are exceptions), many of great composers alter a musical idea, instrumentation and so on, the third time they use it, even if very slightly; this alteration usually functions as a link to a new idea or section" (Adler, 1982, p. 274). As an example, Adler cites the first movement of Beethoven's *Symphony 3* (figure 27).

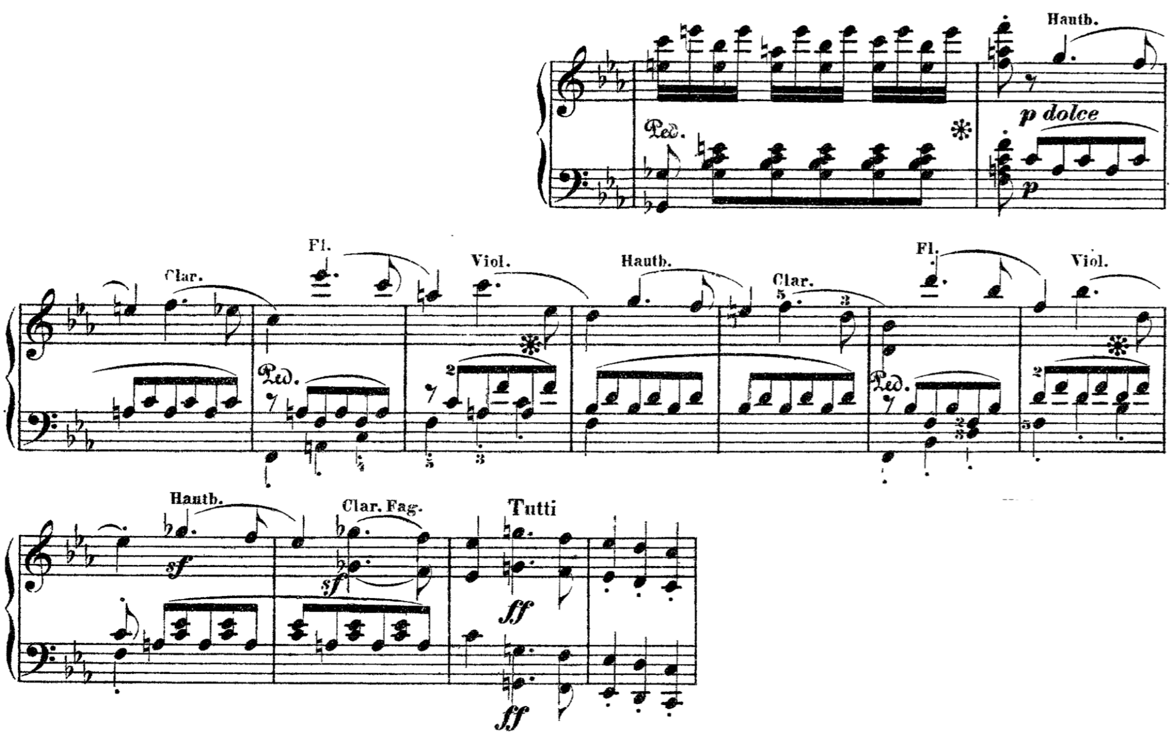

Figure 27 – First movement of Beethoven's *Symphony 3 'Eroica'* (m. 44-57)

The oboe plays a melody in m. 45. This melody passes on to the clarinet (m. 46-47), flute (m. 47-48) and the violins finishes it in m. 48-49. The same instrumental sequence is then repeated from m. 49 to 52 and, in its third appearance (starting in m. 53), the sequence is not completed and the music moves toward a new section.

Adler's assertion might be easily confirmed when we analyze pieces from other composers.[36] The same method is applied by Haydn in the re-exposition of the third movement of his *Symphony 104*. Let us first analyze the structure of the main theme to afterwards analyze its re-exposition. The main theme (figure 28) is a classic 8 measure sentence and its cadence is marked by a high note played in staccato followed by one measure long trill (red arrow – figure 28). As common practice in Haydn's time, the exposition is repeated before the music moves forward to the next section.

[36] In fact, the idea of establishing a pattern through repetition to create surprise is a common procedure in different fields of knowledge. Comedians appeal to it frequently. Video example 1 shows a small passage of Charlie Chaplin's movie *Shoulder Arms*. In the footage, we can see Charlie, the movie's main character, shooting the enemy squad and keeping track of how many soldiers he has killed. Nevertheless, after his fourth shot, when he looks to the other trench, his helmet is shot off his head and he quickly corrects his counting, because he has not killed the last soldier. Again, we have the use of repetition to create a specific expectation in the viewer. The same method is also often applied in martial arts. Repetitive strikes are used to set predictive responses in the opponent. If one fighter always follows a punch to the face with a punch to the body, his opponent will automatically lower his guard to defend his body after having his face attacked. After establishing this pattern of defense in his opponent, the fighter can take advantage of the lowering of the guard and throw a sequence of two punches to the face. It will likely hit his opponent while he is lowering the guard to defend a body attack.

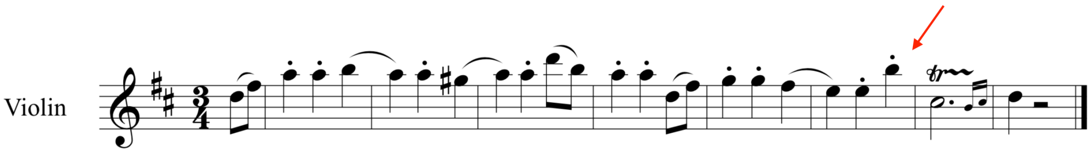

Figure 28 – Third movement of Haydn's *Symphony 104* (m. 1-8)

During the re-exposition (figure 29), the cadential pattern (high note in staccato followed by a trill) is repeated three times (red squares – figure 29). In the first two repetitions (first and second red square – figure 29), it has no interruptions. Nevertheless, in its third occurrence, the high note of the violin is not followed by the expected trill in the low register but by two measures of silence. This disruption of the pattern surprises the listener due to its unexpected behavior.

Figure 29 – Third movement of Haydn's *Symphony 104* (m. 34-53)

Two characteristics might help to emphasize the feeling of suspension in this passage. The first one is the harmony. The excerpt happens in a cadential moment (one of the most archetypal moments in music), therefore, the listener can feel that the piece is heading towards a resolution. Nevertheless, this resolution is interrupted by two measures of silence that occurs between the IV and V^7, enhancing the passage's feeling of suspension. The second characteristic is also related to repetition. During the exposition (figure 28), there is no interruption. The high, staccato note in the violin is followed by the trill in the low register. Therefore, when the melody reappears during the re-exposition, the listener will probably expect it to behave similarly to what it has been previously heard. Again, Haydn creates a dynamic surprise, in which the music is organized to set up a specific expectation in the listeners only to surprise them afterwards.

This technique of creating expectation by three repetitions of the same musical motive was frequently employed in tonal music by the use of harmonic sequences. The technique consisted in the transposition of a given melodic gesture to create the idea of development in an otherwise repetitive musical element. According to Caplin (1998), "harmonic sequence is an important characteristic of a continuation. The ongoing quality of such a progression—its projection of harmonic mobility—coordinates perfectly with the forward impetus to a goal associated with this formal function". This procedure is commonly employed by Bach in his two voices *Inventions*. Examples are found in *Invention 1* (figure 30) and *Invention 6* (figure 31). Many other examples might be found on the others inventions.

Figure 30 – Bach's *Invention 1* (m. 19-22)

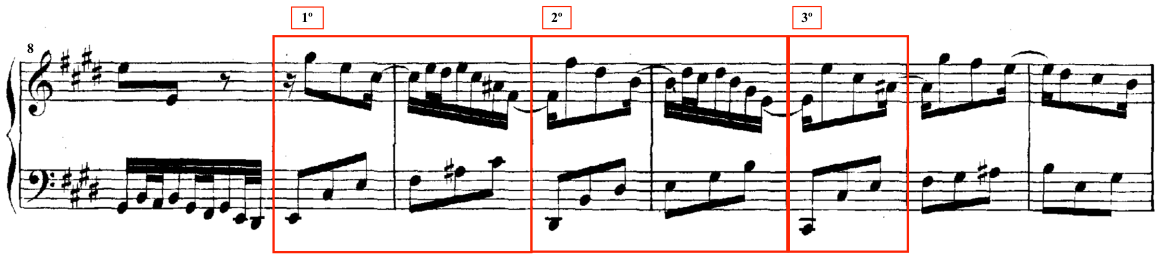

Figure 31 – Bach's *Invention 6* (m. 8-15)

It is also possible to find the application of the same procedure in pop music. An interesting example is the ending of *Led Zeppelin*'s *Heartbreak* (figure 32). At this moment, Robert Plant is singing the chorus of the song. The chorus has only two notes and the lyrics is the title of the music. Besides of a small variation on the guitar riff in the second measure's first quarter, the first two statements of the chorus are exactly the same. The third repetition is suddenly interrupted, marking the end of the song.

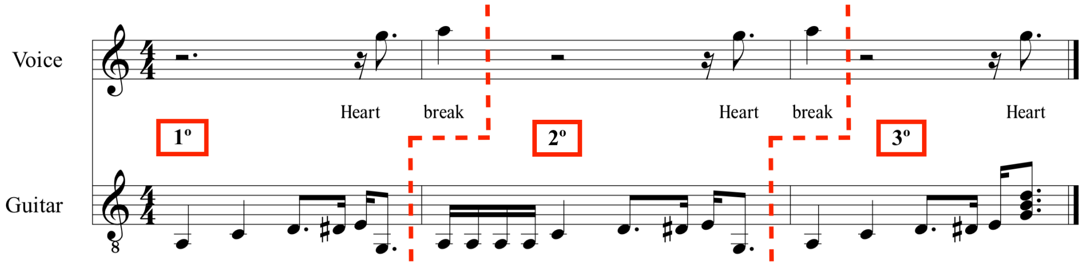

Figure 32 – Ending of *Led Zeppelin*'s *Heartbreak*

While in Haydn's symphony, harmony helps to stress the surprising effect of the excerpt, rhythm is the most important feature in *Led Zeppelin*'s song. Not only do we expect to hear the syllable "break" in the third repetition because of the established pattern, but we would also expect that the song would end in its downbeat. Here, the suspension feeling is enhanced by this highly unusual rhythmical ending. Therefore, we have an example – using Huron's nomenclature - that has not only a dynamic surprise but also a schematic surprise.

Another interesting example of using repetition as a way of controlling a person or an animal expectation is Pavlov's experiment. Boulez has applied this procedure in his piece *Sur Incises*. The composer uses the repetition of a same pitch in the beginning and in the ending of the piece's first section.[37] According to him:

> It is exactly the same note as before, perhaps not the same situation, the same octave, but the same note and it is a feature you cannot but hear, as I am calling up in you a kind of Pavlovian reflex: 'Heard that already, do not know what it is but recognize it'. And it is exactly in this way that we should intuitively understand, on first hearing a piece of music (verbal information)[38]

This kind of organization is based on the use of rhetorical devices in music (common in the western tradition since the baroque period) and it is a useful resource to forge expectations in the listeners. Rhetorical devices such as *Anaphora*, *Epiphora*, *Symploce*, *Epanalepsis*, *Anadiplosis* and *Auxesis* are based on repetition. According to Judy Tarling (2004), these rhetoric devices can be used to different affects in the speech and are as well useful for music.

Anaphora consists in the repetition of the first word in subsequent sentences. This rhetorical device is largely used in poetry and music lyrics as we can see in Bob Dylan's *Blowing in the Wind* (figure 33).

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[37] The use of Pavlov's reflex might be found in pieces from different composers and it is better exposed in my master's dissertation (OLIVEIRA, 2018), in which I analyze João Pedro Oliveira's piece *Titanium* (for piano four hands, two toy pianos and electronics) and Matthias Pintscher's *A Twilight Song*. Both analyses have been published (OLIVEIRA, 2018; OLIVEIRA, 2020).

[38] From the film *A Lesson by Pierre Boulez* (2000), directed by Andy Sommer.

How many roads must a man walk down
Before you call him a man?

How many seas must the white dove sail
Before she sleeps in the sand?

Yes and how many times must the cannonballs fly
Before they're forever banned?

Figure 33 – *Blowing in the Wind*'s first strophe

Although each sentence develops differently, the words "how many" or "before" are used in the beginning of all of them. In music, it is possible to find the use of *Anaphora* in many genres. From the music of classical composers, such as Fernando Sor (figure 34), to contemporary composers, such as Isabel Mundry (figure 35) and pop musicians, such as *The Weeknd* (figure 14).

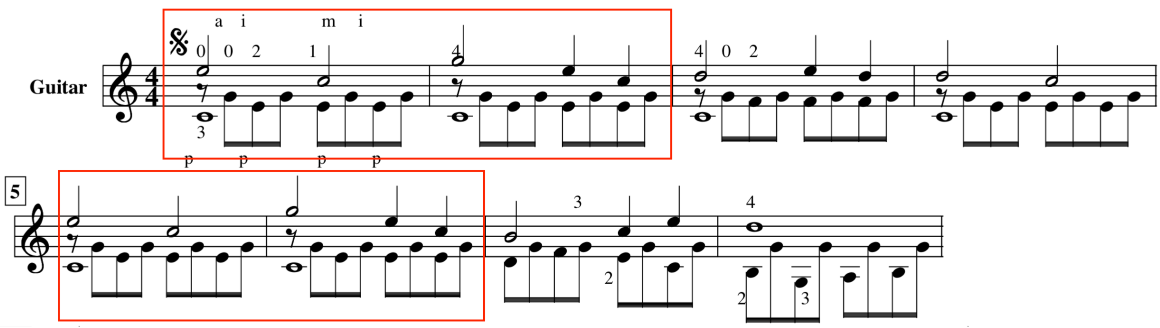


Figure 34 – Fernando Sor's *Op. 35 Nº 13* (m. 1-8)

Figure 35 – Isabel Mundry's *Textile Nacht* (m. 1-8)

Such as in Bob Dylan's lyrics, all these pieces have the same musical material marking the beginning of each sentence, nonetheless, each phrase develops differently. Therefore, the use of *Anaphora* in music may provide familiarity and novelty. The two main elements necessary to achieve a good balance between habituation and processing fluency.

Another common rhetorical device employed in music is the *Epiphora*, that is the repetition of the same word at the end of different sentences. An example of *Epiphora* in literature is the biblical phrase "When I was a child, I spoke as a child, I understood as a child, I thought as a child; but when I became a man, I put away childish things" (BIBLE, Corinthians, 13:11). Every sentence ends with the repetition of the same word: "as a child". This rhetorical device is also widely employed in music. The initial measures of Boulez' *dialogue de l'ombre double* is an interesting example (figure 36):

Figure 36 - Boulez' *dialogue de l'ombre double* (m. 1-4)

Each musical phrase ends with the repetition of the same ninth interval downwards (F#4 to E3). Similar to the *Anaphora*, the *Epiphora* might also be an interesting resource for balancing familiarity and novelty. In fact, both devices can be combined. This combination characterizes a rhetorical device named as *Symploce*. Charles Bukowski uses it in his poem *So You Want to Be a Writer*:

if you have to sit for hours
staring at your computer screen
or hunched over your
typewriter
searching for words,
don't do it.
if you're doing it for money or
fame,
don't do it.
if you're doing it because you want
women in your bed,
don't do it.
if you have to sit there and
rewrite it again and again,
don't do it.

Figure 37 – Charles Bukowski's *So You Want to Be a Writer*

The words "if you" (underlined in figure 37) begins all sentences, while the phrase "don't do it" (bold in figure 37) ends it. Phillipe Hurel uses a musical *Symploce* in his piece *Loops I* (figure 38):

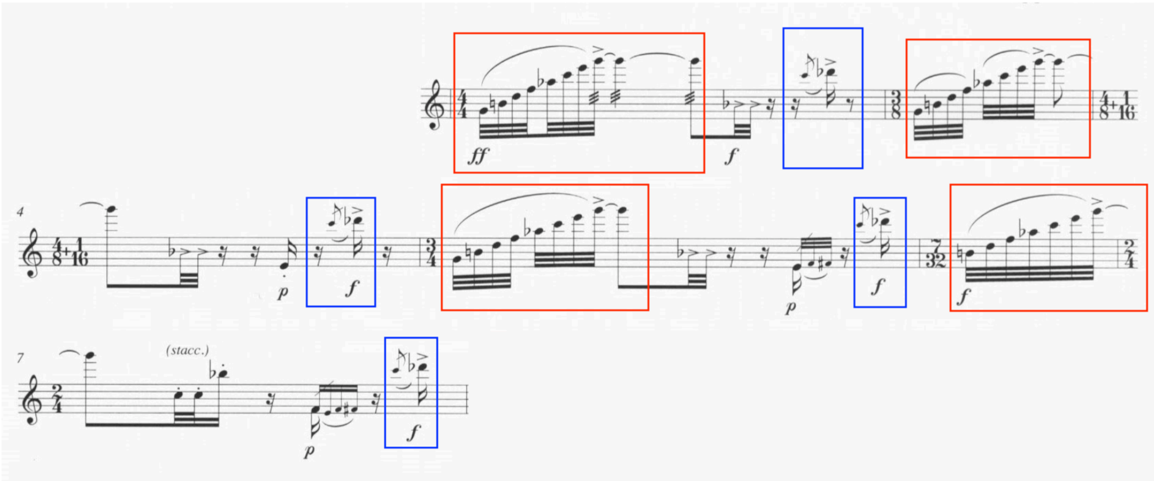


Figure 38 – Phillipe Hurel's *Loops I* (m. 2-7)

Although each musical phrase is not an exact repetition of each other, their beginnings and endings repeats the same musical motives. The *Anaphora* is constituted by an arpeggio towards the flute high register (red square – figure 38) and the *Epiphora* by a D-flat5 preceded by a C5 in grace note (blue square – figure 38). Similarly, the *Epanalepsis* is also a rhetoric device concerning the positioning of repetition within different sentences. In this case, the beginning of a sentence must be repeated at the end of the next. In literature, Dylan Thomas used it in the beginning of his poem *Do not go gentle into that good night*:

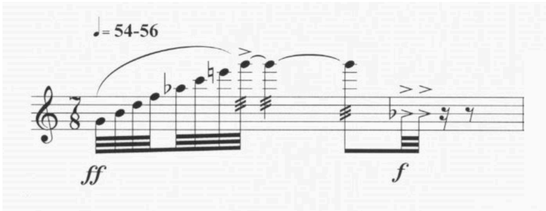
Do not go gentle into that good night,
Old age should burn and rave at close of day;
Rage, rage against the dying of the light.

Though wise men at their end know dark is right,
Because their words had forked no lightning they
Do not go gentle into that good night.

Figure 39 – Dylan Thomas' *Do not Go Gentle Into That Good Night*

In music, the most-common example of *Epanalepsis* is the ternary form (ABA) in which the music begins and ends with the same material. Nonetheless, it is also used in non-ternary pieces. Figure 40 compares the first and last measures of the first movement of Phillipe Hurel's *Loops I*:

m. 1



m. 61-64

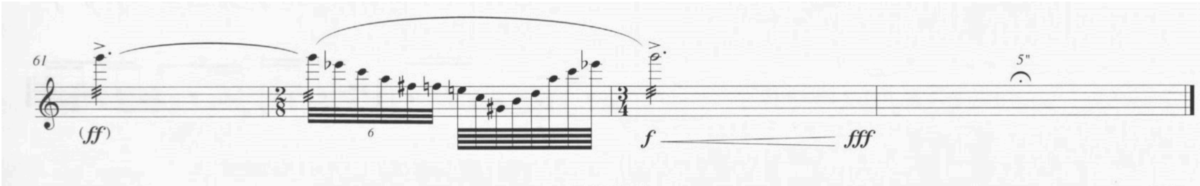


Figure 40 – Phillipe Hurel's *Loops I* (m. 1 and m. 61-64)

Although it is varied, the last measure is a clear reference to the first and, therefore, still can be considered as a varied repetition of the initial musical motif performed by the flutist. This kind of structure is also common to suggest cyclical stories in narrative music. Pink Floyd's album *The Wall* (1979) is another interesting example. The last song of the album, *Outside the Wall*, has the same accompaniment of the opening song *In the Flesh?*, suggesting that the story told throughout the album will repeat endlessly.

While the *Epanalepsis* repeats the beginning of the previous sentence in the end of the subsequent, the *Anadiplosis* uses the end of the previous sentence in the beginning of the next one. The Beatles' song *All You Need is Love* uses *Anadiplosis* on its chorus:

All you need is love
All you need is love
All you need is love, love
Love is all you need

Figure 41 – The Beatles' *All You Need is Love*

The word "Love" ends the three initial sentences of the lyrics. On its fourth repetition, the order of the sentence is reversed and the word "Love" begins the sentence. The *Anadiplosis* can be used musically to create interesting transitions. Chopin's *Sonata Nº 2* first movement illustrates it:[39]

[39] Example extracted from the video "*Principles of Music: Rhetoric Part III*", posted by the Youtube Channel *Musica Universalis*.

Figure 42 – Chopin's *Sonata Nº2* – I (m. 37-56)

Chopin uses the ending of the theme A to suggest how the theme B will continue, preparing the audience to this contrasting change. Phillipe Hurel makes a similar use of this rhetorical device in his piece *Loops II* (figure 43 – m. 15-32):

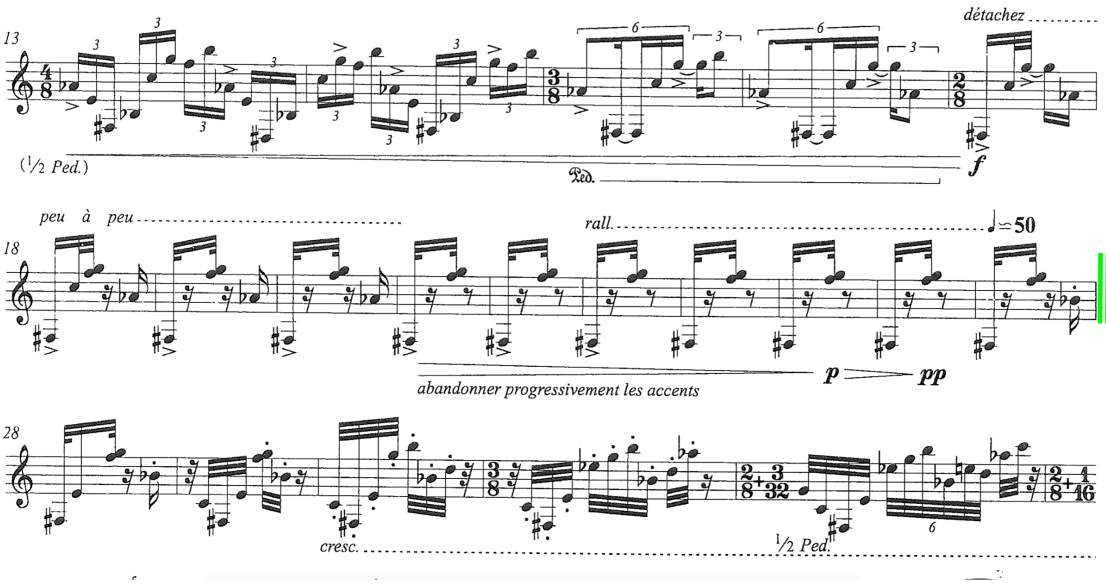


Figure 43 – Phillipe Hurel's *Loops II* (m. 13-32)

Measure 28-29 (green brackets in figure 43) segments two sections. The end of the first section (m.13-27) is based on a loop. As the excerpt progresses, the pitches present in the loop are gradually omitted. Initially (in m. 13-14), there are eight pitches in the loop: A-flat, E, F#, B-flat, C, G, F and B. In m. 15, E, B-flat and F are omitted. In m. 16, B is also omitted. By m. 21, there are only three pitches left: F#, F and G. In m. 23, the loop slows down until a B-flat is added in m. 27, announcing the beginning of the new section. The second section starts using the same musical motif (m. 28) of section I's loop. The only change is the addition of the pitch E. This example, although more varied than Chopin's *Sonata*, shows how effective the *Anadiplosis* can be to musical transitions.

Moreover, this excerpt of *Loops II* also serves as an example of an *Epizeuxis*. While the rhetorical devices analyzed so far are used in the process of structuring the musical phrases, the *Epizeuxis* (and the *Auxesis*[40]) can be useful to suggest the idea of rarefication or accumulation. *Epizeuxis* is the repetition of a word or phrase in succession. The reiteration of the word "rage" in Dylan Thomas poem (figure 39) or the repetition of the phrase "all you need is love" on The Beatles' song (figure 41) are examples of an *Epizeuxis*. This rhetorical device might be used to give emphasis for a musical idea or, if accompanied by a change of inflection, it can create the idea of an increase or decrease of intensity.

In *Loops II* (m. 18-27 - figure 43), Hurel uses a diminuendo and a rallentando during the repetition of the loop to make the music move toward the new section (a point of less intensity). The use of *Epizeuxis* has become one of the most common endings in studio recordings of popular songs: A repetitive pattern is performed by the band (or artist) and, in the recording, a long fade out lowers the energy of the music until it ends. Examples of this kind of ending goes from Jehtro Tull's *Locomotive Breath* to Paul Simon's *Late in the Evening*, Kleiton e Kleidir's *Fonte da Saudade*, Adoniran Barbosa's *Saudosa Maloca* and many others.

Similarly, the *Epizeuxis* has been also constantly employed to create an echo-like effect. Bach uses it in his Violin Partita Nº 3[41] (figure 44):

Figure 44 – Bach's *Violin Partita Nº 3 – Gavotte en Rondeau* (m. 82-85)

Although it is not specified by Bach in the score, most violinists perform the repetition (m. 84-85) in a *p* dynamic, creating an echo of m. 82-83. It is also noticeable that, similarly to the use of the *Epizeuxis* to end pop songs nowadays, Bach also uses this echo effect close to the end of the *Gavotte en Rondeau*. The movement is 100 measures long and the excerpt of figure 44 happens from m. 82-85. In contemporary music, the echo effect is enhanced by the use of electronic devices, as it is evident in Kate Soper's *Voices from the Killing Jar* (figure 45 – sound example 2):

[40] It will be explained further in the text.
[41] Example extracted from the video "*Principles of Music: Rhetoric Part III*", posted by the Youtube Channel *Musica Universalis*.

Figure 45 – Kate Soper's *Voices from the Killing Jar* – I (m. 53-54)

The electronic manipulation realized by Kate Soper makes her voice sound as if it was being performed from far away. This procedure can be very interesting to create spatial related surprises. Further ahead, we will go deeper in this discussion. Philippe Leroux uses a similar echo effect in his piece *Voi(rex)* (sound example 2). From 0:00 to 0:55 (sound example 2), the voice of the singer is recorded, processed and performed by the electronics – an effect quite similar to the one used by Kate Soper in her *Voices from the Killing Jar*, therefore, it is also an *Epizeuxis*. Nevertheless, from 0:55 to 1:47 (sound example 2), the acoustic instruments are also used to imitate the spectromorphology of the breath sounds performed by the singer. This imitation is initially made only by the flutist but, as the work progresses, the percussionist joins the imitation and, lastly, the string instruments and the pianist also imitates the spectromorphology of the breathing sounds. At this point, Leroux is using repetition to create the idea of accumulation and this use can be linked to the rhetorical device *Auxesis*. This device is structurally relevant because it is used to create the idea of climax and it constantly used by many composers from different styles. Figure 46 shows how it is used by Villa-Lobos in his Prelude Nº 1:

Figure 46 – Villa-Lobos' *Prelude I* (m. 22-26)

Pierre Jodlowski uses a similar effect in his piece *Collapsed* (figure 47):

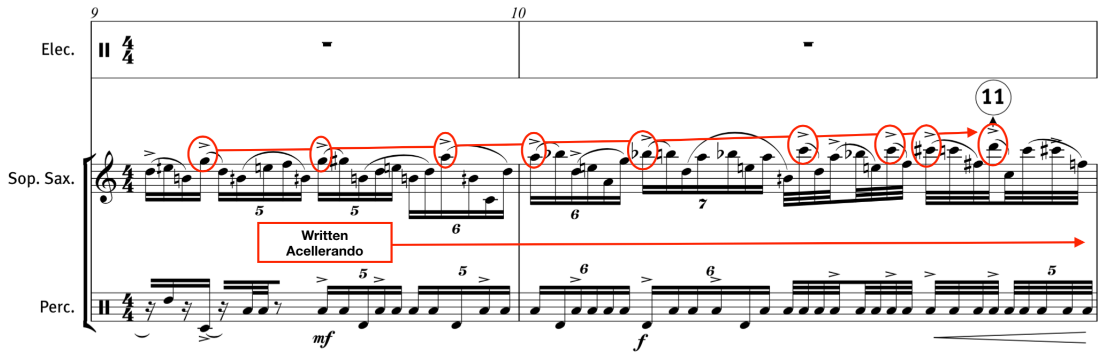


Figure 47 – Pierre Jodlowski's *Collapsed* (m. 9-10)

In both examples, the repetitive pattern is performed in accelerando with an increase of dynamic while moving towards the high register, building up the necessary energy to arrive in a climatic passage. As it is perceptible, the *Epizeuxis* and the *Auxesis*, although similar in their concept, might be used for two completely opposite goals depending on its inflection. If there is a decrease of intensity and velocity on the repetitive pattern, it creates the expectation of rarefication and might be very useful to guide the music or musical sections to its end, on the contrary, if there is an increase of speed and dynamic intensity, it may lead the music to a climax.[42] Of course, these expectations might be subverted. There are many videos on the internet showing DJs using the Drop[43] of electronic pop music – a typical example of an *Auxesis* in pop songs – to set expectations on the audience that are posteriorly subverted.[44] This rhetorical device is known as an *Anti-Climax*.

An interesting aspect of expectation is that, once a person is expecting something and the expected outcome is delayed, it will most likely create tension. According to Huron,

[42] As a result, it may also be useful for endings.
[43] Drops "are points of dramatic variation in the pace, tempo, beat, bass, volume, tone, frequency and/or rhythm of a song. The music builds in these features and abruptly stops or slows to then change" (Turrell et al, 2019, p. 1).
[44] Examples are found in the following link: https://youtu.be/QdNEtVH9bZE

> The feelings that precede highly expected events are quite distinctive (…) The expectation of resolution will lead to a degree of tension (…) Tension is almost the exact opposite of surprise. Tension builds as we approach expected events onsets. Tension drops as the listener passes through moments in which events are unexpected. If an event occurs sooner than expected the tension response fails to reach its potential peak (…) Surprises happens after events, tension happens before events (HURON, 2007, p. 307)

Huron (2007) also stresses that performers often tend to slow down in cadential passages, the moment in which listeners are most certain of the outcome. This rallentando helps to create tension. Haydn uses the same concept in the third movement of his *Symphony 104* (see p. 44 – Figure 29). As previously analyzed, the trill that follows the high staccato note in the violin's melody is highly expected. Nonetheless, the appearance of the trill is delayed by two measures of silence and, moreover, when it is finally played, it is twice as long as it was on its first two statements, delaying even more the resolution of the dominant seventh chord to the tonic. Haydn seems to have consciously created a highly predictive passage to purposely delay the expected outcome, increasing the tension in his minuet's ending. The effectiveness of this technique becomes more evident when we analyze its usage in movies and TV shows.

The end of Joel and Ethan Coen's movie *The Ballad of Buster Scruggs* is an interesting example. The movie is divided in six vignettes. The first one tells the tales of Buster Scruggs, a cowboy extremely good "in singing and in slinging guns". Video example 2 is one of the last scenes of his story.[45] A lot of decisions in the construction of this scene seems to be made in order to keep us waiting for an expected outcome. From the moment we can see that The Kid was the first one to shoot to the moment we see Buster's bullet wound takes twenty-one seconds. Joel and Ethan Coen seems to have constructed the scene consciously exploring the delay of an expected outcome to create tension. This ending is, in a way, very similar to the rallentando performers tend to do in cadential passages. The audience knows exactly what will happen and the artist takes as long as they can to give it to the audience.

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[45] The Kid, a young cowboy, challenges Buster to a duel. The Kid asks if there should be a count and Buster promptly replies "no, sir". At the moment Buster has just finished answering The Kid's question, we hear a gun shot. The camera is still focusing in Buster Scruggs face, therefore, there is some uncertainty concerning which one of them has shot first. Since the previous scene (video example 3) shows that the same talk has happened in a duel Buster has won, we tend to expect that Buster would win again. Nonetheless, his face expression changes and we can see that The Kid was the one to shoot first. From this point, we can infer that Buster has been shot, nevertheless, we do not get the answer right away. After seeing that The Kid gun has been fired, the camera focuses again on Buster's facial expressions. He is clearly concerned and slowly takes off his hat. When he finally takes his hat off, the camera shows only the front side of the hat and there is a bullet hole in it. As the camera focus on the hat's backside, it is possible to see blood and another bullet hole. The camera goes back to Buster Scruggs' face as he says "well, this ain't good". At this point, there is no doubt he was shot, nevertheless, his forehead does not appear in the camera shot and we still cannot see if he was wounded. At this moment, Buster looks through his mirror and we can finally see that the bullet went through his head.

Another interesting use of delay to create tension occurs in *Netflix* series *Black Mirror*. In the last scene of the episode *Smithereens*[46] (video example 4), Jaden tries to take Chris' gun to avoid his suicide. Both of them fight for the gun. Outside the car, a sniper is authorized to shoot Chris as soon as the sniper can have a clear shot. Meanwhile, Hayley finally gets her daughter's password and she is about to log into her Persona's account. In the next scene, the sniper shoots for the first time, but misses the target. The people watching the situation gasp and the fight inside the car continues. Another shot is authorized, but the scene is interrupted and gets back to Hayley, who finally presses the enter key to log into her daughter's social media account. She presses the key at the exact moment the sniper takes the second shot. The scene goes black and the credits appears.

Among the credits, there are some scenes showing how different people reacted after the sniper fired the second shot. The first reaction shown is the sniper's, subsequently, the reaction of a boy that was watching the negotiation from a distance and, lastly, the reaction of the police officer who authorized the shot. By their reaction, we might imply that the sniper did not miss Chris this time. Nonetheless, there is no confirmation. The credits keep interrupting the development of the scene. Before the end of the episode, there are some scenes showing different people receiving a notification on their phones concerning the outcome of the negotiation. After that, the episode ends without a confirmation whether Chris has died or not.

In the construction of this last scene, different characteristics are used to delay the expected resolution and hence increase the audience's tension. First, the audience is expecting the outcomes of two situations (the car fight and Hayley finally entering her daughter's social network). Each story keeps interrupting the development of the other, increasing the time it takes for both to achieve their conclusion. When Hayley finally enters her daughter's account and the sniper shoots the car, the credits interrupt the continuation of the plot. Furthermore, the reaction of every person involved in the situation is shown before the actual outcome. In fact,

[46] In the episode, Chris Gillhaney is an Uber driver who has recently lost his wife in a car accident. The car accident happened because Chris was looking at a notification he received on social media Smithereens (a social media similar to Twitter) on his phone. After the death of his wife, he meets Hayley, a woman that has recently lost her daughter. Hayley is trying to find out her daughter's password to the social media site Persona. She believes she will be able to discover why her daughter committed suicide if she gets into her daughter's account. When Chris picks up Jaden, an intern for social media company Smithereens, he decides to abduct Jaden at gunpoint. A police officer sees Jaden with a plastic bag over his head inside Chris' car and decides to follow them. During the car chase, Chris loses the control of the car and ends up in an open field. At this point, a negotiation to free Jaden begins. Chris says he wants to speak to Billy Bauer, Smithereens CEO. When he finally gets to do so, Chris asks if Billy would be able to get Hayley's daughter's password and Billy confirms he can send the password to Hayley. In the meantime, Chris tells Jaden that he will free him, but he will kill himself.

the outcome is never revealed. The episode leaves the audience curious with this information, since the tension is not resolved.

As an ending, when compared to music, the *Black Mirror* episode's closing scene is relatively similar to *Led Zeppelin*'s *Heartbreak* ending. The responsibility of creating a resolution is given to the audience imagination. In the specific case of *Heartbreak*, the unsolved tension leads to an interesting consequence. *Heartbreak* was first released in the album *Led Zeppelin II*. In the album, *Heartbreak* is followed by the song *Living Loving Maid*. Both songs are often grouped as one by many fans and radio stations. A plausible explication for this fact might be that *Living Loving Maid*'s first downbeat fills the gap left open in *Heartbreak's* ending. Aside from that, there are not many correlations between both songs and *Led Zeppelin* did not feel the need to play *Living Loving Made* after *Heartbreak* in live concerts. Schumann's piece *In Wunderschönen Monat Mai* has a similar ending and it will be closely analyzed onward.

All the techniques discussed above shows different forms to create implied expectations. The composer makes the audience aware that the music is going in a specific direction to, afterwards, surprise them or delay the expected outcome. As we will see, these procedures will be important in the creation of expectation related to timing, musical content, location and causation.

3.2) Musical content expectations

3.2.1) Harmonic expectations

Beethoven's music is filled with fascinating examples concerning the creation of dynamic and schematic surprises. Let us analyze the second movement of his *Piano Sonata op. 2, Nº 3*. The second movement, as commonly expected for a sonata, is a slow movement (adagio). At first glance, the structure reflects exactly what we would expect from the second movement of a Piano Sonata composed in Beethoven's time. The piece is in rondo form and it is structured in the following manner:

m. 1-10	A
m. 11-42	B
m. 43-54	A
m. 55-66	B'
m. 67-76	A'
m. 77-82	Coda

Table 2 – *Sonata op. 2 Nº 3's* structure

Let us now analyze the rondo’s main theme (figure 48).

Figure 48 - *Sonata op. 2 Nº 3’s* main theme

It is structured as a complete unit, having an antecedent and a consequent. In the first two measures of the antecedent, there is an alternation between the tonic and dominant seventh chord, establishing and consolidating the second movement’s tonality, E major. The two succeeding measures also confirm E major as the main tonality. Measure four ends with a half cadence. In m. 5, there is the first schematic surprise. M. 4’s half cadence suggests a return to the tonic and also traditionally the consequent phrase should be in the piece’s main tonality or in its dominant. According to Caplin (1998),

> In most periods, the basic idea of the consequent is supported by the same harmony as in the antecedent – that is, most often by a firm root-position tonic prolongation. On occasion, the basic idea of the consequent is a dominant version, in relation to a tonic version of the antecedent. The overall harmonic design of the period thus takes on a statement-response character (ant: I-V, cons: V-1) (CAPLIN, 1998, p.53)

Nevertheless, in this excerpt (as we can see in figure 48), the consequent begins suggesting a F# minor harmony. It cannot be considered a modulation, as it is not confirmed, but it represents a detour from what would be normally expected. Such as the antecedent’s final cadence, the consequent's final cadential progression also do not conform to the traditional harmonic schemata. The harmonic rhythm slows down drastically in m. 10 (figure 48), containing only a dominant seventh chord.

Such as performers tend to slow down in cadential passages to increase tension, at the end of the consequent, Beethoven creates a rallentando in the harmonic rhythm, delaying the cadence resolution. The period finishes with this half cadence. It would be expected as a sequence that the half cadence would lead to a return of the rondo's main tonality, E major, nevertheless, Beethoven surprises us by resolving it in E minor (figure 49).

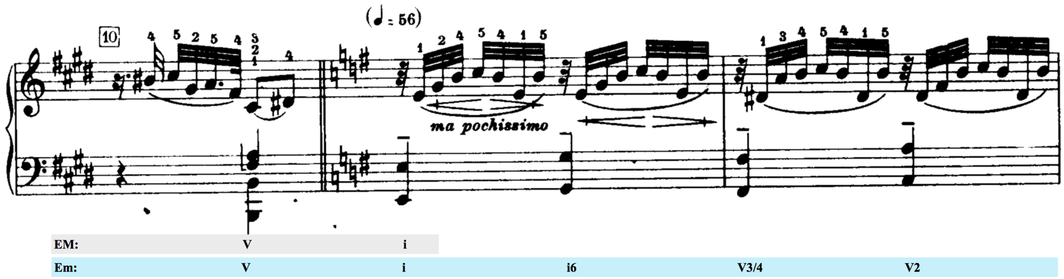

Figure 49 - *Sonata op. 2 Nº 3*'s section B

Furthermore, a change in the piece's tempo helps to enhance the surprising effect (m. 11- figure 49). At the end of section B, the piece returns to its main theme and, once again, Beethoven shows his mastery concerning the control over expectation in his music.

From m. 44 to 52, the main theme returns as an exact repetition of its first appearance. There are no changes. Since everything is behaving as it has behaved previously, we will most likely expect the same cadence we have heard before – that is, a cadence in E minor. Nonetheless, Beethoven surprises us again. The E major dominant seventh chord is not resolved; Beethoven moves abruptly to C major (figure 50).

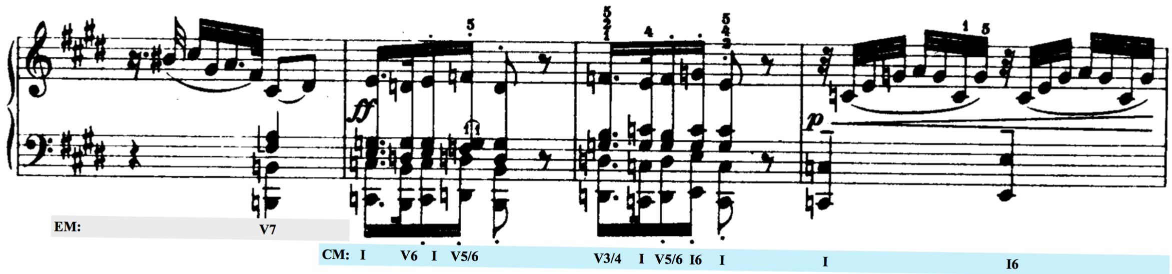

Figure 50 – Main theme's re-exposition resolution

This resolution is surprising in two aspects. Since the main theme's re-exposition was an exact repetition of the exposition, we would expect it to have to resolve again in E minor. Nevertheless, Beethoven resolves in a major key. Therefore, this is an example of dynamic surprise. We were expecting E minor because we have heard it before in the piece, therefore, the work was constructed in a way that it evoked specific expectations. On the other hand, it is also possible to claim that this resolution is an example of a schematic surprise, because Beethoven resolves an E major cadence abruptly moving to C major. A highly unconventional procedure to the laws of tonal resolution, breaking the existing schemas that the listeners were used to hearing.

The traditional tonal harmonic schemata have been used to mislead listeners in various occasions. Robert Schumann’s *Im wunderschönen Monat Mai* – first song from the *Dichterliebe* cycle - also uses tonality to create predictions that are not fulfilled. Figure 51 shows the piece’s initial measures.

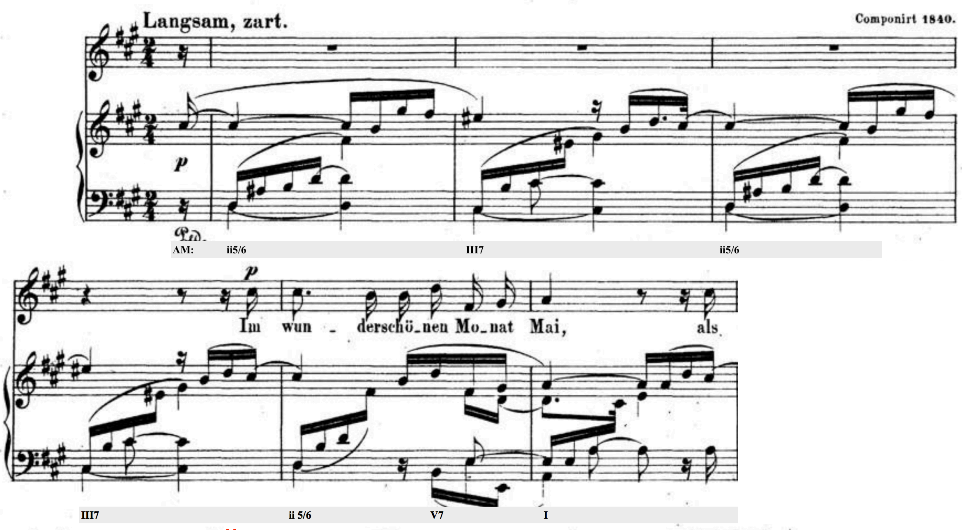

Figure 51 – *Im Wunderschönen Monat Mai* opening

The piano alternates between a B minor chord (m.1 and 3) and a C# major seventh chord (m. 2 and 4). Firstly, the piece does not begin on the tonic chord, which is already a schematic surprise. Secondly, the chords employed in the piece’s opening suggest an F# minor tonality. However, Schumann does not resolve it as it would be expected.

Instead of concluding the initial cadence in F# minor, as the opening suggests, the first cadence of the piece is on A major (figure 51). This new information makes us re-contextualize the initial chords in a new key. Therefore, the initial measures are re-contextualized as F# minor’s secondary dominant that will lead to an A major cadence when the singer starts to sing. This surprising resolution in A major, in opposition to F# minor, increases the lightness of the resolution, because it contrasts with our expectations. Schumann creates an interesting ambiguity that works greatly to improve the piece’s expressivity.

The piece’s formal structure is simple. The section A (m. 1-12) is repeated from measure 13 to 23. To avoid habituation in the repeated section, Schumann changes the lyrics. Therefore, it is another example of strophic strategy. In the piece's last four measures (m. 23-26), the initial cadence is played again. As the piece's end approach, it is normal to expect a perfect cadence, however, Schumann surprises us again and ends the piece on the F# minor dominant chord (Figure 52).

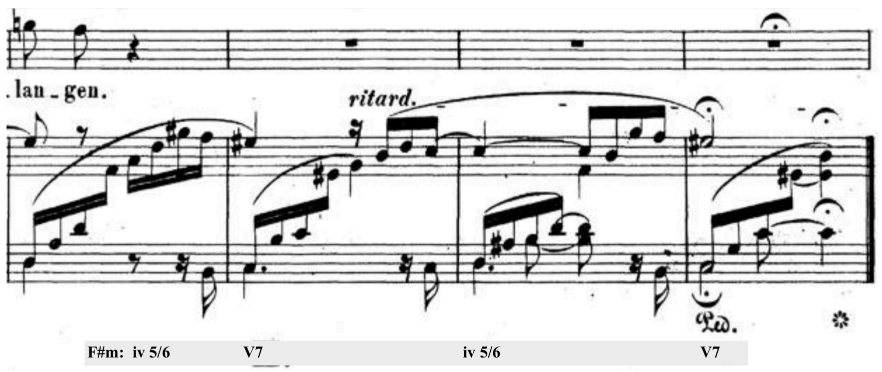

Figure 52 - *Im wunderschönen Monat Mai*'s final cadence

The lack of resolution in *Im Wunderschönen Monat Mai* creates expectations in the audience that are not solved. Schumann uses a ritardando and a fermata in the last measures to postpone the expected resolution. However, in the end, we come to find out that he is not giving it to us. Komar (1971) stresses that *Im Wunderschönen Monat Mai* and *Aus meinem Thränen spriessen*, *Dichterlieber's* second song, might be understood as a unity. The first chord used in the *Dichterliebe's* second piece gives precedent for that (figure 53).

Figure 53 – *Aus meinem Thränen spriessen's* first measures

According to Kerman (1980),

> (…) Since 'Aus meinen Thränen' directly follows the famous C-sharp-seventh chord on which that opening song is left hanging, its first few notes do not announce an unambiguous A major, as Schenker so brutally assumed, but rather, for a fleeting moment, the expected resolution in F-sharp minor (p. 327)

Moreover, Kerman argues that the poems used in both pieces “also form a unity” (1980, p. 327). Figure 54 shows both poems in sequence. According to Kerman (1980), “The ‘Knospen’ of the first song open into ‘blühende Blumen’ in the second, the ‘Vögel’ identify themselves as ‘Nachtigallen’ and so on” (p. 328).

In the wondrous month of May

English Translation © Richard Stokes

In the wondrous month of May,
When all the buds burst into bloom,
Then it was that in my heart
Love began to burgeon.

In the wondrous month of May,
When all the birds were singing,
Then it was I confessed to her
My longing and desire.

Translations by Richard Stokes, author of The Book of Lieder (Faber, 2005)

From my tears there will spring

English Translation © Richard Stokes

From my tears there will spring
Many blossoming flowers,
And my sighs shall become
A chorus of nightingales.

And if you love me, child,
I'll give you all the flowers,
And at your window shall sound
The nightingale's song.

Translations by Richard Stokes, author of The Book of Lieder (Faber, 2005)

Figure 54 – Lyrics translations

Beethoven’s *Piano Sonata op. 2 Nº 3* and Schumann’s *Im Wunderschönen Monat Mai* provides interesting examples of how a composer can create schematic and dynamic surprises related to musical content. Both pieces follow the conventions of tonal harmony. Let us analyze now how the Indian song *Binati Mano* creates similar ideas using a different system.

According to Castellano, Bharucha and Krumhansl (1984),

> Like traditional Western music, Indian music is organized around a single tone, the tonic, which is called Sa. In practice, different pitches may serve as the tonic, but in most theoretical accounts the tonic is set by convention to be the tone C. Sa (C) serves as the starting point of the scale tones. The fifth scale tone, Pa (G), is considered the next most stable (except in the few scales that exclude it) (p.397)

Besides *Sa* and *Pa*, “for each rag, two other tones, called the vadi and samvadi, play important roles” (Castellano, 1984, p. 397). Danielou (1968), quoted by Castellano, Bharucha and Krumhansl (1984, p. 397), affirms it as the “predominant note from which all variations begin and on which they end: it is always accentuated and bears long pauses”. Castellano (1984) creates a table to show how most Indian rags are structured (Table 3).

Rāg	Parent thāt	Thāt tones	Vādi	Samvādi	Tuning
Bhairav	Bhairav	(C, D♭, E, F, G, A♭, B)	A♭	D♭	Same as thāt
Yaman	Kalyān	(C, D, E, F#, G, A, B)	E	B	Same as thāt
Bilāval	Bilāval	(C, D, E, F, G, A, B)	A	E	B missing
Khamāj	Khamāj	(C, D, E, F, G, A, B♭)	E	B	B added
Kāfi	Kāfi	(C, D, E♭, F, G, A, B♭)	G	C	Same as thāt
Āsāvri	Bhairvi	(C, D♭, E♭, F, G, A♭, B♭)	A♭	D♭	Same as thāt
Bhairvi	Bhairvi	(C, D♭, E♭, F, G, A♭, B♭)	C	F	D and F# added
Todi	Todi	(C, D♭, E♭, F#, G, A♭, B)	A♭	E♭	Same as thāt
Purvi	Mārvā	(C, D♭, E, F#, G, A, B)	E	B	F added
Mārvā	Mārvā	(C, D♭, E, F#, G, A, B)	E	A	G missing

Table 3 – Indian rags
Source: Castellano, 1984, p. 400

In Aryya Banik's *Binati Mano*, from the beginning of the piece until three minutes and twenty-six seconds (sound example 1), the singer frequently reaches long notes that are sung without any vibrato or ornaments (sound example 4 to 12). In sound examples 4, 6, 7 and 8, the pitch is B. In sound example 5 and 8, the pitch is F sharp. In sound examples 9, 10 and 12, the pitch is C and, in sound example 11, the pitch is G. These pitches create an arch of tonal resolution on which B moves toward C, reaches its climax, the pitch G, (sound example 11), the highest pitch sung in the role song and then returns to C. After returning to C, the singer will not use long notes until the piece's ending, therefore, in my perception, *Binati Mano* is divided in two sections.[47]

Taking Castellano's table in consideration (table 3), it is possible to conclude *Binati Mano* is most likely on rag *Yaman*, because it uses F sharp instead of F natural and, besides C and G (*Sa* and *Pa*), the other important notes (*Vadi* and *Samvadi*) are respectively E and B. As previously confirmed, B is often used as a long note and E is often present on the main melody and appears constantly in metrically strong positions (see figure 26). Furthermore, according to Castellano, Bharucha and Krumhansl (1984), "in Indian music an additional mechanism, a drone, is used to explicitly anchor the melody line to the tonic. A drone is the continuous sounding of the tonic, Sa (C), and usually the fifth scale tone, Pa (G)" (p. 397).

All these characteristics combined create predictability in *Binati Mano*. This predictability will be considered as schematic for someone experienced with Indian music, nonetheless, it is also effective as a dynamic predictability, since even I - with no experience on Indian music theory - can predict the ending on C. When Aryya Banik starts to slow down the melody in the end of the piece (sound example 1 – from 7:28 to the end), we expect that he will conclude it in the same note as the drone. At this point, one might wonder how these kinds

[47] The second section starts at three minutes and twenty-six seconds (sound example 3).

of predictability might be applied in a contemporary piece. Is it possible to create pitch predictability without recurring to the laws of tonality? To achieve that, we must find ways of creating attractiveness to a specific note. It will allow us to create expectations in the listener and afterwards move in other directions to create surprise. Some examples of how this might be done can be taken from Indian music theory. According to Castellano (1984),

> In both western and Indian music, tones in the melody are usually perceived as anchored to the most stable tones, primarily the tonic. This anchoring is achieved by a variety of means: by using stable tones more frequently than less stable tones, by placing stable tones in metrically strong positions and at the beginnings and endings of phrases, by following unstable tones with stable tones in the form of resolution, and by using tones from established musical scales (p. 397)

The continuous repetition of one pitch, such as the Indian drone, is an effective method to achieve this kind of effect. Luciano Berio effusively repeats the same pitch (B-flat) in his *Piano Sonata* (2001) and it surely is a method of creating polarity as effective as the Indian drone. Apart from repetition, how else can we create the idea of attractiveness to a pitch without resorting to the tonal system?

3.2.2) Edmond Costère's *Theory of Attraction*

Edmond Costère, a French music theorist, developed a theory on which he explained how different notes are attracted to each other. His method will be my main reference on how to create a sense of polarization in post-tonal music. According to Ellard (1973),

> the goal of Lois et styles des harmonies musicales (Costere's most famous book) is to formulate a uniform theory of music which will be equally applicable to all harmonic styles, based on certain basic and irrefutable facts and, in the measure possible, free of the somewhat detrimental effects of subjectivity. The method in question is founded on the affinity that tones seem to exercise on one another as a result of their very being, and as a result of natural, physical and acoustical laws (p. 6)

Costère's theory says that two pitches are attracted to each other when they are separated by the shortest distance possible. "In music this distance is the interval that separates two points or tones, and must be measured according to two criteria: the shortest distance in terms of the harmonic series, and the shortest distance in terms of a tempered chromatic projection" (Ellard, 1973, p. 10). Since the first interval in the harmonic series is the octave (figure 55) and it creates two identical pitches, we will consider the second interval of the harmonic series as the shortest distance.

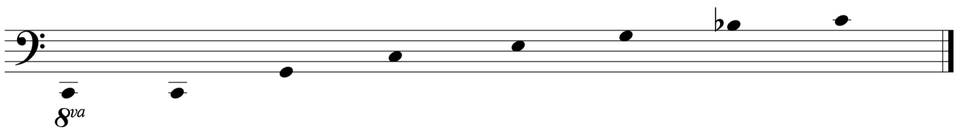

Figure 55 – C harmonic series

Thus, a fifth will be the shortest vertical distance between two tones. Horizontally, the smallest distance – considering the equal temperament – is a half tone. C, for instance, will exert attraction on B and D-flat (half tone above and below), and also on G and F (a fifth above and below). According to Ellard (1973), "the four notes thus related to a given pitch are called its cardinal tones; cardinal attractions are the immanent attractions by which the cardinal tones are linked to the primary tone. Any tone in any projection has four lines of cardinal force revolving around it" (p. 10).

This theory will enable us to create polarization and thus direct the listeners to predict on which note a specific musical passage or section will be ending without appealing to the tonal system. Once such predictions are created, the composer is able to deviate from it and surprise the audience. I believe this technique might be inferred from Harrison Birtwistle's *The Axe Manual*. Let us analyze how the composer applies this principle in the piece's initial measures. As previously analyzed (see p. 30-33), the harmonic structure in the beginning of the piece is quite repetitive. An ostinato consisted of the notes A-flat, E-flat, D and A is performed on the piano. In this ostinato, A-flat and D are emphasized; both are the only pitches not played in staccato, therefore, both reverberate throughout the development of the excerpt.

When we analyze its cardinal tones, we have the following result:

	Half tone up	Half tone down	Fifth up	Fifth down
Ab	A	G	Eb	Db
D	Eb	Db	A	G

Table 4 – A flat and D cardinal tones

Pitches one diminished fifth apart of each other share the same cardinal tones. This characteristic can be used to create a further layer of ambiguity, because the composer becomes able to resolve the musical phrase in two distinct pitches. Birtwistle uses this dual resolution in his favor. As we can see in figure 20, the excerpts A to F will start in A-flat and end in D.

From measure 1 to 16, Birtwistle adds four pitches to his harmonic structure. All pitches used are A flat, E flat, D, A, C, B flat, E and B. In m. 16, the long note is an A. If we analyze A cardinal tones, we have the following result:

	Half tone up	Half tone down	Fifth up	Fifth down
A	B-flat	A-flat	E	D

Table 5 – A cardinal tones

Besides E-flat and B, all notes used by Birtwistle from m. 1 to 16 are part of A cardinal tones and E-flat is one diminished fifth above A, therefore, shares the same cardinal tones as A. In m. 17 and 18, the long notes are respectively A, E and B-flat. In m. 19, the long note is E-flat. Therefore, Birtwistle is alternating between the notes A, E-flat and its cardinal tones.

Although *The Axe Manual* is an atonal piece, Birtwistle seems to create attraction points toward specific pitches. This procedure generates harmonic predictability. In the analyzed example, he is even able to create modulations that can expand this technique's possibilities of application. As analyzed further, this procedure will serve as an important reference in this dissertation composition portfolio.

3.2.3) Timbral expectations

Different strategies are used to achieve interesting timbral surprises, but, most often, composers will withhold some timbral information to be exposed only later in their pieces. In Sciarrino's *Infinito nero*, the timbre pallet is very limited in the beginning of the piece and is gradually enriched throughout the piece's development. From m. 1-5 (figure 56), there is only a flute (playing *Aeolian* sounds) and, in m. 3, a clarinet (playing a tongue slap in pianissimo). Violin, viola, cello and percussion will play for the first time in m. 6. Since the piece's tempo is very slow, it takes around 40 seconds until we hear the first strings and percussion intervention.

Figure 56 – Sciarrino's *Infinito nero* (m. 1-6)

After the first instrumental intervention in m. 6, there is a long excerpt (from m. 7 to 41) exploring only tongue ram in the flute and slap tongue in the oboe and clarinet (figure 57).

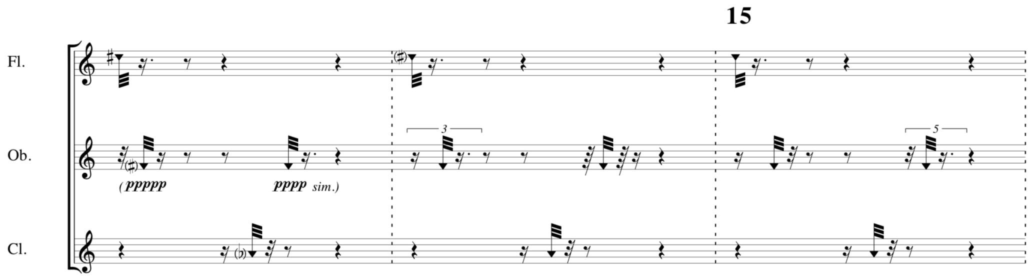

Figure 57 – Sciarrino's *Infinito nero* (m. 13-15)

These techniques share timbral similarities, therefore, there is almost no timbral contrast throughout the whole passage. To avoid an excess of habituation due to the lack of timbral novelty, the rhythm is slightly varied. This passage lasts for around 4 minutes. It is important to stress that Sciarrino's *Infinto neto* is for flute, oboe, B-flat clarinet, piano, voice, percussion, violin, viola and cello. Therefore, there are two timbres we have not heard so far: the piano and voice. The piano plays for the first time in m. 42 and the voice in m. 44. After listening for so long to an excerpt without timbral changes, it comes as a pleasant surprise to hear the piano and voice. Sciarrino most likely limited his timbral pallet to prepare our ears for their entrance.

This effect gets even more interesting when allied with the use of lighting. In *Cantata Profana's* performance of *Infinito nero*, the performers are placed in the dark. In the first 5 measures, the light is focusing only on the flutist. In m. 6, when more instruments are playing, the light illuminates more performers (video example 5). Nonetheless, the singer is placed behind the ensemble and is still not illuminated by the lights. Her light will be turned on only when she sings in m. 44 (video example 6).

The lighting helps the composer in his intention of camouflaging the appearance of a deferred timbre. If the audience sees a vocalist in the stage, they will be expecting the voice to be used in some moment. If they are not able to see it, the effect is more impactful. Different techniques have been used by different composers to enhance this surprising visual effect. We will discuss further on how composers such as Pierre Boulez and Gustav Holst explore the hiding of specific performers to create surprise in their music.

3.2.4) Time-related expectations

In the previous sections, I discussed different techniques a composer can dispose to create timbral and harmonic predictability and surprise. Let us now discuss surprises related to timing. In *The Augurs of Spring*, *Rite of Spring's* first dance, Stravinsky superimposes an E major triad over an E flat seventh chord. This chord is repeated and it is irregularly accentuated. In this example, the listener becomes well aware to the harmonic and timbral content they will listen, nonetheless, they are never certain concerning the accentuation timing. We might say, therefore, that the harmonic and timbral predictability creates fluency, while the rhythmic uncertainty avoids habituation.

Huron (2007) stresses that "accurate expectations about when a stimulus might occur helps the listener in resolving the what of perception" (p. 178). This characteristic can be a useful tool for creating complex passages without overloading the listeners. As previously discussed, Birtwistle's *The Axe Manual* is another example in which the harmonic content is quite predictable (the piece starts using the same pitches with fixed octaves), while the rhythm is unpredictable.

According to Huron (2007), "the most easily predicted timings are those that are periodic" (p. 175). In fact, the use of periodic rhythms is the most common technique to create time-related predictability and surprise. J. J. Cale's *Cocaine*, for example, uses this procedure.

As it is common in Rock and Roll music, the song's first guitar riff (1 in figure 58) is accented in the second and fourth quarter.

Figure 58 – *Cocaine's* guitar riffs

This riff is played solo on the intro and it is also used as an accompaniment for the singer. In the chorus, the instrumental accompaniment changes to riff 2 (figure 58). The rhythm accentuation is drastically altered. It is based in a melodic descending line and its accentuation patterns falls on the measure's upbeats. The last note, a G sharp, is accentuated again in the downbeat to prepare the return to riff 1.

J. J. Cale sets a dynamic surprise in *Cocaine*. In the first riff, he uses a repetitive accentuation pattern to create predictability and surprises the listeners when he changes the pattern in the second riff. This procedure is highly usual in rock music. *Led Zeppelin*'s *Heartbreak* changes its accentuation pattern in two opportunities. The first riff is repeated three times in the song's intro (1 - figure 59); it is transposed a second major upward and then comes back to the original transposition.

Figure 59 – *Heartbreak's* guitar riffs

As usual in Rock music, the second and fourth quarters are accentuated. The drums rhythm reinforces this pattern. After this repetitive exposition, our brain has learned it and will probably expect its continuation. At this moment, *Led Zeppelin* has already set up a dynamic predictability. I would claim that the first surprise comes in the second riff (2 - figure 59). While the drummer keeps the same pattern, the guitar accentuates the fourth quarter's upbeat and resolves playing a different chord in the next measures downbeat. Although this change might come initially as a surprise, it is repeated four times, therefore, we get used to this new pattern and again we expect that it will continue. Nevertheless, once again, the pattern is interrupted and the third riff has even a change in its time signature (3 – figure 59), surprising the listeners even more.

Beethoven also often accentuates the upbeat to create time based surprises. The third movement of Beethoven's *Symphony 7* starts with a strong attack in the first measure's downbeat. The same gesture is repeated in m. 3 (figure 60).

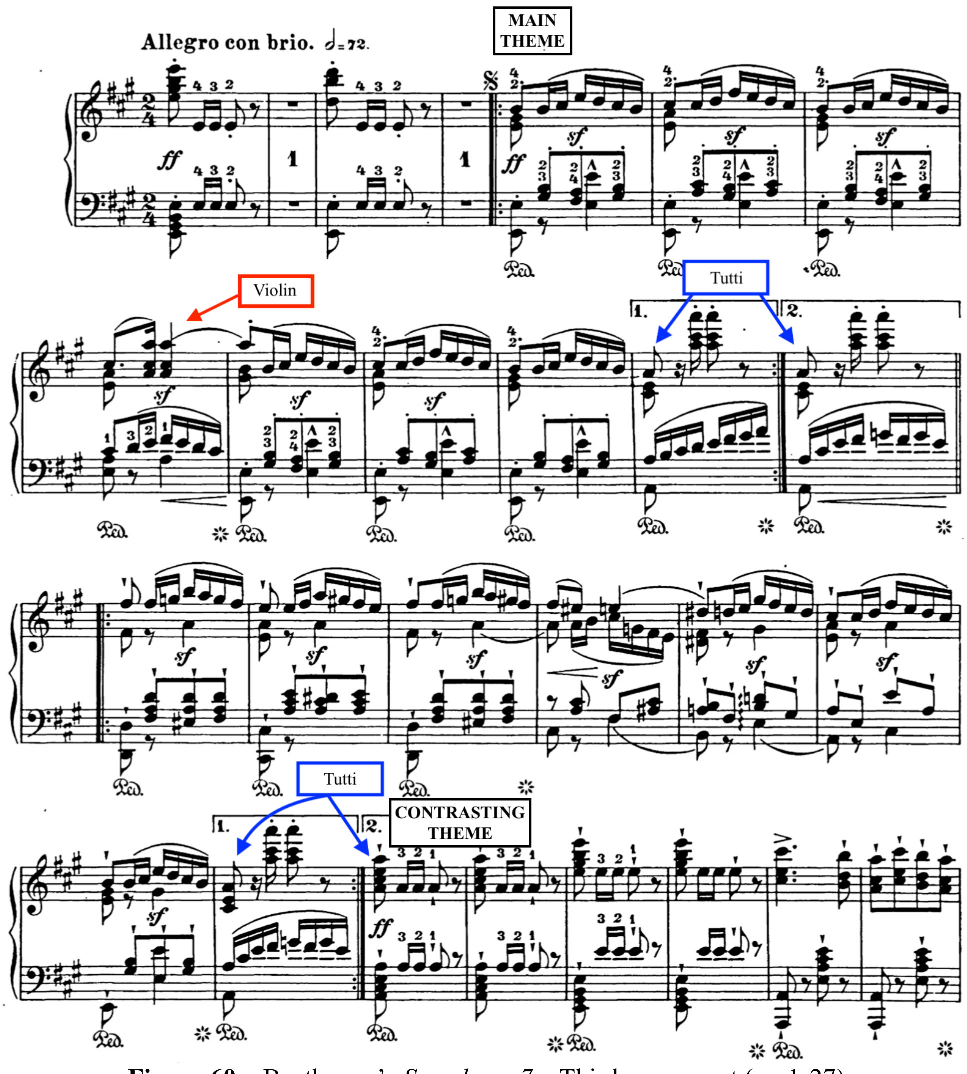

Figure 60 – Beethoven's *Symphony 7* – Third movement (m. 1-27)

After this short intro, the movement's main theme is presented and, as we can see in figure 60, it is constantly accented in the upbeat (sforzando symbol). Timpani, horns, trumpets and woodwinds play mostly in the upbeat to enhance the *sforzando*. These instruments play in the downbeat only on three occasions during the piece's first twenty-two measures (m. 12, 13, 21 and 22 – blue arrow in figure 60). All these occasions marks phrase endings and it will be an important feature in the transition to the contrasting theme. Moreover, in m. 8, the repetitive melodic pattern is interrupted and the violins play an A4 (red arrow – figure 60), the highest pitch in the melody so far, therefore, it attracts the listener's attention. Beethoven places it in m. 8's upbeat as a long note, helping to increase the upbeat accentuation. The accentuation may sound as a surprise in the movement's first measures, nevertheless, we familiarize to it over time. Beethoven waits for this moment to surprise us again. After m. 22, the downbeat accentuation previously used only in the last measure of the melodic phrases is now prolonged and the contrasting melody is fully accentuated in the downbeat (figure 60), shifting our metric perception completely.

This example shows two kinds of surprise. The first one is semantic. We are used to music that accentuates the downbeat. Once Beethoven inverts this process, a surprising effect is created. Nonetheless, he explores this idea for so long that we get used to it. Therefore, Beethoven creates a dynamic predictability, we are now expecting this upbeat accentuation to be maintained, but Beethoven shifts the accentuation again. In this case, the music creates an expectation because of the way it is structured. Thus, it is a dynamic surprise.

A similar technique is frequently used by Jimi Hendrix in his live performances. The downbeat is clearly marked in the song's beginning. Nevertheless, once the listeners have a well-defined expectation of when the downbeat will happen, Hendrix skips its accentuation. To exemplify, let us analyze *Purple Haze's* performance in the *Atlanta Pop Festival* (1970). I will focus my analysis in the song's first guitar riff and its re-exposition. Figure 63 (sound example 13) shows how the riff is initially performed.

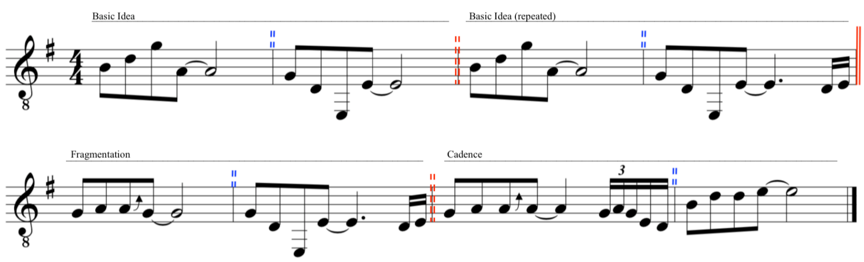

Figure 61 – *Purple Haze's* initial riff

Again, the accentuation fits the common pattern of Rock music in which the second and fourth quarters are accentuated. The drummer helps to enhance it. The riff is constructed in a very traditional manner. It reflects the structure of a sentence. A basic idea is exposed in the first two measures, it is then repeated (m. 3-4), fragmented (m. 5-6) and ends with a cadence in E (m. 7-8). The melody consistently uses the rhythm of three eighth notes followed by a longer note as its main motive. The repetition of this rhythm segments the melody and it is possible to perceive a new articulation on every measure downbeat.

When the same riff is re-stated, it would be commonly expected that it would be performed as it was in the beginning, nonetheless, Jimi Hendrix plays it with small differences (figure 64 – sound example 14).

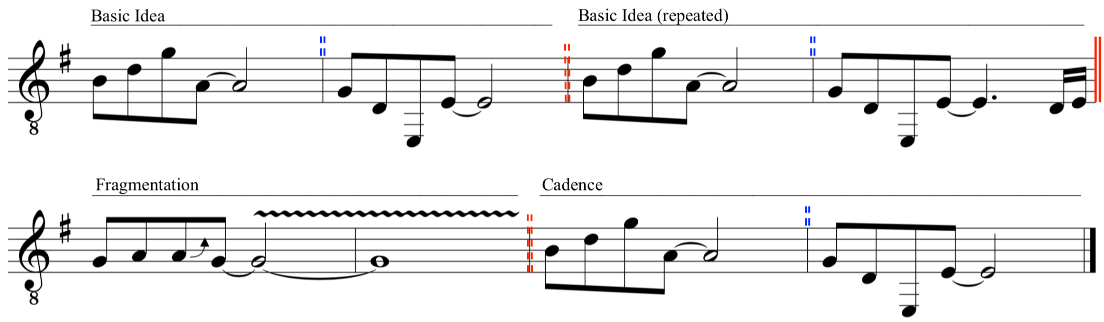

Figure 62 – Initial riff's re-exposition

The re-exposition is still eight measures long and also follows a sentence's structure. Nevertheless, Jimi Hendrix does not play the melody in measure 6, skipping its downbeat and possibly creating a surprising effect. This technique might be considered a dynamic and a schematic surprise. The riff is composed in a way to heighten the importance of every measure's downbeat, establishing this expectation. The music by itself is capable of setting expectation, therefore, it is considered a dynamic surprise. Furthermore, it may also be considered a schematic surprise since the song was not released in The Jimi Hendrix Experience's album *Are You Experienced* with this alteration in the riff's re-exposition. Therefore, fans that had previously heard the recording had already formed schematic expectations.

Hendrix explored frequently this kind of "skipping the downbeat" surprise in his live performances. The same procedure can be found in *Voodoo Child (slight return)* performance in *Woodstock*. After the initial riff, the rhythm guitar plays a repetitive accompaniment based in a E major chord (figure 65 – rhythm guitar). Jimi Hendrix plays variations of this accompaniment, but he keeps emphasizing the downbeat of every measure (figure 65 – solo guitar) (sound example 15).

Figure 63 – *Voodoo Child* beginning

After the first guitar solo, the riff analyzed above is re-stated. Jimi Hendrix plays variations of the accompaniment again (figure 64 – sound example 16). This time, such as in *Purple Haze*'s example, Jimi Hendrix plays a G for longer than we would probably expect, missing the next measure's downbeat (red arrow – figure 64).

Figure 64 – *Voodoo Child* riff in its re-exposition

Another interesting technique to create time-based surprises is to add a beat (or a couple of beats) to delay an expected outcome. The third movement of Haydn's *Symphony 104* is an example of this practice (see p. 44). As discussed earlier, in Haydn's symphony, it may be quite predictable what we will hear (a high note in the violin followed by a trill in the low register), nevertheless, Haydn adds two measures of pause before giving to the listener the expected outcome.

The Bad Plus's version of *Black Sabbath*'s *Iron Man* uses a ritardando to postpone an expected outcome. Iron man's famous guitar riff (figure 65 – sound example 17) is played twice on the piano.

Figure 65 – *Iron man's* guitar riff

In its third repetition, the band initiates a ritardando in the third quarter of the riff's second measure. The ritardando gets more intense towards the measure's ending and, as a result, it considerably postpones the return of the next measure's downbeat and a new exposition of the riff. In this example, such as Haydn, *The Bad Plus* is also using the three-repetitions technique to create time-related dynamic predictability. The riff is repeated two times to establish a pattern. The third repetition suspends it, surprising the listeners. A similar procedure is employed again in the second riff of the same song (figure 66 – sound example 18).

Figure 66 – *Iron man's* second riff

The riff is repeated two times and a ritardando postpones the downbeat arrival after the third repetition. In its fourth repetition, there is another surprise. The riff is abruptly interrupt in the second quarter of its second measure (figure 67). This interruption is also present in *Black Sabbath*'s original version. Nevertheless, *The Bad Plus* uses it to create yet another time-related surprise.

Figure 67 – *Iron Man's* second riff interruption

The drummer plays alone after the riff's interruption. It completely suspends the song's tempo regularity (sound example 18). The choice of adding such an irregular tempo here might be analyzed as an exaggeration of the irregularity caused by the ritardando in both riffs. The irregularity could already be felt before and gets so drastic at this moment that it overcomes the song's regularity and we are not able to feel it anymore.

As it is possible to see, in all examples analyzed so far, some level of regularity is important to create time-related predictability and surprise. As stressed by Huron (2007), "Periodic events are predictable for the simple reason that they establish a regular time interval that acts as a predictive template" (p. 175). The band *The Bad Plus* plays often with this characteristic opposing periodicity and aperiodicity. Their version of the *Nirvana*'s song *Lithium* is another interesting example. The song's main melody is fairly syncopated (figure 68).

Figure 68 – *Nirvana*'s *Lithium*

It is important to state that

> the syncopation only challenges metric perception; it never annihilates meter. In order for syncopation to exist, it is essential to maintain normal (unsyncopated) metric expectations. Syncopated schemas piggy-back on unsyncopated ones. The meter provides the schema against which when-expectations are formed (Huron, 2007, p. 303).

Therefore, in *Nirvana*'s original version, drums and the other instruments are clearly emphasizing a 4/4 meter, enhancing the feel of the main melody syncopation (figure 68 – sound example 19). There is no doubt the excerpt is noticeably periodic, but *The Bad Plus* version changes it. Since the metric perception of the main melody is weakened due to the syncopation, they orchestrate the instrumental accompaniment (piano, bass and drums) in a way that in certain passages the 4/4 metric perception is well-defined and sometimes is indistinguishable (figure 69[48] - sound example 20).

Figure 69 – *The Bad Plus*' arrangement of *Lithium*

The drummer keeps the original version's rhythmical pattern in m. 1-2 (figure 69).

[48] Image 44 is a rough transcription of *The Bad Plus* version. The intention of the transcription is to show where the accentuation is lying in each measure. It does not represent accurately what which instrument is playing.

Nonetheless, in the following measures (m. 3-4), bass and drums are not stressing the 4/4 metric perception anymore. The accentuations become irregular. This new accentuation pattern in the instruments aligned to the main melody's syncopations will most likely mess with the listener's perception of time. It becomes difficult to perceive what is downbeat and what is upbeat. In m. 5-6, drum and bass reinforces the 4/4 metric position again, creating an idea of resolution to the previous musical phrase. As it can be seen in m. 7-9, this alternation is explored again and it will be frequently used in the development of the whole song.

3.3) *Timbre, harmonic and time* surprises

In some occasions, composers combine musical content and time-related surprises to enhance their intentions. In *Prelude 15* from Shostakovich's *24 Preludes* for piano, there is an interesting component of surprise that explores musical contents and timing elements of our perception. Near its ending (m. 42-59 – figure 70), the piece is based on a homophonic texture. Starting in m. 42, melody and accompaniment clearly stresses the piece's ternary time signature, played in fortissimo. The harmony employed in the accompaniment is also straightforward. There is an alternation between tonic and dominant (figure 70).

Figure 70 – Shostakovich's *Prelude 15* (m. 39-59)

The whole structure is very clear and develops without any interruptions until m. 52.

At this moment, instead of having a note in the measure's downbeat, there is a pause. It is a time-related surprise, because our expectation was the continuation of the same pattern of accentuation in the downbeat. Moreover, when the pianist plays again in m. 52's second quarter, the continuation is not quite as we would expect. The pianist does not play in fortissimo anymore. There is a sudden change to pianissimo. Likewise, the harmonic alternation between tonic and dominant is also ceased. Shostakovich uses a chord that is not part of D flat major harmonic field (G major – blue arrow in figure 70). All these changes on the musical content, combined with the time-related surprise, indicate Shostakovich's intension of surprising the listeners in the end of the *Prelude 15*. Alex Mincek's *Pendulum VII* also uses time and musical content unpredictability to postpone the effects of habituation. The beginning of the piece uses a diverse number of musical materials. Let us initially analyze what each instrument is playing from m. 1 to 6 (figure 71).

Flute I and II alternates between tongue ram and a pizzicato from m. 1-4. In m. 5, it plays a harmonic glissando and, in the end of m. 6, pitches with ordinary technique. Mincek uses the tongue ram and pizzicato in the first measures as a percussion effect, contrasting to the more melodic gestures from m. 5-6 (the harmonic glissando and the pitches played with ordinary technique). As we will see, most instruments are structured in the same way. The saxophonist plays two different types of multiphonics, the pitch B in slap tongue and, in m. 5, a trill. In this case, the slap tongue (closely related to the flute pizzicato and tongue ram) will be used as a percussion effect and the trill as the melodic gesture. The multiphonics will be performed with two articulations: 1) extremely accented and staccato; and 2) accented in tenuto. When it is played accented in staccato, it will also work as a percussion effect. When it is performed in tenuto, it will serve as a harmonic background. The percussionist alternates between a guiro, china cymbal, thai gong and an almglocken. With the exception of the guiro (that has no resonance), all other instruments are played with the exact same articulation: choked. Therefore, all sounds here are used to enhance the percussive gesture. The piano also has the same role. All pitches are played very fast or in staccato, therefore, it will be closely related to the percussive sounds.

Figure 71 – Alex Mincek's *Pendulum VII* (m. 1-6)

Figure 71 (cont.) – Alex Mincek's *Pendulum VII* (m. 1-6)

Figure 71 (cont.) – Alex Mincek's *Pendulum VII* (m. 1-6)

In the strings, different extended techniques are employed. The Bartok pizzicato and an attack with lots of bow pressure near the tailpiece are used as a percussive effect. Ordinary pizzicato will sometimes be used as a melodic gesture and sometimes as a percussive sound. A harmonic-like technique, in which the finger damps the strings, will sometimes be used to create melodic gesture and sometimes used to create inharmonic timbral changes. Lastly, a two-note chord, played mostly on the viola, will serve as a harmonic background.

As it is possible to notice, Mincek uses a lot of musical materials, but, at the same time, each instrument has a very repetitive part. The perception of repetition is intensified by the timbral similarities shared by these musical materials (such as the tongue ram and pizzicato on the flute). Therefore, the opposition between harmonic and inharmonic sounds is what stands out mostly for my perception and, in my analysis, Mincek explores it in three categories: Harmonic sounds that has no noticeable pitch change (harmonic background), harmonic sounds with pitch change (melodic gesture) and a fast inharmonic attack (percussive effect). These categories will be very important for the development of the piece, however, to get to this point, we need to analyze some of the rhythmical motives in *Pendulum VII*.

Mincek explores mostly three rhythmic motives: 1) A sixteenth note played by itself, 2) three sixteenth notes played in sequence and 3) a triplet. Although the rhythmic material employed is very limited, it is never applied following any kind of repetitive pattern – that is, it is not possible to find a sequence of events that will always be repeated. The rhythmic organization, whereas very repetitive, is so well structured, that it is not possible to foresee when each of the three main motives will be applied.

As a consequence, the piece has a steady timbral pallet (harmonic background, melodic gesture and percussive attack) and a coherent rhythmic material, nonetheless, they interact in such a complex way that the composer keeps surprising us. Although repetitive, I believe most listeners will never be certain of what they will hear next and when they will hear each musical material. This kind of organization can possibly be interesting because it creates a musical discourse that is at the same time complex, but also easy to follow. If processing fluency demands repetition and habituation demands novelty, Mincek might have found a very creative solution to use both at the same time.

3.4) *Spatial* expectations

According to Huron (2007), "in contrast to the what and when of prediction, the where and why components of auditory expectation have played little role in musical organization and experience. But they represent opportunities for future enterprising composers" (p. 7).

Huron cites works of Giovanni Gabrieli and Stockhausen's electroacoustic music as examples of pieces that explores where-related expectations. As a matter of fact, the resources of electronic music will be of great importance to explore more deeply spatial expectations. In Pierre Boulez' *Repons*, there are examples of spatial surprises involving both acoustic instruments and electronics. The piece is composed for six soloists, ensemble and live electronics. The audience is placed around the ensemble. The soloists and speakers (for the live electronics) are placed around the audience (figure 72). Boulez explores a schematic expectation in this piece. Normally, the expectation in a concert is that the sound will come from the instruments placed in the main stage. Knowing this fact, Boulez withholds information to create surprise. In the beginning of the piece, the soloists are placed in the dark and the audience cannot see them. Moreover, the piece's introduction (that last around six and a half minutes) do not involve the soloists in any capacity. Therefore, there is no reason for the audience to expect sounds coming from any other place but the main stage in front of them.

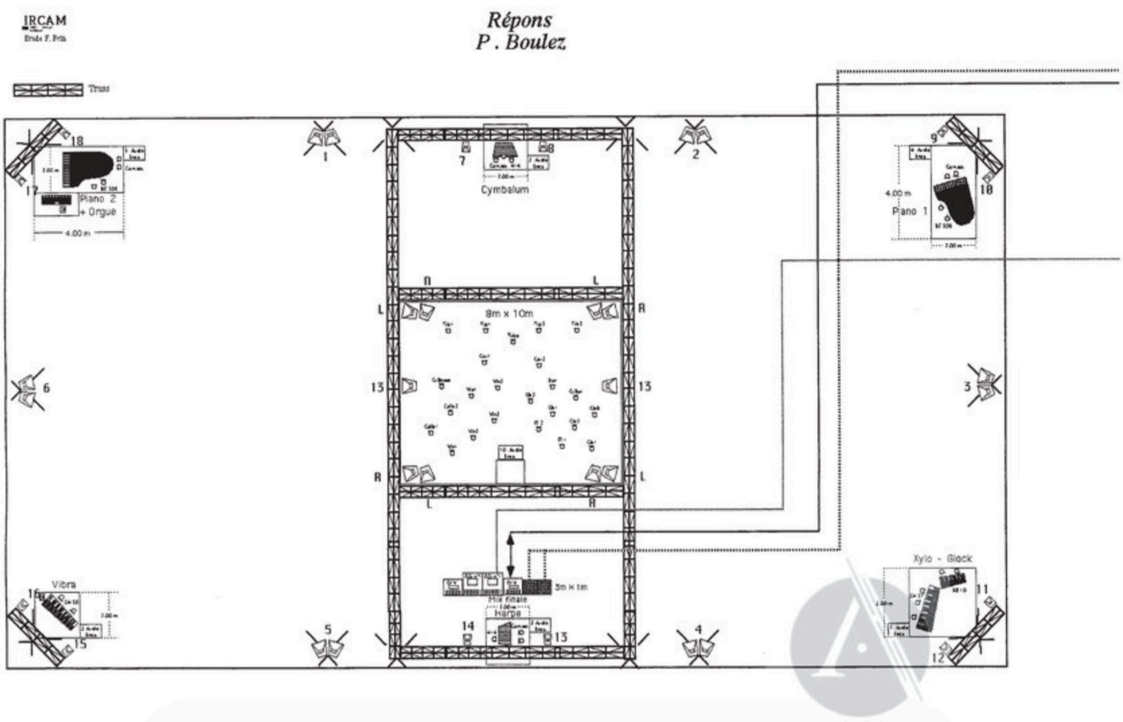

Figure 72 – Instrumental position in *Repons*

It comes as a surprise when the soloists play for the first time. First, the sound comes from unexpected locations, creating a where-related surprise. Additionally, none of the soloist instruments are used in the instrumental ensemble, consequently, the soloists entrance marks a significant change in the timbral pallet employed in *Repons*. The listeners could not foresee such an abrupt change in what they would hear. Hence, in this example, Boulez explores a spatial and timbral component of surprise at the same time.

All soloists play together in their first entrance. In the sequence, a chord is played one time by each of them separately. At this moment, the development of the piece is created by the movement of this chord through space. The electronics also has a significant role to enhance this effect. A microphone picks up the sound performed by each soloist and spreads it throughout the space. Therefore, the chord is not only performed from a different corner of the room in each repetition but also its reverberation moves freely across the concert hall due to the placement of the speakers.

Aside the creation of sound movement, electronic music is also able to create other interesting where-related surprises. According to Stockhausen,

> Nowadays they have the means to make the sound sound as if it were far (…) they distort it to such a degree that it sounds like a sound which has been produced far away, reflected by the leaves or the trees, reflected by the walls and reaches my ear only indirectly, (…) by that it becomes, as we say, distorted. It has noise factors. Naturally, we can produce these noise factors artificially. On the other hand, the sound which reaches me directly, coming as direct as possible from the sound source to my eardrums (…) can also be produced artificially. (…) They have found the means to make (…) (the sound sounds) as if it were very far or as if it were very close, with the combination of dynamics (intensity) plus degree of distortion. The purer the sound, closer it is and also we must say naturally (…) the louder it is (…) We can do it synthetically (…), we do not need to run three miles away in order to give a certain sound the characteristic of a sound that in life, in nature, seems to be three miles away (verbal information)[49]

Stockhausen also stresses the importance of repetition to create the impression that a specific sound has been generated near or far away from the listener. According to him:

> Imagine that someone is whispering very softly and very close to your ear (…) as a rocket is going up about ten miles away, (…) you are still aware that the whispering is very soft but it is close. Whereas the rocket is extremely loud but very far (…) In such a composition is (necessary) that we know what we are hearing. If we have never heard a sound before, we do not know if it is far or if it close. We must have heard it in the context of the music several times in order to know how it sounds when it sounds close or further away (verbal information)[50]

The composer must initially repeat a sound to give context to the audience concerning its location to posteriorly make changes on it. In Trevor Wishart's *Imago*, the perception of space is extremely important in the development of the piece. In the piece's first minutes, there are several variations concerning sound movement or sound location that can serve as reference

[49] From Stockhausen's lecture Four criteria of electronic music, filmed at Oxford Union and produced by Robert Slotover.
[50] From Stockhausen's lecture Four criteria of electronic music, filmed at Oxford Union and produced by Robert Slotover.

for the creation of spatial surprises. Let us analyze the piece's beginning (from 0:00 to 2:00 - sound example 21)

Wishart uses only one sound (two cups hitting each other) to compose the whole excerpt. This sound is the first thing we hear in the piece and it is played without any electronic manipulation. After this first and small gesture, the sound of both cups hitting each other is played again, but now, followed by a fast reiteration. The third gesture has a longer reiteration and it is transposed up towards its ending. All these three initial gestures are in mono, therefore, we listen to it as if it was coming from the center of the stereo image.

In the sequence, the same three gestures are repeated. Nonetheless, the third gesture is now considerably longer and it moves from right to left and then back to the right. Moreover, it sounds as if it was very close to the listener in the beginning and slowly moves far away towards its end. Wishart explores the same idea in other moments. The gesture starting at 1:30 sounds as if the sound source was initially very far away and it moves closer towards the end. Furthermore, in some gestures, Wishart also changes the amount of resonance and reverberation to sound as if the sound had started in a small room and moved to a larger room. Some examples are found in the gestures from 1:10 to 1:16 and from 1:41 to 1:46.

Wishart's Imago displays a rich use of space and spatial change is one of the most important aspects in the development of the piece. In the examples analyzed above, it is possible to perceive that Wishart firstly establishes a context via repetition to afterwards distort the sound. This kind of comparison, as stated by Stockhausen, might be crucial to help the listener to perceive the location changes of the sound.

This idea of spatial change had been previously explored by composers before the emergence of the electronic media. In Gustav Holst's *The Planets*, for instance, a chorus of female voices is positioned outside the stage in a place they cannot be seen by the audience. Gustav Holst uses the chorus only in the last movement of the piece, *Neptune*. Such as in the case of Boulez' *Repons*, Holst hides and does not use specific performers for almost the whole duration of the piece to increase the timbral surprising effect. Besides that, there is the following indication in the score:

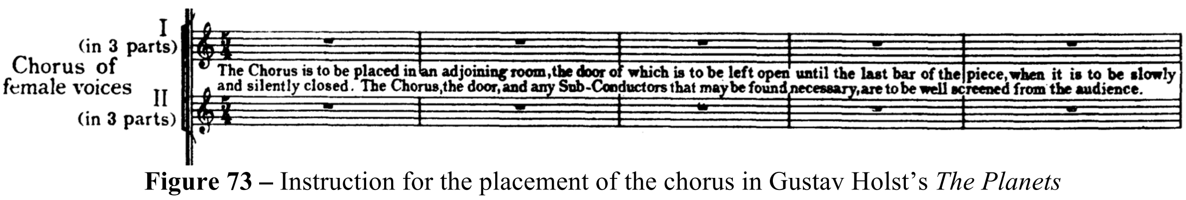

Figure 73 – Instruction for the placement of the chorus in Gustav Holst's *The Planets*

As we can see, Holst indicates that the door should be slowly closed in the piece's last measure. This decision shows that he wanted the sound of the voices to be damped, as if they were moving far away. This kind of procedure, although rudimentary when compared to the possibilities that have arisen with the electronic media, shows that spatial variations might be a fantastic tool to enhance musical expressivity. Therefore, the use of electronic media to manipulate sound location will be an important feature in the composition portfolio analyzed in the next chapter.

3.5) Expectation of causation

In acoustic music, the performer's physical gesture serves normally as a clue on *how* a specific sound came to life, helping the listeners to predict when and what kind of sound will be heard. Performers usually appeal to exaggerated physical gestures to increase the expressivity of musical passages. According to Iazzetta (1997),

> The symbiotic relation between the player's body and his instrument plays a special role in the comprehension of the musical discourse. For example, a violent gesture produced by the player reinforces the effect of a sudden sound attack in the same way that the body expression of a singer can lead to a richer phrase articulation (p. 1)

Having in mind the importance of physical gesture to the comprehension of the musical discourse, a conscious use of it might potentially be considered as a compelling tool for misleading the listener's expectations. The performer, for example, can be instructed in the score to perform a physical gesture as if they would play *ff* and, after all, play *pp*, contradicting the normal expectancy that a large and violent gesture would be used for a sudden sound attack (as stated by Iazzetta in the quote above). As a matter of fact, the use of faking physical gestures to mislead opponents is commonly used in many sports. Brazilian soccer player Garrincha would frequently fake physical movements with this purpose (video example 7). This procedure is also often employed in tennis. Video example 8 shows Hanescu match against Llodra in the *US open 2010*. Hanescu uses a large physical gesture, as if he would hit the ball strongly, but ends up hitting it softly. Mansour Bahrami is another tennis player famous for his trick shots using physical gestures to mislead his opponents. Moreover, this technique can be often found in handball, volleyball, mixed martial arts and many other sports.

In music, many composers have already used physical gesture to control the listeners' expectations. This procedure has become more common after the advent of electronic media during the last century. As stated by Iazzetta (1997),

> The manipulation of tape recorders, synthesizers, and computers eliminates the materiality of sound. Electronic sounds do not embody any kind of gestural relation to the devices that produce them. It represents a great autonomy and freedom in terms of creating new sounds, but at the same time it means a loss in the symbolic and meaningful dimensions that can be present in a musical work. In the last 50 years electronic and digital technology expanded the possibilities of creating music in a very significant way, but this expansion also brought the risk of a loss in the semiotic connections conceived during the performance. Today's musical activities based on the production of pre-recorded or electronic generated music have deviated from the embodied practice of performance to artificial processes of composition and diffusion. In those processes the loudspeaker replaces the performer, thus eliminating visual and gestural references which traditionally composed the symbolic dimension of musical language. In which way contemporary musical practices such as electroacoustic music will restore this symbolic dimension is something that still has to be elaborated and can be seen as a challenge that will entertain, for some time, composers, performers and listeners (p. 1)

Mark Applebaum found an interesting solution to restore this symbolic dimension in his piece *Aphasia*. As explained in the score,

> The soloist is seated on a chair (a simple one without arms, or a low stool) at center stage and well-lit (by a spotlight, if possible). The soloist makes various choreographed hand gestures in synchrony with the "tape" (a two-channel audio CD). The hand gestures must be precisely synchronized with the sound, the illusion being that the gestures cause the sound or vice-versa.

As we can see, Applebaum intends to create a distorted sense of reality. He takes advantage of our expectations that sounds are normally produced by physical action to associate a physical gesture to a sound that are not related at all, illustrating how the physical gestures of a performer – when well synchronized with the musical discourse – might be easily used to create false associations in the mind of the listeners. Once this association is created, it can be used for surprising effects. In fact, many composers have used our tendency of expecting some kind of consequence from physical gestures to increase the expressivity of their works.

This kind of thought is often explored by Alexander Schubert in his multimedia works. In *Sensate Focus*, for instance, the physical gesture is not related only to sound but also to lighting. These three medias (sound, lights and physical gestures) are composed in a synchronized fashion, giving the false impression that they are co-dependent. During the performance of *Sensate Focus,* the exaggerated physical gestures made by the performers seem to be responsible for controlling sound and lightning, although this is not in fact happening.

Lightning and sound would keep synchronized even if there were no physical gestures. Nonetheless, in my opinion, the piece would not be half as expressive as it is. These examples stress how strong the correlation between physical gesture and expectations may be. It is one of our most intuitive expectation. If someone is taking some specific action, there should be some kind of consequence. This notion will be explored in this dissertation's composition portfolio.

4) COMPOSITION PORTFOLIO

The last chapter of this dissertation will be dedicated to the analysis of the composition portfolio developed in the scope of the current research. The purpose of these analysis is to illustrate how the theoretical discussion conducted in the first chapters can be applied in the compositional practice of a contemporary composer. Hopefully, it will encourage others to find their personal way of applying these techniques in their own creative endeavors.

Six pieces were composed during this research. They are:

1) *Asterion's Labyrinth* (2019): for solo percussion and ensemble.
2) *Mysteries of the Unseen* (2019): for flute, B-flat Clarinet, piano, violin, cello, electronics and light operator.
3) *Rock On* (2020): for flute, alto sax, guitar, drums, piano and electronics.
4) *Towards the Unknown Island* (2020): for flute, violin, percussion and electronics.
5) *Arapuca* (2020): for flute, classical guitar, cello and electronics.
6) *Comigo me Desavim* (2021): for vocalizing pianist and electronics.

Asterion's Labyrinth will not be analyzed here. It was the first piece composed in the scope of this research[51] and, although it uses repetition as a tool to create surprise and explores to some extent the concept of habituation, these concepts were still maturing in my compositional practice. I believe the same techniques applied in *Asterion's Labyrinth* will be demonstrated in the analysis of the other pieces in a context in which the theoretical ideas presented in this dissertation were better cemented in my head.

4.1) *Mysteries of the Unseen*

Mysteries of the Unseen was composed at the UMKC IMPACT center during a 6-month residency program financed by the Brazilian Federal Foundation for Support and Evaluation of Graduate Education (CAPES). At the time, one aspect that had been constantly intriguing me was the fact that all mixed music I had previously composed used similar structures: they would go from beginning to end with electronics and instruments playing all the time. Therefore, I decided that *Mysteries of the Unseen* would have a section solely dedicated to the

[51] The composition process of the piece started only few months after the beginning of the research.

acoustic instruments and one section dedicated only for electronic sounds.

The piece has the following structure:

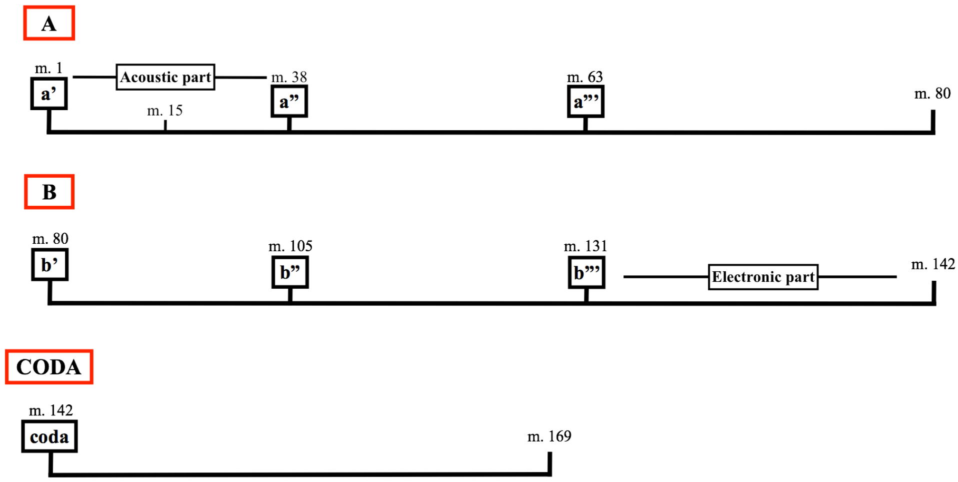

Figure 74 – *Mysteries of the Unseen*'s structure

Mysteries of the Unseen has two main sections (A and B) and a Coda. Section A and B are both divided in three smaller subsections (a', a'', a''', b', b'', b'''). Subsection a' is further subdivided in two subsections (m. 1-15 and 15-38). The idea behind this musical form is to narrate a story. In the beginning of the plot, the acoustic instruments control the musical discourse (section a' – Figure 74). The electronics does not play throughout most of it, being heard uniquely at the end of section a'. In its first appearance, the electronics completely dependent on the acoustic instruments (reverberating the harmonies performed by the pianist), as the piece develops, its independence gradually increases until it becomes prevailing to a point that it overpowers the acoustic instruments and takes control over the musical discourse (section b''' – figure 74). During most part of section b''', the piece becomes acousmatic. In the last section (coda – figure 74), both medias (acoustic and electronics) find a way of cohabiting together. This story arch allowed me to explore the full capabilities of both medias by themselves in at least one section and the interaction between them in others.

Harmonically, I composed *Mysteries of the Unseen* at a time I was listening mostly to composers from the romantic period and I was particularly fascinated by their use of tonality to create expectation and surprise (Schumann and Beethoven works analyzed in the chapter 2[52] were constantly present in my playlists). I wanted to create similar harmonic-based expectations in my own work, nevertheless, I was not interested in writing tonal pieces. I started

[52] See p. 57-62.

to wonder how I could create the same sense of direction as one can find in the tonal system but using a different kind of harmonic organization.

In order to do that, I decided to use Edmond Costère's *Theory of Attraction*. Costère's theory - such as the tonal system - is mainly based in the harmonic series, therefore, both share similarities. This is especially interesting because I would be able to use the semantic expectation of the western listeners (used to tonal music) to help me to emphasize specific pitches as tonics and better manipulate their expectation.[53]

As explained before, Costère's theory states that the minor second and the perfect fifth are able to create polarization. In *Mysteries of the Unseen*'s first section, I wanted to polarize the pitch A. Therefore, the pitch set chosen was the following:

Figure 75 – Pitch set 5-13

The first three pitches are cardinal tones[54] (G# and B-flat are one semitone apart from A and E is a fifth above). I chose to include A in the pitch set to ensure its repetition, what also helps to enhance its polarization. The pitch C was also included because, when I started to improvise ideas on the piano, its inclusion sounded interesting to my ears. After defining the pitch set I would use, I wrote down all its transpositions and inversions. To create harmonic movement, I decided to use the following:

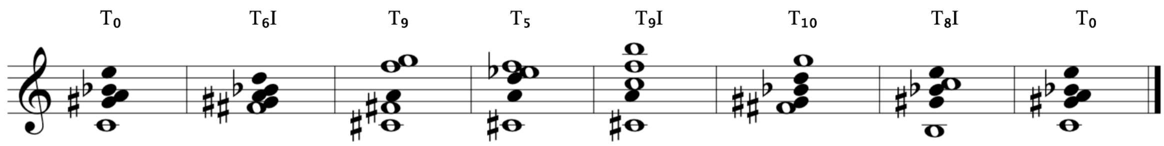

Figure 76 – Harmonic progression in *Mysteries of the Unseen*

This order was chosen for numerous reasons. It starts and ends with the same pitch set. The five initial pitch sets (T_0, T_6I, T_9, T_5 and T_9I) have the pitch A in order to optimize its repetition and consequently its significance and polarization in the beginning of the musical phrases. Moreover, due to the transpositions and inversions, these five initial pitch sets have a

[53] As we will see further, my pieces *Arapuca* and *Comigo me Desavim* explores more deeply tonal archetypes to create expectation.
[54] To review the terminology of Costère's theory, please, see p. 64-66.

decreasing number of cardinal tones (black noteheads – figure 76) and the last one (T_9I) has none. The following pitch sets (T_{10} and T_8I) do not have A, nevertheless, each have three cardinal tones. The desired effect is a dominant like feeling in which, although the tonic A is not present, the ear is still polarized to it.

Since the harmonic discourse of the piece might be fairly complex to be decoded by the ears, I used fixed octaves to help the listener to better understand its structures. The only chord that breaks the fixed register is the chord formed by the pitch set T_8I (figure 76). I changed the octave of the pitch B to keep it as a climatic point in its first appearance (pitch set T_9I – figure 76) and, as consequence of this change, I decided to change the pitch C to avoid the second minor harmony that would be generated if it was kept in the same register it appeared before. Similar to Harrison Birtwistle's *The Axe Manual*, in *Mysteries of the Unseen*, the listener will have to process new information concerning how different pitches interact to each other, nonetheless, their fixed octave creates familiarity - In other words, the chord progression intends to avoid habituation while the fixed octaves intends to enhance processing fluency. In figure 77, we can see how the initial gestures of the piece (m. 1-15) are based in the above-mentioned harmonic structure (all staves are in treble clef):

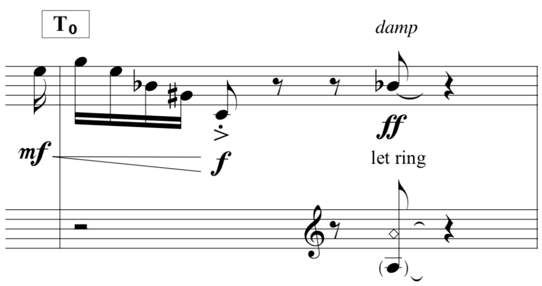

Figure 77a – Musical gesture based on T_0 (m.4)

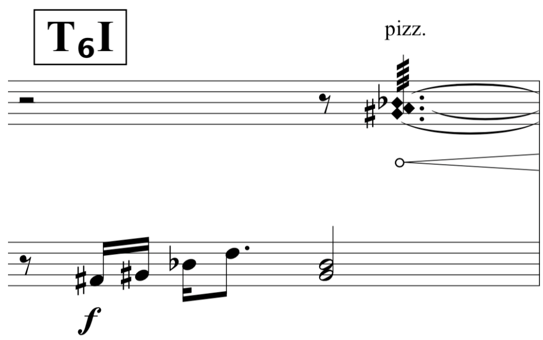

Figure 77b - Musical gesture based on T_6I (m. 6)

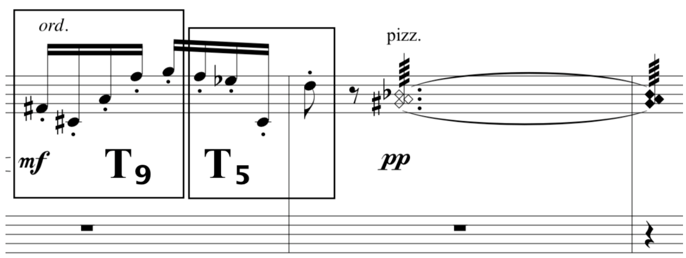

Figure 77c - Musical gesture based on T_9 and T_5 (m. 7-8)

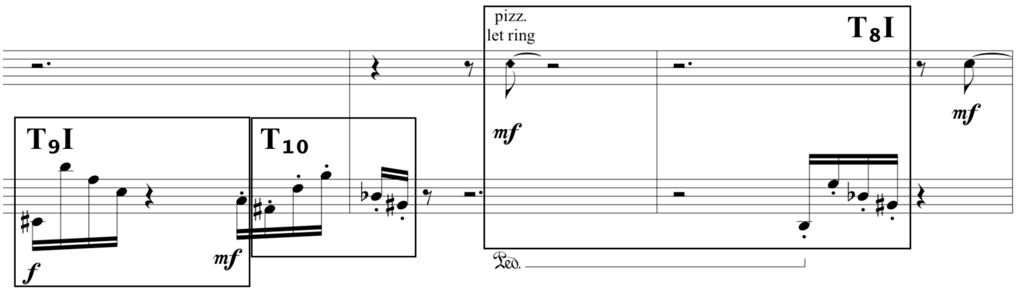

Figure 77d – Musical gesture based on T_9I, T_{10} and T_8I (m. 9-11)

From m. 13-15, the last gesture – based in T_8I (figure 77d) – is repeated three times. Rhythmically, the three repetitions form a written rallentando (Figure 78).

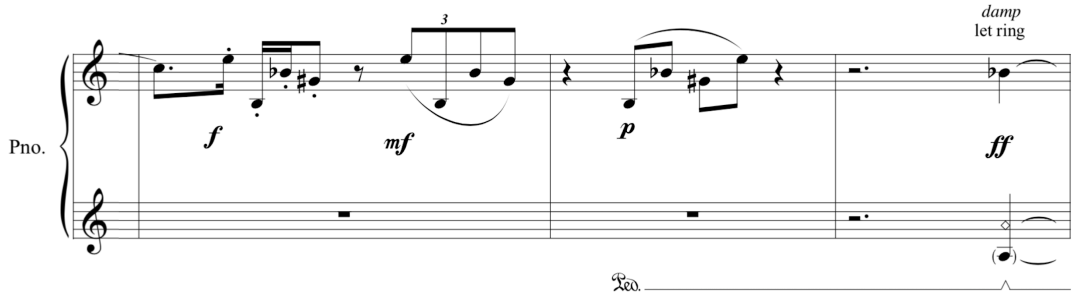

Figure 78 – *Mysteries of the Unseen* (m. 13-15)

The idea of the rallentando is to delay the expected resolution in A, because, as previously discussed, postponing an expected outcome may be an effective tool to create tension. When the harmonic tension is resolved back in A (in m. 15), the same harmonic structure (based in figure 76) is used once again from m. 15-38. Although similar to the musical structures presented from m. 1-15, the music now is considerably varied.

As figure 76 shows us, all the pitches used from m. 1-15 are in the upper register of the piano (from B2 to B4). The limited use of the piano's register and, consequently, the limited use of the piano's timbre, enables me to create yet another content related surprise. From m. 15-38, the music is moving towards a climax that marks the end of the acoustic section.[55] To enhance the effect of this climax (starting at m. 25 – figure 79), I used for the first time the piano's low register. My intention here is similar to the one employed by Pierre Boulez in *Repons* and by Gustav Holst in *The Planets*. Specific musical parameters are not explored for a certain amount of time in order to achieve a surprising effect in an important moment of the musical development.

[55] The movement towards the climax is made by the use of accumulation or, as previously discussed, by the use of the rhetorical device *Auxesis*.

Figure 79 – *Mysteries of the unseen* (m. 25-27)

It is also important to state that this is not only the first time a low piano sound was used on the piece, but also the first time any of the instruments have used such a low sound all together, increasing the significance of this passage. I believe this in an example of how preparing a surprise can enhance the structural meaning of the musical sections. My intention is to have the arrival of an important section (the section climax) enhanced by the surprising effect.

At the end of the climax, the repetitive gesture polarizing A appears once again and the A resolution – that is hopefully more expected than before, since we have already heard the development and resolution of the first subsection (m. 1-15) – is delayed more emphatically. This is the first time the audience will listen to electronically manipulated sounds coming from the loudspeakers. The whole section a' lasts one minute and a half, therefore, the audience gets used to the idea of listening primarily to the timbres of the instrumental body available on the stage. When the electronics starts playing, it brings a timbral novelty.[56] In the 8 channels version, the first electronic interferences are all in stereo and come from the two speakers placed in front of the audience (speakers 1 and 2 - figure 80 – sound example 22). Although stereo, the electronic sounds do not move between both speakers.

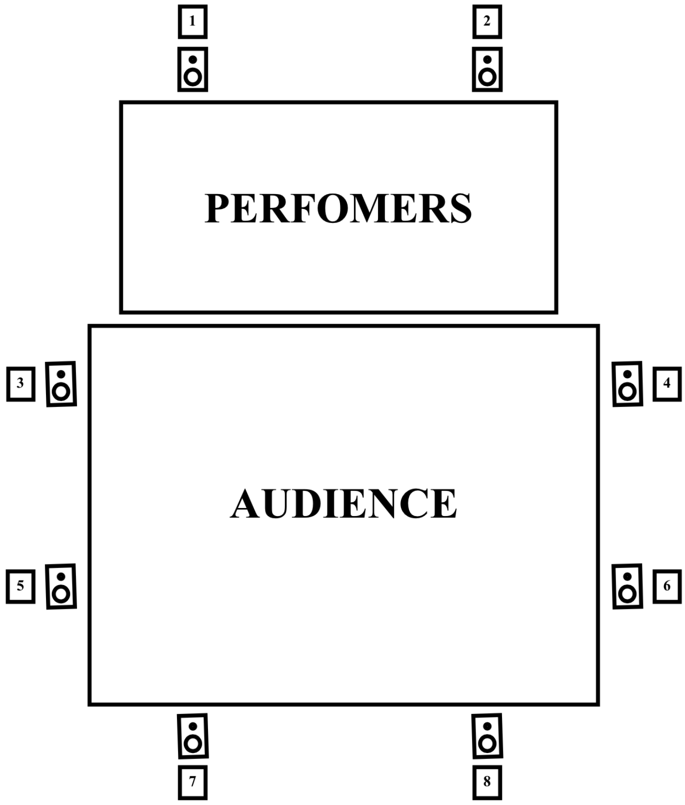

Figure 80 – Speakers disposal in *Mysteries of the Unseen*

From m. 15-38, the electronic gestures start to move between speakers 1 to 2 (sound example 23). These gestures are initially an extension of the notes played on the piano, adding a kind of movement from left to right (and right to left) that would be otherwise impossible without the use of electronic devices. The gesture that leads to the attack in 0:18 (sound example 23)[57] makes a circular movement around the audience, hopefully, extending the surprising effect further. Therefore, the electronics and the use of spatialization are initially used sparingly to create, firstly, a content-based surprise: when the electronics alters the timbre

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[56] Ideally, the speakers should be placed in a location in which the public could not easily see it, enhancing the surprising effect. Nonetheless, since hiding eight speakers is a challenging task, I did not ask for this in the score.
[57] The sound example is in stereo and should be used only as a reference, since the circular movement is not possible to achieve in stereo.

of the piano reverberation and, secondly, a location-based surprise: when the electronic sounds start moving through space.

Section a" has a modulation. The polarized tone will drift a minor second upwards and it will become B-flat. The following pitch set was chosen to polarize B-flat:

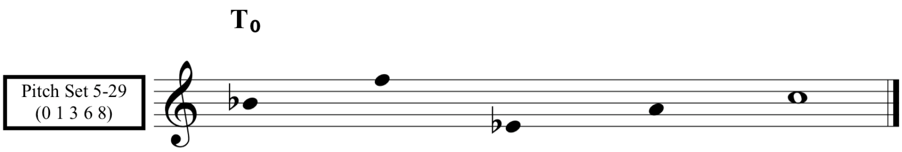

Figure 81 – Pitch set 5-29

Besides the pitch B-flat (the tonic), this pitch set contains three cardinal tones (A – a minor second below B-flat; F and E-flat – respectively, a fifth above and below B-flat). The pitch C was added to bring a new harmonic color to the pitch set. It is also important to stress that, according Costère's Theory, the pitches that exert the most attraction are the ones placed in the least distance vertically or horizontally from the tonic. The least horizontal distance is the minor second above or below the tonic[58] and the next closest is the major second. Although it is not as strong as the minor second, it still has some power of attraction. Hence, I consider the added C as a cardinal tone.

Such as I did in section a', I set a harmonic sequence to serve as reference to my compositional process. The harmonic sequence is the following:

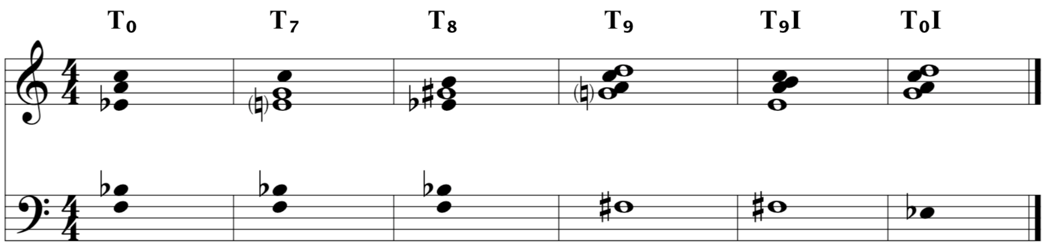

Figure 82 – B-flat polarization

This sequence (figure 82) was chosen for the same reasoning of the first one (figure 76). The pitch set begins without any transposition. The following sets are inversions and transpositions of the original in which the first three (T_0, T_7 and T_8) have the tonic (B-flat) plus cardinal tones. The last three chords (T_9, T_9I and T_0I) do not have the tonic, nonetheless, they

[58] If we do not take into consideration microtones.

contain an increasing number of cardinal tones. T_9 has one (A), T_9I has two (A and B) and T_0I has three (C, A and E-flat). Again, the idea is to distance from the tonic and gradually add more cardinal tones to create a dominant-like harmony towards the end, in which, although the tonic B-flat is not present, the ear polarizes it.

Although my initial intention was to use this harmonic progression with a fixed register, I abandoned this idea because, as stated before, this passage is a modulation between A and B-flat. Since a modulation demands less stability, the pitches were not employed with a fixed register. Furthermore, to increase the instability further, I mixed some parts of the first pitch set (responsible for the polarization in A – figure 76) with the second (responsible for the polarization in B-flat – figure 82) throughout most part of section a". Both pitch sets are mixed to a point that is hard to distinguish one from another. In m. 59 (figure 83), the B-flat harmonic structure (from figure 82) becomes more clear:

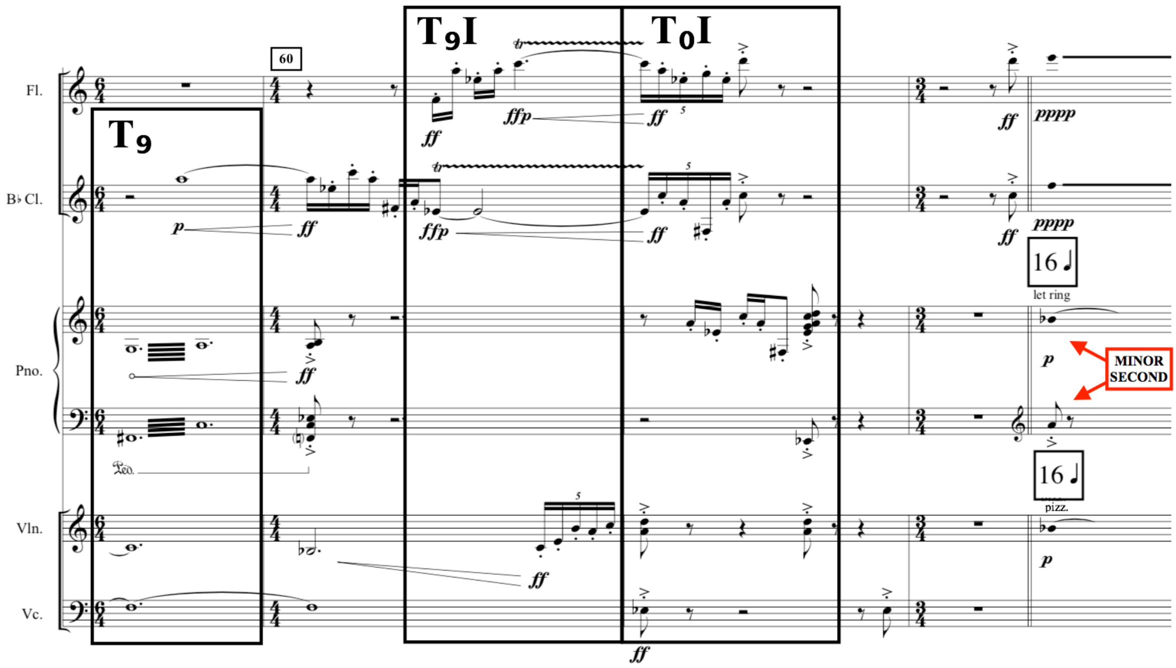

Figure 83 – *Mysteries of the Unseen* – m. 59-63

In m. 59, the harmony is based on T9. The next chords, based in T9I and T0I, are used in m. 60-61. In m. 63, the harmony resolves in B-flat for the first time. As we can hear in sound example 24, although, to my perception, it does sound as an arrival point, it does not work as a conclusion for the musical structure. The pitch B-flat is attacked simultaneously with A on the piano, postponing the ending of section A to m. 80. This minor second (in red – figure 83) was added to minimize the strength of the conclusion. The next cadence (figure 84), the one concluding Section A, uses the same musical motive employed in section a's cadences (figure

79).

Figure 84 – *Mysteries of the Unseen* (m. 71-76)

I expect that the resemblance of the three-note musical motif performed by the piano in both passages is noticeable. The pitch set used in the motif from m. 71-75 is slightly different and it is considerably slower now, nevertheless, it still has a written rallentando. Moreover, the woodwinds imitate it now. As previously mentioned, the use of musical motives in the same points of the musical discourse – such as in sections endings – is intended to make the listener to associate its appearance with the arrival of a new ending. This is an example of an *Epiphora* and stresses the importance rhetorical devices might have on the consolidation of musical structures. Hopefully, when the listener hears this musical motive, they will be able to associate this passage with a new ending (even if unconsciously).

Since the passage's outcome might be easily predictable (due to the association with the previous cadences), delay is used once again to create tension. The three-note motif performed by the pianist is followed by an accelerando in the electronics in m. 75 (figure 84 - sound example 25). The same accelerando idea has been used in the electronics since the beginning of the piece. As we can hear in sound example 23 and 26, these accelerandi always concluded with an attack to dissolve the accumulated tension. In m. 75 (figure 84), as it is possible to see in the electronics' graphic notation and to hear in sound example 25, the accelerando is followed by a rallentando. While the speed of the reiteration slows down, it gets louder, starting a new accumulation of tension that is passed to the instruments in m. 76 (figure 84). At this point, a new musical gesture is introduced (the scratching of one of the piano strings - unheard until this point). This gesture will be important in section B.[59] The resolution in B-flat is played only after it (in m. 80), ending the section A.

Throughout section B, the electronics increasingly overshadow the acoustic instruments until it takes the main role of the musical discourse in section b''' (m. 131-142 - figure 74). At this moment, the lights of the concert hall should be turned off. To enhance the structural significance of this change, I decided to interrupt the harmonic and motivic development of the music before the turning off the lights. From m. 127-131, the flutist and pianist hold a bichord for approximately 9 seconds (m. 127-131 – figure 85 – sound example 27).

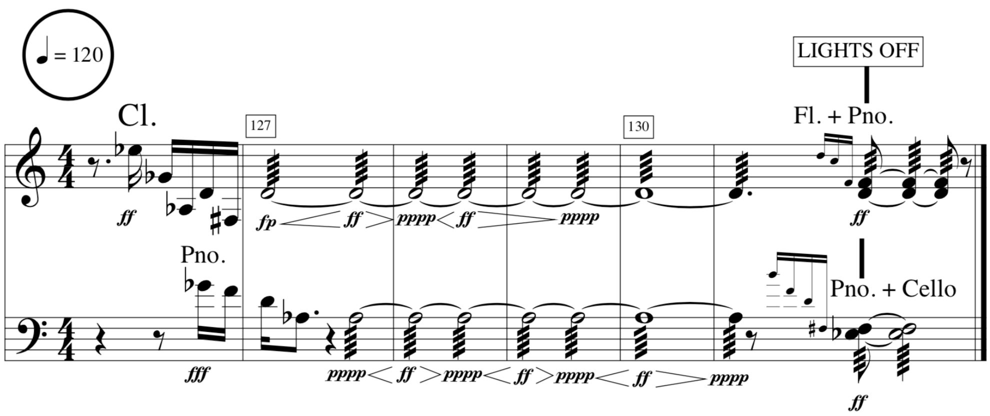

Figure 85 – *Mysteries of the Unseen* (m. 127-131)

Such interruption has no precedents in the piece. Moreover, the low sound performed by the electronics explores a kind of spectromorphological behavior (as if something was lurking in the distance) that was not previously used in the work. All these elements combined intends to serve as a signal that unexpected events are on the way, inviting the listeners to re-assess their expectations concerning the musical discourse. In this case, not repetition, but new and completely unexpected material works as a tool to create expectation. Not knowing what will come next becomes the expectation and that is the feeling that I – as the composer – am aiming to give to the listener. I want them completely out of their comfort zone without any clues to predict what might happen next, accentuating the emotional and structural meaning of

[59] This procedure is similar to the rhetorical device *Anadiplosis*.

the turning off of the lights. Furthermore, the conductor is asked to act as if he was not expecting these electronic low sounds. This is a literal demonstration that the musical development is now being controlled by the electronic sounds. As discussed in the second chapter, the way a performer acts in the stage can be an insteresting tool to manipulate the audience's expectation. While pop musicians are well known for their use of body movements and theatrical interventions to stress the musical message they want to express, this characteristic still could be more well explored by classically-trained composers.[60] I believe all these characteristics build up the necessary tension to have the lights turning off when the chord changes in m. 131 (figure 85).

At the end of section b''', the acoustic instruments gradually return and the last section of the piece (Coda – figure 74) shows how both medias can cohabit in peace. The initial harmonic structures come back, polarizing A and resolving on it on the piece's last cadence. In *Mysteries of the Unseen*, I was mainly focused on setting harmonic expectations and surprises concerning the interaction between instruments and electronics. In the next piece, *Rock On*, my attention has shifted to motivic relations.

4.2) *Rock On*

Rock On was also composed at the UMKC IMPACT center during a 6-month residency program financed by the Brazilian Federal Foundation for Support and Evaluation of Graduate Education (CAPES). The piece is inspired by the sonorities found in 70's Rock bands. I started to study music because of these bands and, therefore, this piece is my homage to this musical style. The piece was written for Kansas City based ensemble *Project C4* and it is for flute, alto sax, drum set, electric guitar, piano and electronics. The presence of a guitarist and a drummer helps to ensure a timbre that recalls the 70's rock band sonorities, nonetheless, the resemblances do not stop there. Many rock bands are famous for their minimalistic approach. Therefore, I decided to follow a similar approach. The piece's structure is the following:

[60] As we will see further ahead, my piece *Comigo me Desavim* uses this kind of procedure more deeply.

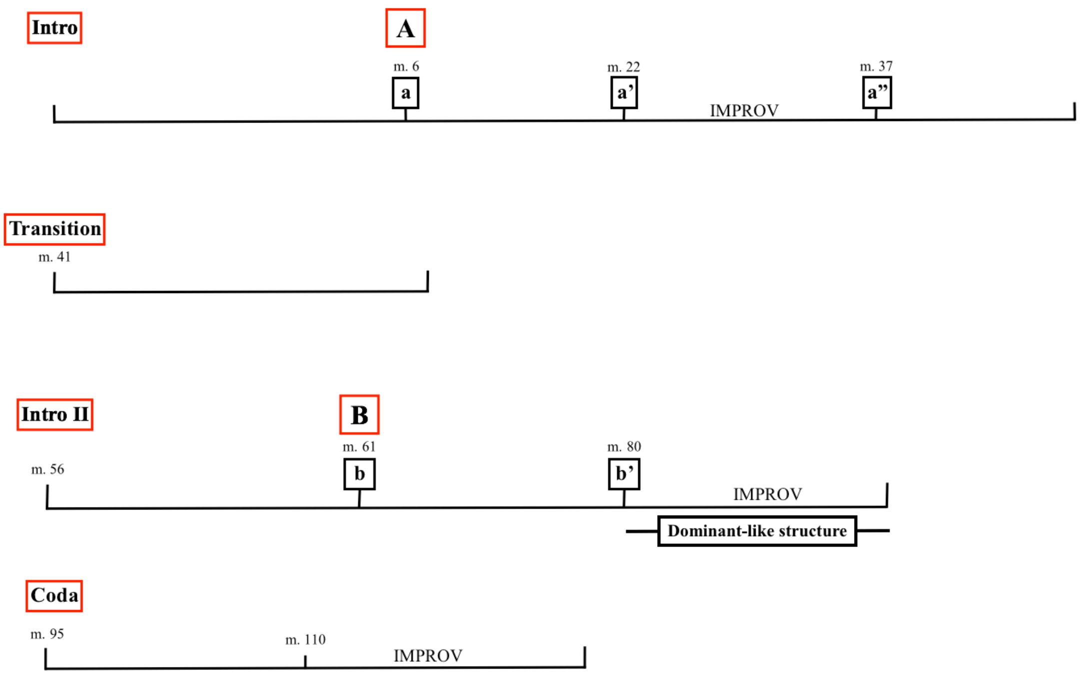

Figure 86 – *Rock On* Structure

The piece has two main sections: A (m. 6-41) and B (m. 61-80) followed by a coda (m. 95-117). A and B have an intro (Intro I precedes A and Intro II precedes B) and are connected by a transition (m. 41-56). Moreover, both sections are subdivided in subsections. Section A has three subsections (a, a’ and a”) and section B has two (b and b’). In both cases, one of these subsections is comprised of guided improvisation. The use of improvisation is used for two reasons: 1) the ensemble *Project C4* specializes in improvisation and 2) many rock bands I admire, most notably *Jethro Tull*, often perform their songs live with small modifications. These changes are not drastic to the point that the song will become unrecognizable, nevertheless, it always brings an interesting sense of novelty to their live interpretations. Improvisation serves this same purpose in *Rock On*. The improvised parts are played alongside with notated parts, therefore, if someone listens to the piece more than once, the basic structure and melodic traits of it will always be recognizable but the resulting overall sound will be slightly different.

Many Rock songs are based in only three or four chords and displays a very limited number of guitar riffs. Similarly, *Rock On* has very little harmonic development and only a few simple musical motives. Its harmonic organization is based in superimposed fifths (figure 87), inspired by the constant use of power chords in Rock music.

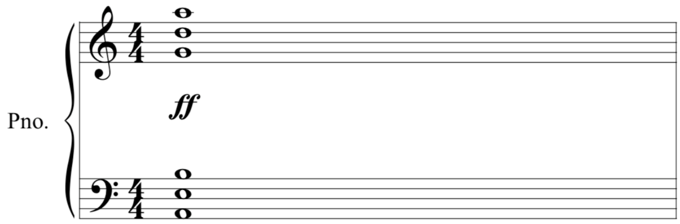

Figure 87 – *Rock On* harmonic organization

This chord is employed throughout the whole piece with a few transpositions. The voice leading is mostly parallel, also referencing the harmonic movement commonly heard in the songs composed by 70's Rock bands. The only exceptions are m. 62, 64 and 66 in which a third is added to the chord to bring a slightly new harmonic color to section B's beginning. Likewise, the motivic development is also simple. The piece has its motivic development entirely based in two simple melodic lines (figure 88):

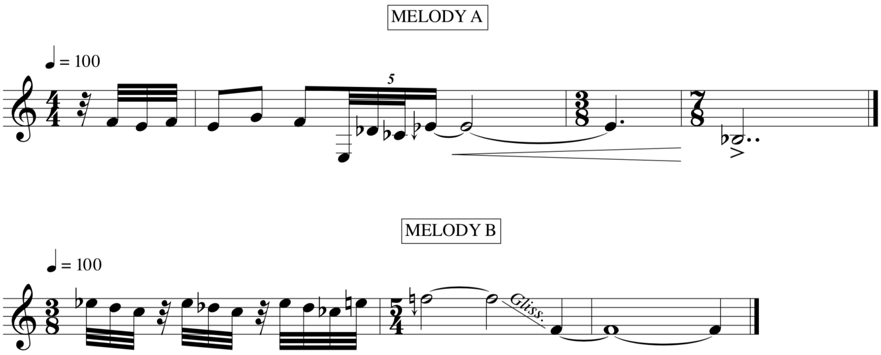

Figure 88 – *Rock On*'s melodic lines

These melodies are repetitively employed in section A, B and the Coda. I expect that their constant use will optimize the listeners' processing fluency, while its organization and textures will be responsible for avoiding habituation. In the beginning of section A, melody A and B are respectively performed by the saxophonist (m. 6-8) and guitarist (m. 10-12). The subsequent appearances of these melodies (1 – figure 89 – m. 13-16) (2 – figure 89 – m. 18-19) (3 – figure 89 – m. 20-23) maintain the same initial melodic gesture, nonetheless, their endings are varied. Therefore, their development is based on the rhetorical device *Anaphora*.[61]

[61] Similarly, section B (m.61-80) and Coda (m. 95-117) are also based in the same melodies presented in figure 88 and are also varied following the principles of *Anaphora*.

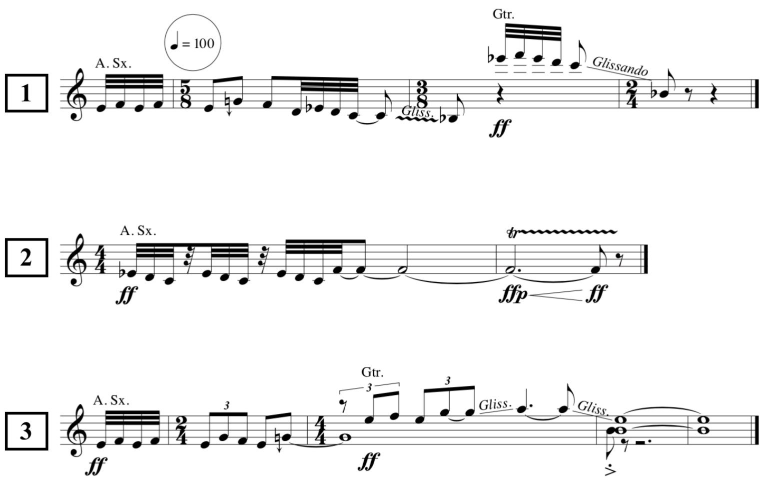

Figure 89 – Variations

Variations 1 and 3 (figure 89) are based on melody A (figure 88). Both variations end with an imitation performed by the guitarist. In variation 3, the rhythm is performed in eighth note triplets. This variation gives the impression that the performers are rushing the melody and this is another aspect I took from Rock and Roll performers, mostly from Jimi Hendrix live performances. Sometimes, it feels like he is getting ahead or behind the band, rushing or slowing down his musical phrases, but, at the end, he always finishes on time, providing an appealing resolution to the accumulated tension. This characteristic is a major inspiring part of his musical appeal for me, therefore, I tried to emulate it in my piece. As will see further, a similar procedure is used in the ending of section a".

Moreover, another aspect that brings novelty to these repetitive melodies is how it interacts with the other instruments. The piano accompaniment, for instance, has only two musical motives: a sustained chord (blue square – figure 90) and a cluster in staccato (red square - figure 90).

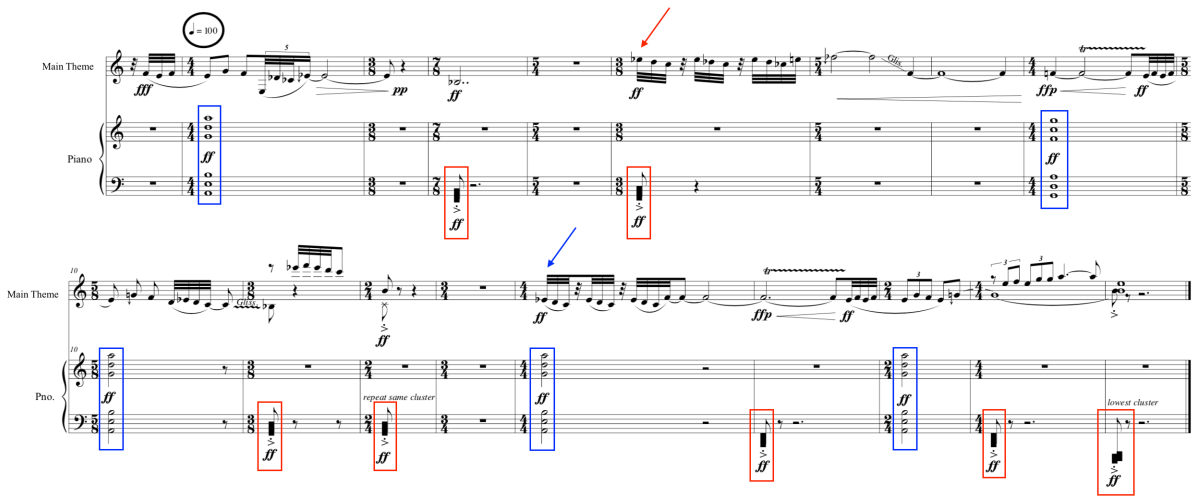

Figure 90 – Main theme and piano

Nevertheless, these two motives are not performed in the same places of the main melody. In melody B's first appearance (red arrow – figure 90), the cluster is played on its first downbeat, nonetheless, when melody B is repeated (blue arrow – figure 90), the sustained chord is used to accentuate the downbeat. This alternation of motives on the piano accompaniment might be too subtle to make the reiterations of the main melody sound renewed, but the other instruments help to ensure new layers of novelty. The drum set plays three main motives: 1) A single attack in fortissimo (red square - figure 91), 2) 5 attacks in sequence (blue square - figure 91) and 3) two fast attacks (green square - figure 91).

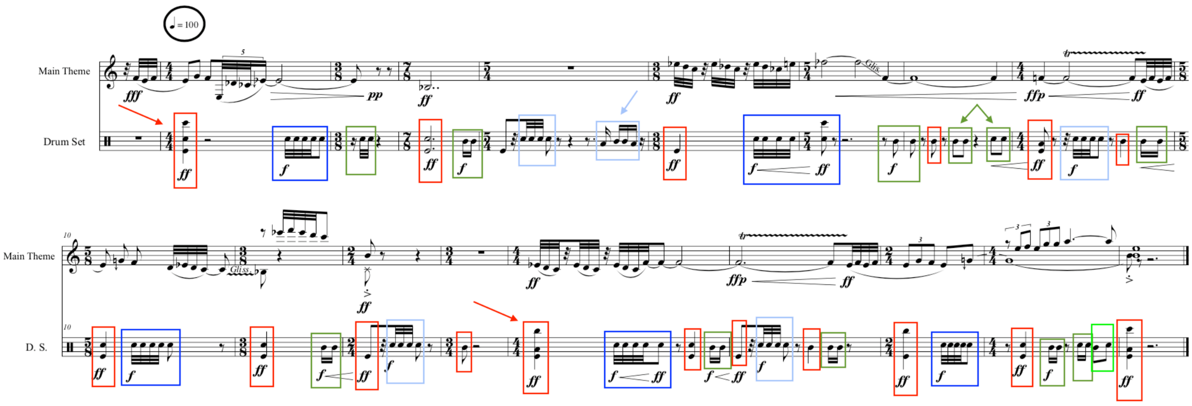

Figure 91 – Main Theme and Drum Set

Some of these motives might appear slightly varied (In figure 91, I used different shades of blue and green squares to show motives that are variations of motif 2 and 3). The motif 2, for example, appears with augmented rhythm and performed in more than one instrument (light blue arrow – figure 91). Similarly, the motif 3 also appears augmented (green arrow – figure 91) or, as we can see in a light green square at the end of the excerpt (figure 91), performed in two instruments. Analyzing the drum set part, we can have a better overview on how varied the musical accompaniment can sound while permuting only these three motives alongside the main melody. Melody A's first downbeat, for instance, is accentuated by an attack in fortissimo in the kick drum, snare and crash cymbals (first red arrow – figure 91). The same fortissimo attack (in the same instruments) is then repeated, but now, it accentuates the downbeat of melody B's second appearance (second red arrow – figure 91). Therefore, while melody and accompaniment are both repetitive, the way they interact intends to provide novelty. The flute makes this relation even more complex, playing two additional motives: 1) a long A_4 (red square – figure 92) and 2) different pitches in staccato (a spectromorphological behavior similar to the one performed by the drum set) (green square – figure 92).

Figure 92 – Main theme and flute

When the guitarist and saxophonist are not playing the main melody, they double and reinforce some of the accompaniment motives performed by the other instruments. Similar to Alex Mincek's *Pendulum VII*, although there is a reduced number of musical motives performed by each instrumentalist, they are permuted to create complex relations with the main melody. I hope that the listener will be able to recognize the process of repetition, nevertheless, at the same time, it will be difficult to predict exactly what will come next, avoiding the process of habituation.

Besides the melodies from figure 88, another melodic figure has an important structural role in *Rock on*. A small variation of melody A is performed in subsection a" (figure 93):

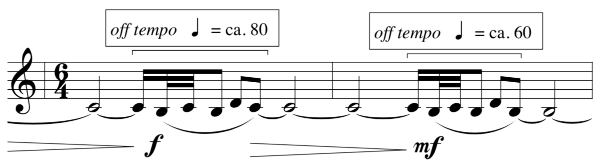

Figure 93 – Melody A variation

This melody – performed by the saxophonist –consists of a small melodic fragment that is then repeated. The other performers are asked to accentuate the downbeat of each measure. The saxophonist must play each reiteration slower and out of tempo,[62] nevertheless, the ensemble must hold the piece's tempo. It should sound as if the soloist (in this case, the saxophone) is getting each time slower, meanwhile, the rest of the group is keeping its pace. As previously stated, this tempo irregularity is a direct influence from Rock and Roll live performances. The idea of the irregularity here is to suggest that the section A is close to its ending. As previously discussed, a repetitive pattern (or, as it is known in rhetoric, an *Epizeuxis*) when performed with a slowing down inflection may provide the expectation of

[62] The tempo indicated is only a suggestion, but it is important that the repetition sounds slower than the first melodic fragment.

closure. The same procedure will be used again in Coda's second subsection (m. 110-117) to emphasize the ending of the piece.

A variation of melody A is also found throughout the whole subsection b' and it is initially performed by the guitarist in m. 80 (figure 94):

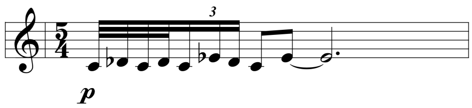

Figure 94 – Melody A variation II

In this variation, the third leap upwards is not followed by its resolution downwards like happened with melody A (figure 88) or its variations (1 and 3 - figure 89). This lack of resolution was used to create a sense of suspension. In the sequence of subsection b'', the flutist also performs two variations without resolution (figure 95 – m. 85 and 92):

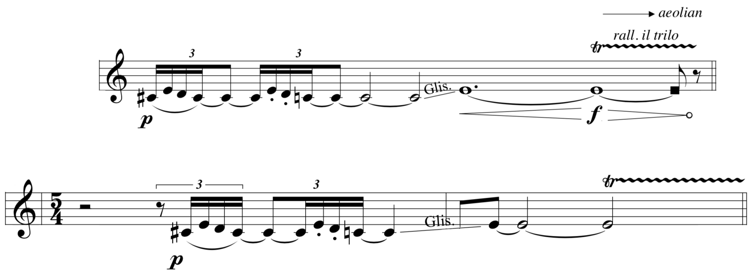

Figure 95 – Flute variations

And a similar motif is also performed by the pianist (figure 96):

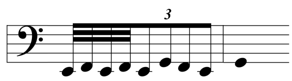

Figure 96 – Piano variations

The resolution of these melodies will only come when the alto sax plays the melody A in the beginning of the Coda (figure 97).

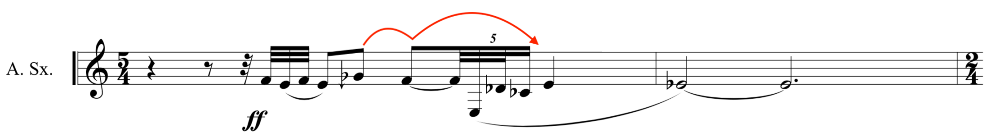

Figure 97 – *Rock On* – Sax part (m. 96-97)

Therefore, my intention is to give to section b' a dominant-like function: It intends to create tension, evoking a desire of conclusion due to the lack of resolution of the melodic motif. Interestingly, while this dominant function was created in *Mysteries of the Unseen* through harmonic manipulation, in *Rock On*, it is purely created by the repetitive motivic manipulation that will hopefully induce an expectation in the listeners that keeps being postponed. This is another example that shows how the manipulation of expectation might be structurally relevant to a piece of music.

The Coda, the piece's last section, will present a similar *Anaphora* variation of melody A and B and concludes the piece. Hitherto, I focused my analysis on how the harmonic and motivic organization of these pieces was manipulated to stress their structures and to facilitate the processing fluency of the listeners while, at the same time, avoiding habituation. In *Rock On*, a piece obviously more rhythmic than *Mysteries of the Unseen*, I started to explore more emphatically temporal aspects of surprise. It has surely served to me as an interesting experiment for my next piece *Towards the Unknown Island*, in which the rhythmical organization was the main aspect of my attention.

4.3) *Towards the Unknown Island*

Towards the Unknown Island was composed in 2020 and it is for flute, violin, percussion and electronics. As previously stated, during the process of composition of this piece, my attention was focused on rhythmic aspects of expectation and surprise. Therefore, I decided to use extended techniques with no recognizable (or, at least, less recognizable) pitches to oblige me to find interesting rhythmic solutions.[63] Moreover, as we will see, in the sections without pitches, timbre is an important feature to avoid the process of habituation.

Before analyzing the piece more closely, let us take a general overview on its structure (figure 98):

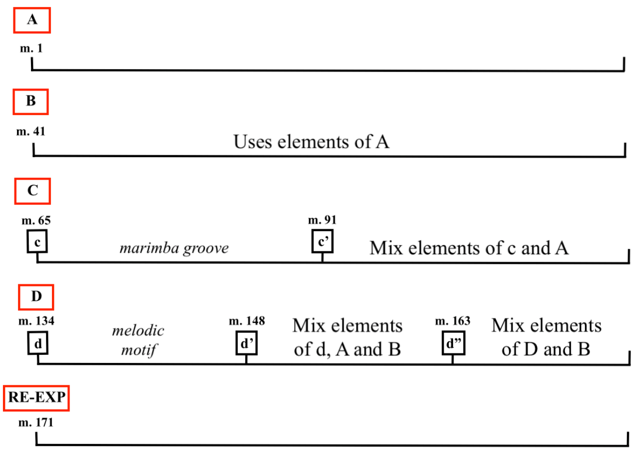

Figure 98 – *Towards the Unknown Island*'s structure

[63] Pitches were added in later sections of the music to create contrast.

The piece has four larger sections and a re-exposition. Section A (m. 1-41) explores rhythmic and timbral developments. Pitches have almost no importance on it. While section A has a fast developing texture, Section B (m. 41-65) has a contrasting, sparse and slow developing texture, nonetheless, some of the rhythmic motives of section A are still present. Section C has two subsections: c (m. 65-91) and c' (m. 91-134). While subsection c introduces a new motif, a regular groove performed on the marimba, section c' blends the rhythmical characteristics of A with the musical motives introduced in subsection c. Like section C, Section D (m. 134-171) is also divided in subsections: Subsection d (m. 134-148), d' (m. 148-163) and d" (m. 163-171). Subsection d introduces a clearly melodic motif for the first time in the piece. Subsection d' mixes the melodic aspect of subsection d with the rhythmical ideas presented in section A and, analogous to section B, it also has a sparse and slow developing atmosphere. Lastly, subsection d" is melodic and sparse, blending elements found in subsection d' and section B. The re-exposition, as it is expected by its name, seeks to recapitulate all these musical motives superimposed.

This structure aims to provide new information in each section, while, concurrently, always recapitulates some aspects of what has happened previously. I believe this kind of structural arrangement is interesting to avoid habituation, due to the constant addition of new information, while at the same time, enhances the processing fluency via the constant recapitulation of previous musical materials.

Before going into the analysis of the piece, let us analyze the extended techniques used throughout the piece's first section. The flutist plays in pizzicato, *Aeolian* sounds and tongue ram, all sounds that minimize pitch content. Throughout section A, ordinary playing is employed only in two measures (m. 39 and 41) and, in both occasions, the pitches are played fast and staccato, giving a percussive effect. It is also important to state that, although the *Aeolian* sounds and the pizzicatos are played in different pitches, my intention was not to create melodies, but to have slightly varied timbres in each one of them. Therefore, the alternation of pitches will work similarly to a filter in electroacoustic music. It changes the character of the sound, however, do not solidify a pitch-based motif.

The percussionist plays marimba and frame drums. The frame drums have no recognizable pitches, therefore, I do not use many extended techniques. The marimba keys are damped with a book or something similar to obscure its pitch (figure 99) and, such as in the case of the flute, the alternation of pitches indicated in the score intends to work similar to a filter, making each noisy event sound somewhat distinctive.

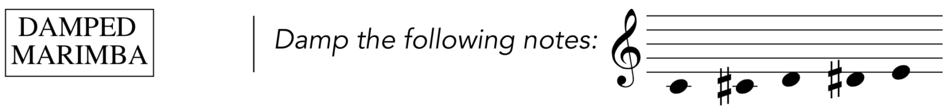

Figure 99 – *Towards the Unknown Island*'s Performance Instructions (Marimba damping)

In the piece's initial section, the violin is essentially transformed into a percussion instrument. One of the most recurrent extended technique employed on it is the use of the violinist's fingers or bow stick to play percussive sounds in different parts of the instrument's wooden body. This technique emits no recognizable pitch. In some measures, the violinist must play recognizable pitches in *col legno*, pizzicato or Bartok pizzicato. The goal of these pitches is not to create melodies or harmonies but to produce a timbral contrast between harmonic and inharmonic sounds, being mostly used to reiterate specific notes. These three playing techniques (*col legno*, pizzicato and Bartok pizzicato) are often employed in succession to create a timbral progression (figure 100 – sound example 28).

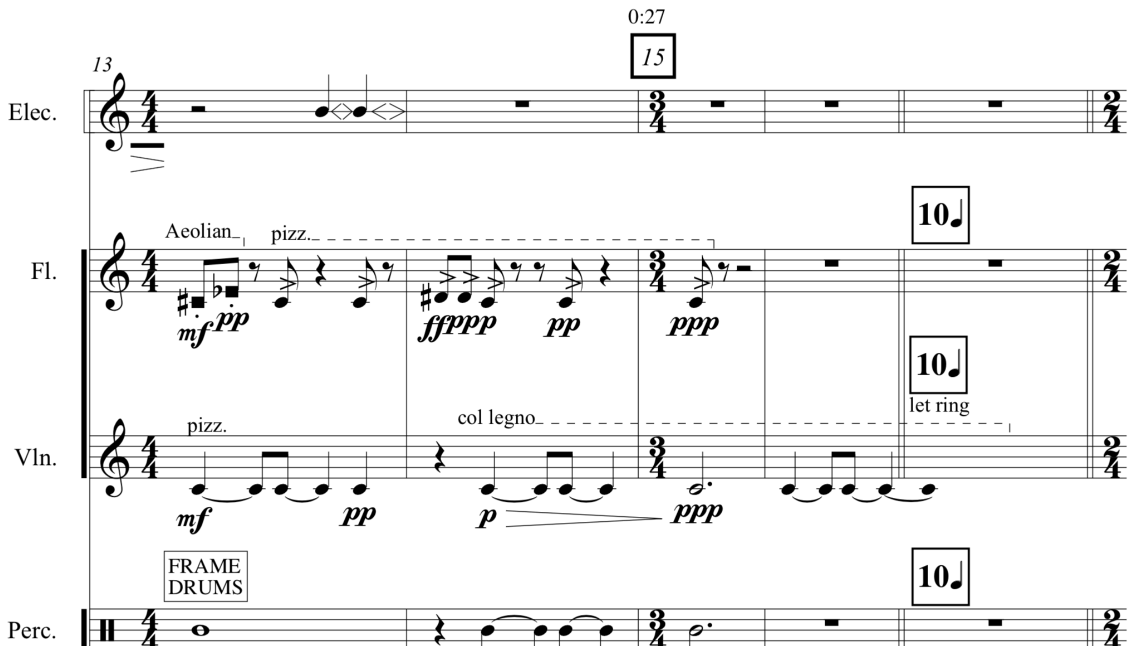

Figure 100 – *Towards the Unknown Island* (m. 13-17)

The violinist is therefore exposed to unorthodox technical challenges in *Towards the Unknown Island*. Sofia Leandro, the violinist for whom this piece was composed, preferred to perform the first section without a bow. She used a pencil, arguing it would give her more agility and flexibility to achieve a better sounding result, which I incorporated into the final version of the score.

Let us now analyze the rhythmic pattern employed in the piece's first section (m. 1-41) to see how it affects the development of the work. The main rhythmical motif of the work is the following:

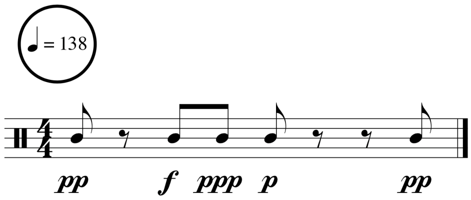

Figure 101 – *Towards the Unknown Island's* main motif

This rhythm is then orchestrated (figure 102):

Figure 102 – *Towards the Unknown Island* (m. 1-2)

The orchestration aims to enhance the dynamic articulation of the rhythmic pattern. Although it is quite brief, it is possible to feel a steady meter embedded in it. I believe this meter is important because it intends to set a temporal segmentation in the listener's mind, creating an expectation of continuity and, in fact, this constant meter serves as a forecast of the groove development that comes further ahead. The same rhythmic pattern appears once again from m. 3-4 with small variations (figure 103), having an accentuated eighth note added in the weak part of its third beat and, moreover, it is slightly longer, due to an extra attack in measure 4.

Figure 103 – *Towards the Unknown Island* (m. 3-4)

Timbre brings novelty to the musical phrase. The long *Aeolian* note performed by the flutist on m. 3’s second beat (figure 103) adds not only a new timbral color but also a spectromorphological behavior not found in m. 1. I hope this spectromorphological behavior will evoke the idea of a release of tension following the attack performed in forte on m. 3’s second quarter (sound example 29). The next restatement of this rhythmic pattern happens in m. 5 (figure 104) and it is fairly similar to the one presented in m. 1.

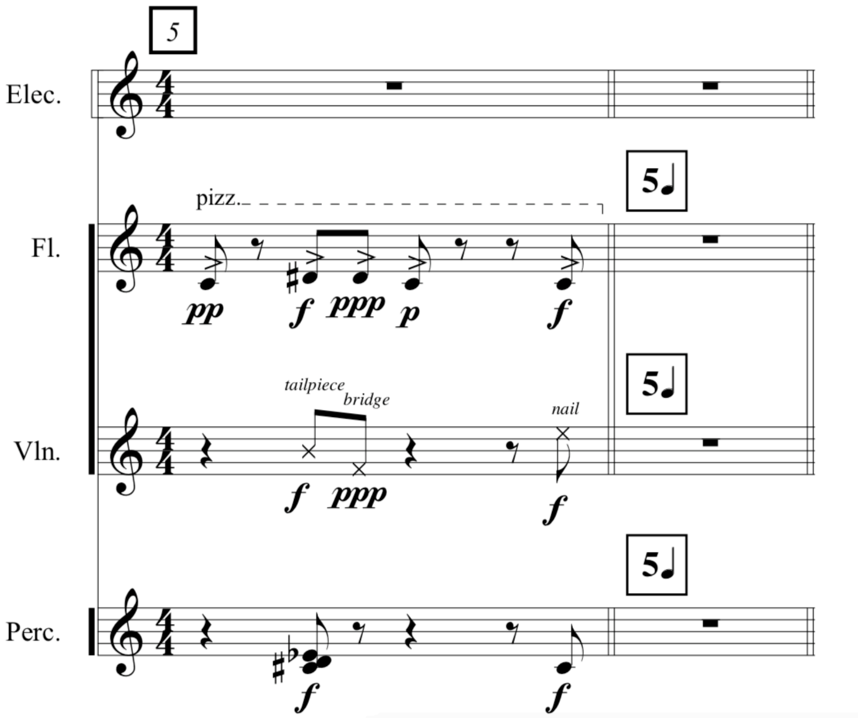

Figure 104 – *Towards the Unknown Island* (m. 5-6)

The orchestration is slightly varied, which might bring some sort of timbral novelty, nevertheless, it sounds almost as an exact repetition of m. 1-2 (figure 102). My idea was to create a musical development in which the music moves one step forward and half step back. Ultimately, it is still moving forward but in a more unpredictable way. I believe this is an interesting solution to give time for the listeners to get used to the musical discourse. Each restatement of the rhythmic pattern (figure 102, 103 and 104) is highly segmented due to a measure of silence added between them. Likewise, the use of the rhetorical device *Anaphora* (all of them share the same beginning) also stresses this segmentation. As section A develops, the rhetorical device *Auxesis* is used to create an effect of accumulation. Each restatement of the rhythmic pattern gets larger and more complex. The electronics enters in m. 11 to enhance this effect, enriching the timbral relations of the piece and adding spatial movement. This process leads to section A's climax in which a groove is used for the first time (m. 37-42 – figure 105 – sound example 30).

While the percussionist accentuates the downbeat of each measure, the motives performed by the flutist and violinist are structured as an *Anaphora*. In the fourth quarter of each measure, both performers start their phrases with the same musical motif (blue and red square – figure 105). The *Anaphora* structure will hopefully segment the whole passage in small chunks and, in its two initial reiterations (1 and 2 – figure 105), it starts just before the downbeat of the following measure and serves as a signal to the listener that the next downbeat is coming. In its third appearance (3 – figure 105), nevertheless, the signal comes before it is expected (on the second beat of m. 39), giving the false impression that the downbeat will come earlier and the listener might have the expectation of hearing the downbeat of the next measure earlier as exemplified in sound example 31. Nevertheless, this expectation is subverted, because a new musical motive is added to make the phrase as long as it is needed to have the downbeat in the same place as it would be previously expected (following the quaternary meter). In the fourth and last appearance of the signal (4 – figure 105), the downbeat of m. 41 is not accentuated as before (the percussionist does not play in this downbeat and the flutist and violinist play in *mezzoforte*), intending to provide a sense of suspension that is then resolved in m. 42's downbeat, concluding the passage. This example shows how motivic organization and regular tempo with rhetorical devices such as the *Anaphora* and *Auxesis* described in chapter 2 can be used to generate and disturb the listener's expectations.

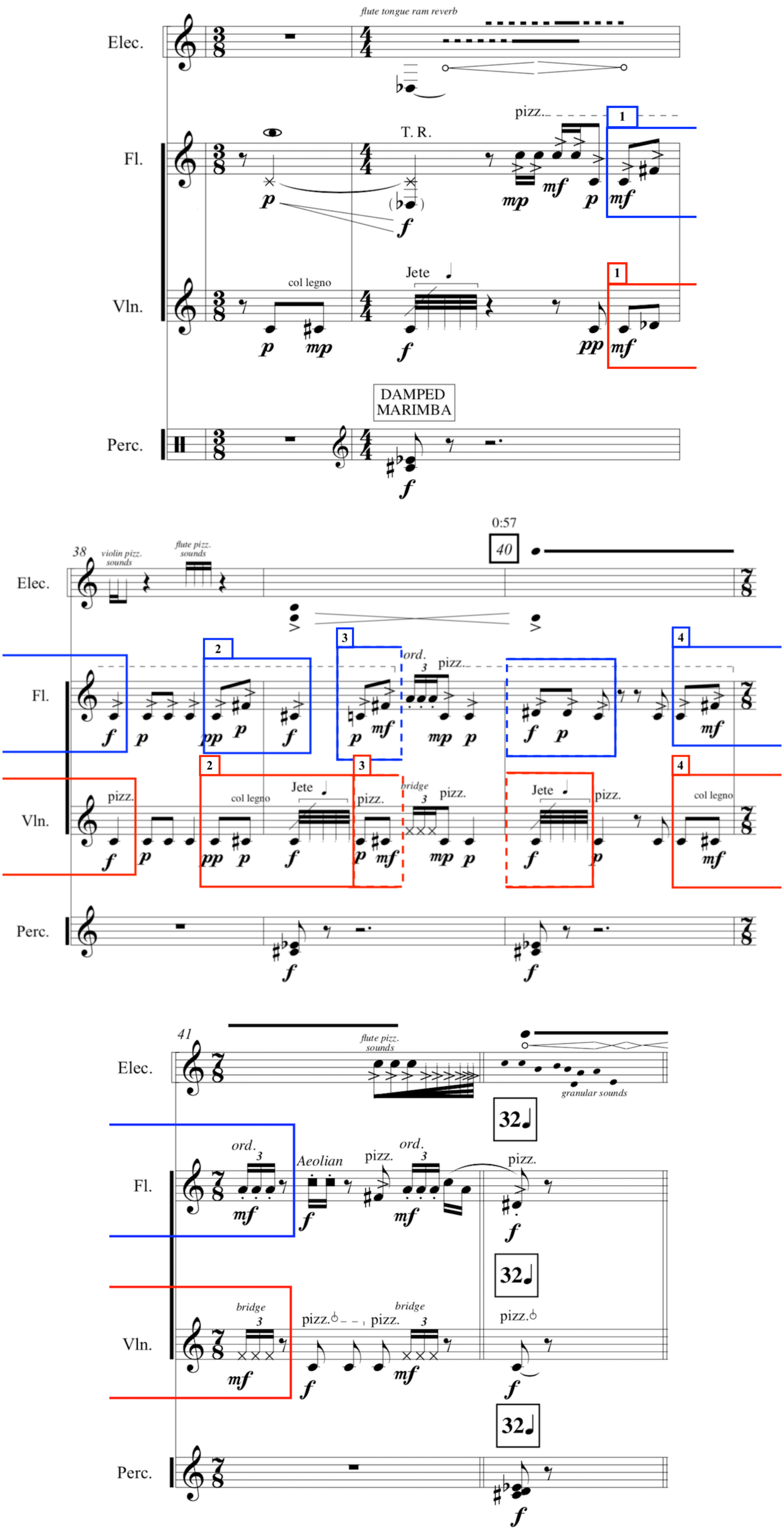

Figure 105 – *Towards the Unknown Island* (m. 37-42)

Section B, as mentioned before, is a slow developing and fragmented version of section A. It leads eventually to section C and C’s first subsection is also based on a groove. The following pattern is established in m. 72:

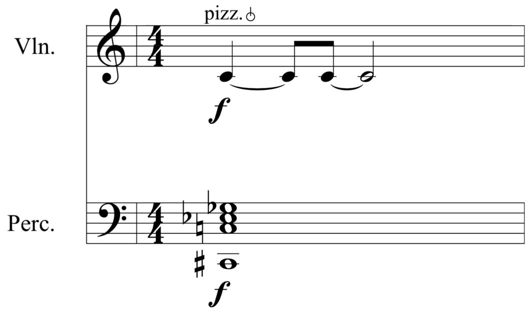

Figure 106 – *Towards the Unknown Island’s* rhythmic pattern (m. 72)

As stated in the previous chapters, probably, one of the most efficient ways of creating tempo related expectation is through regularity and this pattern clearly establishes a quaternary meter. Initially, the patterns performed by the percussionist and violinist stresses every measure’s downbeat (m. 72-74), while the flutist plays varying gestures above it to increment the musical texture. Subsequently, the percussion will start to play other musical gestures and, by m. 75, it will be playing the same musical pattern as the violin, but delayed an eighth note (figure 107):

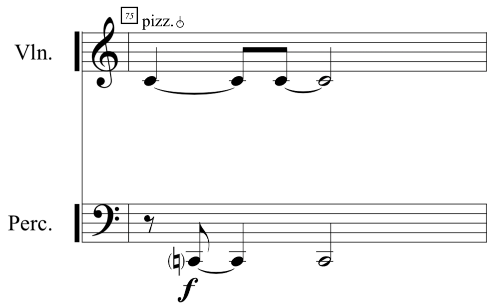

Figure 107 – *Towards the Unknown Island’s* rhythmic pattern (m. 75)

The violin rhythmic pattern, unchanged since the beginning of the excerpt, will hopefully become the main reference of the quaternary meter. My intention is to clearly stress to the listener when the downbeat of each measure will come. In m. 76, this regularity is broken to create surprise (figure 108):

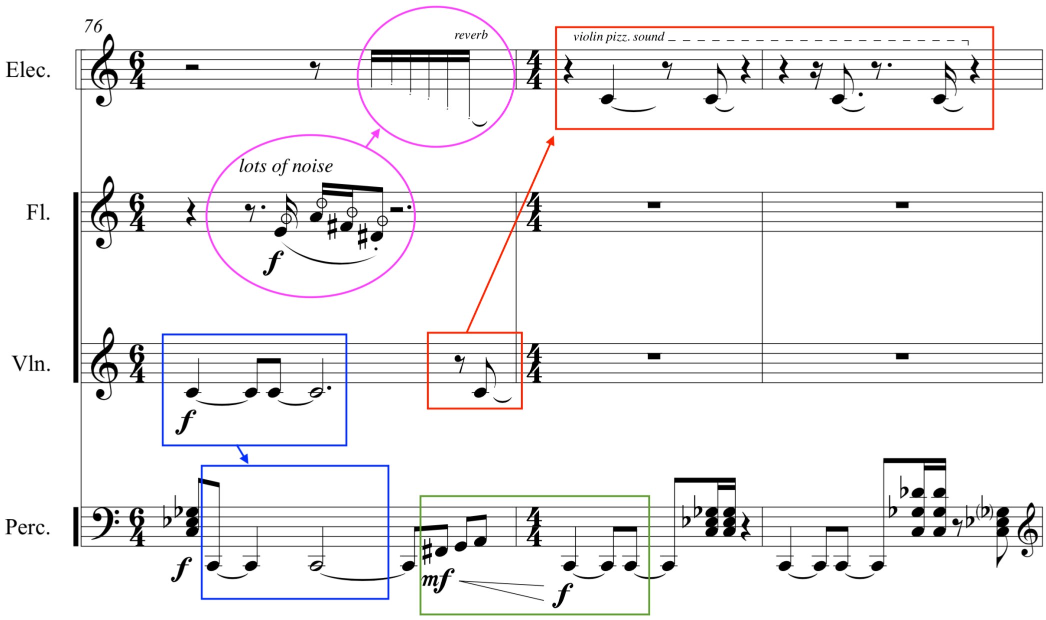

Figure 108 – *Towards the Unknown Island's* rhythmic pattern (m. 76-78)

The violin starts m. 76 still playing its quaternary rhythmic pattern, that is imitated by the percussion one eighth note later (blue squares – figure 108). Nonetheless, the gesture played by the flutist is reverberated by the electronics (pink circle – figure 108) and extends the duration of the measure in two quarters (from 4/4 to 6/4). This change of meter makes the violin pattern lose its downbeat accentuation (red square – figure 108). In m. 77, the marimba motif (previously played one eighth note after the downbeat) is now responsible for the downbeat accentuation. This sudden change – if perceived as I intended – should make the listeners reassess their temporal expectations. If they keep using the violin as reference for the downbeat accentuation, their reference will not match the actual downbeat of the piece. This passage (m. 72-80) can be heard in sound example 32 (0:00 to 0:14).

As we can hear in the sound example, the excerpt also has a location surprise as the violin pizzicato sound moves to the electronics in m 77-78. I used EQ to manipulate a recorded version of the violin pattern, making it to sound as if it was performed from a distance. Since it is slowly fading away in the electronics, this transformation is a clue that the violin pattern is not responsible anymore for articulating the downbeats, but now, ambiguates them. Nevertheless, I believe this uncertainty concerning the downbeat position will most likely be preserved until m. 80 (figure 109), when the violin pattern stops being played in the electronics and the repetitive pattern of the marimba becomes the only metric reference.

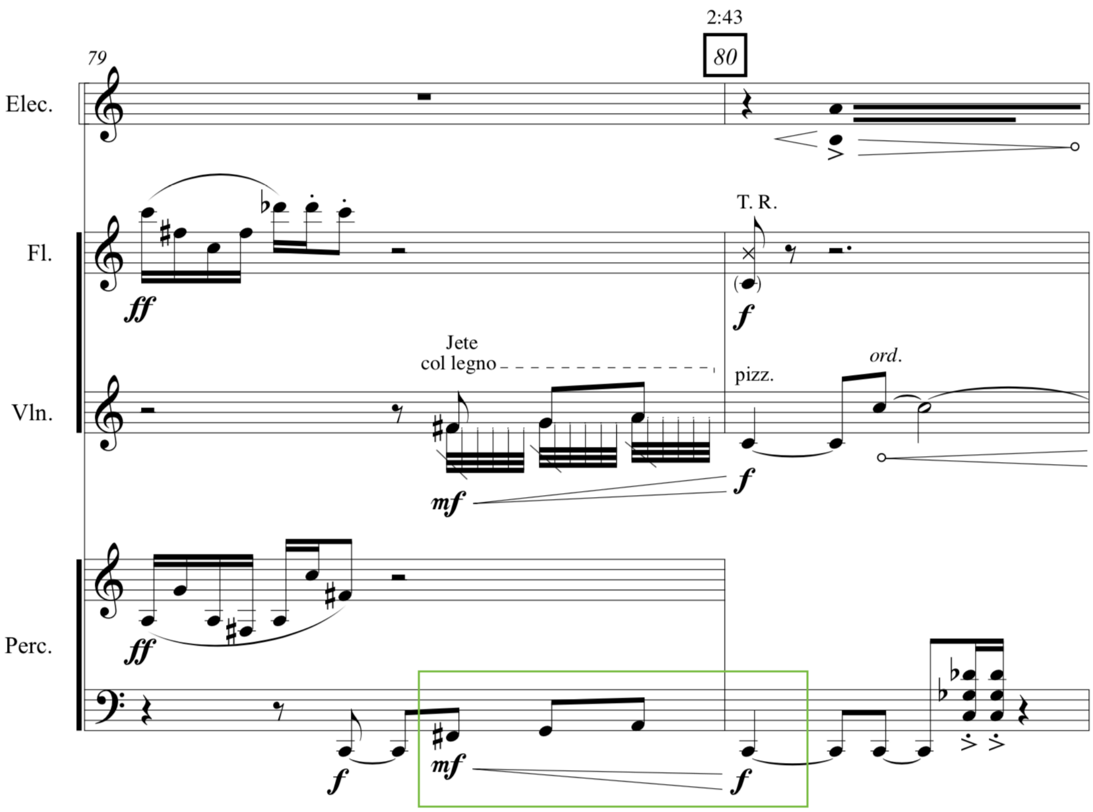

Figure 109 – *Towards the Unknown Island* (m. 79-80)

The melodic pattern, formed by the pitches F#, G and A (green square – figure 108 and 109), will now serve as a signal that the downbeat accentuation is coming. From m. 77-91, the quaternary meter continues. Nonetheless, its regularity will be constantly interrupted by a melodic motif in sixteenth notes (blue square - figure 110). The F#, G, A melodic pattern (green square – figure 110) will be responsible for announcing when the regular meter is coming back. As we can see, in m. 84, it gets larger and doubled by the flute, but it is still recognizable. I believe this organization (again based in *Anaphora*) allows subsection c to move freely from regular to irregular meter, interpolating between habituation and ambiguity, while promoting the listener's processing fluency. There is always a level of surprise as the listener never knows when irregularity will take place, nevertheless, he is still able to create expectations that are fully matched when the melodic gesture (green square – figure 110) announces the return to regularity. This procedure is maintained until m. 91, ending subsection c. Sound example 32 plays the whole passage from m. 72-91.

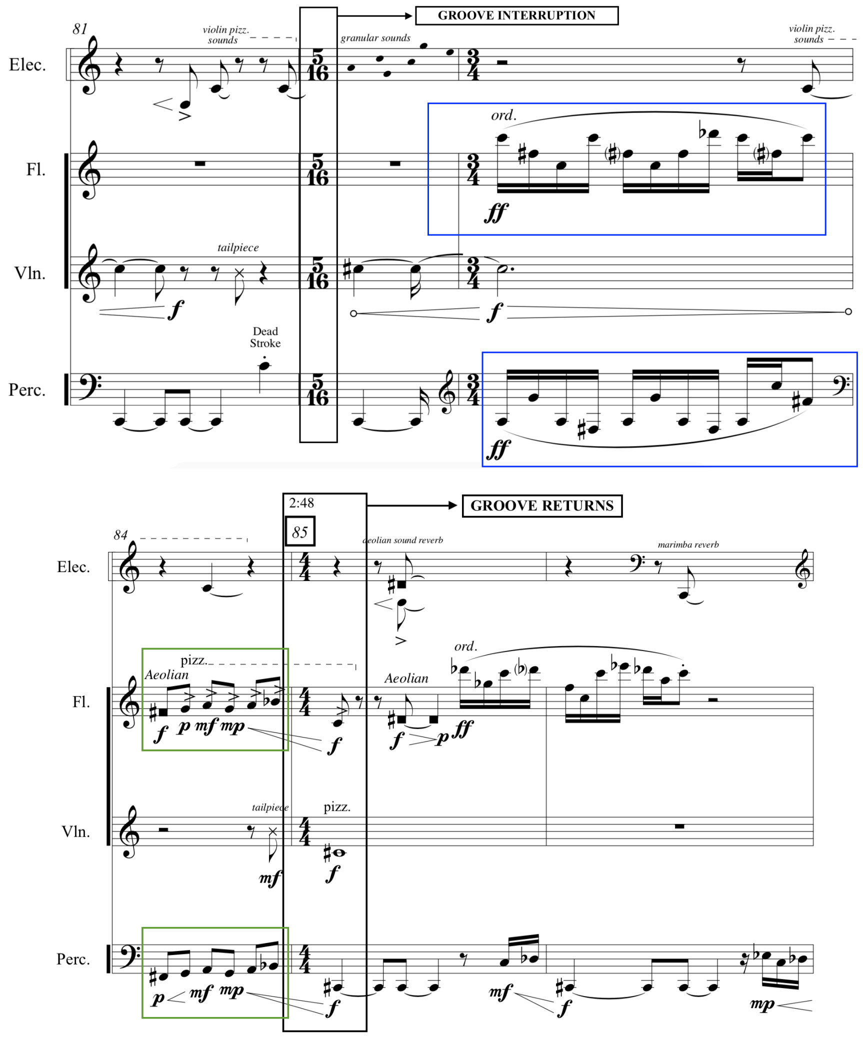

Figure 110 – *Towards the Unknown Island's* rhythmic pattern (m. 81-86)

Subsection c' (m. 91-134) share similarities with section A (m. 1-41). Nevertheless, the alternation between regular and irregular meter found in section c continues. From m. 92-93, for instance, a 3/8 meter is established (figure 111 - m. 92-93).

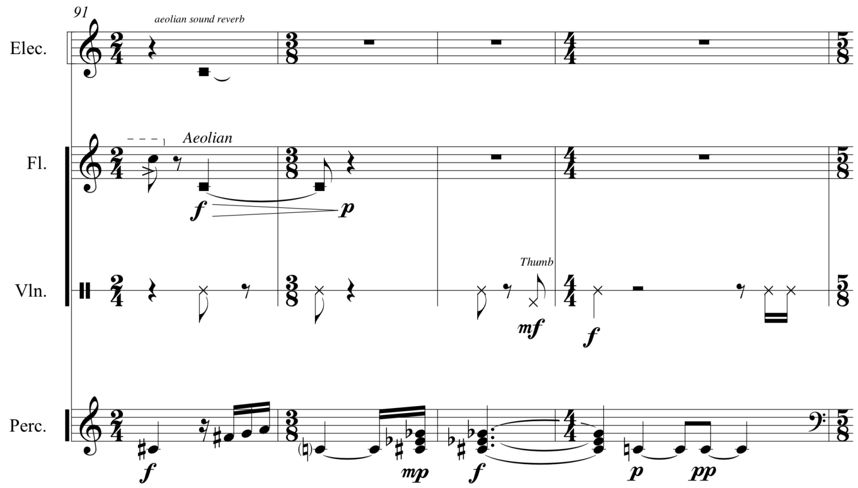

Figure 111 – *Towards the Unknown Island* (m. 91-94)

The F#, G, A melodic pattern is still announcing the return to regularity, although it is now transposed up two octaves (m. 91’s last quarter – figure 111). In m. 94, the regular meter is broken again and the rhythmic figure performed by the violin and marimba in section c (figure 107) is re-exposed in m. 94 (figure 111). The subsequent measures (m. 98-99 – figure 112) establishes another regular meter. Now, it is in 5/8. Similarly, the return to regularity is once again announced by the F#, G and A melodic pattern in m. 97 (m. 97’s second quarter - figure 112). The meter is broken again in m. 100.

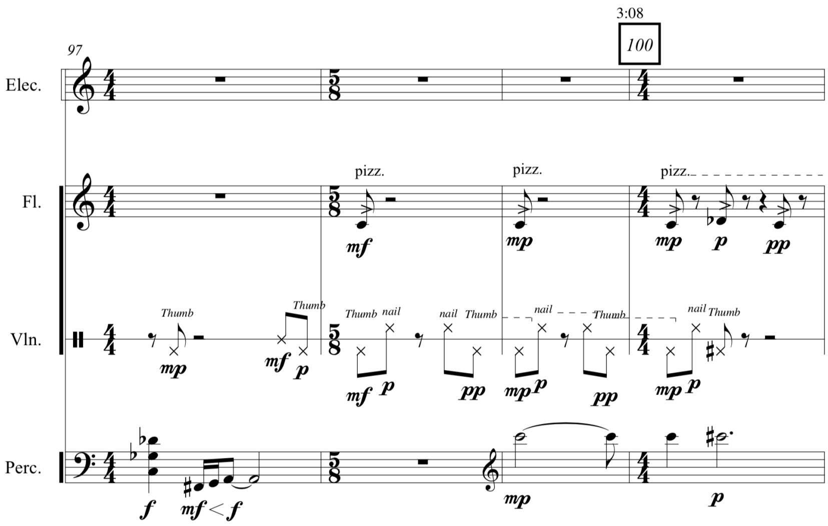

Figure 112 – *Towards the Unknown Island* (m. 97-100)

This procedure continues throughout the whole subsection c’.[64] As we can see, to create tempo related expectation, *Towards the Unknown Island* lies heavily on Huron’s idea that “the meter provides the schema against which when-expectations are formed” (Huron, 2007, p. 303). Some sort of stable meter was used throughout the whole piece as the main way to provide the schemata through which the listeners would form their expectations. When the expectations are formed, they are promptly disrupted by unstable metric events.

In each of the pieces analyzed so far, I focused my attention on specific aspects of the musical structure to create expectation and surprise. I was working mostly with harmonic surprises in *Mysteries of the Unseen*, *Rock On* was conceived mostly throughout motivic organization and *Towards the Unknown Island* by rhythmic structures. *Arapuca* was the first one I tried to apply all these aspects in the same piece.

[64] Another example can be found in m. 102 reintroduces the 3/8 beat that is interrupted in m. 104 and re-established in m. 105-106.

4.4) *Arapuca*

Composed in 2021, *Arapuca* is for flute, acoustic guitar, cello and electronics. The piece was inspired by the chant of a Sabiá. The bird would sing every day nearby the apartment I live in Belo Horizonte. The rhythmic relations of his chant are (in my opinion) rich and interesting, therefore, I decided to record it (sound example 33) and transcribe it. In this transcription, I aimed not only to transcribe the rhythmic relations of the chant but also – to some extent – its melodic contours. Sound example 34 shows the first sample-based redemption of this transcription in relation to the actual chant of the bird. As it is easy to hear, although some of its main features (melodic contours, glissandi etc.) are transmitted to the flute melody, it is not an actual note by note transcription. As we will see further ahead, the actual harmonic organization of the work has no relation to the chant of the Sabiá. Analogous to the previous pieces, the harmony was based on Costère's *Theory of Attraction*.

If you listen to the beginning of the piece (sound example 35) after hearing sound example 34, it is easy to perceive the resemblances between the birdsong and *Arapuca*'s main melody. The Sabiá chant alternates between melodic and rhythmic gestures and this basic concept was kept in *Arapuca*'s main melody, nonetheless, I increased the space between each gesture to open some room for cello and acoustic guitar. Before analyzing more deeply the aspects involved in the construction of this piece, let us have an overview of its structure (figure 113).

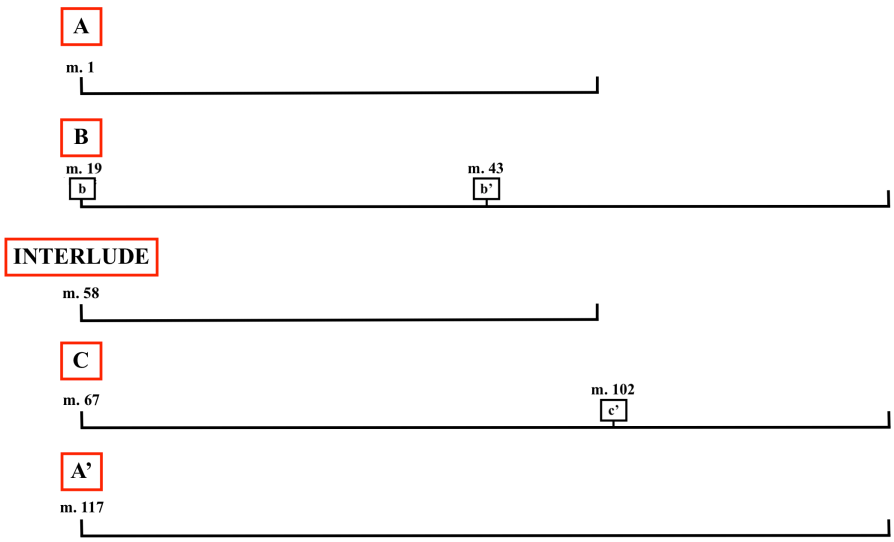

Figure 113 – *Arapuca's* structure

Arapuca has four large sections (A, B, C and A’) and an Interlude as a central section. All sections present a different development for the motives transcribed from the birdsong. Section B and C have two subsections, respectively, b, b’, c and c’ (figure 113). The sections and subsections of the piece are organized creating an opposition between dense (section A, b’, c and A’) and rarefied sections (b, c’ and the Interlude). My goal with this organization is to provide contrast and give time for the listeners to rest: After a section with a lot of information to process, they have a section (or subsection) in which their brain can rest and enjoy each sound for a longer time.

Figure 114 shows the melody performed by the flutist in *Arapuca*’s section A (m. 1-19):

Figure 114 – *Arapuca’s* main melody

From m. 1-10, the pitch set 6-7 (0, 1, 5, 6, 7, 11) is used to polarize the pitches C and F#. Besides the polarized tones, the pitch-set 6-7 also has a D-flat, F, G and B – that is, the pitches a perfect fifth and a minor second above and below C and F#. Such as the chant of the Sabiá, the melody is constructed exploring the opposition between fast melodic gestures and a rhythmic pattern reiterating the same pitch. The melodic gestures use any of the pitches contained in the pitch-set. The rhythmic patterns will always repeat the polarized pitches (C or F#). C is repeated in m. 1, 5, 7 and 10 and F# is repeated in m. 6 and 8. In my opinion, the possibility of using two notes (C and F#) as a harmonic resolution becomes an interesting resource to avoid habituation while easing the processing fluency, because the pitch-set 6-7 has a limited number of notes (what diminishes the number of information the listener has to process) but a dubious resolution, therefore, my intention is to keep the listener uncertain in which direction it is actually going.

Moreover, in order to create another layer of complexity in section A's melody, I used two transpositions of the initial pitch-set to temporally polarize other tones. From m. 11-15, the pitch-set is transposed five semitones above, polarizing F and B, and, from m. 16-18, it is transposed seven semitones above, polarizing G and D-flat. These two transpositions make the melody polarize not only C and F# - the first two pitches polarized – but all pitches of the T_0 version of the pitch-set (F, B, G and D-flat). I hope, therefore, that the F performed by the flutist in m. 11's third quarter (figure 114) is heard as a harmonic resolution, moreover, the low F, played by the cello at the end of m. 11 (figure 115), should also be heard as a resolution and the low C (performed by the cello) in m. 13 (figure 115) as a tension (even though it is the exact same note that has been performed by the cello since the beginning of the music).

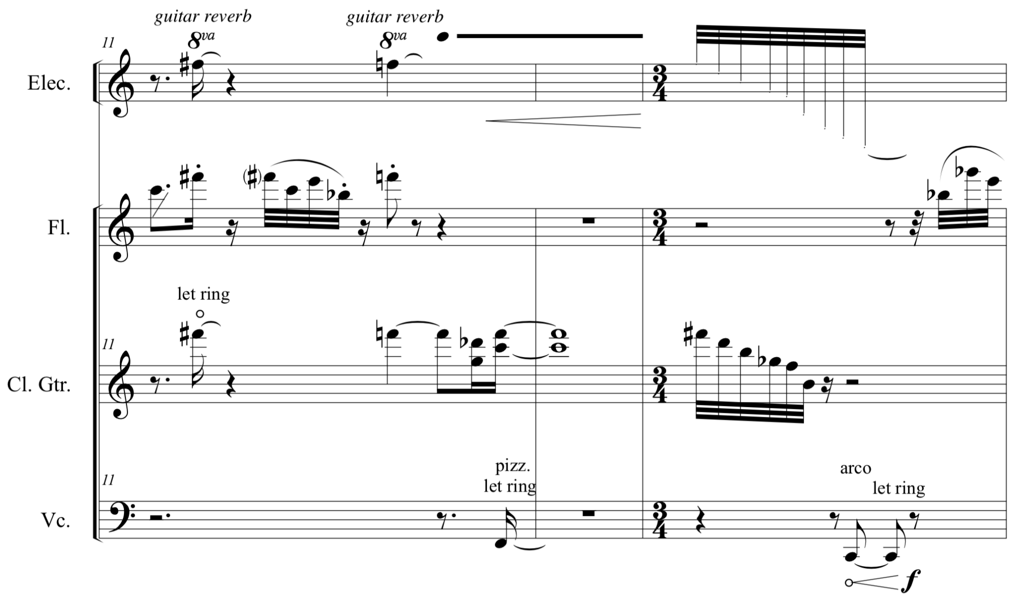

Figure 115 – *Arapuca* (m. 11-13)

Although it is expected that the G in m. 17 (figure 114) should sound initially as a tonic (since the pitch-set used in the previous measure is polarizing it), as we can see in figure 116, at the end of m. 17, the guitar and cello perform the pitches B and F that leads the music back to its original polarization (C and F#):

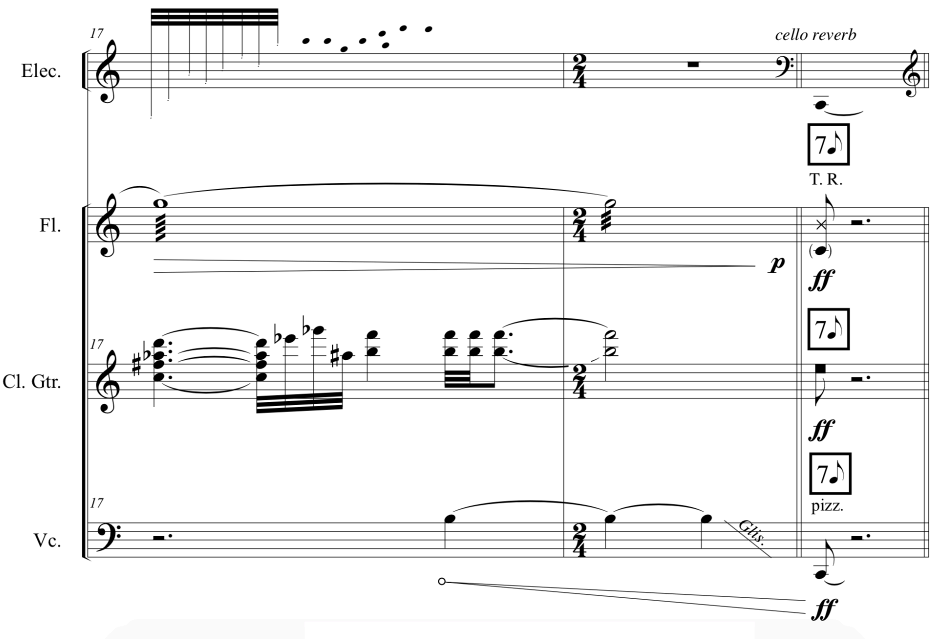

Figure 116 – *Arapuca* (m. 17-19)

The addition of these two notes (B and F) combined with the G performed by the flutist creates a classic Dominant seventh chord of C on m. 18 (figure 116). I am using here the schematic expectation of western listeners – that is, the expectation created by their experience listening to tonal music – to enhance the polarization of C and, therefore, optimize the sense of closure of section A in m. 19. I believe that all these elements enable me to say that, although *Arapuca* is not diatonic (and, therefore, not tonal), it is in fact in C. The use of tonal archetypes to explore the schematic expectation of the listeners will be, as we will see in the next section of this text, deeper explored in my piece *Comigo me Desavim*.

The whole development of *Arapuca* is based on the idea of polarization. Section B starts with a strong polarization in C (m. 19 – figure 116). This pitch is systematically repeated in the low register by the cellist to guarantee its polarity. The electronics reverberates it, increasing its relevance. The flutist plays a long C3 that is eventually followed by a melody (in 32th notes) that goes back to C (figure 117). This 32th notes melody (last quarter of m. 27 - figure 117) only has pitches found in the pitch-set 6-7 (the same used in the beginning of the piece) and, therefore, still polarizes C.

Figure 117 – *Arapuca* (m. 27-29)

Motivically, the first subsection of B (m. 24-41) is entirely based on a simple structure: The flute plays the above mentioned 32th note melody that rests on a long note and, during this long note, guitar and cello play repetitive musical motives. Figure 118 shows the cello part for subsection b:

Figure 118 – Cello part (m. 26-41)

As it is noticeable, the cello part has only two motives: 1) a melody in harmonics and glissandi (performed in m. 26-27, 33 and 35) that is varied at the end of m. 36 and in the beginning of m. 37 and 2) A melody based in the pitches G, B and C# that is performed in m. 36, 37 and 39 with small variations. The guitar part also has a limited number of musical materials (figure 119):

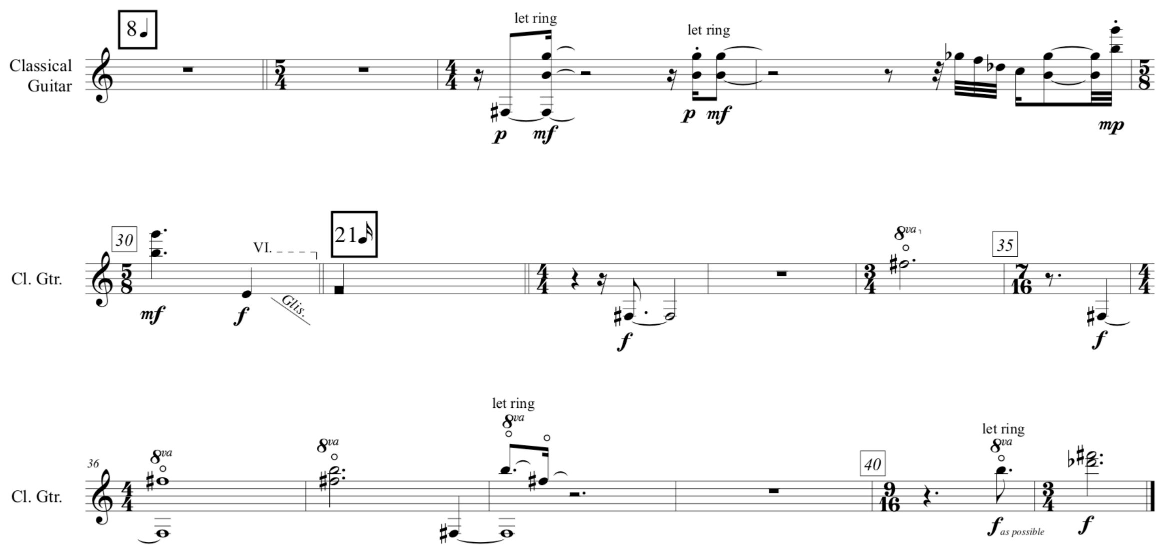

Figure 119 – Guitar part (m. 26-41)

From m. 26-30, the acoustic guitar has more complex motives, nonetheless, from m. 31-41, it plays only a low F# (m. 32, 35 and 37) and harmonics. All pitches employed throughout the passage are from pitch-set 6-7, emphasizing the C polarization and serving as an echo of the melody performed by the flutist.

Consequently, the music in subsection b is highly repetitive. As it is possible to hear in sound example 36, the repetitive beginning of flute melody – that is, its *Anaphora*-based structure – segments the musical phrase, serving as a guide to when a new cycle of repetition will begin. This segmentation becomes gradually faster as the section develops and the texture becomes more complex. Therefore, similar to *Towards the Unknown Island*, *Arapuca* combines *Anaphora* and *Auxesis* to lead its sections to climatic points. This densification can be easily perceived in the flute melody. In m. 33, it has only 3 notes (figure 120):

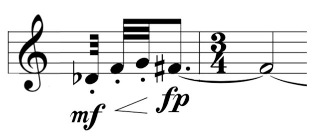

Figure 120 – Flute melody (m. 33)

As the section progresses, each reiteration of the melody gets louder and, from m. 36 to the end of the passage, it also gets longer (Figure 121):

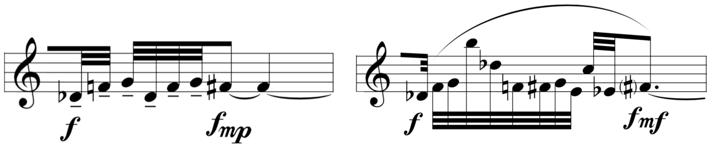

Figure 121 – beginning of the flute melody (m. 37 and 38)

Moreover, the melody, that initially would always rest on C3, gradually moves its resting point to the upper register of the instrument as the section progresses, enhancing the effect of densification. It goes from C3 to D-flat3 (in m. 32), to F#3 (in m. 33), G3 in m. 39, F#4 in m. 40 and, finally, to F#5 in m. 41. This process of accumulation is also accompanied by the textures performed by cello and guitar (figure 118 and 119).

This densification gets to a climatic point in m. 41, ending subsection b. The thrust of energy from the climax initiates a modulation to a new tonal center in subsection b'. From this point until m. 56 (where the modulation to A/E-flat is finally concluded), the flute melody will be mostly based in a new pitch-set: 4-25 (2, 4, 8, 10), a subset of pitch-set 6-7 in which only the cardinal tones of A and E-flat are used: E, D, B-flat, and A. To ensure that the C polarization would be completely forgotten by the listeners, I decided to go through all twelve tones throughout subsection b'. As we can see in figure 122, with exception of E-flat and A, all twelve tones are used from m. 43-46.

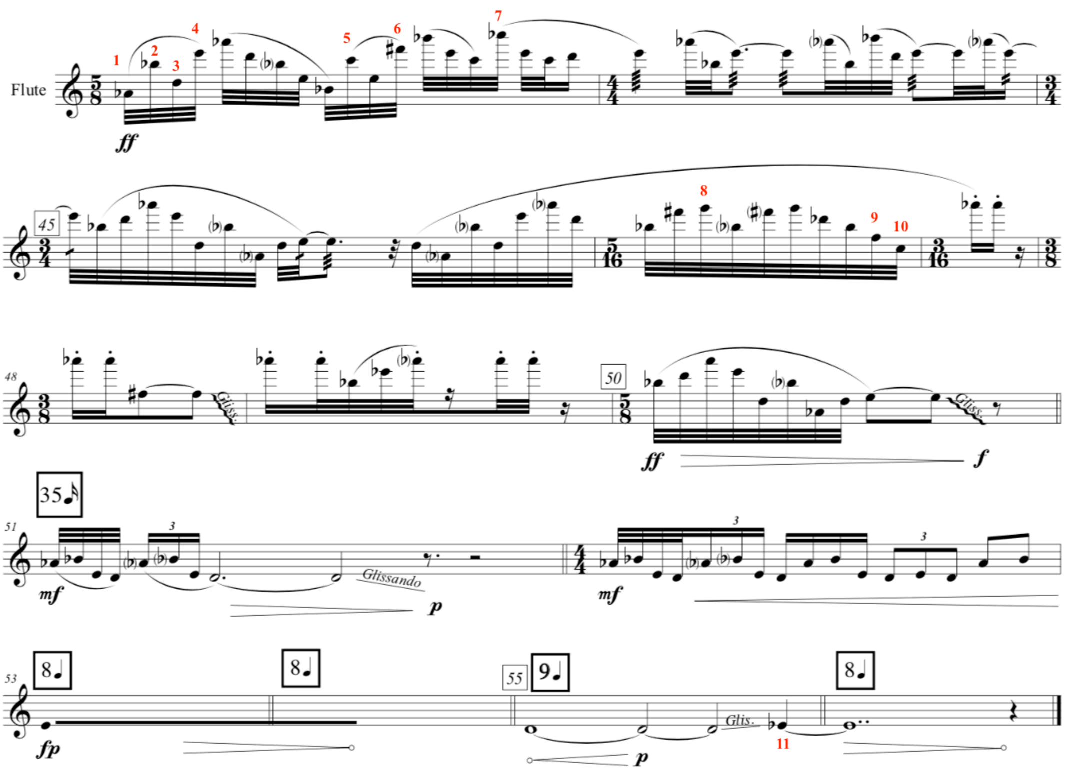

Figure 122 – Flute part (m. 43-56)

A and E-flat will only appear in the modulation's resolution at the end of subsection b'. E-flat is played by the flutist (11 in figure 122 – m. 55) and the A is played by the acoustic guitar (m. 56 – figure 123) and then confirmed by the cello (figure 123).

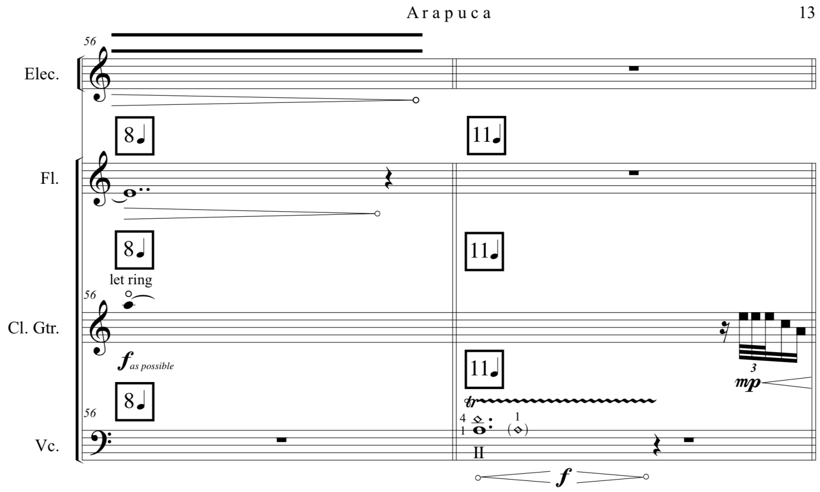

Figure 123 – *Arapuca* (m. 56-57)

Another important feature in the conclusion of subsection b’ is the harmonic glissando performed by the cellist in m. 54 (figure 124).

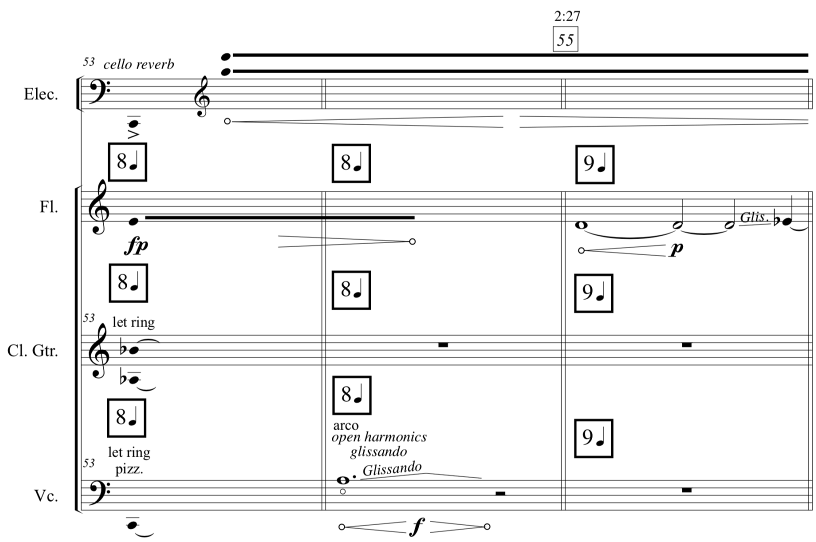

Figure 124 – *Arapuca* (m. 53-55)

According to Costère’s *Theory of Attraction*, the harmonics closest to the fundamental – horizontally or vertically - will exert an attraction towards the fundamental. Therefore, as stated before, not only the perfect fifth will have force of attraction but every harmonic of the fundamental and, as it is documented by many acoustics studies, the human brain is wired to perceive fundamentals. Even if it is not played alongside its harmonics, our brain is capable to infer it. Hence, before resolving the modulation on A, I used an open A string harmonic glissando to suggest that the music is heading towards it. Thus, this harmonic glissando works as a dominant chord in tonal music, strongly suggesting the polarized pitch even though the pitch *per se* is not played.

Concerning this open string harmonic glissando, there is another characteristic I would like to discuss. Although it is used in m. 54 as a Dominant, in the first measures of section B, an open C string harmonic glissando is used and it functions as a tonic (figure 125):

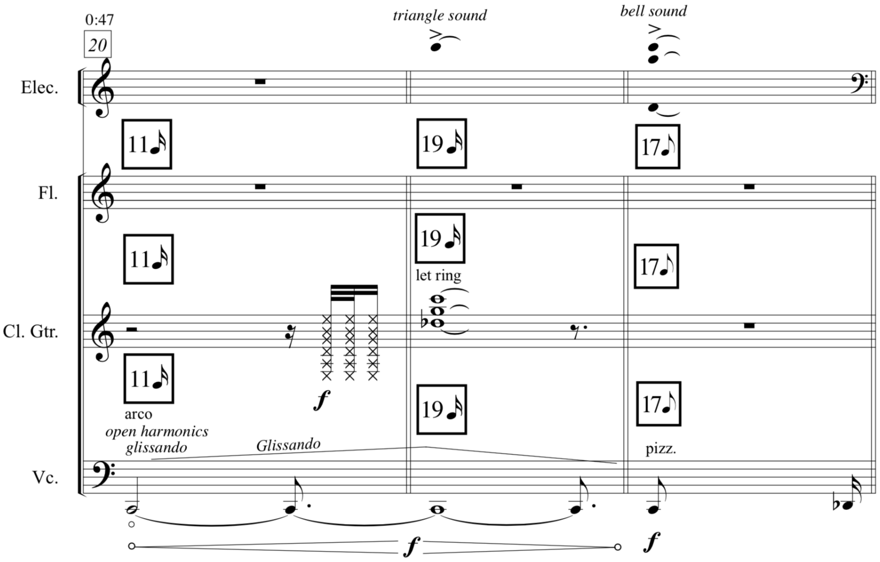

Figure 125 – *Arapuca* (m. 20-22)

This may sound contradictory, nevertheless, I believe the context in which this technique is presented differentiate its function. In m. 20-21 (figure 125), the harmonic glissando is performed alongside its fundamental and it is basically heard as an extension of the low C performed by the electronics. It evokes no sense of suspension. The fundamental, overly emphasized at the moment, grounds it (beginning of sound example 36). In m. 54 (sound example 37), the harmonic glissando is played without the presence of its fundamental. The electronics solely resonates its timbral color, increasing the feeling of suspension and giving to it a Dominant-like function.

I take advantage of this expectation for resolution at the end of subsection b' to delay as much as possible the appearances of the polarized pitches A and E-flat. The energetic and fast melodic movement present from m. 43-50 ceases in m. 51 (figure 122), where the flutist plays a repetitive pattern based in pitch-set 4-25 (A-flat, B-flat, E and D – cardinal tones of A and E-flat). The pattern has a written rallentando that is extended until m. 53.[65] Hopefully, to this point, the listener can already perceive the section is close to its end. In m. 54, the cello plays the open glissando harmonic (figure 124 – m. 54), strongly suggesting the pitch A but, at the same time, delaying the resolution even further. The resolution will only happen in m. 55-

[65] The *Euxesis* is used to suggest the proximity to the section's ending.

56 (figure 122 and 123), but before resolving in A and E-flat, the flutist plays a D and takes six quarters to finally get to the resolution in E-flat via glissando in the measure's last quarter. This resolution is then followed by the performance of A in m. 56's first quarter (on the guitar – figure 123) and its confirmation in m. 57 (cello – figure 123), closing the cadence. The confirmation is performed by the cello and uses a harmonic double trill technique in which both notes of the trill are the same. It has a unique timbre and it was reserved to be used by the first time on this moment to reinforce the structural importance of this resolution, not only concluding section B's modulation, but also introducing a new musical material that will be explored in the next section.

The Interlude (m. 58-67) is slower and more delicate than the previous sections. Techniques such as the seagull effect in the cello, harmonics in the guitar and whistle tone in the flute are used as a development for the harmonic double trill used to conclude the section B. This kind of organization can be considered as an *Anadiplosis*, in which the beginning of one section repeats the ending of the previous.[66] The end of the Interlude suggests a resolution in A (figure 126), using once again the harmonic glissando in the A string (recorded on the electronics) and the cello goes from B-flat to G# (a minor second above and below A) in m. 66.

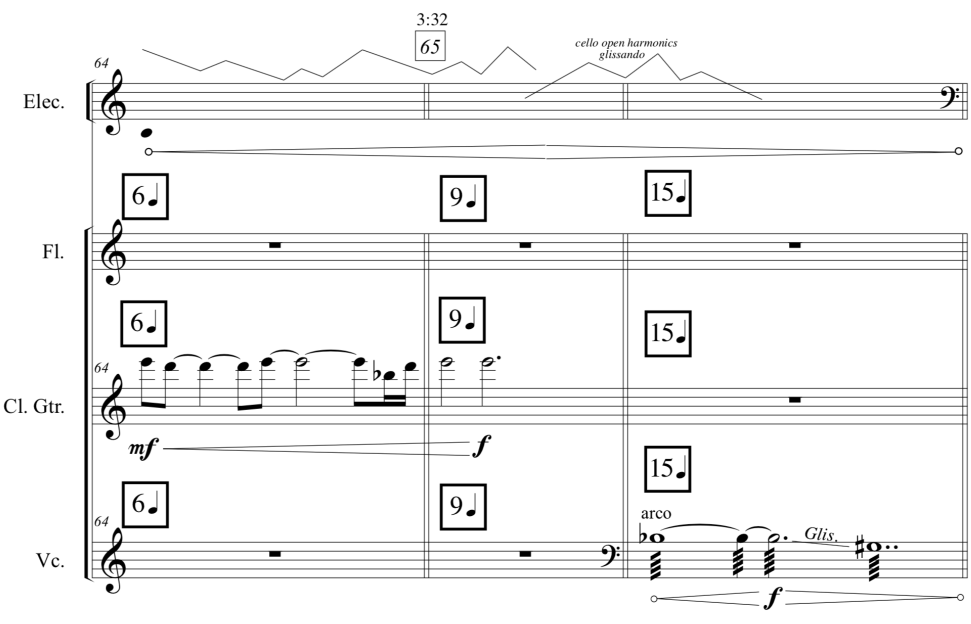

Figure 126 – *Arapuca* (m. 64-66)

This resolution is frustrated and the next section (section C) starts in D (figure 127).

[66] In this case, the repetition here is based on timbral characteristics.

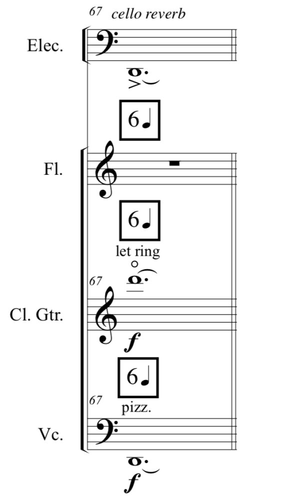

Figure 127 – *Arapuca* (m. 67)

This surprise gives the impulse to the beginning of section C, the climatic section of the piece. This section explores the rhythmic reiteration of the Sabiá chant. In *Towards the Unknown Island*, regular meters (and its regular accentuation patterns) were responsible for creating temporal expectations. In *Arapuca*, the process is somewhat different. Section C gives a regular pulse as a temporal reference for the listener, nonetheless, its accents are unpredictable. This procedure is similar to the one used by Stravinsky in *The Rite of Spring* (figure 128):

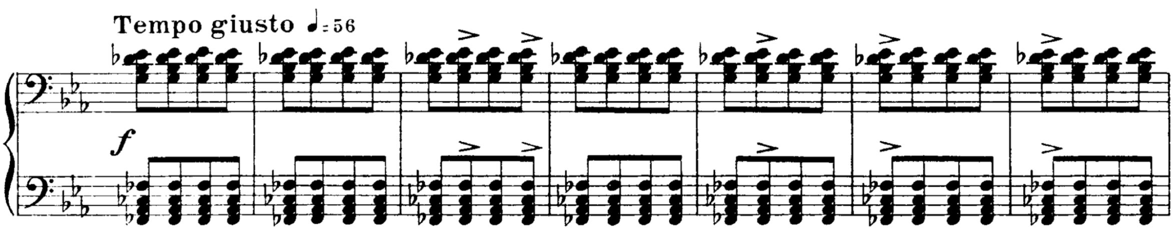

Figure 128 – Stravinsky's *The Rite of Spring*

In his piece, Stravinsky gives us a steady pulse (based in eighth notes), nonetheless, we are never able to predict when the next accentuation is coming. Similarly, throughout *Arapuca's* section C, a steady pulse based in sixteenth notes is recurrently suggested, but it has no predictable accentuation pattern. To exemplify, let us analyze the excerpt from m. 89-94 (figure 129).

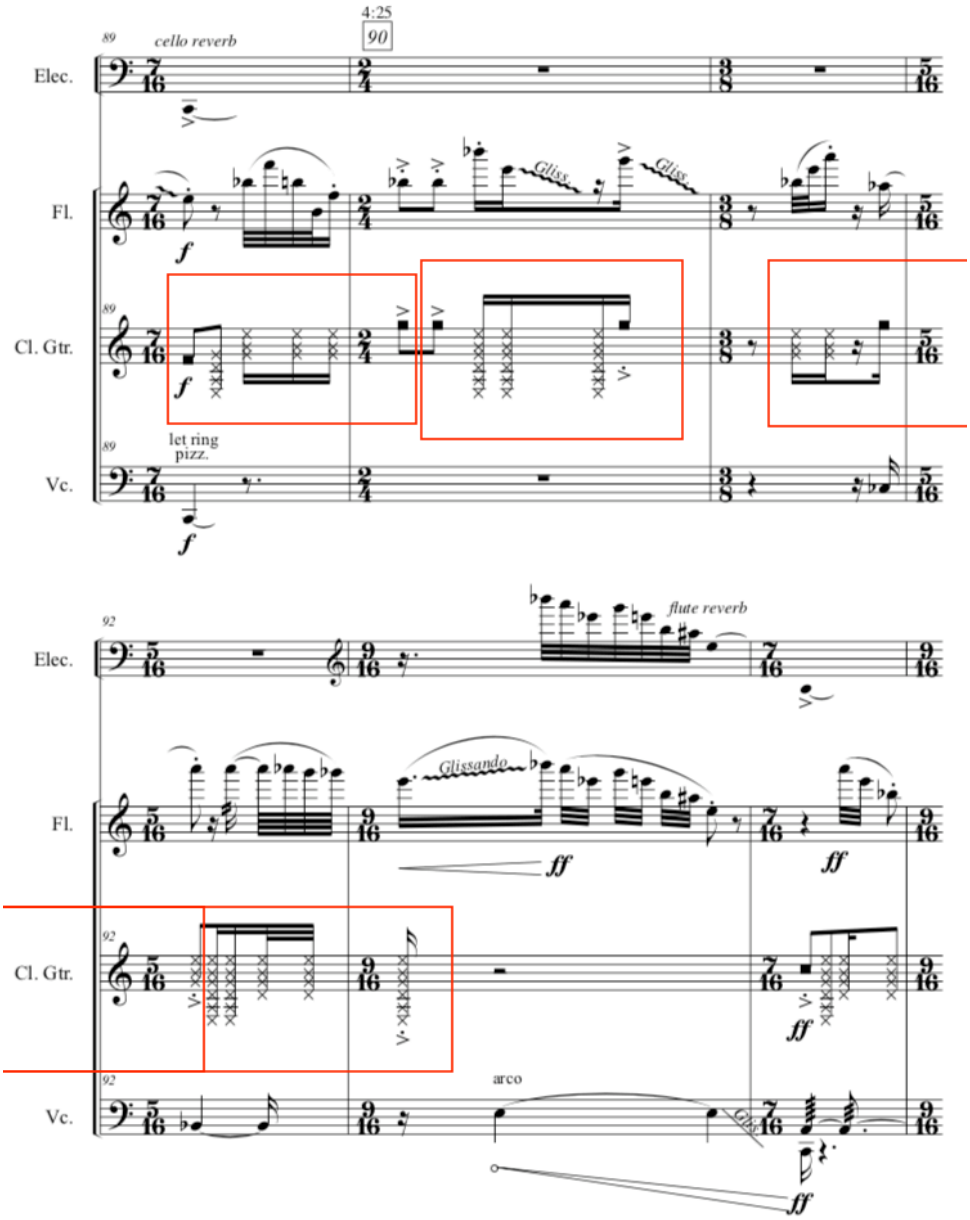

Figure 129 – *Arapuca* (m. 89-94)

The guitarist is responsible for stressing a sixteenth note pulse, performing rhythmic patterns damping the strings or drumming on the instrument's body. As it is possible to notice in figure 129, to set this pulse, repetitive rhythmic patterns (structured like an *Epiphora*) are used (red boxes – figure 129). This pattern creates the temporal segmentation in which the accents will happen. The steady pulse intends to facilitate the processing fluency and the accents intend to postpone the effects of habituation. If we listen to sound example 38, we can perceive that the steady pulse is alternated with passages with no discernable pulse, adding another possible layer of surprise. One of this pulse interruptions happens is m. 93 (figure 129).

Harmonically, section C leads the music back to its original polarization in C/F# as it gets to its last section (section A'), a recapitulation of the piece's initial musical material. To return to the original polarization, the twelve tones were used again to make the listeners lose their reference of the previous polarization to posteriorly confirm the new one. As we can see in figure 130, the flute performs ten pitches in m. 109:

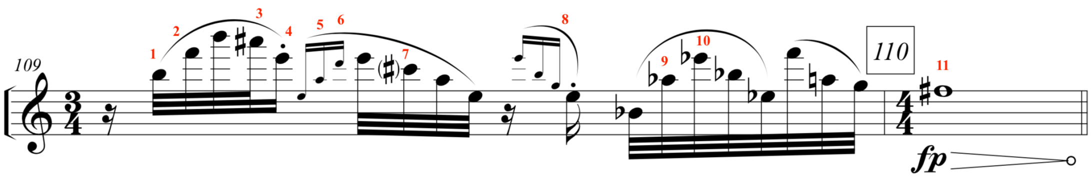

Figure 130 – *Arapuca* – flute part (m. 109-110)

In m. 110, it plays a F#, one of the polarized tones, nonetheless, C is not used yet. The next measures polarize F (m. 111 - figure 131) and C# (m. 112-113 – figure 131). Both pitches are cardinal tones of C.

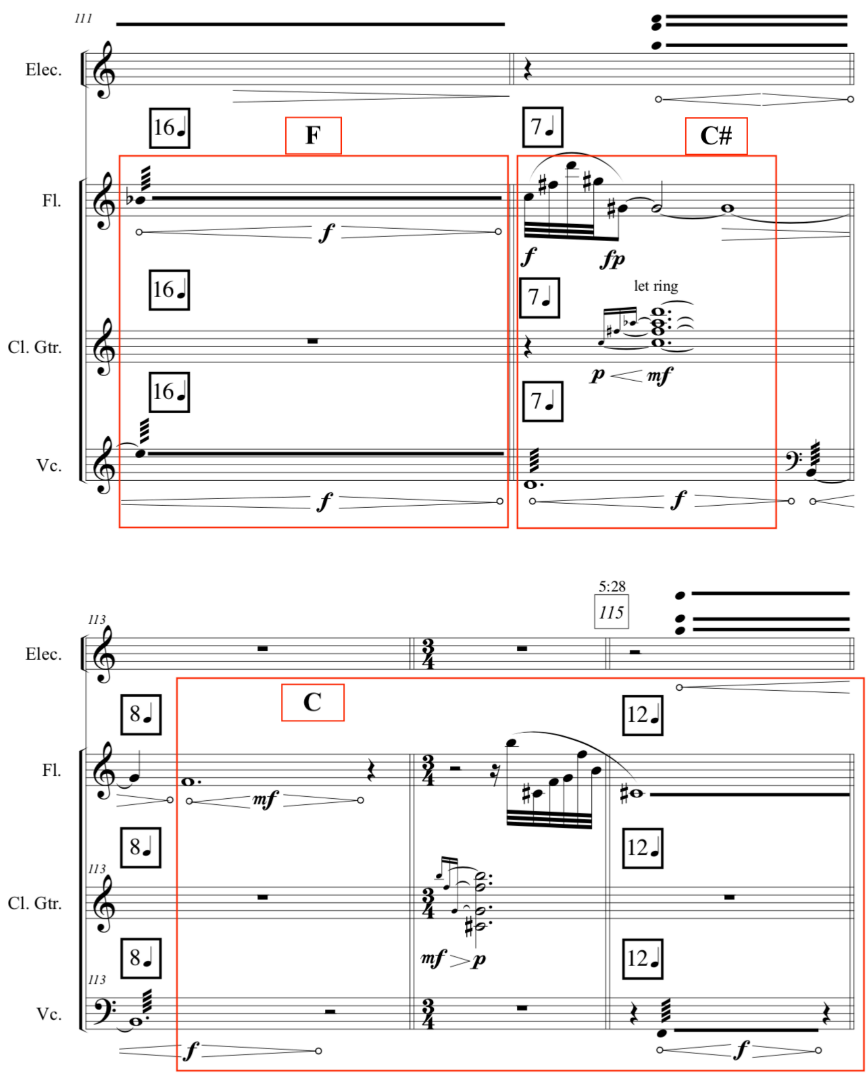

Figure 131 – *Arapuca* (m. 111-115)

From m. 114-115, the pitch set 6-7 is used again, polarizing C and concluding the cadence in m. 116, when the cellist plays the lowest C of the instrument (figure 132).

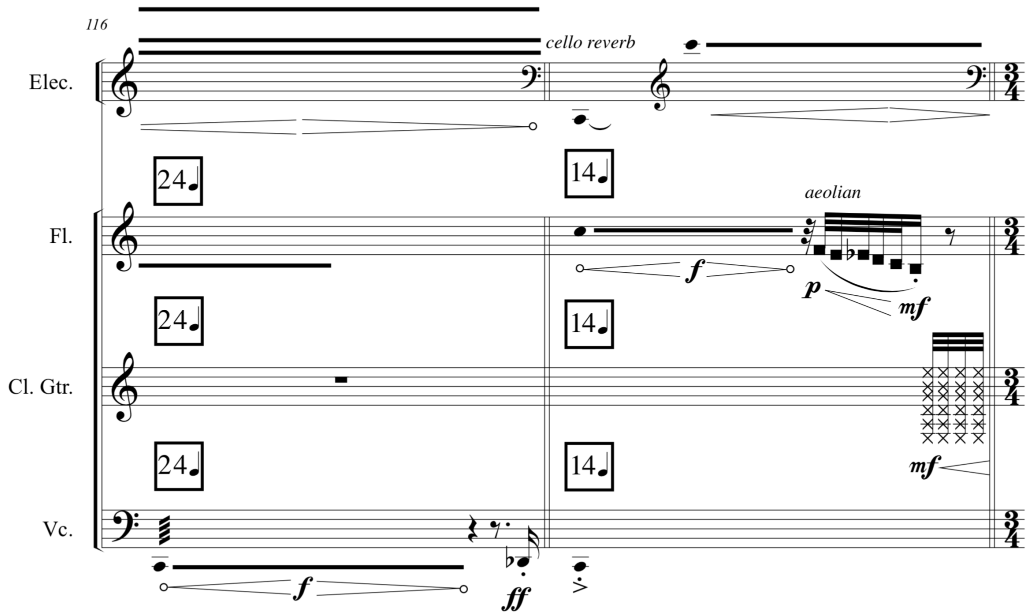

Figure 132 – *Arapuca* (m. 116-117)

Section A' recapitulates the main musical materials of the previous analyzed sections. To lead to a climatic ending, I used plenty of melodic repetition to create simultaneously the idea of accumulation and saturation (it should sound as if the musical material has been explored to exhaustion). This constant repetition can be perceived in all instruments as we can hear in sound example 39.

4.5) *Comigo me Desavim*

Comigo me Desavim was commissioned by the Brazilian pianist Adriano Lopes Sobrinho. In his PhD, Adriano was researching about the multifaceted elements of performance existent in the contemporary piano repertoire. Composers often asks pianists to sing, act, recite, play alongside live electronics or fixed media and many other things. Having this in mind, Adriano proposed a new terminology to cover all this new set of skills a pianist must have: *pianista vozeante.*[67] He therefore commissioned me a new piece for *pianista vozeante* in which all these techniques should be explored.

[67] The best suitable translation to English is the term 'vocalizing pianist' proposed by Marks (2012). Similarly, Rzewski has used the term speaking pianist in his piece *De Profundis* (1994).

The use of theatrical aspects in music have always interested me. As we have seen in the analysis of *Mysteries of the Unseen*, instructions for acting were used to optimize the surprise of the lights being turned off. I truly believe that theatrical aspects can enrich a performance immensely and be extremely expressive, nevertheless, to achieve an interesting result, the performers must be involved with the concept and willing to act or the performance can become massively dull or even comic (even if this is not the expected outcome). For this reason, since I was not composing for a specific ensemble in *Mysteries of the Unseen*, I decided to keep the instructions for acting to a minimum. For *Comigo me Desavim*, I was composing for Adriano and he studies acting and was specifically asking me to explore it as freely as I could. Therefore, I did. Throughout the whole piece, the pianist is asked to scream, recite, whisper, inhale, exhale, sing, get up from the piano and act. Furthermore, all these aspects must interact with the electronics (fixed media). To be able to notate all these aspects, *Comigo me Desavim*'s score has four pentagrams (figure 133).

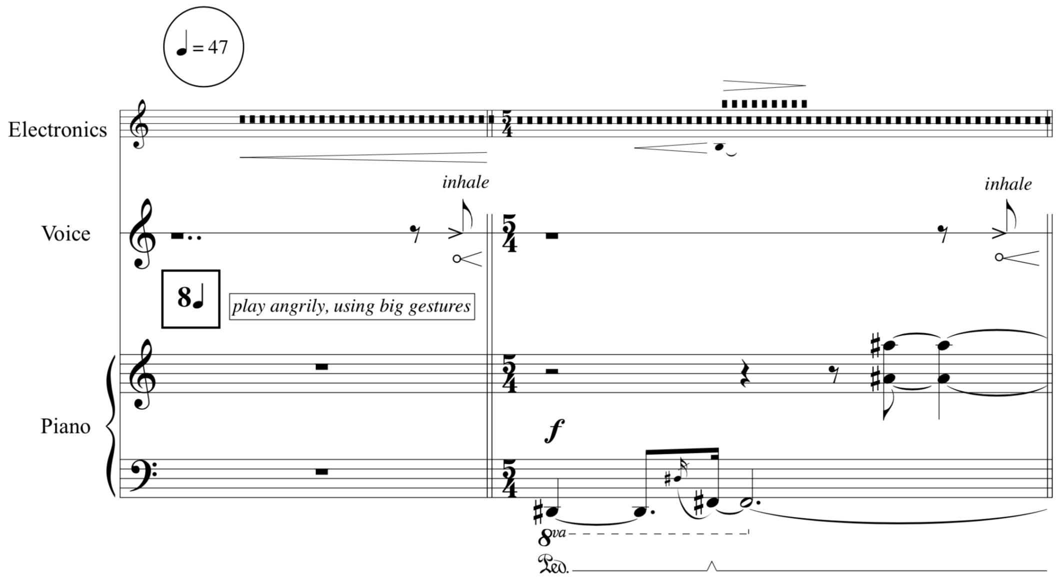

Figure 133 – *Comigo me Desavim* (m. 1-2)

The first pentagram displays a graphical representation of the electronics to help the pianist to interact with the electronic sounds. The second one, labeled as "voice", is used to notate nontraditional piano techniques such as recitation, instructions for acting and singing. The last two pentagrams are used for the usual piano notation.

The music is based on Sá Miranda's poem *Comigo me desavim* (figure 134):

Comigo me desavim,
Sou posto em todo perigo;
Não posso viver comigo
Nem posso fugir de mim.
Com dor da gente fugia,
Antes que esta assi crecesse:
Agora já fugiria
De mim, se de mim pudesse.

Que meo espero ou que fim
Do vão trabalho que sigo,
Pois que trago a mim comigo
Tamanho imigo de mim?[68]

Figure 134 – *Comigo me desavim*

During the process of deciding how I would use this poem musically, I decided to add another text to the music: Nietzsche's aphorism 341 from *The Gay Science*.

> What if a demon crept after you into your loneliest loneliness some day or night, and said to you: "This life, as you live it at present, and have lived it, you must live it once more, and also innumerable times; and there will be nothing new in it, but every pain and every joy and every thought and every sigh, and all the unspeakably small and great in thy life must come to you again, and all in the same series and sequence - and similarly this spider and this moonlight among the trees, and similarly this moment, and I myself. The eternal sand-glass of existence will ever be turned once more, and you with it, you speck of dust!" - Would you not throw yourself down and gnash your teeth, and curse the demon that so spoke? Or have you once experienced a tremendous moment in which you would answer him: "You are a God, and never did I hear anything so divine!" If that thought acquired power over you as you are, it would transform you, and perhaps crush you; the question with regard to all and everything: "Do you want this once more, and also for innumerable times?" would lie as the heaviest burden upon your activity! Or, how would you have to become favorably inclined to yourself and to life, so as to long for nothing more ardently than for this last eternal sanctioning and sealing? (1882, p. 194)

This aphorism complements – to some extent – the ideas presented in the poem *Comigo me Desavim* and its addition to the music allowed me to create a more interesting narrative arch to the piece. Such as Sá Miranda's poem, Nietzsche's aphorism also describes the dualism we might face on our own existences. To transmit this dualism musically, I decided to use diatonicism. Tonal music has a long history of relating its harmonic structures to specific emotions (such as the minor and major chords association to sadness and happiness) and the western audience has embraced this relationship, therefore, I explore this semantic expectation in *Comigo me Desavim*. Furthermore, the piece moves freely from chromatic to diatonic

[68] I was not able to find an English translation of the poem. According to Haroldo Campos (2011, p. 10), Brazilian poet, the act of translating a poem is an act of recreating it. I am not a writer or a poet. Therefore, I am not able to translate the poem keeping the same lyricism, metric and other aspects. Nevertheless, since its meaning is important to the dissertation, I will translate it to the letter: I feel uncomfortable with myself; I am put in every danger; I cannot live with me; I cannot run away from myself; In pain, I used to flee from people, before the pain would worsen; now, I would run away from myself; If only I could; What should I expect; from this useless suffering; if I bring with me; such an unbearable enemy of myself.

structures, also mimicking acoustically the dualism present in both texts. The music becomes completely diatonic only on its last section. However, before analyzing how the arrival of this last diatonic section was made, the understanding of the piece's global structure is necessary (figure 135).

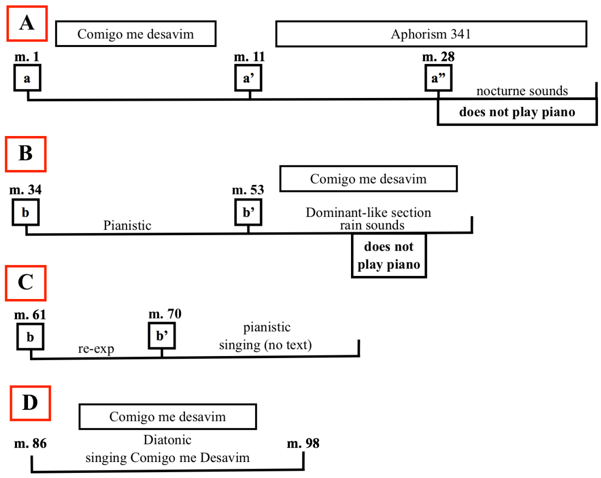

Figure 135 – *Comigo me Desavim's* structure

The piece is divided in four larger sections (A, B, C and D). Section A is divided in three subsections (a, a' and a"). It introduces both texts and the main musical motives of the piece. Section B has two subsections (b and b'). Its first subsection (b – m. 34-53) is contrasting to Section A and its second subsection (b'- m. 53-61) is a dominant-like structure that prepares the re-exposition that happens in section C (also divided in two subsections – c and c'). Section D is the last section and, as stated before, it is completely diatonic.

The first half of the poem *Comigo me Desavim* is recited in section A's first subsection (a - m. 1-11). Nietzsche's aphorism 341 is declaimed throughout subsections a' and a" (m. 11-34). In subsections a and a', both texts are recited concurrently to traditional piano playing. In subsection a" (m. 28-34), the pianist is asked to get up from the piano to be able to improve his acting performance. Whereas section A ends with the pianist solely acting, section B's first subsection (b – m. 34-53) starts with the pianist playing piano with no recitation or acting. Since Adriano – the piece's commissioner – is a classically trained pianist that also studies acting, I decided to explore this two sides of his skills sets. In some sections (such as subsection a"), he can unleash his actor skills to full extent without being concerned with his piano techniques. In other sections (such as subsection b), his traditional piano skills are the main focus of attention. Moreover, in many occasions, both are used together.

In subsection a", the first subsection the pianist is asked to act without playing piano, he is reciting Nietzsche's aphorism, in the second (subsection b'), he recites Sá Miranda's poem. In both, the recitation is accompanied by soundscapes on the electronics. The first soundscape was recorded during a starry night in my grandmother's yard. She lives in São Brás do Suaçui, a small city in Minas Gerais (Brazil), therefore, as its perceptible, there are almost any urban disturbances (such as people talking, cars honking etc) (sound example 40). It is only possible to hear the sound of crickets and other night animals, constructing a peaceful atmosphere.[69] The second one was recorded in my apartment during a terrible storm that hit Belo Horizonte at the time I was composing the piece. It is possible to hear the sound of the rain hitting my bedroom's window, the whistling of the wind and loud thunders (sound example 41). I added some distorted voices to increase the recording's noisy and bustling atmosphere. These two field recordings were chosen to aurally illustrate the dualism contained in both texts. While the first one represents a moment of peace, the second one sounds – at least to my perception – almost as a meltdown. As I stated previously, the use of chromaticism/diatonicism and major/minor chords were also intended to emulate this textual duality.

The arrival of the diatonicism in the piece's last section was prepared similarly to the approach used by Smalley in his piece Pentes.[70] Diatonic structures are suggested since m.1 and intends to serve as a clue that the piece could eventually turn to this direction. Let us analyze the piece's first section (m. 1-11). The low pitches performed by the pianist uses only three pitches extracted from D# minor scale: D#, F#, G# (m. 1-2 - figure 133) (m. 3-4 - figure 136).

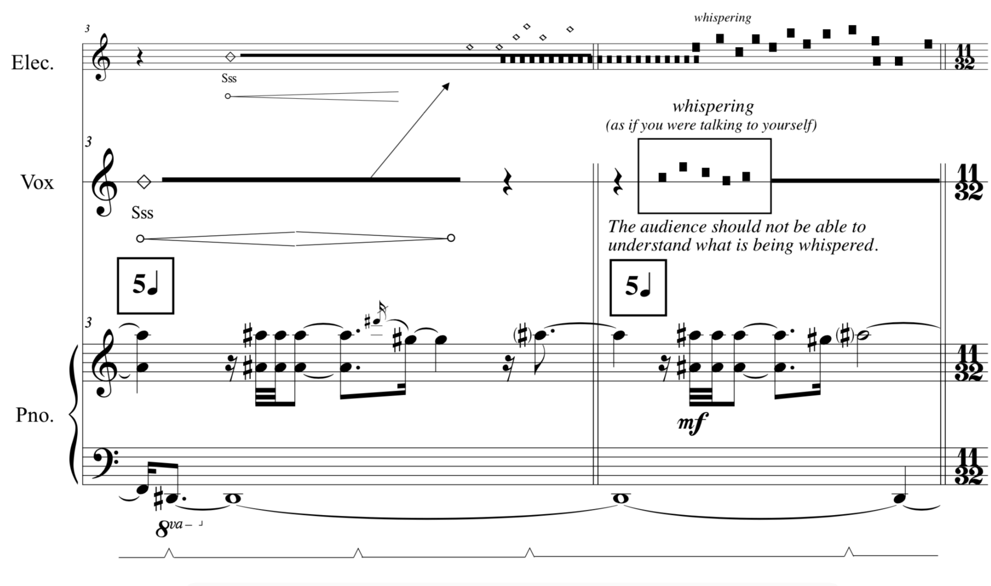

Figure 136 – *Comigo me Desavim* (m. 3-4)

[69] The night soundscape is a reference to "the moonlight among the trees" quoted in Nietzsche's aphorism.
[70] As analyzed by Paul Rudy (2002).

Similarly, the melody of this excerpt (m. 1-4 – figure 133 and 136) is created using only three notes: A#, D# and G#, enhancing the D# minor association. The goal of the octave doublings is to increase its association to diatonic/tonal structures due to the interval's power of polarization. The intervals of third (minor and major) and perfect fifth (or its inversion, the perfect fourth) are also important throughout the whole piece. These intervals are also used to associate the harmonic color of the piece with diatonic sonority. Figure 137 (m. 24-25) exemplifies it:

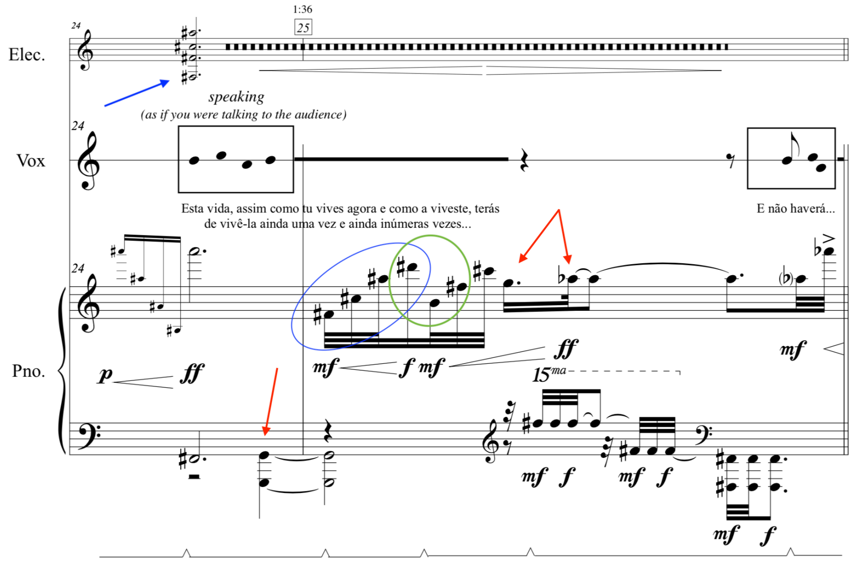

Figure 137 – *Comigo me Desavim* (m. 24-25)

In the beginning of m. 24, the pianist plays an A# in three octaves, accompanied by a low F# (a third major below A#). This harmony is extended by the electronics as a F# major chord (blue arrow – figure 137). In m. 25, the pianist plays a D# minor seventh arpeggio (blue circle – figure 137), followed by a B major arpeggio (green circle – Figure 137). The left-hand concludes the excerpt playing a F# in three octaves (figure 137). Although the excerpt is highly diatonic, it has no basis in tonal music's laws and, moreover, the diatonicism is presented with many instances of chromaticism that blurs the diatonic color (red arrows – figure 137). The tonal sonority is used solely as a mean to create contrasting harmonies and hopefully cause different emotion reactions in the listeners.

While *Comigo me Desavim* does not use functional harmony as it was common in tonal music, I use Costere's *Theory of Attraction* to create polarization in different tones without having to recur to tonal laws *per se*. From m. 53-61 (subsection b'- figure 135), I create a dominant-like structure to build up the tension that will only be resolved when the piece arrives in its new section (section C – figure 135). This extended feeling of suspension is structurally important because, as stated before, Section C is a re-exposition.

The pitch set used in the whole subsection b' is 7-7 (2, 3, 4, 8, 9, 10, 11). B was added in the structure because it is a third major below D#. If we exclude it, we have the pitch-set 6-7 – the same used in *Arapuca* to create a dominant-like sonority. I think the use of Costère's theory was especially interesting in *Comigo me Desavim* because it is closely related to tonal theory, allowing me to suggest the diatonic structures that will come at the end of the work, while tolerating chromaticism more freely. If we analyze the pitch-set 6-7's interval vector, we have the following result: 420243. It has four instances of a minor second and also four instances of a perfect fifth, showing how easily it is to move between these two harmonic worlds.

As we can see in figure 138, after playing a chord in the high register, the pianist plays in the low register a chord based in the cardinal tones of D#: D, E, G# and A#.

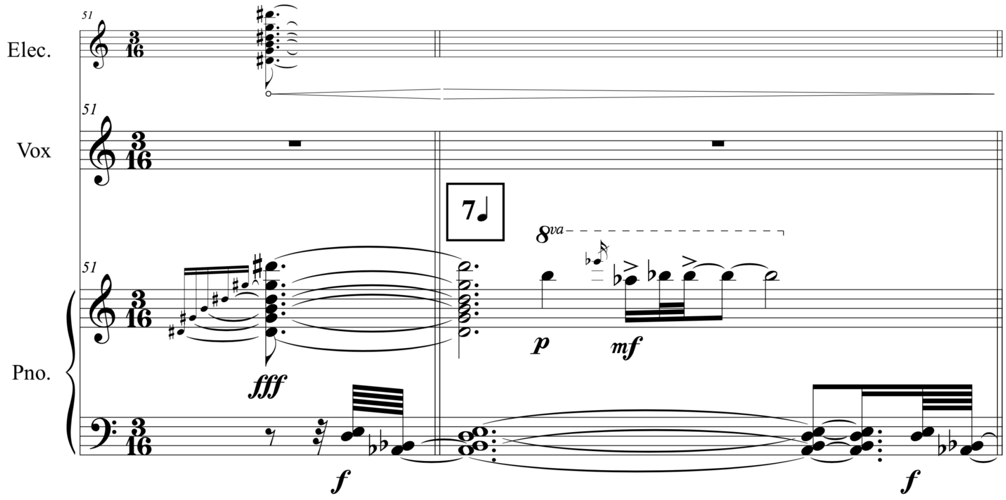

Figure 138 – *Comigo me Desavim* (m. 51-52)

This chord is then maintained until m. 57. In m. 58, the pianist makes a whisper sound with his mouth that is extended by the electronics and transformed in rain sounds (sound example 41). I used this transformation to postpone the expected resolution in D#. After the soundscape is over, a visual clue is used to enhance the tension and the feeling of suspension of the passage. This visual clue is the pianist physical gestures. As stated by Iazzetta (1997, p. 1), "the symbiotic relation between the player's body and his instrument plays a special role in the comprehension of the musical discourse". It is inherent for us to associate the body movement of the performer with the kind of sound the instrument will produce. I intended to use this natural expectation to create tension. Since the beginning of the piece, the pianist is asked to play with big gestures. It not only helps to associate the music with an emotion (in this case, anger) but also to optimize the relation between the low D# of the piano and the inhale sound (figure 133).

The same sequence (inhale, big physical gesture and low note on the piano) is also found in m. 2-3 (figure 133 and 136) and 57-58. Hopefully, the listener will associate the inhale sound with this sequence and, when they listen to the inhale sound in m. 60 (figure 139), they will expect that it will also be followed by a big physical gesture of the pianist and a low attack on the piano, nevertheless, the sequence is suspended and the inhale sound and the pianist physical gesture are now followed by silence.

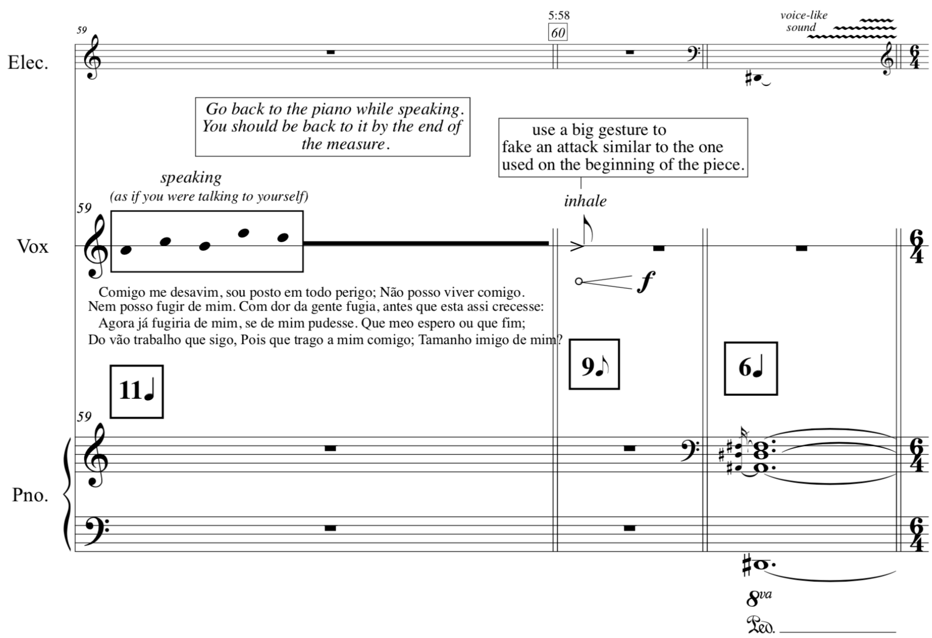

Figure 139 – *Comigo me Desavim* (m. 59-61)

Since the expectation of the listener for a low attack on the piano is postponed, I expected that the tension and feeling of suspension felt by the listeners will be very high at this point. The resolution to the accumulated tension is finally resolved with a D# minor chord in m. 61 (figure 139).

A similar idea is used again in m. 70. The inhale sound is now followed by a big physical gesture and an attack, nevertheless, this attack happens in the middle/high register of the piano. My intention is to frustrate the expectation of the attack in the low register (figure 140).

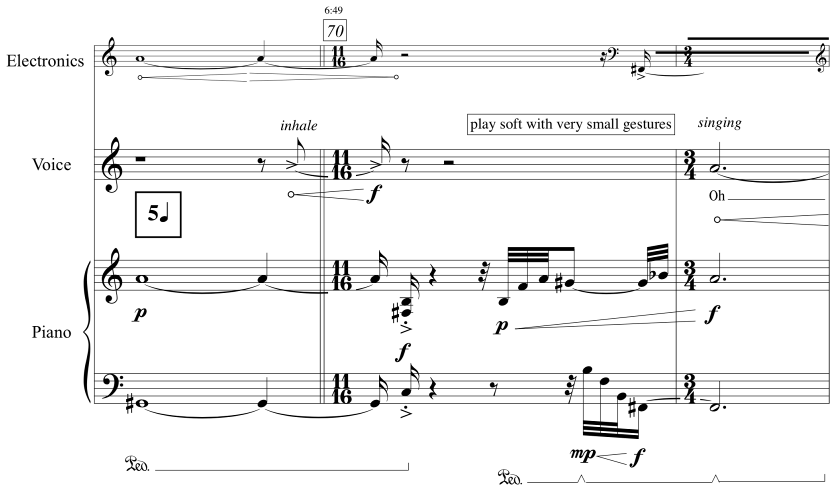

Figure 140 – *Comigo me Desavim* (m. 69-71)

The high sound in the electronics intends to increase the feeling of suspension (sound example 42). I would argue that the feeling of resolution comes when, in m. 70, the pianist plays a low F# in the piano, fulfilling our expectation of hearing a low pitch. This resolution is structurally important, because it marks the beginning of subsection c', the first subsection the pianist must sing.

The pianist only vocalizes in subsection c' and his voice should blend as well as possible with the piano sounds. Both should sound basically as one. To achieve this result, the vocalized melodic lines mostly double the melody performed in the piano (figure 141).

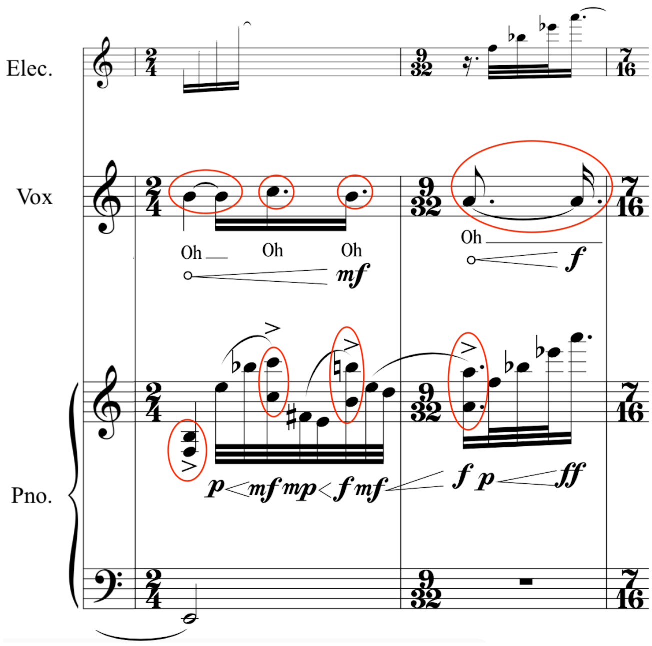

Figure 141 – *Comigo me Desavim* (m. 73-74)

All pitches sung by the pianist comes from a pitch performed initially on the piano. The singing voice always starts *dal niente* and gets louder over time. Hopefully, it will help to optimize the impression that the voice is emerging from the inside of the piano sounds. The electronics also plays reverberations of the instrumental gestures, creating a game of imitation similar to the one happening between piano and voice. This passage will resolve in section D, the final and the only completely diatonic section of *Comigo me Desavim*.

In this section, the pianist sings the first part of the poem *Comigo me Desavim*. From m. 86-93, a B-flat major is played in the piano and the melody of the singing voice is quite traditional in what concerns to embellishing tones[71] (figure 142).

Figure 142 – *Comigo me Desavim* (m. 86-98 – harmonic reduction)

In m. 94 (red arrow - figure 142), there is a B-flat5 (with no third) and, in m. 96, just before the pianist sings "*nem posso fugir de mim*"[72], a B-flat minor is performed (blue arrow – figure 142). As previously stated, the opposition minor/major is used to aurally illustrate the opposition present in Sá Miranda's poem. The piece's ends with another repetition of the chord B-flat minor.

[71] Neighbor tones, Passing tones, Escape tones, anticipation, suspension, retardation, appoggiaturas etc.
[72] English translation: "I cannot run away from myself".

5) CONCLUSION

In the first chapter of this text, I aimed to discuss how our brain processes auditory information and, ultimately, how it processes music. Repetition is an important factor in this procedure, facilitating the advent of habituation and optimizing the listener's processing fluency. This dual characteristic might explain why traditional musical forms such as the rondo and theme and variation are structured as they are: to maximize the processing fluency and avoid habituation. Moreover, as the analysis conducted in the first chapter shown us, it is possible to see that pop music and music from other cultures also have features that might be understood as methods of dealing with the duality created in our cognition by musical repetition. The acknowledgment of this fact might be useful for composers seeking new ways of organizing the musical materials in their own works.

In chapter 2, I discussed the relation between musical repetition and expectation. As it is shown by the bibliographical reference, the process of expectation is very important to create a better connection between the music and the audience. Moreover, the postponing of highly expected moments may be a powerful tool to create musical tension. A conscious use of this characteristic might be of great significance to increase the effectiveness of a given musical form and can potentially be quite impactful to increase the listener's involvement to a piece of music. Chapter 2 also showed us that cultural background and previous acquired knowledge has an immense influence on how each one of us perceive the musical discourse. Therefore, it is not possible to create a universal theory of musical expectation, since each culture has different methods of musical organization. For this reason, the discussion developed in this dissertation is focused on western listeners and, consequently, even the analysis of music from other cultures are inherently affected by the western musical thought (as I, the author of the text, am trained following the western musical traditions). Nonetheless, I believe this clash of thoughts might be interesting to shed some light in points that could otherwise pass unnoticed.

I would argue that one of the main conclusions that arises from chapter 2's discussion concerning musical repetition, cognition and expectation is that composers, usually caged in their lonely creative processes, must try as well as they can to listen to their own music with the ears of the others. Mainly, they should have in mind that, *au contraire* to their experience while working on a piece of paper or a computer software in which the same passage can be reviewed over and over, listening to music is an ephemeral activity. Once a passage is played, if it is not understood, the listener cannot go back and listen to it again. Therefore, we should frequently ask ourselves: Is there enough time to process all the auditory stimuli present in a given passage? If not, does the passage still make sense? Are tension and relaxation moments balanced to maintain the listener's attention while still giving time for their processing brain to rest? What emotion or intention do I want to evoke with each musical structure? How can I effectively set expectations that might help to enhance the emotional character of these structures? I illustrate (at least to some extent) how these questions have impacted my own creative work in the analysis of the composition portfolio in chapter 3.

As we could see, the application of the techniques discussed in this dissertation were maturing in my composition practice as I composed each of the analyzed pieces. In *Mysteries of the Unseen*, I was concerned with pitch relations, posteriorly, *Rock On* and *Towards the Unknown Island* focused, respectively, on musical motives and rhythmic patterns. *Arapuca* is the first piece that explored all these features in the development of its musical discourse. The use of extra musical aspects such was employed initially in *Mysteries of the Unseen* and more prominently in *Comigo me Desavim* opens up a new pallet of alternatives that were not explored to its full extent in my composition portfolio. The control of lights (via DMX protocol) and other multimedia aspects (such as video) is surely something to explore in the music I will compose from now on.[73] It can provide an extensive array of possibilities to enhance the effect created by the surprises embedded in the musical discourse.

I would like to state that, although the discussion conducted throughout this whole dissertation might seem a bit too theoretical, I have never been interested in composing music for the sake of the theory. My interest in music has always been its power to evoke emotions and aesthetical pleasure, therefore, I strongly believe that music must be decoded by the ears and ears only (without the need of a score or an explanation one hundred and forty-four pages long). Hence, I am not expecting that someone will listen to the pieces of my portfolio and be able to consciously understand each of the procedures explained here. I expect that the decisions taken in order to create expectation will hopefully enrich the listener's aural experience and increase their involvement with the music even if they are not able to consciously apprehend every single detail illustrated in the analysis.

Lastly, as stated by Meyer (1956),

> In any style the deviants as well as the norms are finite in number; and it is both possible and likely that a deviant through constant employment may become so fixed, so common in its recurrence in particular situations, that the probability relationships of the system become modified by this recurrence. Consequently, a sound term which

[73] Video example 9 show some initial experiments using the DMX protocol to sync music and lighting.

> was once definite deviant may become more or less normative within the style and thus lose its potential for expression (p. 65)

Therefore, music expectation is a subject constantly being updated and it is the composer’s job to keep searching for interesting and novel ways to better communicate their ideas musically, avoiding to fall in predictable or cliché solutions, and surprise the listeners. I hope that this dissertation serves to the reader as an inspiration to seek for their own ways of exploring the subject of musical repetition and expectation in their own creative endeavors, helping to develop further this ever evolving subject.

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For solo percussionist and ensemble

Solo Percussion

Flute (piccolo)
Flute (alto flute)
Alto Sax
Percussion
Piano

Maceió, AL

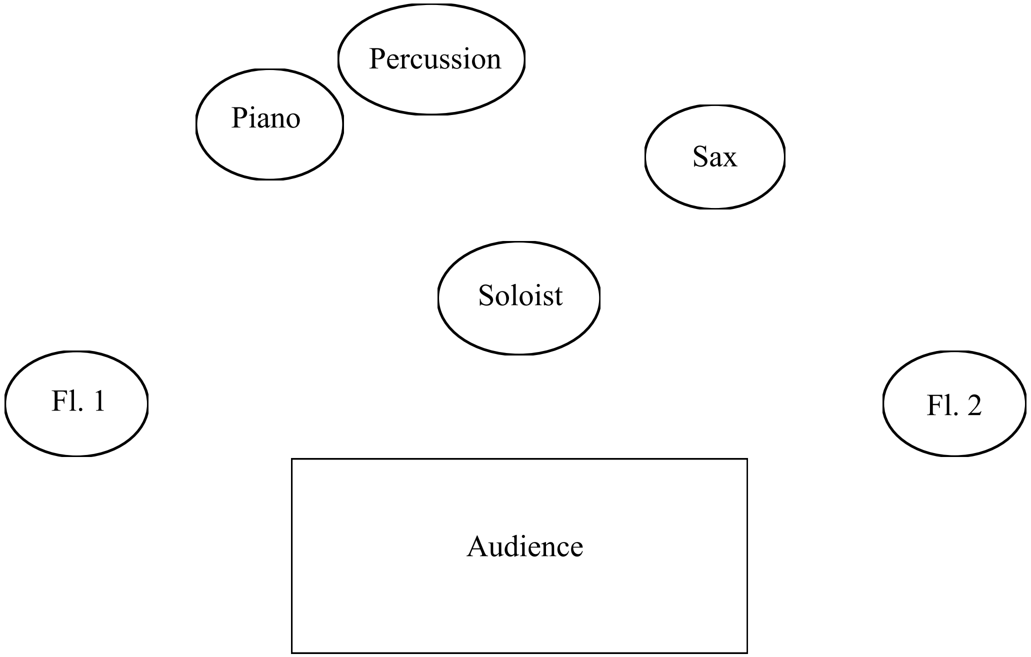
(2019)

PERFORMANCE INSTRUCTIONS

Score in C

- STAGE DISPOSITION -

(if it is not possible to make it exactly like suggested, try to keep it as similar as possible)



- All instrumentists have to play at least one percussion instrument in some moment of the piece*:

Besides flute and piccolo, **Flute 1** also plays a cymbal, and crolales (E5**).

Besides flute and Alto flute, **Flute 2** also plays a chinese gong (C5) and Berra-boi.

The **saxofonist** also plays a cowbell (C#5)

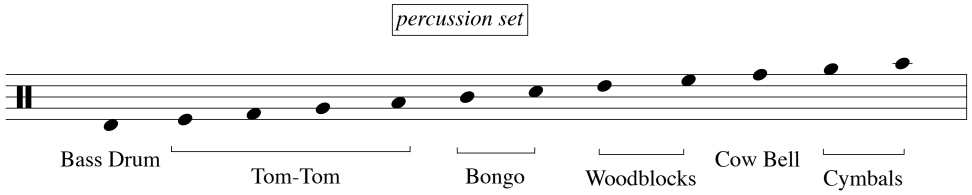
The **pianist** also plays a piece of paper and crotales (A#4)

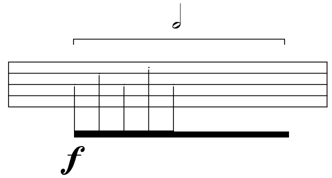
* This moments are indicated in the score.
** C4 is middle C.

PERFORMANCE INSTRUCTIONS

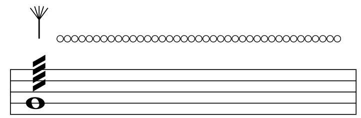
- SOLOIST -

The soloist plays in a percussion set (details below), vibraphone, tuned chinese gongs (B4, A4, C4, F#4, C#5, D#5, C#4, D#4, C5, F#3), and crotales (C#5).





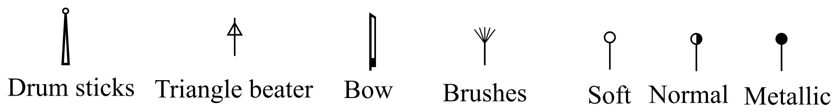
Improvisation.
(Further instructions on duration,
density and dynamics of the improvisation
may appear in some of these moments).



Brush mallet on the instrument.

Percussion mallets:

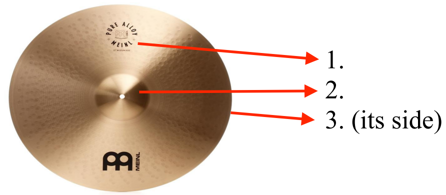
(This indication is valid for all performers)



Cymbal's regions:

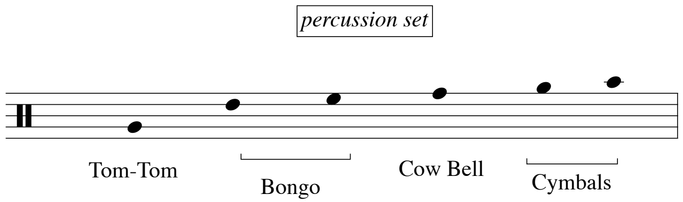
(there is some indications in the score of where the percussionist
should strike the cymbal. When there is no specification,
the instrumentist can choose)

(Indication valid for all performers)

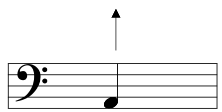


- PERCUSSION -

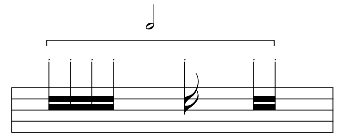
The group percussionist plays a percussion set (details below), rainstick, berra-boi, crotales (A4) and paper.
(When playing in the percussion set and crotales, a 5-line staff is used. When playing other instruments a 1-line staff is used).



The instruments in the non-soloist percussion set is not defined,
but it must share sound similarities with the indicated instruments.

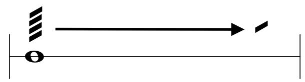


Pass a guitar pick
(or something of similar material)
throughout the indicated piano string.



Free rhythm notation.
There must be pauses between attacks.
It must not last longer than the indicated duration.

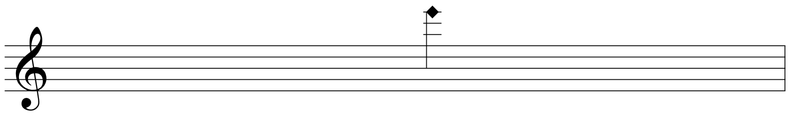
(FOR PAPER AND SLEIGH BELLS ONLY)



The number of strokes show
how dense should be the texture created.
The arrow indicates a gradual
transition between two states.

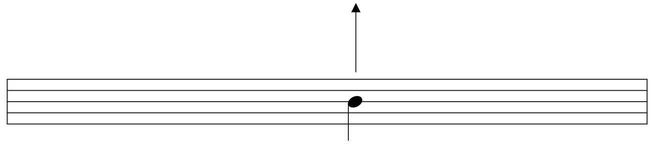
play inside piano

bowing



Pass rosin in a fishing line to create
a bow like effect in the indicated piano string.

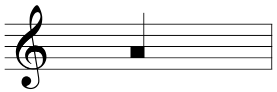
rainstick



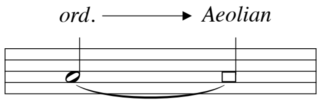
Turn the rainstick upside down
slowly to create a rain-like sound.

- WIND INSTRUMENTS -

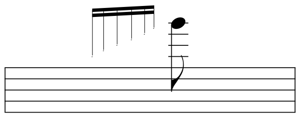
Aeolian



Wind sound



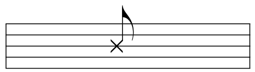
Gradually transformation between
ordinary playing and aeolian sound.



The instrumentist can choose
which notes will be played.

(SAX ONLY)

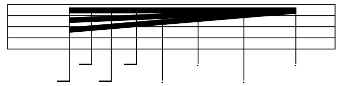
slp.



Slap sound
(as percussive as possible)

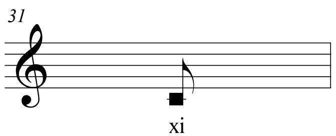
(SAX ONLY)

key click only



Play only key clicks.

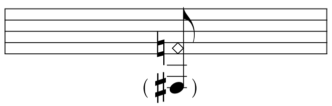
(FLUTE ONLY)



Speak the words inside
the flute.

(FLUTE ONLY)

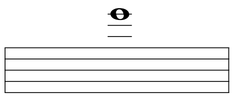
T. R.



Tongue Ram

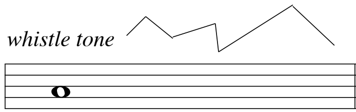
(FLUTE ONLY)

whistle tone



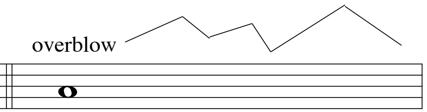
Play indicated note in whistle tone.

(FLUTE ONLY)



Play in whistle tone the
harmonics of the indicated note.

(FLUTE ONLY)

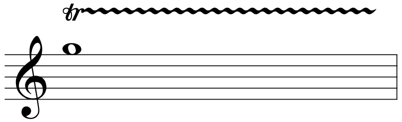


Overblow to produce the harmonics
of indicated note.

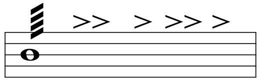
- PIANO -

(See how to play the paper in percussion instructions)

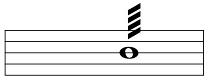
- ALL INSTRUMENTS -



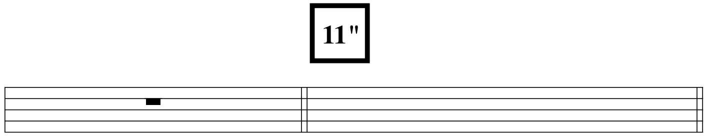
Trilling note is always a half-step above.



Random attacks during tremolo.



Tremolos always played very fast and not measured.



In this score, there is traditional and proportional notation.

(Between double bars, there is no measures) Time duration is indicated in seconds.

 Usual Fermata

 Longer fermata

Further indications may also be found in other parts of the score.

In case of any doubts, feel free to contact the composer at pacheco.levy@gmail.com

CADENZA INSTRUCTIONS

[redacted]

The soloist is free to imporvise as he/she thinks it is best for the piece. Nevertheless, I make here some suggestions:

1) The main pitch sets of the piece are 6Z42 (012369) and 6Z13 (013467). Use them as a reference for your improvisation.

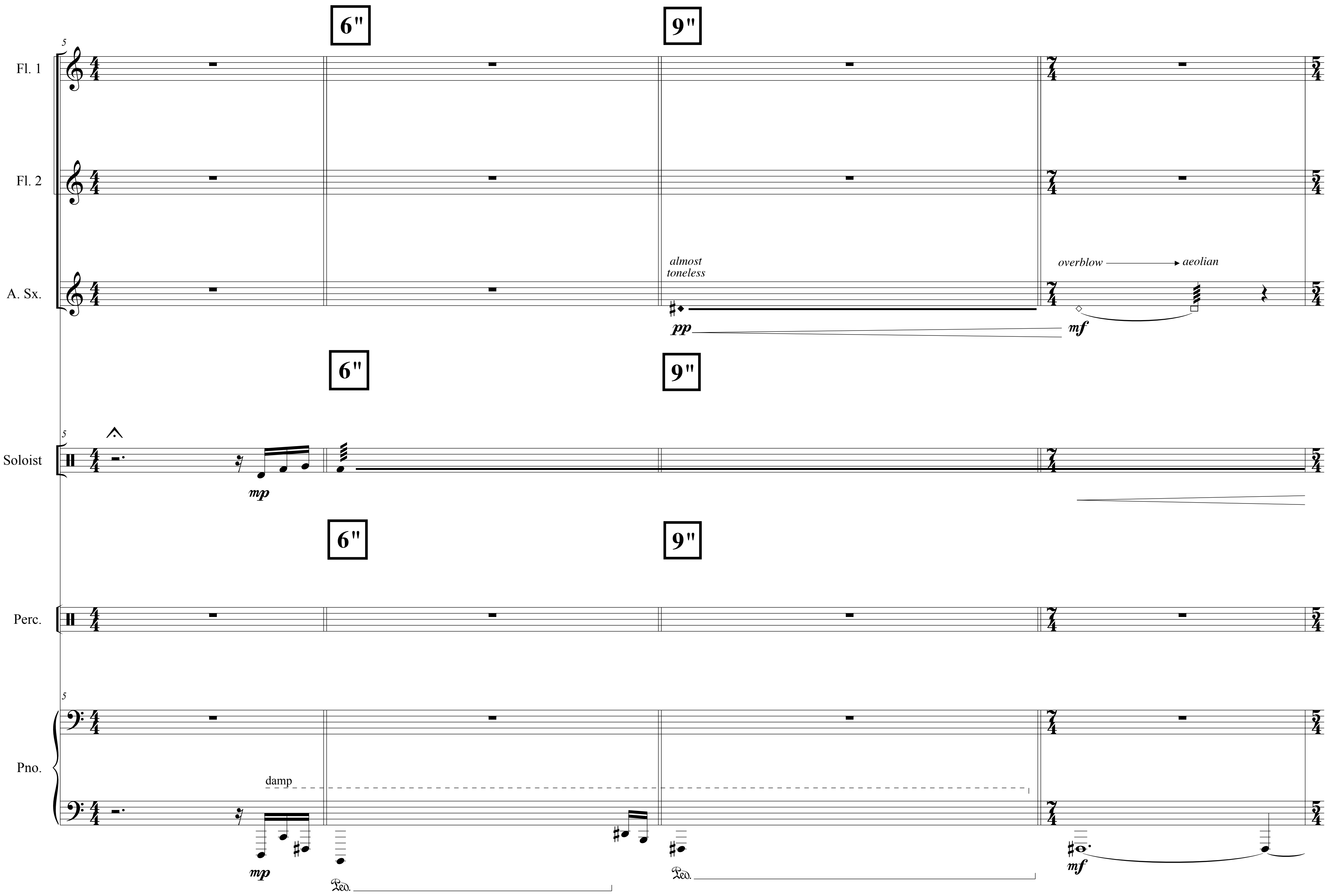
2) Try to explore rhythms that were in some point important in the piece.

3) Try to explore the instruments timbre as much as possible. It highly reccomended the use of different mallets, different methods of attack, dynamics and articulations.

Labirinto de Astérion

Levy Oliveira

©


6"
9"
Fl. 1
Fl. 2
A. Sx.
almost toneless
pp
overblow
aeolian
mf
Soloist
mp
Perc.
Pno.
damp
mp
mf


aeolian
Fl. 1
Fl. 2
aeolian
almost
toneless
ord.
almost
toneless
ord.
A. Sx.
Soloist
Perc.
Pno.
damp
damp
damp
8va
8va


ord.
lots of wind sound
aeolian
Fl. 1
Fl. 2
slp.
A. Sx.
Soloist
percussion set
Perc.
Pno.
damp


aeolian
ord.
16
aeolian
aeolian
Fl. 1
f
f
ff pp
aeolian
ord.
Fl. 2
3
aeolian
f
f
ff pp
slp.
slp.
A. Sx.
f
p
f
ff
16
Soloist
3
3
f
mf
ff
1.
3.
1.
Perc.
f
ff
16
Pno.
f
ff


Fl. 1
Fl. 2
A. Sx.
Soloist
Perc.
Pno.
aeolian
aeolian
pppp
ff
f
pp
mf
8va


lots of wind sound
aeolian
ord.
Fl. 1
Fl. 2
A. Sx.
slp. ord.
Growling + lots of wind noises
Soloist
Perc.
play inside piano
Gliss. on piano strings
(lowest register possible)
gliss.
Pno.

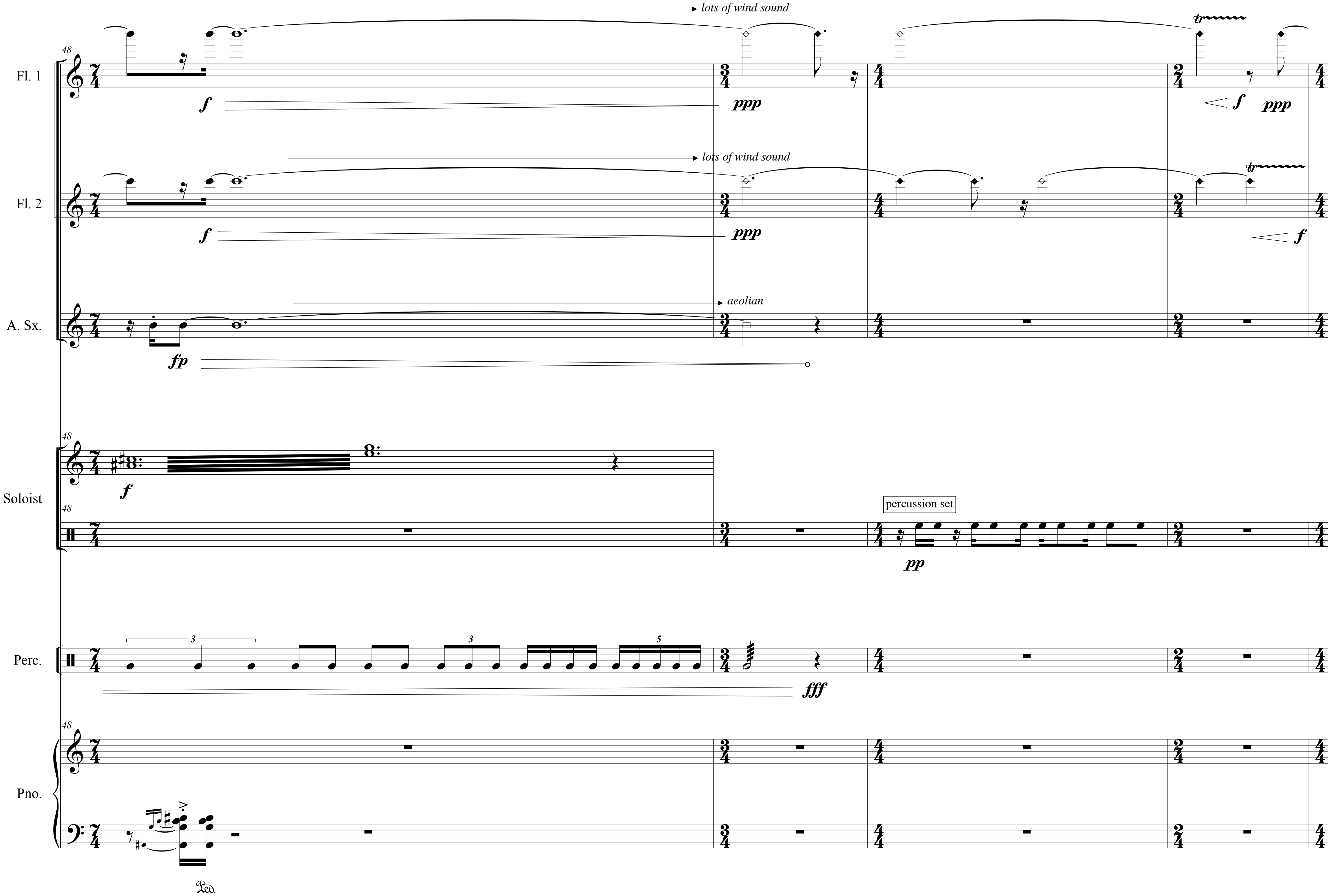

Fl. 1
Fl. 2
A. Sx.
Soloist
Perc.
Pno.
aeolian
xi ka su he
sa he
T. R.
pizz.
percussion set
2.
3.
tam tam
paper


35
Fl. 1
cymbal
pppp
lots of wind sound
f
Fl. 2
aeolian
6
f
A. Sx.
slp.
ff
almost toneless
ord.
f
Soloist
Vibraphone
ppp
percussion set
5
f
6
Perc.
percussion set
3.
f
1.
play inside piano
bowing
15ma
f
Pno.
f
piano
damp
ff
8va
f
Ped.
paper
damp
p
mf
f
Ped.


39
Fl. 1
aeolian
ord.
6
3
f
Fl. 2
aeolian
ord.
6
f
A. Sx.
3
Soloist
Perc.
Pno.
mf
f


Fl. 1
Fl. 2
A. Sx.
Soloist
Perc.
Pno.
whistle tone
overblow
overblow
ord.
lots of wind sound
lots of wind sound
lots of wind sound
ord.
Vibraphone
damp piano string
to create a harmonic
damp piano string
to create a harmonic

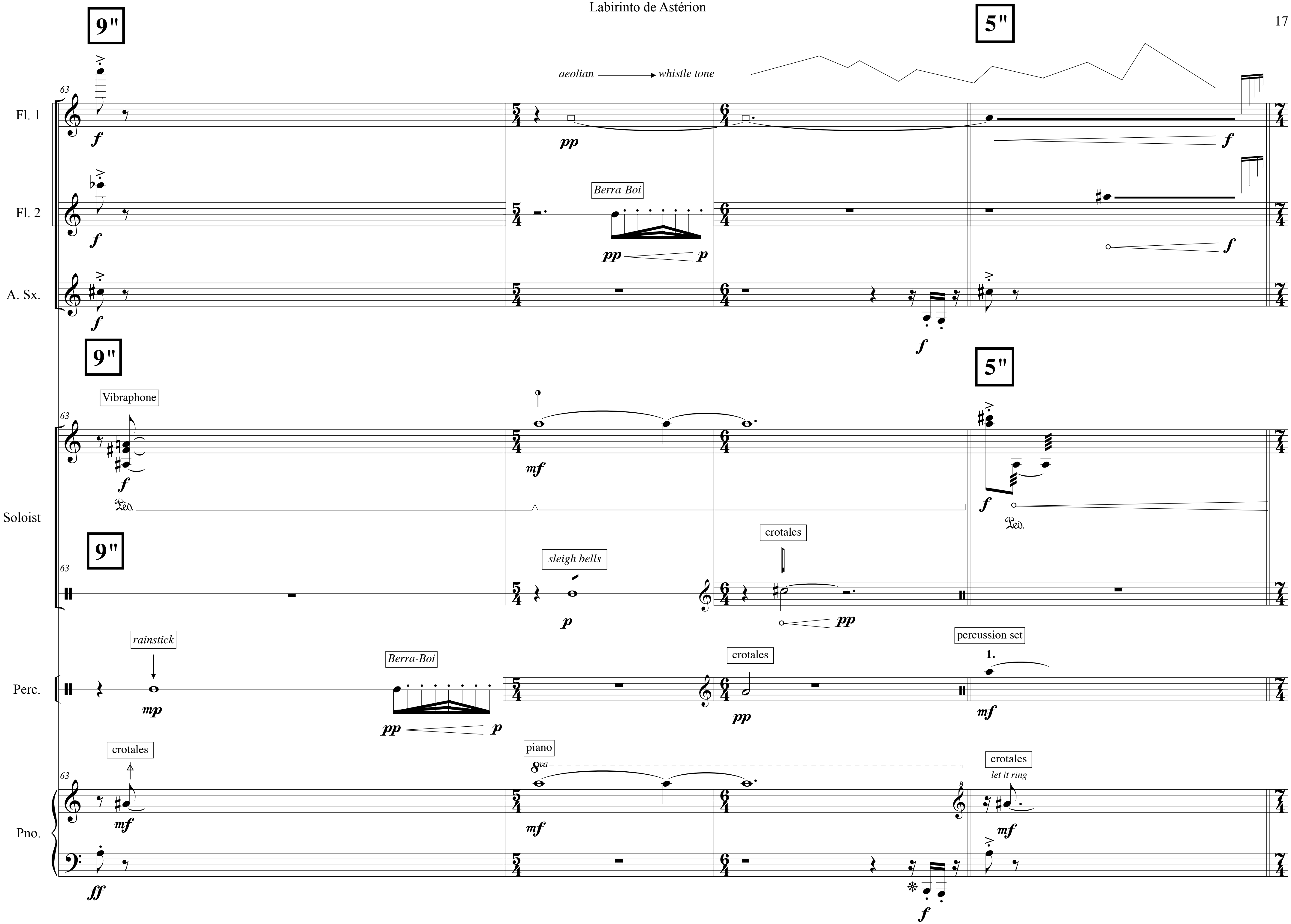

Fl. 1
Fl. 2
A. Sx.
Soloist
Perc.
Pno.
45
mp
mf
Vibraphone
pppp
Ped.
percussion set
f
p
fff
Ped.


48
Fl. 1
lots of wind sound
f
ppp
f
ppp
Fl. 2
lots of wind sound
f
ppp
f
A. Sx.
aeolian
fp
Soloist
f
percussion set
pp
Perc.
fff
Pno.

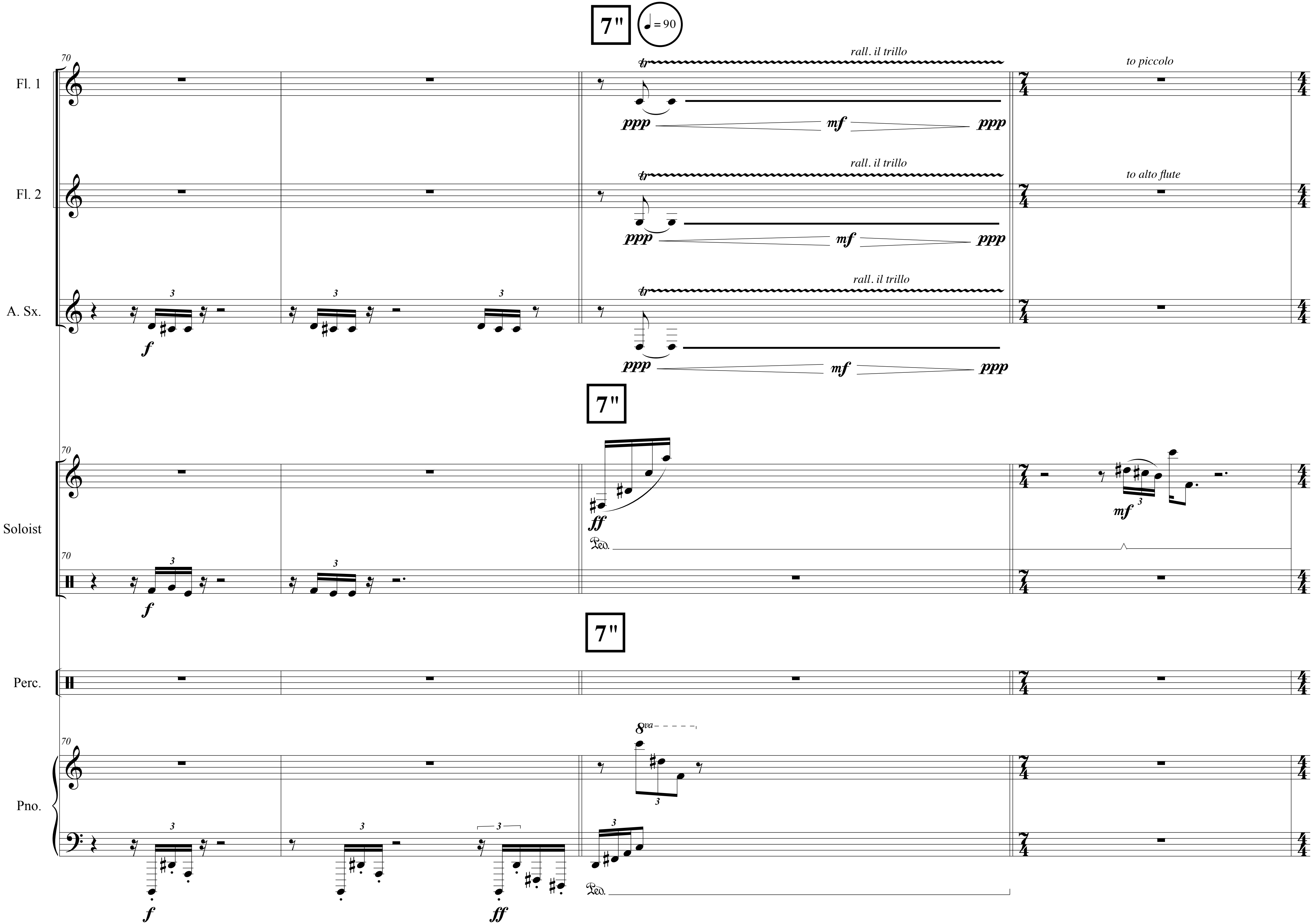

Fl. 1
Fl. 2
A. Sx.
Soloist
Perc.
Pno.
52
ppp
f
mf
p
pp
slp.
Strike piano strings in the higher register possible

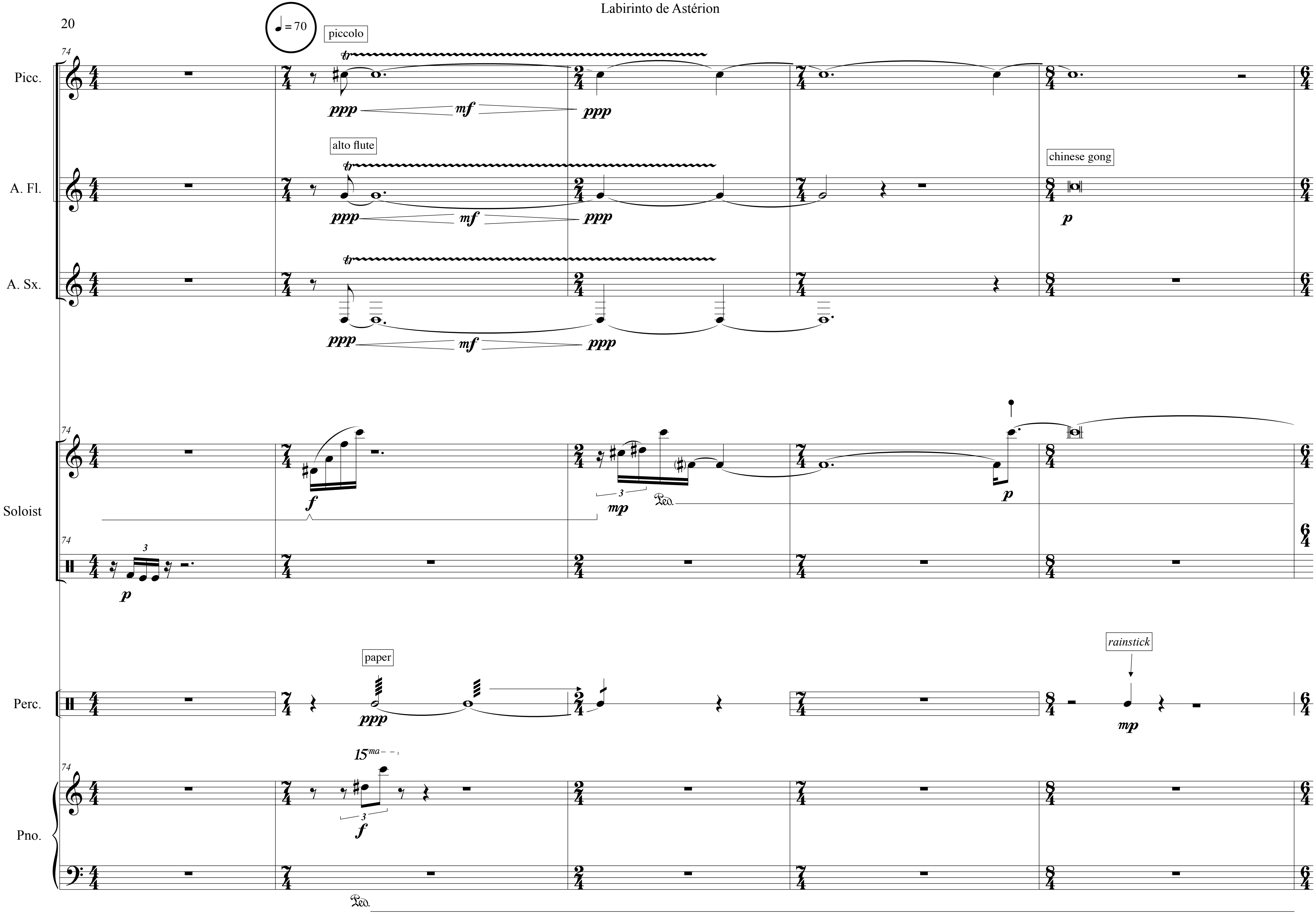

55
Fl. 1
Fl. 2
A. Sx.
slp.
slp.
slp.
55
Soloist
2.
3.
Perc.
percussion set
55
Pno.
damp
damp

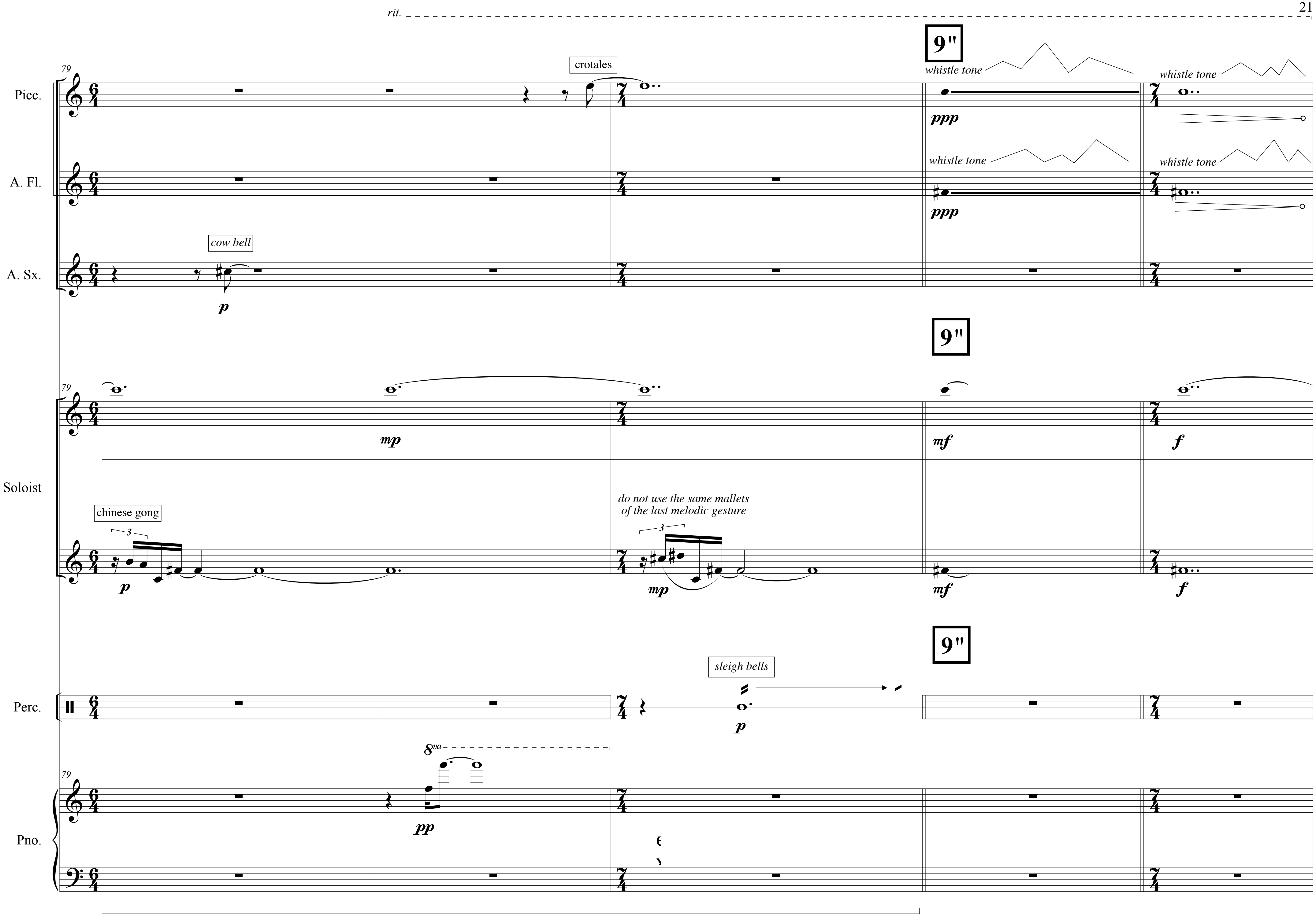

Fl. 1
Fl. 2
A. Sx.
Soloist
Strike piano strings in the higher register possible
percussion set
Perc.
Pno.


9"
5"
aeolian
whistle tone
63
Fl. 1
Fl. 2
Berra-Boi
A. Sx.
Vibraphone
Soloist
sleigh bells
crotales
rainstick
Perc.
Berra-Boi
crotales
percussion set
piano
crotales
let it ring
Pno.


67
Fl. 1
lots of wind sound
pp
mf
Fl. 2
lots of wind sound
pp
mf
mp
A. Sx.
f
ff
fp
Soloist
mp
Ped.
percussion set
Perc.
3.
play inside piano
gliss.
Pno.
crotales
let it ring
piano
piano


7"
♩= 90
70
Fl. 1
Fl. 2
A. Sx.
Soloist
Perc.
Pno.
rall. il trillo
to piccolo
to alto flute
tr
ppp
mf
ppp
f
ff
3
8va
Ped.

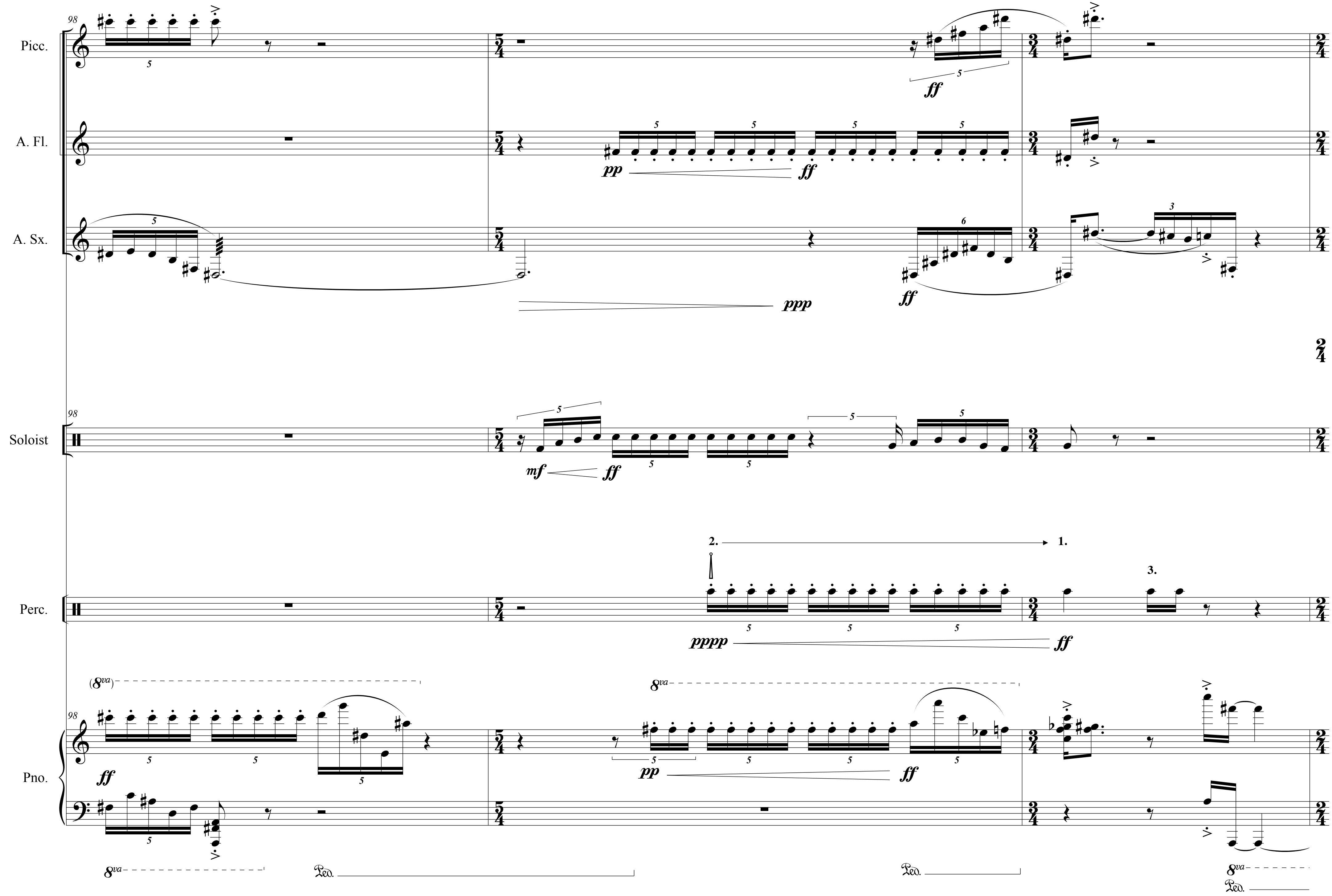

= 70
piccolo
alto flute
chinese gong
rainstick
paper
Picc.
A. Fl.
A. Sx.
Soloist
Perc.
Pno.
74
ppp
mf
ppp
p
f
mp
mp
15ma


rit.
79
Picc.
A. Fl.
A. Sx.
crotales
9"
whistle tone
whistle tone
whistle tone
whistle tone
ppp
ppp
cow bell
p
Soloist
79
mp
mf
f
chinese gong
3
p
do not use the same mallets
of the last melodic gesture
3
mp
mf
f
Perc.
sleigh bells
p
Pno.
79
8va
pp


Picc.
A. Fl.
A. Sx.
Soloist
Perc.
Pno.
almost toneless
percussion set
damp piano string to create a harmonic

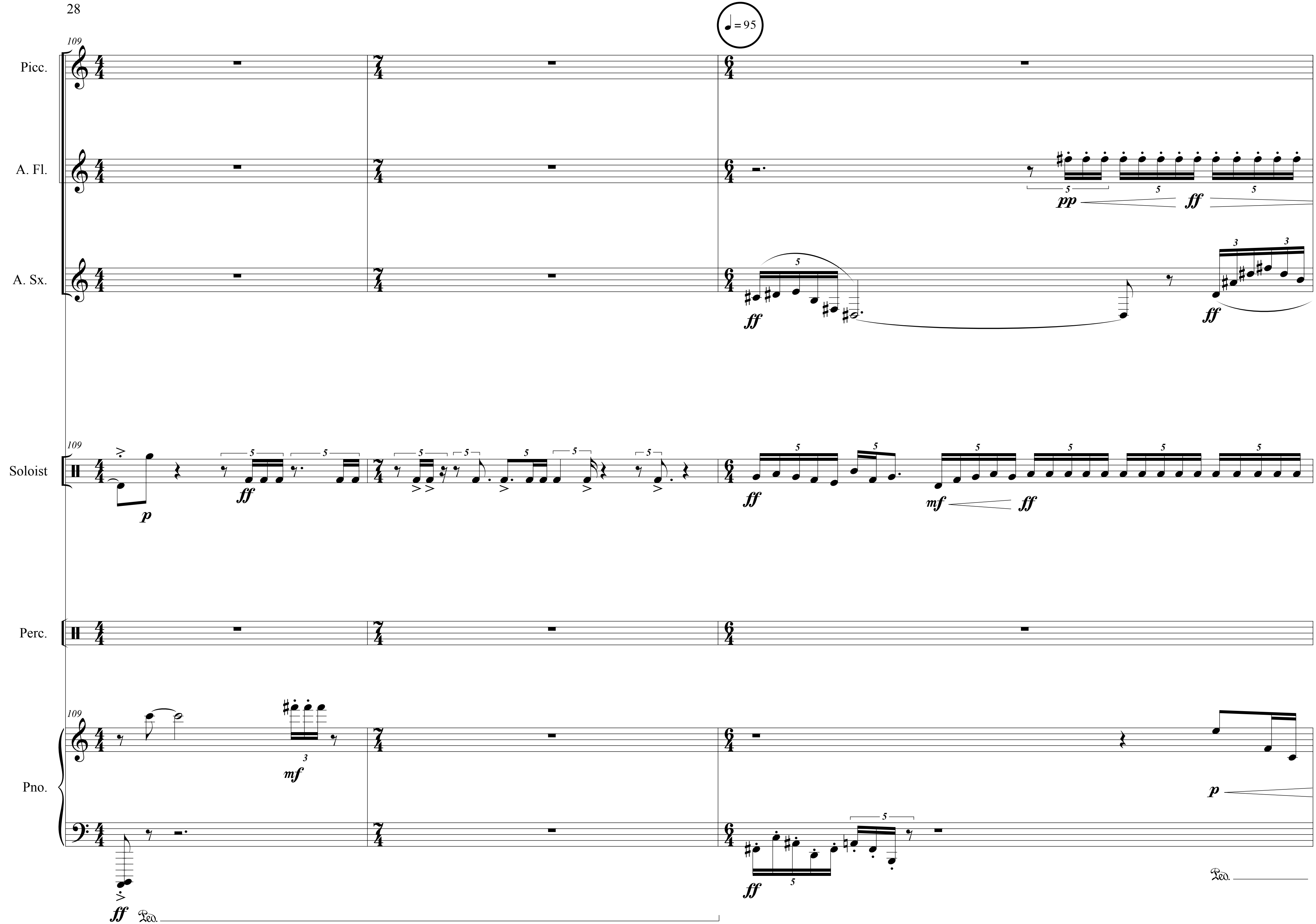

♩ = 80
89
Picc.
A. Fl.
A. Sx.
Soloist
percussion set
Perc.
Pno.
ppp
ff
pp
mf
f
p
8va
Ped.


♩= 90
93
Picc.
A. Fl.
A. Sx.
Soloist
Perc.
Pno.
ppp
ff
mf
damp
ord.
8va
mp


Picc.
A. Fl.
A. Sx.
Soloist
Perc.
Pno.
2.
1.
3.
pp
ff
ppp
mf
pppp


101
Picc.
A. Fl.
A. Sx.
ff
Vibraphone
Soloist
p
ff
mf
Perc.
tam tam
let ring
Pno.
mf
(8va)
Ped.


105
Picc.
A. Fl.
A. Sx.
Soloist
Perc.
Pno.
ff
sfz
mf
8va
Ped.


♩= 95
109
Picc.
A. Fl.
A. Sx.
Soloist
Perc.
Pno.
pp
ff
p
mf
Ped.

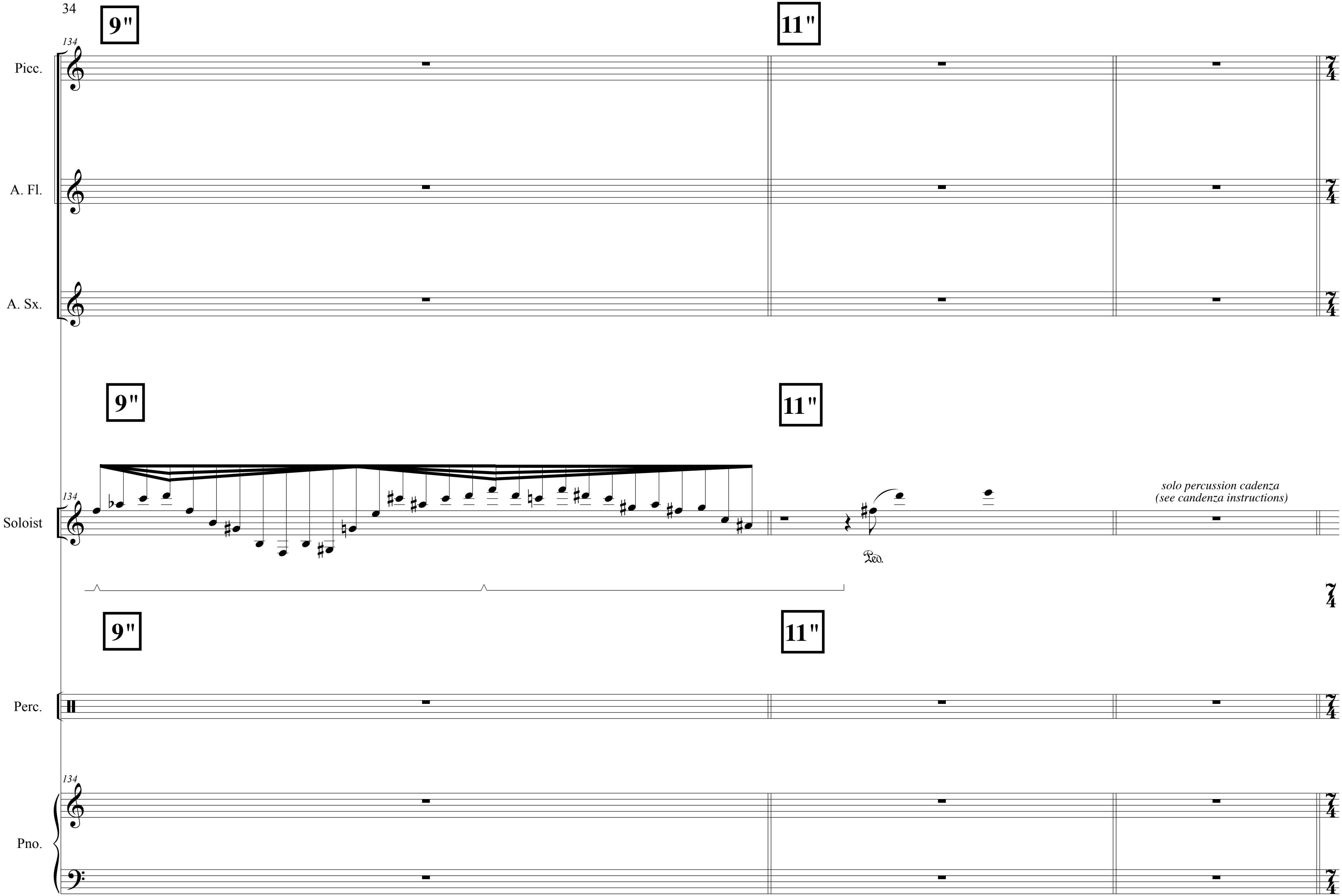

112
Picc.
lots of wind sound
A. Fl.
lots of wind sound
A. Sx.
slp.
Vibraphone
Soloist
percussion set
Perc.
Pno.
damp


115
Picc.
A. Fl.
A. Sx.
slp.
Vibraphone
Soloist
percussion set
Perc.
Pno.
ff
fff
f
6
3


Picc.
A. Fl.
A. Sx.
Soloist
Perc.
Pno.
118
ff
ffp
fff
ffff
mf
6
5
3


122
Picc.
ffff
to flute
A. Fl.
ffff
to flute
A. Sx.
slp.
ffff
fff
fff
fff
very virtuosistic
improvisation
Soloist
damp the following
piano strings
percussion set
Perc.
fff
fff
fff
Pno.
damp
damp
damp
fff
fff
fff

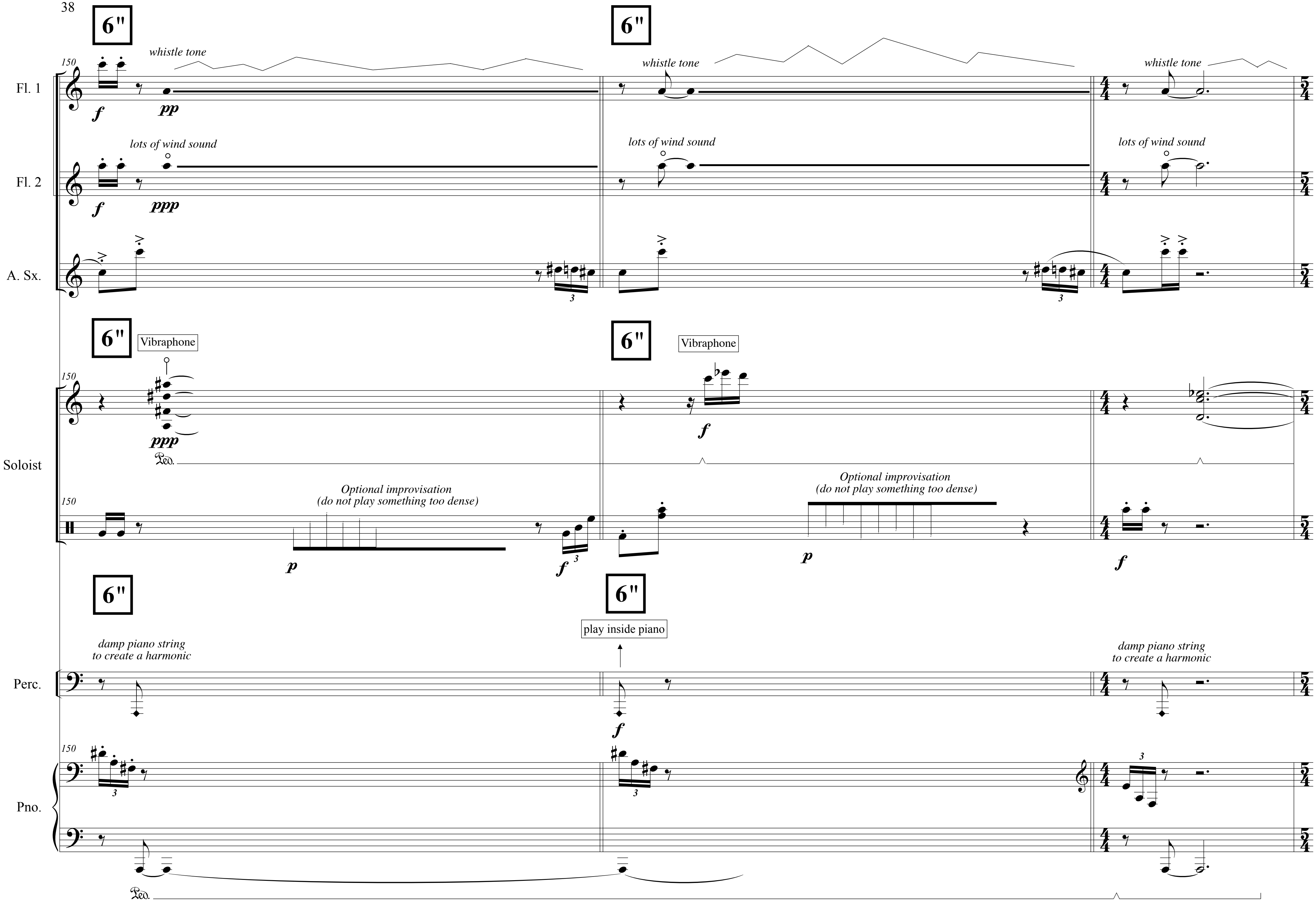

126
Picc.
A. Fl.
A. Sx.
slp.
aeolian
slp.
aeolian
slp.
aeolian
key click only
fff
f
ff
mf
ff
p
Vibraphone
Soloist
fff
ff
mf
Perc.
Pno.
damp
damp
damp

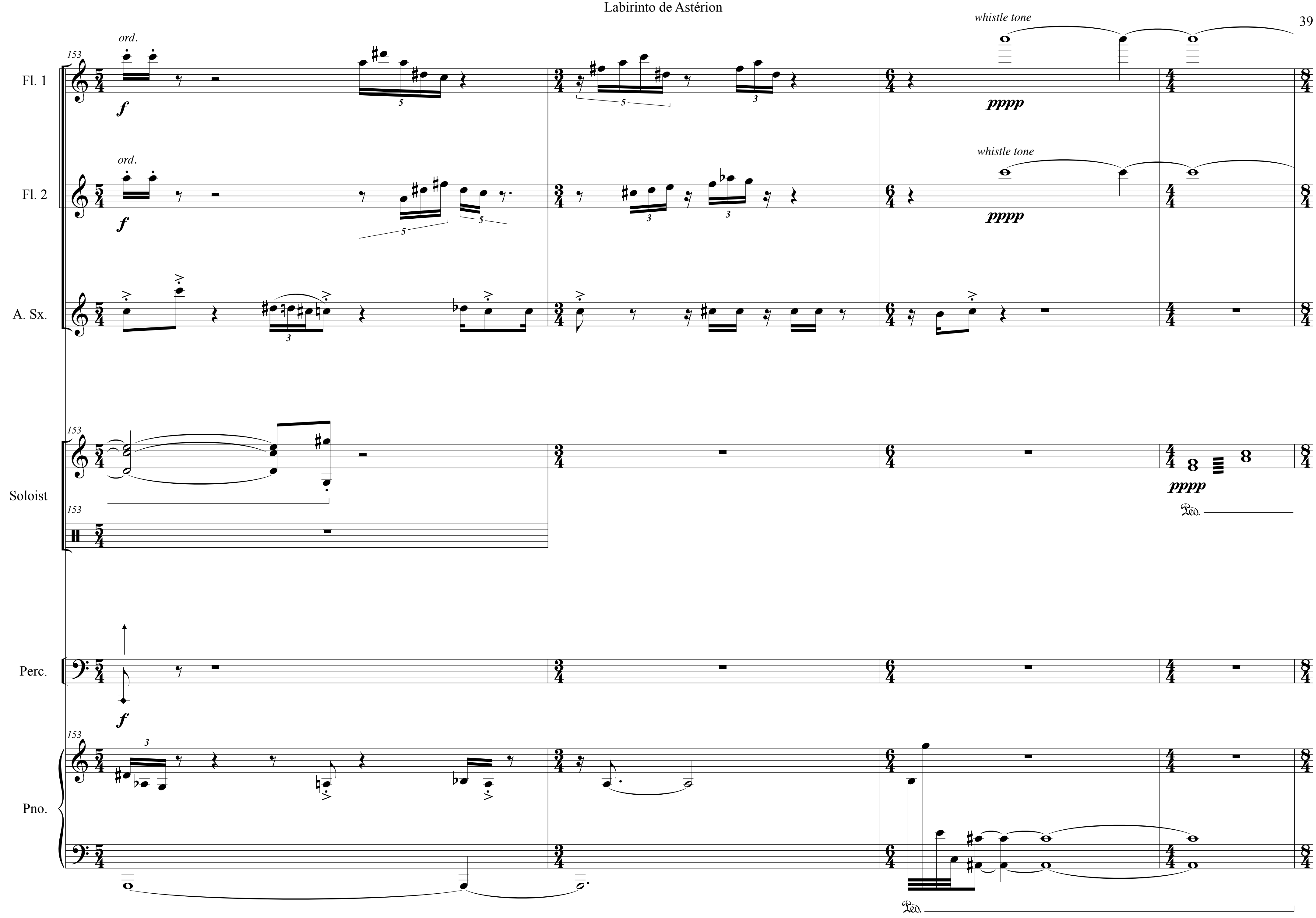

9"
11"
134
Picc.
A. Fl.
A. Sx.
Soloist
solo percussion cadenza
(see candenza instructions)
Ped.
Perc.
Pno.

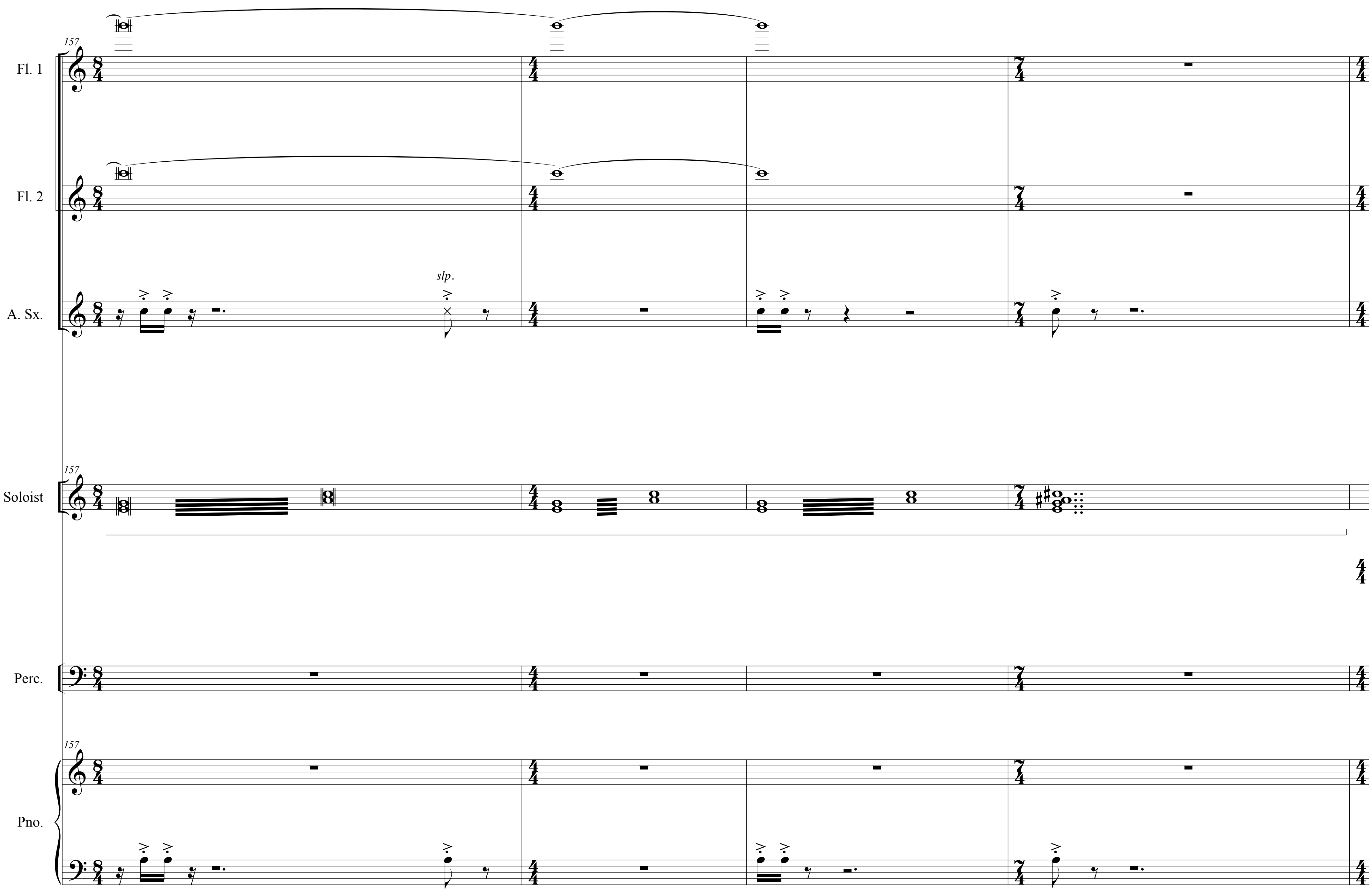

♩= 105
flute
aeolian
ord.
lots of wind sound
aeolian
flute
aeolian
aeolian
aeolian
aeolian
slp.
slp.
aeolian
Fl. 1
Fl. 2
A. Sx.
percussion set
Soloist
percussion set
1.
Perc.
Pno.
damp
damp
damp
8va
137


aeolian
Fl. 1
pp
f
p
aeolian
Fl. 2
slp.ord.
A. Sx.
Vibraphone
Soloist
Ped.
Perc.
mp
Pno.


146
aeolian → ord.
aeolian → ord.
slp.
Fl. 1
Fl. 2
A. Sx.
Soloist
percussion set
Perc.
Pno.
f
f
p
f
mf
f
f
6
6
6
3
3
3
3
3


6"
whistle tone
lots of wind sound
Fl. 1
Fl. 2
A. Sx.
Vibraphone
Soloist
Optional improvisation
(do not play something too dense)
damp piano string
to create a harmonic
play inside piano
Perc.
Pno.


153
Fl. 1
ord.
f
whistle tone
pppp
Fl. 2
ord.
f
whistle tone
pppp
A. Sx.
Soloist
153
153
pppp
Ped.
Perc.
f
Pno.
153
Ped.


157
Fl. 1
Fl. 2
A. Sx.
slp.
157
Soloist
Perc.
157
Pno.


161
Fl. 1
aeolian
pppp
f
Fl. 2
aeolian
pppp
f
A. Sx.
slp.
f
Soloist
percussion set
Perc.
percussion set
1.
f
Pno.
damp
damp
damp


aeolian
ord.
166
Fl. 1
pppp
ff
aeolian
ord.
Fl. 2
pppp
ff
A. Sx.
166
Soloist
mf
ff
Perc.
166
Pno.
damp

LEVY OLIVEIRA

mysteries of the unseen

For flute, Bb Clarinet, piano, violin, cello, electronics and light operator

Kansas City, MO
December 2019

©

INSTRUMENTATION:

Flute

Bb Clarinet

Piano

Violin

Cello

Electronics

Light operator

Mysteries of the unseen *was born from an idea of the composer to try to explore as many ways of interacting acoustic instruments and electronic sounds as possible. The first section of the piece is presentend by the acoustic instruments, the electronics play no part at it. In the end of this section, the electronics starts to complement the acoustic part, enriching its timbre and space movement. Throughout the development of the piece, the electronics gets more significance until it takes the main role.*

Mysteries of the Unseen *was composed in the IMPACT center at the University of Missouri at Kansas City (United States) with financial support from the Brazilian Coordinating Agency for Advanced Training of Graduate Personnel (CAPES).*

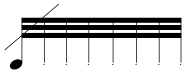
Levy Oliveira *(1993), born in Congonhas (Brazil), dedicates himself to musical composition since 2010. His music is being played frequently in Brazilian and international festivals and it has also been awarded in competitions in Brazil and abroad. In his creative work, the composer aims to understand how the listeners reacts to music and what are their expectations to posteriorly confirm or deny it. The use of electronics sounds has been constant in his work because of the wide and expressive array of timbral and spatial possibilities provided by this media. Nonetheless, he has composed for different instrumentations that goes from acousmatic pieces to solo instrument, chamber and orchestral music.*

For more information, please visit: ***www.levyoliveira.com***

PERFORMANCE INSTRUCTIONS

Score in C

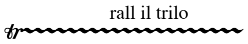
GENERAL



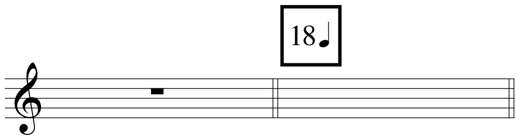
Fast repetition of the same pitch.

Tremolos are always fast and not measured.

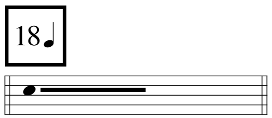
Trill note is always a half step above.



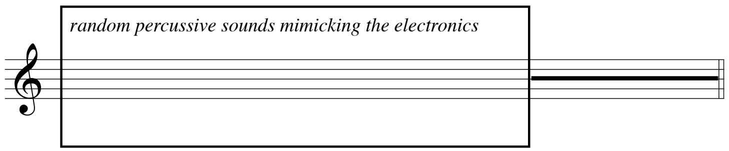
The overall duration should be respected, but the trill must progressively slow down.



In this score, there is traditional and proportional notation. Proportional notation happens always between double bars.

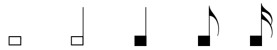


Hold note for a time proportional to the length of the line.
(In this example, the note extends half away through the duration of the measure.)

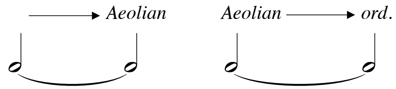


Play random percussive sounds in the instrument.
(the overall result should be similar to the electronic sounds)

WINDS



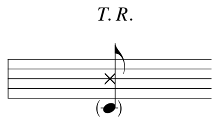
Aeolian sound.



Gradual transformation between ordinary playing and aeolian sound.

Bisbigliando.
Rapid and irregular alternation between the same pitch.

FLUTE ONLY



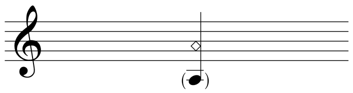
Tongue Ram.

Bb CLARINET ONLY

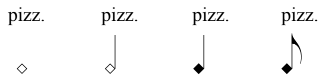
Slap.

PIANO

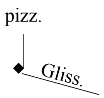
Damp piano string inside the piano.



Put finger in string node to make it sound one octave above.

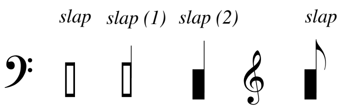


Plucked string.



Glissando in the strings inside the piano.

Pass a plectrum throughout the indicated piano string. Ex:



Slap the piano strings.

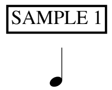
In the bass clef, there is three indications of slap: slap, slap (1) and slap (2).
Slap (2) must be the lowest in register and Slap (without any number) must be the highest in register, but none can be produced in a higher register than C3 (middle C).
Try to keep the same register for each time they appear.

Slap in the treble clef must be higher than C3 and lower than C6.

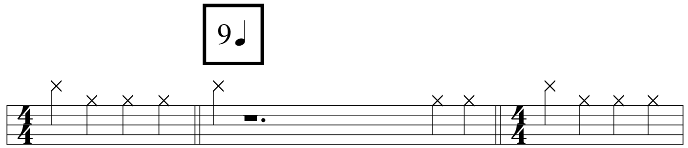
CONDUCTOR

A conductor staff is added from page 28 to 30 of the score. The conductor is asked to perform a small theatrical act in measure 126 and 132. Furthermore, he is aked to play with his cellphone lights from measure 133 to 135 (see cellphone light instrucitions).

ELECTRONICS AND CLICK-TRACK



Start sample.
There are 4 samples in this piece (available in stereo or 6.1).
Samples 3 and 4 are followed by a click-track.

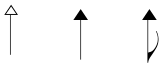
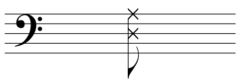
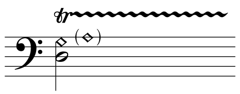
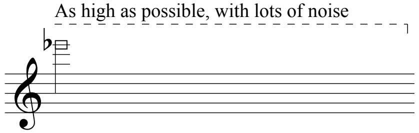


The piece should be played with a click-track (earphone) to facilitate the synchronism between performer and electronics. Click-track plays every beat.

In measures between double bars, click-track does not play. Cue to next measure is given two beats before.

> *Other instructions may appear in the score.*
> *In case of any doubts, please contact the composer at pacheco.levy@gmail.com*

STRINGS

Sul Pont.	*Sul ponticello*
MSP	*Molto sul ponticello*
Bridge	*Play on the bridge. The sounding result should be pitchless.*
ord. → MSP	*Gradual transiction between two bow positions.*
	*Increase bow pressure.*
	*Increase bow pressure and damp the string with the bow at the end.*
	*Play with lots of bow pressure.*
	*Play as high as possible.*
	*Vary tremolo speed.*
percussion 	*Hit instrument body to produce a percussive sound.*
col legno 	*The 'x' notehead means the col legno should be played in the specified strings after the bridge. Col legno without the 'x' notehead should be played following the tradition.*
	*Alternation between a fourth and a fifth harmonic.*
As high as possible, with lots of noise 	*Indicated pitch should be played as high as possible. It should be so high that there should be a lot of noise mixing with the pitch.*

BLINDFOLD

Every performer should have a black piece of fabric to use as a blindfold.
See Suplementary Video for more information.

LIGHT OPERATOR

ALL LIGHTS OFF	*All lights of the hall shoud be turned off. Light operator must follow the score to know the exact moment the lights should be turned off.*
ALL LIGHTS ON	*All lights of the hall shoud be turned back on. Light operator must follow the score to know the exact moment the lights should be turned on.*

CELLPHONE LIGHTS

TURN CELLPHONE LIGHTS ON	*Turn cellphone light on. The cellphone should be positioned in the stand in a way that the performer's face is lighted but the audience cannot see from where the source of light is coming. See complementary video for more information*
BLINK CELLPHONE LIGHTS 	*Change the brightness of your phone. See complementary video for more information.*
CELLPHONE LIGHTS OFF	*Turn cellphone lights off. See complementary video for more information.*

mysteries of the unseen

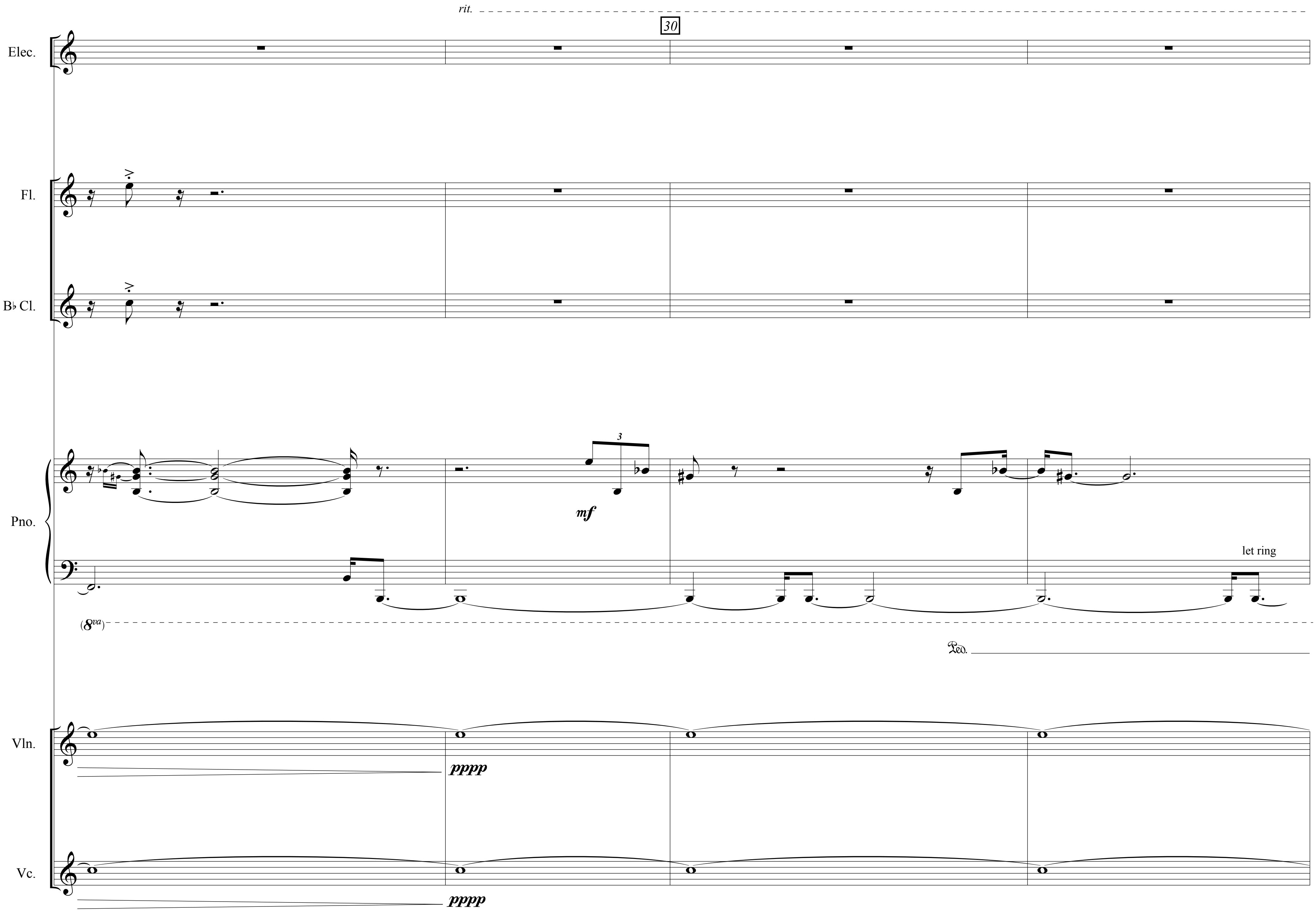
Levy Oliveira

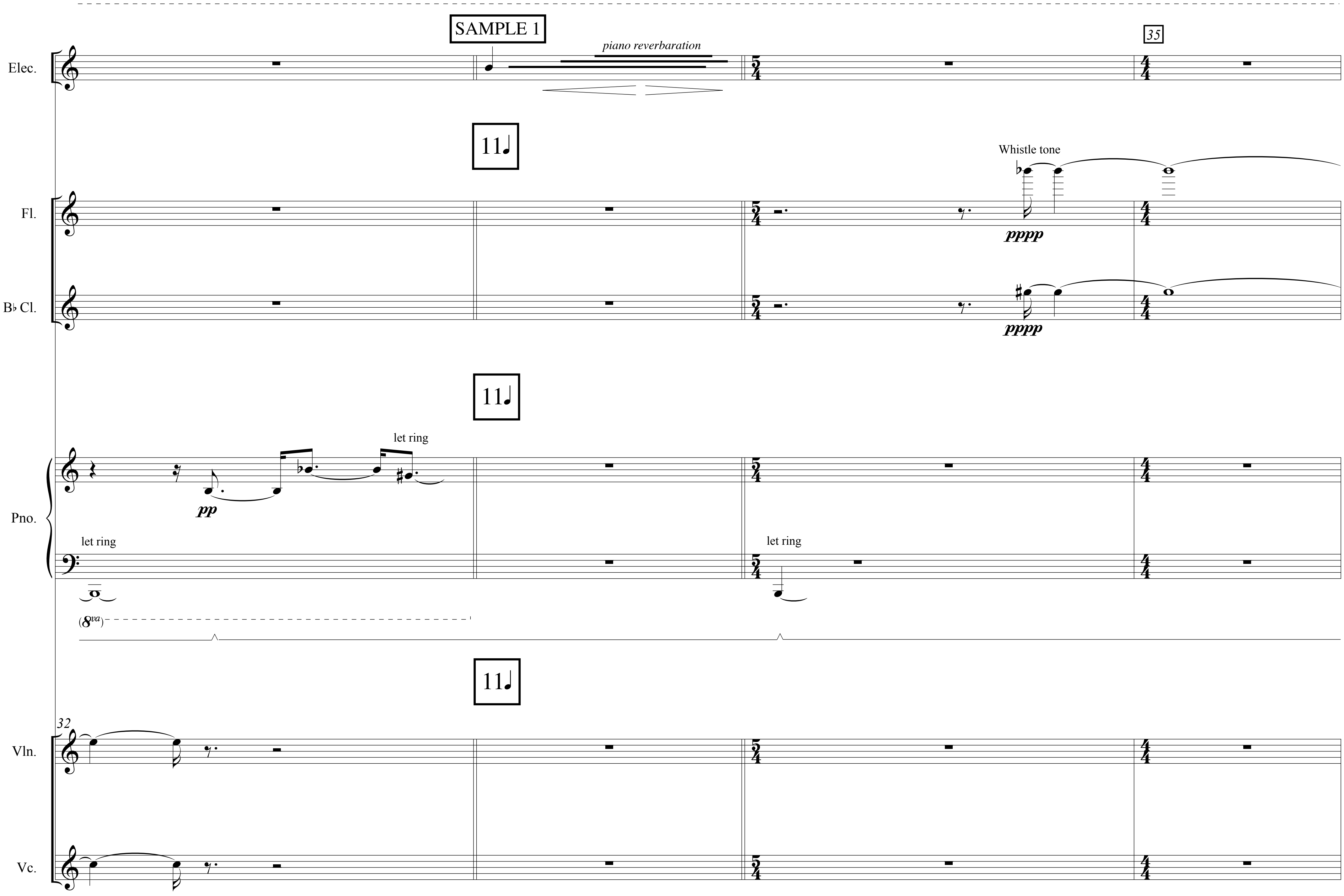

Elec.
10
Fl.
aeolian
rall. il trilo
mf
aeolian
fp
p
pp
pizz.
B♭ Cl.
aeolian
rall. il trilo
mf
aeolian
fp
p
pp
aeolian
ord.
mf
Pno.
ord.
mf
pizz.
pp
pizz.
let ring
mf
mf
f
mf
Vln.
mf
Gliss.
pizz.
let ring
mf
arco
f
pizz.
pizz.
arco
p
Vc.
pizz.
let ring
mf
arco
f
pizz.
pizz.
arco
p

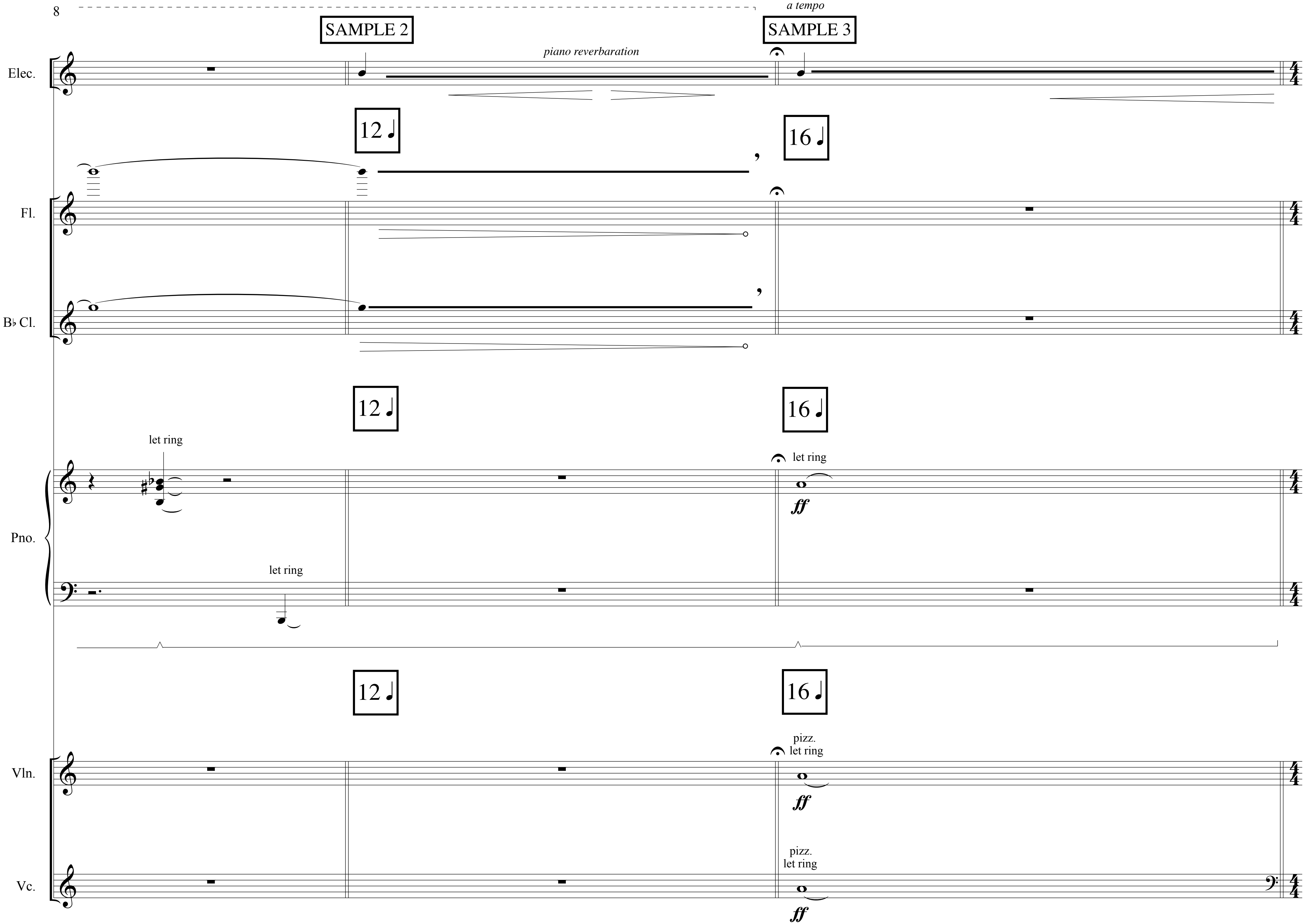
rit.
15
a tempo
Elec.
Fl.
aeolian
T. R.
B♭ Cl.
aeolian
slp.
aeolian
Pno.
damp
let ring
Ped.
Vln.
MSP
pizz.
Vc.
MSP
col legno

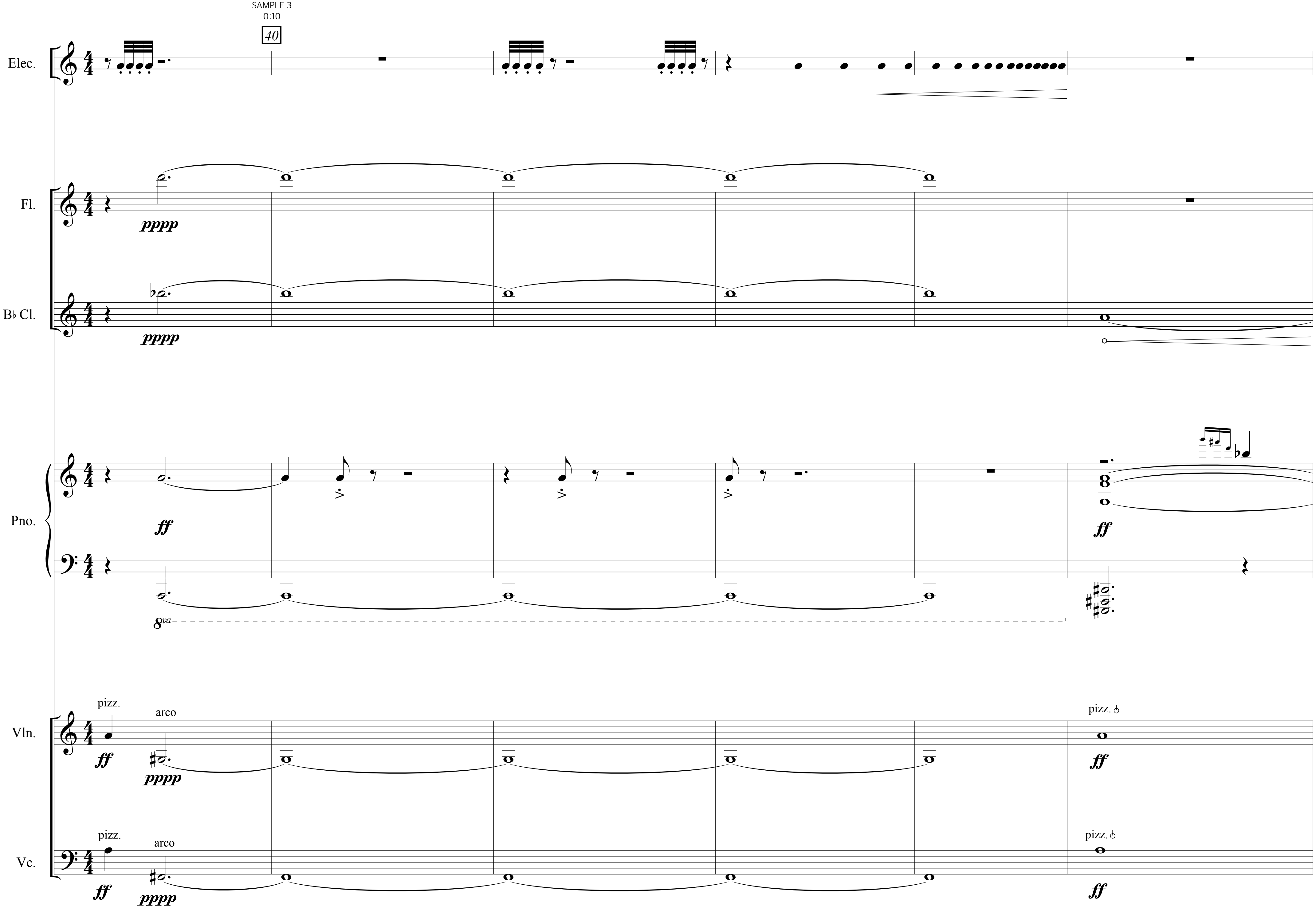

20
Elec.
Fl.
aeolian
ff
pp
B♭ Cl.
almost pitchless
pp
key click
+
rall. il trilo
ppp
ff
pp
Pno.
ff
ppp
p
Ped.
As high as possible, with lots of noise
Vln.
arco
rall. il trilo
ppp
ppp
pp
As high as possible, with lots of noise
Vc.
MSP
arco
rall. il trilo
ppp
ppp
pp


25
Elec.
Fl.
B♭ Cl.
Pno.
Vln.
Vc.
T. R.
slp.
ff
mf
f
damp
8va
Ped.
III
II
Gliss.
pizz.
arco
pppp
fp


rit.
30
Elec.
Fl.
B♭ Cl.
Pno.
mf
3
let ring
(8va)
Ped.
Vln.
pppp
Vc.
pppp


SAMPLE 1
piano reverbaration
35
Elec.
11♩
Whistle tone
Fl.
pppp
B♭ Cl.
pppp
11♩
let ring
pp
Pno.
let ring
let ring
(8va)
11♩
32
Vln.
Vc.


a tempo
SAMPLE 2
SAMPLE 3
piano reverbaration
Elec.
12
16
Fl.
B♭ Cl.
let ring
let ring
let ring
Pno.
ff
pizz.
let ring
Vln.
ff
pizz.
let ring
Vc.
ff

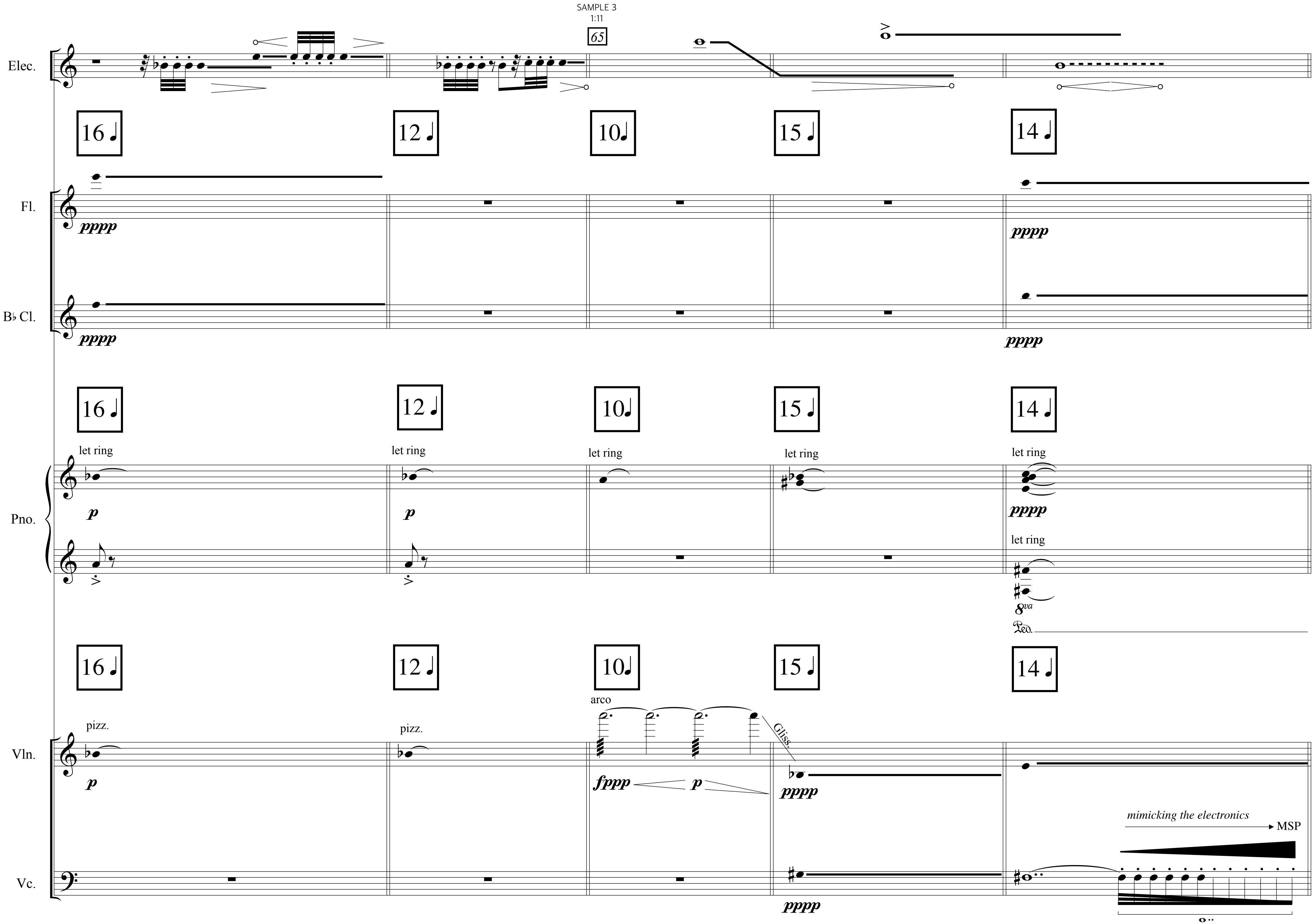

SAMPLE 3
0:10
40
Elec.
Fl.
B♭ Cl.
Pno.
Vln.
Vc.
pppp
ff
8va
pizz.
arco
pizz.

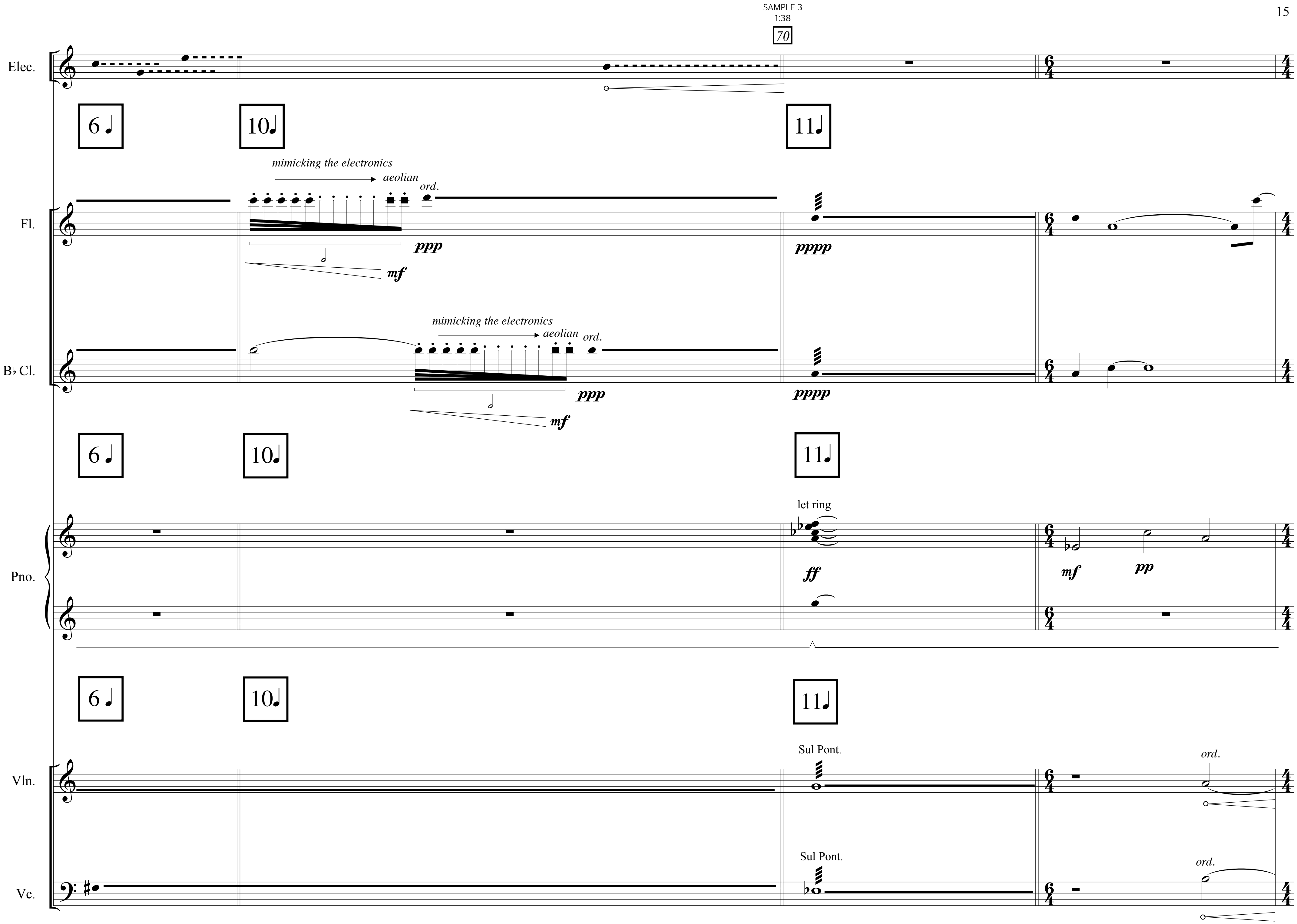

SAMPLE 3
0:20
45
Elec.
Fl.
B♭ Cl.
Gliss.
let ring
Pno.
pizz.
arco
Vln.
pizz.
arco
Vc.

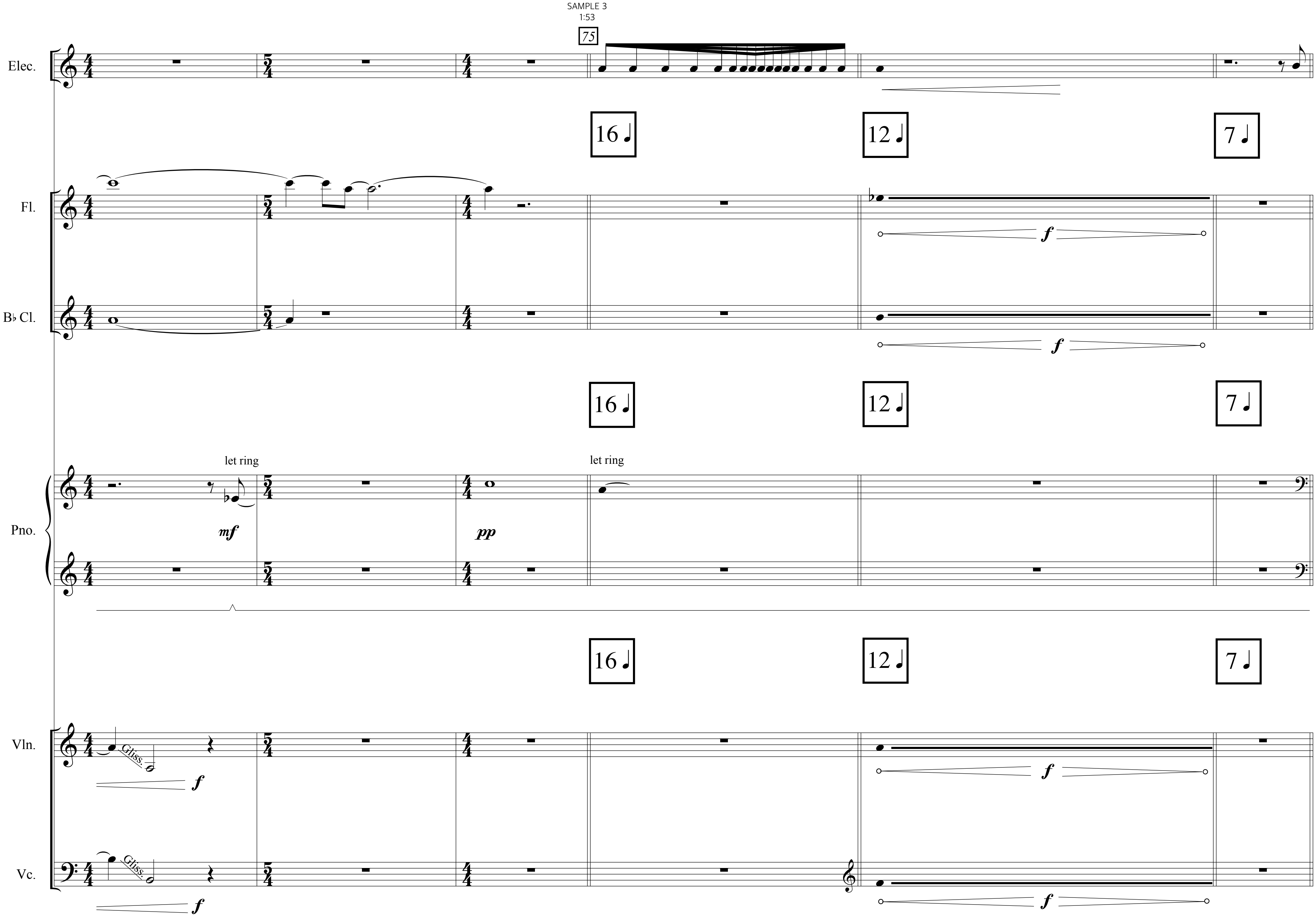

SAMPLE 3
0:30
50
Elec.
piano reverbaration
Fl.
pppp
f
pppp
B♭ Cl.
ff
ffp
ff
50
5
Pno.
ff
Ped.
8va
Ped.
50
Vln.
pppp
f
pppp
Vc.
pppp
f
pppp

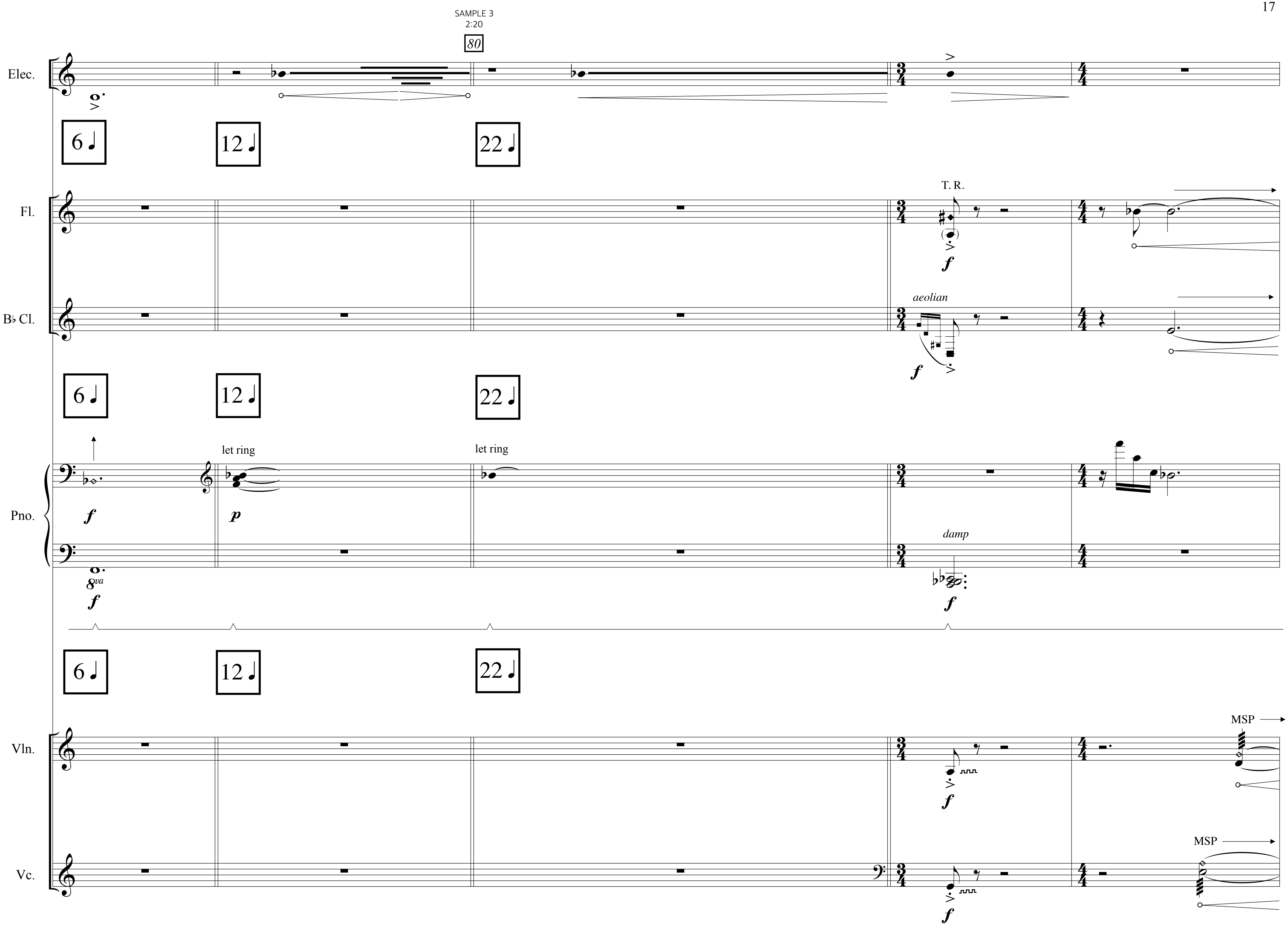

SAMPLE 3
0:40
55
Elec.
Fl.
B♭ Cl.
Pno.
Vln.
Vc.
tr
f
pppp
fp

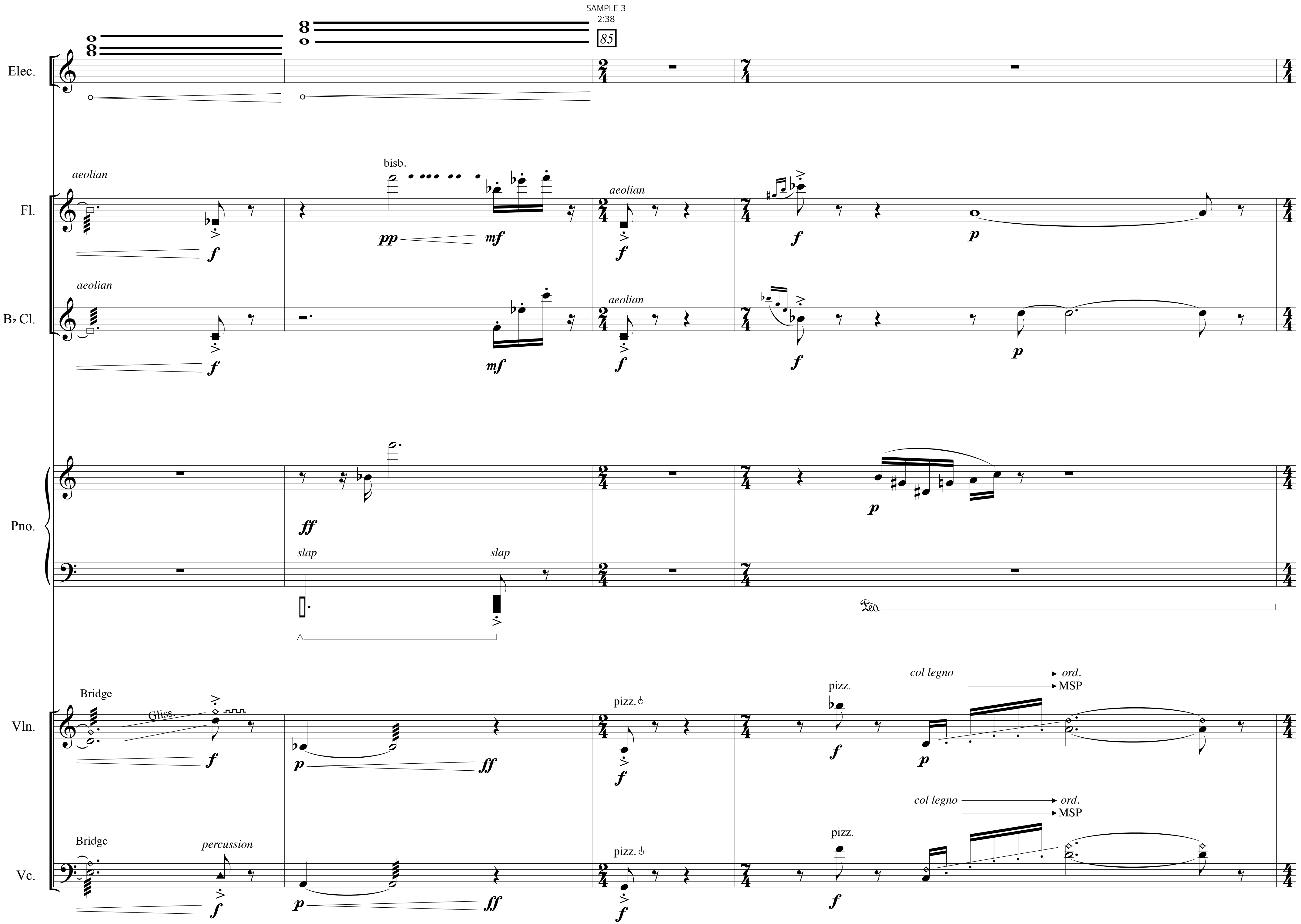

SAMPLE 3
0:51
60
Elec.
piano reverbaration
Fl.
B♭ Cl.
Pno.
Vln.
Vc.

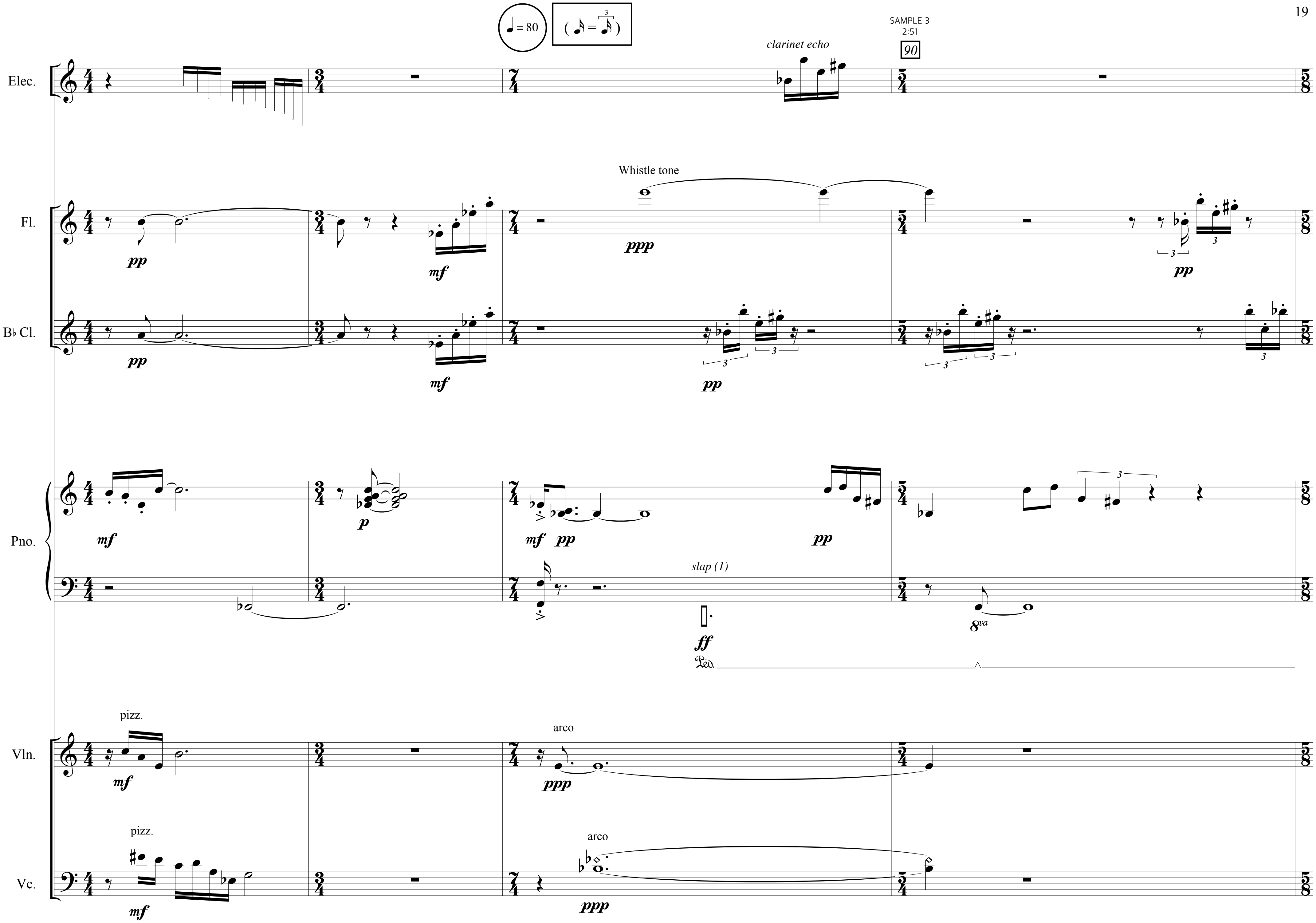

SAMPLE 3
1:11
65
Elec.
16
12
10
15
14
Fl.
pppp
pppp
B♭ Cl.
pppp
pppp
16
12
10
15
14
let ring
let ring
let ring
let ring
let ring
Pno.
p
p
pppp
let ring
8va
16
12
10
15
14
pizz.
pizz.
arco
Gliss.
Vln.
p
fppp
p
pppp
mimicking the electronics
MSP
Vc.
pppp

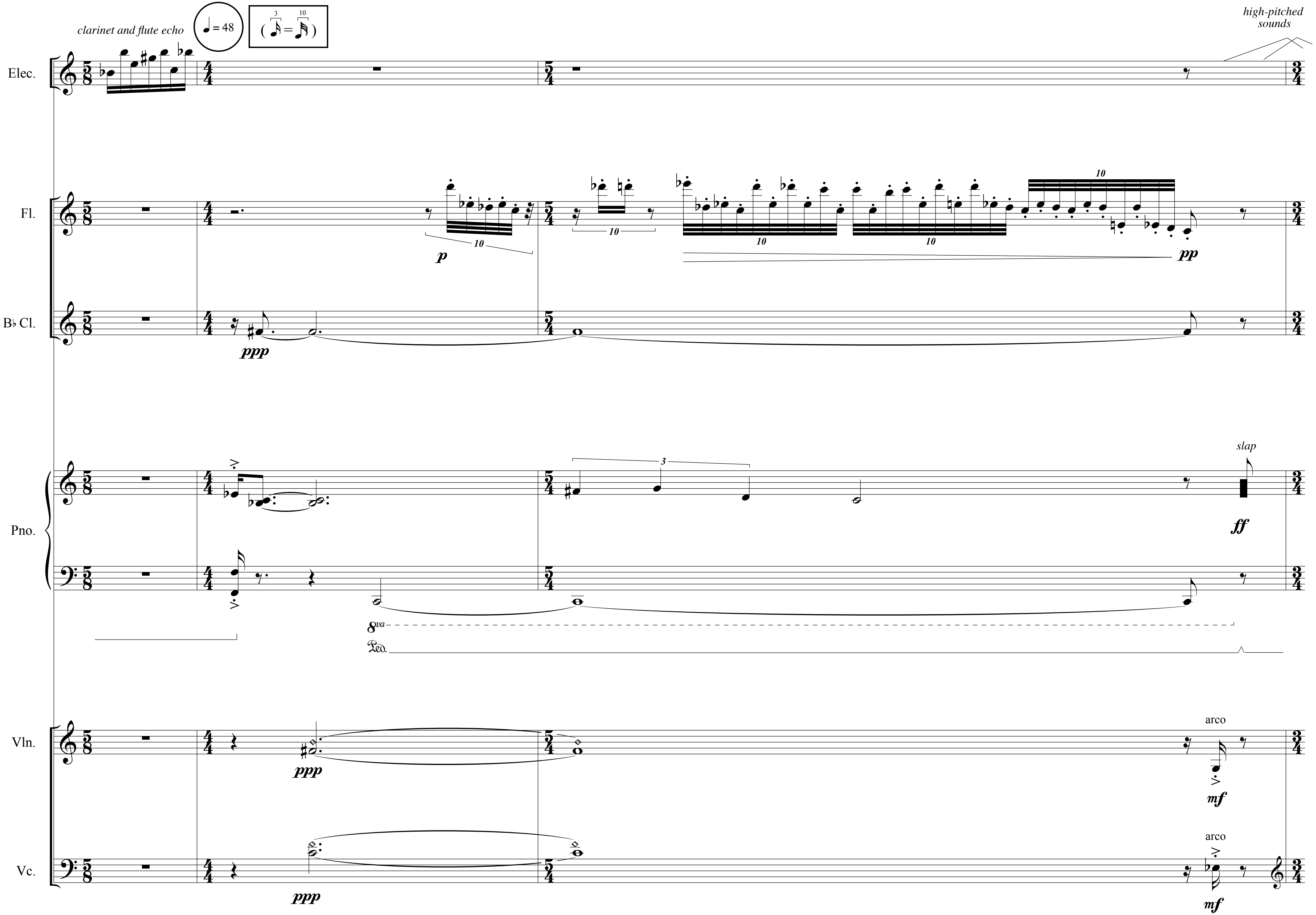

SAMPLE 3
1:38
70
Elec.
6
10
11
mimicking the electronics
aeolian
ord.
ppp
mf
pppp
Fl.
B♭ Cl.
let ring
ff
mf
pp
Pno.
Sul Pont.
ord.
Vln.
Vc.

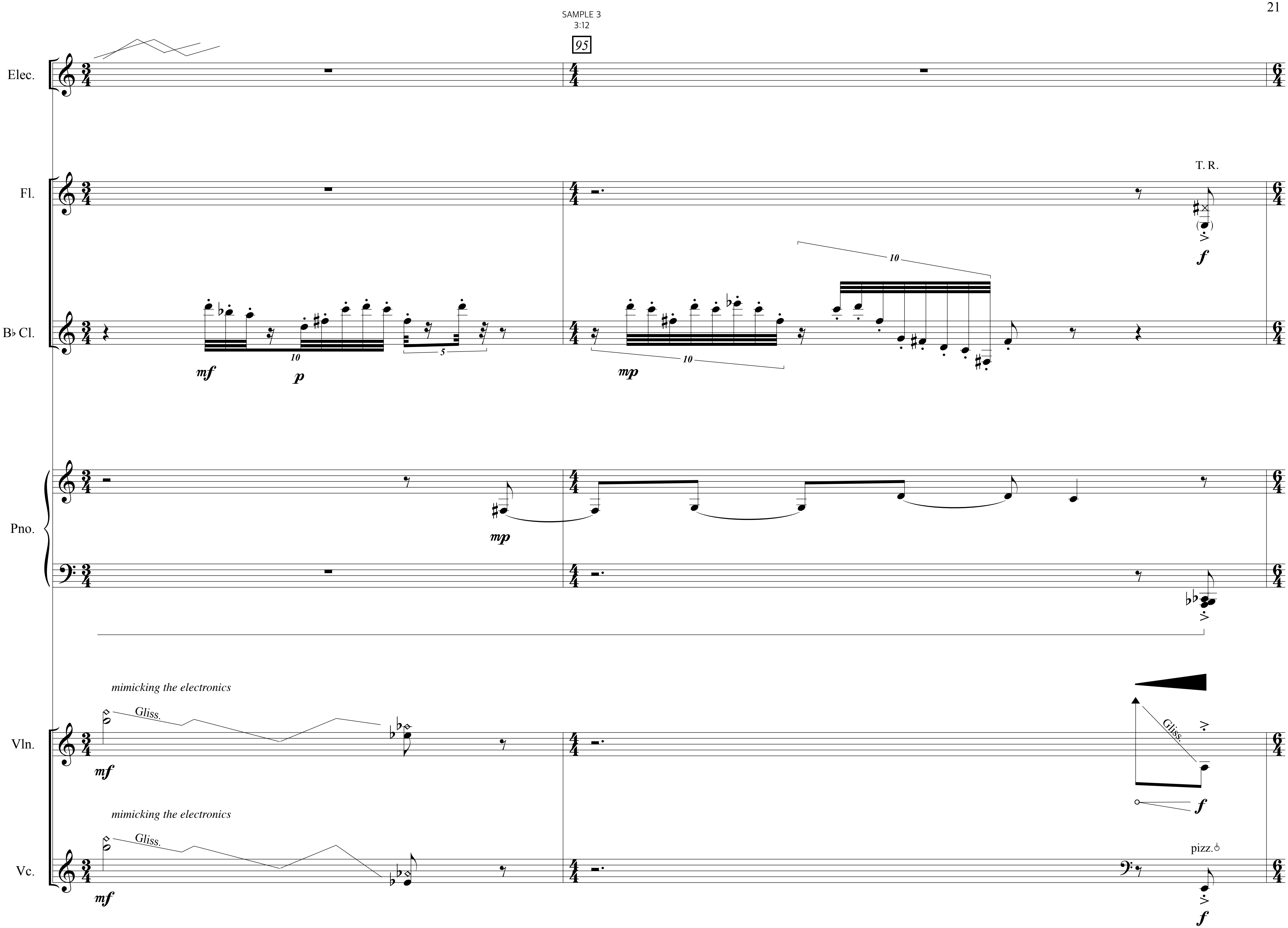

SAMPLE 3
1:53
75
Elec.
16
12
7
Fl.
B♭ Cl.
f
let ring
Pno.
mf
pp
Vln.
Vc.
Gliss.

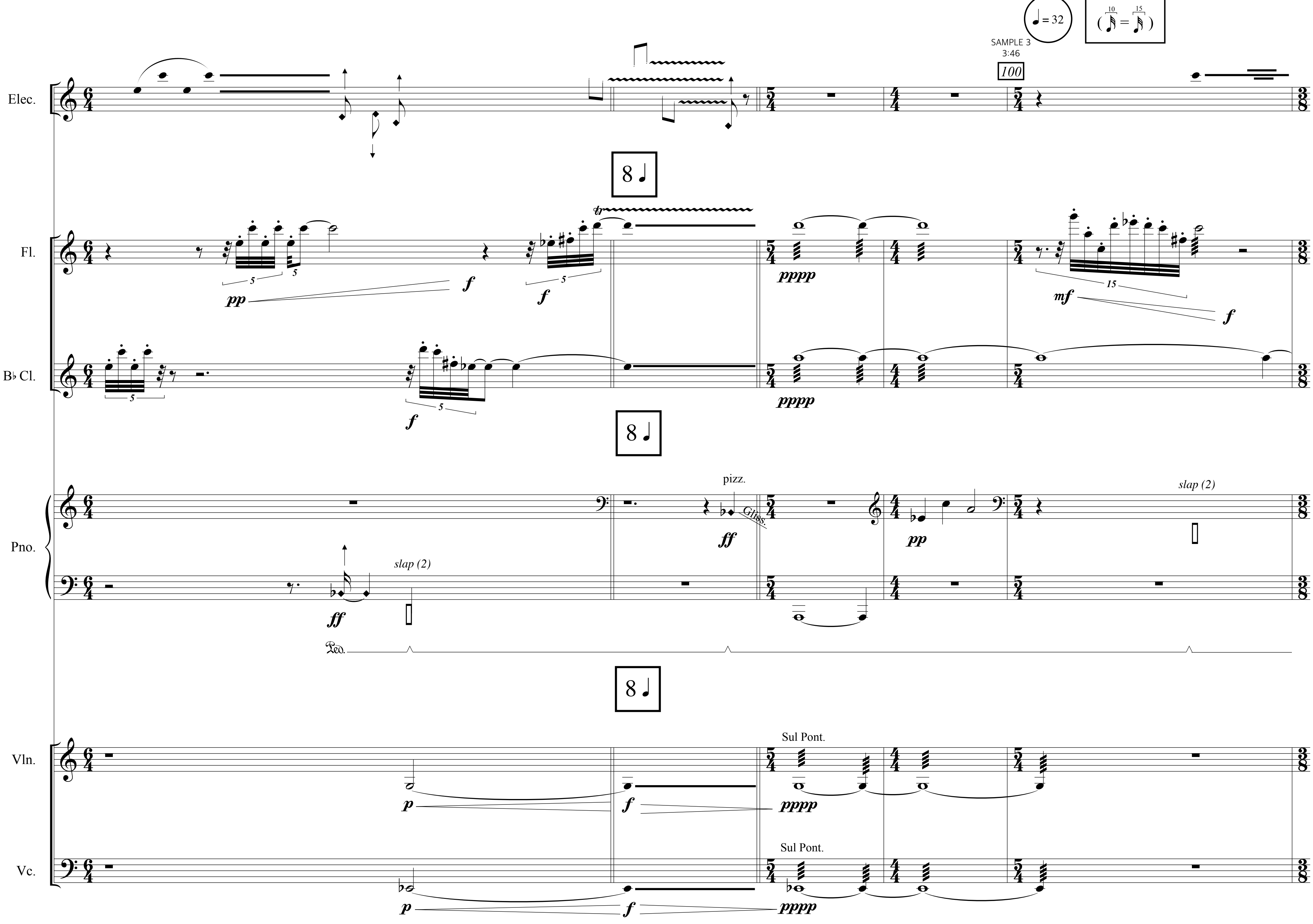

SAMPLE 3
2:20
80
Elec.
6
12
22
Fl.
T. R.
B♭ Cl.
aeolian
let ring
let ring
Pno.
damp
8va
Vln.
MSP
Vc.
MSP

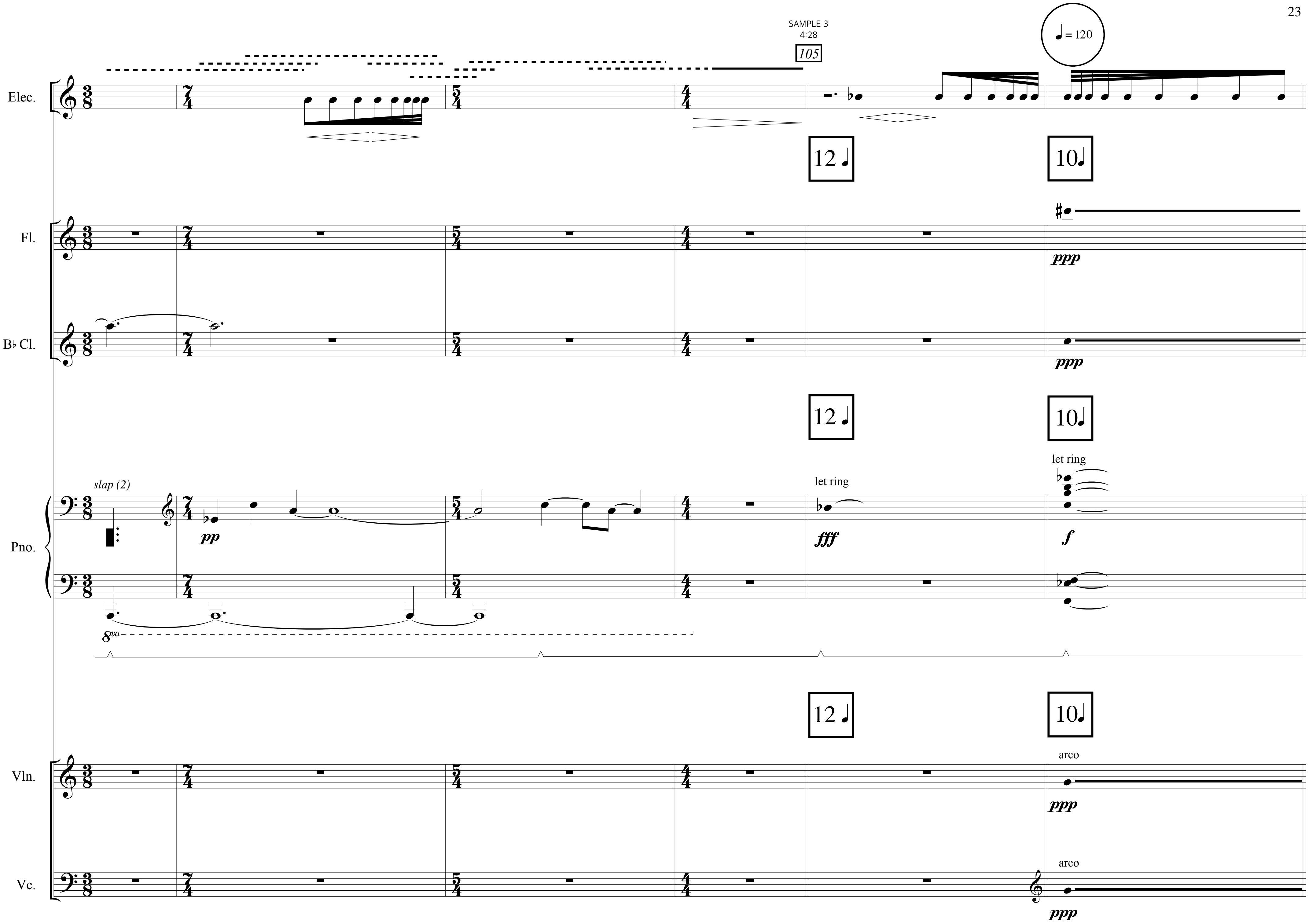

SAMPLE 3
2:38
85
Elec.
aeolian
bisb.
Fl.
pp
mf
f
p
aeolian
B♭ Cl.
Pno.
ff
slap
Vln.
Bridge
Gliss.
pizz.
col legno
ord.
MSP
Vc.
percussion


♩ = 80
SAMPLE 3
2:51
90
clarinet echo
Whistle tone
Elec.
Fl.
B♭ Cl.
Pno.
Vln.
Vc.
pp
mf
ppp
p
ff
slap (1)
8va
pizz.
arco


clarinet and flute echo
♩ = 48
high-pitched sounds
Elec.
Fl.
B♭ Cl.
Pno.
Vln.
Vc.
p
pp
ppp
slap
ff
8va
arco
mf


SAMPLE 3
3:12
95
Elec.
Fl.
T. R.
B♭ Cl.
Pno.
Vln.
mimicking the electronics
Gliss.
Vc.
mimicking the electronics
Gliss.
pizz.


Elec.
Fl.
B♭ Cl.
Pno.
Vln.
Vc.
SAMPLE 3
3:46
100
♩= 32
8 ♩
pizz.
Gliss.
slap (2)
Sul Pont.
Ped.


SAMPLE 3
4:28
105
♩= 120
Elec.
Fl.
B♭ Cl.
Pno.
Vln.
Vc.
12 ♩
10♩
slap (2)
pp
let ring
fff
f
ppp
arco
8va

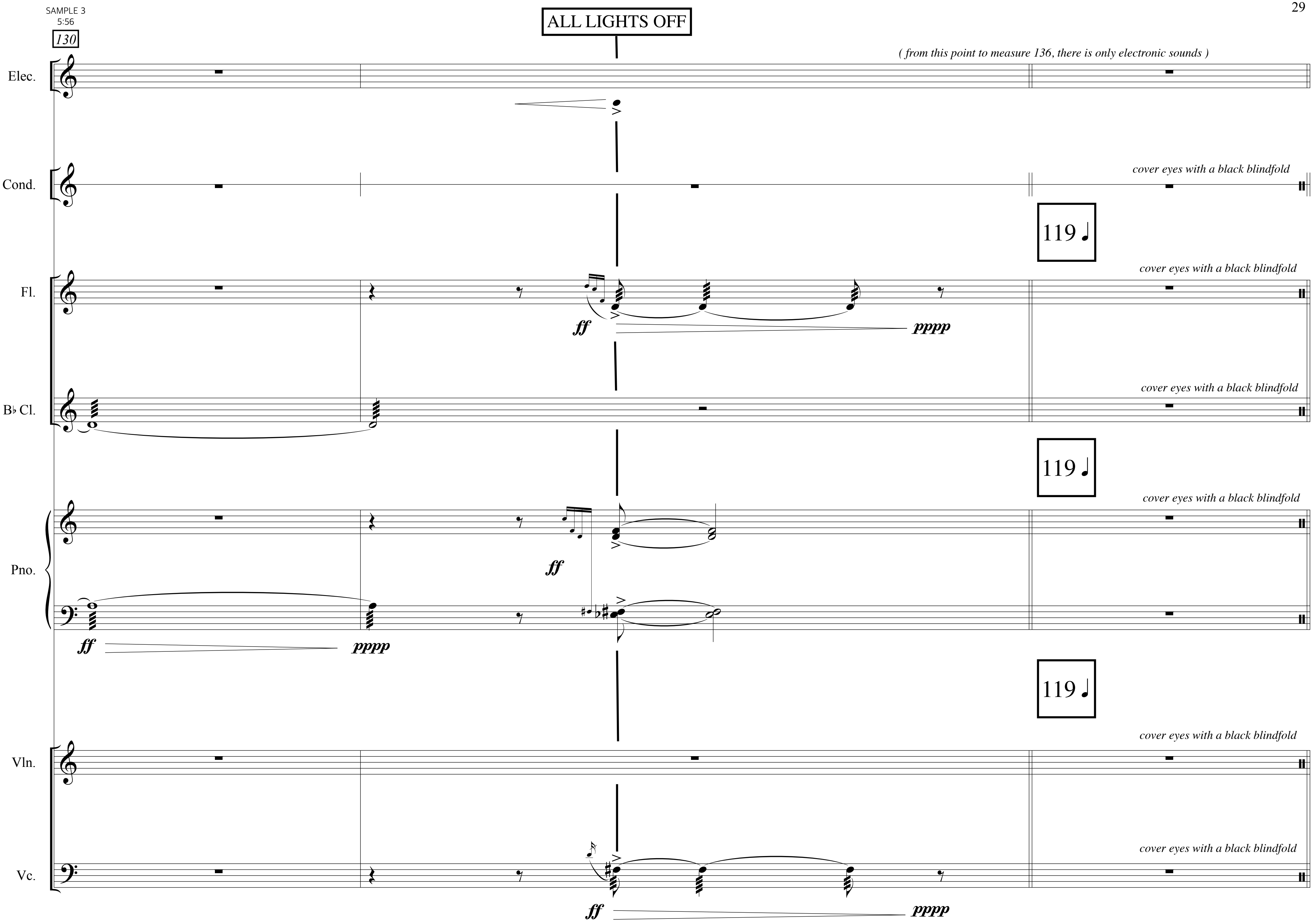

SAMPLE 3
5:13
110
Elec.
granular sounds
25 ♩
Fl.
aeolian
ff
B♭ Cl.
aeolian
ff
Pno.
Ped.
Vln.
MSP
rall. il trilo
Vc.
MSP

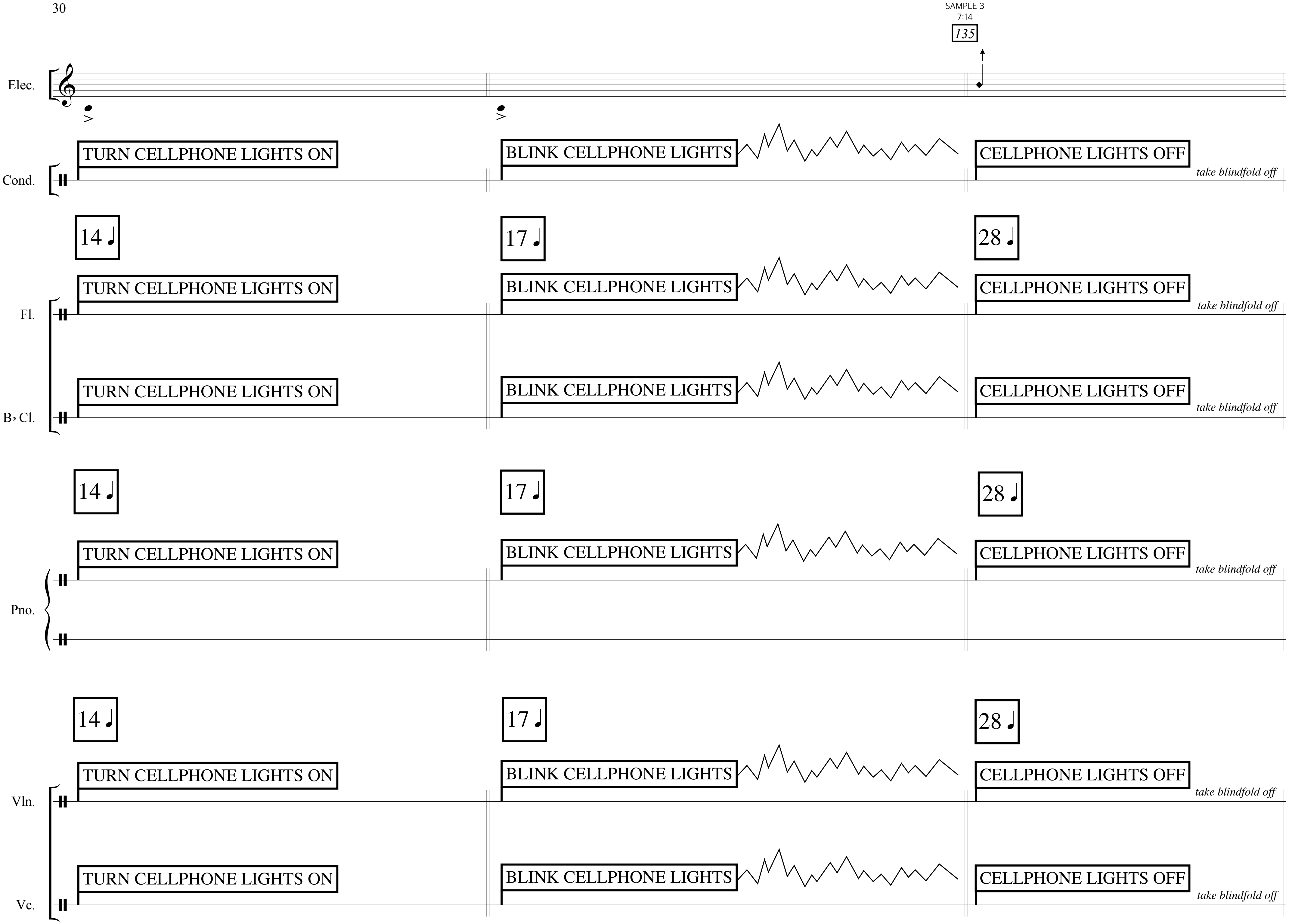

SAMPLE 3
5:25
115
Elec.
Fl.
B♭ Cl.
Pno.
Vln.
Vc.
9 ♩
aeolian
ord.
damp
slap (2)
Gliss.
Jete
Col legno
fff
ff
f
p
ppp

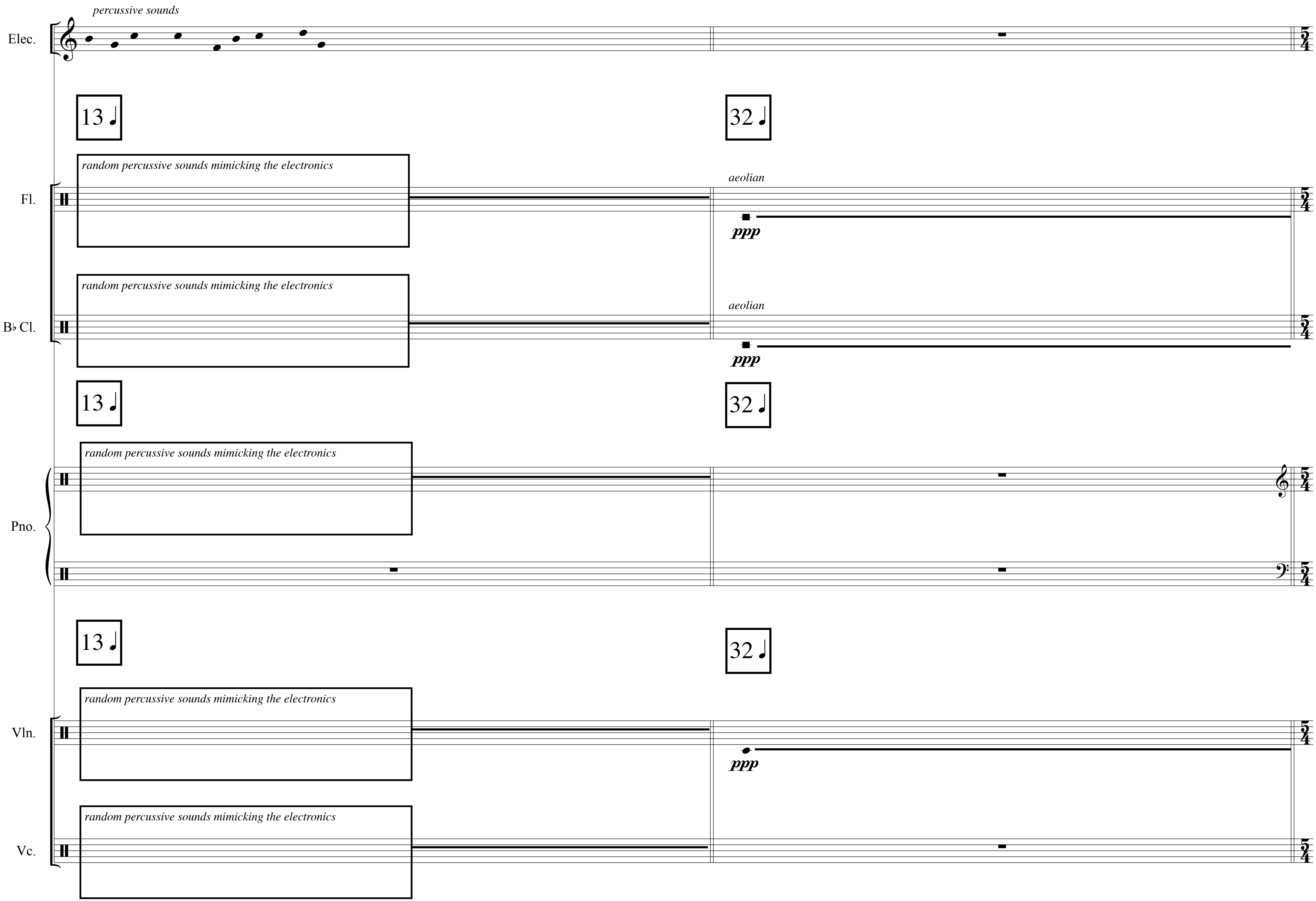

SAMPLE 3
5:33
120
Elec.
Fl.
B♭ Cl.
Pno.
Vln.
Vc.
Gliss.
Gliss.
fp
ff
pppp
ppp
f
Ped.
Ped.

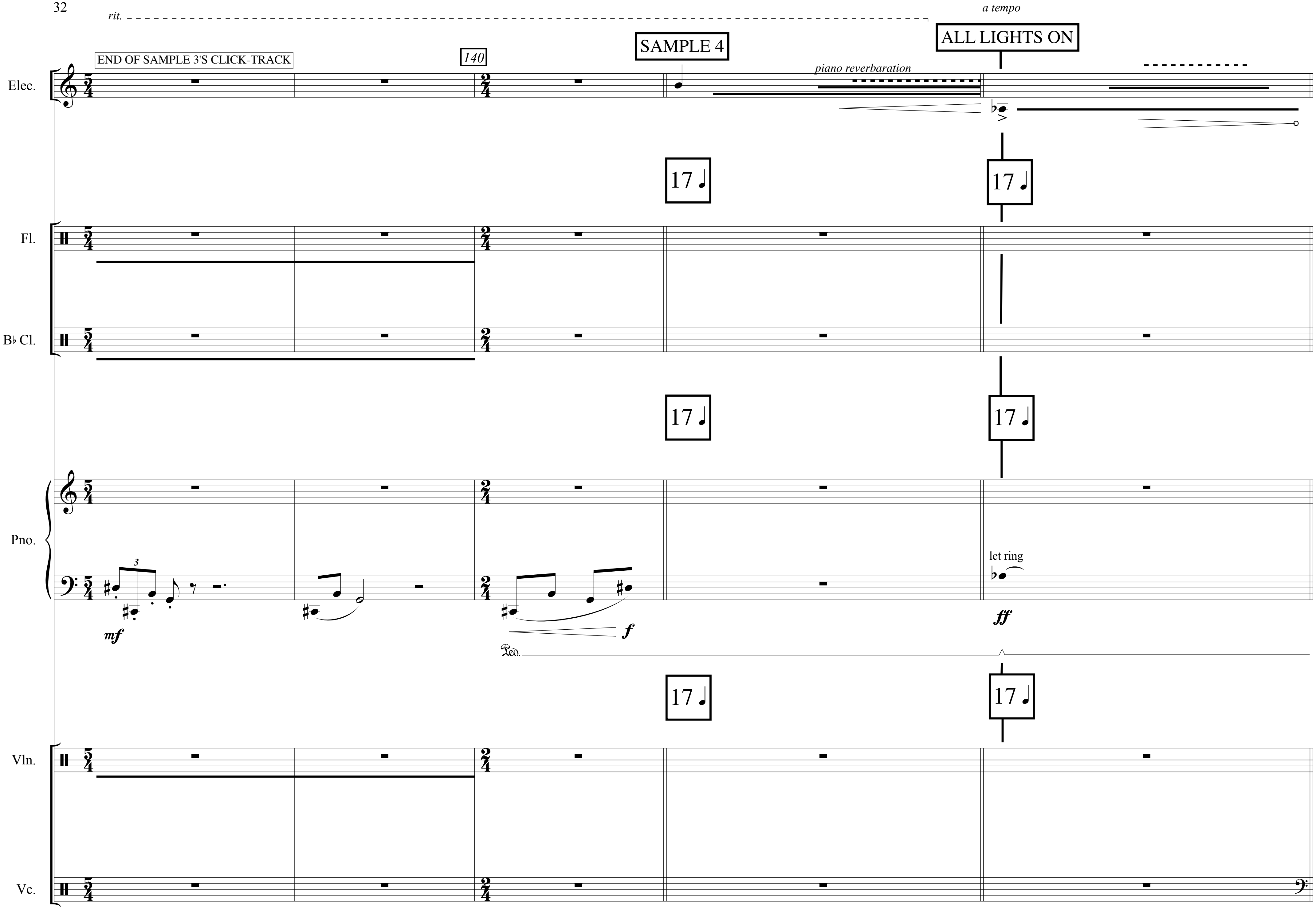

Elec.
Fl.
pp
ff
B♭ Cl.
ff
ffpp
ff
Pno.
ppp
ff
pppp
ff
fff
Ped.
Ped.
Vln.
Gliss.
mf
ff
sfz
p
Vc.
Gliss.
ff

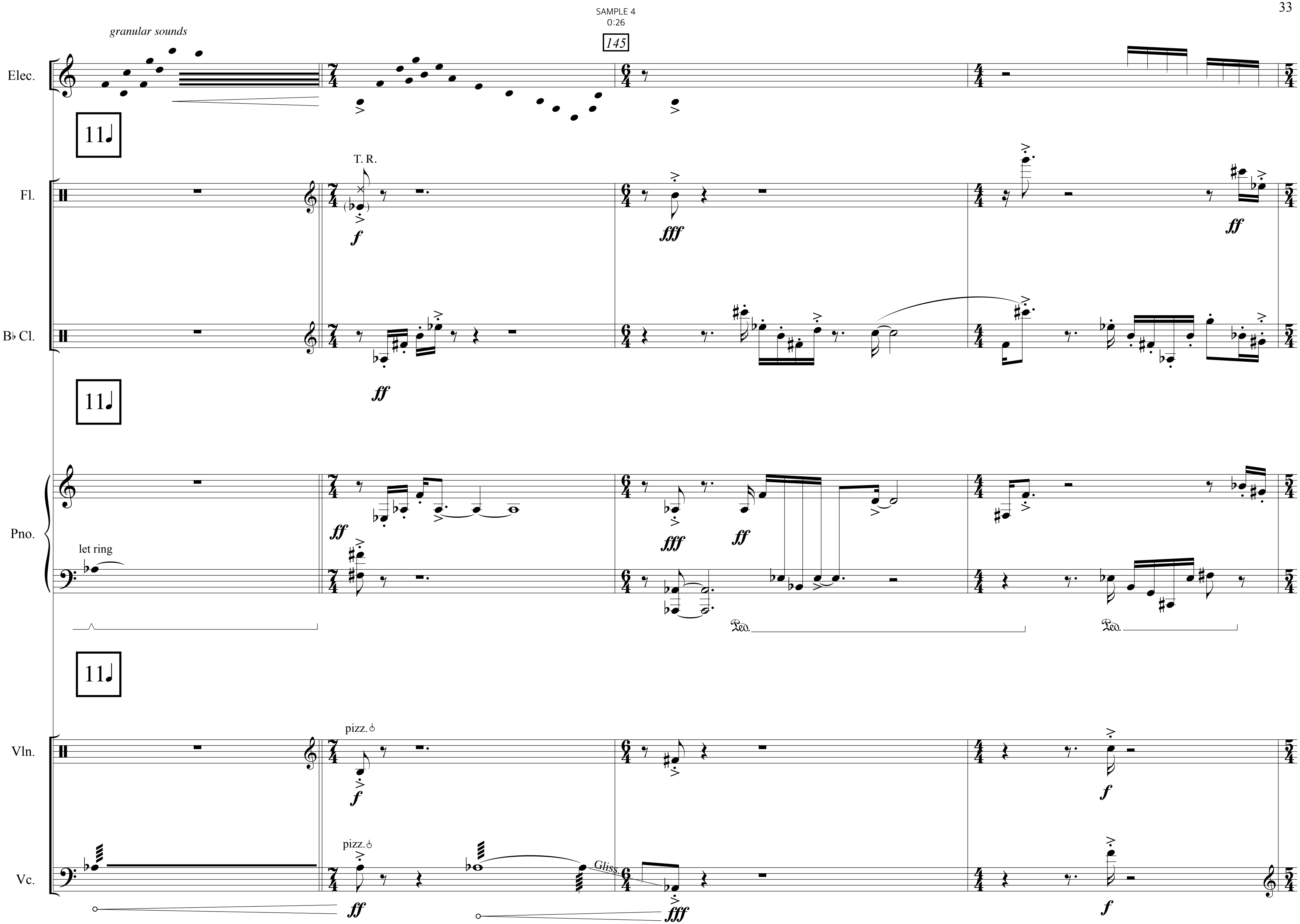

SAMPLE 3
5:45
125
Elec.
Look sideways as if the low electronic sound was not expected and you are looking to find out what is going on.
(the acting should be very subtle, do not exagerate it)
Cond.
Fl.
pppp
ff
B♭ Cl.
ffp
fp
Pno.
Ped.
Ped. (ad libitum)
Vln.
sfz
Gliss.
Vc.

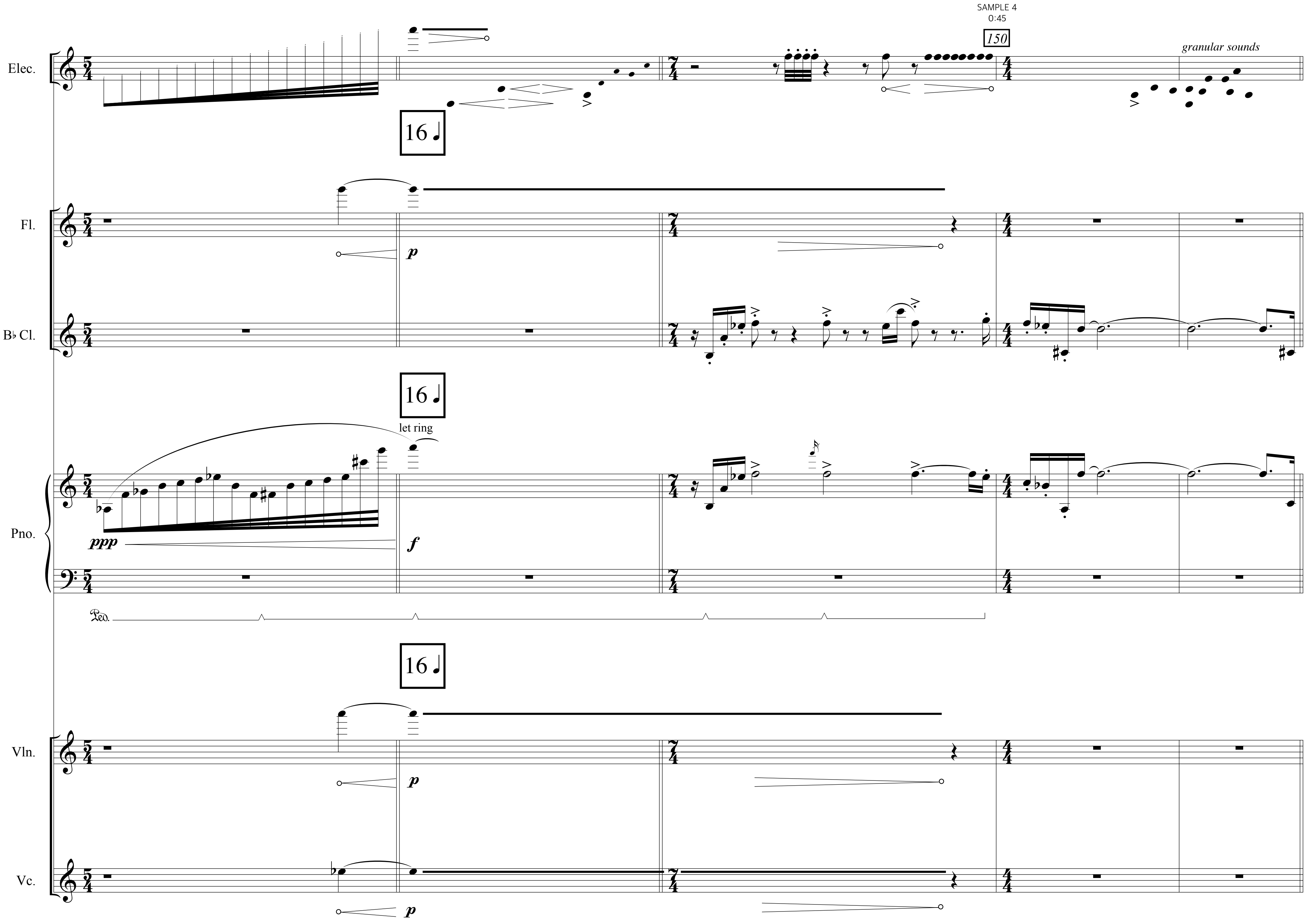

SAMPLE 3
5:56
130
ALL LIGHTS OFF
(from this point to measure 136, there is only electronic sounds)
Elec.
Cond.
cover eyes with a black blindfold
119 ♩
Fl.
cover eyes with a black blindfold
ff
pppp
B♭ Cl.
cover eyes with a black blindfold
119 ♩
Pno.
cover eyes with a black blindfold
ff
ff
pppp
119 ♩
Vln.
cover eyes with a black blindfold
Vc.
cover eyes with a black blindfold
ff
pppp

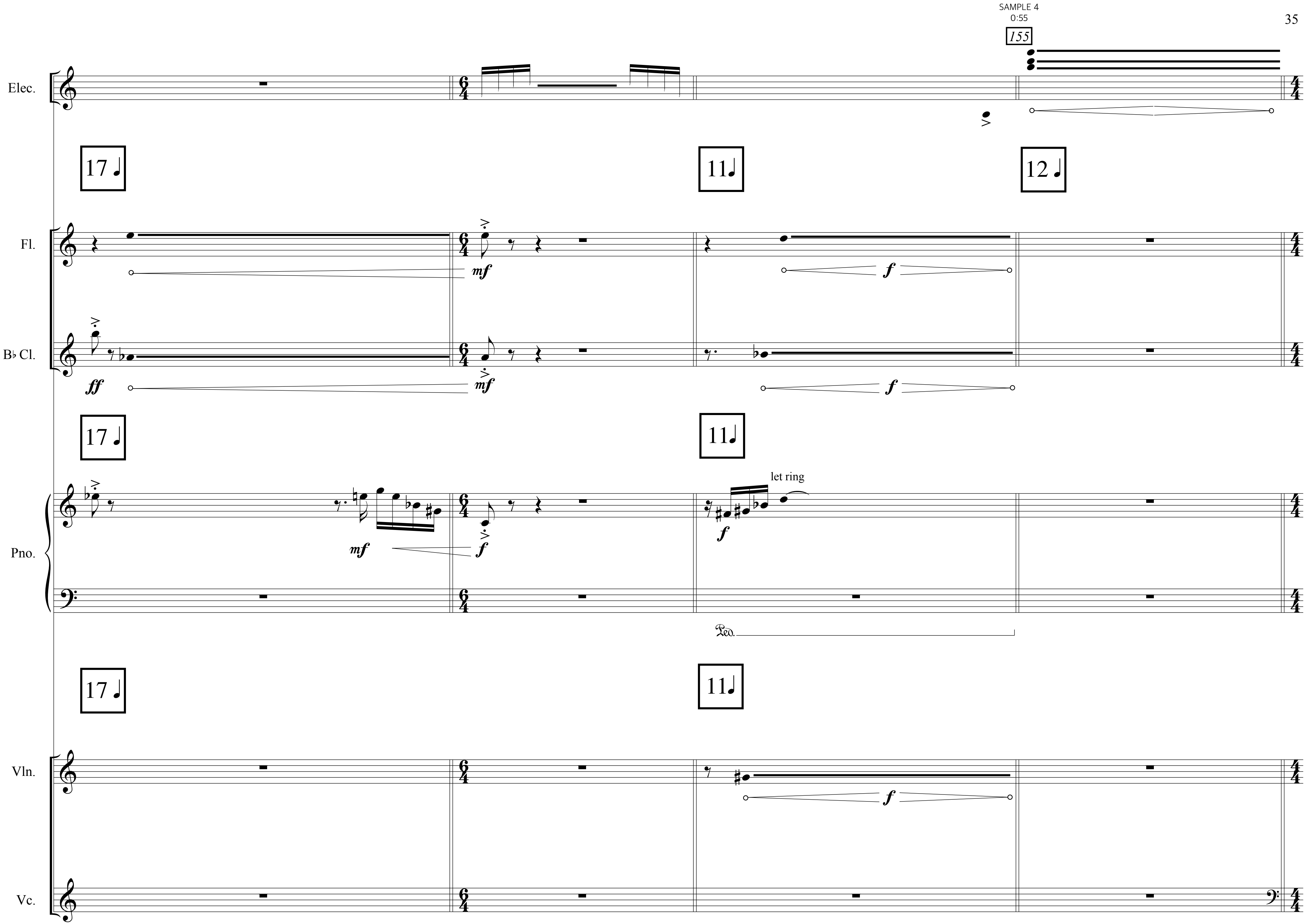

SAMPLE 3
7:14
135
Elec.
Cond.
TURN CELLPHONE LIGHTS ON
BLINK CELLPHONE LIGHTS
CELLPHONE LIGHTS OFF
take blindfold off
14
17
28
Fl.
TURN CELLPHONE LIGHTS ON
BLINK CELLPHONE LIGHTS
CELLPHONE LIGHTS OFF
take blindfold off
B♭ Cl.
TURN CELLPHONE LIGHTS ON
BLINK CELLPHONE LIGHTS
CELLPHONE LIGHTS OFF
take blindfold off
14
17
28
Pno.
TURN CELLPHONE LIGHTS ON
BLINK CELLPHONE LIGHTS
CELLPHONE LIGHTS OFF
take blindfold off
14
17
28
Vln.
TURN CELLPHONE LIGHTS ON
BLINK CELLPHONE LIGHTS
CELLPHONE LIGHTS OFF
take blindfold off
Vc.
TURN CELLPHONE LIGHTS ON
BLINK CELLPHONE LIGHTS
CELLPHONE LIGHTS OFF
take blindfold off


Elec.
percussive sounds
13
32
Fl.
random percussive sounds mimicking the electronics
aeolian
ppp
B♭ Cl.
random percussive sounds mimicking the electronics
aeolian
ppp
13
32
Pno.
random percussive sounds mimicking the electronics
13
32
Vln.
random percussive sounds mimicking the electronics
ppp
Vc.
random percussive sounds mimicking the electronics

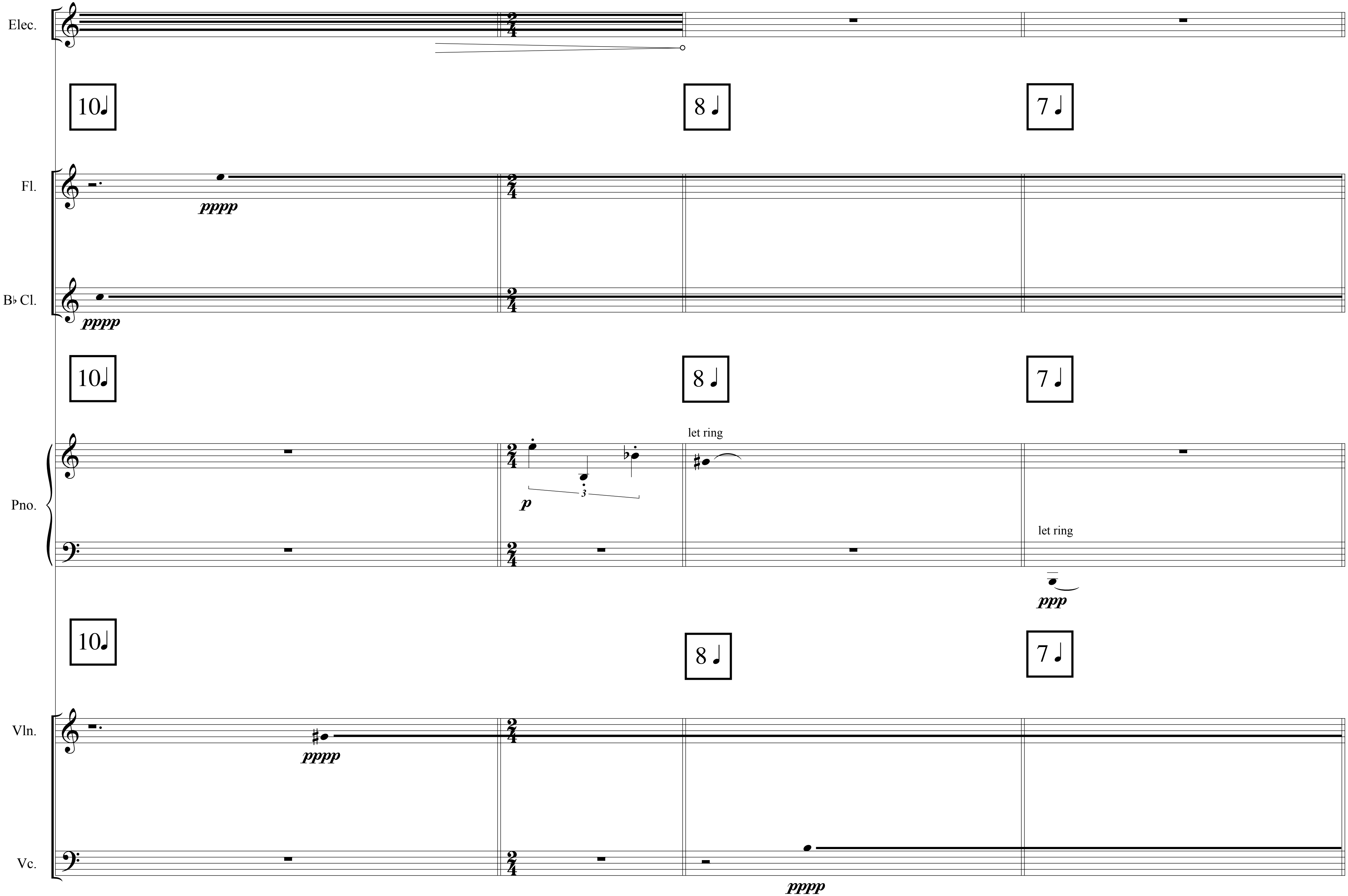

rit.
a tempo
END OF SAMPLE 3'S CLICK-TRACK
140
SAMPLE 4
ALL LIGHTS ON
piano reverbaration
Elec.
17
Fl.
B♭ Cl.
17
Pno.
3
mf
f
let ring
ff
Ped.
17
Vln.
Vc.

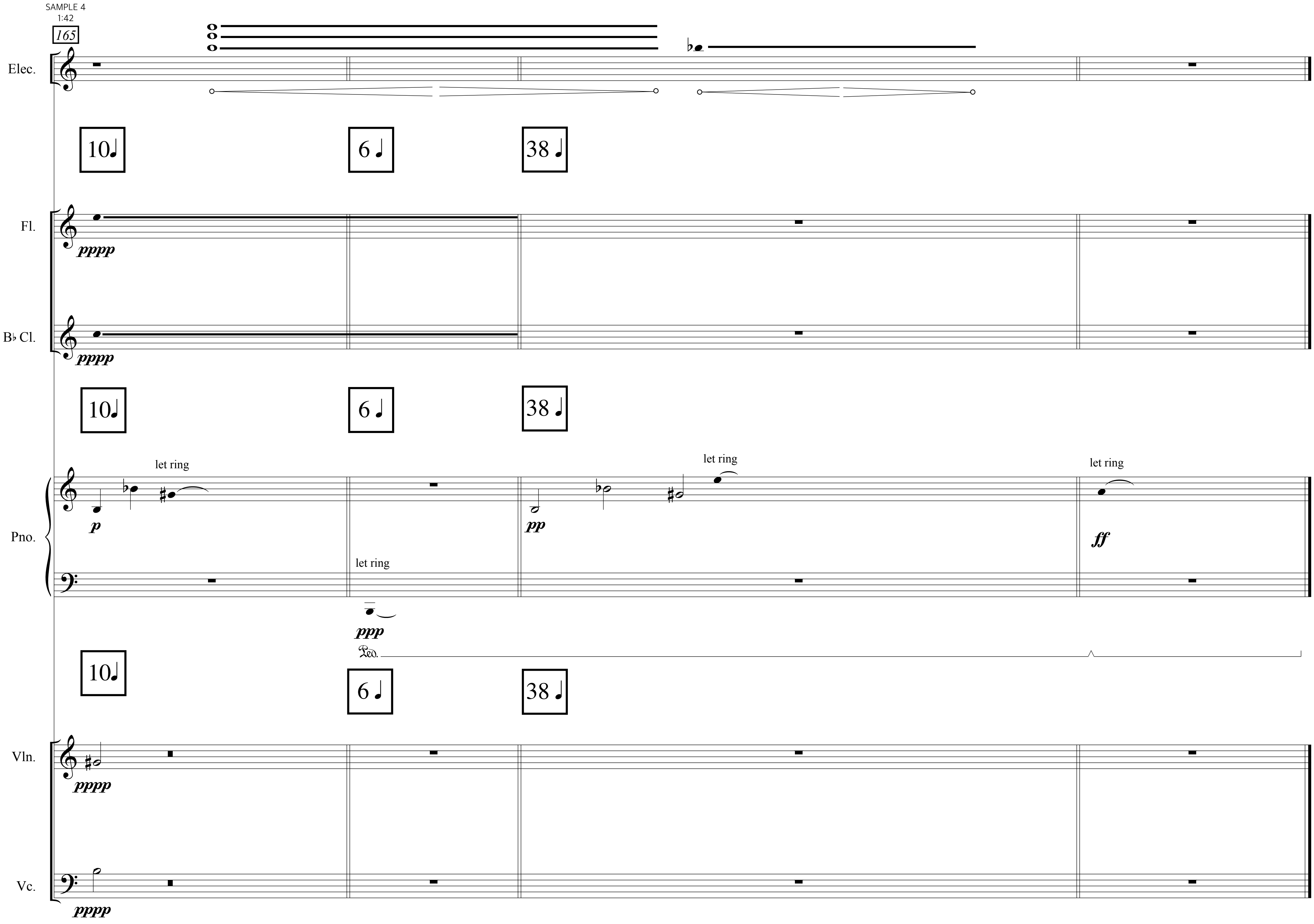

SAMPLE 4
0:26
145
granular sounds
Elec.
11♩
T. R.
Fl.
B♭ Cl.
Pno.
let ring
Ped.
Ped.
Vln.
pizz.
Vc.
pizz.
Gliss.


SAMPLE 4
0:45
150
Elec.
granular sounds
16
Fl.
p
B♭ Cl.
16
let ring
Pno.
ppp
f
Ped.
16
Vln.
p
Vc.
p


SAMPLE 4
0:55
155
Elec.
Fl.
B♭ Cl.
Pno.
let ring
Ped.
Vln.
Vc.

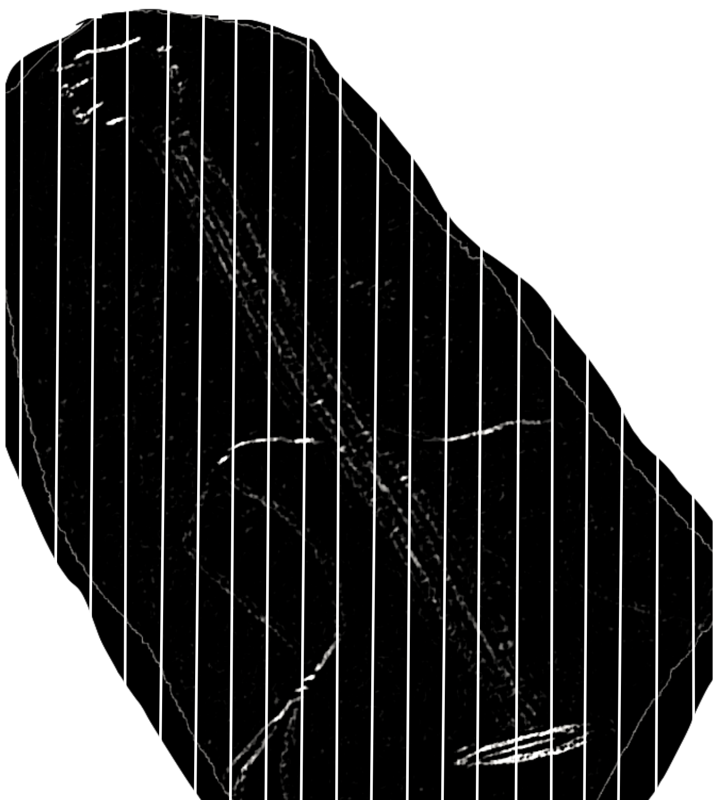

SAMPLE 4
1:22
160
Elec.
12
aeolian
Fl.
aeolian
B♭ Cl.
12
Pno.
Ped.
12
pizz.
arco
Vln.
pizz.
arco
Vc.


Elec.
10♩
8 ♩
7 ♩
Fl.
pppp
B♭ Cl.
pppp
10♩
8 ♩
7 ♩
let ring
p
3
Pno.
let ring
ppp
10♩
8 ♩
7 ♩
Vln.
pppp
Vc.
pppp


SAMPLE 4
1:42
165
Elec.
10
6
38
Fl.
pppp
B♭ Cl.
pppp
10
6
38
let ring
let ring
let ring
Pno.
p
pp
ff
let ring
ppp
Ped.
10
6
38
Vln.
pppp
Vc.
pppp

ROCK ON

FOR FLUTE, ALTO SAX, DRUM SET, ELECTRIC GUITAR, PIANO AND ELECTRONICS



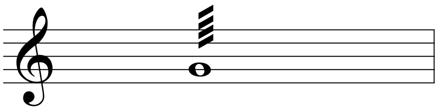
LEVY OLIVEIRA

KANSAS CITY, MO, FEBRUARY 2020

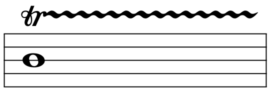
©

PERFORMANCE INSTRUCTIONS

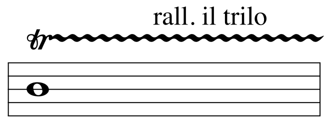
Score in C



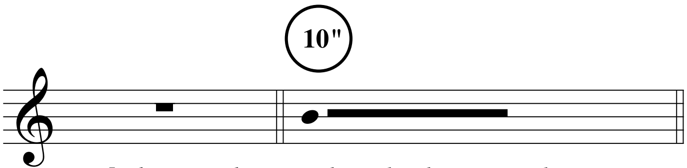
Tremolos are always played very fast and not measured.



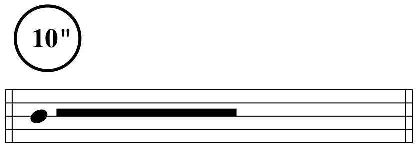
Trilling note is always a half-step above.



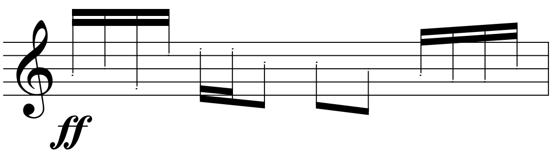
The overall duration should be respected, but the trill must progressively slow down.



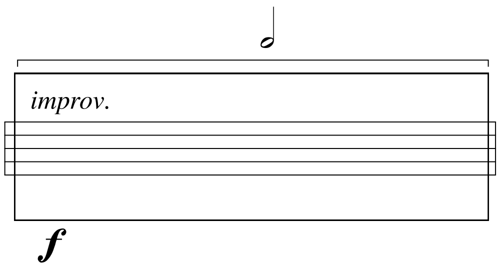
In this score, there is traditional and proportional notation. Time duration for measures between double bars is indicated in seconds.



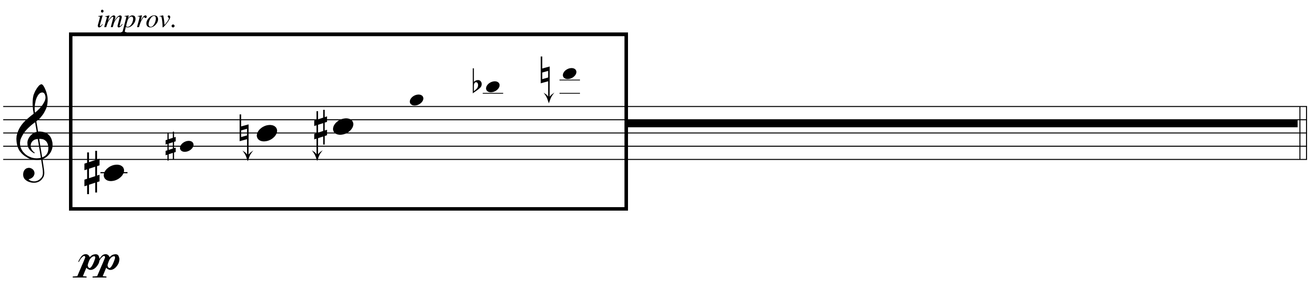
Hold note for a time proportional to the length of the line. (In this example, the note extends half away through the duration of the measure.)



Improvisation.
(freely improv on pitches, but strictly follow notated rhythm and dynamics).
(percussionist can choose the percussion instruments to be played, but strictly following notated rhythm and dynamics).



Improvisation.
(while pitches and rhythms must be freely improvised, indications on durations and dynamics should be strictly followed).



Improvisation using notated pitches in specified octaves.

- You can play the pitches as chords or melodic patterns. The notes with bigger noteheads should be used more often.

- There is no need to play all notes during improv. Play as many as needed for an interesting sound atmosphere. Players may optionally tacit or play very sparse.

- The overall texture should be very delicate and it should sound as an extension of the reverbaration in the fixed-media.

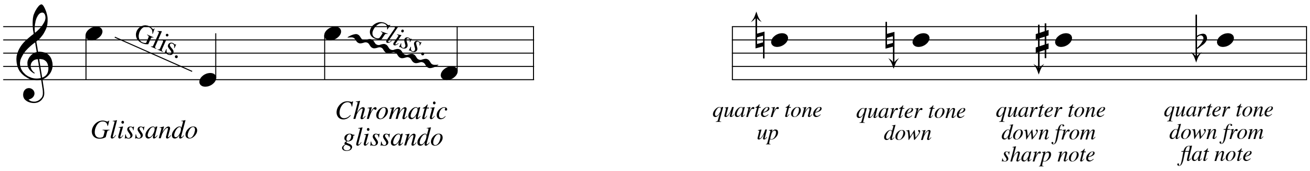
- Use as many extended techniques as you wish.

- Drumset should add noise (always remembering to keep the sound texture very delicate). Other percussion instruments can be added during the improv.

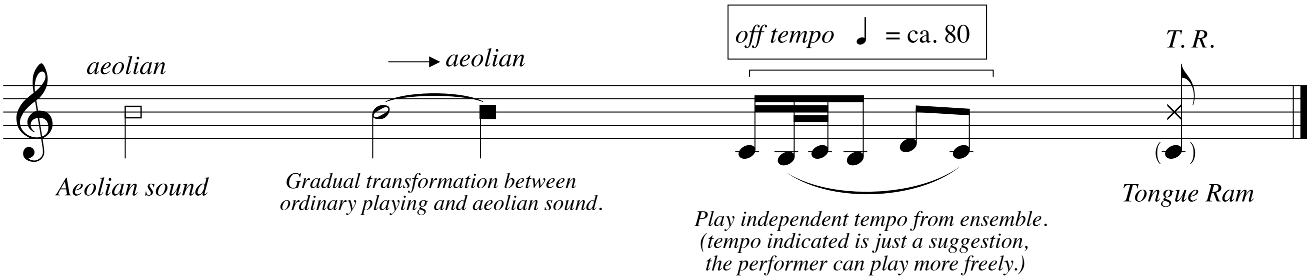
- Computer should use simple waveforms.

- EACH PRESENTATION OF THIS IMPROV TEXTURE SHOULD BE LESS DENSE THAN PREVIOUS UNTIL THE LAST ONE THAT SHOULD BE VERY DELICATE AND SPARSE.

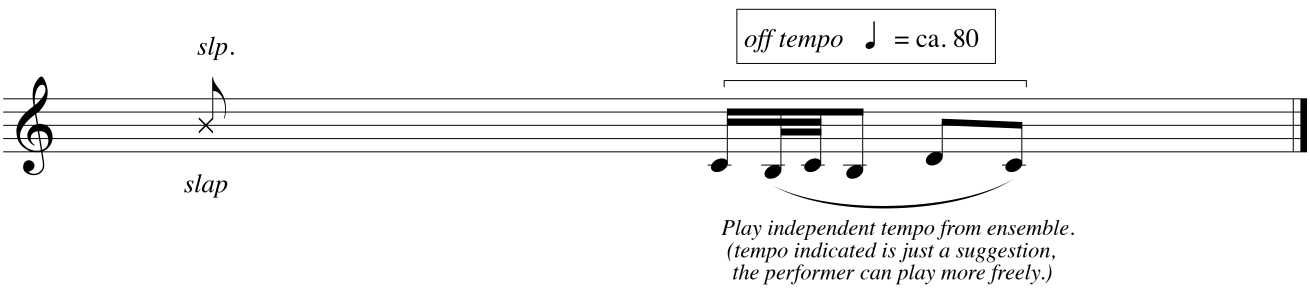
PERFORMANCE INSTRUCTIONS



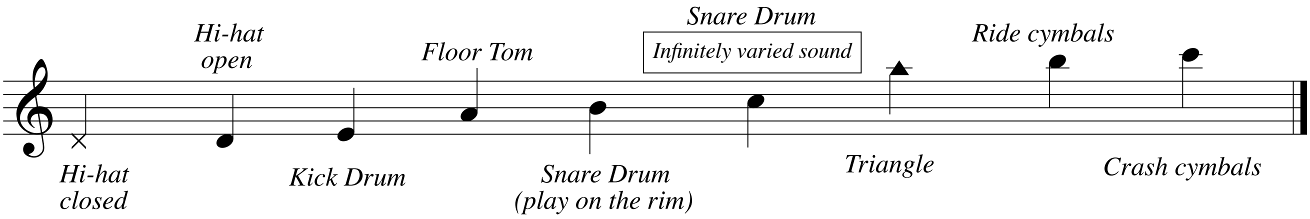
FLUTE NOTATION



SAX NOTATION

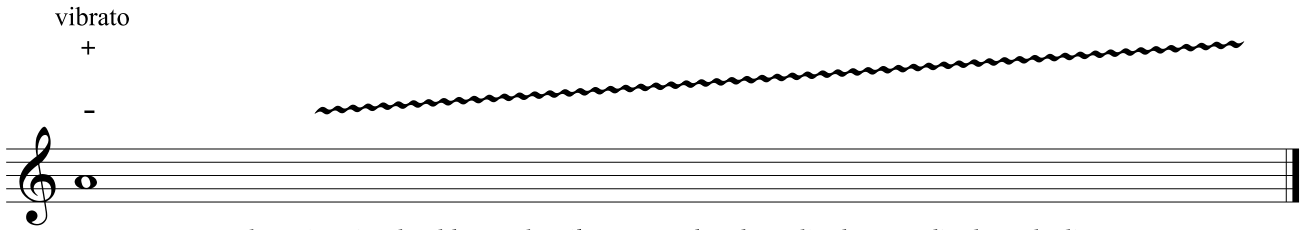


DRUMSET NOTATION



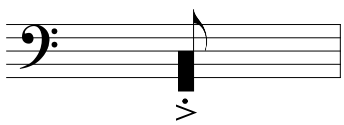
PERFORMANCE INSTRUCTIONS

GUITAR NOTATION



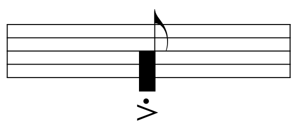
The guitarrist should vary the vibrato speed and amplitude accordingly to the line.
If the line is in the same height as the minus (-) symbol, no vibrato should be played.
If the line is in the same height as the plus (+) symbol, the vibrato should be wide and fast)
Therefore, in the example above, the note should be played without vibrato in the beggining and increase its speed and amplitude afterwards.

PIANO NOTATION



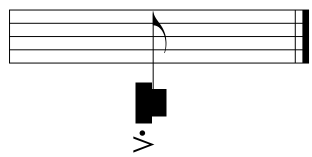
Vary the register of the cluster a little every time you play it. Nonetheless, the cluster must always be in the instrument's low register.

repeat same cluster



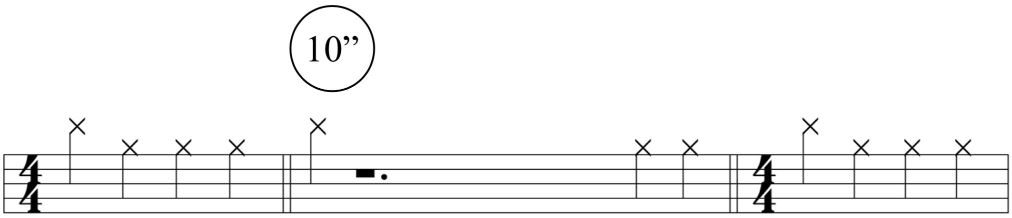
Play the exact same cluster played before.

lowest cluster



Play the lowest cluster you can play in the instrument only in this specific moment.

COMPUTER



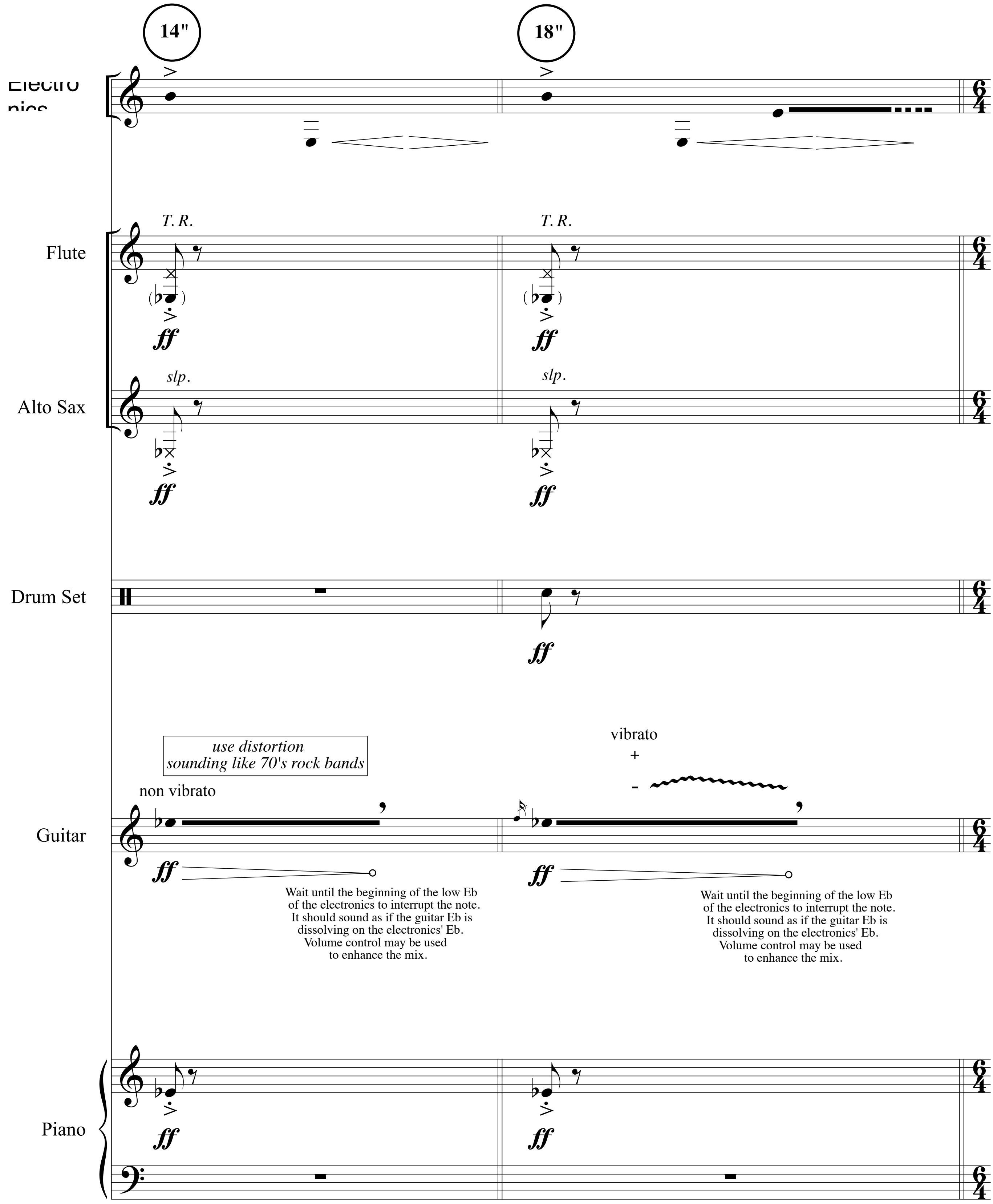
The piece should be played with a click-track (earphone) to facilitate the synchronism between performer and electronics. Click-track plays every beat.

In measures between double bars, click-track does not play. Cue to next measure is given two beats before.

ROCK ON

(WRITTEN FOR PROJECT C4)

Levy Oliveira




♩= 100
0:38
5
Fl.
A. Sx.
D. S.
Gtr.
Pno.
ff
f
fff


granular sounds
Fl.
A. Sx.
D. S.
Gtr.
Pno.


0:49
10
granular sounds
guitar-like sound
Fl.
A. Sx.
D. S.
Gtr.
Glis.
Pno.


Fl.
A. Sx.
D. S.
Gtr.
Pno.
Gliss.


1:00
15
Fl.
A. Sx.
D. S.
Gtr.
Pno.
aeolian
slp.
Glis.
repeat same cluster
ff
f


1:09
20
18
Ele
sax-like sound
Fl.
ff
A. Sx.
ff
ffp
ff
3
D. S.
ff
f
ff
f
ff
f
ff
f
Gtr.
ff
pppp
Pno.
ff
ff
ff


21
sax-like sound
sax-like sound
Fl.
A. Sx.
21
D. S.
ff
f
ff
21
Gtr.
Glis.
Glis.
3
3
ff
21
Pno.
lowest cluster
ff
ff


1:22
25
sax-like sound
granular instrumental sounds
aeolian
improv.
Fl.
A. Sx.
D. S.
Gtr.
Pno.


27
Ele
improv.
ff
Fl.
improv.
ff
A. Sx.
27
D. S.
ff
27
Gtr.
27
Pno.


1:33
30
29
Fl.
ff
improv.
A. Sx.
Glissando
D. S.
Gtr.
Pno.
8va


1:42
35
Ele
Fl.
improv.
A. Sx.
D. S.
Gtr.
Pno.
(8va)

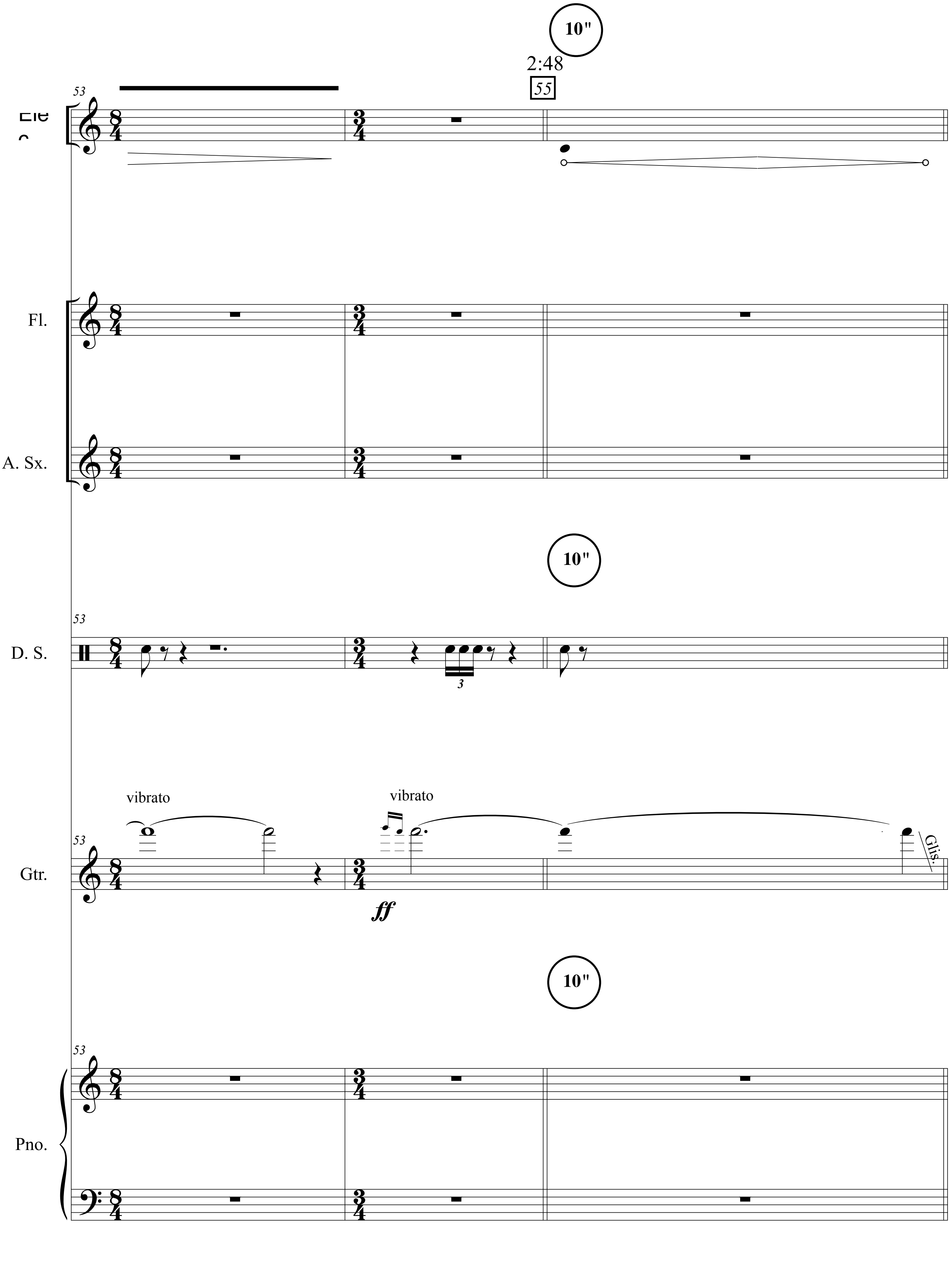

36
Fl.
improv.
A. Sx.
off tempo ♩ = ca. 80
off tempo ♩ = ca. 60
D. S.
Gtr.
Pno.
8va


13"
1:58
40
39
Fl.
A. Sx.
p
mp
13"
39
D. S.
mp
f
39
Gtr.
13"
39
Pno.
(8va)
8va
mp


6"
42
Ele
Fl.
A. Sx.
6"
42
D. S.
f
10
ff
6
f
42
non vibrato
Gtr.
f
6"
42
Pno.


2:23
45
guitar-like granular sound
Fl.
A. Sx.
D. S.
vibrato
Glis.
Gtr.
Pno.


2:35
50
49
Fl.
A. Sx.
D. S.
mf
f
non vibrato
vibrato
non vibrato
Glis.
Gtr.
Pno.


10"
2:48
55
53
Fl.
A. Sx.
10"
53
D. S.
3
vibrato
vibrato
53
Gtr.
ff
Glis.
10"
53
Pno.


13"
56
Fl.
f
A. Sx.
f
13"
56
D. S.
ff
f
use whammy bar
Glis.
Glis.
vibrato
56
Gtr.
ff
ff
13"
56
Pno.
8va


3:19
60
58
Fl.
A. Sx.
D. S.
Gtr.
Pno.
ff
f
pp


granular flute sounds
61
Ele
Fl.
A. Sx.
D. S.
Gtr.
Pno.
5
ff
f

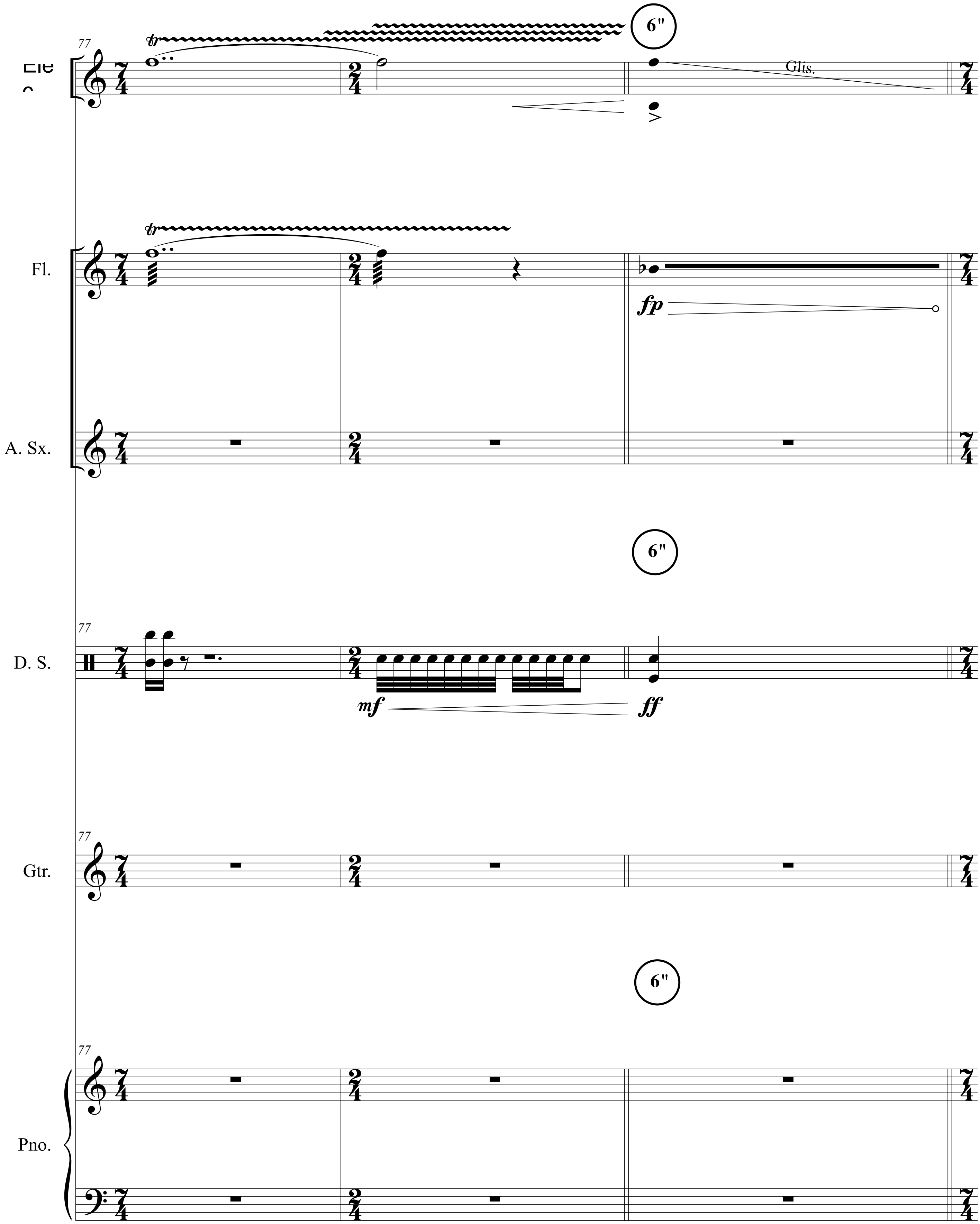

3:32
65
guitar-like sound
64
Fl.
ff
A. Sx.
D. S.
ff
f
10
6
Gtr.
ff
p
Pno.


67
Ele
Fl.
A. Sx.
D. S.
Gtr.
Pno.
ff
f
ffp
mf
5
6
10

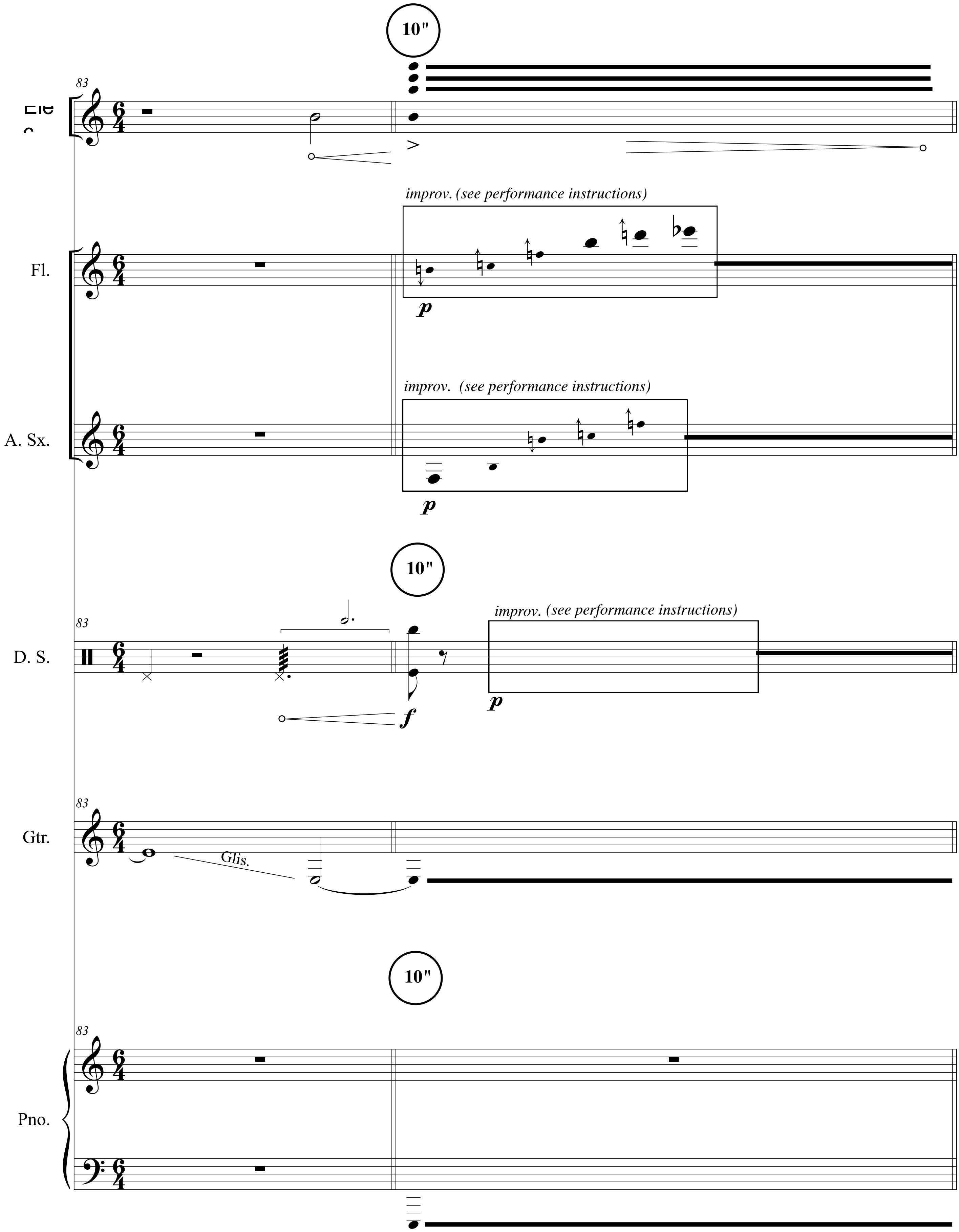

3:44
70
69
Ele
Fl.
ff
A. Sx.
ff
69
D. S.
ff
f
ff
ff
f
69
Gtr.
69
ff
Pno.
lowest cluster


72
Fl.
Glis.
A. Sx.
ff
3
72
D. S.
ff
mf
10
72
Gtr.
72
Pno.

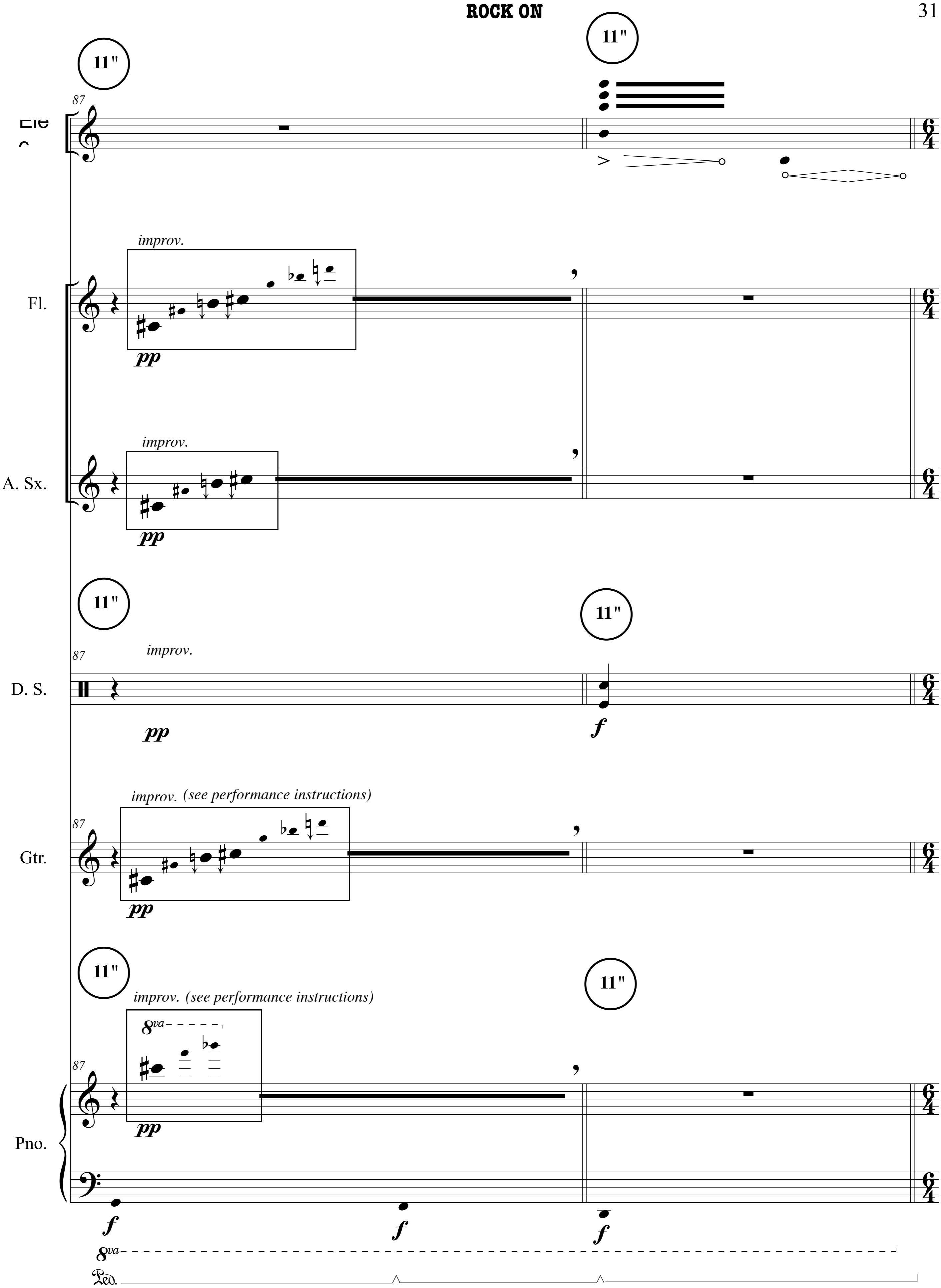

3:52
75
74
Ele
Fl.
Glis.
A. Sx.
D. S.
ff
mf
ff
6
10
6
Gtr.
Pno.


77
6"
Glis.
Fl.
fp
A. Sx.
6"
77
D. S.
mf
ff
77
Gtr.
6"
77
Pno.


4:06
80
Fl.
A. Sx.
D. S.
p
mf
p
f
Gtr.
damp
3
ord.
p
Pno.


10"
83
improv. (see performance instructions)
Fl.
p
improv. (see performance instructions)
A. Sx.
p
10"
83
improv. (see performance instructions)
D. S.
f
p
83
Gtr.
Glis.
10"
83
Pno.


13"
4:28
85
Ele
aeolian
rall. il trilo
tr
3
3
Glis.
p
f
Fl.
A. Sx.
13"
D. S.
Gtr.
13"
Pno.


11"
87
Ele
11"
improv.
Fl.
pp
improv.
A. Sx.
pp
11"
87
improv.
D. S.
pp
11"
f
improv. (see performance instructions)
87
Gtr.
pp
11"
improv. (see performance instructions)
8va
87
Pno.
pp
11"
f
f
f
8va
Ped.


5:06
90
89
Fl.
A. Sx.
D. S.
Gtr.
Pno.
Glis.
Glis.
mf
f
ff
p


91
Ele
Fl.
Glis.
A. Sx.
D. S.
Gtr.
Pno.
8va


6"
5:22
95
94
Fl.
A. Sx.
6"
94
D. S.
f
f
94
Gtr.
3
ff
6"
94
Pno.

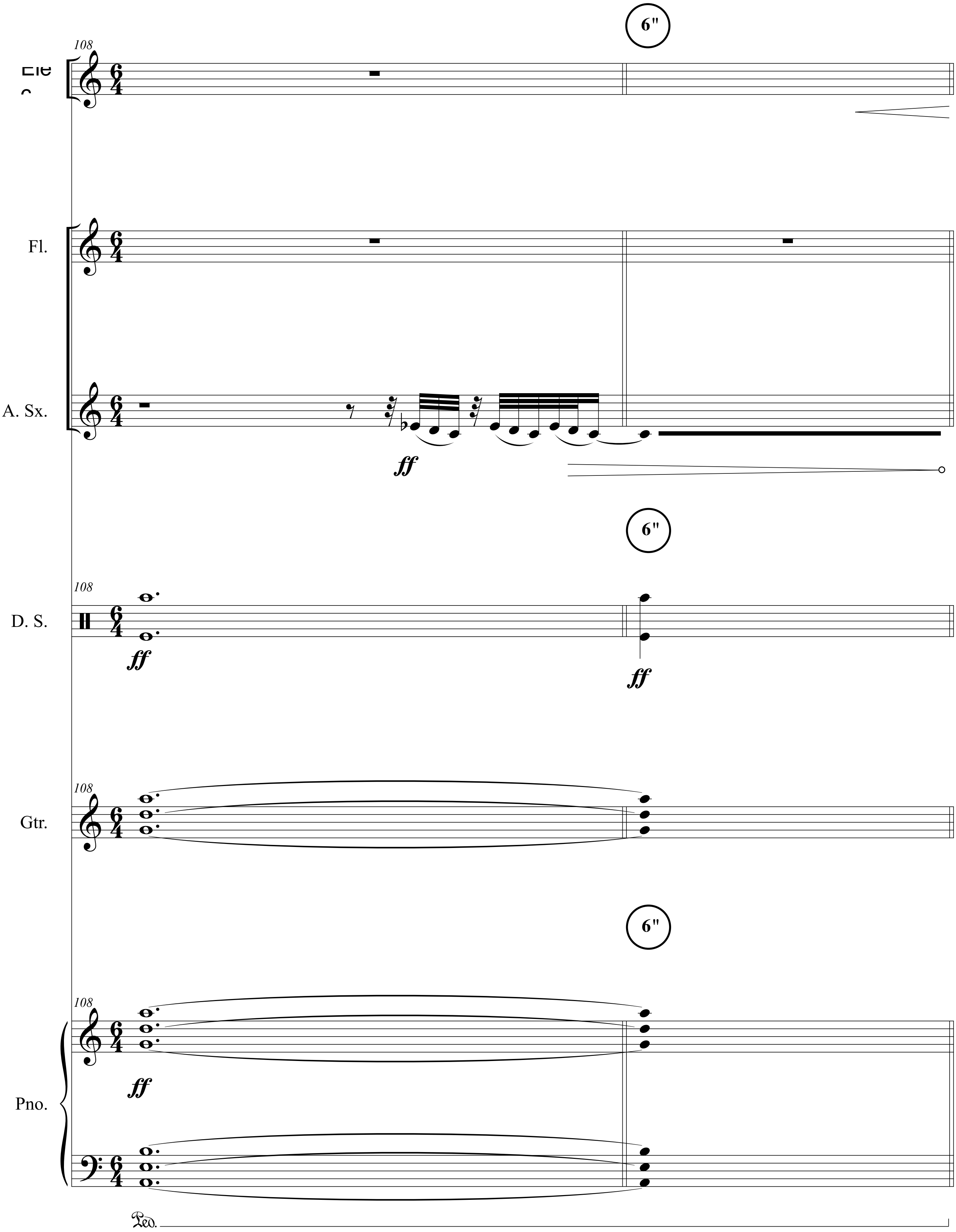

96
granular sounds
Fl.
A. Sx.
5
ff
D. S.
p
Gtr.
Pno.

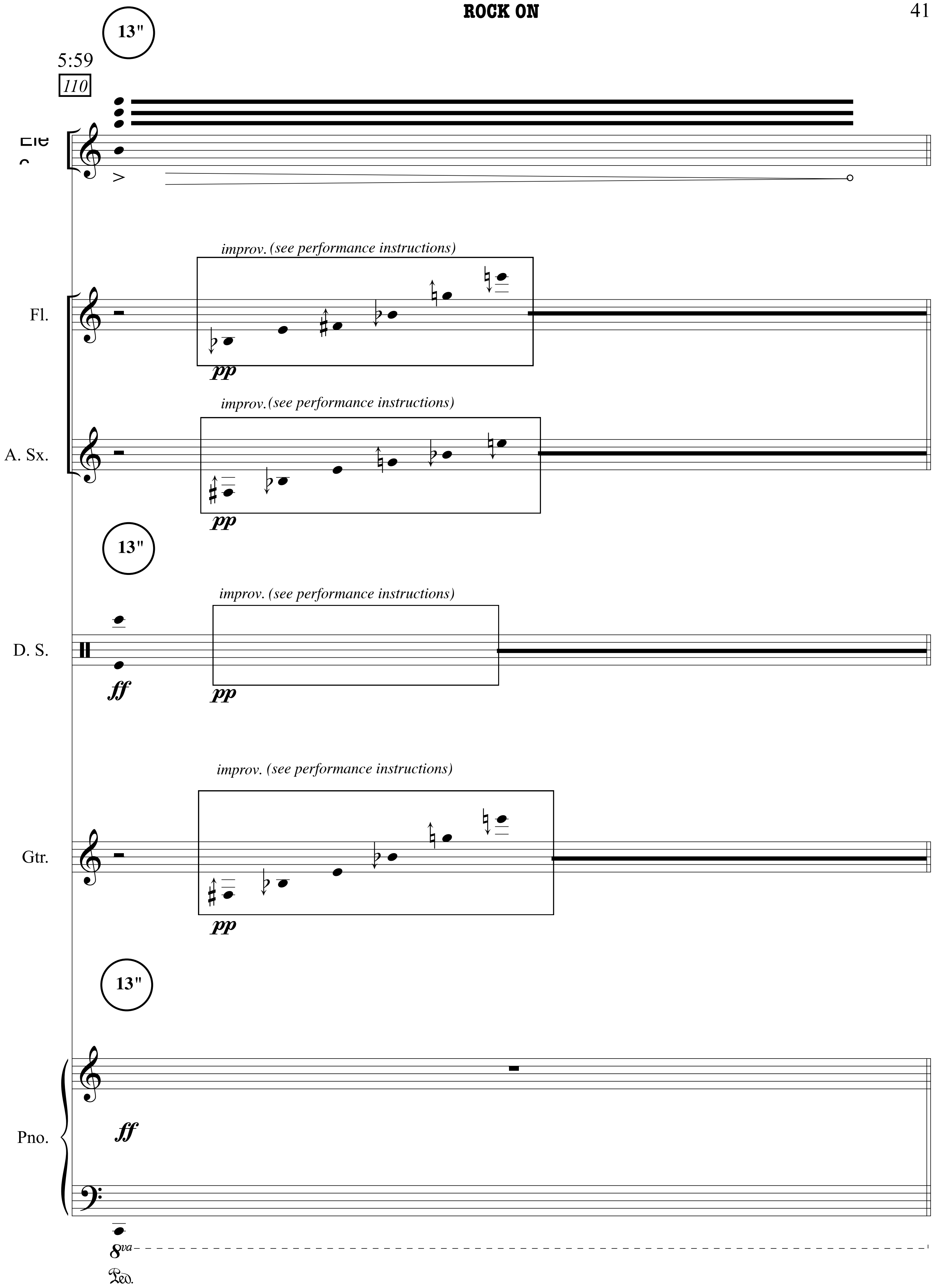

98
Ele
Fl.
ff
6
3
A. Sx.
D. S.
ff
Gtr.
ff
Pno.

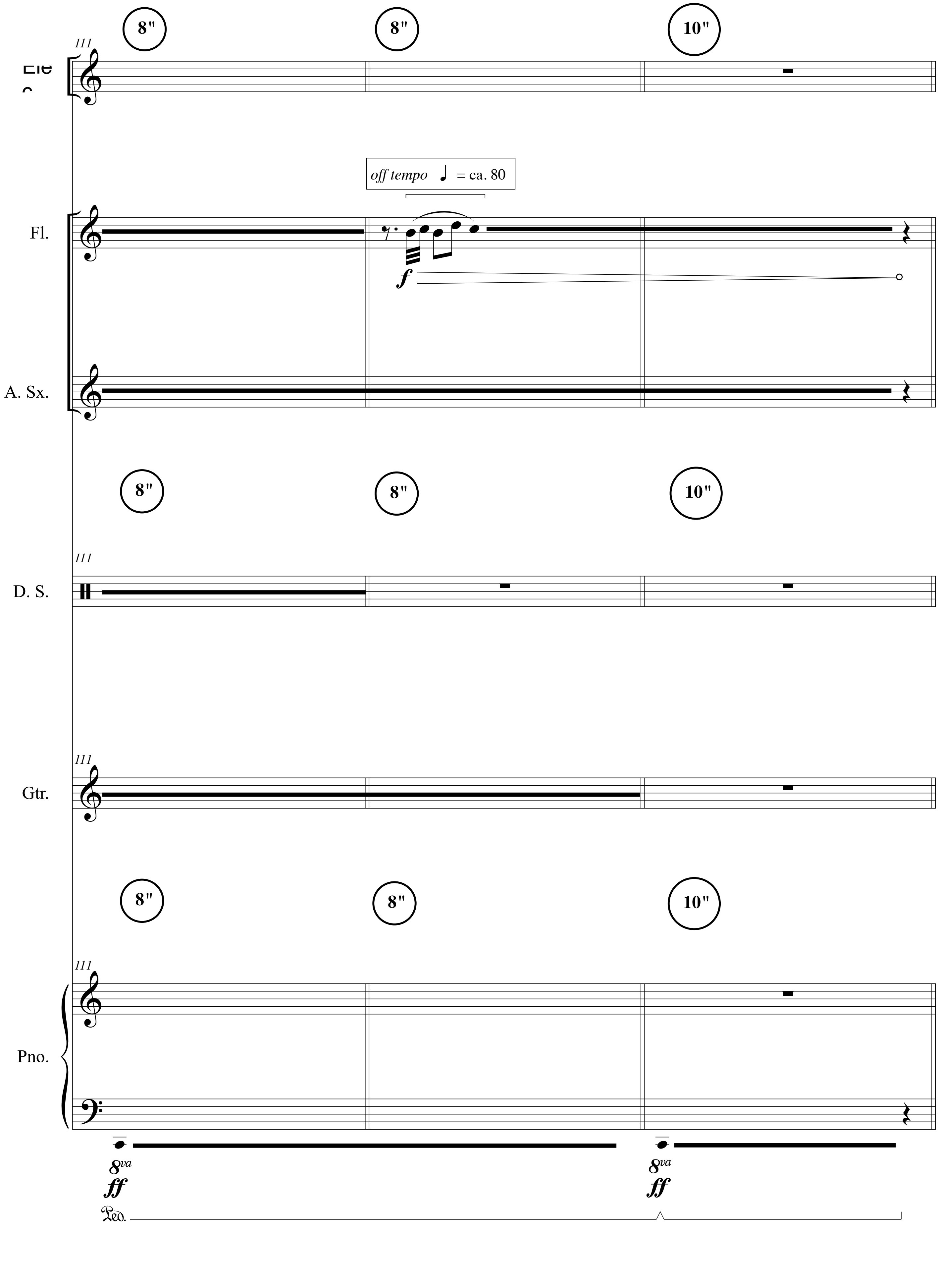

5:32
100
8va
Glis.
Fl.
pp
A. Sx.
10
6
D. S.
Gtr.
Pno.

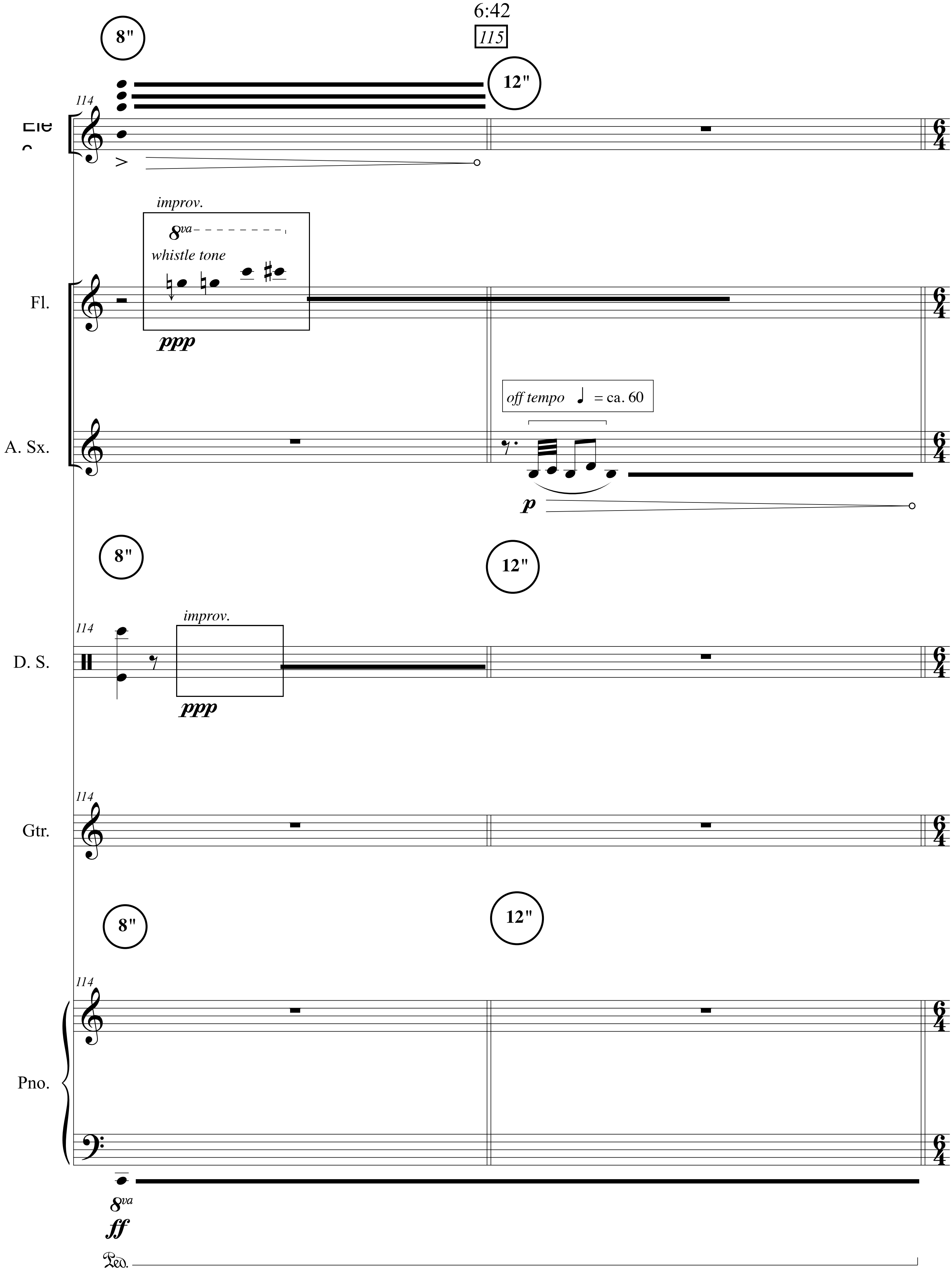

102
Fl.
ff
mf
ff
A. Sx.
102
D. S.
ff
f
ff
102
Gtr.
ff
102
Pno.
ff
ff
8va

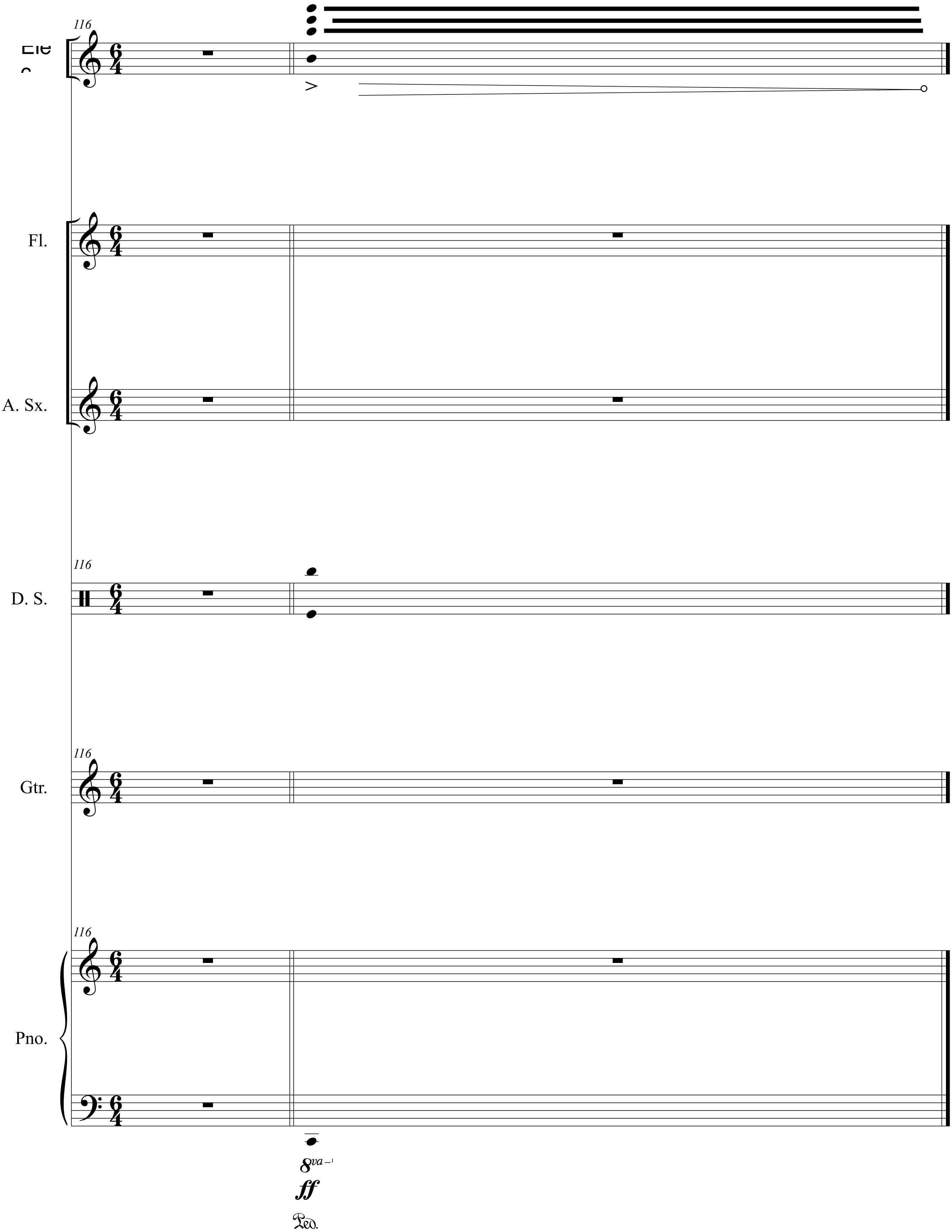

5:45
105
granular sounds
granular sounds
Fl.
A. Sx.
D. S.
Gtr.
Pno.


6"
108
Ele
Fl.
A. Sx.
ff
6"
108
D. S.
ff
ff
108
Gtr.
6"
108
ff
Pno.
Ped.


13"
5:59
110
Fl.
improv. (see performance instructions)
pp
A. Sx.
improv.(see performance instructions)
pp
13"
D. S.
ff
improv. (see performance instructions)
pp
Gtr.
improv. (see performance instructions)
pp
13"
Pno.
ff
8va
Ped.


8"
8"
10"
111
off tempo ♩ = ca. 80
Fl.
f
A. Sx.
8"
8"
10"
111
D. S.
111
Gtr.
8"
8"
10"
111
Pno.
8va
ff
8va
ff
Ped.


6:42
115
8"
12"
114
Ele
improv.
8va
whistle tone
Fl.
ppp
off tempo ♩ = ca. 60
A. Sx.
p
D. S.
Gtr.
Pno.
ff
Ped.


116
Fl.
A. Sx.
D. S.
Gtr.
Pno.
8va
ff
Ped.

LEVY OLIVEIRA

Em Direção à Ilha Desconhecida

for flute, violin, percussion and electronics

Belo Horizonte MG
September 2020

Tens com certeza um mester, um ofício, uma profissão, como agora se diz, Tenho, tive, terei se for preciso, mas quero encontrar a ilha desconhecida, quero saber quem sou eu quando nela estiver, Não o sabes, Se não sais de ti, não chegas a saber quem és, O filósofo do rei, quando não tinha que fazer, ia sentar-se ao pé de mim, a ver-me passajar as peúgas dos pajens, e às vezes dava-lhe para filosofar, dizia que todo o homem é uma ilha, eu, como aquilo não era comigo, visto que sou mulher, não lhe dava importância, tu que achas, Que é necessário sair da ilha para ver a ilha, que não nos vemos se não nos saímos de nós.

José Saramago

You must have some skill, a craft, a profession, as they call it nowadays, I have, did have, will have if necessary, but I want to find the unknown island, I want to find out who I am when I'm there on that island, Don't you know, If you don't step outside yourself, you'll never discover who you are, The king's philosopher, when he had nothing to do, would come and sit beside me and watch me darning the pages' socks, and sometimes he would start philosophizing, he used to say that each man is an island, but since that had nothing to do with me, being a woman, I paid no attention to him, what do you think, That you have to leave the island in order to see the island, that we can't see ourselves unless we become free of ourselves.

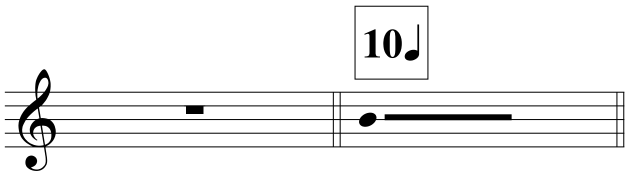
José Saramago

PERFORMANCE INSTRUCTIONS

Score in C

GENERAL

Tremolos are always fast and not measured.

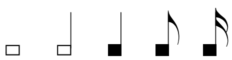


In this score, there is traditional and proportional notation.
Proportional notation happens always between double bars.
In proportional notatiton, hold note for a time proportional to the length of the line.
(In this example, the note extends half away through the duration of the measure).

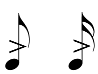
ppp pp p mp mf f ff fff

Dynamics must be the same for every instrument. Therefore, the pianissimo played by the flutist should be the same played by the percussionist and violinist. As well, the fortissimo played by the percussionist should be as loud as the fortissimo played by flute and violin. Therefore, amplification for violin and flute is highly recommended.

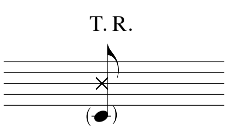
FLUTE



Aeolian sound.



Pizzicato.

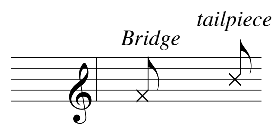


Tongue Ram.

Play with closed embochure.

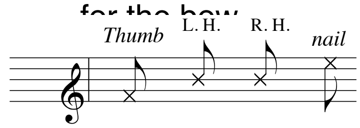
Variation in vibrato's speed and amplitude.

VIOLIN

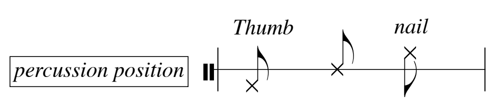


Percusive sound striking the tailpiece or bridge of the instrument with violin's bow in col legno position.

A pencil or percussion stick might be used as a substitute for the bow



Percusive sound striking the violin's wood with fingernail (nail), thumb (Thumb) or left (L. H.) or right hand (R. H.).



At this moments, the performer should put the violin on her/his lap and play it solely as a percussion instrument.

The strikes should be done with thumb (when notated below staff line), with fingers (when notated on staff line) or fingernail (when notated above staff line).

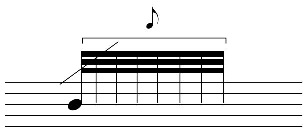
Gradual transition between bow positions.

col legno = col legno battuto

PERFORMANCE INSTRUCTIONS

PERCUSSION

Percussionist plays marimba, one frame drum and five thai gongs tuned in D#2, D4, E4, F4 and A4 (C3 is middle C).



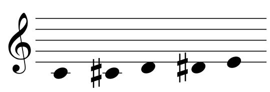
Let the mallet ricochet.
(the indicated duration must be respected)

Soft Mallet.

Medium Mallet.

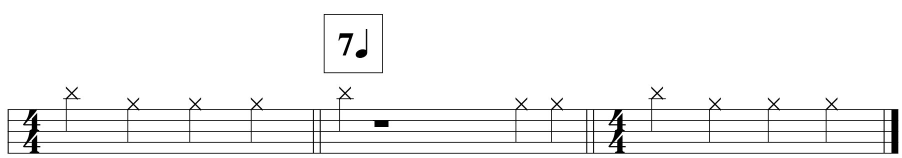
Drumsticks.

DAMPED MARIMBA

Damp the following notes: 

Suggested damping technique:

CLICK AND ELECTRONICS



The piece should be played with a click-track (earphone) to facilitate the synchronism between performer and electronics. Click-track plays every beat. In measures without time signature click-track does not play. Cue to next measure is given two beats before.

Other instructions may appear in the score.
In case of any doubts, please contact the composer at pacheco.levy@gmail.com

For further information about the composer, please visit: www.levyoliveira.com

Em direção à Ilha Desconhecida

(English title: Towards the Unknown Island)

Levy Oliveira


0:10
5
Elec.
Fl.
Vln.
Perc.
pizz.
5
Aeolian
pizz.
tailpiece
bridge
nail
Jete
col legno
bridge
8
0:19
10
Aeolian
pizz.
pizz.
tailpiece
col legno
3
tailpiece
Jete
col legno
3
Dead
Stroke


11
Elec.
Fl.
T. R.
Aeolian
pizz.
Aeolian
pizz.
Vln.
pizz.
Jete
col legno
Jete
col legno
pizz.
FRAME
DRUMS
Perc.
0:27
15
14
Elec.
Fl.
10
Vln.
col legno
10
let ring
Perc.
10


0:34
20
18
Elec.
Fl.
Vln.
Perc.
pizz.
Aeolian
mp
f
p
mf
col legno
tailpiece
bridge
pizz.
DAMPED MARIMBA
FRAME DRUMS
0:39
25
22
pizz.
col legno
pizz.
col legno
pizz.
col legno
pp
3


0:43
30
26
Elec.
Fl.
Vln.
Perc.
Aeolian
pizz.
mp
mf
f
p
31
violin pizz. reverb
pizz.
pp


0:52
34
35
Elec.
flute tongue ram reverb
Fl.
T. R.
pizz.
Vln.
col legno
Jete
Perc.
DAMPED
MARIMBA
0:57
38
40
violin pizz.
sounds
flute pizz.
sounds
ord.
pizz.
bridge
col legno


41
Elec.
flute pizz. sounds
granular sounds
32
14
Fl.
ord.
Aeolian
pizz.
mf
f
Vln.
bridge
col legno
tailpiece
Perc.
1:24
45
aeolian sound reverb
10
nail
f pp p f
p


1:35
50
49
aeolian sound reverb
violin pizz. reverb
Elec.
11
15
pizz.
Aeolian
pizz.
Aeolian
pizz.
Aeolian
pizz.
Fl.
11
15
pizz.
(LH)
pizz.
bridge
tailpiece
tailpiece
Vln.
11
15
Perc.
1:49
55
53
aeolian sound
aeolian sound reverb
Elec.
pizz.
Aeolian
pizz.
Aeolian
pizz.
Aeolian
pizz.
Fl.
Vln.
Perc.


2:00
60
57
aeolian sound reverb
flute pizz. sounds
flute pizz. sounds
Elec.
11
8
Aeolian
pizz.
Aeolian
pizz.
Fl.
f p
f mp
f pp
mf
R.H.
Vln.
f
Perc.
f
61
violin pizz. reverb
aeolian sound reverb
20
12
Aeolian
Aeolian
pizz.
Aeolian
pizz.
Aeolian
f mp mf
f mf p
f mp
f pp
nail
pizz.
pizz.
L.H.
mp
f
f
f


2:18
65
Elec.
aeolian sound
flute pizz. sounds
flute pizz. sounds
Fl.
Aeolian
pizz.
Aeolian
pizz.
ord.
Vln.
col legno
bridge
pizz.
tailpiece
pizz.
FRAME DRUMS
Perc.
2:26
70
68
violin pizz. reverb
aeolian sound reverb
Aeolian
pizz.
T. R.
pizz.
Aeolian
col legno
pizz.
col legno
tailpiece
col legno
MARIMBA


71
Elec.
Fl.
Vln.
Perc.
pizz.
pizz.
74
2:33
75
pizz.
pizz.


76
Elec.
reverb
violin pizz. sound
Fl.
lots of noise
Vln.
Perc.
2:43
79
80
T. R.
Jete
col legno
pizz.
ord.


81
Elec.
Fl.
Vln.
Perc.
violin pizz. sounds
granular sounds
violin pizz. sounds
ord.
tailpiece
Dead Stroke
84
2:48
85
aeolian sound reverb
marimba reverb
pizz.
Aeolian
Aeolian
ord.
tailpiece
pizz.


87
Elec.
reverb
marimba reverb
Fl.
Aeolian
pizz.
f
Vln.
pizz.
(LH)
R.H.
mf
f
col legno
Perc.
ff
2:58
90
aeolian sound reverb
p
percussion position
Thumb
mp


3:03
95
94
Elec.
Fl.
pizz.
Aeolian
Vln.
Thumb
Thumb
Perc.
Dead
Stroke
3:08
100
98
Elec.
Fl.
pizz.
pizz.
pizz.
Vln.
Thumb
nail
nail
Thumb
nail
Thumb
nail
Thumb
Perc.


101
Elec.
Fl.
Vln.
Perc.
Aeolian
Aeolian
Thumb
Thumb
nail
nail
104
3:14
105
aeolian sound reverb
Glissando
Aeolian
Aeolian
pizz.
nail
Dead
Stroke
let ring

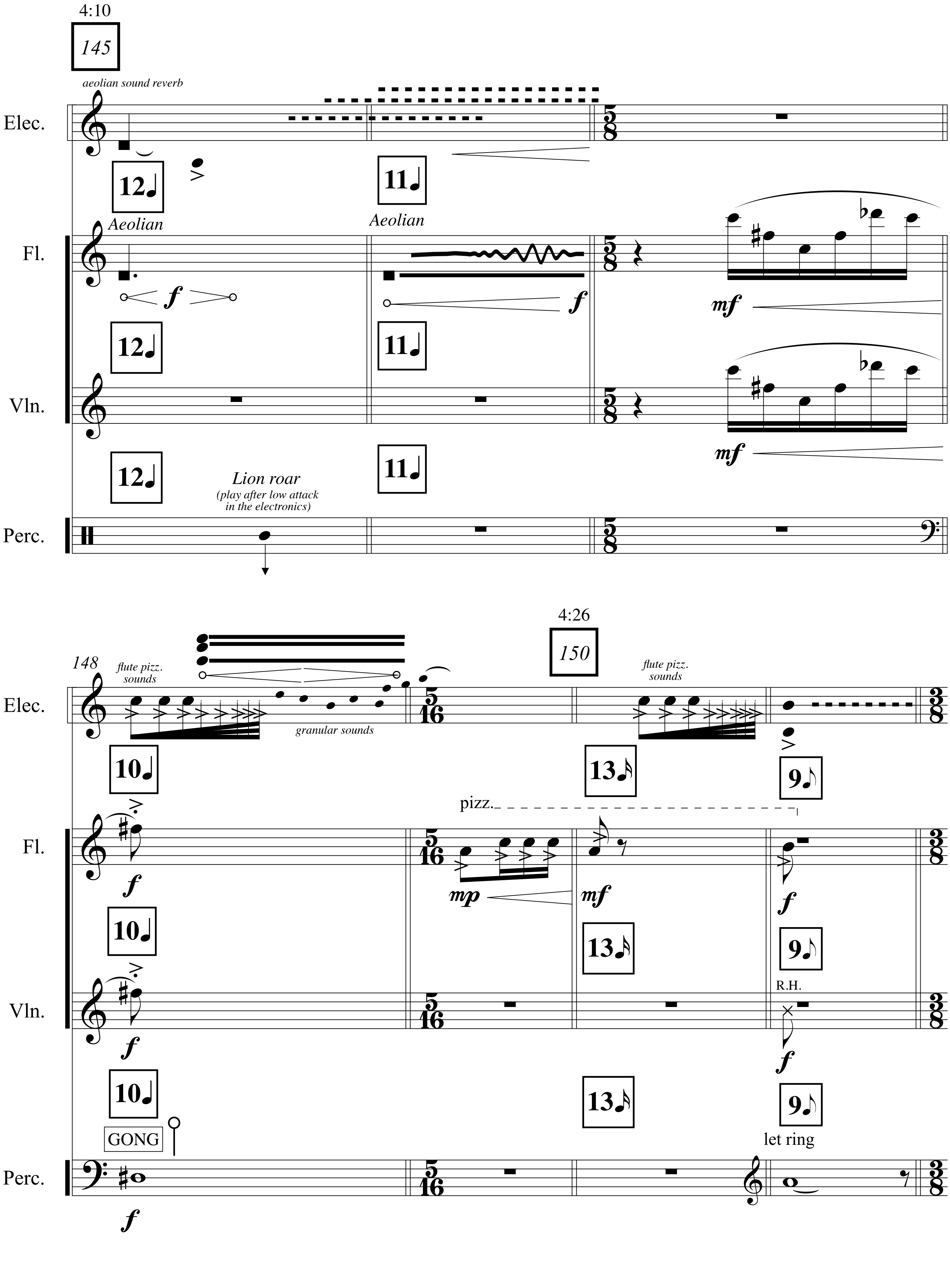

3:21
110
108
Elec.
Fl.
Vln.
Perc.
Aeolian
pizz.
Thumb
nail
mp
mf
f
p
111
marimba reverb
Tongue Ram
reverb
8va
Aeolian
T. R.


3:28
115
114
Elec.
Fl.
Vln.
Perc.
flute pizz. sounds
pizz.
Aeolian
ordinary position
without bow
R.H. L.H. R.H.
nail
117
aeolian sound reverb
Aeolian
Aeolian
pizz.
pizz.
Thumb
pizz.
3:34
120
bow

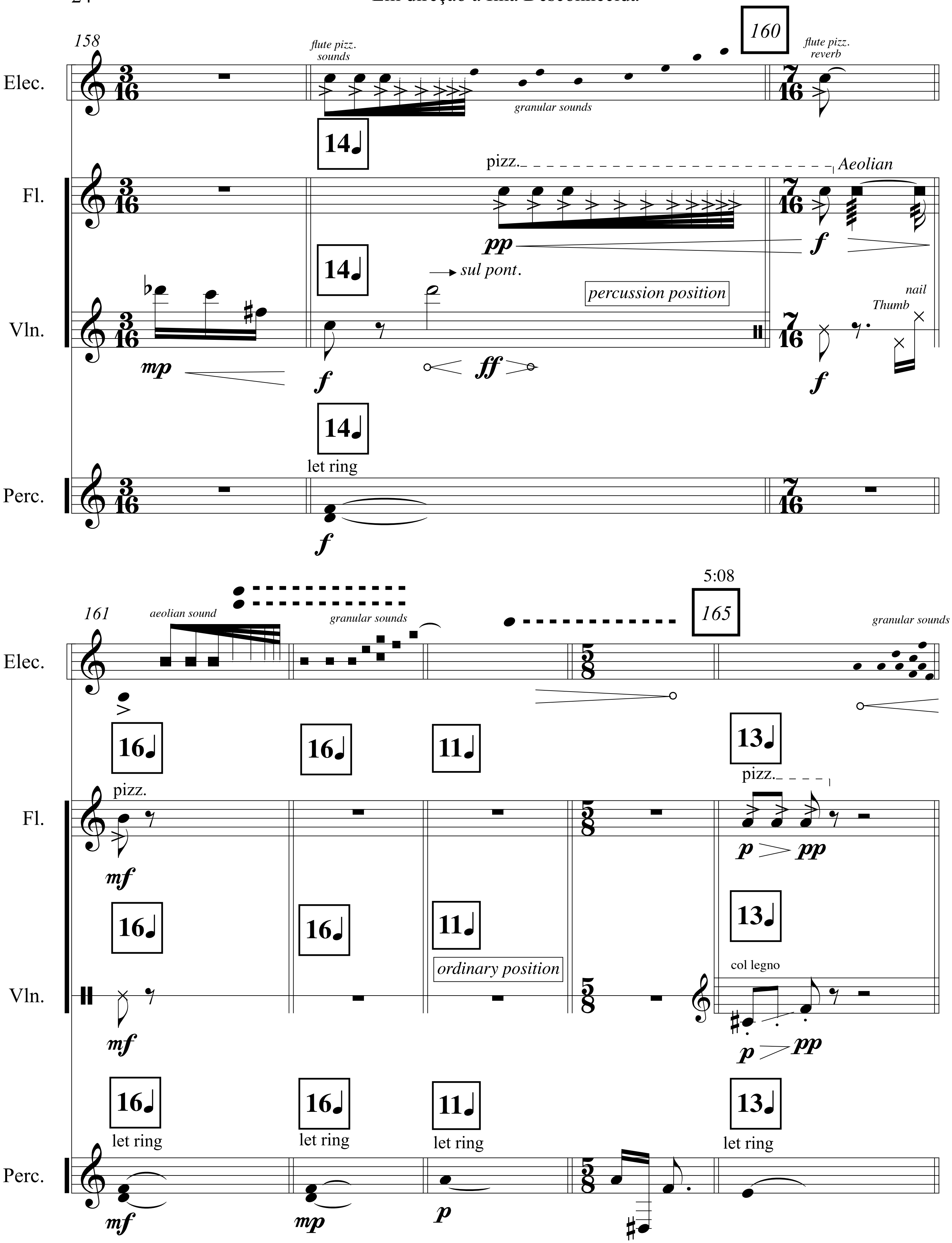

121
Elec.
flute pizz.
reverb
Fl.
Aeolian
pizz. Aeolian
pizz.
pizz.
Vln.
pizz.
Perc.
FRAME DRUMS
MARIMBA
3:41
125
124
marimba reverb
Aeolian
pizz.
col legno

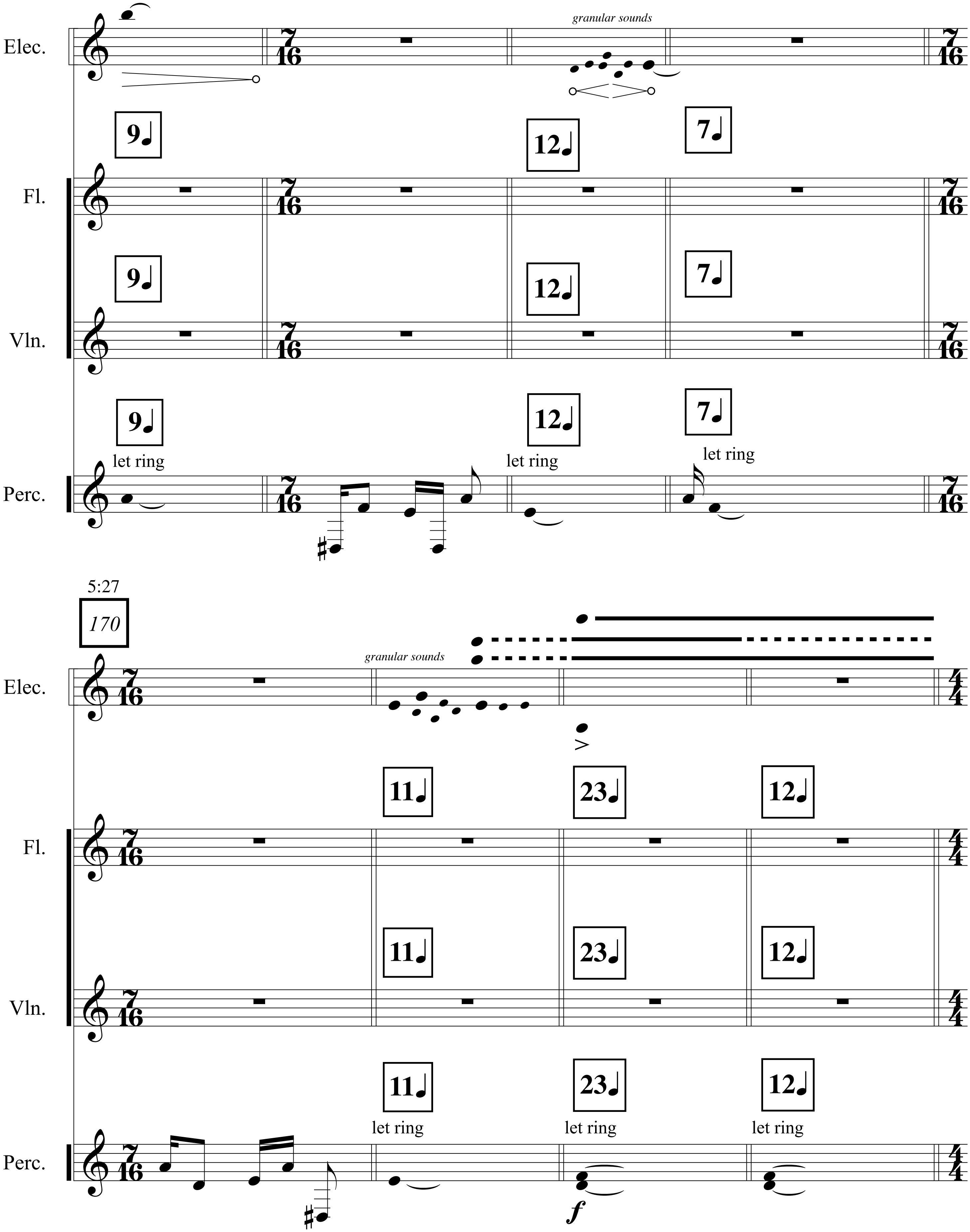

3:45
130
128
Elec.
Fl.
Vln.
Perc.
Aeolian
pizz.
Aeolian
pizz.
Aeolian
pizz.
3:49
135
133
marimba + aeolian sound
reverb
Elec.
Fl.
Vln.
Perc.


137
instrumental granular sounds
violin granular sounds
Elec.
Fl.
Vln.
Perc.
6
ff
p
3:55
140
echo-like sound
granular sounds
aeolian granular sounds
Aeolian
4
14
10
f
FRAME DRUMS
Lion roar
MARIMBA

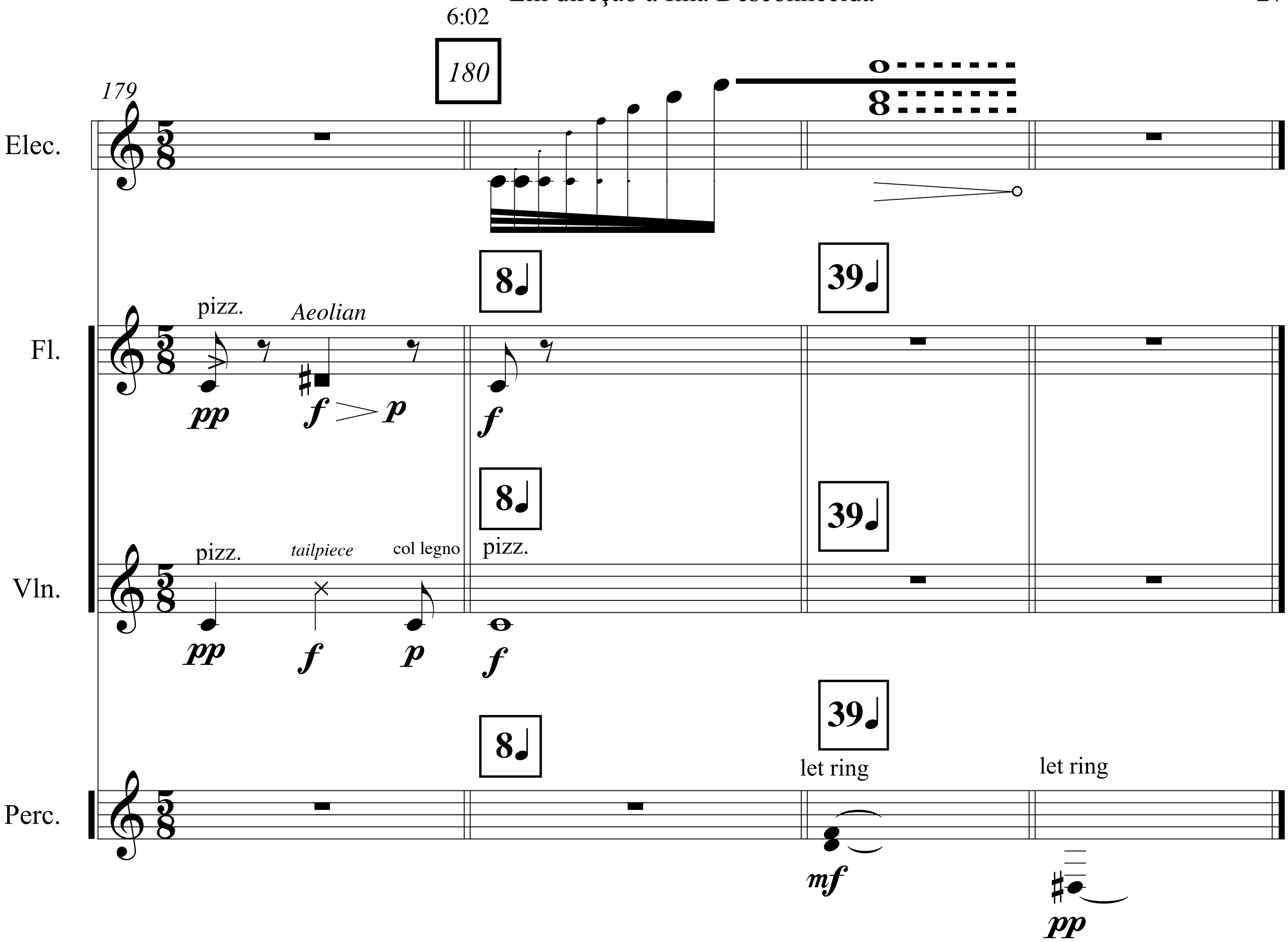

4:10
145
aeolian sound reverb
Elec.
12
Aeolian
11
Aeolian
Fl.
f
f
mf
Vln.
mf
Lion roar
(play after low attack
in the electronics)
Perc.
148
flute pizz.
sounds
granular sounds
4:26
150
flute pizz.
sounds
10
13
9
pizz.
mp
mf
f
R.H.
GONG
let ring


152
8va
aeolian sound reverb
Elec.
pizz.
Aeolian
pizz.
5
Aeolian
Fl.
mf
f
(switch between different natural harmonics)
5
nail
Vln.
mf
f
5
Perc.
4:33
155
Elec.
7
10
Fl.
Aeolian
mp
f
p
f
7
10
Vln.
mp
f
7
10
let ring
Perc.
f


4:48
160
158
Elec.
flute pizz. sounds
granular sounds
flute pizz. reverb
Fl.
pizz.
Aeolian
Vln.
sul pont.
percussion position
Thumb
nail
Perc.
let ring
5:08
165
161
aeolian sound
granular sounds
granular sounds
pizz.
pizz.
ordinary position
col legno
let ring
let ring
let ring
let ring


Elec.
Fl.
Vln.
Perc.
granular sounds
9
12
7
let ring
7/16
5:27
170
11
23
12
4/4
f


174
5:49
175
Elec.
Fl.
Vln.
Perc.
pizz.
bridge
tailpiece
col legno
DAMPED MARIMBA
GONG
let ring
11
177
Aeolian
pizz. (LH)
6


6:02
180
179
Elec.
8
8♩
39♩
Fl.
pizz.
Aeolian
pp
f
p
f
8♩
39♩
Vln.
pizz.
tailpiece
col legno
pizz.
pp
f
p
f
8♩
39♩
let ring
let ring
Perc.
mf
pp

L E V Y   O L I V E I R A

A r a p u c a

for flute, classical guitar, cello and electronics

Belo Horizonte MG
Janeiro 2021

Somos assim: sonhamos o voo mas tememos a altura. Para voar é preciso ter coragem para enfrentar o terror do vazio. Porque é só no vazio que o voo acontece. O vazio é o espaço da liberdade, a ausência de certezas. Mas é isso o que tememos: o não ter certezas. Por isso trocamos o voo por gaiolas. As gaiolas são o lugar onde as certezas moram.

Rubem Alves

That is how we are: We dream about flying, but we fear heights. To fly you need to face your fear of the void. Because the flight only happens if there is a void. Emptiness is the space of freedom, the absence of certainties. Men want to fly, but they fear emptiness. They cannot live without certainties. That's why we exchange the flight for cages. Cages are the place where certainties live.

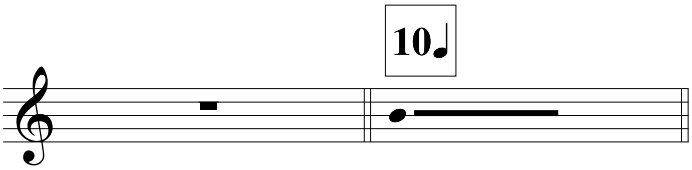
Rubem Alves

PERFORMANCE INSTRUCTIONS

Score in C

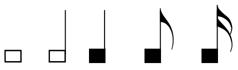
GENERAL

Tremolos are always fast and not measured.

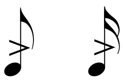


In this score, there is traditional and proportional notation. Proportional notation happens always between double bars. In proportional notatiton, hold note for a time proportional to the length of the line (In this example, the note extends half away through the duration of the measure).

FLUTE



Aeolian sound.

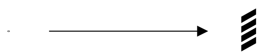


Pizzicato.

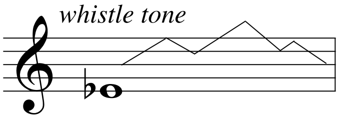
Tongue Ram.

Chromatic glissando.

Embochure glissando.

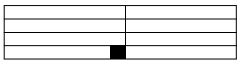


Transiction from ordinary playing to frullato.

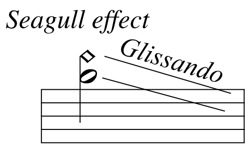


Play upper harmonics of indicated pitch.

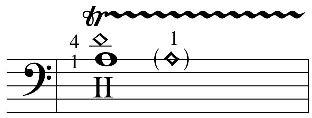
CELLO



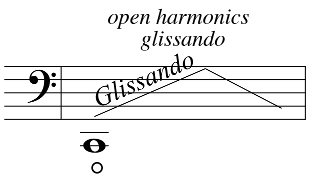
Percussive sound on cello's body (near f-hole).



Put your fingers as high as possible in artificial harmonic position and slide down the fingerboard keeping your fingers in the exact same position the entire time.
Reference video: [shorturl.at/auIPZ]



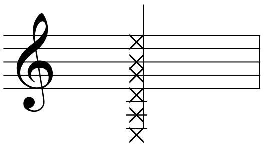
Harmonic trill.
Reference video: [shorturl.at/emnsS]



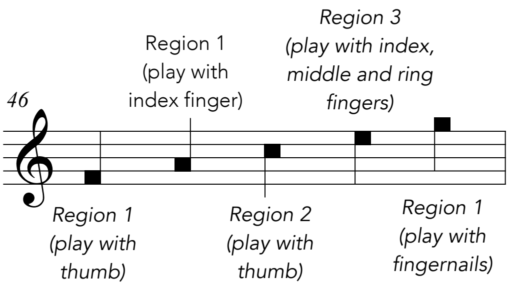
Open harmonic glissando in indicated string.

PERFORMANCE INSTRUCTIONS

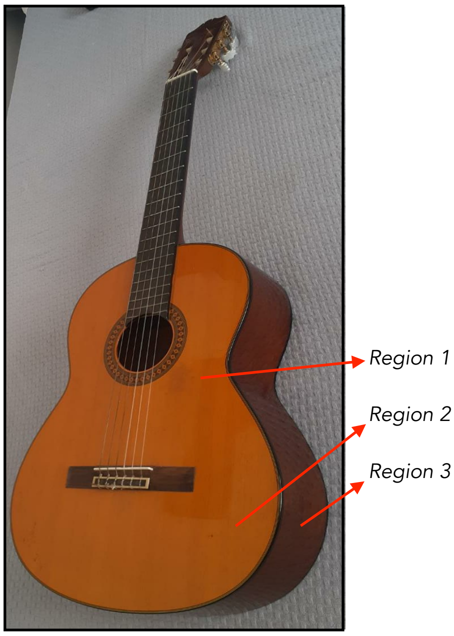
GUITAR



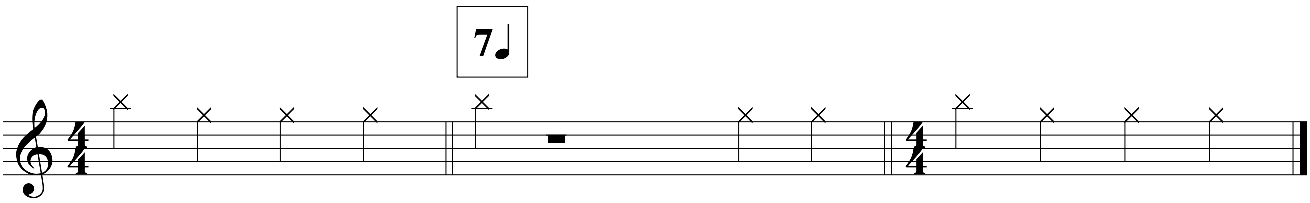
Damp indicated strings.



Percussive sound on indicated place of instrument's body with specific finger.



CLICK AND ELECTRONICS



The piece should be played with a click-track (earphone) to facilitate the synchronism between performer and electronics.
Click-track plays every beat. In measures without time signature click-track does not play. Cue to next measure is given two beats before.

Other instructions may appear in the score.
In case of any doubts, please contact the composer at pacheco.levy@gmail.com

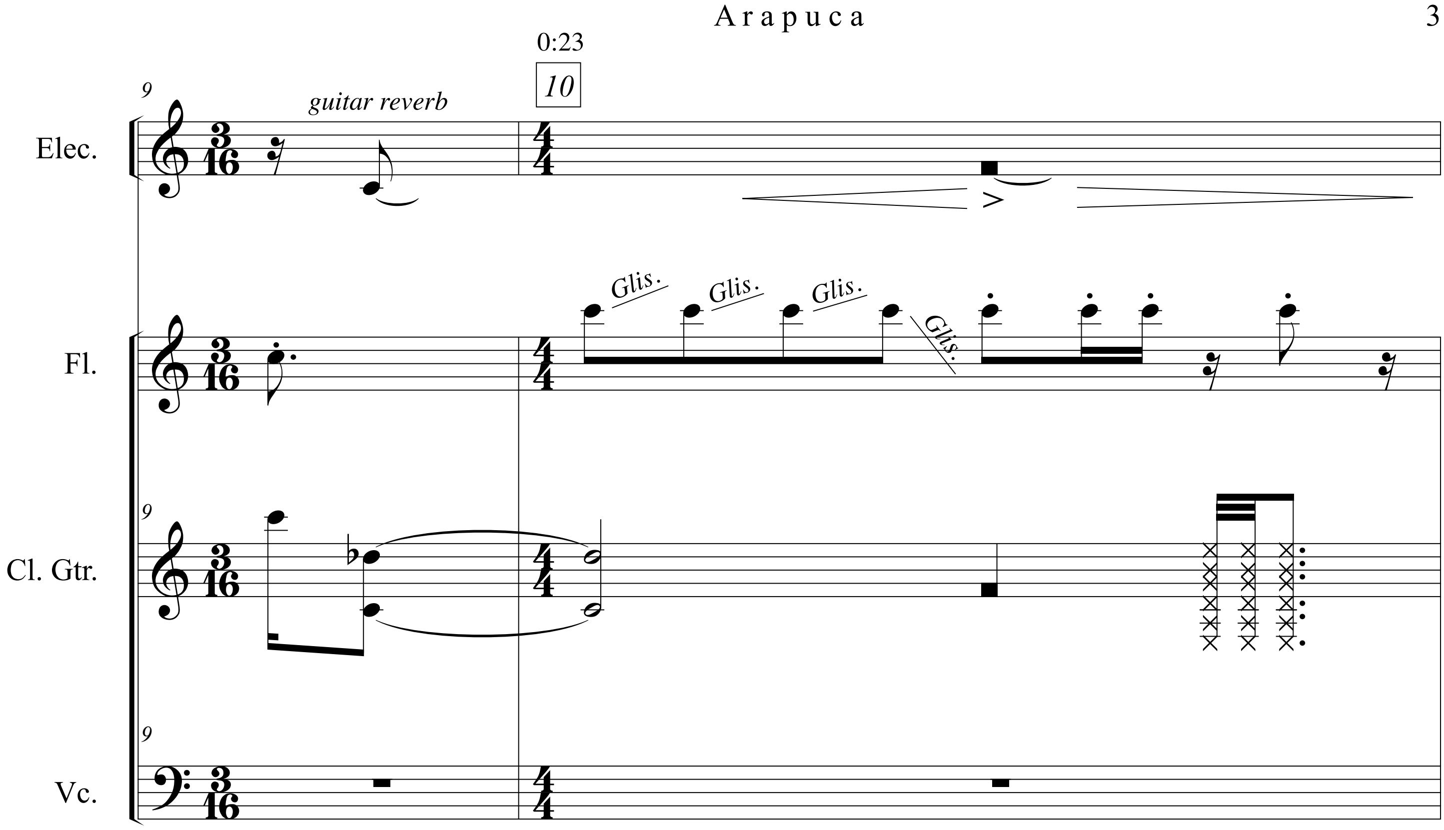
For further information about the composer, please visit: www.levyoliveira.com

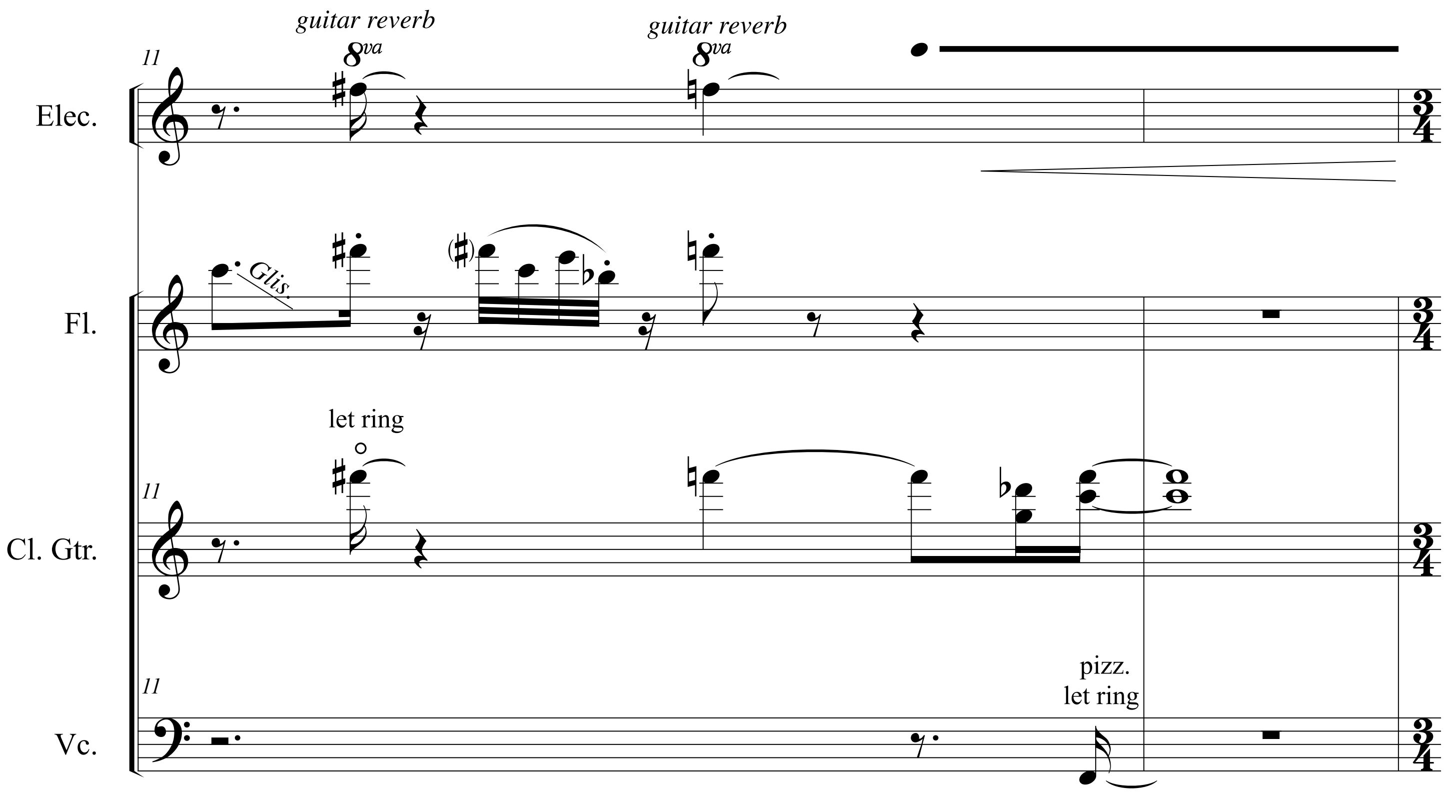
Arapuca

(English title: Bird Trap)

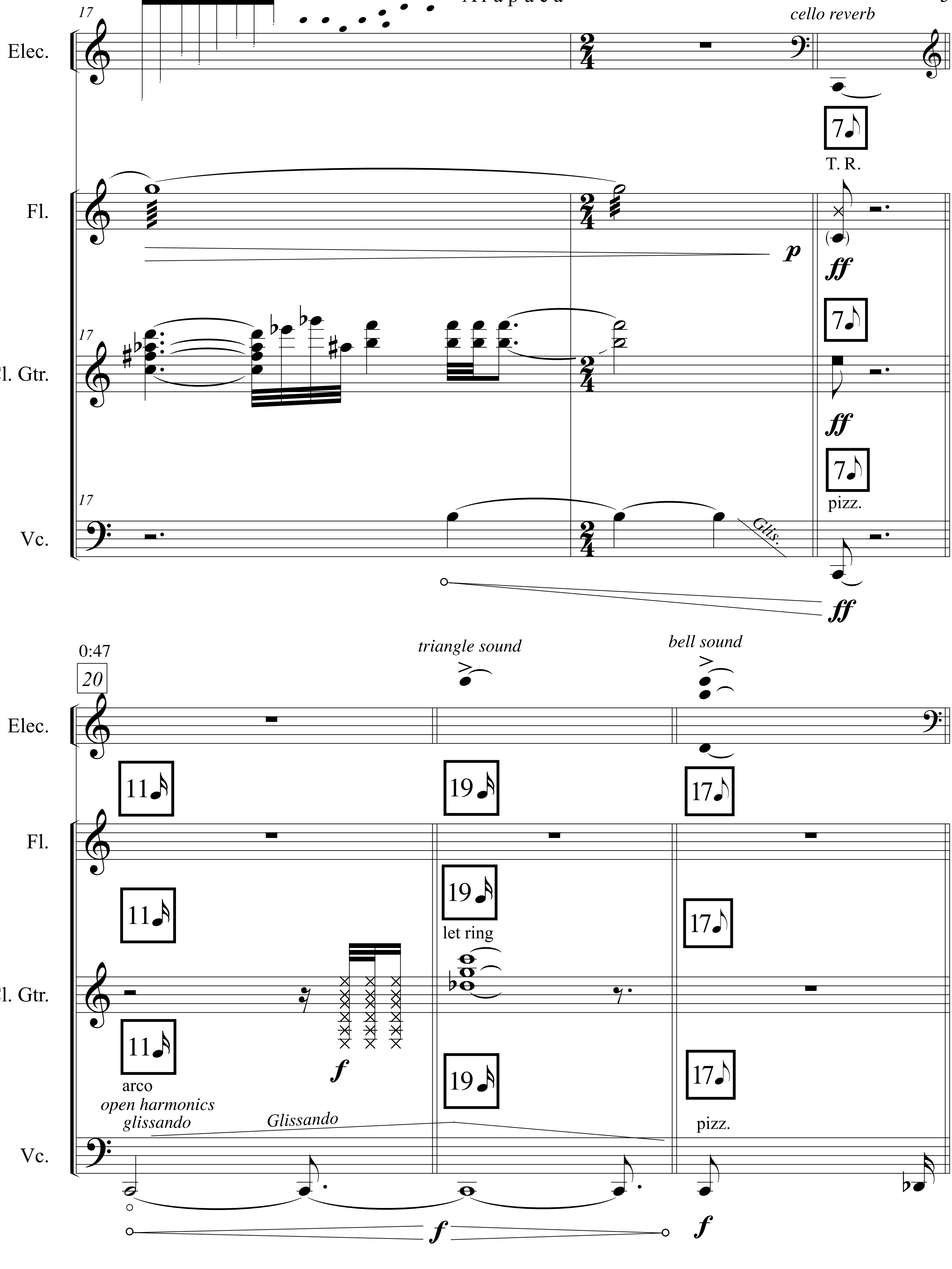
Levy Oliveira

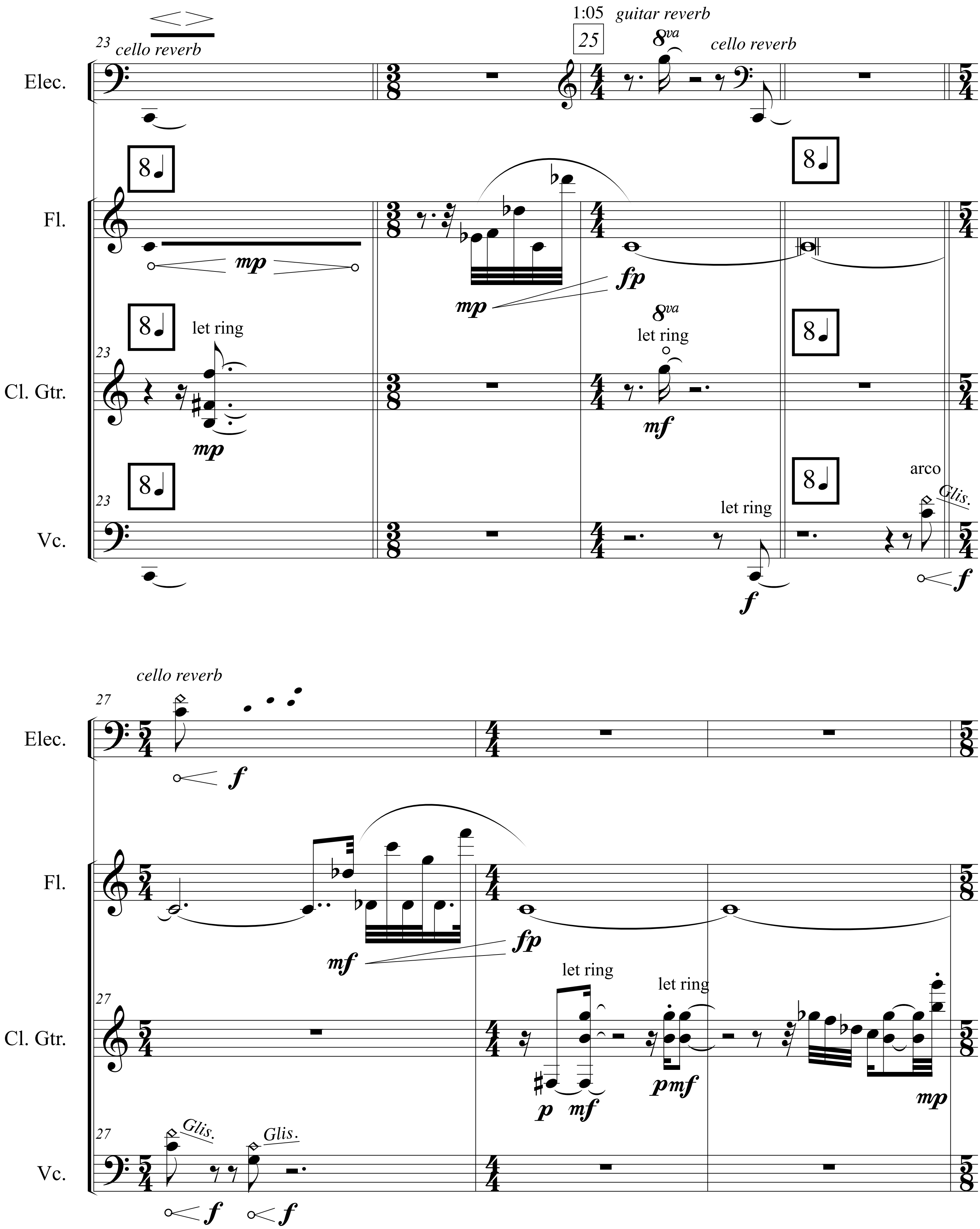

0:13
5
granular sound
Elec.
Fl.
Glis.
Glis.
Glis.
fp
fp
fp
Cl. Gtr.
VI.
Glissando
3
Vc.
arco
let ring
f
let ring
f
7
cello reverb
guitar reverb
granular sound
Elec.
Fl.
Glis.
Glis.
Glis.
Glis.
f
Cl. Gtr.
let ring
Vc.
f


0:23
10
9
guitar reverb
Elec.
Fl.
Glis.
Glis.
Glis.
Glis.
Cl. Gtr.
Vc.


11
guitar reverb
8va
guitar reverb
8va
Elec.
Fl.
Glis.
let ring
Cl. Gtr.
pizz.
let ring
Vc.


13
Elec.
guitar reverb
guitar reverb
Fl.
13
Cl. Gtr.
13
arco
let ring
Vc.
0:36
15
Elec.
Fl.
3
Cl. Gtr.
Vc.


17
Elec.
Fl.
Cl. Gtr.
Vc.
cello reverb
7
T. R.
p
ff
Glis.
pizz.
0:47
20
triangle sound
bell sound
11
19
17
let ring
f
arco
open harmonics
glissando
Glissando
pizz.


Elec.
Fl.
Cl. Gtr.
Vc.
cello reverb
mp
let ring
1:05
25
guitar reverb
8va
fp
mf
f
arco
Glis.
pmf
p

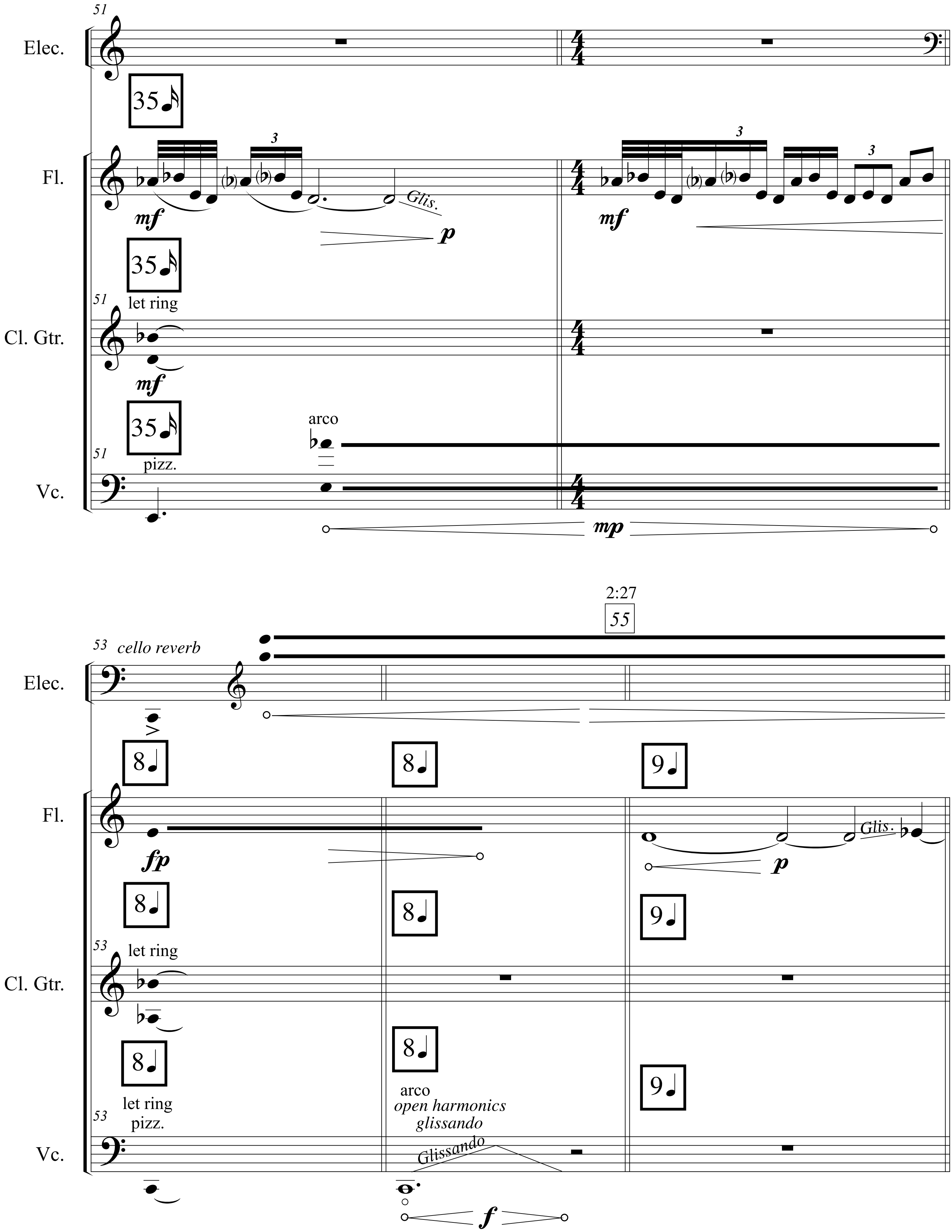

1:23
30
granular sound
Elec.
Fl.
Cl. Gtr.
Vc.
VI.
Glis.
pizz.
cello reverb
33
1:37
35
arco

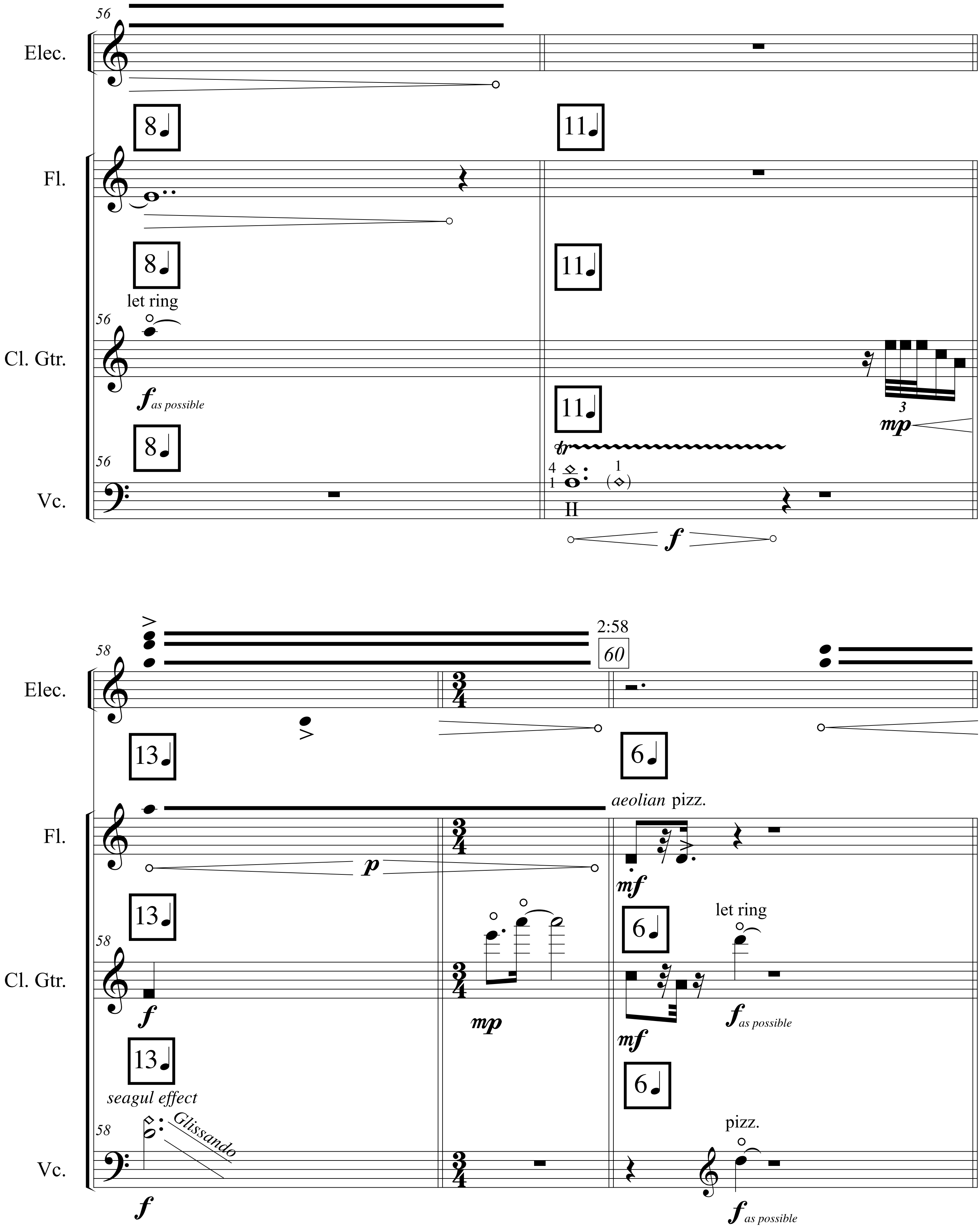

triangle sound
guitar reverb
triangle sound
Elec.
Fl.
Cl. Gtr.
Vc.
Glis.
Glis.
triangle sound
bell sound
let ring
Elec.
Fl.
Cl. Gtr.
Vc.

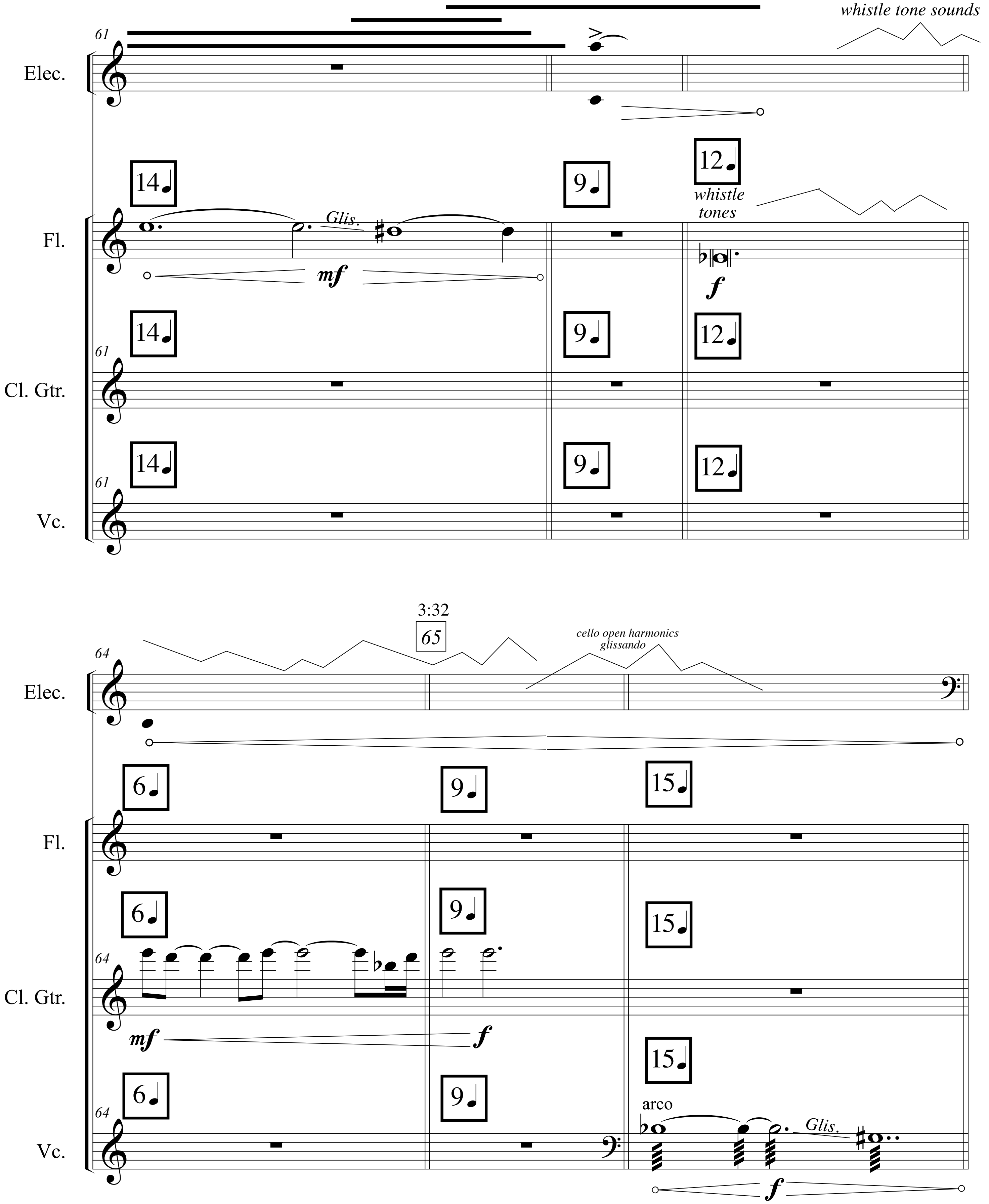

1:50
40
Elec.
Fl.
Cl. Gtr.
Vc.
guitar reverb
Glissando
let ring
8va
f as possible
f
Glissando
f
43
ff
mf
ff
ff

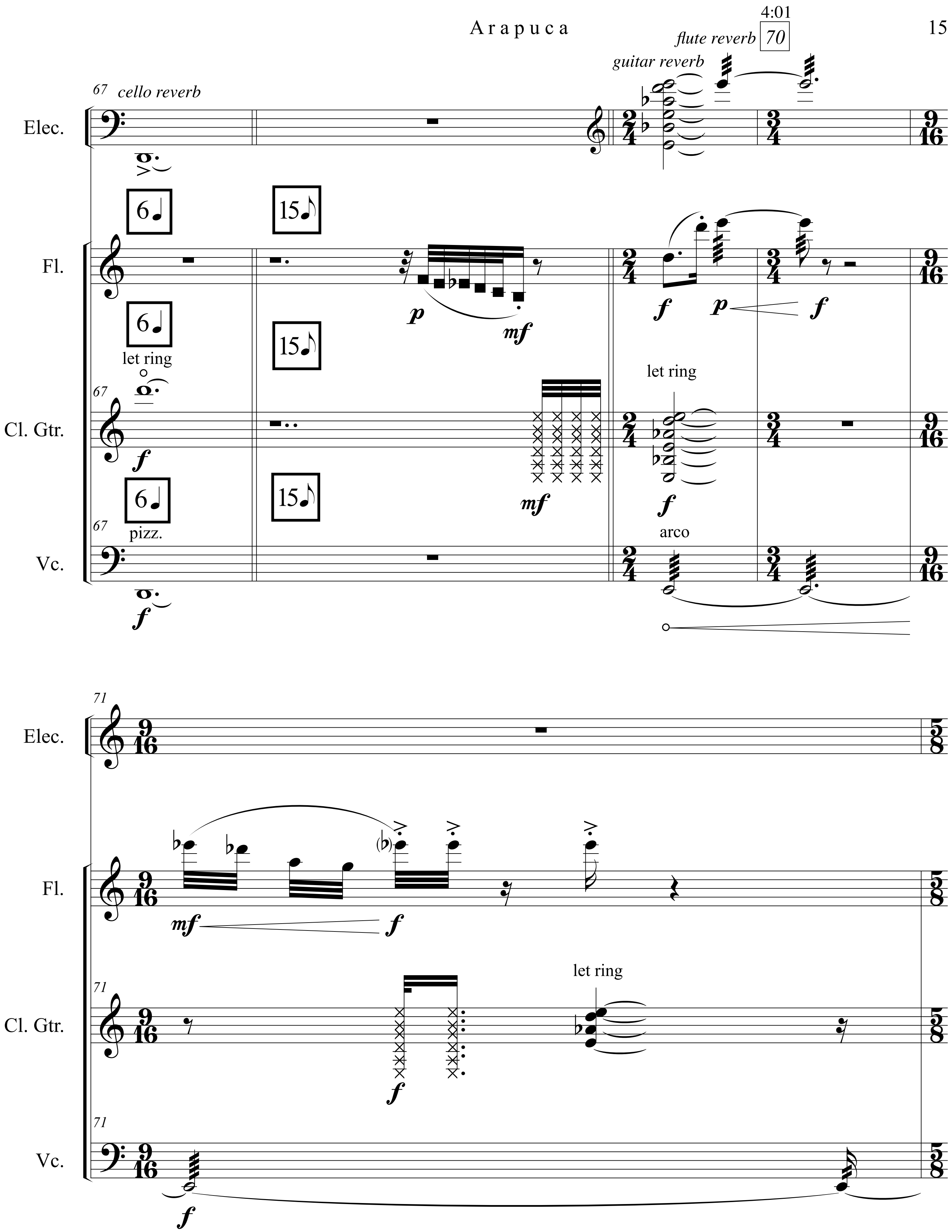

44
Elec.
Fl.
44
Cl. Gtr.
Glissando
ff
44
Vc.
1:59
45
Elec.
Fl.
Cl. Gtr.
Vc.
Glissando
ff

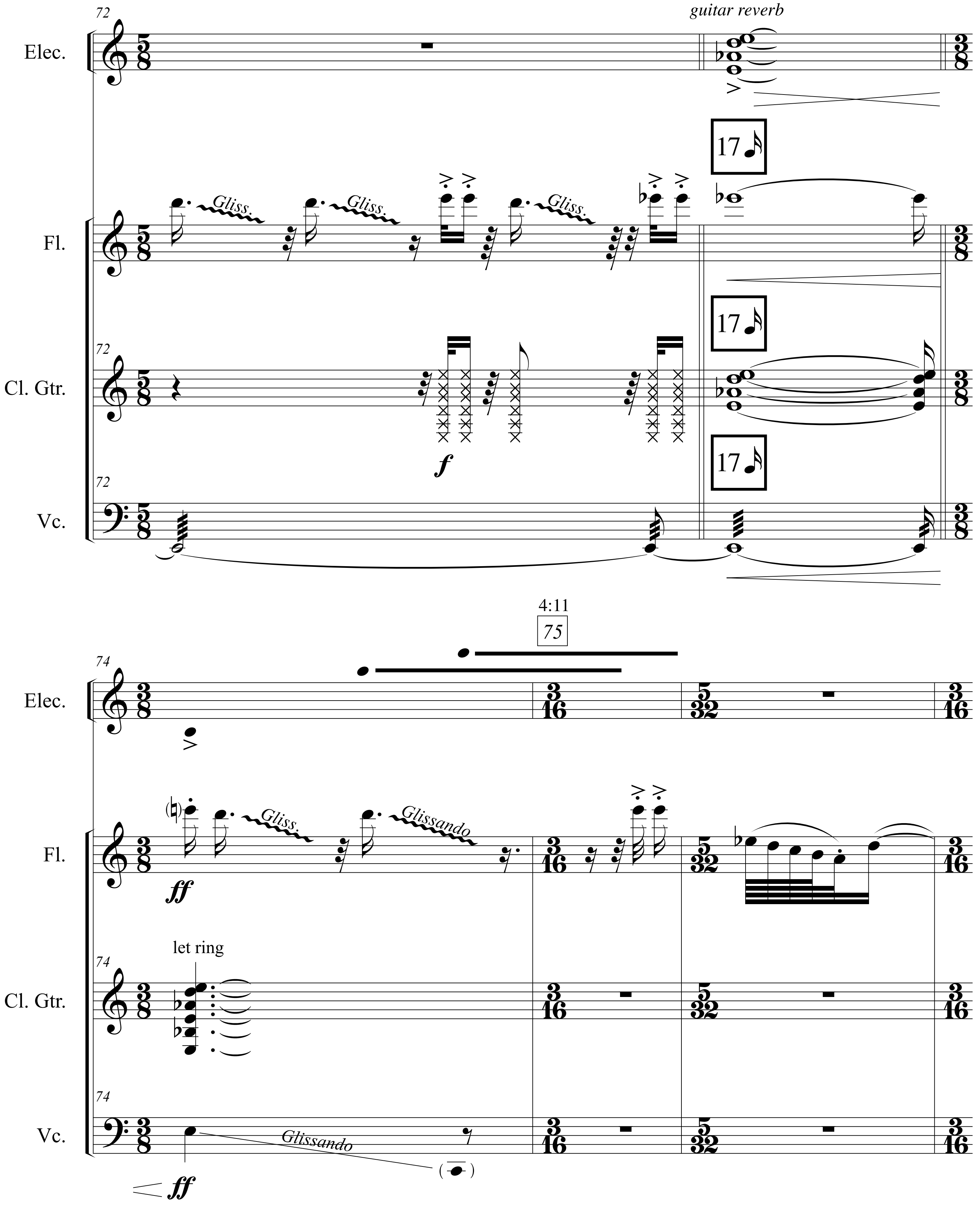

46
Elec.
Fl.
Cl. Gtr.
Vc.
flute reverb
Gliss.
49
2:04
50
cello reverb
Glissando
ff
f


51
Elec.
35
Fl.
mf
Glis.
p
35
let ring
51
Cl. Gtr.
mf
35
arco
51
pizz.
Vc.
mp
2:27
55
53
cello reverb
Elec.
8
8
9
Fl.
fp
Glis.
p
8
8
9
53
let ring
Cl. Gtr.
8
8
9
let ring
pizz.
arco
open harmonics
glissando
53
Vc.
Glissando
f


56
Elec.
8♩
11♩
Fl.
8♩
11♩
let ring
56
Cl. Gtr.
f as possible
11♩
3
mp
8♩
56
Vc.
II
f
58
Elec.
2:58
60
13♩
6♩
Fl.
aeolian pizz.
p
mf
13♩
6♩
let ring
58
Cl. Gtr.
f
mp
mf
f as possible
13♩
6♩
seagul effect
pizz.
58
Glissando
Vc.
f
f as possible

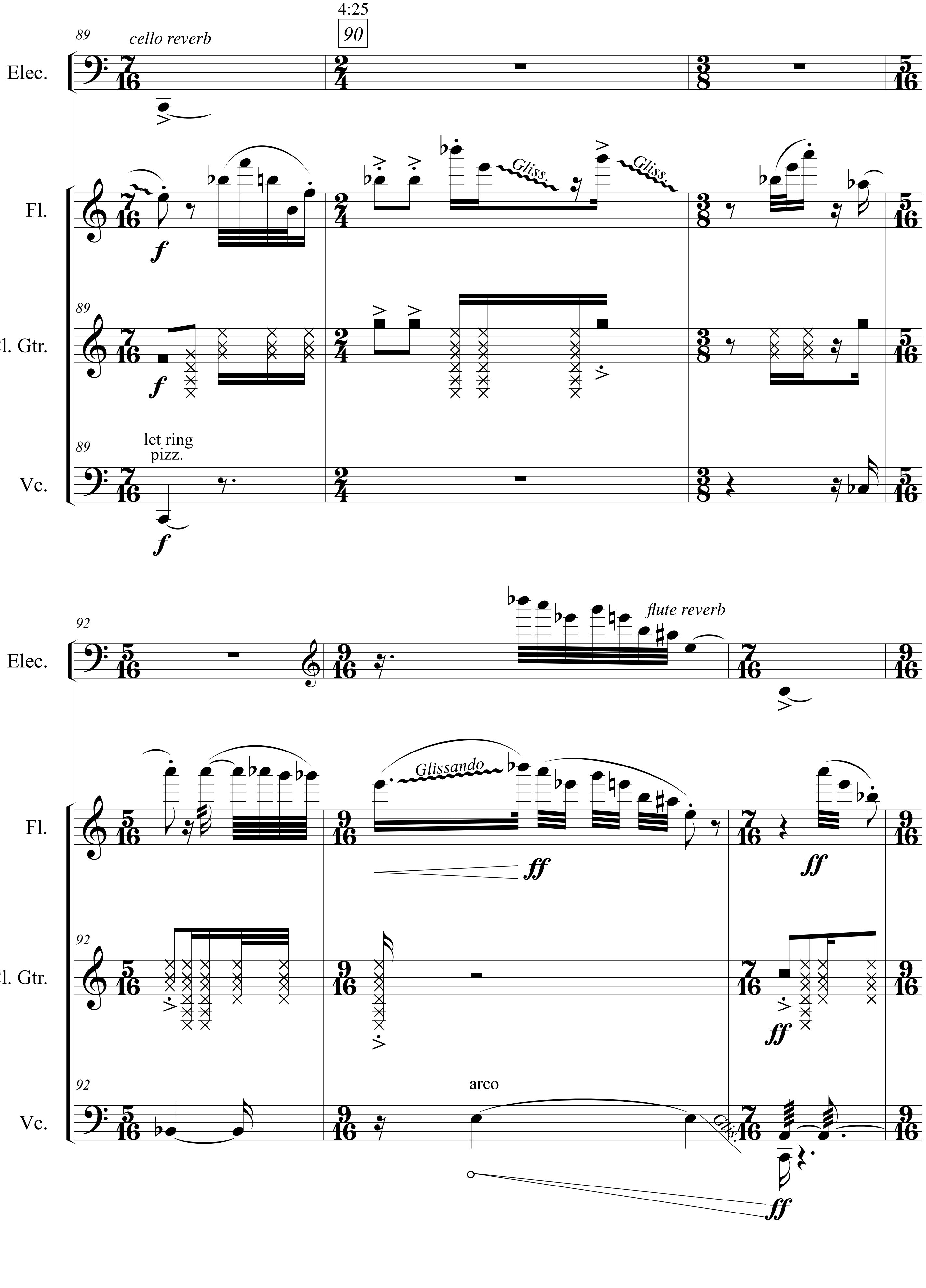

61
Elec.
Fl.
Cl. Gtr.
Vc.
whistle tone sounds
14
9
12
Glis.
whistle
tones
mf
f
64
3:32
65
cello open harmonics
glissando
6
9
15
mf
f
arco
Glis.
f


4:01
70
flute reverb
guitar reverb
67
cello reverb
Elec.
6
15
Fl.
p
mf
f
p
f
let ring
67
Cl. Gtr.
f
mf
let ring
f
pizz.
67
Vc.
arco
f
71
Elec.
Fl.
mf
f
71
Cl. Gtr.
f
let ring
71
Vc.
f

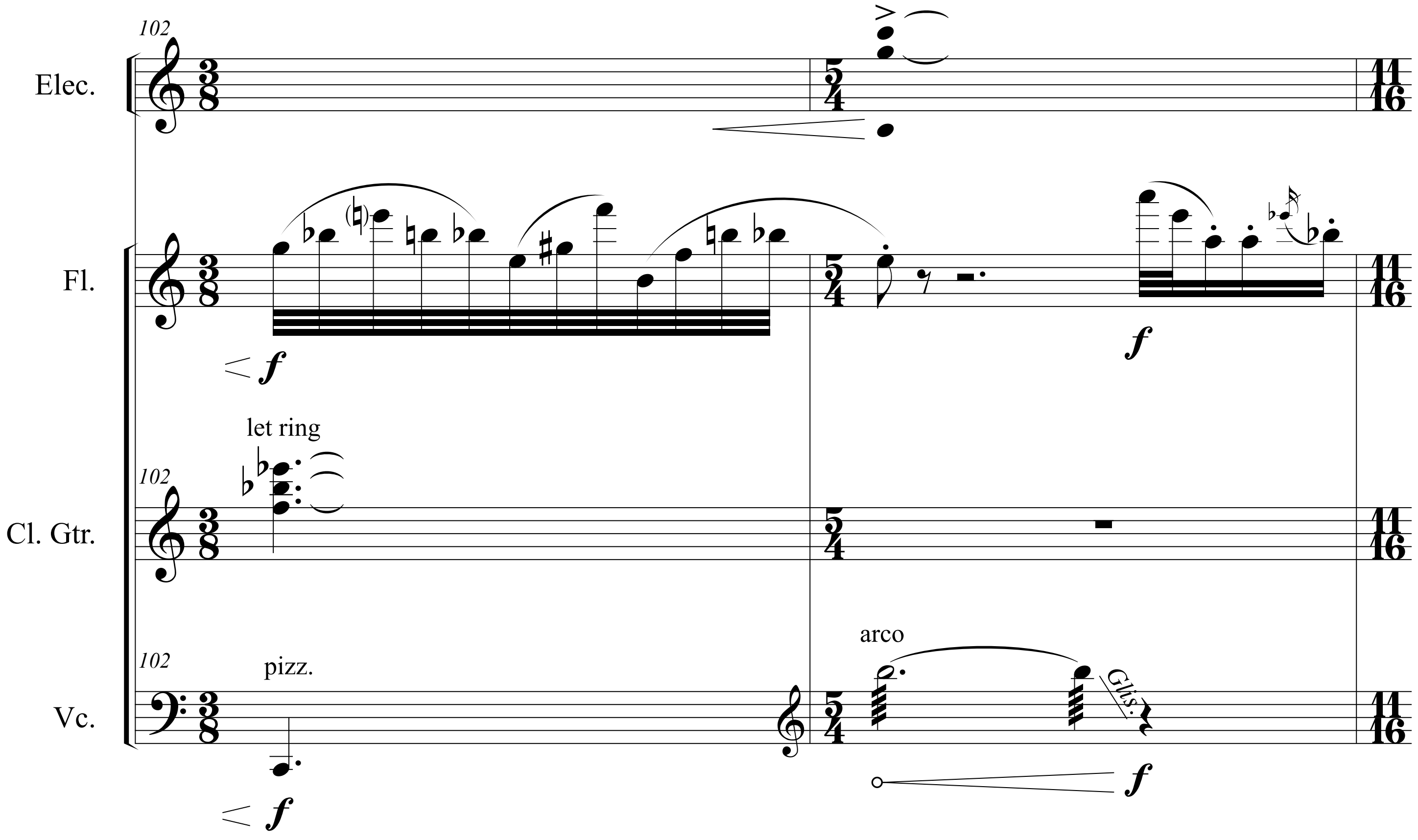

72
Elec.
guitar reverb
17
Fl.
Gliss.
Gliss.
Gliss.
17
72
Cl. Gtr.
f
17
72
Vc.
4:11
75
74
Elec.
Fl.
ff
Gliss.
Glissando
let ring
74
Cl. Gtr.
74
Vc.
Glissando
ff

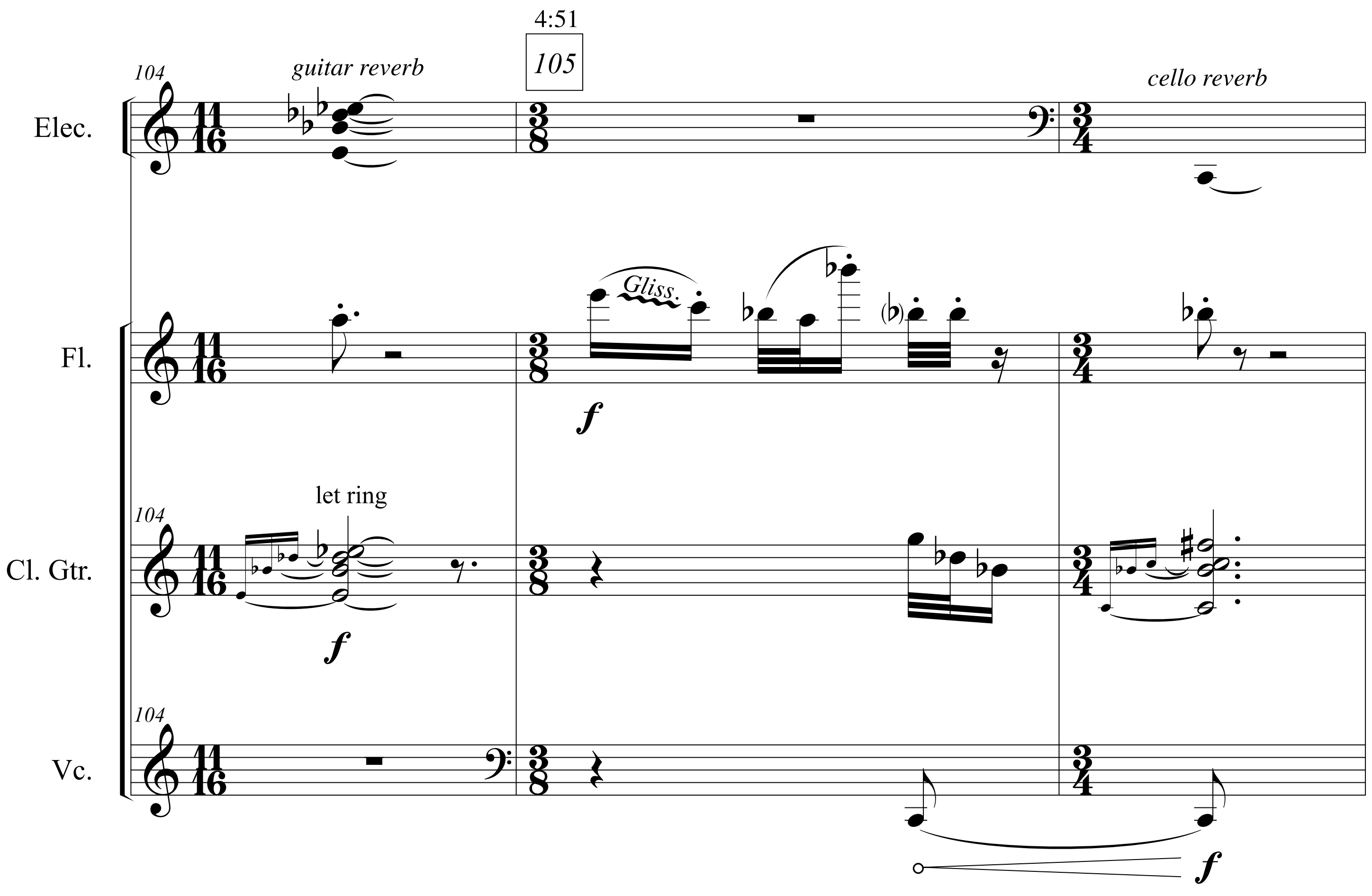

77
flute reverb
guitar reverb
Elec.
Fl.
let ring
Cl. Gtr.
pizz.
arco
Vc.
4:14
80
cello reverb
cello reverb
guitar reverb
Elec.
Fl.
Cl. Gtr.
Vc.


4:20
85
84
cello reverb
Elec.
Fl.
Gliss.
Gliss.
Cl. Gtr.
Vc.
pizz.
87
flute reverb
Glissando
arco
Glissando

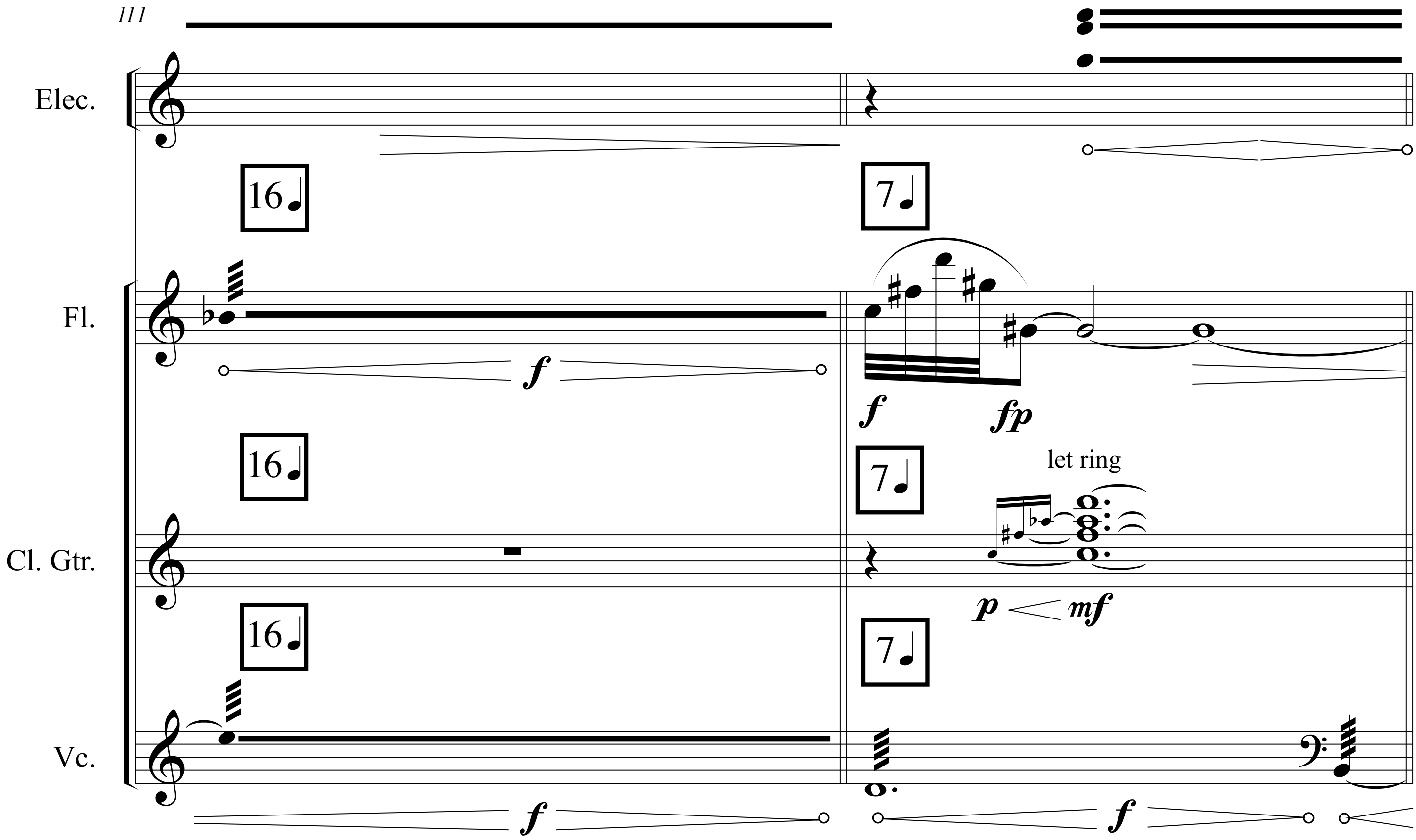

89
cello reverb
4:25
90
Elec.
Fl.
Gliss.
Gliss.
Cl. Gtr.
Vc.
let ring
pizz.
92
flute reverb
Glissando
arco
Glis.

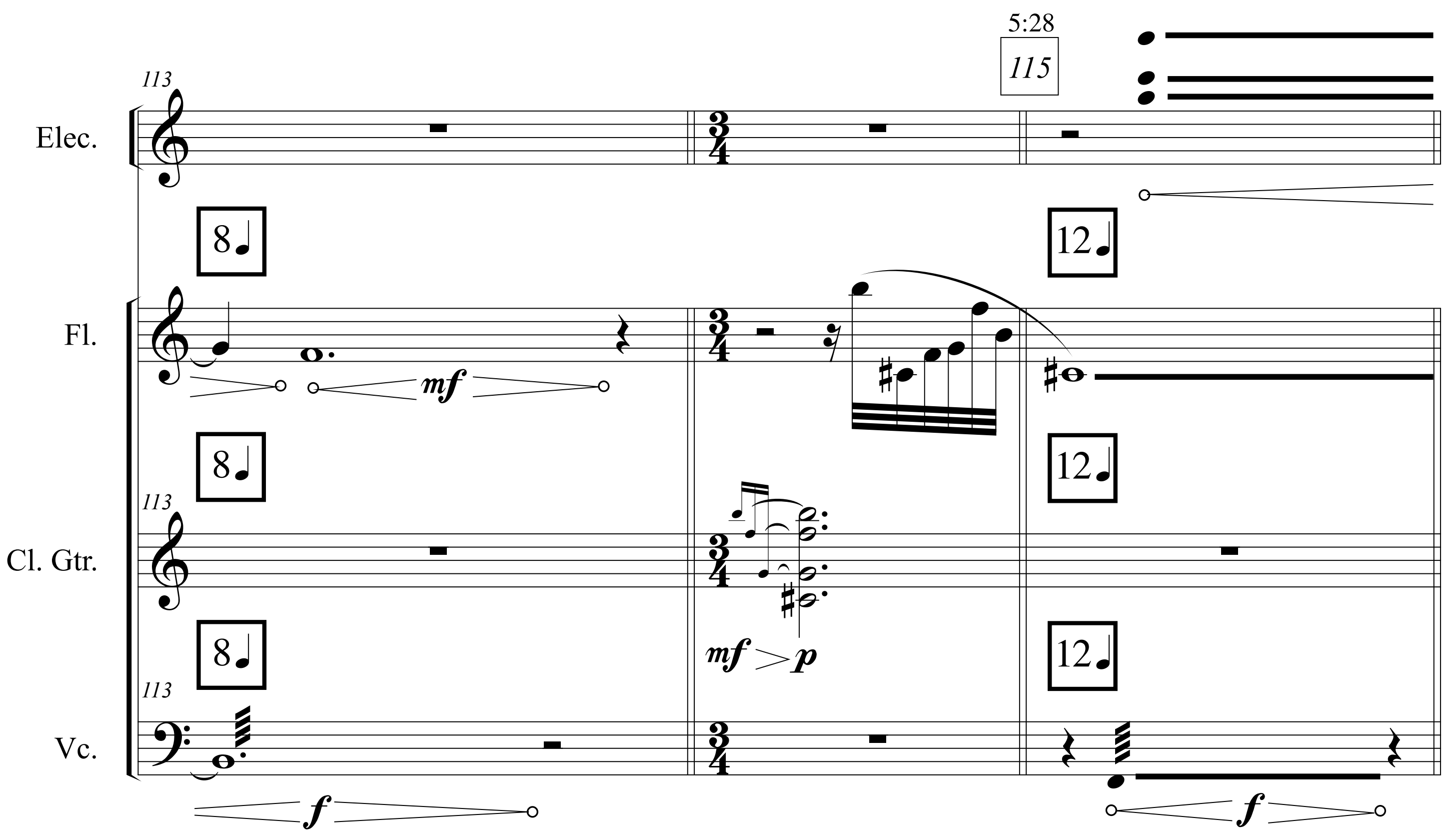

4:32
95
triangle sound
flute reverb
Elec.
Gliss.
aeolian
Gliss.
Fl.
Cl. Gtr.
3
Vc.
4:38
100
99
Elec.
Fl.
99
Cl. Gtr.
mff
mf
f
99
Vc.
Glis.


102
Elec.
Fl.
let ring
102
Cl. Gtr.
arco
102
pizz.
Gliss.
Vc.


4:51
105
104
guitar reverb
cello reverb
Elec.
Gliss.
Fl.
let ring
104
Cl. Gtr.
104
Vc.


107
Elec.
flute reverb
Fl.
Gliss.
Gliss.
107
Cl. Gtr.
let ring
107
Vc.
109
Elec.
5:00
110
Fl.
fp
let ring
109
Cl. Gtr.
f as possible
109
Vc.


111
Elec.
16
7
Fl.
f
f
fp
16
let ring
Cl. Gtr.
p
mf
16
7
Vc.
f
f


5:28
115
113
Elec.
8
12
Fl.
mf
8
12
113
Cl. Gtr.
mf
p
8
12
113
Vc.
f
f


116
Elec.
cello reverb
24
14
Fl.
aeolian
Cl. Gtr.
Vc.
118
cello reverb
6:08
120
Glis.
pizz.
let ring
arco

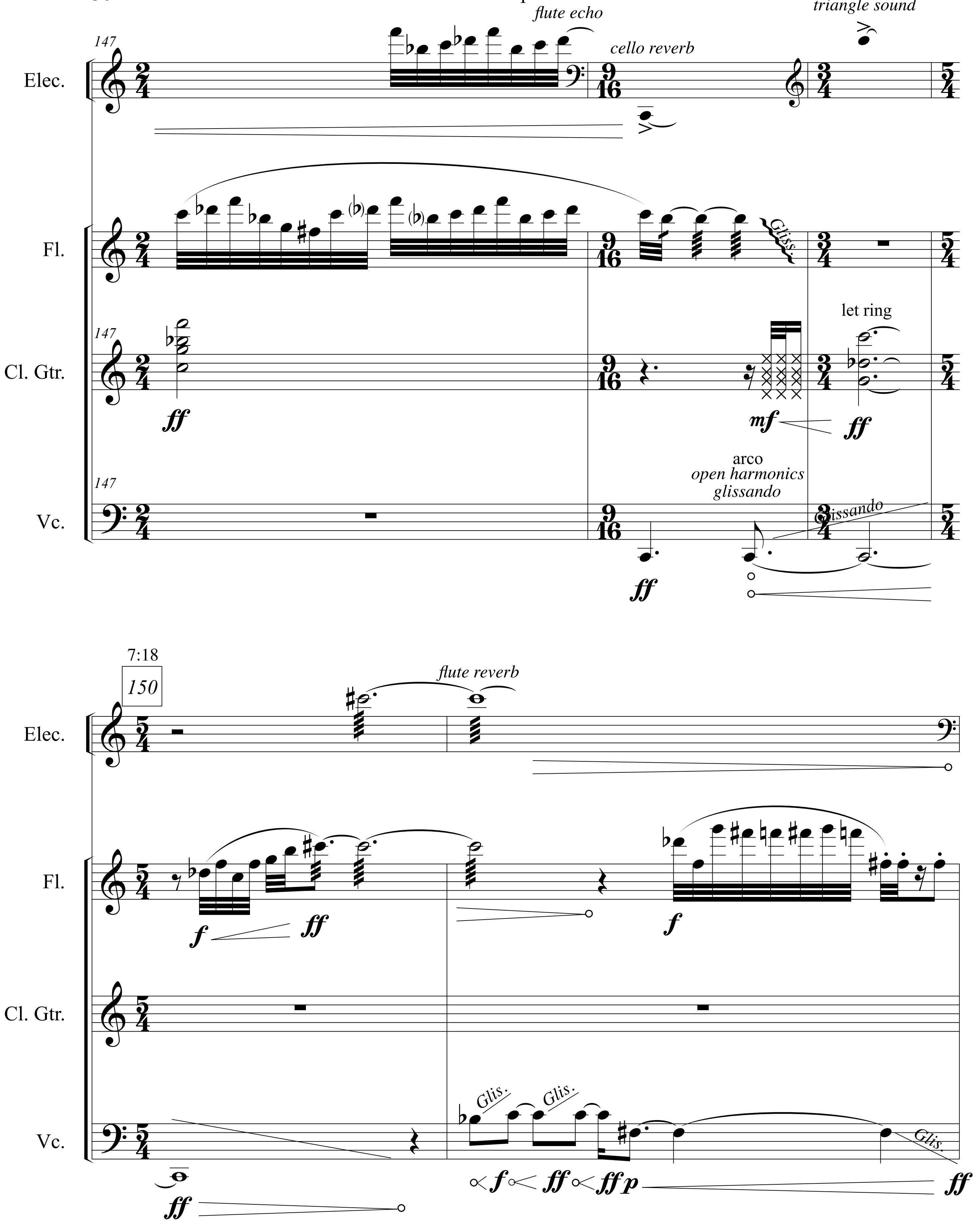

121
Elec.
Fl.
Cl. Gtr.
Vc.
Glis.
124
triangle sound
cello reverb
6:15
125
cello reverb
124
124
let ring
pizz.
arco

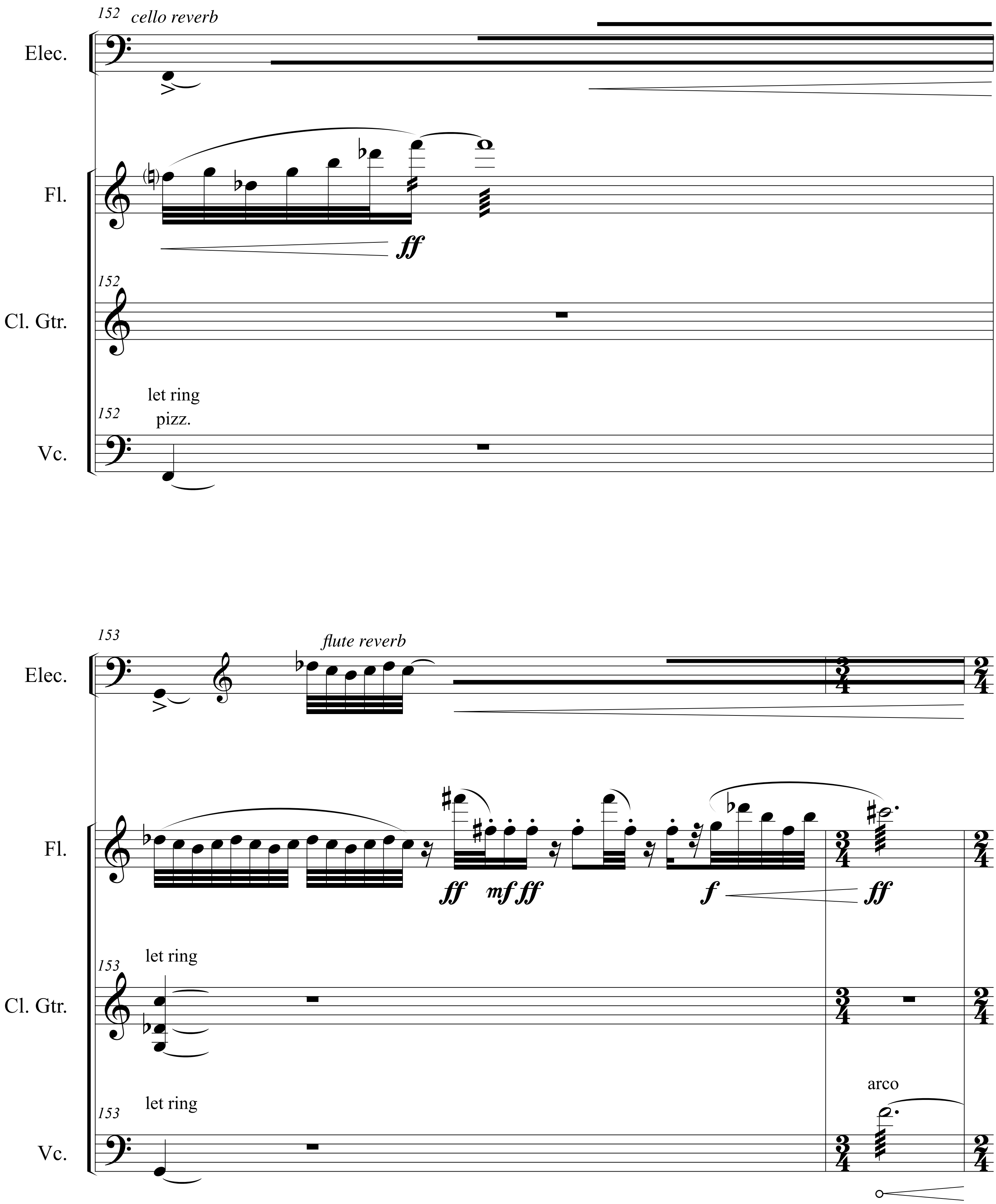

cello reverb
guitar reverb
cello reverb
127
Elec.
Fl.
Cl. Gtr.
Vc.
6:27
130


131
Elec.
Fl.
Cl. Gtr.
Vc.
flute echo
flute echo
let ring
let ring
pizz.
134
flute reverb
6:40
135
guitar reverb
Glissando
Glis.
Glis.
Glis.
let ring

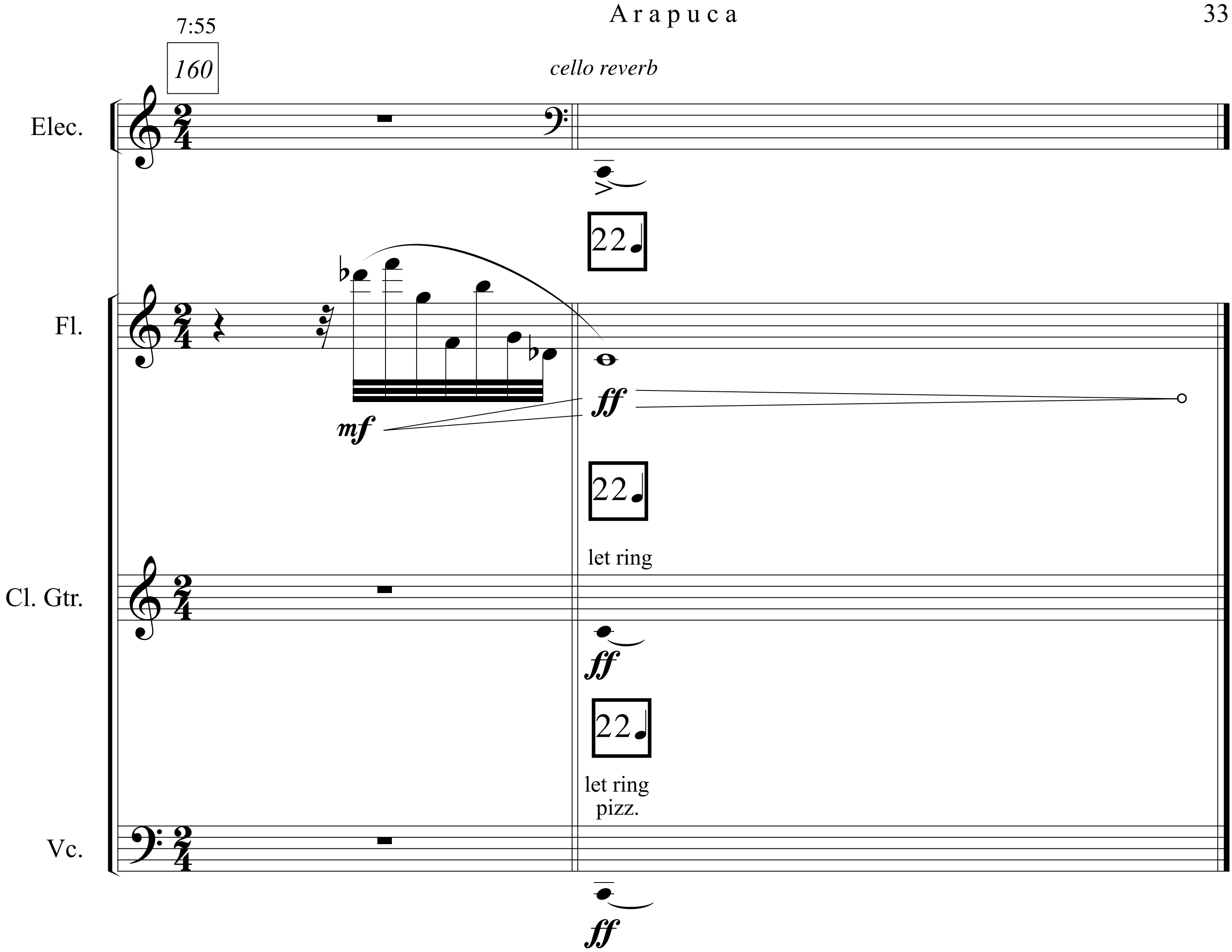

137
Elec.
Fl.
Cl. Gtr.
Vc.
triangle sound
arco
6:53
140
cello reverb
guitar reverb
Glis.
Glis.
Glis.


143
Elec.
flute reverb
9♩
Fl.
f
p
ff
9♩
143
Cl. Gtr.
let ring
ff
9♩
143
Vc.
pizz.
arco
Glis.
f
7:09
145
cello reverb
ff mf ff
ff
pizz.


147
Elec.
flute echo
cello reverb
triangle sound
Fl.
Gliss.
147
Cl. Gtr.
let ring
147
Vc.
arco
open harmonics
glissando
Glissando
7:18
150
flute reverb
Glis.
Glis.
Glis.


152
cello reverb
Elec.
Fl.
ff
Cl. Gtr.
let ring
pizz.
Vc.
153
flute reverb
ff
mf
f
let ring
arco


7:35
155
Elec.
Fl.
Cl. Gtr.
Vc.
flute reverb
fff
fff
f
fff
158
flute reverb
14
Glis.
Glis.
p
ff
14
158
14
158


7:55
160
cello reverb
Elec.
22
Fl.
mf
ff
22
let ring
Cl. Gtr.
ff
22
let ring
pizz.
Vc.
ff

L E V Y   O L I V E I R A

Comigo me Desavim

para pianista vozeante e eletrônica

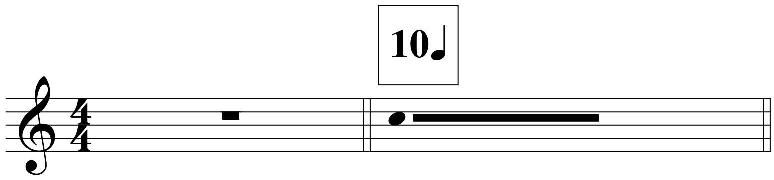
Belo Horizonte MG
June 2021

Commissioned by Adriano Lopes Sobrinho

Encomendada por Adriano Lopes Sobrinho

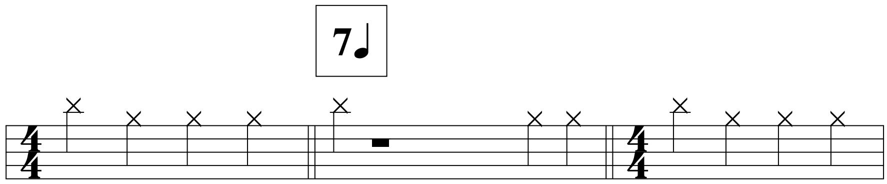
PERFORMANCE INSTRUCTIONS

Tremolos are always fast and not measured.



*In this score, there is traditional and proportional notation.
In proportional notatiton, hold note for a time proportional to the length of the line. In this example, the note extends half away through the duration of the measure).*

CLICK AND ELECTRONICS

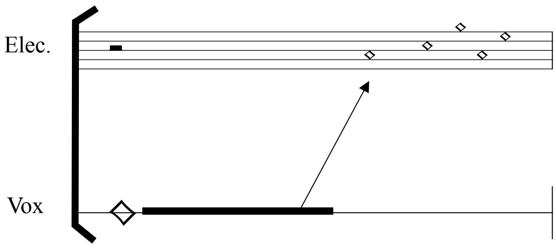


The piece should be played with a click-track (earphone) to facilitate the synchronism between performer and electronics. Click-track plays every beat. In measures without time signature click-track does not play. Cue to next measure is given two beats before.

VOICE

*In this piece, the pianist is asked to sing, whisper, recite and to perform theatrically.
All these commands are mandatory and therefore should not be ignored.*

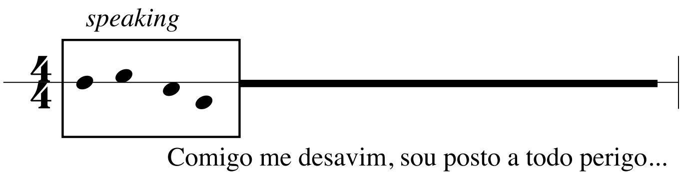
The voice has its own staff and theatrical commands are notated inside a rectangle located between voice and piano staves.



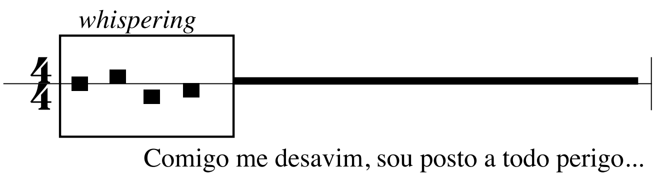
An arrow connecting the voice staff to the electronics staff means that you should ensure that the sound you are emiting with your mouth should blend as well as possible with the pre-recorded sounds in the electronics.

Shush sound

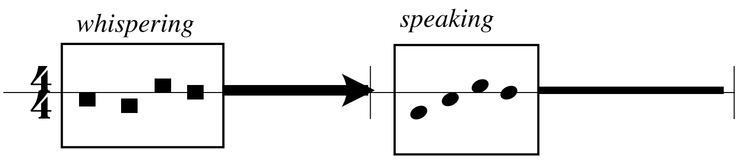
PERFORMANCE INSTRUCTIONS



The text to be spoken appears under the box. The whole text should be spoken in a duration proportional to the duration of the line. Therefore, in this example, the text should be said on the duration of one measure.



The text to be whispered appears under the box. The whole text should be spoken in a duration proportional to the duration of the line. Therefore, in this example, the text should be said on the duration of one measure.



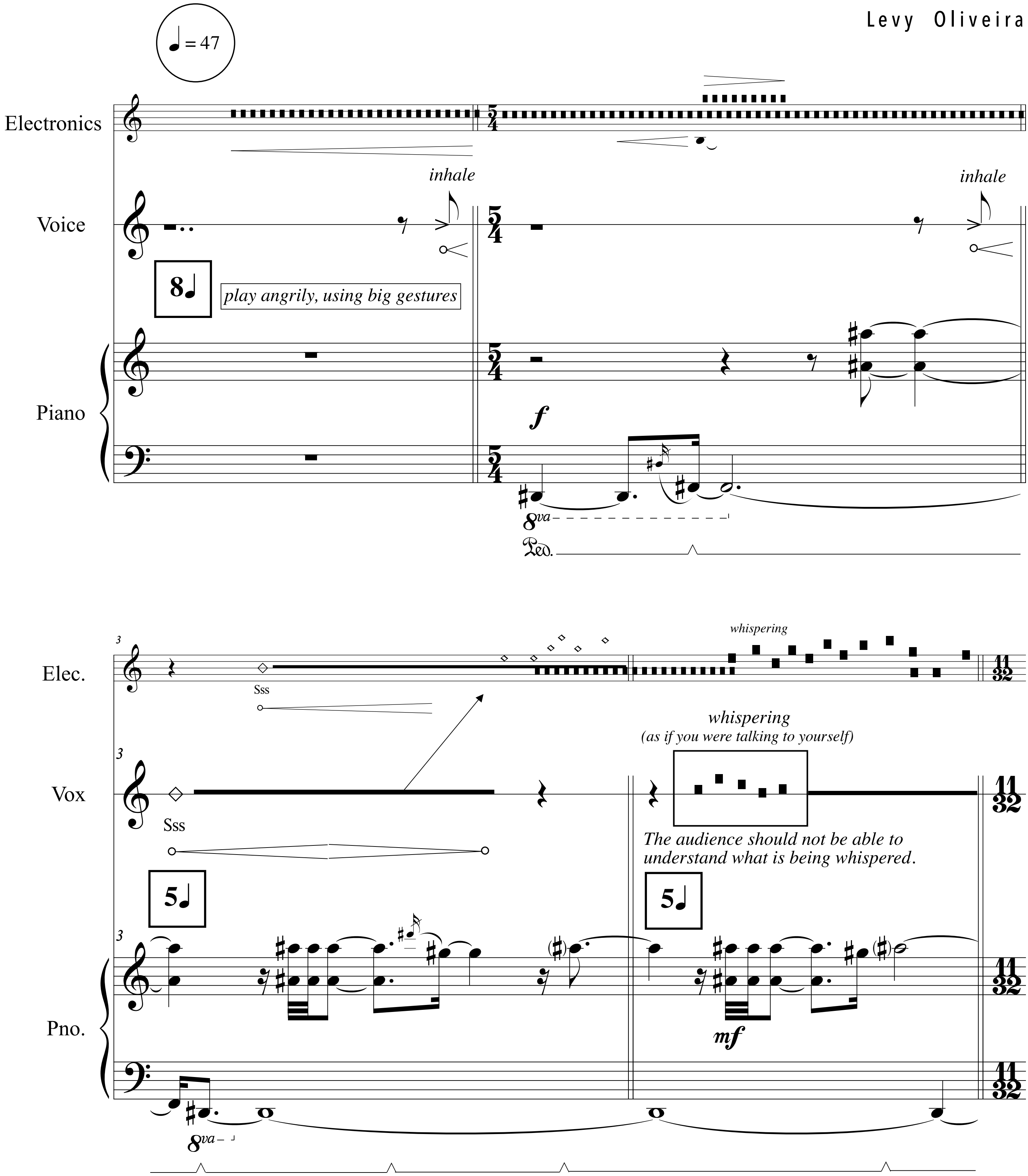
Gradual transition from whispering to speaking.

Other instructions may appear in the score.
In case of any doubts, please contact the composer at pacheco.levy@gmail.com

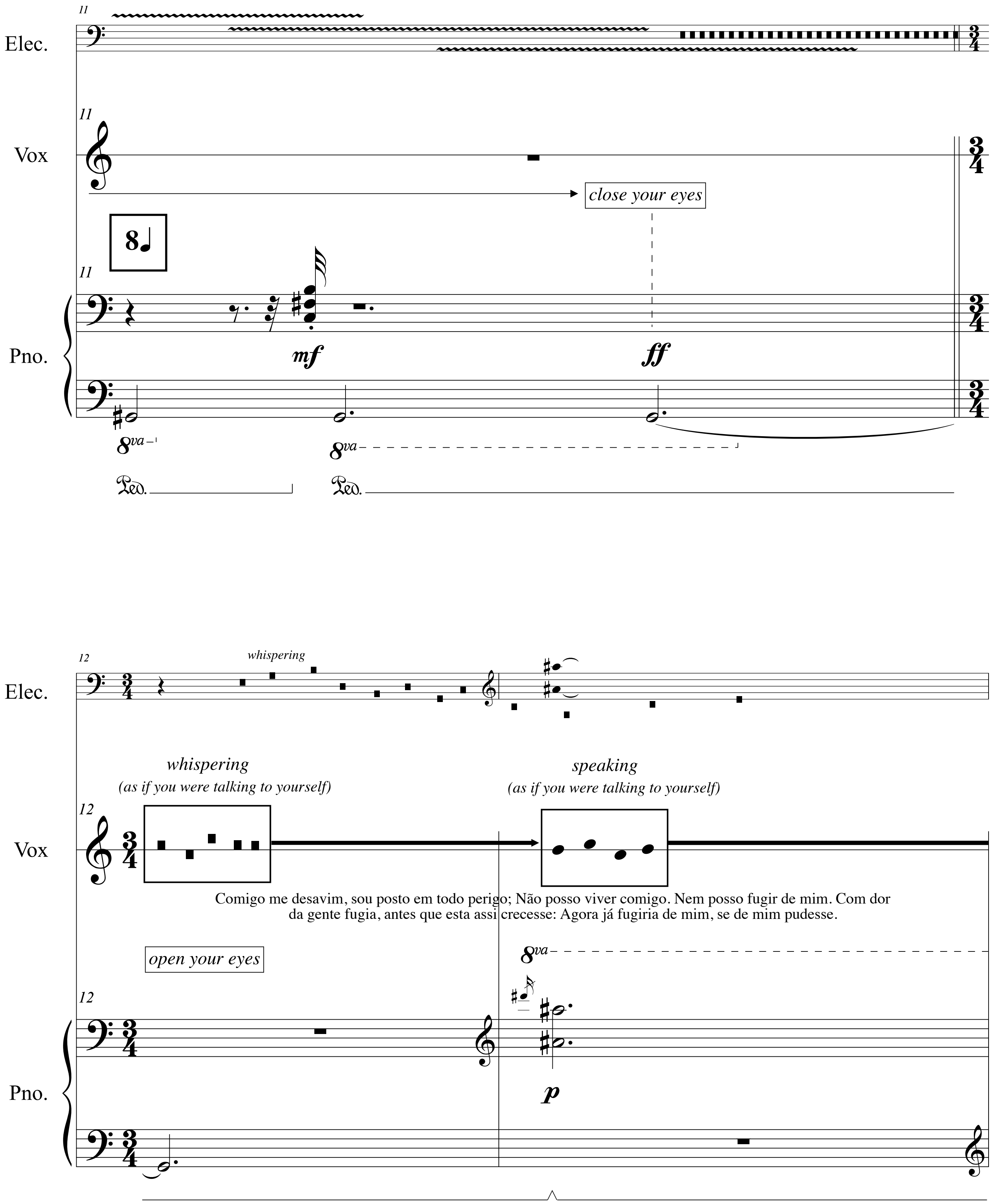
For further information about the composer, please visit: www.levyoliveira.com

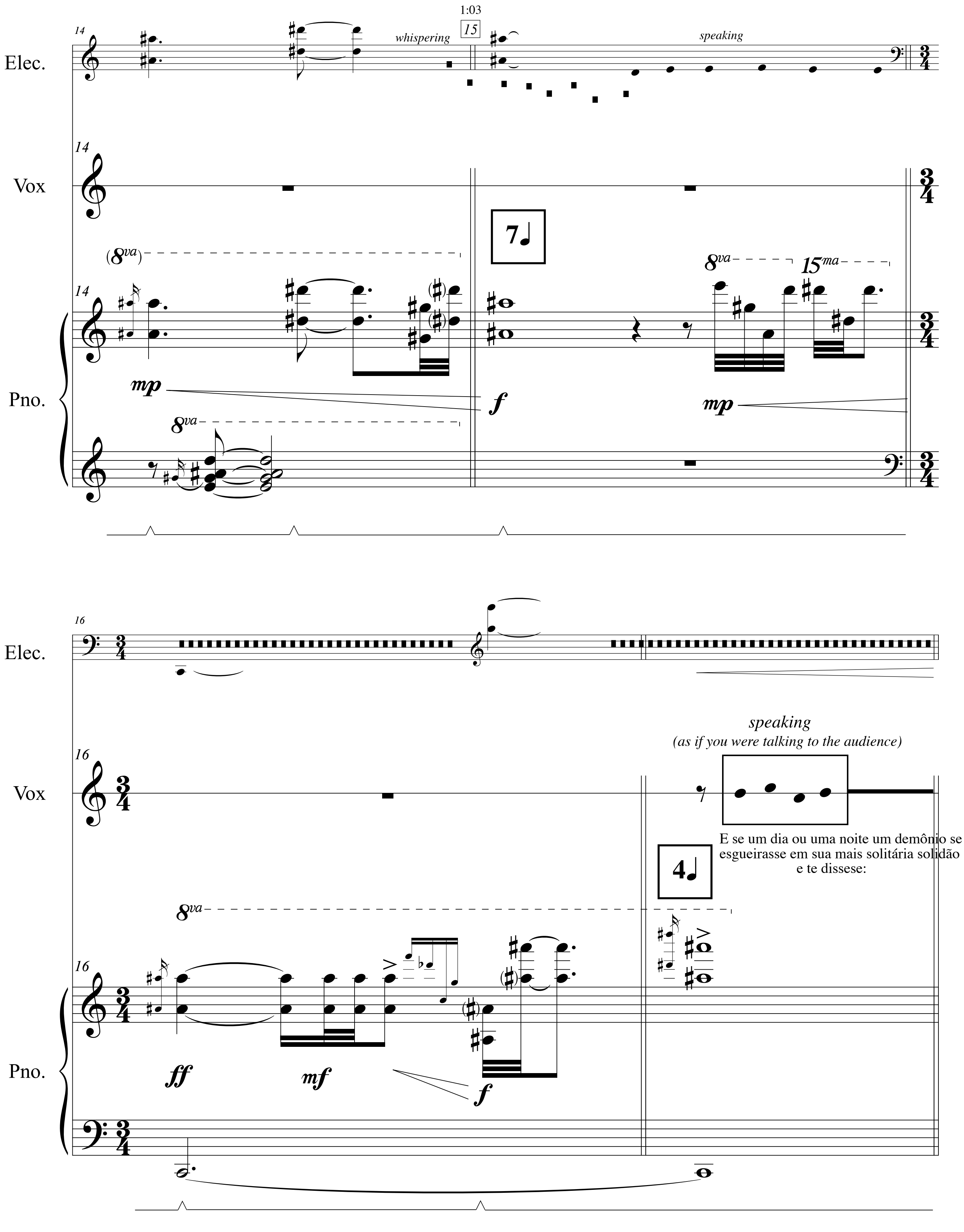
Comigo me desavim

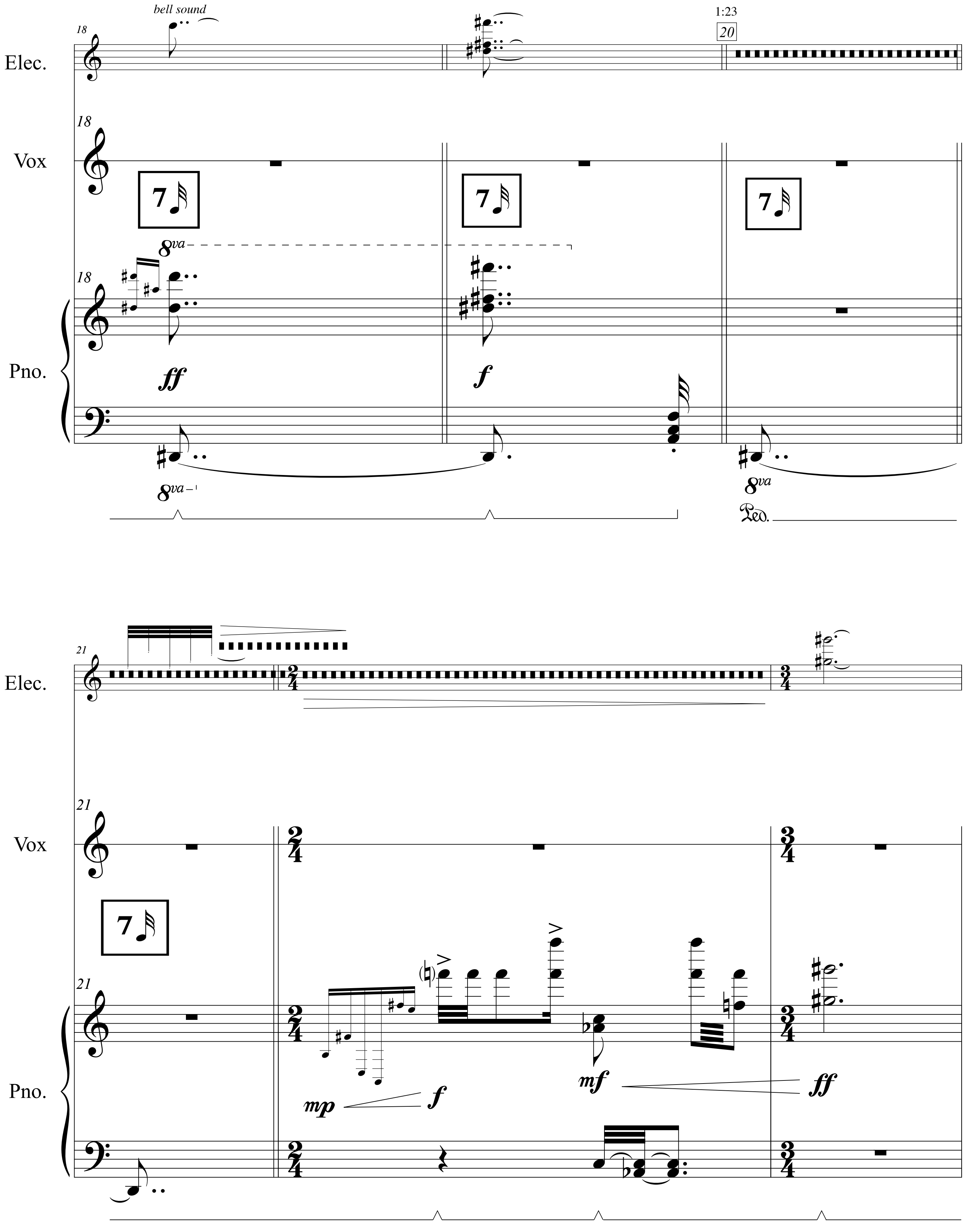
Levy Oliveira



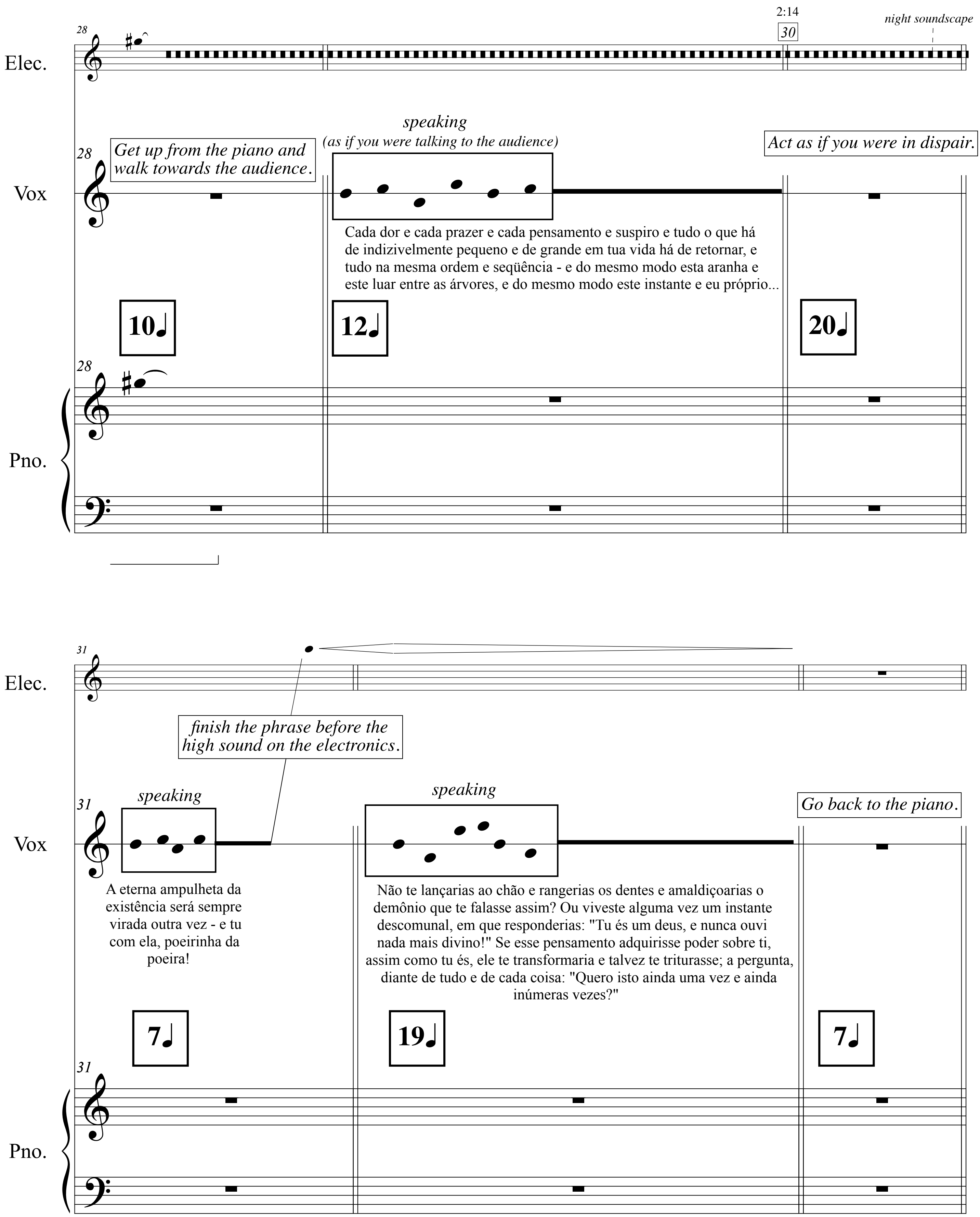

0:29
Elec.
exhale
Vox
scream-like
ff
move your whole body in the ff attacks
7
Pno.
mf
mp
ff
8va
9
0:38
10
voice-like sound
The gesture should get smaller and calmer in each attack
5
f
Ped.


Elec.
Vox
Pno.
close your eyes
8♩
mf
ff
8va
Ped.
whispering
whispering
(as if you were talking to yourself)
speaking
(as if you were talking to yourself)
Comigo me desavim, sou posto em todo perigo; Não posso viver comigo. Nem posso fugir de mim. Com dor da gente fugia, antes que esta assi crecesse: Agora já fugiria de mim, se de mim pudesse.
open your eyes
p


1:03
15
whispering
speaking
Elec.
Vox
Pno.
7♩
(8va)
8va
15ma
mp
f
mp
speaking
(as if you were talking to the audience)
E se um dia ou uma noite um demônio se esgueirasse em sua mais solitária solidão e te dissese:
4♩
8va
ff
mf
f


bell sound
1:23
20
Elec.
Vox
Pno.
7
8va
ff
f
mp
mf
Ped.

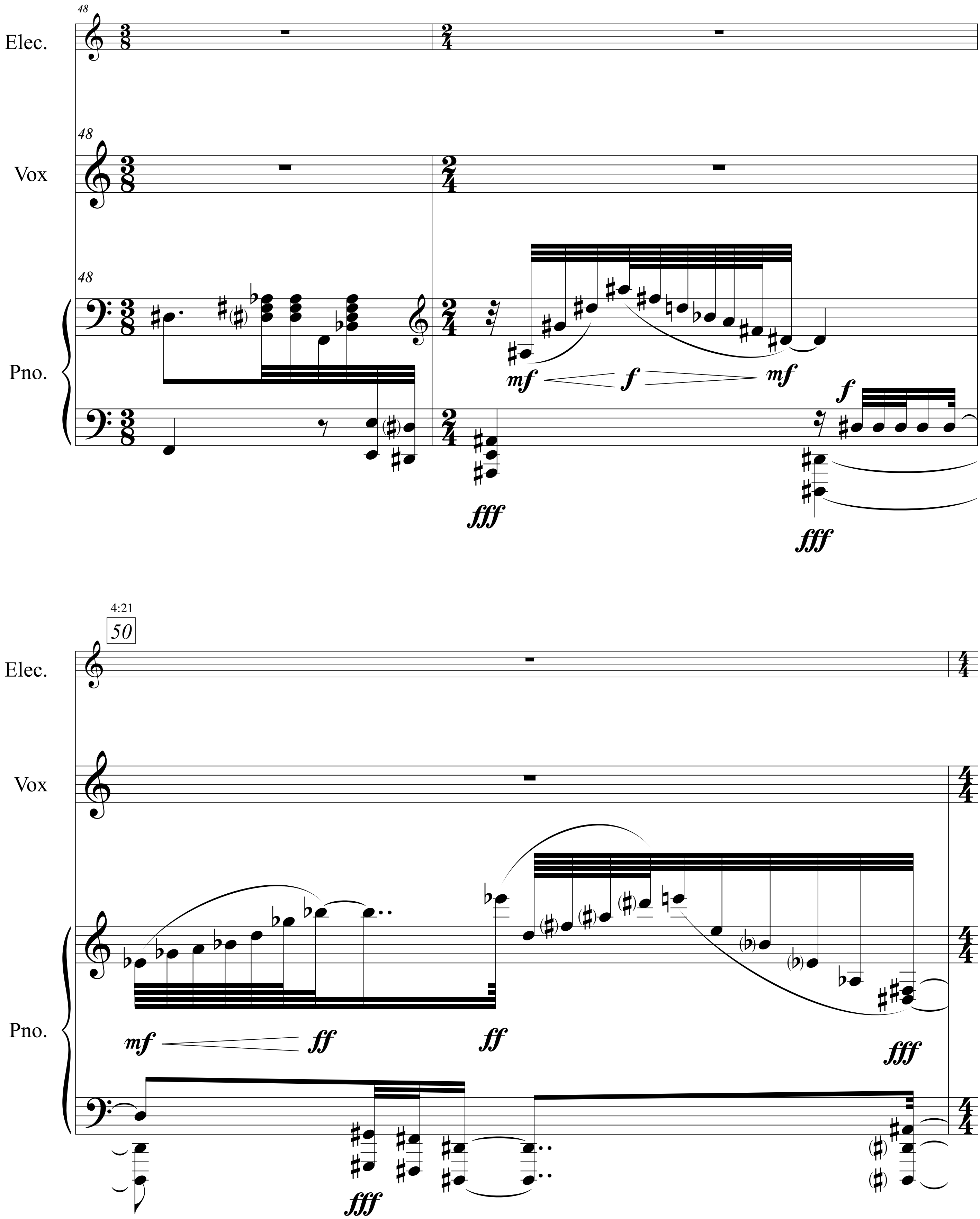

1:36
25
Elec.
Vox
Pno.
speaking
(as if you were talking to the audience)
Esta vida, assim como tu vives agora e como a viveste, terás de vivê-la ainda uma vez e ainda inúmeras vezes...
E não haverá...
15ma
whispering
... nela nada de novo ...
8va


2:14
30
night soundscape
28
Elec.
Get up from the piano and walk towards the audience.
speaking
(as if you were talking to the audience)
Act as if you were in dispair.
Vox
Cada dor e cada prazer e cada pensamento e suspiro e tudo o que há de indizivelmente pequeno e de grande em tua vida há de retornar, e tudo na mesma ordem e seqüência - e do mesmo modo esta aranha e este luar entre as árvores, e do mesmo modo este instante e eu próprio...
10♩
12♩
20♩
Pno.
31
finish the phrase before the high sound on the electronics.
speaking
A eterna ampulheta da existência será sempre virada outra vez - e tu com ela, poeirinha da poeira!
Não te lançarias ao chão e rangerias os dentes e amaldiçoarias o demônio que te falasse assim? Ou viveste alguma vez um instante descomunal, em que responderias: "Tu és um deus, e nunca ouvi nada mais divino!" Se esse pensamento adquirisse poder sobre ti, assim como tu és, ele te transformaria e talvez te triturasse; a pergunta, diante de tudo e de cada coisa: "Quero isto ainda uma vez e ainda inúmeras vezes?"
Go back to the piano.
7♩
19♩
7♩

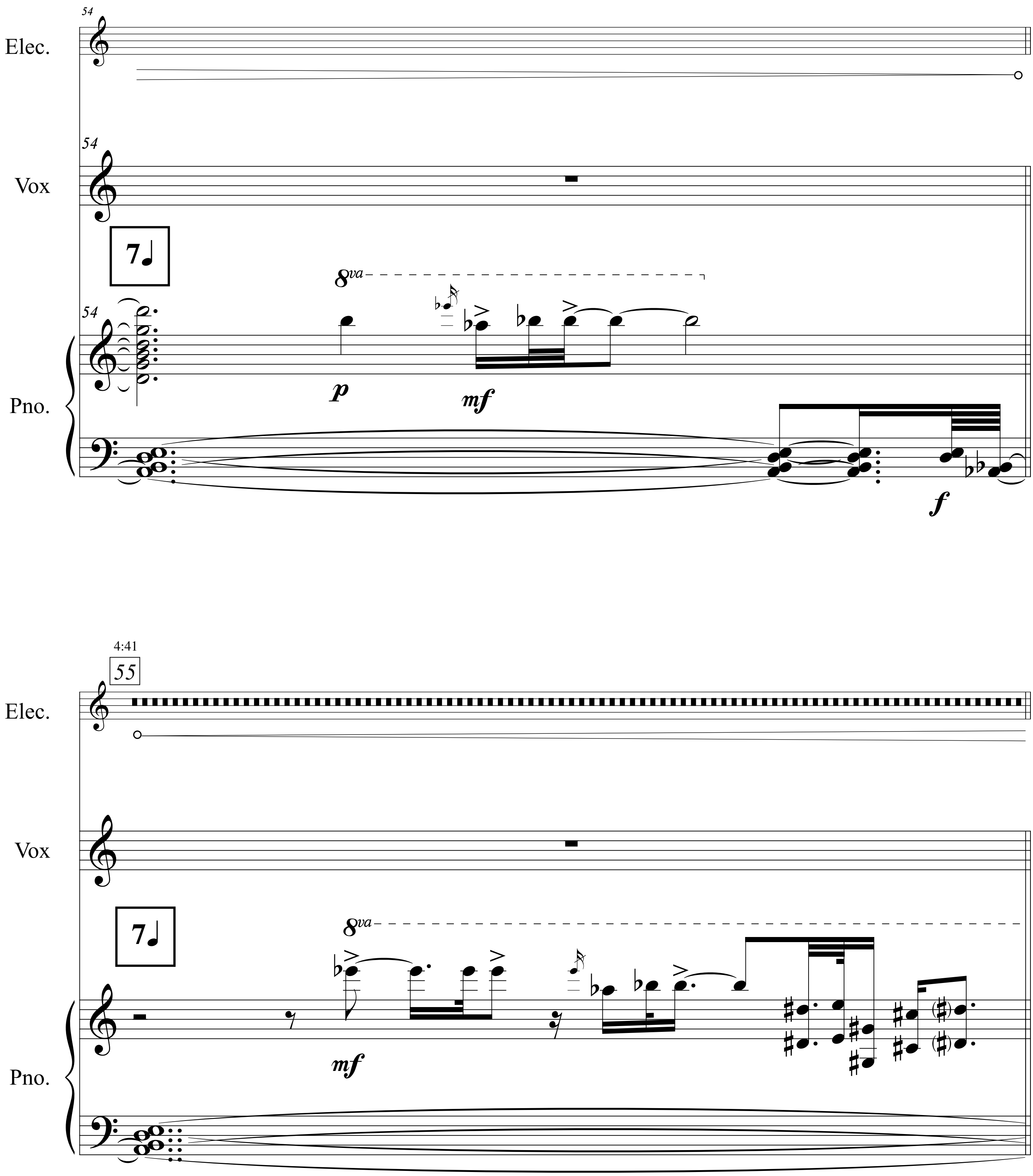

3:31
35
Elec.
Vox
Pno.
7♩
4♩
mf
mp
p
Ped.
Elec.
Vox
Pno.
4♩
mp
mf
p
f
p
f
p
f
Ped.

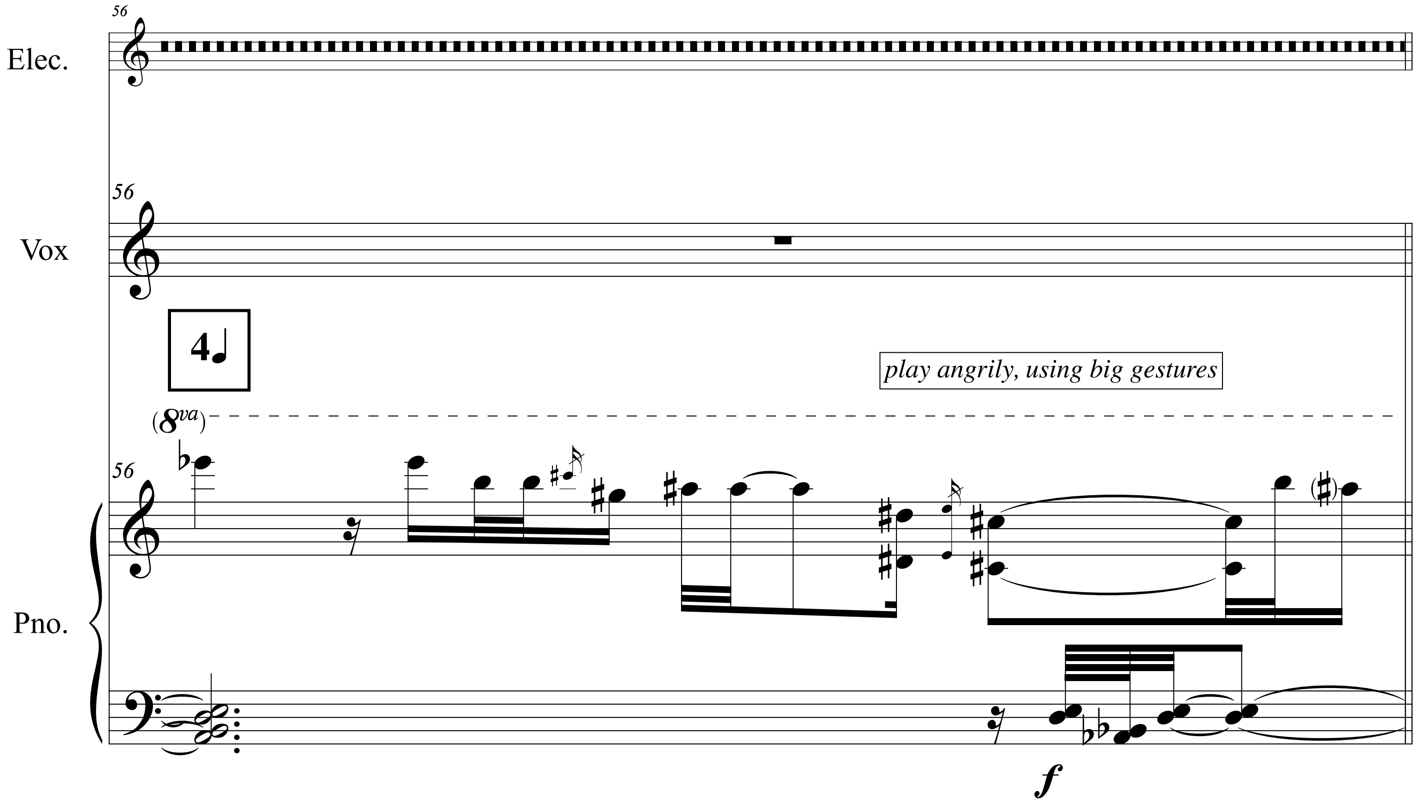

3:52
40
Elec.
Vox
Pno.
mf p
f
mp
f p
Ped.
Ped.
Ped.
42
Elec.
42
Vox
8va
42
Pno.
f
mp f mf

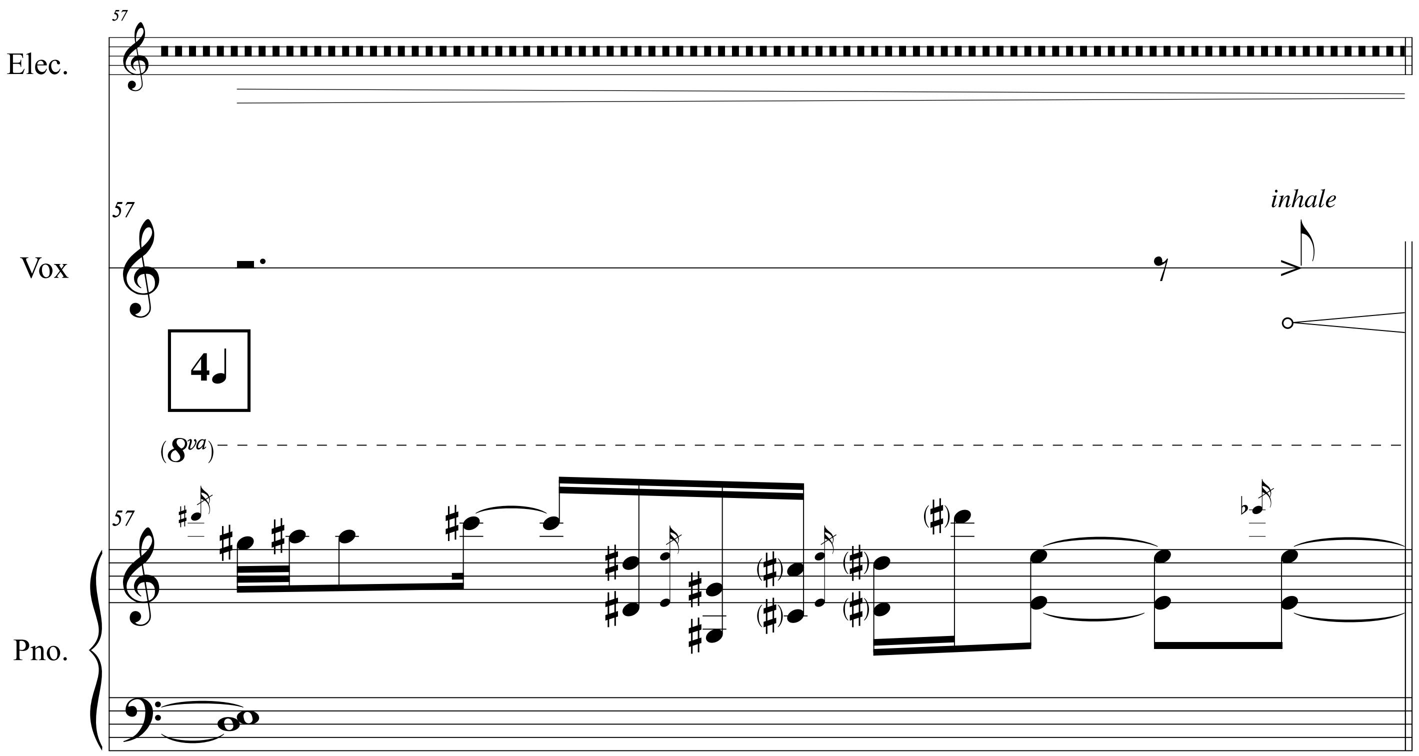

4:04
45
Elec.
Vox
5♩
Pno.
f
p
p
Ped. (ad libitum)
46
Elec.
46
Vox
46
Pno.
f
ff

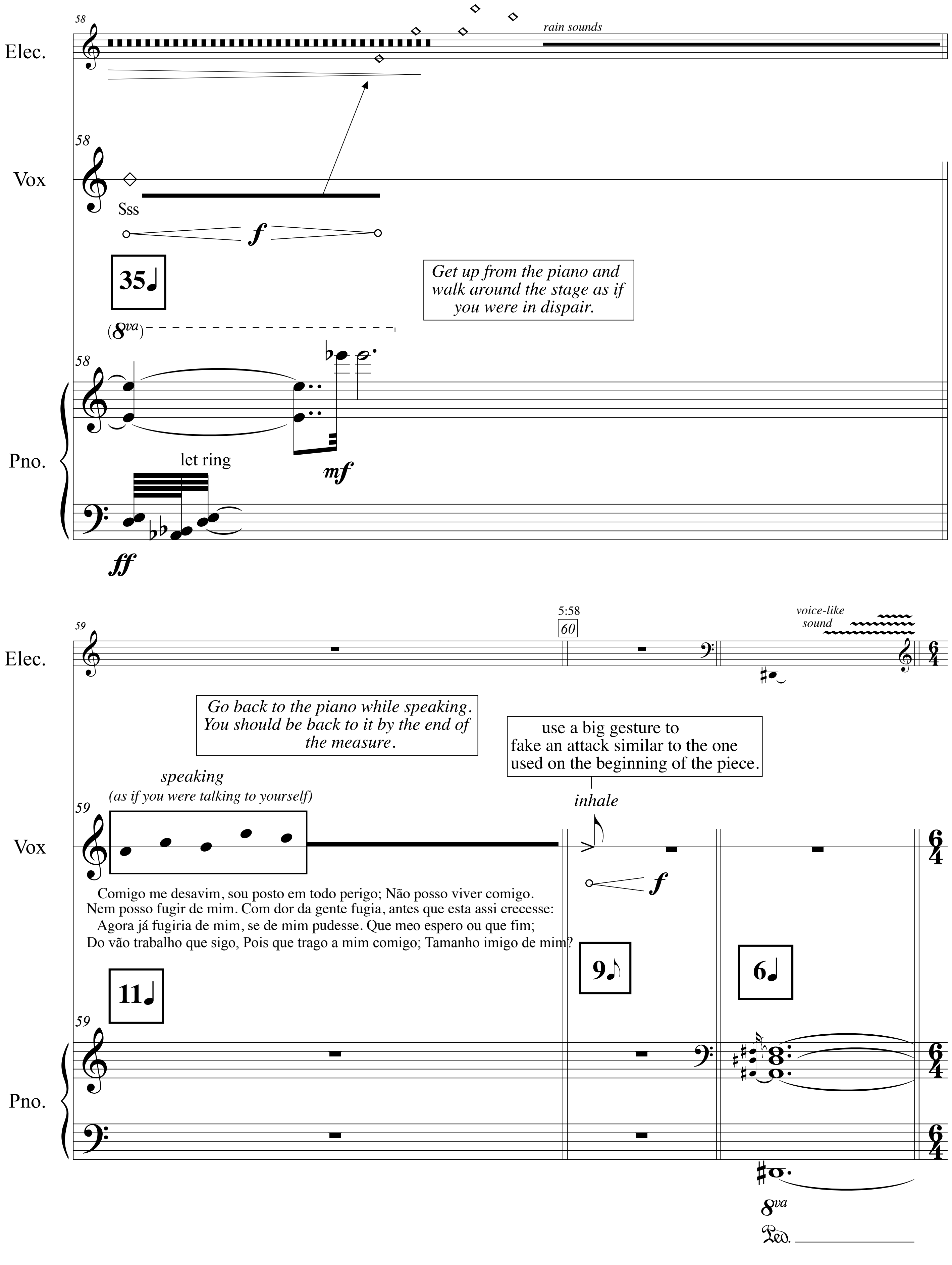

48
Elec.
Vox
Pno.
mf
f
mf
f
fff
fff
4:21
50
Elec.
Vox
Pno.
mf
ff
ff
fff
fff

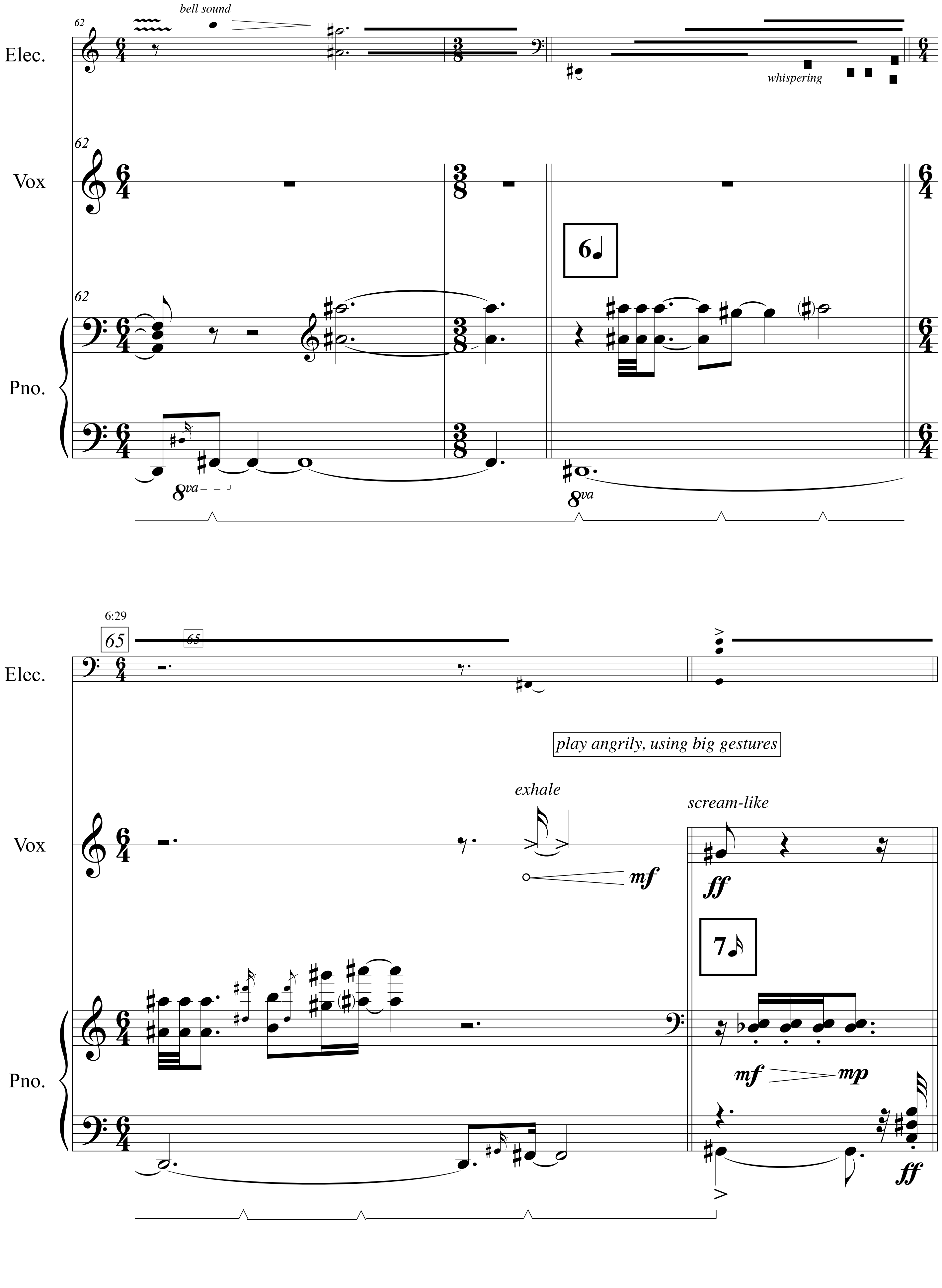

Elec.
Vox
Pno.
f
ff
mf
fff


Elec.
Vox
Pno.
7♩
8va
p
mf
f
4:41
55
Elec.
Vox
Pno.
7♩
8va
mf


56
Elec.
Vox
4♩
play angrily, using big gestures
(8va)
Pno.
f


57
Elec.
Vox
inhale
4♩
(8va)
Pno.

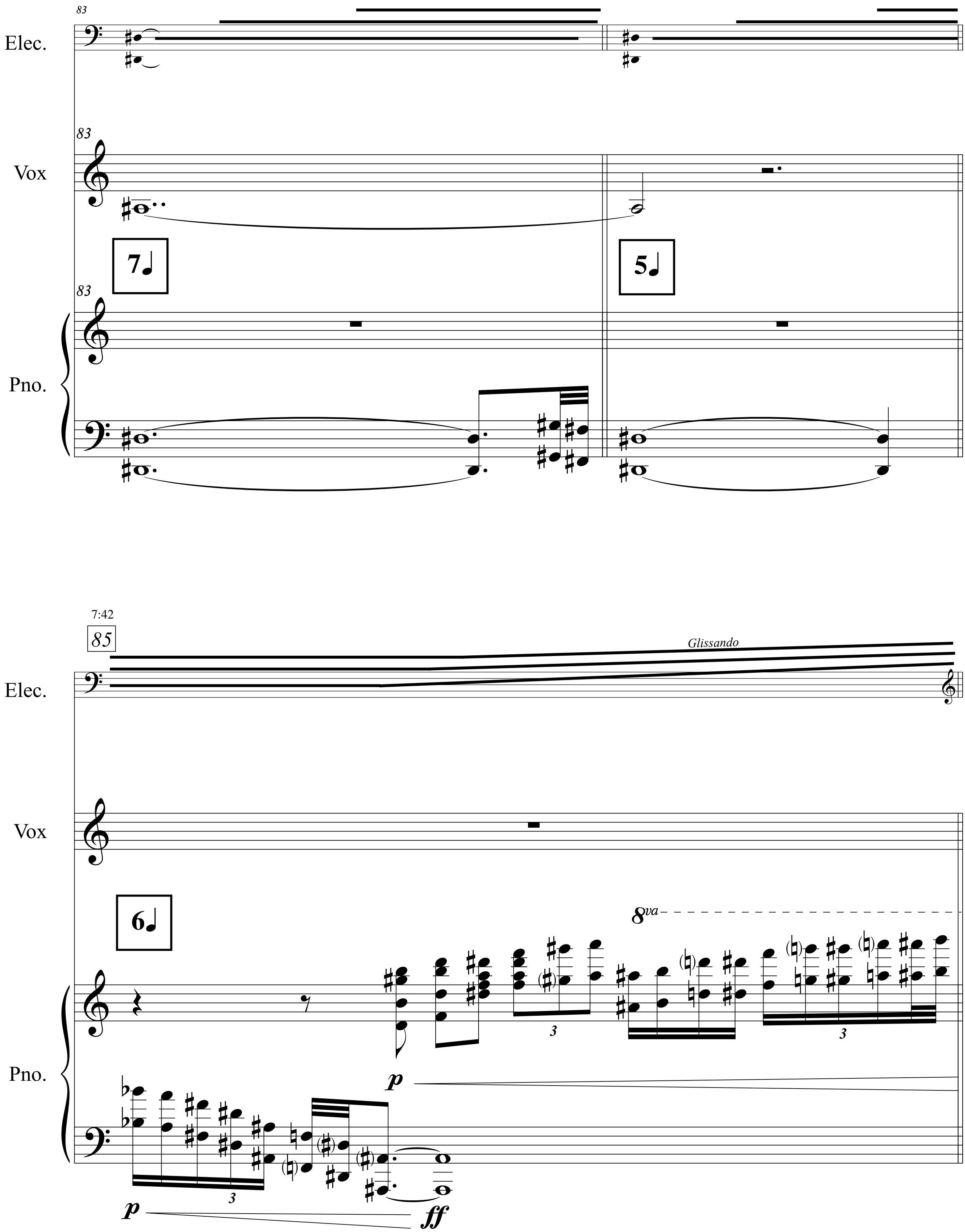

58
Elec.
rain sounds
Vox
Sss
35♩
Get up from the piano and walk around the stage as if you were in dispair.
(8va)
Pno.
let ring
59
5:58
60
voice-like sound
Go back to the piano while speaking. You should be back to it by the end of the measure.
use a big gesture to fake an attack similar to the one used on the beginning of the piece.
speaking
(as if you were talking to yourself)
inhale
Comigo me desavim, sou posto em todo perigo; Não posso viver comigo.
Nem posso fugir de mim. Com dor da gente fugia, antes que esta assi crecesse:
Agora já fugiria de mim, se de mim pudesse. Que meo espero ou que fim;
Do vão trabalho que sigo, Pois que trago a mim comigo; Tamanho imigo de mim?
11♩
9♪
6♩
8va
Ped.


Elec.
Vox
Pno.
bell sound
whispering
6:29
play angrily, using big gestures
exhale
mf
scream-like
ff
mf
mp
ff
8va

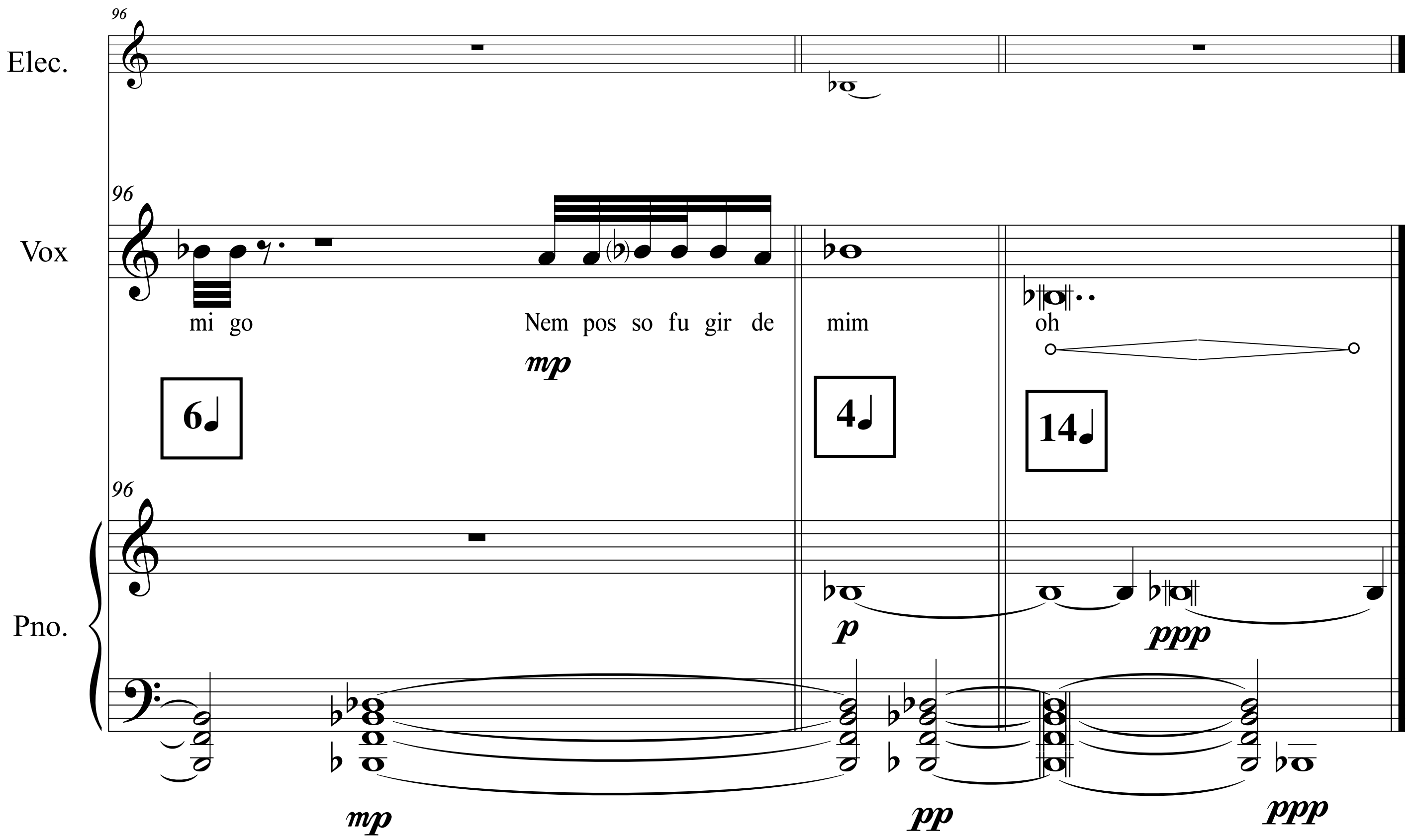

Elec.
Vox
Pno.
scream-like
inhale
7
5
5
6:49
70
play soft with very small gestures
singing
Oh


72
Elec.
Vox
Pno.
Oh
Oh
Oh
Oh
Ped. (ad libitum)
7:04
75
8va


78
Elec.
Vox
Pno.
f
fp
mp
mf
p
7:18
80
piano granular sounds
ff


83
Elec.
Vox
7♩
Pno.
5♩
7:42
85
Glissando
6♩
8va
p
p
ff
3


7:58
90
Elec.
Vox
Pno.
4♩
(8va)
co
mi go me de sa
vim
f
ff
f
8:10
95
sou
pos to'em to do pe
ri go
não
pos so vi ver co
mf
mf


96
Elec.
Vox
mi go
Nem pos so fu gir de
mp
mim
oh
6
4
14
Pno.
p
ppp
mp
pp
ppp