

**Forming an Interpretation  
of the Violin Works of  
Boulez, Cage, Nono:  
A Comparative Study**

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## **Declaration**

The work presented in this thesis is entirely written by the author. Information cited from third party materials is fully referred in the bibliography.

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## *Abstract*

This thesis contains documentation to support my interpretation of violin works written in the twentieth century. Selected works for this study are: John Cage's *Freeman Etudes*; Luigi Nono's *La Lontananza Nostalgica Utopica Futura* and "Hay Que Caminar" *Soñando*; also, Pierre Boulez' *Anthèmes 1* and *2*.

The three composers' works are discussed separately. In the first chapter, notation and distinctive violin techniques in the *Freeman Etudes* are explored, and a recording analysis answers ambiguous aspects in its notation. An interview with the British violinist Irvine Arditti also reveals his practical opinions for the *Freeman Etudes*. Interpreting the eight-channel tape of *La Lontananza* and solving the notational issues are the main subjects in the second chapter. A new performance edition provided here comprises fully-corrected notational errors in the manuscript, and reflects Irvine Arditti's performance style. The last chapter explores details in electronics, and considers a way to perform with the electronics from the violinist's point of view. At the end of every chapter, consensus violin techniques are discussed. Conclusions are also added at the end of every chapter to illustrate performance plans.

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## CD

### 1. John Cage - *Freeman Etude I*: Mizuka Yamamoto, violin

(Recorded on 17 April, 2008, at EMS, Goldsmiths College, University of London. Recording director, Ian Stonehouse)

### 2. Pierre Boulez - *Anthèmes 2*: Mizuka Yamamoto, violin; Tom Mudd, electronics

(Recorded on 22<sup>nd</sup> April, 2010, EMS, Goldsmiths, University of London. Recording director, Tom Mudd)

3. *Anthèmes 2*, section II, electronic part, recorded by using an Italian old violin
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5. *Anthèmes 2*, section III, electronic part, recorded by using an Italian old violin with bow 1
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9. *Anthèmes 2*, section III, electronic part, recorded by using an Italian old violin with bow 5
10. *Anthèmes 2*, section II, electronic part, recorded by using an French modern violin with bow 1
11. *Anthèmes 2*, section II, electronic part, recorded by using an French modern violin with bow 2
12. *Anthèmes 2*, section II, electronic part, recorded by using an French modern violin with bow 3
13. *Anthèmes 2*, section II, electronic part, recorded by using an French modern violin with bow 4
14. *Anthèmes 2*, section II, electronic part, recorded by using an French modern violin with bow 5

(Tracks 3-14: recorded on 5<sup>th</sup> March 2013, EMS, Goldsmiths, University of London. Mizuka Yamamoto, violin; Tom Mudd, electronics)

## Words and abbreviations

' = minute, e.g. 20' = 20 minutes

" = second, e.g. 20" = 20 seconds

**Chance operations, *I Ching*:** ‘term introduced by Cage for techniques allowing compositional decisions to be made by chance, whether by tossing coins or, later, by digital means.’<sup>1</sup> ‘Cage began using chance operations when he was given a copy of the *I Ching*, or ‘Book of Changes’ by Christian Wolff, and was struck by the similarity of its chart of hexagrams to his own sound charts he had been using. The *I Ching* is based on the interpretation of figures made of six solid or broken lines, which represent the basic principles of weak and strong, yin and yang. There are sixty-four such hexagrams, which are numbered 1 to 64.’<sup>2</sup> Ever since composing the *Concerto for Prepared Piano*, he had used the hexagram as a compositional tool, by applying musical elements on each column of the *I Ching* chart.<sup>3</sup>

***Crini*:** using the bow hair.

***Martellato*** (same as ***Martelé***): ‘the literal meaning of this term is “hammered”, referring to a percussive on-string stroke produced by an explosive release following heavy initial pressure (“pinching”) on the string, and a subsequent stop of the arm (and tone) before the next “pinching”. The result is a sharp, biting *sforzando*-like attack and a rest between strokes. The early bow, with its comparatively gentle attack, cannot produce this stroke effectively. *Martelé* can be played in any region of the bow, but is best

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<sup>1</sup> Griffiths, P., 2004. *The Penguin Companion to Classical Music*. (London: Penguin Group), p.161.

<sup>2</sup> Pritchett, J., 1988. From Choice to Chance: John Cage’s Concerto for Prepared Piano. *Perspectives of New Music*, Vol. 26, No.1. Winter, pp.68-69.

<sup>3</sup> Ibid.

between the middle and the top of the bow. However, it cannot be executed in excess of a certain speed because of the preparation required for each stroke. *Martelé* may be indicated by dots or by arrow-head.<sup>4</sup>

***Détaché:*** A bowing technique to make sound ‘detached.’<sup>5</sup> However, it is not as sharp as *staccato*. At the beginning of a bow stroke, a strong attack is given. The bow is not released from the string after the attack. Hence, each pitch can be heard as a separated sound, but a length of the note is longer than *staccato*.

***Jeté:*** This is a style of bouncing bow technique. The top of the bow is used, and usually up bow is applied. ‘P. Baillot (L’art du violon, Paris, 1834) gave *détaché jeté* as a synonym for *staccato à ricochet*. The number of rebounds specified by composers generally varies between two and six.’<sup>6</sup>

***Legno / col legno:*** using the wooden part of the bow.

***Leggio:*** music stand. Nono used *leggio* to call each movement of *La Lontananza* and “*Hay Que Caminar*” *Soñando*, so the same style is adopted in the music edition attached to this thesis. However, in the main chapters, *leggio* is called a section, e.g. 1<sup>st</sup> *leggio* = 1<sup>st</sup> section.

***Ponte / sul ponticello:*** playing very close to the bridge.

***Punta:*** playing at the point of the bow.

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<sup>4</sup> Walls, P., 2007. ‘Bow.’ In: Mercy, L. ed, 2007. *The Grove Music Online*. [online] Available at: <<http://www.oxfordmusiconline.com>> [Accessed 22 September 2008].

<sup>5</sup> Stowell, R., ed. 1992. *The Cambridge Companion to the Violin*. (Cambridge: Cambridge University Press), p.263.

<sup>6</sup> Boyden, D. D., Cochrane, L. and Walls, P., 2007. ‘Jeté.’ In: Laura Macy, ed. 2007. *Grove Music Online*. [online] Available at: <<http://www.oxfordmusiconline.com>> [Accessed 5 July 2009].

**Ricochet:** ‘in string playing, a bow stroke that bounces off the string.’<sup>7</sup> While *jeté* requires using the top of the bow, slightly lower than the middle of the bow is suitable to use for this technique.

**Roman numerals (I, II, etc.) for *Anthèmes 1* and *Anthèmes 2*/ Chapter 3:** Boulez uses Roman numerals to specify the section numbers in *Anthèmes*. Therefore, the same style is used in this thesis to recognise the section numbers.

**Roman numerals (I, II, etc.) for the *Freeman Etudes*/ Chapter 1:** Cage uses Roman numerals in the *Freeman Etudes* to recognise the *Etude* numbers. Therefore, the same style is used in this thesis.

***Sfff:*** *Sforzando*.

***Tallone:*** playing near the frog of the bow.

***Tasto / sul tasto:*** on the fingerboard.

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<sup>7</sup> Cooke, P., 2007. ‘Ricochet.’ In: Mercy, L., ed. 2007. *The Grove Music Online*. [online] Available at: <<http://www.oxfordmusiconline.com>> [Accessed 22 September 2008].

## Introduction

The twentieth century was a new era for the unaccompanied violin repertoire. The majority of contemporary solo violin works explore new performance styles for the instrument. Even if musical trends have changed in each century, traditional performance techniques and the construction of the instrument have remained almost the same. It is most probably the musical interpretation and performance style that have changed to an appropriate fashion in each period.

The aim of this study is to discuss ways of approaches for new styles of compositions. The thesis uses documentation to support my interpretation of the works. A further intention here is how to understand the composer's character.

For these purposes, three composers and their major works for violin were selected: John Cage's (1912-1992) *Freeman Etudes* for solo violin (1977-80, 1989-90); Luigi Nono's (1924-1990) *La Lontananza Nostalgica Utopica Futura* for violin and eight-channel speakers (1988, revised 1989) and "Hay Que Caminar" *soñando* for two violins (1989); and also Pierre Boulez' (1925- ) *Anthèmes I* (1995) for solo violin and *Anthèmes 2* for violin and real-time devices (1997).

The *Freeman Etudes* use a detailed notation system which, at the same time, is a highly demanding virtuoso work for the solo violinist. A star chart and the *I Ching* gave inspiration to Cage for the compositional process. As used in the score, every imaginable musical term and technical detail are written down. No element is left undetermined, unlike in some of Cage's earlier works. The notation of the *Freeman Etudes* is fairly conventional. However, there are some ambiguities in the score. A main

focus here is an understanding of the notation, and a recording analysis will examine performances by the violinists, who worked closely with Cage: Paul Zukofsky, János Négyesy and Irvine Arditti. Moreover, the results of the recording analysis will be compared with my own performance.

As denoted in the title, a violinist is required to perform with a pre-recorded tape for *La Lontananza Nostalgica Utopica Futura*. The tape consists of eight tracks, and each track contains different types of sound fragments. It is a violinist's task to interpret the detail of the tape. Therefore, the chapter includes a recording analysis of the pre-recorded tape. The recording analysis aims to disclose the details in the tape and examine how they are combined with a real-time performance.

A major problem in *La Lontananza* is its chaotic violin part. Currently, the only available source for this work is a manuscript which is in Nono's handwriting. There are many errors in the manuscript. For example, combinations of harmonics are often wrong, and there are double stops that are impossible to play on the violin. Even several decades after Nono's death, we do not know the truth of his work. Therefore, producing a performance edition for *La Lontananza* and "*Hay Que Caminar*" *soñando* is a part of this project. Also, my aim for making the edition was to produce a record of a violinist who knew Nono's music and had a deep understanding of his works. In this context, Irvine Arditti has played all Nono's string works including *Fragmente-Stille*, *An Diotima* for string quartet, as well as the two works chosen in this thesis; as such, he knows the composer's character well. In the editions, Arditti's opinions are reflected in the technical aspect to correct contradictory details in the manuscript.

Pierre Boulez' *Anthèmes* for solo violin was written after the violin part of '*...explosante-fixe...*' which was written between 1972 and 1978. *Anthèmes* was written

for the 90<sup>th</sup> birthday of Alfred Schlee.<sup>8</sup> It was initially premièred by Arditti in Vienna in 1991, but was revised several times since that première. The most recognisable version of *Anthèmes 1* was completed for the Menuhin Competition in 1995. The work was further extended to form *Anthèmes 2* for violin and electronic devices in 1997.

The idea that the electronics should follow the performer, rather than the performer plays along with a pre-recorded tape, was devised by Boulez.<sup>9</sup> It stimulates the technology required to develop new software, and a score-following system used for *Anthèmes 2* is an up-to-date technology as well as a new genre for the performer. As *Anthèmes 2* is a significant work for violin and live electronics, an examination of the work will focus on a new performance scheme in order to play with the computer technology. A main issue for working with live electronics is the nature of the consequence of processing between the violin and the live electronics.

The main purpose of this thesis is to examine various types of solo violin works of the late twentieth century. Therefore, different styles of compositions are selected here. The *Freeman Etudes* are an acoustic solo violin work. On the other hand, *La Lontananza* is for a non-amplified solo violin with pre-recorded tape. “*Hay Que Caminar*” *soñando* is for two non-amplified violins, and uses almost the same musical materials as *La Lontananza*. Similarly, *Anthèmes* and *Anthèmes 2* are another contrasting pair of works.

Another feature of these works is virtuosity. Every work listed above challenges the violinist’s ability to control the instrument. At the same time, what are the factors that make them technically demanding pieces for the violinist? To observe this point closely, various violin techniques are studied in every chapter. If the

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<sup>8</sup> From an e-mail correspondence with Irvine Arditti on 30th October 2009.

<sup>9</sup> Boulez, P., 2003. *Boulez on Conducting*. Translated from French by R. Stokes. (London: Faber and Faber Limited), p.85.



examination here would discover a different sort of technical usage in each work, it means the specific violin techniques contribute to give it a character.

The examination focuses on the composer's intention and technical issues with the new style of compositions in the late twentieth century. Conclusions provided at the end of every chapter will discuss how to accommodate the new style of the composition, as well as to illustrate my own interpretations.

## 1 John Cage's *Freeman Etudes* for solo violin: interpreting 'the practicality of the impossible'<sup>10</sup>

John Cage started writing the *Freeman Etudes* for solo violin in 1977.<sup>11</sup> The American violinist Paul Zukofsky suggested that Cage should write a work for solo violin<sup>12</sup> using traditional Western notation.<sup>13</sup> The notation includes unconventional time and rhythm specifications by running two lines underneath each system, and yet it is a fundamentally conventional notation. The main concept here was to write a work which shows what Cage himself came to call 'the practicality of the impossible'.<sup>14</sup> The notation of the *Freeman Etudes* is contrasted especially with his early periods, so it is perhaps hard to understand why he wrote an extremely complex composition using an adaptation of conventional notation at that time.

Indeed, the compositional process is very complicated in the *Freeman Etudes*, and this is reflected in its notation. A Star Chart and the *I Ching* are a fundamental part of the *Freeman Etudes*.<sup>15</sup> Several materials decided by *I Ching* construct a number of layers in this work. As used in the score, every imaginable musical term and technical detail are written down. No element is left undetermined, unlike in some of Cage's earlier works.

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<sup>10</sup> Pritchett, J., 1994. 'The Completion of John Cage's *Freeman Etudes*.' *Perspectives of New Music*, Vol. 32, No. 2. Summer, p.264.

<sup>11</sup> Ibid., pp.264-270.

<sup>12</sup> Cage wrote a solo violin version of *Cheap Imitation* using traditional notation before he wrote the *Freeman Etudes*. See Zukofsky, P., 1992. 'Aspects of contemporary technique (with comments about Cage, Feldman, Scelsi and Babbitt).' In: R. Stowell, ed. *The Cambridge Companion to the Violin*. (Cambridge: Cambridge University Press), p.145.

<sup>13</sup> Cage, J. and Kostelanetz, R., 1988. 'His Own Music: Part Two.' *Perspectives of New Music*, Vol. 26, No.1. Winter, p.40.

<sup>14</sup> Pritchett, J., 1994. 'The Completion of John Cage's *Freeman Etudes*.' *Perspectives of New Music*, Vol. 32, No. 2. Summer, p.264.

<sup>15</sup> Ibid., p.266.

Even so, there are ambiguities in the score. This article examines the notational problems from the point of performance practice. For this purpose, recordings will be analysed in this essay. At the time of writing, there are three commercial recordings of the *Freeman Etudes* by violinists who worked closely with Cage. These recordings will be further compared to my own recording made for this essay. The results show us different possibilities for approaching a performance, without giving exhaustive answers to all the questions about the notation of the *Freeman Etudes*.

This chapter includes an interview with the British violinist Irvine Arditti, which can be found in Appendix 1.5. Like the violinists Janos Négyesy and Paul Zukofsky, Arditti had a close musical relationship with Cage.<sup>16</sup> He answered questions that arose in the previous chapters.

The name of the piece derives from its dedication to Betty Freeman, who supported Cage and many of his contemporaries.<sup>17</sup> The *Freeman Etudes* consist of four books, and each book contains eight pieces.

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<sup>16</sup>Pritchett, J., 1994. 'The Completion of John Cage's *Freeman Etudes*.' *Perspectives of New Music*, Vol. 32, No. 2. Summer, p.265.

<sup>17</sup> Ibid. p.270.

## 1.1 The Compositional Process

Regarding the concept of difficulty in the *Freeman Etudes*, Cage (1988, p.40) said:

[...] these are intentionally as difficult as I can make them, because I think we're now surrounded by very serious problems in society, and we tend to think that the situation is hopeless and that it's just impossible to do something that will make everything turn out properly. So I think that this music, which is almost impossible, gives an instance of the practicality of the impossible.

At the same time, Cage was always worried that the *Freeman Etudes* might not be playable.<sup>18</sup> Cage succeeded in using four and a half octaves on the violin. The unusual intervals and wide range of the pitches make the *Freeman Etudes* one of the most virtuoso works in the violin repertoire. Cage stopped writing the piece in 1980, and only resumed in 1989 after he listened to Arditti's remarkable performance.<sup>19</sup>

During the compositional process of the *Freeman Etudes*, Cage was influenced by two major violinists: Zukofsky and Arditti. Ever since Cage wrote his other solo violin work *Cheap Imitation* (1977),<sup>20</sup> Zukofsky had been one of Cage's principal collaborators.<sup>21</sup> On the other hand, had Arditti never performed the work, the *Freeman Etudes* would never have been completed.

The compositional process for Cage's *Freeman Etudes* is the same as for his solo piano work *Etudes Australes* (1974-5) and *Etudes Boreales* for cello and piano

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<sup>18</sup> Pritchett, J., 1994. 'The Completion of John Cage's *Freeman Etudes*.' *Perspectives of New Music*, Vol. 32, No. 2. Summer, p.270.

<sup>19</sup> Revill, D., 1992. *The Roaring Silence John Cage: A Life*. (London: Bloomsbury), pp.291-292.

<sup>20</sup> Pritchett, J., 1993. *The Music of John Cage*. (Cambridge: University Press), p.164.

<sup>21</sup> Ibid.

(1978).<sup>22</sup> Cage used a star chart, Antonin Bečvář ‘*Atlas Australis*’ (Prague: Czechoslovak Academy of Sciences, 1964), while writing the works.<sup>23</sup> The basic formula for the composition is chance operations, using *I Ching*. The notes were traced from the star chart, using large sheets of manuscript paper to trace the positions of the stars on the music.<sup>24</sup> How many stars he traced from the chart was decided by chance operations. Once he decided how many notes to include in an etude, these notes were divided into two types of bowing: *legato* and *détaché*.<sup>25</sup>

According to the musicologist James Pritchett, Cage then decided ‘pitch classes.’<sup>26</sup> Pritchett describes ‘the pitch classes G to D having five possible octaves, and the remaining pitch classes having four possible octaves.’<sup>27</sup>

The chords in the *Freeman Etudes* were written in consultation with Zukofsky. Once Cage decided how many numbers of notes were in a chord by chance operation,<sup>28</sup> he asked Zukofsky what sort of notes it was possible to play at the same time from a particular note on the top of the string on the violin.<sup>29</sup> They repeated this process over and over again. Cage amended some details, which were purely based on the chance operations, by adding some practical suggestions from Zukofsky. Strings were decided

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<sup>22</sup> Pritchett, J., 1993. *The Music of John Cage*. (Cambridge: University Press), pp.198-199.

<sup>23</sup> Pritchett, J., 1994. ‘The Completion of John Cage’s *Freeman Etudes*.’ *Perspectives of New Music*, Vol. 32, No. 2. Summer, p.270.

<sup>24</sup> Ibid.

<sup>25</sup> Ibid.

<sup>26</sup> Pritchett and Zukofsky said ‘the pitch classes’ were decided in the early stage of the compositional process for the *Freeman Etudes*. See Pritchett, J., 1994. ‘The Completion of John Cage’s *Freeman Etudes*.’ *Perspectives of New Music*, Vol. 32, No. 2. Summer, p.270. Also, see Zukofsky, P. and Cage, J., 1991. ‘Freeman Etudes.’ In: R. Kostelanetz, ed. 1993. *Writing About John Cage*. (Ann Arbor: The University of Michigan Press), p.225.

<sup>27</sup> Pritchett, J., 1994. ‘The Completion of John Cage’s *Freeman Etudes*.’ *Perspectives of New Music*, Vol. 32, No. 2. Summer, p.266.

<sup>28</sup> Ibid.

<sup>29</sup> Ibid., p.270.

by both chance operations and Zukofsky's advice.<sup>30</sup> Regarding the string indication, Cage said 'the stringing may be changed, but only if after due consideration on the part of a particular violinist it proves absolutely necessary.'<sup>31</sup>

For the single notes, it is presumably ideal not to change any of the stringings. At the same time, if the violinist could produce a similar tone quality on a different string, is it truly necessary to follow all the strings in the score? A question which arises here is the influence of the chance operation, the compositional process, upon the performance.

Regarding the fingerings in the *Freeman Etudes*, Zukofsky said, 'I was most reluctant to create an absolutely final version since, as every violinist is aware, the fingerings and bowings that one uses throughout one's life evolve constantly as the mind and body change.'<sup>32</sup> If replacing the fingerings were allowed, the strings would enable more flexibility when playing the chords. At the same time, the stringings and fingerings are well provided in the *Freeman Etudes*. I would like to point out the relative difficulty of finding another good selection of stringings.

In the *Freeman Etudes*, dynamics are well contrasted. Almost every pitch is given different dynamics, and adjacent notes in the *Freeman Etudes* never use the same marking. Cage placed all dynamics on his own choice, and they were not decided by the chance operation.<sup>33</sup> A whole range of dynamics is used at the beginning and ending of

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<sup>30</sup> Zukofsky, P., 1992. 'Aspects of contemporary technique (with comments about Cage, Feldman, Scelsi and Babbitt).' In: R. Stowell, ed. 1992. *The Cambridge Companion to the Violin*. (Cambridge: Cambridge University Press), p.145.

<sup>31</sup> Cage, J. 1981. *Freeman Etudes I-XVI Books 1 & 2*. [Music Score] (Edition Peters). See Appendix 1.2.

<sup>32</sup> Duckworth, W., 1995. *Talking Music: Conversations with John Cage, Philip Glass, Laurie Anderson, and five generations of American experimental composers*. (New York: Schirmer Books, An Imprint of Simon & Schuster Macmillan), p.228.

<sup>33</sup> Pritchett, J., 1994. 'The Completion of John Cage's *Freeman Etudes*.' *Perspectives of New Music*, Vol. 32, No. 2. Summer, p.270.

*détaché* notes.<sup>34</sup> Apart from this, ‘different types of dynamics were used for every single note.’<sup>35</sup>

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<sup>34</sup> Pritchett, J., 1994. ‘The Completion of John Cage’s *Freeman Etudes*.’ *Perspectives of New Music*, Vol. 32, No. 2. Summer, p.270.

<sup>35</sup> *Ibid.*

## 1.2 The Notation

### 1.2.1 Notational Style and issues

As mentioned above, the *Freeman Etudes* are conventionally notated. Pitches are indicated with five line staves. Contrasting dynamics are given for each note and event. Full instructions for the notations are given in *Note* (see Appendix 1.2) in the published score. According to this, *Ricochet* is always with ‘the number accompanying it giving the number of sounds so produced.’<sup>36</sup> ‘Four kinds of *martellato* are used’<sup>37</sup> (see Appendix 1.2) in the *Freeman Etudes*. Cage creates various types of *martellato*, and precisely notates which type of *martellato* on every occasion. Stringings are given on each note in the *Freeman Etudes*. Four types of special timbres are notated clearly: harmonics, *sul tasto*, *sul ponticello* and *col legno*.<sup>38</sup>

Cage describes the notation as follows: ‘at one extreme you have the *Freeman Etudes* for violin, which are very determinate; they are written down in as exact a notation as I can make.’<sup>39</sup> Following this statement, Cage also says: ‘at the same time I am developing an interest in improvisation, which is probably freer than anything I have done before, including the indeterminate music.’<sup>40</sup> Here, Cage clearly mentions the indeterminate music as an opposite style to that of the *Freeman Etudes*.

The way Cage indicates tempo and rhythm is unconventional in the *Freeman Etudes*. He uses two horizontal lines underneath the staves: the upper line shows ‘the appearance in space-time of the *ictae* (or *Note* in Books 3 and 4 “*ictuses*”).’ The lower

<sup>36</sup> Cage, J. 1981. *Freeman Etudes I-XVI Books 1 & 2*. [Music Score] (Edition Peters). See Appendix 1.2.

<sup>37</sup> Ibid.

<sup>38</sup> Pritchett, J., 1994. ‘The Completion of John Cage’s *Freeman Etudes*.’ *Perspectives of New Music*, Vol. 32, No. 2. Summer, pp.264-270.

<sup>39</sup> Gagne, C. and Caras, T., 1982. ‘John Cage’, *Sound pieces – Interviews with American Composers*. (Metuchen, N.J., London: The Scarecrow Press, Inc.), p.71.

<sup>40</sup> Ibid.



line is ‘giving the “measure (bar)”, a constant length of time.’<sup>41</sup> The latter ensures consistency of the time. Each *Etude* includes twelve systems, with seven measures in each system. Regarding the measure, Cage (1982, p.1) says:

A violinist should establish a time-length for the measure (bar) and then maintain that tempo from system to system and from etude to etude. It should be short rather than long, as short a time length as his virtuosity permits (circa three seconds).

The bar is a basic structure of the work. This makes a form in each system and, finally, creates a structure for the entire *Freeman Etudes*. Cage often refers (1961, p.18-19) to the relationship between structure and time:

The strict division of parts, the structure, was a function of the duration aspect of sound, since, of all the aspects of sound including frequency, amplitude, and timbre, duration, alone, was also a characteristic of silence. The structure, then, was a division of actual time by conventional metrical means, meter taken as simply the measurement of quantity.

In Cage’s composition, the structure and time are related to one another. The *Freeman Etudes* provide an example to ponder in connection with Cage’s statement quoted above. In the *Freeman Etudes*, the structure and the line beneath each system give the consistent time length.

However, why does Cage not simply instruct the performer to maintain a speed corresponding to about three seconds for a bar throughout the work? Does the instruction include any philosophical meaning? The musicologist David Revill explains this point as: ‘the duration of the regular *tactus*, Cage had specified, should be “as short a time-length as his virtuosity permits” – which one may infer as determined by the

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<sup>41</sup> Cage, J. 1981. *Freeman Etudes I-XVI Books 1 & 2*. [Music Score] (Edition Peters).

fastest rate at which the most difficult passage could be played.’<sup>42</sup> Pritchett describes (1994, p.265) Arditti’s performance as follows:

Arditti treated the etudes as an ongoing project on which he worked diligently to improve his speed in playing them. In the score of the *Freeman Etudes*, Cage instructs the violinist to play ‘as fast as virtuosity permits’, and Arditti took that to mean ‘as fast as possible’, period.

So, ‘three seconds’ is not a definite figure. It depends on the violinist’s individual ability to play complex passages in the *Freeman Etudes*. Even so, a question raised here is how relatively a performer can set individual note-lengths following Cage’s instructions. In the above instruction, Cage clearly refers to tempo as an important factor in the work. The tempo should be ‘maintained’ through the *Freeman Etudes*.

Despite its detail, there is another ambiguity about the notation of the *Freeman Etudes*. How should one understand the rhythm here? The Grove Music Dictionary (Donington, 2001, p.71) gives a definition of ictus as follows:

Ictus (Latin). A term which in prosody indicates the stress or accent schematically implied on a certain syllable of a foot or verse; hence, in music, it is a comparable stress or accent schematically implied on a certain beat of a bar, in a certain metre, whether or not this implication coincides with the stress or accent actually made. In the editions of Gregorian chant produced by the monks, the *ictus* is a sign which indicates rhythmic groupings of two and three notes. The term is also used in relation to conducting patterns, to describe the downbeat.

The *ictus* shows the occurrence of the timing interval, but does not show the durations of the notes. The violinist has to understand the length of the pitch by

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<sup>42</sup> Revill, D., 1992. *The Roaring Silence John Cage: A Life*. (London: Bloomsbury), pp.291-292.

measuring the beams. Indeed, *ictus* shows the rhythm, but it only tells the performer the beginning of the note. Besides, the indications of *ictus* do not give a precise timing within the three-second period. However, in the compositional process, Cage put the utmost effort into deciding accurate pitch length. In fact, Pritchett asked Cage, in the *Freeman Etudes*, ‘how were durations determined?’ Cage answered Pritchett: ‘using a graph [...] chance then determined the total length of the end of a legato passage and detached notes.’<sup>43</sup> The correspondence reveals that the duration of each note was a due consideration on the compositional process. The notation should certainly show us the lengths of the notes.

In the *Freeman Etudes*, the bowings can be divided into two groups: ‘*legato*’ and ‘*détaché*’. Although this point was well-considered during the compositional process, it is not fully explained in the published score. Here, Pritchett (1994, p.266) refers to this point as follows:

An *I Ching* hexagram number was obtained to control the division into *legato* and *detached* notes. Subsequent numbers below this represented legato notes, while numbers greater than or equal to this represented detached notes. A second number was obtained to determine the number of notes to be divided using this partition, and the process continued with a new division, and so on, until all events had been determined.

From Pritchett’s remark, we learn that *legato* are notated as beamed notes, and isolated notes are supposed to be played by *détaché*.<sup>44</sup> On the other hand, this is not explained in the *Note*. Here, Cage only mentions that ‘tones to be played *legato*, sometimes simulated, are connected with a beam.’ It is unclear why Cage did not

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<sup>43</sup> Pritchett, J., 1994. ‘The Completion of John Cage’s *Freeman Etudes*.’ *Perspectives of New Music*, Vol. 32, No. 2. Summer, p.269.

<sup>44</sup>Ibid.

demonstrate the existence of *détaché* to the violinist. As Pritchett mentions, segregating *legato passages* from *détaché notes* must be an important part of the composition.

The *Freeman Etudes* were described by Cage as being ‘very determinate’<sup>45</sup> music. Many details are clearly expressed in the score. Take, for example, Cage’s work *Music of Changes*; here, Cage (1973, p.36) explains the relationship between chance operation and determined score as:

The *Music of Changes*, composed by means of chance operations, identifies the composer with no matter what eventuality. But that its notation is in all respects determinate does not permit the performer any such identification: his work is specifically laid out before him. He is therefore not able to perform from his own centre but must identify himself insofar as possible with the centre of the work as written.

The above statement reveals that Cage acknowledges the result of the determined score and knows its impact on the performer. The violinist is more controlled by the notation, and it would restrict the performer’s expression. If so, does ambiguity in the score control the performer? In the case of the *Freeman Etudes*, ambiguity is a result of the determinate score. Therefore, ambiguity is a part of determinacy rather than indeterminacy. Ambiguity here does not give any kind of freedom to the performer. Ambiguity applies to questionable aspects in the score. The materials are already determined in the compositional processes. The performer has a choice to decipher the meaning. However, as much as he or she makes a choice, they will be more controlled by the music.

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<sup>45</sup> Gagne, C. and Caras, T., 1982. ‘John Cage’, *Sound pieces – Interviews with American Composers*. (Metuchen, N.J., London: The Scarecrow Press, Inc.), p.71.

## 1.2.2 Ways to read the notation

Although there are some unconventional technical details in the *Freeman Etudes*, Cage manages to give the utmost information in its notation. The way Cage expresses details is consistent. For example, we would not find any pitch errors on the harmonic combinations. Technical details are fully instructed. The dynamics are given to all pitches throughout, and these facts identify a well-organised aspect in the composition.

The only uncertain part in this work is the rhythm. As was mentioned, Cage denotes bar lines to establish three seconds for every segment. He uses short vertical lines, which are called *ictae*, to mark the timing of the pitch, meaning they describe the rhythm. However, unlike the notion of the crotchet, etc., *ictae* does not immediately give a precise idea of the duration. Therefore, the performer has two choices. One is to guess the length between two *ictaes* by his visual imagination. Nevertheless, in a performance, this would not convey accurate notational information to the audience.

The other option is to measure the space between two *ictaes*. This might consume time to accomplish all calculations. However, this will determine exact pitch lengths. The measurement can be done as follows:

- 1) In the published score, 35mm is allocated per bar.
- 2) Therefore, 11.6mm represents one second.

<b>From beginning to 1<sup>st</sup> pitch = 27mm = 2.3 seconds</b>
<b>1<sup>st</sup> pitch = 85mm = 7.3 seconds</b>
<b>2<sup>nd</sup> pitch = 23mm = 2 seconds</b>
<b>3<sup>rd</sup> pitch = 44mm = 3.8 seconds</b>
<b>4<sup>th</sup> pitch = 54mm = 4.6 seconds</b>
<b>5<sup>th</sup> pitch = 12mm = 1 second</b>

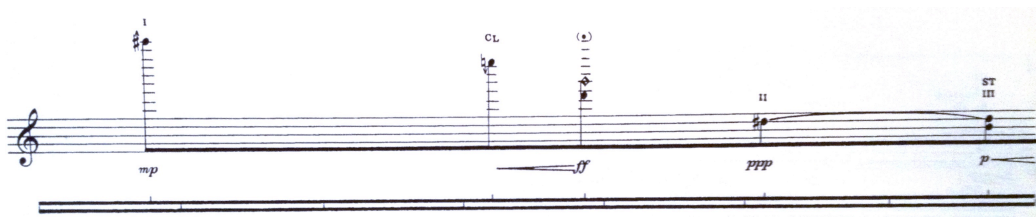
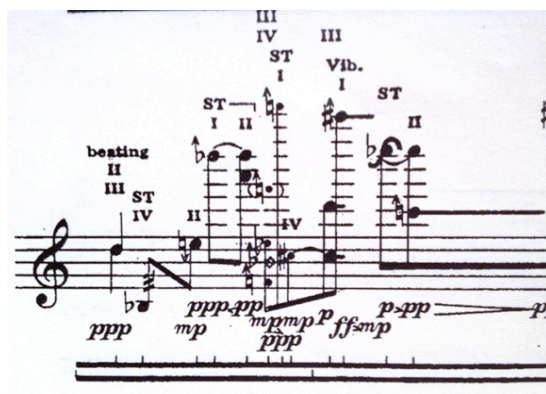


Figure 1.1: *Freeman Etude XV*, 1<sup>st</sup> system

See figure 1.1 above. Each pitch is measured based on the formula listed in the previous page. For the sustained notes, it would be particularly useful to know how long each pitch should be held. However, for sections where pitches are condensed, would it be helpful to the violinist to know the rhythm by seconds?

The time calculation in Figure 1.2 identifies similar durations over several pitches. For example, 1<sup>st</sup> and 11<sup>th</sup> pitch in Figure 1.2 are given the same length. Although it is not realistic to follow these ‘second’ calculations during the performance, it is still useful to know the rhythmic relations between pitches in the violinist’s practice sessions.



<b>Beginning of the system to 1<sup>st</sup> pitch = 6mm = 0.5 seconds</b>
<b>1<sup>st</sup> pitch = 4mm = 0.34 seconds</b>
<b>2<sup>nd</sup> pitch = 8mm = 0.68 seconds</b>
<b>3<sup>rd</sup> pitch = 3mm = 0.25 seconds</b>
<b>4<sup>th</sup> pitch = 5mm = 0.42 seconds</b>
<b>5<sup>th</sup> pitch = 3mm = 0.25 seconds</b>
<b>6<sup>th</sup> pitch = 2mm = 0.17 seconds</b>
<b>7<sup>th</sup> pitch = 1mm = 0.086 seconds</b>
<b>8<sup>th</sup> pitch = 6mm = 0.5 seconds</b>
<b>9<sup>th</sup> pitch = 2mm = 0.17 seconds</b>
<b>10<sup>th</sup> pitch = 6mm = 0.5 seconds</b>
<b>11<sup>th</sup> pitch = 4mm = 0.34 seconds</b>
<b>12<sup>th</sup> pitch = 20mm = 1.7 seconds</b>

Figure 1.2: *Freeman Etude XVI*, 2<sup>nd</sup> system

Figure 1.1 corresponds to the *etudes* which are given fewer pitches, but there are many sustained notes. Indeed, the first pitch in Figure 1.1 requires 7.3 seconds, on a high position C sharp. This pitch can be found almost on the edge of the fingerboard, and to sustain this pitch for the length given here would not be so comfortable for the violinist. As there is no specific instruction for the bowing in the *Freeman Etudes*, using one bow on each pitch would be recommended. The violin's bow hair is approximately 66cm.<sup>46</sup> Therefore, the violinist can only use less than 10cm per second on this pitch. As this pitch is played by an ordinal bow stroke, the violinist may intend making a clear sound. Alternatively, the violinist could produce a noise-contained sound.

Extracts for Figure 1.2 represent a virtuoso character of the *Freeman Etudes*. A group of pitches are often condensed in a short period of time, and are well distributed over a wide range of registers. Even without counting the notes, it takes a certain amount of time for the violinist's left hand to move all over the fingerboard. Particularly, the first bar of Figure 1.2 includes a unison double stop (1<sup>st</sup> pitch), an awkward position of a double stop (5<sup>th</sup> pitch), a combination of a harmonic and an ordinal pitch (6<sup>th</sup> pitch), and a high registered pitch (7<sup>th</sup> pitch). It would probably take more than three seconds just to move the left hand to collect all pitches here.

It is possible to find precise rhythm in Cage's notation by measuring *ictaes*. However, every pitch in the *Freeman Etudes* is given a different dynamic and a fixed string. A pitch does not usually have any simple interval relations with adjacent notes. Whether it is a long or short note, achieving millisecond differences at the same time as accomplishing the technical details requires a flexible understanding of each component. To expect a conventional sound result in this setting might take the violinist in another direction. To hear unforeseen sound results after following the notational

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<sup>46</sup> This is a length of bow hair, and the measurement is calculated from bows I have owned.

information could be an essence of this work. Even after a comprehension of the notational information, technical details are required to be solved by each violinist.



## 1.3 Techniques

### 1.3.1 Sound qualities: techniques and dynamics

Cage explains the way he sets the dynamics in the *Freeman Etudes* as ‘except for *martellato* and snap *pizzicato*, a whole range *ppp-fff* was used for endings and beginnings of detached notes, otherwise single dynamics for single notes.’<sup>47</sup> Often, contrasted dynamics are given to adjacent pitches, connected by either *crescendo* or *diminuendo*. Figure 1.3 shows an example of a dynamics setting. The first pitches in this figure need to be sustained for about four to five seconds, and require *f* to *ppp*. It looks simple, but it demands *sul ponticello* and the double stop requires F and F quarter-tone sharp. Holding the pitches by the left fingers and bow position for such a length of time is an unusual situation for the violinist.

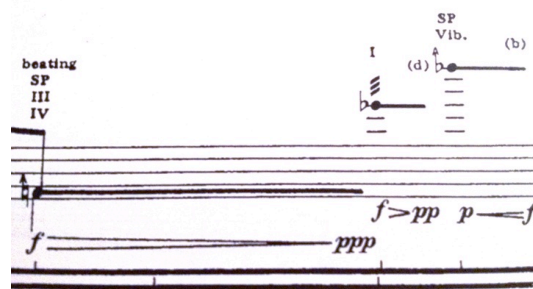


Figure 1.3: *Freeman Etudes IV*, 3<sup>rd</sup> system

Figure 1.4 shows us another plain form of dynamics. The last pitch in the figure is given a *crescendo* from *ppp* to *f*. The bowing and left hand position are not awkward for this pitch. So, as long as the left finger is stable enough to get to the right pitch, this would not be so demanding. Nevertheless, making contrasted dynamics for the last two pitches in the figure is rather more difficult, because the first and second pitches are played on the D string, and the last pitch is on the E string. The second

<sup>47</sup>Pritchett, J., 1994. ‘The Completion of John Cage’s *Freeman Etudes*.’ *Perspectives of New Music*, Vol. 32, No. 2. Summer, p.268.

pitch's sound projection is better on the E string, but the notation here is against the nature of the instrument. So, the violinist needs to start the E string pitch with extra care.



Figure 1.4: *Freeman Etude IV*, 5<sup>th</sup> system

Figure 1.5 displays rapid dynamics and pitch changes. In the first half of the music excerpt, there are only short gaps between the pitches. However, Cage puts some *crescendos* and *diminuendos* and often subtle contrasts are notated, e.g. *ppp-p*.



Figure 1.5: *Freeman Etude X*, 10<sup>th</sup> system

As is the nature of the instrument, each string on the violin has different types of sound quality. Also, a harmonic and an ordinal finger-pressed pitch would not be the resembled sound quality and dynamics. However, the dynamics Cage uses here ignore these facts, and those dynamics settings might produce unexpected sound results.

Figure 1.6 is another excerpt that contains a rapid dynamics shift between pitches. Between the 3<sup>rd</sup> and 4<sup>th</sup> pitches in this figure are given *ppp* to *fff* with a *crescendo*. Here, a rapid bow movement is required in order to make transitions of the dynamics. Nevertheless, there would be a limit to the bow speed when using a certain

length of the bow, so another solution would be using an extra bow pressure to play the *crescendo*. An issue with pressing the bow down is the sound quality. Usually, the violinist is trained to be able to keep a proper bow pressure for making clear tones. However, if the dynamics are more of a priority than the pure sound quality, the violinist's conventional belief should be abandoned. Importantly, Cage does not mention definite sound quality. So, the accidental results after following the notation might be more suitable than producing conventional sounds.

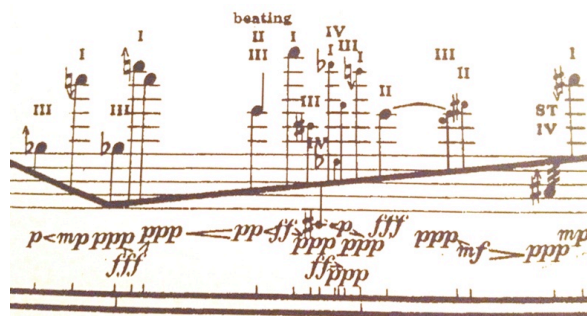


Figure 1.6: *Freeman Etude X IV*, 5<sup>th</sup> system

Figure 1.7 includes some *col legno*, *sul ponticello* and *sul tasto* with rapid dynamics changes. As an example, *sul tasto* is explained as ‘drawing the bow lightly and rapidly over the strings (usually near the fingerboard) to produce a flutelike timbre.’<sup>48</sup> Traditionally, *sul tasto* is also used to make a soft dynamic, but it does not give any options for a great deal of dynamics change within the soft quality of sound. The same facts can be applied to *col legno* and *sul ponticello*.

For example, *sul tasto* on the first pitch in Figure 1.7 is given *f*. The dynamics are in opposition to the nature of *sul tasto*, so the pitch requires a little extra bow pressure to increase the sound volume. Also, the pitch needs to be on an extreme high

<sup>48</sup> Blum, D. ed., 1987. *The Art of Quartet Playing – the Guarneri Quartet*. (New York: Cornell University Press), p.239.

register. Although the bow position for *sul tasto* is over the fingerboard, it requires a very close bow position to the left finger.

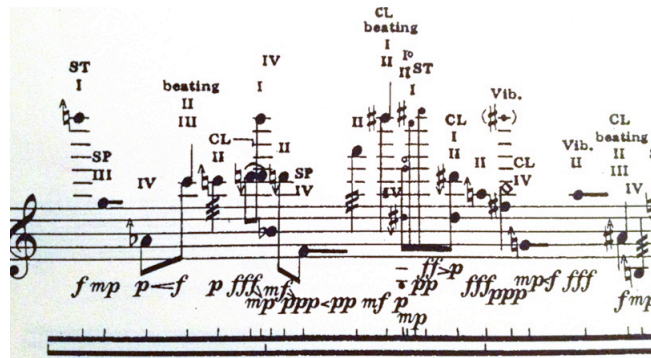


Figure 1.7: *Freeman Etude X VI*, 4<sup>th</sup> system

In the *Freeman Etudes*, the dynamics are not just providing instructions for sound volumes. Once combined with other factors, such as the rhythm, bowing and pitch, the dynamics offer an important means of producing unexpected sound results.

### 1.3.2 Unusual technical settings

One of the important characteristics in Cage's works for the string instrument is fixed-string indications and bowing. As is the nature of the instrument, we can find the same pitch over the four strings on the violin. Most of the time, the violinist has choices to make as to which string's pitch to use according to its context.

However, Cage's string indications are decided by *I Ching*.<sup>49</sup> Usually, the violinist's criteria when deciding the strings are the functionality and tone quality. Strings decided by the chance operation would not consider these details as a priority. Zukofsky says, 'chance cannot be relied upon to provide a practical and expedient fingering or bowing, nor should that be its function.'<sup>50</sup> Obviously, the technical

<sup>49</sup> Pritchett, J., 1994. 'The Completion of John Cage's *Freeman Etudes*.' *Perspectives of New Music*, Vol. 32, No. 2. Summer, p.268.

<sup>50</sup> Zukofsky, P., 1992. 'Aspects of contemporary technique (with comments about Cage, Feldman, Scelsi and Babbitt).' In: R. Stowell, ed. 1992. *The Cambridge Companion to the Violin*. (Cambridge: Cambridge University Press), p.145.

confinement restricts the violinist's physical movement. The composer could give precise information to the performer by allocating the fingering and bowing indications. Nevertheless, the composer's technical instruction does not always give a comfortable setting for the performer. However, if the technical details are a part of the composition, the performer ought to respect and follow them.





A major aspect of the chance operation is its unforeseen results. Firstly, using a conventional left finger pattern may produce similar tone qualities with the performance for other compositions. Secondly, the violinist is usually trained to press down the left finger securely. Intonations must be precise for any violin works. However, even on the same intonation, an unsteady finger weight on the string may produce different timbres. Thirdly, the most practical fingerings also help bowing patterns. Fingerings without consideration of practicality will conflict with the smooth bow movement. Hence, connections between notes would be uneven, and we can expect unusual phrasings over the passage.

In spite of the detailed score, there are always questions about practicality for the performer. The composer's creative idea and the performer's physical ability do not always meet the same conditions. The detailed notation often gives technically uncomfortable tasks to the performer. For example, Cage's string indication in the *Freeman Etudes* requires rapid left hand position changes. If violinists are given the same pitches without Cage's instruction, they may choose different fingering patterns, which are more practical and reduce energy consumption. However, Cage wanted to use the finger patterns decided by using the *I Ching* as part of the compositional process.<sup>51</sup> The composer's intention is respectable; hence, the violinist has an obligation to follow the fingerings instructed by Cage.

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<sup>51</sup> Pritchett, J., 1994. 'The Completion of John Cage's Freeman Etudes.' *Perspectives of New Music*, Vol. 32, No. 2. Summer, p.266.

Although most of the performance techniques used in the *Freeman Etudes* are conventional, ‘*martellato*’ and ‘inflected notes’ in this work are unique. *Martellato* is a ‘hammered’ stroke.<sup>52</sup> It is explained as ‘a bow stroke that begins with an incisive accent’<sup>53</sup> and also ‘a type of percussive bow stroke characterised by its sharp initial accent and post-stroke articulation.’<sup>54</sup> Therefore, *martellato* usually refers to a very strong bow stroke. Meanwhile, Cage has envisaged different types of *martellato*. Figure 1.8 shows us four styles of *martellato* used in the *Freeman Etudes*. Beautifully designed, these *martellato* specified the bow movement comprehensively.

	Beginning in space, ending on the string [M1]
	Starting on the string, ending in space [M2]
	Beginning and ending in space, hammering the string between [M3]
	Beginning and ending on the string [M4]

**Figure 1.8: Four kinds of *martellatos*, the *Freeman Etudes***

Among the four types of *martellatos*, ‘beginning and ending in space, hammering the string between’ [M3] is identical to the conventional term of *martellato*.

‘Beginning in space, ending on the string’ *martellato* [M1] would not leave a sound resonance after a bow stroke. It will stop the sound at the end of the note. There may be a sound noise at the same time the bow is stopped on the string.

‘Starting on the string, ending in space’ [M2] is contrasted from [M1]. As the bow will be released at the end of the note, a sound will remain after finishing a bow

<sup>52</sup> Blum, D. ed., 1987. *The Art of Quartet Playing – the Guarneri Quartet*. (New York: Cornell University Press), p.240.

<sup>53</sup> Ibid.

<sup>54</sup> R. Stowell, ed. 1992. *The Cambridge Companion to the Violin*. (Cambridge: Cambridge University Press), p.264.

stroke. However, this is rather similar to the conventional term of *staccato*. For example, *staccato* is explained as ‘a series of short, quick, *martelé* strokes, the bow hair does not leave the string between strokes.’<sup>55</sup> However, in practice, the bow cannot have any control unless the bow hair holds the string at the beginning of the stroke. Moreover, if the bow is not released after a short attachment on the string, sound vibration would be stopped. The sound will be ugly in this situation, and quite likely the violinist will lift up the bow from the string in the end of conventional *staccato* to avoid causing noise.

Still, [M2] must be a *martellato* stroke, rather than *staccato*. However, it is not so possible to ‘hammer’ the string without hitting the bow, so it is contradictory to the general definition of *martellato*. The same problem can be found in ‘beginning and ending on the string’ *martellato*. [M4] For this, the bow should not leave the string, so again this does not allow knocking the string by the bow. In such a manner, are these actually indications of *staccato*, or could they be a new style of bowing?

Among the conventional bowing techniques, *martellato* is the only bow technique where the violinist is allowed to hit the bow violently on the string. Other major bouncing bow techniques, such as *spiccato*, *staccato* and *ricochet*, are the terms used for bouncing the bow and detaching the sound, but not hitting the bow.

‘Hammer’ implies a motion of lifting up an object and hitting the object on another target. However, can the violinist strike the string without a pre-motion to aim the point? In fact, violin strings are elastic so, even after the bow is placed on the string, it can still hammer the string. Obviously, the violinist has to dig into the string more

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<sup>55</sup> Blum, D. ed., 1987. *The Art of Quartet Playing – the Guarneri Quartet*. (New York: Cornell University Press), p.240.

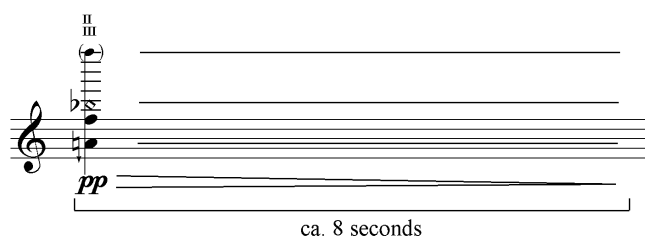
than usual *arco* bow strokes. The violinist makes an adjustment of the bow weight to produce a pure quality of tones; such a sound cannot be expected with these *martellatos*.

Consequently, four *martellatos* reveal contrasted sounds. [M3] can be a conventional *martellato*, but the other three styles may cause a blast sound. Some resonance can be anticipated after [M2], when the bow is released from the string. However, [M1] and [M4] dampen the sound at the end of the note. The way Cage indicated for the last two *martellatos* to be played is a perfect setting for sparking a noise. Importantly, Cage always gives loud dynamics to the four types of bowings, so it can be assumed that these bowings can be harsh.

Two features – the fingering and *martellato* discussed in this section – can be called extended techniques, because of their unconventional settings. More importantly, the violinist has to reconsider what is the appropriate sound concept for the allocated techniques. An extended technique does not immediately achieve a unique result; the performer needs to understand the essence of the technique in order for its effect to be maximised.

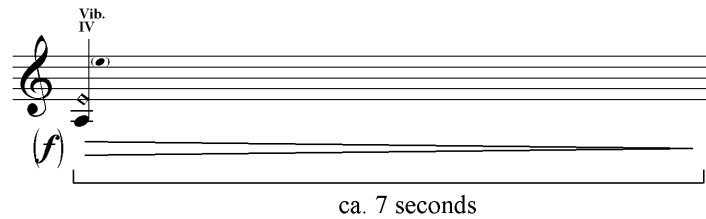
### 1.3.3 Harmonics

Figures 1.9-1.10 illustrate examples of long held harmonics. Figure 1.9 displays a double stop consisting of an ordinal pitch and an artificial harmonic, while Figure 1.10 shows a single artificial harmonic.



**Figure 1.9:** from Cage, *Freeman Etude III*



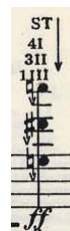


**Figure 1.10:** from Cage, *Freeman Etude III*

As shown in Figure 1.9, if the bow is not carried by having an equal arm pressure, it might disturb the creation of a long *diminuendo* line. Figure 1.10 also requires a long *diminuendo*; however, it starts from *f*, so that the sound level will be dramatically changed during the *diminuendo*, more than in Figure 1.9. A transition of the two dynamics during a bow stroke should be well-planned.

### 1.3.4 Sul tasto

Figures 1.11 and 1.12 show us some examples of *sul tasto* in the *Freeman Etudes*. Figure 1.11 is given *ff*, while the trichord consists of microtones. The finger position here needs to be fairly high. *Sul tasto* was historically used as a technique to achieve a soft dynamic, hence, *p* is more appropriate with *sul tasto*. Nevertheless, Cage gives a dynamic which contradicts the custom of *sul tasto*. So, is this not a practical idea at all?



**Figure 1.11:** Cage, *Freeman Etude I*

In fact, *sul tasto* is also used as a solution in order to play chords on the violin. By placing the bow on the position of *sul tasto*, it makes it possible to hold three strings together by pressing down the middle string. In order to do this, the bow needs to put

enough pressure on the strings. For the purpose of this, *sul tasto* could even be *f*. Therefore, *ff* in figure 1.11 is rather a practical idea.



**Figure 1.12: Cage, *Freeman Etude I***

Figure 1.12 shows similar pitch combinations with Figure 1.11. However, *mp* is given here. As was mentioned, louder dynamics are rather more suitable for playing a *sul tasto* trichord. So, does Figure 1.12 show us an impractical idea? For this chord, Cage indicates an arrow with a waved line, meaning it can be played as a broken chord. The chord in Figure 1.11 is given an arrow, indicating which string should be started; however, the line is straight, indicating it does not need to be a broken chord.

The highest note in the *Freeman Etudes* is D with nine ledger lines, which is just off the fingerboard on a standard length of the fingerboard. Cage probably knew about this fact, and none of the off finger-board pitches need to play as *sul tasto*. It seems he carefully restricts the register of *sul tasto*.

### 1.3.5 Sul ponticello

Figures 1.13-1.15 display extracts from the *Freeman Etudes*.<sup>56</sup> In Figure 1.13, *sul ponticello* is only required on the pitch B, with *ff*. This looks technically quite simple; however, the bow transition between the previous pitch and the *sul ponticello*

<sup>56</sup> In these music examples, SP is the abbreviation of *sul ponticello*.

should be made smoothly: the bow positions need to be changed from an ordinal position with *col legno* to *sul ponticello* without any gap.

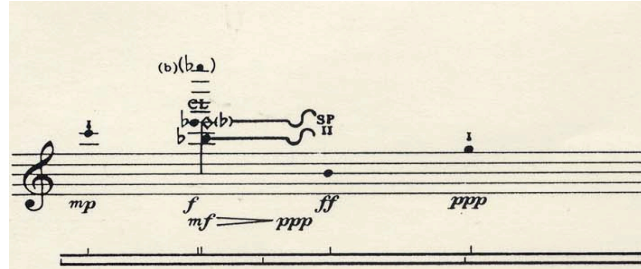


Figure 1.13: Cage, *Freeman Etude I*, 1st system

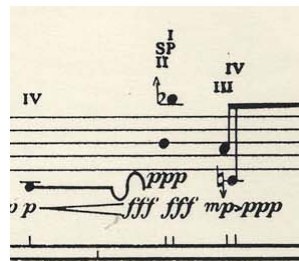


Figure 1.14: Cage, *Freeman Etude I*, 2<sup>nd</sup> system

Figure 1.14 shows us an example of *sul ponticello* which requires a sudden dynamics change between the two pitches. Generally, it would be possible to make varieties of dynamics with *sul ponticello*. Nevertheless, clarity of sound might be different. As a matter of fact, *sul ponticello* with loud dynamics can produce a husky sound quality, and it modifies the intonation by its timbre. *Sul ponticello* with soft dynamics is also able to make rough sounds. However, the pitch can be heard much clearer than when it is played loudly by *sul ponticello*, so the sound results will not always be as expected. Small factors would cause a dramatic sound change: for example, angle of the bow, etc. Therefore, different performances would result in diverse sound timbres.

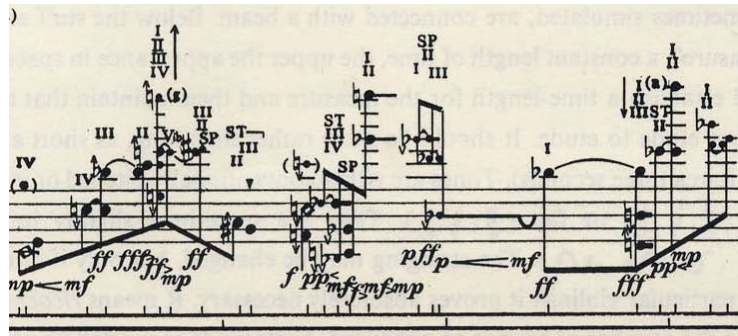


Figure 1.15: Cage, *Freeman Etude 1*, 3<sup>rd</sup> system

The first *sul ponticello* (SP, on 8<sup>th</sup> *ictae* from the beginning of the example) in Figure 1.15 requires D and A strings to be played, and the left hand position needs to be quite high. The majority of violinists would probably prefer to use A and E strings instead of what is suggested here, because higher strings can produce the pitches clearer. Most string instrumentalists may aim to achieve clear intonations; people pursue accuracy of pitches in order to make improvements in a performance.

Importantly, there is no evidence that Cage wanted every pitch in his music to be heard clearly in the way of a conventional style. In fact, *sul ponticello* will distort the clarity of pitches, so none of the E-A or D-A string combinations would produce a clear pitch. The quality of the pitch will contribute to changing the timbre of *sul ponticello*. When violinists decide whether or not to follow Cage's string choice, they may need to consider the quality of the timbre rather than just the clarity of the pitches.

Some examples from the *Freeman Etudes* consider the notion of sound quality. What Cage instructs in the examples here are not totally practical ideas for the violin. However, they are still technically possible to follow, and what comes as a result would be more important than technical easiness.

### 1.3.6 Col legno

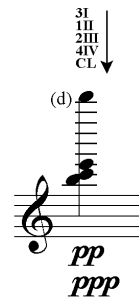


Figure 1.16: from Cage, *Freeman Etude I*

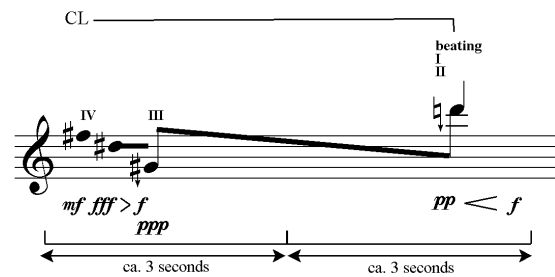


Figure 1.17: from Cage, *Freeman Etude IV*

Figures 1.16 and 1.17 show examples of *col legno*. The four notes in figure 1.16 can be gained in the same left hand position; however, the hand placement needs to be on a very high position. Given the nature of *col legno*, it cannot make a particularly loud sound. It would make harsh and dry sounds, but a low sound volume could be expected. So, the dynamic given to Figure 1.16 is ideal for *col legno*. At the same time, the pitch combination in this figure is difficult to project even if the violinist plays it with an ordinary bow stroke. The violinist needs to consider, firstly, how to play the four pitches clearly. The fingers should be positioned accurately. Secondly, an appropriate bow pressure is required in order to make a suitable dynamic. Thirdly, sound qualities should be well-considered. When *col legno* is attempted in order to make it sound clearer, sounds tends to be similar to an *arco* sound. The violinist may need to evaluate how much timbre effect he makes by *col legno* as well as the level of dynamics.

The differences between Figures 1.16 and 1.17 are, firstly, dynamics and, secondly, length of notes. Importantly, bow pressure and timbre effect are needed to be considered. In order to produce *fff* by *col legno*, a heavy bow pressure is needed, as it is against the nature of *col legno*. It could make a strong noise, but it would be possible to produce an unexpected sound timbre by following the notational instructions.

## 1.4 Recording Analysis

In this section, some commercial recordings and my own performance are examined by using *Sonic Visualiser*<sup>57</sup> – the software invented by the CHARM<sup>58</sup> project. Only the *Freeman Etude I* will be analysed here. It is meaningful to observe how other violinists perform the *Freeman Etudes* after Cage intended to write it as ‘impossible to play’. It is useful to plan a new performance strategy by analysing these recordings. The main purpose of the recording analysis is to improve understanding of the notation.

Firstly, it is important to know how the violinist interprets the instruction to ‘establish a time-length’ and, therefore, an analysis will be made of each performer’s tempo progression. This will be followed by a close examination of the spectrograms in comparison with the notation. Finally, as was discussed previously, since *legato* and *détaché* were left without any explanations in the score, the recording analysis observes the bow strokes in the beamed notes and isolated notes.

The intention in making this observation is not to criticise any particular style of performance. Rather, the main purpose of this analysis is to help my own discovery, as someone currently learning to play the *Freeman Etudes*, of appropriate performance strategies for the work. Therefore, as an example, my own recording is analysed in order to make a comparison with these commercial recordings.

Currently, Paul Zukofsky, János Négyesy and Irvine Arditti have made recordings of the *Freeman Etudes*. Zukofsky produced his CD in 1981,<sup>59</sup> Négyesy’s

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<sup>57</sup> Centre for the History and Analysis of recorded music, 2009. *Sonic Visualiser* [online] Available at: <[http://www.charm.rhul.ac.uk/analysing/p9\\_0\\_1.html](http://www.charm.rhul.ac.uk/analysing/p9_0_1.html)> [Accessed 17 January 2009].

<sup>58</sup> Ibid.

<sup>59</sup> Cage, J., 1981. *John Cage Chorals, Cheap Imitation, Freeman Etudes I-VIII*. Performed by Zukofsky, P., [CD] (New York: CP<sup>2</sup> Recordings) B000009J1L.

recording was made in 1982,<sup>60</sup> and Arditti recorded the *Freeman Etudes Book 1* and 2 in 1990.<sup>61</sup> In order to produce a performance example for this essay, I recorded the *Freeman Etude I* on 17 April 2008. For this sound example, I played the piece three times from beginning to the end, and the recording technician chose the track with the best sound quality. However, the track is not edited apart from the sound quality.

My recording can be found on the CD, attached with this thesis. Appendix 1.1 is the score of the *Freeman Etude I*. Appendix 1.1 also shows the measure numbers, and these numbers are used for the purposes of this essay.

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<sup>60</sup> 1985. *Freeman Etudes*. Performed by Négyesy, J., [CD] Reproduced by Newport Classics. (New York: Lovely Music, Ltd.) CD B00005NZLN.

<sup>61</sup> 1982. *Freeman Etudes Book 1 I-XVI*. Arditti, I., [CD] (New York : Mode Records) Mode Records 32.



### 1.4.1 Issues of speed and tempo in performance

	Paul Zukofsky	János Négyesy	Irvine Arditti	Mizuka Yamamoto
System numbers	Seconds	Seconds	Seconds	Seconds
1	20.54	18.92	15	17.69
2	21.26	20.93	15.65	24.36
3	23.21	22.36	16.79	25.52
4	20.37	18.24	11.42	15.46
5	21.93	23.23	17.07	18.53
6	19.39	21.44	20.97	25.22
7	18.49	17.3	13.4	16.86
8	20.59	18.49	10.54	18.07
9	19.7	21.97	11.86	14.21
10	21.41	21.1	17	20.99
11	19.2	21.48	16.16	19.69
12	–	–	–	–

**Figure 1.18: durations in each system of Cage's *Freeman Etudes I*, played by Paul Zukofsky, János Négyesy, Irvine Arditti and Mizuka Yamamoto**

Figure 1.18 above presents performance durations by seconds in each system in the *Freeman Etude I* (see Appendix 1.1 for the score). As mentioned in the introduction, recordings by four violinists are analysed. The figure in the 12<sup>th</sup> system is unclear and not so important. After the last note, half of the 12<sup>th</sup> system is silent, so there is a possibility that the recording technician included the silence at the end; hence, we cannot judge how long each violinist actually takes for the system.

Significant in the result is the difference between Arditti and the other three players' performance lengths. Most of the time, Arditti's durations in each system are shorter than that of the other violinists. Taking the 8<sup>th</sup> system as an example, Arditti plays it at almost double the speed of the others.

As was mentioned before, Cage's statement regarding the tempo in the *Freeman Etudes* is ambiguous. Pritchett's description about Arditti's tempo interpretation was also quoted earlier in this essay. The result of the recording analysis identifies that Arditti understands that the tempo set should be 'as fast as possible'.

Four charts (figure 1.19) demonstrate tempo developments of the four performers. The vertical line indicates seconds, and the horizontal line shows the system numbers. These charts immediately confirm the inconsistency of the tempo in these performances.

The charts show different patterns of lines. Even so, none of them particularly establish a tempo. The results of the recording analysis clearly demonstrate the impossibility of maintaining the tempo.

The three commercial recordings were supposed to be edited during the recording process. However, none of them demonstrate solid tempo progression. I, too, failed to achieve any specific tempo development. If one wants to illustrate a fixed tempo, the line in the graph would be a more moderate line than any of the actual results in the charts. However, the tempo developments of these performers are more or less irregular. The tempo may be an aspect of 'the practicality of the impossible'<sup>62</sup> in the *Freeman Etudes*.

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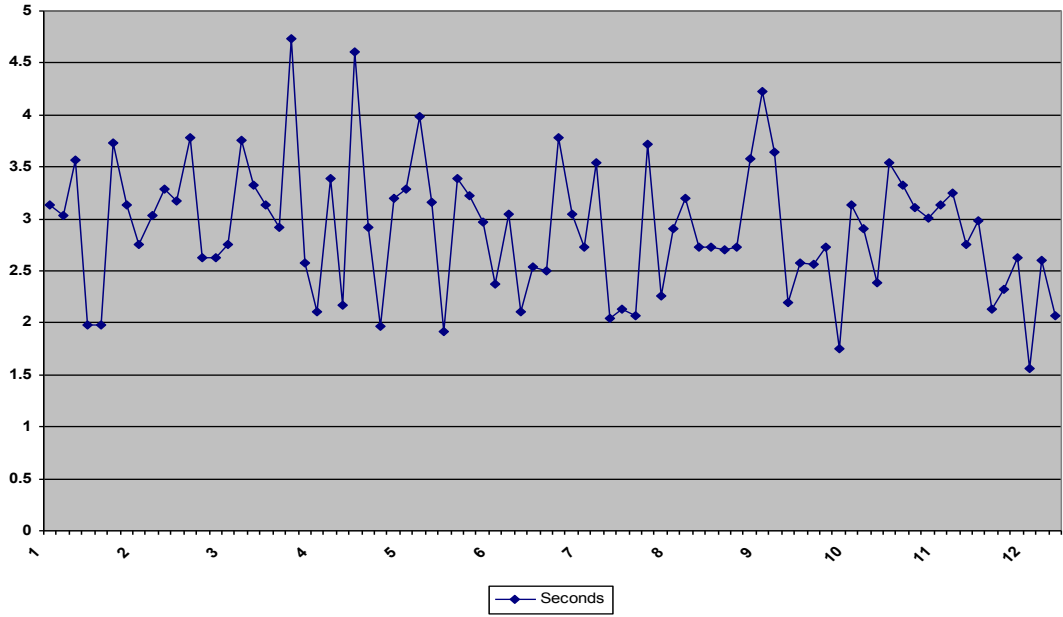
<sup>62</sup> Pritchett, J., 1994. 'The Completion of John Cage's Freeman Etudes.' *Perspectives of New Music*, Vol. 32, No. 2. Summer, p.264.

Figure 1.19

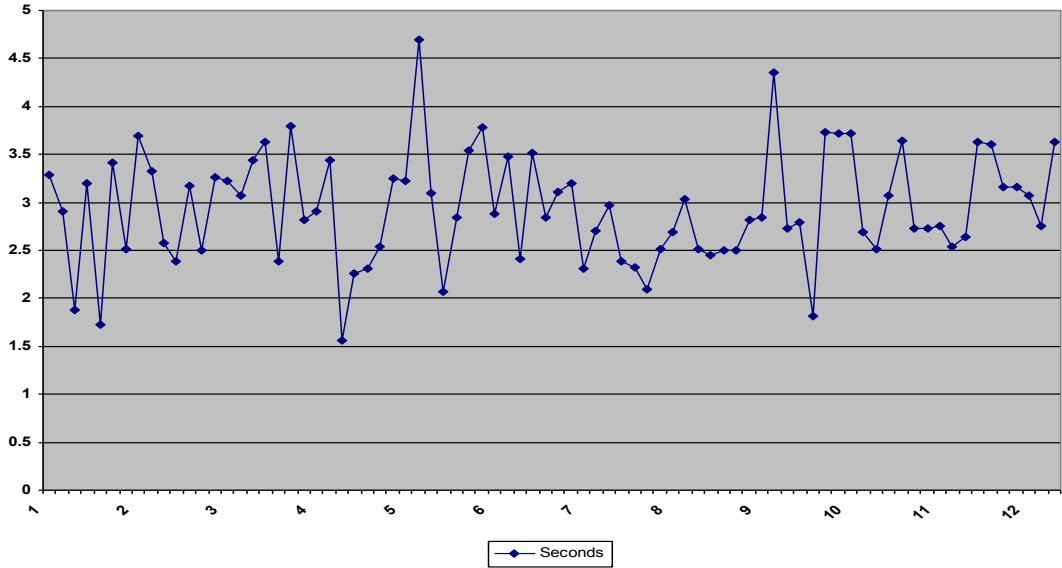
Tempo development charts

Vertical lines=seconds; horizontal lines = system numbers of the *Freeman Etude I*

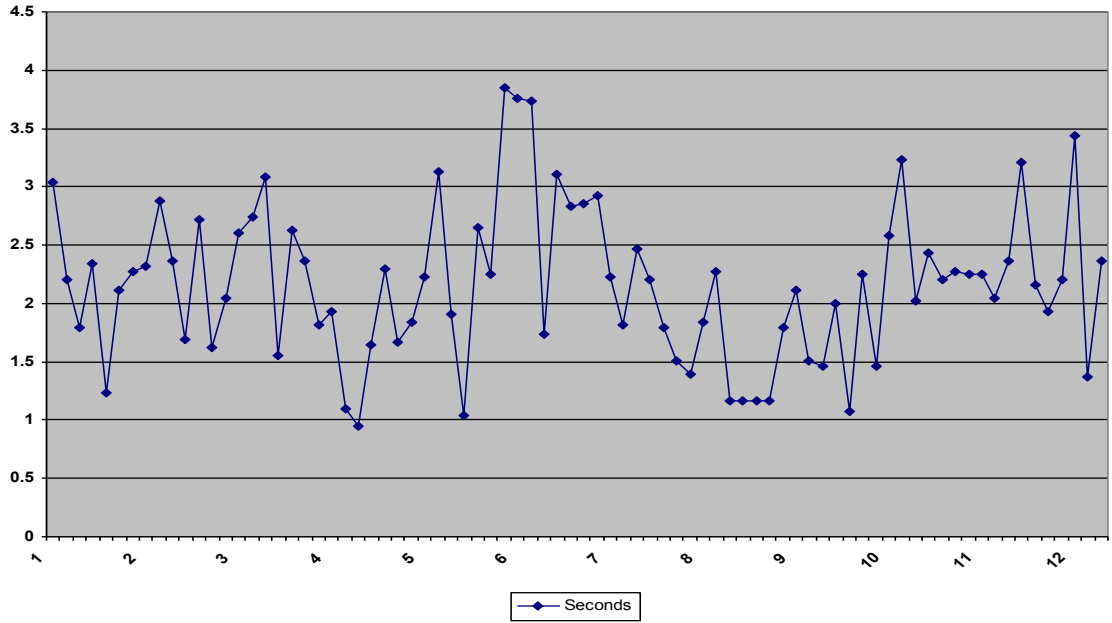
Paul Zukofsky (violin), John Cage *Freeman Etudes No.1*



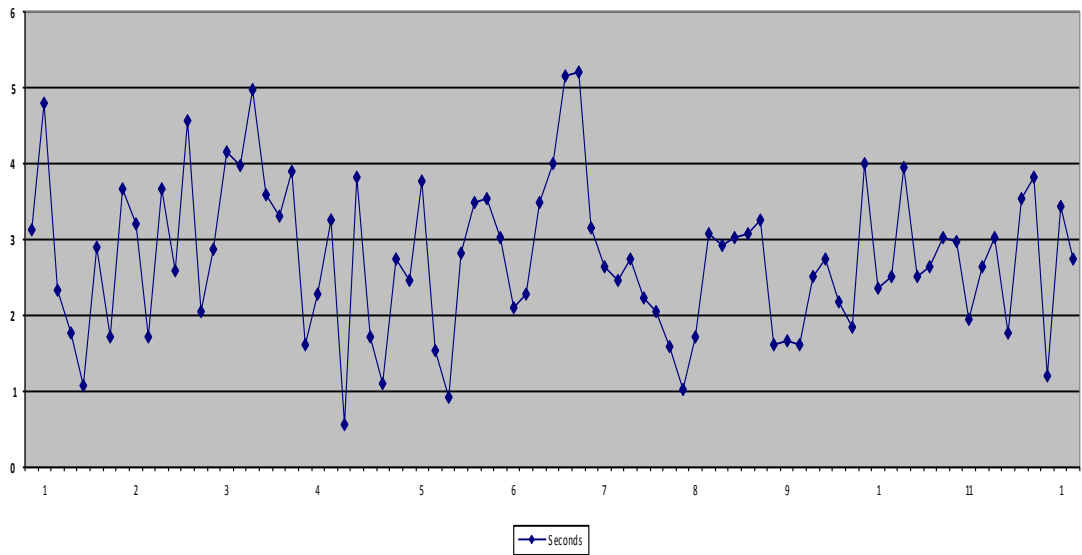
Janos Negyesy (violin), John Cage *Freeman Etudes No.1*



Irvine Arditti (violin), John Cage *Freeman Etudes No.1*



Mizuka Yamamoto (violin), John Cage *Freeman Etudes No.1*



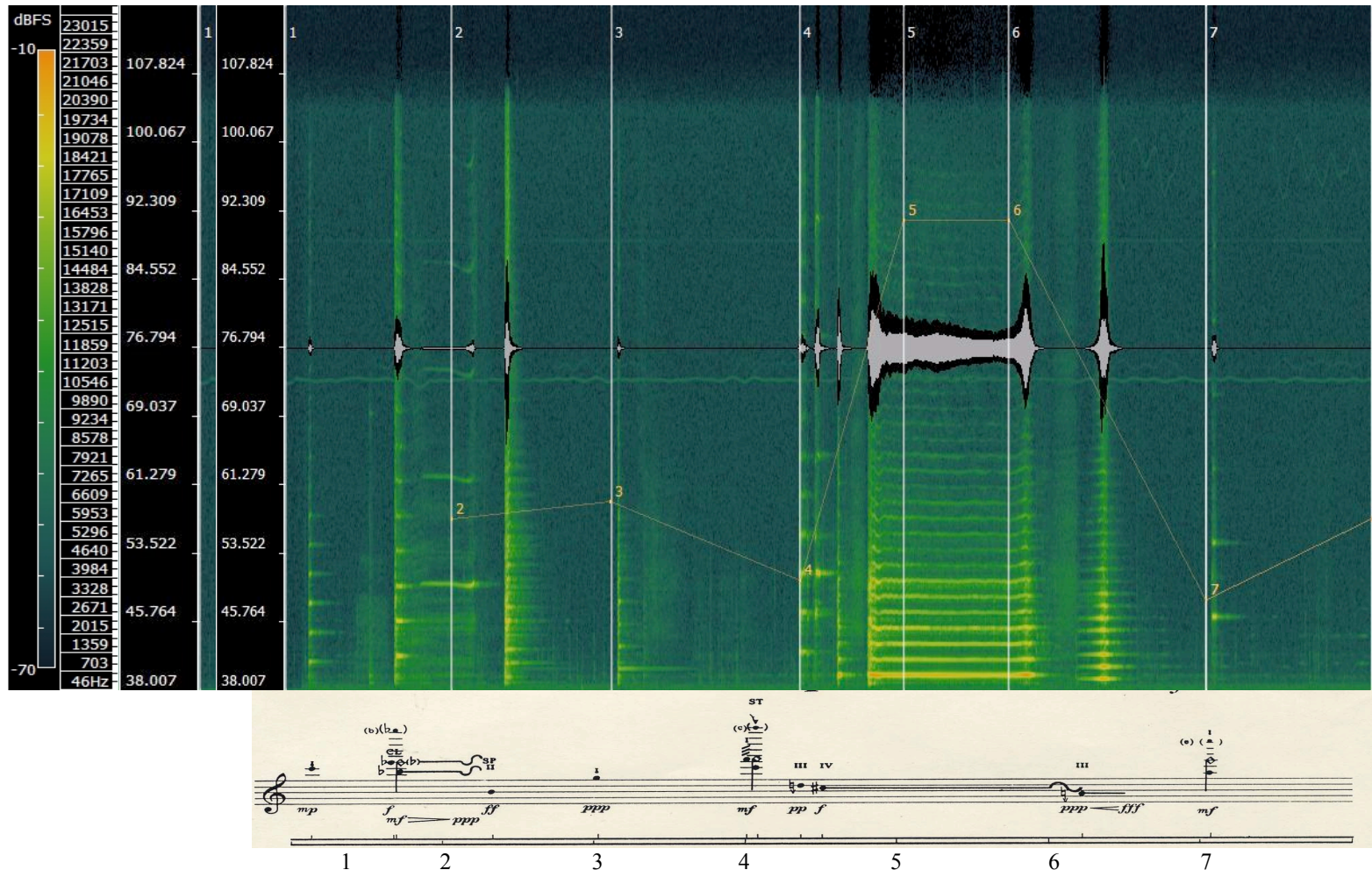
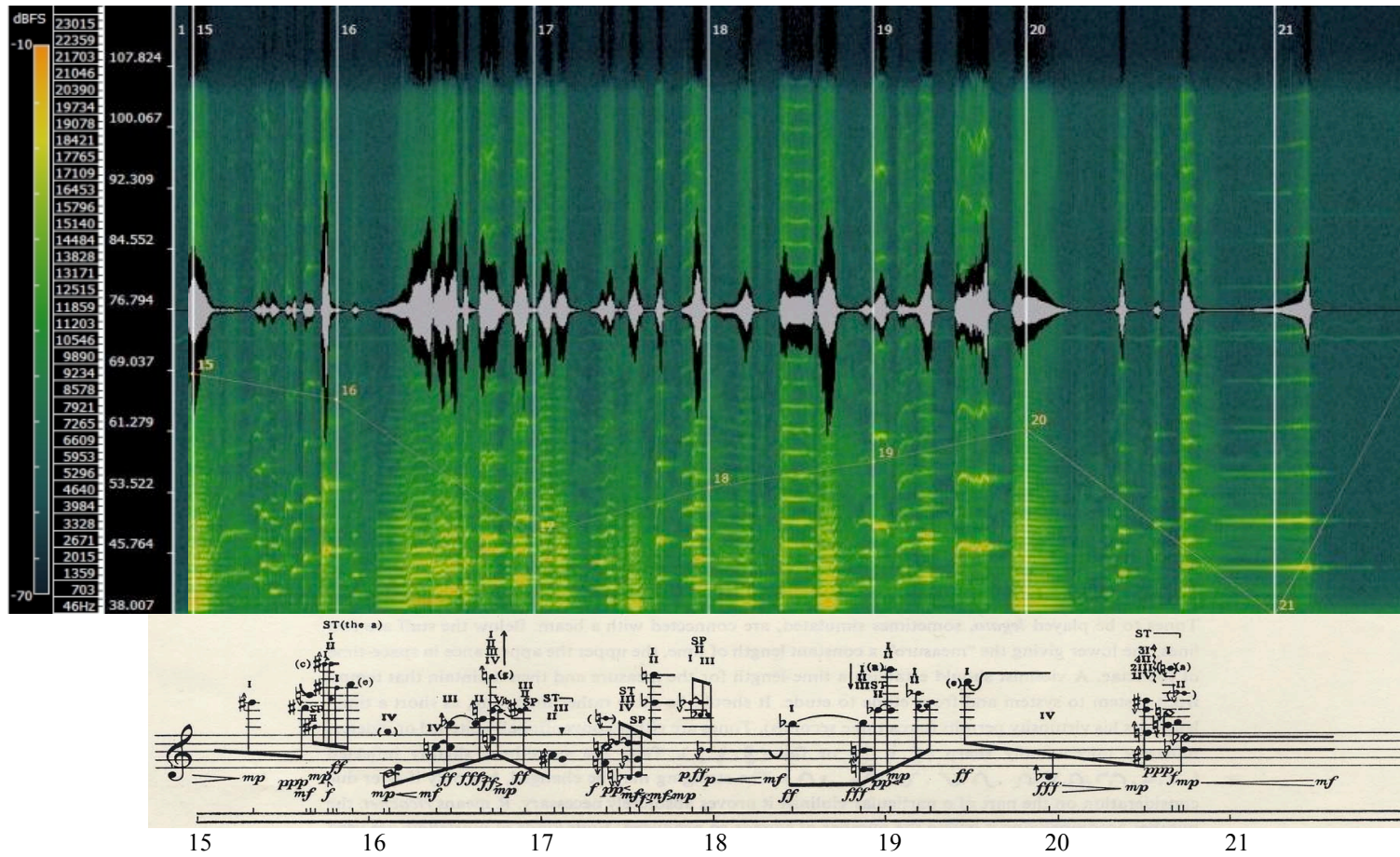
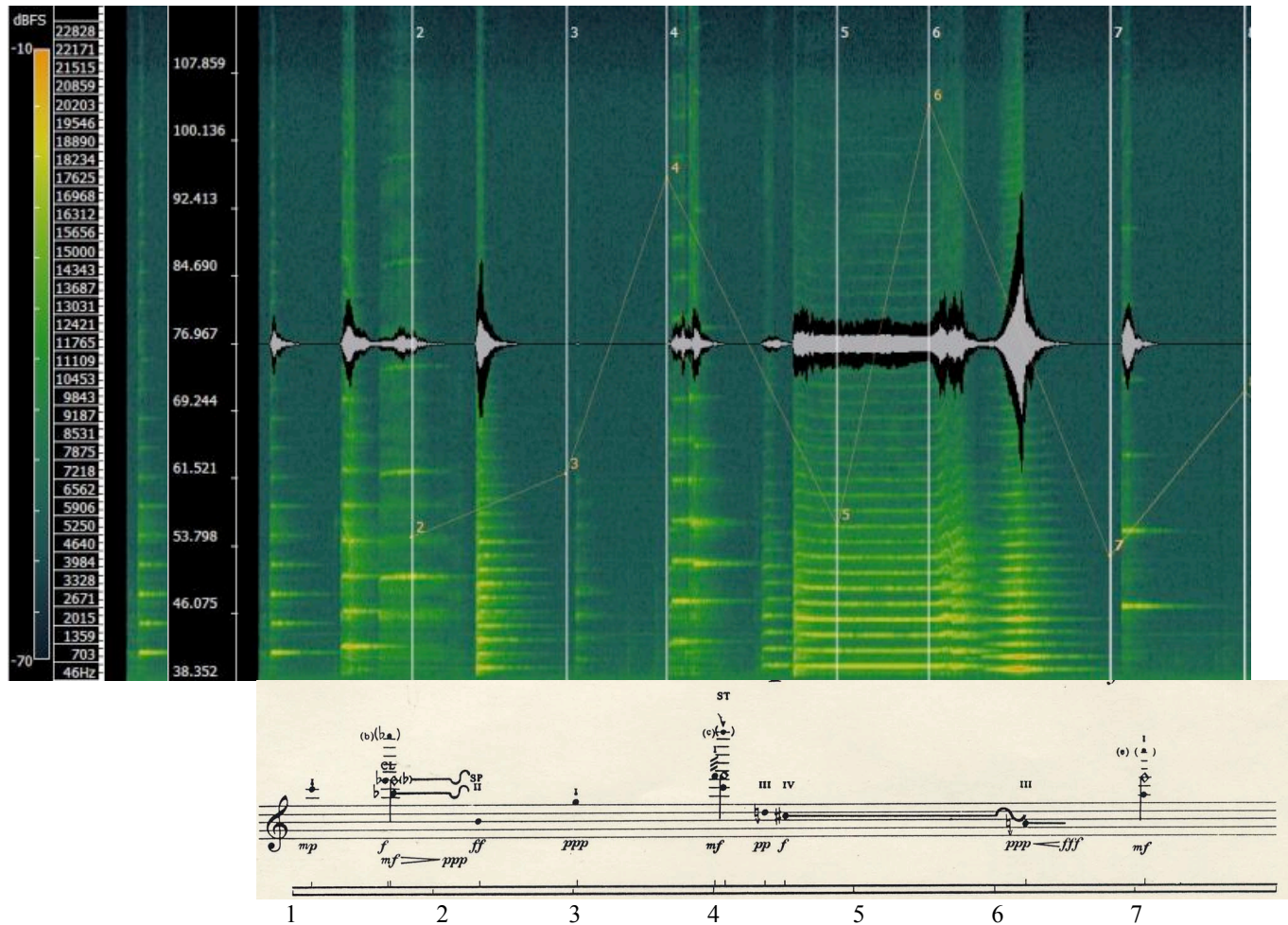


Figure 1.20: Spectrograms John Cage *Freeman Etudes I*, System 1 [Paul Zukofsky, violin]

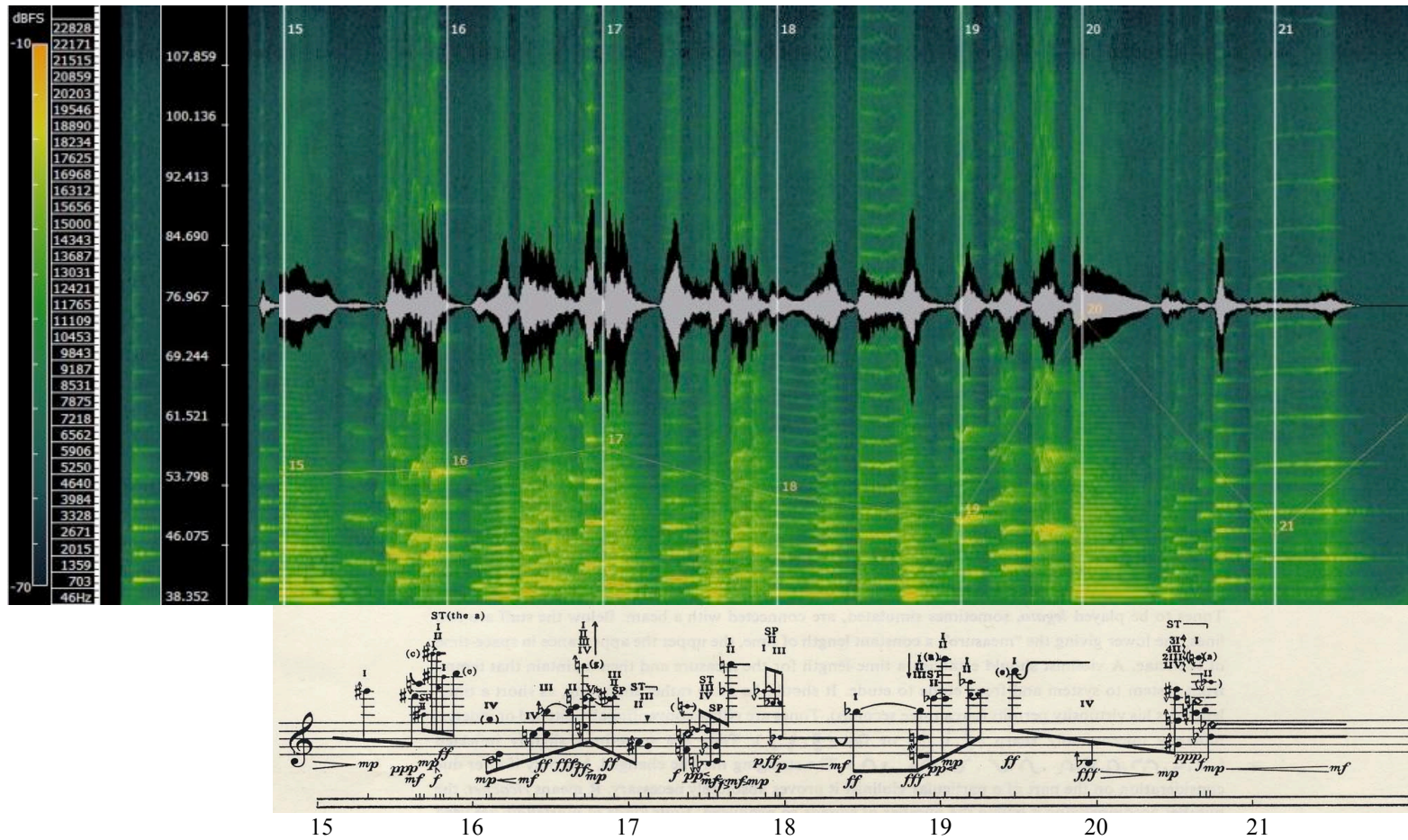


Appendix 1.20: Spectrograms

John Cage *Freeman Etudes I*, System 3 [Paul Zukofsky]



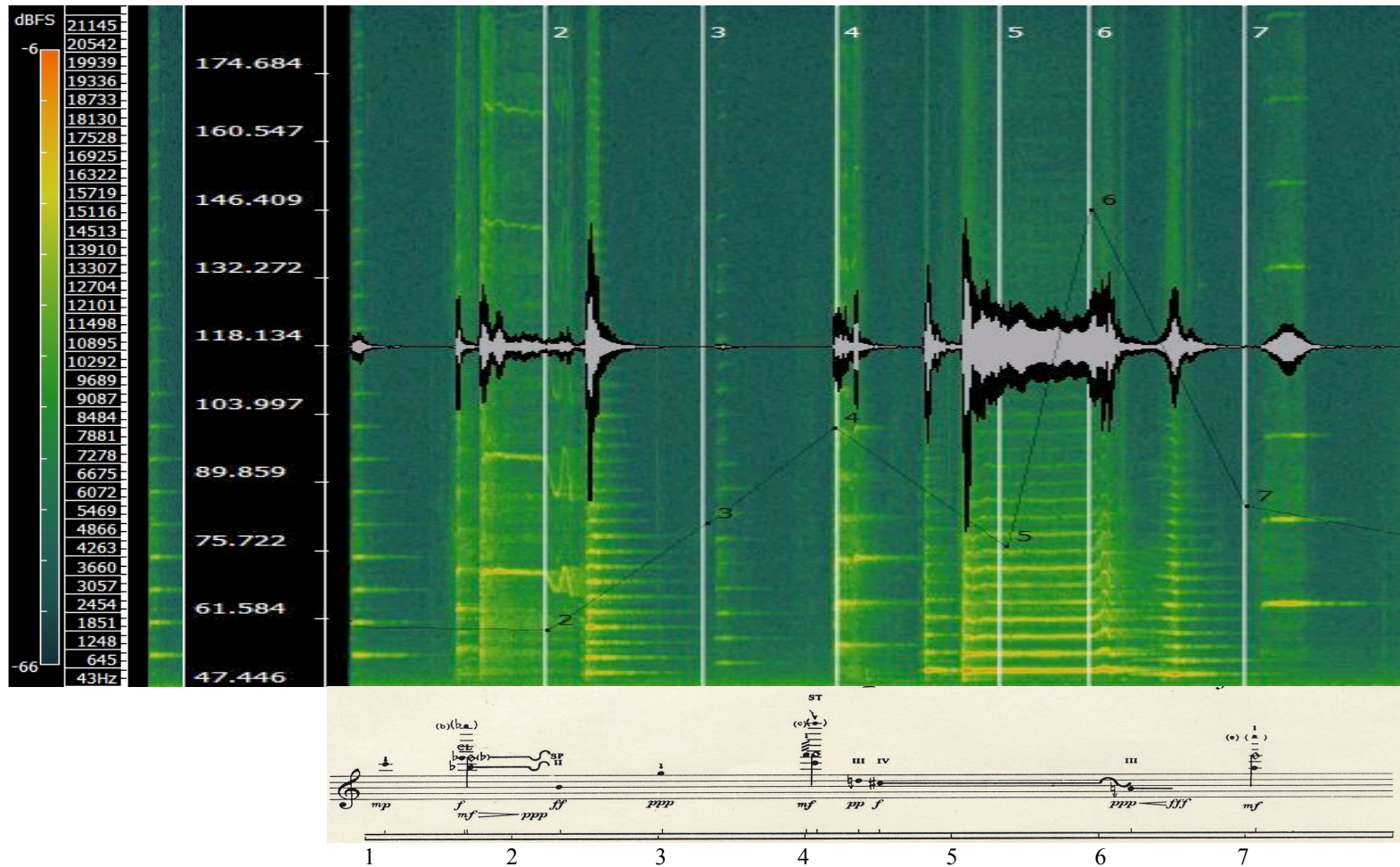
Appendix 1.20: Spectrograms John Cage *Freeman Etudes I, System 1* [János Négysesy]



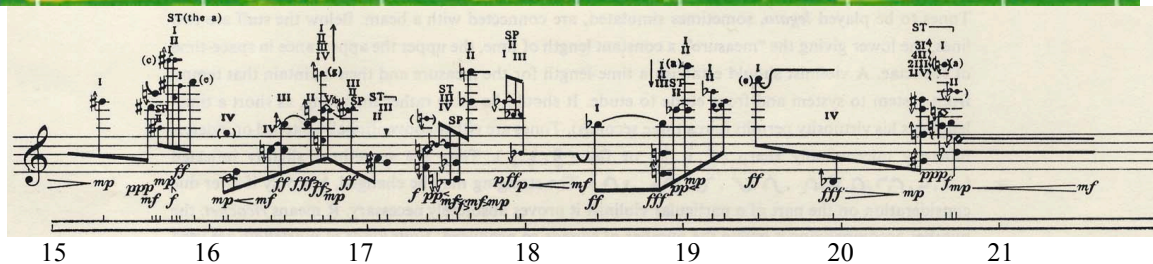
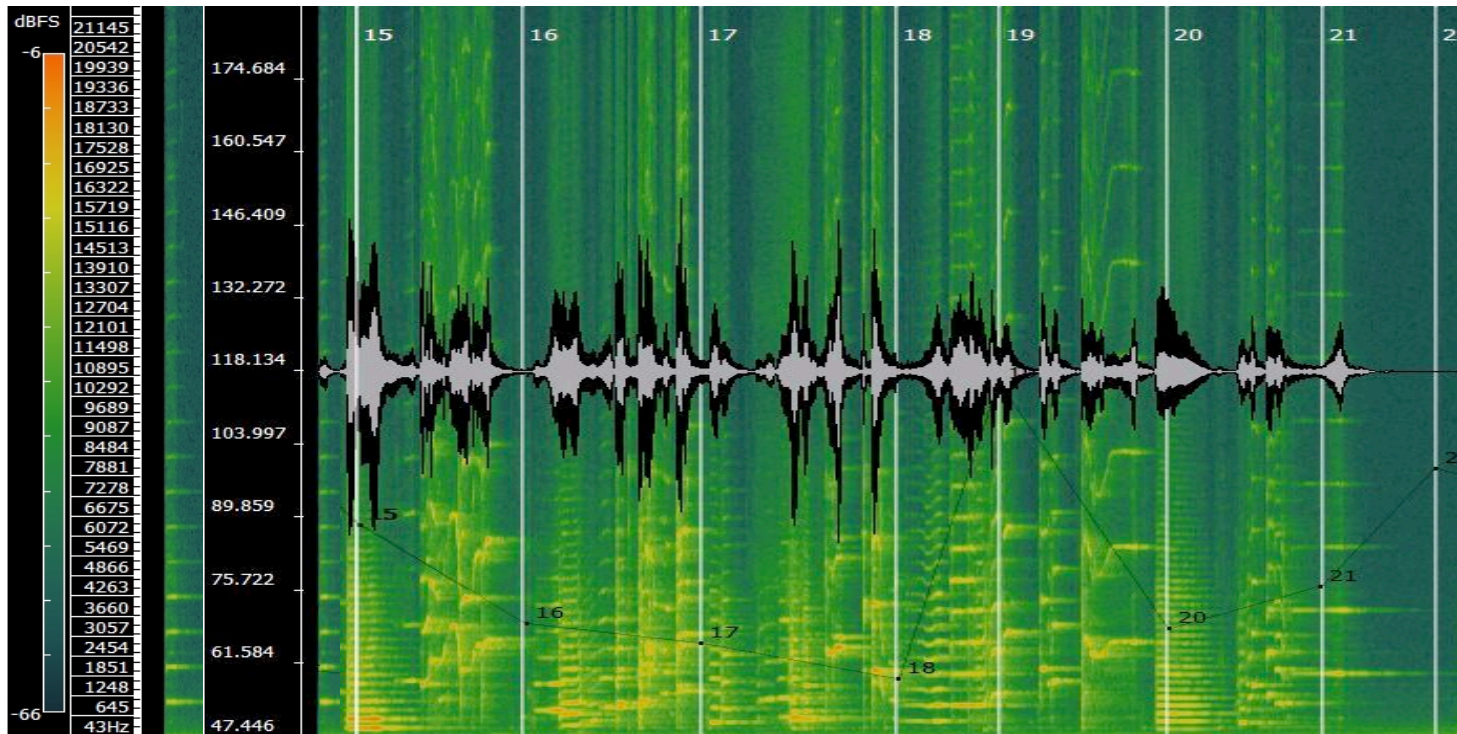
Appendix 1.20: Spectrograms

John Cage *Freeman Etudes I, System 3* [János Négyesy]

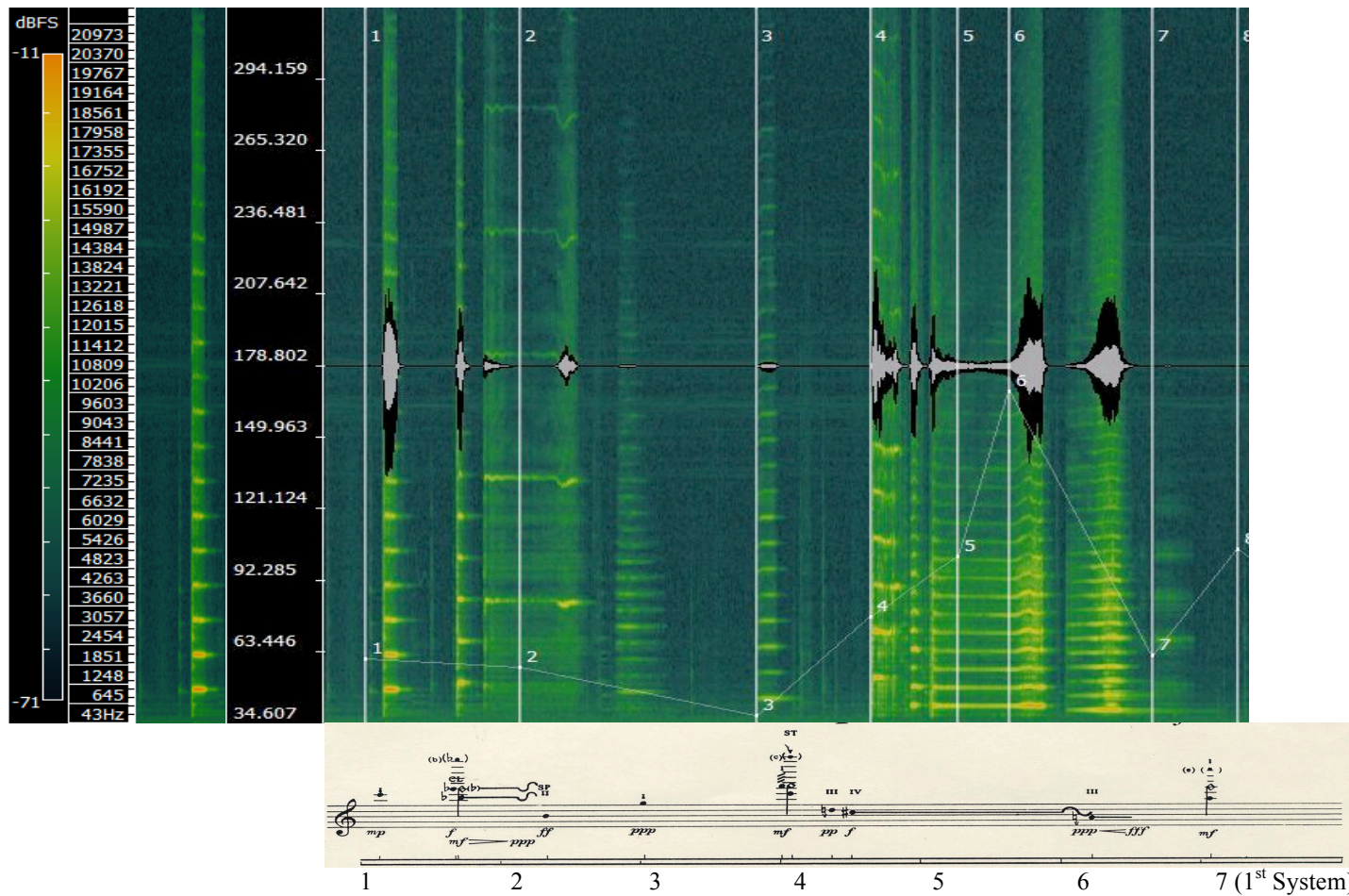




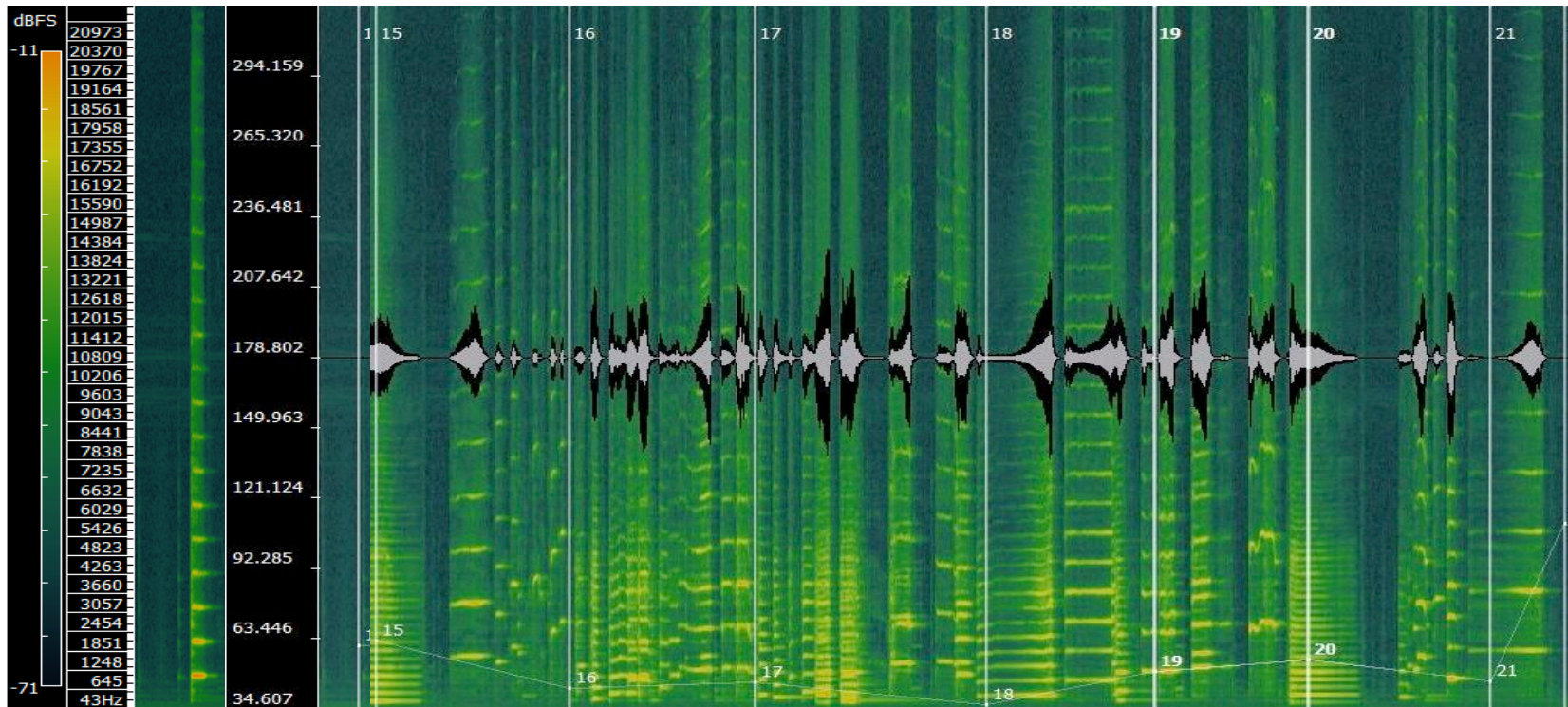
Appendix 1.20: Spectrograms John Cage *Freeman Etudes I, System 1* [Irvine Arditti]



Appendix 1.20: Spectrograms John Cage *Freeman Etudes I*, System 3 [Irvine Arditti]



Appendix 1.20: Spectrograms John Cage *Freeman Etudes I*, System 1 [Mizuka Yamamoto]



Appendix 1.20: Spectrograms John Cage *Freeman Etudes I*, System 3 [Mizuka Yamamoto]

### 1.4.2 Techniques and Notation

Figure 1.20 shows spectrograms of the recordings by Zukofsky, Négyesy, Arditti and myself. The spectrograms are divided into separate systems. Each part is combined with the published score of the *Freeman Etudes*. The vertical lines show bar numbers.

In the spectrograms, Arditti's sound wave shows the most astonishing result. In the *Freeman Etudes*, there are twelve types of 'slightly inflected' notes<sup>63</sup> (see Appendix 1.2). When comparing Arditti's spectrogram and the score, the sound waves show exactly the same line as Cage's notation. Arditti's spectrogram in the 1<sup>st</sup> system resembles the score almost perfectly. Arditti's sound inflection in bar 2 is slightly more exaggerated than the score, but it makes clear the line. An inflection in bar 6 is another very good example, and this too is identical with the score.

Zukofsky's spectrogram does not show the inflections. In bar 2, the sound bends slightly upwards at the point of the inflected note. In bar 6, it is more curved, but neither inflection is as clear as Arditti's. Négyesy's sound waves make a subtle inflection in bar 6; in bar 2, however, his wave line is straight.

The spectrogram which analysed my recording shows an attempt at the inflected notes in both bars 2 and 6 in the 1<sup>st</sup> system. However, this is still not as clear as Arditti. Obviously, Arditti is the most successful of the violinists in realising the inflected notes.

Now, let us move on to the 3<sup>rd</sup> system between bars 15 and 17, where most of the notes are beamed in the score.

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<sup>63</sup> Cage, J. 1981. *Freeman Etudes I-XVI Books 1 & 2*. [Music Score] (Edition Peters). See Appendix 1.2.

There is an obvious contrast between Zukofsky's spectrogram and Arditti's spectrogram in bar 15. Most of Zukofsky's sounds appear here as dots. It is very clear that he uses short bow strokes.

Arditti's sounds are all connected. His spectrogram shows many upward and downward lines. The sound curves here are not for any inflected notes. It is possible to assume that these curves show position changing in his left hand. Hence, the bow is presumably always on the string.

Négyesy's spectrogram is between those of Zukofsky and Arditti. Each of Négyesy's sounds is slightly longer than Zukofsky's sounds. However, there are subtle gaps between notes, while most of the sounds are horizontal and straight. It is not possible to see any changing of his left hand position in the spectrogram. His bow strokes are slightly separated, so the bow strokes are a little off-string.

My spectrogram is very similar to Zukofsky's in bar 15. The sounds in the second half of bar 15 appear as a group of dots. I clearly stop the sounds between each note and, therefore, am using short bow strokes like Zukofsky.

These spectrograms disclose the different interpretations of the notation. Recalling the discussion on *détaché* and *legato* earlier in this chapter, it is interesting to see how the violinists perform isolated notes/events and notes connected by beams. The first system is a good example of how they perform isolated notes. As was mentioned before, these notes were intended to be *détaché* notes in the compositional processes.<sup>64</sup>

Arditti's recording always keeps sounds long in the 1<sup>st</sup> system. Négyesy's sounds are similar to Arditti's; Arditti and Négyesy perform isolated notes almost as *legato*. Zukofsky's spectrogram shows a contrasting result from the other two

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<sup>64</sup> Pritchett, J., 1994. The Completion of John Cage's Freeman Etudes. *Perspectives of New Music*, Vol. 32, No. 2. Summer, p.266.

commercial recordings. His sounds for the isolated notes were always short. It seems he makes a strong attack at the beginning of each isolated note, and releases the bow immediately.

However, the three commercial recordings do not disclose any significant differences between isolated notes and beamed notes. The recordings do not, therefore, identify *détaché* and *legato*. The result of the recording analysis shows the different interpretations of individual performers.

### 1.4.3 Expression

How difficult a task is it to establish a metronomic tempo during a performance? A psychological matter would be a cause of the tempo problem. A relation between mind and *tempi* is said to be (Trevarthem, Delafield-Butt and Schögler, 2011, p.16):

Motives give form and prospective control to movements, and emotions expressed in the tempi and qualities of movement are the regulators of the power and selectivity of motives.

The unsteady tempo can be as a result of one's musical expression. The psychologist Arnold Small (Seashore, 1967, p.215) has analysed some violin recordings, and states:

Temporal deviations seemed to bear somewhat closer relationships to phrase structure of the melody than did intensity. There was also a somewhat more general agreement among the violinists in their use of temporal deviations than in their use of intensity variation.

We cannot immediately judge a performance with a spontaneous tempo as a bad performance. It seems temporal unsteadiness is a natural tendency, particularly among violinists. So, a way to express the music could be a reason to cause unsteady tempo in a performance; simultaneously, the expression and tempo do not always relate

to each other. This means it would be ideal if the performer could make some expression while achieving a regular tempo.

A transition of the notational manner has had a huge impact on the style of performance since the twentieth century. For instance, we can see dynamics on almost every note in Anton Webern's compositions. The detailed notational style is commonly used by composers, particularly after the twentieth century; therefore, the works discussed in this thesis follow the notational fashion in the same age. A positive aspect with the detailed notation is that it gives clear information to the performer. The composer's intention is much clearer compared to works written by the past composers, but is this detailed writing necessarily any clearer for the musician?

Where is the performer's own character? What is a factor of the expression? It is acknowledged that the performer's mind is a fundamental part of the expression (Trevarthen, Delafield-Butt and Schögler, 2011, p.16):

Our movements communicate what our brains anticipate our bodies will do and how this will feel because others are sensitive to the essential control processes of our movements, which match their own.

Seashore also says 'in modern psychology, to feel is always to do, to express something – action of the organism.'<sup>65</sup> Importantly, the technical tasks and mind coexist in a performance. When the sound is expressed, there should be a performer's technical input causing the expression. It is not as obvious as making the ornamentation, but the performer still provides extra objects to express himself.

At the same time, it is true that the technical obstacle restricts the addition of more expressive techniques by the performer, and prevents him from showing

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<sup>65</sup> Seashore, C.W., 1967. *Psychology of Music* (New York: Dover Publications, Inc.), p.10.



emotional patterns to the sound. The violist Michael Tree (Blum, 1987, p.86) expresses his frustration with the detailed score as follows:

In a way, things become more problematic when composers over mark their music, appending instructions to virtually every note, as Berg and Webern did. The performer is not trusted to do anything on his own. It drives you to distraction trying to be so literal; it binds you down.

If the detailed notation is felt to constrain the performer's character, then increasing notational information in the score will only decrease further the performer's expression.

Some techniques which can be used to show the performer's character are tempo, *rubato*, phrasing, vibrato and sound quality. Tempo, however, is always clearly indicated in the *Freeman Etudes*. Therefore, the violinist is not able to show any freedom of expression regarding the tempo. Cage's remark to achieve 'three seconds per bar' would not even allow the performer the opportunity to attempt *rubato*. Phrasing is a tool for showing expression. The violinist Christian Tetzlaff (2012) says the way to 'put personal emotions' in music is as follows:

What he or she puts down obviously is important guidance to the character of the piece. Especially in phrasings, a lot of meaning is transported. In order to really feel like being on the tracks of the composer is actually what most elevates my emotions and gives greatest freedom in expression.

Tetzlaff's statement reveals the way the violinist constructs the composition in performances. However, different types of music structure give distinctive psychological experience. Storr (1992, p.171) says:

Serial music is difficult to remember because it abolishes the hierarchical structure of tonal music in which it is easy to recognise ‘home’ as consonance following dissonance. Some serial music is also difficult to remember because, unlike classical tonal music, it tends to avoid repetition. This is why so many listeners cannot make sense of serial music.

However, the *Freeman Etudes* would fall into that category which contains neither intended repetition nor tonal structure. ‘Phrase’ seems an even inappropriate word for this *chance operation*-based composition. In this style of music, is it still possible to show the performer’s expression?

The cellist Christopher Bunting says ‘vibrato is more properly an integral part of the sound and of the expression.’<sup>66</sup> Generally speaking, the use of vibrato can cultivate the string player’s expression. Unfortunately, this great option is not an applicable tool in the *Freeman Etudes*. Some pitches are particularly instructed to be played with vibrato in this work, meaning the rest of the pitches are supposed to be played *non vibrato*.

However, ‘sound quality’ always remains as a tool to express any type of composition. The violinist Carl Flesch says ‘not until one has completely mastered it does one approach the final object of all music-making, the production of tone a means of expression.’<sup>67</sup>

Particularly, the *Freeman Etudes* contain rich varieties of bowings. As was mentioned, the tempo restriction and condensed rhythm are aspects of virtuoso in this work. In this setting, can the violinist give attention to the sound quality? Before

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<sup>66</sup> Bunting, C., 1982. *Essay On the Craft of Cello-Playing, Volume 2 The Left Hand*. (London: Sangeeta Publications), p.47.

<sup>67</sup> Flesch, C., 1924. *The Art of Violin Playing*. Translated from German by Fredetick H. Martens. (New York: Carl Fischer, Inc.), p.100.

thinking about extra technical input, the violinist still has to achieve all the details written in the score. With those technically demanding works, realisation of the notation is already an accomplishment. Can a technical success on the instrument be part of the performer's expression?

Simply following the notation, like a computer, would be an uninteresting presentation. However, it is not an easy task to play along with the detailed notation. Unlike a computer, musicians have to think, explore how to achieve the technique, and decipher the notation. Realisation of the score will be achieved via a rendering process, and a procedure to a performance can already be an expression. It is based on the performer's interpretation, while an understanding of the composition helps him/her make a final decision regarding the performance. Therefore, an attainment of the technique shows the performer's character which can, itself, be a new style of expression.

#### **1.4.4 Forming an interpretation after listening to the recordings**

The recording analysis focused on aspects of tempo and bowings in the *Freeman Etudes*. The results identify various performance speeds. Also, it reveals different types of bow strokes by each violinist. Unfortunately, none of them show any contrast in bow strokes between isolated notes, and beamed notes appeared in the notation.

The recordings do not provide us with any clues as to why this should be. At the same time, the difference between isolated notes and detached notes is visually clear in the notation. Why we cannot hear distinctive differences between the two in the commercial recordings? There may be some assumptions we could make as we seek reasons for this. Probably the three violinists could not find a way to differentiate between isolated notes and detached notes, because of the notational ambiguity. Or,

even if they knew *legato* and *détaché* were used as part of the compositional process, presumably it was technically difficult to differentiate between the contrasted bow strokes.

The tempo and rhythms are ambiguous aspects in the *Freeman Etudes*, and Arditti gives answers to the questions in an interview (See Appendix 1.5). Arditti reveals that he did not give much thought to maintaining the same tempo all the time. His answers also disclose to us how psychologically difficult it is to keep a consistent tempo while we read the score. This point raises a new aspect of the performance experience. Determination is required to deal with the detailed notation. In addition, Arditti mentions one important thing that Cage said to him: ‘Cage informed me during our rehearsals that he did not really care for each *Etude* to be exactly the same, but just approximately the same.’ Is there any implication that the definition of the tempo is not fixed?

Arditti’s comments regarding *détaché* and *legato* unveil the philosophical side of the piece. As the ambiguity of the *détaché* in the score was discussed earlier, the separation of the two bowings must be an important part of the composition. Arditti conceded he did not know if the *détaché* was particularly needed in the *Freeman Etudes*. On the contrary, *détaché* is already decided in the compositional process. It seems Cage left a question open for the violinist by not providing enough information. So, how did each performer receive information behind the notation? Here, I would like to provide interpretive comments on each recording.

Zukofsky’s recording displays a generalised speed. Apart from a few places, the chart (figure 1.19) shows that his tempo is moving between 2 and 4 seconds per bar. In fact, the analysis result shows he seems well-accelerated for those sections that are technically demanding. However, in comparison with other recordings, he tends to

shorten a long note, and takes more time over demanding passages. If we compare the rhythmical proportion in the notation and Zukofsky's spectrogram, we would notice they are not so identical (See figure 1.20). We can recognise some trace of inflected note in his spectrogram, though they are not so clear. I think these facts show Zukofsky's intention to regulate tempo; however, less care seems to have been taken over the rhythmical aspect.

Négyesy's recording also presents a moderate speed progress. His speed rarely exceeds 3.5 seconds and only a few times does he go below 2 seconds per bar. When I listen to the recording, the inflected notes can be heard clearly, and are visibly shown by spectrograms. Rather, we can see curved sound waves more than numbers of inflected notes notated in the score. Does this mean he uses small vibratos in order to produce a better quality sound? Indeed, his sounds are elegantly presented in the recording, but how much does it contribute to the style of the composition? 'Beauty' might not be a part of the *Freeman Etudes*. Cage had never mentioned such an aesthetical notion relates to this work. Does the performance still need to be beautiful for this work? If this would be a performer's way of showing expression, this could be a part of the performer's interpretation for the composition. However, I would not choose this style for my own performance, because I believe 'beauty' is not the main purpose of this work. To show such a technical demanding work in a beautiful way is a respectful attitude. However, combinations of timbres, dynamics and speed would form unconventional beauty in this work, and I think to present individual pitch in an attractive way is too intentional.

We could also find attractiveness in Arditti's performance, particularly in his sound. However, I think this aspect was naturally formed after Arditti's attempt to show extreme performance via the challenging composition. The recording analysis shows a

style of an intense performance. His performance speed is not generalised. However, his speed is kept less than three seconds per bar for most of the time. Indeed, his interpretation to play this work ‘as fast as possible’ confines the tempo under three seconds. As was mentioned, his spectrograms display very clear inflected notes. Single pitches provide perfect straight lines, and we can visually see *diminuendos* and *crescendos* in the spectrograms.

Also, when making an observation by listening to these recordings, Zukofsky’s performance sounded most fragmented. Négyesy’s recording is beautifully finalised by adding some reverb effects, and it preserves his sound quality. Arditti’s recording also displays a quality of sound. However, Zukofsky seems to play every pitch more mechanically, and less expressively. We could feel more phrasing in Négyesy’s performance, suggesting that sounds are well-connected between pitches. As Arditti’s spectrogram proves, he links the sounds, but in a different way to Négyesy. The sounds are less intentional and, therefore, so invigorated in his performance. This shows more his character, while Zukofsky’s performance seems to be lacking such an energy. The two performers would have different interpretations for Cage’s instruction to keep three seconds per bar. We could say Zukofsky and Négyesy made a success of keeping a regular speed rather than Arditti, but what could they show after achieving the tempo?

I found a hint for interpreting the meaning of the performance speed in Bečvář’s star map ‘*Atlas Australis*’,<sup>68</sup> which Cage used as a main compositional material. The star map is very detailed, and it depicts the stars’ movements on an hourly basis. Probably, a majority of the star map only shows the stars’ positions, rather than showing detailed movements relating to hours. Therefore, the way Bečvář described the stars was very unique. With the *Freeman Etudes*, what could audience experience when

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<sup>68</sup> Bečvář, A., 1964. *Atlas Australis*. (Prague: Czechoslovak Academy of Sciences).

the violinist successfully achieves the regular speed? The pitches described in the *Freeman Etudes* might not have a melodic sense. So, what would the purpose be in keeping the speed? I think the *Freeman Etudes* is a composition that enables one to feel time progress by listening to a performance. So, I interpret the three seconds flame as an important factor in establishing the speed, although to keep three seconds per bar is not the main purpose. Three seconds is a measurement by which to move objects, and objects are pitches. Furthermore, the objects have fixed positions to display them, and the positions are notated by the rhythm. Therefore, I would like to insist tempo and rhythm are equally important.

By observing my own recording, I also discover how difficult it is to sustain a long held note for a fixed duration from the recording analysis. When the performing speed is dramatically increased, quite likely the violinist plays the long note shorter than it is supposed to be. To hold a single long note is such a simple task to achieve, but it is very easy to neglect among the demanding passages. This point has a big impact on establishing the regular speed.

In the recordings, individualities are mostly made by different bowing style. When I observe my recording, I have noticed that my spectrograms show many short lines, and this is similar with Zukofsky's analysis result. In fact, I was not aware that my bowing was so separated most of the time until I saw the spectrograms. I could possibly use my bow more on the string for *legato* pitches. An understanding of *legato* and *détaché* could naturally display a construction of the composition. The two contrasted bowings would be important elements in this piece. However, I would not take a group of *legato* as a phrased passage. If I add extra emphasis during the group, it would disturb some effects of dynamics; moreover, the performance could be over-expressive.

I shall not deny the violinist's expression in the *Freeman Etudes*, but I think the individuality could form the expression, rather than showing emotional feeling for the compositional objects in this work. My way of expression for this work is to let the audience feel the time progress. This could be achieved by establishing tempo. The bowing styles and related dynamics can display the compositional structure. Technically, the bow could be more on the strings to give more quality of sound, but not in an expressive way. As shown in Arditti's performance, I would like the sound to be full of energy.

The performer's way of expressing music could be spontaneous, along with the compositional style. If there is any beauty I could point out in the *Freeman Etudes*, it could be its compositional process and the structure. I would like to highlight this point, as well as focus on the bowing techniques in my future performance.



## 1.5 Conclusion

The star chart is a unique tool for writing a piece of music. However, the *Freeman Etudes* is no longer a description of the stars. It became a most complex work for the violin. Cage did a great work in completing all the intricate compositional processes; now it is the violinist's turn to achieve a realisation of his language. In this chapter, firstly a compositional process was explored. Secondly, some violin techniques were observed, and illustrated some characteristic technical usage in this work. Thirdly, the three violinists' recordings are analysed and performance strategies discussed. It also discusses a way of expression with the detailed score.

Finally, here are some suggestions for a performance. The tempo could be established by aiming at three seconds per bar. Also, I think this work is still related to the star chart, the source material of the composition. As the star chart depicts hourly changes in the sky, the audience could experience a process of time by listening to the performance. Within the violinist's capability, it would be ideal to keep at a regular speed as much as possible. A purpose of establishing the regular tempo could depict a time progress during a two-hour long performance.

It is necessary to consider how, technically, we can differentiate between the isolated notes and beamed notes in the score. Cage did not particularly mention the existence of *détaché* in the *note*; however, two techniques were well-considered in the compositional process. A separation of the two bowing sections could divide this work into two contrasted parts: fragmented part and legato part. The division by the two bowing could fundamentally help in constructing a performance.

Combinations of technical details are unique in the *Freeman Etudes*. Varieties of dynamics are applied to any sort of techniques. Unusual combinations of techniques

would make an unexpected sound definition. For example, the violinist might not need to aim for a conventional term of a 'good sound'. A combination of harmonic and loud dynamics could contain noises. So, a contrasted dynamics on the same technique could explore more timbre, rather than just sound volume. In the same way, some *crescendo* and *diminuendo* over a long note could discover uneven tone colours, rather than a clear sound.

A long held note with one stable dynamics level demands extreme concentration on the part of the violinist. To play a long note seems a very simple task to achieve for an experienced violinist; however, even such a simple detail would not be as easy as we would expect. Psychologically, it would be hard for a violinist to maintain their mental strength after more demanding passages. Physically, loud dynamics require a heavy pressure on the bow over a few seconds, and a fully controlled bow stroke for softer dynamics. For both cases, the violinist's strength would be well-consumed.

Rhythm is neatly notated in this work, yet it would not be as easy as reading a conventional notation. Although it is possible to measure every segment and calculate the timing on each note, to do this for the whole piece is a painstaking process. Even if a violinist successfully calculates all rhythms, it would be difficult to think about rhythmical measurements during a performance. Rather, the way Cage notates *ictae* gives us a proportional rhythmic idea. To apply to 'three seconds' per bar is not just an indication to keep tempo. We can understand the rhythm within a frame of three seconds. The recording analysis shows a clear line of inflected note in the spectrograms. For example, Arditti's inflected notes look almost exactly to be the same line with the notation. In the same way, if one could make the same sound mapping as it was notated, it could be a successful method of reading the rhythm.

However, it would be still helpful to measure sustained notes in order to understand how long to hold them. Some isolated notes are accompanied by a long line, signifying the note is to be held. This is opposed to a conventional style of *détaché*, as it is usually a short bow stroke. The violinist needs to plan how much amount of the bow to use on each *détaché*, and it is not recommended to hold the notes without knowing their exact length.

In the *Freeman Etudes*, Cage chose to use the star chart, and he placed the dynamics in such a way that they were well-contrasted; any other details were selected by using the *I Ching*. So, how much could the violinist show his intention during the performance? As was mentioned, sequences of pitch do not have any melodic meaning. Still, gaining a precise pitch is a priority, and pitches are a most obvious and fixed detail in this work. However, attempting to play all the written pitch is only one aspect in this work. A synthesis of bowing technique, timbre, rhythm and speed create a performance.

The *Freeman Etudes* is not a composition based on *indeterminacy*. All details are planned and fixed in the compositional process. At the same time, a determined score does not control the performer. The violinist's interpretation and consideration could form an expression.

## **2 Luigi Nono's *La Lontananza Nostalgica Utopica Futura* for solo violin and eight-channel tape (1988-89) and "*Hay Que Caminar*" *Soñando* for two violins (1989)**

*La Lontananza Nostalgica Utopica Futura* for solo violin and eight-channel tape (1988-89) and "*Hay Que Caminar*" *Soñando* for two violins (1989) were Nono's last works.<sup>69</sup> The two works are paired works, and almost the same pitch materials are used. As the title describes, a violinist will perform with pre-recorded fixed tracks for *La Lontananza*, while the length of the pre-recorded tape is just over 60 minutes.

Nono was often associated with his political activities.<sup>70</sup> However, politics is not the subject of this thesis; rather, it focuses on interpretation and performance in *La Lontananza*. Playing with tape was a new genre that appeared in the twentieth century and became a new performance approach for the modern ensemble style, which is the main topic in this chapter.

The notation and performance techniques used in the two works are quite conventional, yet they display Nono's own compositional vocabularies. Nono did not include any particular extended techniques in his violin works. However, as an example, unusually long-held notes, rapid changes between different types of bowing techniques, etc., show the composer's originality, and these details create his own sound world.

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<sup>69</sup> Morio, G., 2007. Nono. In: Mercy, L. ed, 2007. The Grove Music Online. [online] Available at: <<http://www.oxfordmusiconline.com>>[Accessed 19 December 2009].

<sup>70</sup> Ryan, D. and Lachenmann, H., 1999. 'Composer in Interview: Helmut Lachenmann.' *Tempo*, New Series, No.210, October, p.20.

So, the notation captures Nono's characteristic style; nevertheless, extremely detailed scores are unfortunately left in an incomplete state. Once a violinist starts reading the scores, he has to face many technical contradictions.

The pre-recorded tape derived from sound materials played by the violinist Gidon Kremer.<sup>71</sup> Recording sessions 'with Kremer for the eight-channel tape took place from 15 to 19 February 1988.'<sup>72</sup> 'Production and electronic realization of the eight-track tape from 19 to 25 June 1988, under Nono and Hans-Peter Haller, at the Experimental studio of the Heinrich Strobel Foundation, of the SWF in Freiburg.'<sup>73</sup> *La Lontananza* was premièred by Kremer on 3 September in 1988.<sup>74</sup> Nono had not completed the violin part until two days before its première,<sup>75</sup> and Nono 'completely rewrote the solo part and altered its relationship to the tapes'<sup>76</sup> after the première. 'The revisions were completed in January 1989.'<sup>77</sup> In fact, one of manuscripts<sup>78</sup> kept in the Nono archive is described in its catalogue as 'final draft of the first version of the composition performed on September 3, 1988 in Berlin,' and 'the writing is probably owned by Gidon Kremer.'<sup>79</sup> The manuscript contains dissimilar details with the final version of the violin part, which is currently published from Casa Ricordi.<sup>80</sup> This first completed version looks much shorter, and pitches in this version can be reasonably played on the

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<sup>71</sup> Richard, A. 1988. *Notes on sound direction: La Lontananza Nostalgica Utopica Futura*. (Milano: Ricordi), p.1

<sup>72</sup> Ibid., p.2.

<sup>73</sup> Ibid.

<sup>74</sup> Covell, G.C., 2004. *Nono's Shrug at Immortality: La lontananza nostalgica utopica future*. [A sleeve note] (Berlin: Polygram Records).

<sup>75</sup> Ibid.

<sup>76</sup> Ibid.

<sup>77</sup> Ibid.

<sup>78</sup> Nono, L., 1988. *La Lontananza Nostalgica Utopica Futura*. [Manuscript] 59.09.01-59.11.0. Venice. The Luigi Nono Archive.

<sup>79</sup> Fondazione Archivio Luigi Nono Onlus., Catalogues [online] Available at <<http://www.luiginono>> [Accessed 12 April, 2013].

<sup>80</sup> Nono, L., 1988. *La Lontananza Nostalgica Utopica Futura*. [Music Score] Milano: Ricordi.

violin. In fact, another manuscript<sup>81</sup> was described in the catalogue as a ‘photocopy of the final draft of the first version of the composition; the photocopy was made after inserting some annotations and corrections by Gidon Kremer.’<sup>82</sup> Presumably, Nono consulted with Kremer before giving the final version to the publisher. It is hard to imagine why Nono left so many errors in the final version of the manuscript.

This chapter first explores the eight-channel tape of *La Lontananza*. It examines sound objects in the tape, and considers how the violinist is to perform with the electronics. Secondly, the essay will focus on problematic writing in the scores of *La Lontananza* and “*Hay Que Caminar*” *Soñando*. It points out notational problems in the two works, while it discusses how to solve these problems in a more technically practical way. Finally, a performance edition is provided in this thesis to conclude the notational matters. Irvine Arditti is one of the prominent performers who frequently presents *La Lontananza* and “*Hay Que Caminar*” *Soñando*. He gave a première performance for “*Hay Que Caminar*” *Soñando*, and has great knowledge of Nono’s style. The edition here is a performance edition by Arditti, and the edition describes a style of playing by editing the original details. The commentary explains in great depth the difference between Nono’s original writings and Arditti’s ideas.

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<sup>81</sup> Nono, L., 1988. *La Lontananza Nostalgica Utopica Futura*. [Manuscript] 59.11.02/01-09. Venice. The Luigi Nono Archive.

<sup>82</sup> Fondazione Archivio Luigi Nono Onlus., Catalogues [online] Available at <<http://www.luiginono>>[Accessed 12 April, 2013].

## 2.1 Performing with a pre-recorded tape: a performing strategy for *La Lontananza Nostalgica Utopica Futura*

*La Lontananza* is to be presented by a violinist and a sound projectionist, who controls the electronics. André Richard (1988, p.1), who worked closely with Nono and had performed *La Lontananza* as the sound projectionist many times over the years, instructed the performers as follows:

Nono conceived the performance of *La Lontananza Nostalgica* as a musical interaction between the soloist and the projection of eight-channel tape. The score allows the violinist to choose the points at which he begins each section of the work, and to vary the length of the fermata on the pauses and on single notes. Thus each performance produces a different combination of sounds, and a new reading of the work, from the reaction between the violinist and the tape projectionist, whose role is itself that of an interpreter.

As Richard mentions above, the performance will be a spontaneous result between the violinist and the sound projectionist. The ‘musical roll’ of the sound projectionist is ‘one of constant interaction with the violinist. He reacts in every way as a companion to the interpretation of the violinist.’<sup>83</sup> In particular, it is the violinist’s responsibility to arrange a specific phrase.<sup>84</sup> However, a transcription of the eight-channel tape had never been made for *La Lontananza*. Hence, the detail of the tape is obscure; as a result, the violinist cannot easily foresee what kind of sounds will occur at any given time. As the violin will not be amplified in a concert, this will put the violinist at a disadvantage, because the loud sound from the speaker may unexpectedly muffle

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<sup>83</sup> Richard, A. 1988. Notes on sound direction: *La Lontananza Nostalgica Utopica Futura*. (Milano: Ricordi), p.1.

<sup>84</sup> Ibid.

the violin sounds, contrary to the performer's intention. However, the sound projectionist is given such an important role. Richard (1988, p.1) mentions:

Nono attached the same importance to each track as to the violin part, so that there may be passages in which the dynamics of the tape predominate and put the violin into the background, or even cover it and make it inaudible.

So, the violin part can be muffled by the electronics. However, I think this needs to happen after both performers examine the sound materials, and after the sound projectionist makes the violin sound inaudible as a response of the violinist's manner. Richard also put an emphasis on the violinist's interpretation.<sup>85</sup> In particular, the point where the sections need to start should be decided by the violinist's reading. Also, 'the interpretation of the work by varying both the duration of the pauses and the tempo a crotchet equals 30-40 or even slower.'<sup>86</sup>

Therefore, firstly this chapter discloses a brief detail of the tape of *La Lontananza*. Secondly, a performance plan is provided along with the details of the tape. As is the nature of the pre-recorded tape, the sound objects appear at a fixed time, thus the violinist has to keep to a precise time. It is important to plan the starting point for each section. Moreover, it is necessary to consider how to combine the violin part with the materials in the tape.

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<sup>85</sup> Richard, A. 1988. Notes on sound direction: *La Lontananza Nostalgica Utopica Futura*. (Milano: Ricordi), p.2.

<sup>86</sup> Ibid.



### 2.1.1 The Nature of the tape: *La Lontananza Nostalgica Utopica Futura*

Richard explains the details of the tape as ‘the eight magnetic tapes are composed with original sounds by Kremer without any manipulation of the live recording.’<sup>87</sup> After an analysis of Kremer’s different modes of performing and qualities of sound, ‘Nono made a selection of the sound material and composed eight autonomous parts on eight tracks.’<sup>88</sup>

The sound details of the pre-recorded tape are (Richard, 1988, p.1) as follows:

Channels 1 and 2: very dense harmonic materials, superimposed

Channels 3 and 4: original sound of different modes of attack, single sounds and fifth

Channels 5 and 6: voices, words, noise of doors, chairs, etc., and also violin sounds

Channels 7 and 8: high melodic material, melodies in harmonics, fast *tremolos*, *spiccato* and *jeté* passages.

As the list above shows, two channels are set to be a pair. If we see this in a wave form, we can notice a resemblance in each two channels. On the other hand, the two channels are not exactly the same. See Appendix 2.1, which shows us channels 1 and 2, at 2’30” from the beginning of the tape. Between the beginning and 40”, the wave form identifies there are loud sounds in both channels. However, channel 2 has a longer loud material as compared with channel 1. Also, channel 1 is given a sound material between 1’10” and 1’20”; meanwhile, channel 2 is almost silent in the same period.

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<sup>87</sup> Richard, A. 1988. *Notes on sound direction: La Lontananza Nostalgica Utopica Futura*. (Milano: Ricordi).

<sup>88</sup> Ibid.

Although a pair of channels contains similar materials, each channel produces different sound objects. Appendix 2.2 shows us details of the eight channels from the beginning to the 5'00" point. We can see that each two channels are given identical sound materials. A prominent difference between them is the sound volume. There are some silences, especially in channels 5, 6, 7 and 8. However, sound components in channels 7 and 8 are longer and louder than channels 5 and 6. Actually, the sound waves in channels 7 and 8 look very similar to channels 1 and 2; nevertheless, the sounds in channels 7 and 8 appear less frequent.

In terms of the sound volume of the tape, 'Nono had already regulated the dynamics of the tracks at the time of realising the tape.'<sup>89</sup> Moreover, 'as a result the passages of the tape that are *p/pp* cannot be amplified above a certain level.'<sup>90</sup> Controlling the dynamics is one of the sound projectionist's tasks. It has been described that, when Nono was present at concerts as a sound projectionist, he 'always controlled' the dynamics himself.<sup>91</sup> In the instruction for the sound projectionist, Richard (1988, p.1) says as follows:

The interpreter must also decide the dynamics with which he wishes to play the different tracks. In this connection it should be remembered that Luigi Nono attached the same importance to each track as to the violin part, so that there may be passages in which the dynamics of the tape predominate and put the violin into the background, or even cover it and make it inaudible.

So, the dynamics of the tape may be improvised at each concert by the sound projectionist. However, this does not mean the violin part should be isolated. The

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<sup>89</sup> Richard, A. 1988. *Notes on sound direction: La Lontananza Nostalgica Utopica Futura*. (Milano: Ricordi).p.1.

<sup>90</sup> Ibid.

<sup>91</sup> Ibid.

violin's sound volume should be incorporated with the electronics. A question arises here as to how a violinist should perform with the tape.

## 2.2 Performance strategies

The violin part of *La Lontananza* consists of six sections, and allows a violinist to be free to interpret the duration of each section. Several different types of pauses give the violinist opportunities to decide how long he should halt between phrases<sup>92</sup> (see Appendix 2.3). For example, the violinist could take only enough time to breathe for a pause, or the same pause could be taken for much longer, e.g. a few seconds. Generally, we cannot judge how long each section of *La Lontananza* takes in performances. However, to discuss performance plans in this essay, a duration example is provided in Figure 2.1 as follows:

	Duration of the violin part <sup>1</sup>	Numbers of pauses <sup>2</sup>	Extra seconds	Total
Section 1	3'35"	10 x 02" = 20"	ca. 3'00" – 4'00" + 40"	ca. 7'00"– 8'35"
Section 2	7'50"	15 x 02" = 30"		ca. 8'20"
Section 3	8'00"	3 x 02" = 06"		ca. 8'06"
Section 4	4'16"	36 x 02" = 1'12"		ca. 5'28"
Section 5	8'32"	2 x 02" = 04"		ca. 8'36"
Section 6	6'41"	14 x 02" = 28"	ca. 1' 00" for the last note <sup>3</sup>	ca. 7'39"

**Figure 2.1: a model duration of *La Lontananza***

1 – The durations are calculated by MIDI files, using the Sibelius software. As is the nature of the work, each section contains different types of pauses, and depends on the violinist's decision, as the actual duration would be varied. In the performance instruction,<sup>93</sup> the violinist can decide the tempo between metronome markings 'crotchet equals 30 to 40 or even slower'<sup>94</sup> unless there are other tempo markings in the score. The

<sup>92</sup> Nono, L. 1988. *La Lontananza Nostalgica Utopica Futura*. [Music Score] (Milano: Ricordi).

<sup>93</sup> Ibid.

<sup>94</sup> Ibid.

MIDI file took a metronome marking as a crotchet equals 30 most of the time, rather than 40. However, *accel.* and *rit.* are not within the consideration in the MIDI files. Therefore, the figures in the table above are not definite.

2 – The types of pauses are varied, and the violinist can decide how long he takes for individual pauses. As an example, two seconds are allocated for each pause, and calculate the total duration in this table. However, the length of pauses can be varied (see Appendix 2.3).

3 – The last note of section 6 will be ‘recorded in the delay and replayed immediately in the loop. From the moment at which he hears that the speaker is emitting the recorded sound, the violinist slowly leaves the stage, continuing to play, and finishes his part in the wings. The interpreter at the console ends the piece with a very long diminuendo on the last sound.’<sup>95</sup> Therefore, the length of the last note will be varied. In this table, it estimates a duration of 30” for the violinist’s exit and another 30” for fading out the note afterwards.

An imaginative part of *La Lontananza* is a violinist’s theatrical movement between sections. The violinist needs to prepare ‘six music stands arranged on the stage – and in the audience as well, irregularly and asymmetrically, never near each other, but in such a way as to permit free although never direct passage between them, the players searching them out.’<sup>96</sup> Therefore, after each section, the violinist needs to walk from one music stand to another. The walking between the sections gives choreographic movement. Furthermore, the movement between the music stands fills in the sound gap between two sections. The violinist is given a task

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<sup>95</sup> Richard, A. 1988. *Notes on sound direction: La Lontananza Nostalgica Utopica Futura*. (Milano: Ricordi), p.1.

<sup>96</sup> Nono, L. 1988. *La Lontananza Nostalgica Utopica Futura*. [Music Score] (Milano: Ricordi).

while not playing the part, and also it allows the violinist freedom to choose when he starts each section. It is possible to predetermine the point at which a section starts, and the violinist can perform along the plan carrying a stopwatch. Nono often writes poetical lines in the violin part. It says:

The sound is variable for micro intervals of less than 1/16 (of a tone):

Searching for itself

Or searching for the sound

Varying it every time.<sup>97</sup>

The first line in the above text seems to state the pitch should be varied by changing it to 'less than 1/16' microtones. However, the rest of the lines imply 'the search' is not only made by a physical reaction in order to change the intonation, and this is not simply a technical instruction. Rather, it shows a performance aesthetic for the violinist.

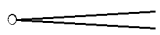
In terms of sound balance, it is the sound projectionist's responsibility to control the volume during the concert. Even so, if the violinist plays his part at the same time as when the tape provides loud sounds, how will the sound projectionist make a decision regarding the sound balance? As the sound projectionist is allowed muffling in the violin sound, turning down the volume of the sound level of the electronics is not a priority. Nono states a relationship between the violin part and tape, as follows:

It is not in any circumstance a concerto for solo and accompaniment.

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<sup>97</sup>Nono, L. 1988. *La Lontananza Nostalgica Utopica Futura*. [Music Score] (Milano: Ricordi).

But imaginatively feeling autonomous relationships among the nine parts (eight tapes + soloist).

The connections between them are autonomous, even to total silences, often tending to *ppppp* →silence  <sup>98</sup>.

The text above confirms how ‘nine parts’ are given equal meaning, and that each part is independent. However, they unite and produce *La Lontananza* as one piece of music. At the same time, can the violinist control the sound results between the violin part and the tape? In fact, it may be possible if the violinist knows the details of the tape. The following sections explore several possibilities as to how to interpret the details of the tape and how to mingle sounds between the violin and the electronics.

### 2.2.1 Beginning of Section 1

To examine the eight-channel tape in detail, a sound sample has been prepared for this essay. The sample combines all the eight channels and has made the sound balance equal. As a result, the sample will show us both the high and low peak of the sounds in the tape.

The sample is analysed by *Sonic Visualiser*<sup>99</sup>. Appendix 2.4 shows details of the sample at the point between 3’00” and 5’20” with a result of the analysis. This is now examined with the violin part of the first section.

Firstly, Nono instructs the violinist to begin at three to four minutes after the tape has started.<sup>100</sup> Hence, it would be helpful to decide the exact starting point for section 1. In fact, the violin part instructs a forty-second rest after three bars from the

<sup>98</sup> Nono, L. 1988. *La Lontananza Nostalgica Utopica Futura*. [Music Score] (Milano: Ricordi).

<sup>99</sup> Centre for the History and Analysis of recorded music, 2009. *Sonic Visualiser* [online] Available at: <[http://www.charm.rhul.ac.uk/analysing/p9\\_0\\_1.html](http://www.charm.rhul.ac.uk/analysing/p9_0_1.html)> [Accessed on 17th November 2009].

<sup>100</sup> Nono, L. 1988. *La Lontananza Nostalgica Utopica Futura*. [Music Score] (Milano: Ricordi).

beginning. Also, there is an effective *sforzando* (*sfff*) immediately after the forty-second rest. Therefore, firstly it is necessary to consider what sort of sound material in the tape should be chosen for the forty-second rest and, secondly, the placement of *sfff* in order to make a significant effect.

As a hypothesis, I would like to observe what might happen if the violinist starts at 3'00". Let me draw your attention to Appendix 2.4. The sound analysis shows there is a continuous loud sound until the 3'10" point. If the violinist starts at 3'00", the violin sound in the first bar, which takes around eight to ten seconds, will not be audible at all. The violin sound in the second bar may be clearly heard, while the tape's volume is low, between 3'10" and 3'20". However, there is another loud sound material in the tape between 3'20" and 3'30". Figure 2.2 summarises the detail above.



**Figure 2.2**<sup>101</sup>

<b>Time progression</b>	<b>Violin part (bars/seconds)</b>	<b>Violin part (details)</b>	<b>Tape (details) See also Appendix 2.4</b>
Beginning /3'00"	No playing	No sound	Loud noises fade out towards 3'10"
3'00" – 3'10"	Bar 1 / ca. 10"	The dynamics level: <i>ppp</i> - <i>p</i>	Loud noises fade out towards 3'10"
3'10" – 3'20"	Bar 2 / ca. 10"	The dynamics level: <i>mf</i> - <i>mp</i> <i>diminuendo</i>	Soft noises with a moment of silence
3'20" – 3'30"	Bar 3 / ca. 10"	A long held note: diminuendo into silence	Loud noises fade out towards 3'30"
3'30" – 4'10"	A rest / 40"	No sound	Silence and very soft noises start at 3'37" Loud sounds start from 3'52"
4'10" – 4'18"	Bar 4 / ca. 08"	An effective <i>sfff</i> in the end of the bar/at 4'17"	Loud noises until 4'18"
4'18" – 4'26"	Bar 5 / ca. 08"	A long held note, dynamics level: <i>ppp</i>	Silence and soft noises
4'26" – 4'34"	Bar 6/ ca. 08"	Three beats /06" long held note, dynamics level is <i>ppp</i> then diminuendo into silence; a <i>sfffff</i> note at the point of 4'33"	Loud noises from 4'26" until 4'43"

If the violinist starts at 3'00" from the beginning of the tape, subtle sounds will be produced from the speakers, while the violinist will have a forty-second rest. Along with this plan, *sfff* shall be played at the point of 4'17"; however, the loud noises can be provided by the electronics until 4'18". Therefore, the *sfff* would not be so audible unless the sound projectionist turns down the whole volume.

<sup>101</sup> In figure 2.2 the metronome marking is interpreted as a crotchet equal to 30. However, there are some pauses and *rallentando* during bars 1-3, hence each bar includes a few extra seconds. Ten seconds are applied to bars 1 to 3 and eight seconds are allocated for bars 4 to 6.

It seems that, if the violinist starts performing at 3'00" after the tape has started, the violin part will always crash with the sound from the electronics. Apparently, there would not be much of a contrast between the violin part and the tape. The forty-second rest in the violin part is an effective moment to let the audience experience the sounds from the speakers. Indeed, it is possible to highlight a muted sound in the tape, while the violinist pauses for forty seconds. However, it is questionable to highlight such subdued sound material shortly after 4'24" from the beginning; forty seconds is quite a long period of time in which to have inaudible sound, as it may stop the sound flowing.

The results of the examination show us that, if the violinist begins at 3'00", he will have to perform at the same time as when the electronics produce the loud sound, and the same situation will happen for the rests.

On the contrary, if the violinist wishes to allocate loud materials in the tape for the forty-second rest, the point of the tape between 3'48" and 4'18" looks a very suitable place. There are other loud materials from 4'27", which are more continuous sound materials compared with the period 3'50" – 4'18". As a hypothesis, if we set up the 3'50"– 4'18" position for the forty-second rest, how would the violin part and the tape coordinate with each other?

Figure 2.3 below is based on this assumption. As the figure shows, the violinist needs to start performing the first bar at 3'18" to be able to start the forty-second rest at 3'50". In the first bar, loud sounds can be expected from the electronics. In bar 2, the tape has occasional noise, but most of the time there are silences. In bar 3, the noises are slightly louder than in the previous bar; however, the sound level may still be enough to play with a long held note the violinist provides. Recalling a previous discussion


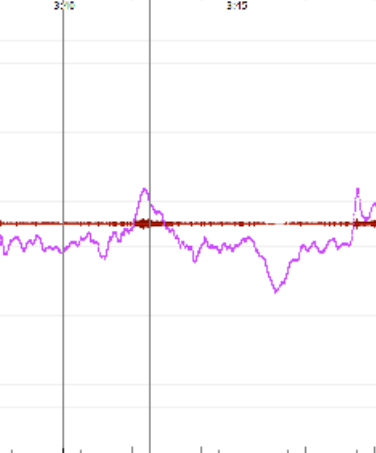
regarding the *fff* in bar 4, the tape provides a silence during bar 4; hence, the *fff* in this bar will be certainly audible along with this time plan.

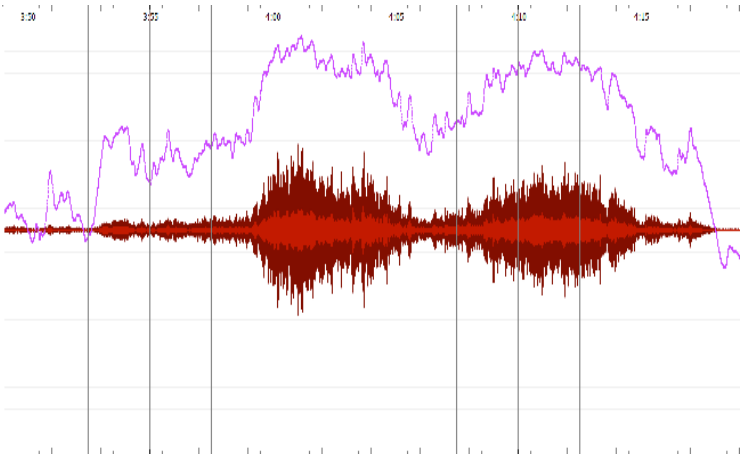
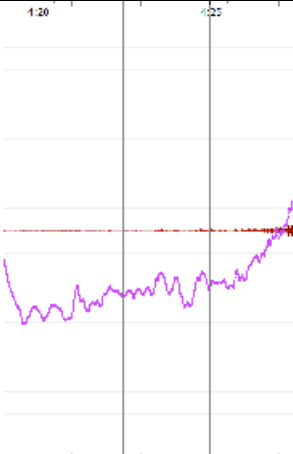
### Figure 2.3

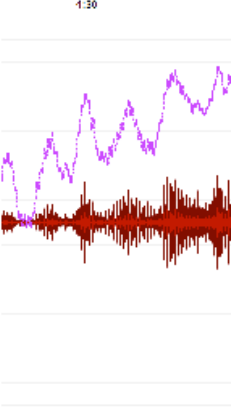
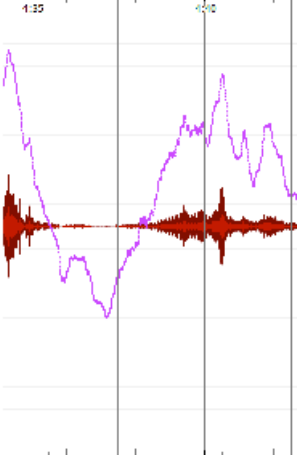
The images here contain information as set out below:

- Vertical lines show us time progression by minutes and seconds. A space between two lines is 2.5 seconds.
- Sound waves appear in the middle of each image.
- A purple graph line in each image shows analysis results made by ‘power curve plug-in’ with *Sonic Visualiser*. The line shows us detailed amplitude level by decibel.

Time progression	Violin part (bars/seconds)	Violin part (details)	Tape (details)
<b>Beginning</b>	Beginning – no playing	No sound	
<b>3'18" – 3'28"</b>	Bar 1/ca. 10"	The dynamics level: <i>ppp - p</i>	

3'28" – 3'38"	Bar 2/ca.10"	The dynamics level: <i>mf</i> - <i>mp</i> <i>diminuendo</i>	 <p>A spectrogram showing frequency content over time. The x-axis is labeled with 3:30 and 3:35. A horizontal red line is drawn across the plot. The purple waveform starts at a high frequency and amplitude, then gradually descends in both frequency and amplitude, ending with a small peak near the 3:35 mark.</p>
3'38" – 3'48"	Bar 3/ca.10"	A long held note: diminuendo into silence	 <p>A spectrogram showing frequency content over time. The x-axis is labeled with 3:40 and 3:45. A horizontal red line is drawn across the plot. The purple waveform shows a sustained frequency with a slight upward trend, followed by a gradual decrease in amplitude until it reaches a low level near the 3:45 mark.</p>

3'48" – 4'18"	A rest/40"	No sound	<p style="text-align: center;"><b>Loud materials 3'48" – 4'18"</b></p> 
4'18" – 4'26"	Bar 4/ca. 08"	An effective <i>sfff</i> in the end of the bar/at 4'27"	

4'26" – 4'34"	Bar 5/ca. 08"	A long held note, dynamics level: <i>ppp</i>	 <p>A spectrogram showing a long held note. The frequency spectrum is relatively stable over time, with a prominent peak in the lower-mid frequency range. The amplitude is very low, consistent with the <i>ppp</i> (pianissimo) dynamic level. The time axis is marked at 1:30.</p>
4'34" – 4'42"	Bar 6/ca. 08"	Three beats/ A six-second long held note, dynamics level is <i>ppp</i> then diminuendo into silence; a <i>fffff</i> note at the point of 4'41"	 <p>A spectrogram showing a six-second long held note that gradually decreases in amplitude (diminuendo) into silence. At the point of 4'41, there is a very loud, sharp peak in the frequency spectrum, indicating a <i>fffff</i> (fortissimo) note. The time axis is marked at 1:35 and 1:40.</p>



A study here proves contrasted performance results by starting the violin part at different points. It is a violinist's choice whether to mingle similar types of sound materials from two sound sources, or to combine the resembled objects alternately between the two parts. When performing with a pre-recorded tape, time is an important aspect in mixing the two parts. The following sections examine more details of the tape, and consider how the violinist is to perform with it.

### 2.2.2 A starting point for each section

As was mentioned earlier, the whole tape takes an hour. A strategy here is formed by a simple calculation, and divides an hour into six sections – hence, each violin section is allocated ten minutes. Figure 2.1 identifies that each section can be performed in less than ten minutes, so the violinist can spend the rest of the time walking between the music stands. Also, Figure 2.4 below takes into account the examination in the previous section. Hence, the total length of section 1 is clearly defined as 7'53" in Figure 2.4. The figure here also provides the exact timing of how long a violinist will need to walk between the music stands.

**Figure 2.4**

<b>Sections (violin part)</b>	<b>Total</b>	<b>Walking sections</b>	<b>Timing</b>
Section 1	ca. 7'53"	Between Section 1 and 2	7'53" – 10'00"
Section 2	ca. 8'20"	Between Section 2 and 3	18'20" – 20'00"
Section 3	ca. 8'06"	Between Section 3 and 4	28'6" – 30'00"
Section 4	ca. 5'28"	Between Section 4 and 5	35'28" – 40'00"
Section 5	ca. 8'36"	Between Section 5 and 6	48'36" – 50'00"
Section 6	ca. 7'39"		

Figure 2.4 has already provided an issue. If the violinist were to be so rigid as to take ten minutes for each section, the audience would have to listen to the electronic

sounds for the whole 4'30" after section 4. It would be meaningful to observe the details of the tape as to whether the period 35'28"- 40'00" is appropriate to play without the violin part. As another option, the violinist could vary the speed and, thus, take longer to finish section 4. The duration of each section provided earlier is a sample, and not a fixed length. Based on different interpretations, it might be possible to change the duration.

### **2.2.3 Section 4**

Appendix 2.5 shows us the wave form of the tape during 35'28" to 40'00". As was mentioned above, this is supposed to be between sections 4 and 5 in the performance plan in this essay.

In fact, there are long moments of tranquillity between 35'28" and 40'00". Figure 2.5 below summarises the numbers of quiet periods and their duration in this area. There are more short silences in this moment; however, the silences below three seconds are not included in this figure.

As you can see in Figure 2.5, the distinguished soft sound materials appear in almost every minute in this duration. The outstanding moments are between 36'41" and 39'08". There are two big sound gaps: the first one is 49", while the second one takes 30". Also, from 36'41", there is a perfect silence, at which point none of the eight channels produce any sound. In fact, this is one of the rare moments in the whole track where the tape provides complete silence.

Duration of the soft sound	Quiet points
35'02" – 35'35"	ca. 08"
36'08" – 6'27"	ca. 12"
36'41" – 37'23"	ca. 49"
38'58" – 39'08"	ca. 30"
39'25" – 9'34"	ca. 06"

**Figure 2.5**

According to Appendix 2.5, most of the time the audience will hear soft sound objects during the period 35'28"- 40'00". The question that arises here is whether this is an ideal moment to allow the audience to listen only to the tape. Silence must be an important factor in the music; in the same way, subtle sounds should have a huge impact on the listener. However, if these moments are not provided at the proper timings, these elements can easily destroy the music. As was mentioned, if the violinist and sound projectionist want to create silence any time during a one-hour performance, the sound projectionist is allowed to do so.<sup>102</sup> So, the silence could occur anywhere, and the performers do not necessarily need to treat the silence at 36'41" as a special moment.

However, the point at 36'41" is still a distinguished moment at which to have no sound from the speakers. In other words, even if the performers want to have sounds for the period, they do not have any materials. Again, the questioning arises as to whether this is an ideal point to play only the tape. The reason for this is because the silence at the 36'41" point is an unavoidable break during the performance and, in this case, it may interrupt the atmosphere the violinist and the sounds of the tape create.

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<sup>102</sup> Richard, A. 1988. *Notes on sound direction: La Lontananza Nostalgica Utopica Futura*. (Milano: Ricordi), p.1.

If the performers are not willing to play the tape around 36'41" only, then the violinist needs to continue performing over the point of 36'41". As the initial performance plan shows earlier in this essay, section 4 may be finished earlier than other sections. So, there are two possibilities for the violinist: either the violinist starts section 4 slightly later than 30'00", or he can interpret the pauses in various ways and make section 4 longer than it is estimated in this essay.

To make a performance plan based on the details above, it is necessary to decide when the violinist will stop performing section 4. It would be recommended for the violinist to carry on playing to 36'41" where a silence will then occur. So, a new hypothesis here is that the violin part of section 4 will finish at around 37'25". As was estimated earlier in this essay, the violinist would take 5'28" for section 4. Along with this plan, he needs to start section 4 at 32'00".

Secondly, we would like to find suitable tape materials for the violinist around the section between 30'00" and 32'00". Appendix 2.6 shows us the sound waves between the points 30'00" and 32'00". As was mentioned above, section 4 starts at 30'00" in the initial plan in this essay. However, there are dramatic loud sounds between 30'00" and 31'50". After 31'50", there is a silence for twenty seconds. So, it seems that point 31'50" is an appropriate place at which to begin the violin part.

Moreover, dynamics in bar 4 in section 4 are crucial for the violinist. These are indicated to be *diminuendo* and the last quintuplet is given seven *pianos* (*ppppppp*) as a dynamic. In fact, the same element appears in more of Nono's work, such as "*Hay Que Caminar*" *Soñando* for two violins. In this work, delicate sounds which are woven by the isolated quintuplets are beautiful, with the silence as a background. To create a similar situation in *La Lontananza*, it can be appropriate to set up bar 4 at 31'50" or

slightly later. The initial tempo for three bars in the beginning of section 4 is set to be a crotchet equals 30. Hence, about 24'' will be needed before bar 4. As was mentioned above, the silence only lasts 20'' at this point. So, if the violinist starts at 31'36'', he can certainly bring up bar 4 at the point of 31'50''. The details explained here are summarised in Figure 2.6, as follows:

**Figure 2.6**

Details	Time progression
Beginning of section 4	30'00''
Dramatic loud sounds in tape	30'00'' – 31'50''
Beginning of violin part: section 4	31'36''
Beginning of silence in tape, violin part bar 4	31'50''
	[20'' silence]
End of section 4	37'25''

### 2.2.4 Section 3

Section 3 is the quietest movement among the other sections, and needs to be performed with nine *pianos* (*pppppppppp*). Nono also instructed this movement to be '*quasi inaudibile*'.<sup>103</sup> This essay will examine sound materials in the tape to combine with the violin part's extreme dynamics. According to the initial plan in this essay, section 3 will be between 20'00'' and 30'00''.

Figure 2.7 below identifies some moments when the tape displays soft sounds at the point of 20'00'' to 30'00''. The violinist can certainly find calm moments, especially in the early part of this period; 20'00'' to 22'36'' in particular is a very comfortable place at which to bring in the violin's '*quasi inaudibile*' sounds. Within this period, there are only subtle noises for approximately 2'36'', which excludes areas

<sup>103</sup> Nono, L. 1988. *La Lontananza Nostalgica Utopica Futura*. [Music Score] (Milano: Ricordi).

22'15" to 22'33" and 22'37" to 22'54". Therefore, it can be concluded that a proper place for the violinist to start section 3 would be at 20'00".

<b>Quiet points</b>	<b>Duration of the soft sound tape</b>
19'58" – 20'11"	ca. 13"
20'13" – 20'35"	ca. 22"
20'59" – 21'07"	ca. 08"
21'20" – 21'38"	ca. 18"
21'42" – 22'11"	ca. 29"
22'12" – 22'15"	ca. 03"
22'33" – 22'37"	ca. 04"
22'54" – 22'36"	ca. 40"
24'19" – 24'30"	ca. 11"
24'49" – 24'52"	ca. 03"
26'33 – 26'36"	ca. 03"
27'28" – 27'43"	ca.15"
29'37" – 29'42"	ca. 05"
29'49" – 29'52"	ca. 03"

**Figure 2.7**

The sound balance between the violinist and the tape during section 3 is a crucial subject. If it demands more sophisticated sounds between the two sound sources, it will be necessary to consider details of the individual channels in the tape. As the pre-recorded tape is a fixed material, it is possible to expect certain materials at a precise point. Although this is not a work that allows improvisation, the violinist has choices as to whether to combine the violin part with another type of sound in the tape.

### 2.2.5 Details of the eight channels – section 3

Once we open the sound samples of the eight channels, we then notice how each channel contains limited details. Appendix 2.7 shows us the characters of each channel. As was mentioned, we can find some quiet moments in the tape between 20'00" and 30'00". This is an analysis which resulted from studying a synthesis of the eight channels. As the questions are previously provided, it is necessary to examine the details of each channel at 20'00" to 30'00".

The quietest channel is channel 5. As was mentioned earlier in this essay, the materials in channel 5 are derived from 'voices, words, noise of doors, chairs etc., and also violin sounds.'<sup>104</sup> There are limited numbers of sounding moments in the 20'00" to 30'00" point in channel 5. Most of the sounds during this period are noises caused by wooden materials. Occasionally, we can hear the violin sounds, but they are fragmented and do not form huge sounds. As a result, most of channel 5 during the period 20'00" to 30'00" is silent. As was mentioned earlier, each two channels are set to be a pair, so channel 5 should be a pair with channel 6. Indeed, channel 6 is also a very quiet channel; however, the materials in channel 6 look larger than channel 5.

On the other hand, the loudest channels are channels 1 and 2. The sound details in these channels are 'very dense harmonic materials, superimposed.'<sup>105</sup> The two channels resemble each other closely, and it is hard to distinguish between the two. There are some very quiet moments; however, the sound materials in these channels are distorted and have a huge impact when sounds occur.

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<sup>104</sup> Nono, L. 1988. *La Lontananza Nostalgica Utopica Futura*. [Music Score] (Milano: Ricordi).

<sup>105</sup> Richard, A. 1988. *Notes on sound direction: La Lontananza Nostalgica Utopica Futura*. (Milano: Ricordi), p.1.

Although the violin part in section 3 is instructed to make extreme dynamics, we cannot find any other performance directions in this section. Nono always notates *crini/ col legno/ ponticello/sul tasto* etc. in other sections. However, none of the above timbres are used in section 3. All special effects other than the dynamics are subdued in this section. If the violinist makes successful ‘*quasi inaudibile*’ sounds, is it a satisfactory performance? Nono’s instruction ‘searching for itself, or searching for the sound, varying it every time’<sup>106</sup> is as if he is asking the violinist to find appropriate tone colours and different sonorities.

In the process of the preparation, the violinist and the sound projectionist need to discuss which speaker applies to which channel. If the violinist can acknowledge where a specific channel’s sounds come from during the performance, and especially for section 3, it would be much more comfortable to coordinate the sound balance between the violin and the tape.

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<sup>106</sup> Richard, A. 1988. *Notes on sound direction: La Lontananza Nostalgica Utopica Futura*. (Milano: Ricordi), p.1.



## 2.2.6 A performance plan

Figure 2.8 below shows a final performance strategy.

**Figure 2.8**

<b>Sections</b>	<b>Time progression</b>	<b>Violin part (bars/seconds)</b>
<b>Section 1</b>	<b>Beginning</b>	<b>Beginning - no playing</b>
	<b>3'18" – 3'28"</b>	<b>Beginning of section 1</b>
	<b>3'48" – 4'18"</b>	<b>A rest / 40"</b>
	<b>7'53"</b>	<b>The end of section 1</b>
	<b>7'53" – 10'00"</b>	<b>Walking between music stands</b>
<b>Section 2</b>	<b>10'00"</b>	<b>Beginning of section 2</b>
	<b>18'20"</b>	<b>The end of section 2</b>
	<b>18'20" – 20'00"</b>	<b>Walking between music stands</b>
<b>Section 3</b>	<b>20'00"</b>	<b>Beginning of section 3</b>
	<b>28'06" – 31'50"</b>	<b>Walking between music stands</b>
<b>Section 4</b>	<b>31'50"</b>	<b>Beginning of section 4</b>
	<b>37'25"</b>	<b>The end of section 4</b>
	<b>37'25" – 40'00"</b>	<b>Walking between music stands</b>
<b>Section 5</b>	<b>48'36"</b>	<b>The end of section 5</b>
	<b>48'06" – 50'00"</b>	<b>Walking between music stands</b>
<b>Section 6</b>	<b>50'00"</b>	<b>Beginning of section 6</b>
	<b>57'39"</b>	<b>The end of section 6</b>
	<b>57'39"</b>	<b>Exit</b>
	<b>(Ca. 2'20" Tape)</b>	

## 2.3 Some notational issues

This section will discuss some notational issues in Nono's *La Lontananza Nostalgica Utopica Futura* for solo violin and the eight-channel tape and "*Hay Que Caminar*" *Soñando* for two violins.

The score for these two works is problematic, and there are some issues in its notation. Firstly, there are some contradictions on harmonics. When Nono notates the harmonics, he always writes a resultant pitch and a fingering position. However, the fingering position quite often does not conform to the resultant pitch. Also, Nono's fingering choices are sometimes not practical for a violinist.

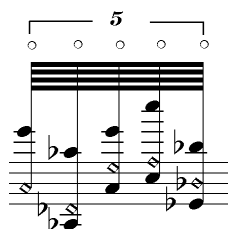
Secondly, in these works, there are some double stops which are unplayable on the violin. Nono uses them several times in the two works, so it is a kind of evidence that he intended them to be played. Therefore, the violinist has to find a solution for those pitches.

Finally, rhythmical errors can be found in the two works. When Nono starts using a time signature, the notation shows us irregular rhythmic values rather than following the time signature. In "*Hay Que Caminar*" *Soñando*, the issue is much clearer, because the two violins are supposed to have the same rhythmic values within the same bar, and be synchronised to each other. However, the two violin parts have been given different values of beats within a segment. These errors demonstrate Nono's confusion in adding up the rhythmic value. However, a main concern in this essay is how the violinist can make a satisfactory decision after describing these issues in the notation.

### 2.3.1 Harmonics

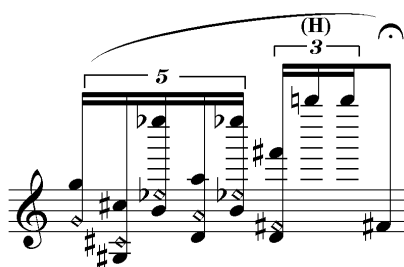
Nono always notates fingering positions and resultant pitches for harmonics. However, quite often the fingering position in the manuscript does not produce the resultant pitch as Nono instructs.

For example, Figure 2.9 shows us Nono's original writing. The resultant pitch for the first and third notes is the same. Therefore, fingerings could be the same for both pitches. In fact, the fingering position for the first pitch in the quintuplet does not produce E.



**Figure 2.9:** *La Lontananza Nostalgica Utopica Futura*, section 4, bar 23

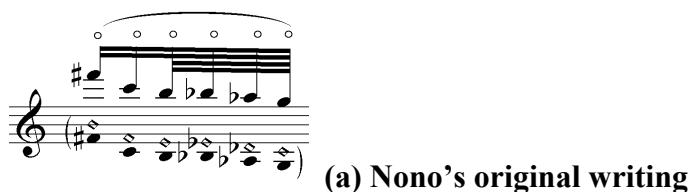
Figure 2.10 shows us another problematic harmonic writing. The fingering position for the second pitch in the quintuplet does not produce C sharp as a resultant pitch.



**Figure 2.10:** *La Lontananza Nostalgica Utopica Futura*, section 4, bar 35

An edition included in this essay corrects these errors, after a consultation with Arditti. In order to correct the harmonics, Arditti always adjusts the fingering, rather

than following Nono's fingerings. Also, when misconceptions of the harmonics are corrected, it is necessary to consider transitions with other harmonics within the phrase.



**Figure 2.11: *La Lontananza Nostalgica Utopica Futura*, section 1, bar 25**

Figure 2.11 shows us Nono's original writing and Arditti's fingering. In this example, Nono does not make any mistakes among the fingering positions. Arditti, however, changes the fingering position for the first pitch. Both Nono's and Arditti's fingering demands using the D string for the first pitch and G string for the second pitch. However, Nono uses artificial harmonics for all pitches in Figure 2.11, while Arditti uses a natural harmonic for the first pitch, and then moves on to the artificial harmonics. A summary of the fingerings and their positions is shown as follows:

**Nono's fingering:**

**1st pitch: 1st and 4th fingers**

**2nd pitch: 1st and 4th fingers in an upper position from the 1st pitch**

**Arditti's fingering:****1st pitch: 3rd finger****2nd pitch: 1st and 4th fingers in the same position with the 1st pitch**

As the details above show, Nono's fingering needs the same fingers for both pitches, but also the changing of a hand position, at the same time crossing strings. Arditti's fingering does not require a change of the left hand position, and fingering for the second pitch can be prepared during the first pitch. In fact, Nono's fingering is slightly awkward for the violinist. If the left hand shifts over the different strings, the fingers should be released from the first string once, then move on to the second string. Apparently, there would be a sound gap between two pitches. Arditti's fingering can make a smooth left hand movement, because the second finger set can be prepared while the first pitch is still played.

Finally, there are several patterns of artificial harmonic and, in order to choose the correct fingering, a type of harmonic needs to be considered. These are third, fourth and fifth harmonics. As a matter of fact, the third harmonic is somewhat problematic and insecure on the violin. The violinist Zukofsky (1968, p.175) explains the issue regarding the third harmonic as follows:

The touched major third's resultant is two octaves and a major third higher than the fundamental, and the minor third gives a resultant two octaves and a fifth above the fundamental. It is with these two types of third harmonics that we run into the problems of the small number ratios mentioned above. As is probably clear by now, when we talk of small number ratios in the harmonic series, we are referring to the 'just' intervals, in this case the just major third of 4:5, and the just minor third of 5:6. The 5:6 minor third is 316 cyclic cents wide (16 cents sharper than the equal tempered minor third of 300 cents), and the 4:5 major third is 386 cents wide (14 cents flatter than the equal tempered major third). This means that the distance between the 4:5 and 5:6 third is only 70 cyclic cents. This makes a rather small semitone as opposed to the equal semitone of 100 cents. Consequently, while one of these thirds must be flattened, and the other sharpened (otherwise they will not speak), one must be cautious not to overdo either correction as it may result in the breaking of one resultant to another. This is the main reason that third harmonics, especially minor third harmonics, are not always used by violinists.

Zukofsky's statement identifies the tuning problem on the major and minor third harmonics by explaining scientific evidence. On the contrary, Nono frequently uses the third harmonic in his violin works. However, Zukofsky (1968, p.175) also mentions advantages in using the third harmonics as:

The delicacy of touch required in third harmonics is quite possible and provides an invaluable technical resource in passages of quickly changing harmonics over a wide range. They are also indispensable in double harmonics.

So, can we recognise the third harmonics to be reasonably used in Nono's works? Figure 2.12 shows us an example of a third harmonic in "*Hay Que Caminar*" *Soñando*.

**Figure 2.12: “Hay Que Caminar” Soñando, section 1, bar 22 (original)**

In Figure 2.12, a third harmonic is used for the second violin part. The tempo here is a crotchet equals 30. Hence, the third harmonic should be held for about six seconds, with five *pianos* as a dynamic. As was mentioned, Zukofsky states that it is reasonable to use the third harmonic if ‘technical resource in passages of quickly changing harmonics over a wide range.’<sup>107</sup> However, the passage in Figure 2.12 is rather slow and, as Zukofsky explained, the long held note here may become insecure by holding the third harmonic.

In fact, a reason for using the third harmonic in the passage shown in Figure 2.12 is unclear. There are plenty of other fingering choices for getting the resultant pitch F. Quite simply, a violinist can alternatively choose a fourth harmonic. Figure 2.13 shows us Arditti’s fingering position for the same place in Figure 2.12. He is clearly aware of the problematic nature of the third harmonic, and replaces it with a fourth harmonic.

<sup>107</sup> Zukofsky, P., 1968. ‘On Violin Harmonics.’ *Perspectives of New Music*. Vol. 6, No. 2, Spring-Summer, p.175.

CRINI + LEGNO TASTO

1° Vno

*ppppp*

♩ = Ca. 30

CRINI PONTE

2° Vno

*ppppp*

**Figure 2.13: “Hay Que Caminar” Soñando, section 1, bar 22  
(Edited by Irvine Arditti)**

As a conclusion, when there are errors in harmonic in Nono’s original writing, the violinist should find a solution by exploring different finger patterns. Amending the fingering is less obvious than changing the pitches.

In order to choose the fingering position for the harmonic, we cannot simply pick up one of the possible fingering positions for a specific resultant pitch from a fingering list. It is necessary to consider a context, while examining fingering transitions is very important.

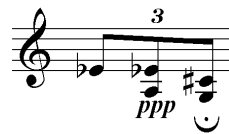
Indeed, timbre would be different by using either the third harmonic or fourth harmonic. However, when I replaced different types of harmonics for other composers’ works, I have never pointed out my personal choice. Also, making varieties of timbres and having a technically difficult time are different matters. From an aesthetic point of view, it would be better to choose a way to present a seamless performance. An experienced performer could create varieties of timbre by just using the fourth harmonic. Some violinists could even make exactly the same tone between the artificial harmonic and natural harmonic. From a technical point of view, it is better to use either a fourth or fifth harmonic. However, it is meaningful to acknowledge the composer’s



original idea, then the violinist could change the sound results along with the compositional purpose.

### 2.3.2 Solving impossible pitch combinations on the violin

Unlike keyboard instruments, a double stop combination ‘G3 and C#3’ cannot be played on the violin. It is an unfortunate matter and one which the violinist must face in *La Lontananza* and “*Hay Que Caminar*” *Soñando*. Figure 2.14 shows the double stop that appears in section 4 in *La Lontananza*, while Figure 2.15 shows us the double stop in a context. The double stop is used more than once in the two works, so probably Nono had a strong wish to have it performed.



**Figure 2.14:** *La Lontananza Nostalgica Utopica Futura*, section 4, bar 8, 4th beat (Original)

**Figure 2.15:** *La Lontananza Nostalgica Utopica Futura*, section 4, bar 8 (Original)

In order to change the double stop to make it a playable condition, a possible solution is to change a register in an octave higher. However, the modified chord should be well-mingled with the sound quality of surrounding pitches.

So, if the ‘G3 and C#3’ is transposed in an octave higher, it no longer follows a descending top line E flat – E flat – C sharp within the triplet. Figure 2.16 shows a solution by Arditti. Arditti transposes a whole triplet in a register, which is an octave higher. This does not break the descending line of the triplet.

Musical score for Figure 2.16, showing a sequence of chords and triplets. The score includes performance instructions: *Stesso Tempo*, *Mantenere Le* (with a fermata symbol), *Con Diversi Valori Durata*, *ALLA PUNTA TASTO*, *CRINI*, *ALLA PUNTA PONTE*, and *ALLA PUNTA TASTO*. The dynamics range from *pp* to *ppppp*. The score features a descending line of notes within a triplet, with a fermata over the final note.

**Figure 2.16: *La Lontananza Nostalgica Utopica Futura*, section 4, bar 8 (Edited by Irvine Arditti)**

Figure 2.17 shows us another place Nono uses the ‘G3 and C#3’ double stop in *La Lontananza*.

Musical score for Figure 2.17, showing a double stop chord. The score includes performance instructions: *ALLA PUNTA TASTO PONTE LIBERO*, *DURATE VARIATE* (with a fermata symbol), *180* (in a box), *ALLA PUNTA TASTO*, *VELOCISSIMO*, and *p*. The dynamics range from *fff* to *p*.

**Figure 2.17: *La Lontananza Nostalgica Utopica Futura*, section 4, bar 18 (Original)**

As was mentioned previously, the double stop can be transposed in an octave higher register. However, Arditti does not simply change the register of the chord. The double stop modified by Arditti can be seen in Figure 2.18.

The image shows a musical score for a violin. It is a single staff in treble clef. Above the staff, there are several performance instructions: 'Libero' with a fermata symbol, 'Durate Variate', 'ALLA PUNTA TASTO PONTE', a box containing the number '180', 'Velocissimo', and 'ALLA PUNTA TASTO'. The number '18' is written at the beginning of the staff. The music consists of a double stop chord. The notes are marked with 'fff' and '<<'. The notes are G3 and C#3, which are transposed to higher registers. The score shows a double stop chord with notes G3 and C#3, which are transposed to higher registers.

**Figure 2.18: *La Lontananza Nostalgica Utopica Futura*, section 4, bar 18  
(Edited by Irvine Arditti)**

This time, Arditti only transposes the bottom note G in an octave higher register. This solution still keeps a dense sonority on the double stop, while also it does not break a descending line E flat – E flat – C sharp that appears in the original writing.

Another solution for the ‘G3 and C#3’ chord is to use a *scordatura*. *Scordatura* is a technique to use ‘a tuning other than normal’.<sup>108</sup> If the violinist prepares a spare violin, and tunes only the D string to be C sharp instead of D, the violinist can play as it was originally written by Nono. Also, retuning only one string would not make it too difficult for the violinist to find the right pitches. There is plenty of time to swap between two violins at the places where Nono writes ‘G3 and C#3’, so this would be another solution.

If a performer comes across an unplayable pitch in any works on the instrument, the pitch should be modified in order for it to be playable. The obvious way to solve the problem is to transpose the pitch in a higher or lower register. However, it is always necessary to consider the context. As Arditti shows in examples, the change could be applied to a whole beat which includes the problematic pitch. The replacement of the notes should not interrupt the whole atmosphere in the music. The technical

<sup>108</sup>Boyden, D.D., 2007. ‘Scordatura’ In: Mercy, L. ed, 2007. *The Grove Music Online*. [online] Available at: <<http://www.oxfordmusiconline.com>>[Accessed 28 February 2010].

problems should be sorted out for a performance, but the modifications should not change the composer's basic music construction.

### 2.3.3 Issues on rhythm

Nono does not use time signatures in *La Lontananza* and “*Hay Que Caminar*” *Soñando*. However, he does use time signatures a few times in part of section 4 in *La Lontananza*. However, once Nono starts using time signatures, often there are contradictions between the time signature and the total number of beats within a bar.

Figure 2.19 shows an area where Nono uses the time signature in *La Lontananza*. In the conventional style of the notation, a time signature is valid for bars until a different time signature is applied. In the example above, Nono writes 4/4 in bar 5. So, bars 5-7 are supposed to be 4/4 until 5/4 appears in bar 8. However, bar 6 is only given two crotchet beats, while bar 8 contains three crotchets and five semiquavers. It seems there was some confusion in the compositional process.

The musical score for Figure 2.19 consists of seven measures in a single system. The time signature is 4/4. The notation includes various dynamics and performance instructions:

- Measure 5: Dynamics  $p < mf < <$ . Instruction: PONTE. A fermata is placed over the first two notes.
- Measure 6: Dynamics  $p < sff$ . Instruction: TASTO ARPEGGIATO. An arpeggiated chord is shown.
- Measure 7: Dynamics  $ppppp$ . Instruction: (Fis). A note with a fermata is shown.
- Measure 8: Dynamics  $PPP$ . Instruction: ALLA PUNTA RAPIDISSIMO. A note with a fermata is shown.
- Measure 9: Dynamics  $PPP$ . Instruction: TASTO. A note with a fermata is shown.
- Measure 10: Dynamics  $PPP$ . Instruction: TASTO → ALLA PUNTA PONTE. A note with a fermata is shown.
- Measure 11: Dynamics  $p <$ . Instruction: V. A note with a fermata is shown.

**Figure 2.19:** *La Lontananza Nostalgica Utopica Futura*, section 4, bars 5-7 (Original)

The rhythmic disorganisation is more obvious in “*Hay Que Caminar*” *Soñando*. Nono never uses a time signature in this work. Nevertheless, two violins are supposed to be performing together and synchronising with each other. Therefore, it would be a problem if the two parts are given a different number of beats within the same bar.

Figure 2.20 shows a bar which has such a rhythmic problem in “*Hay Que Caminar*” *Soñando*. It seems Nono miscalculated the value of triplets in the 1<sup>st</sup> violin part, and also may have forgotten to put a triplet mark over the hemidemisemiquavers in the 2<sup>nd</sup> violin part. So, the rhythm is modified to give the same time signature in both parts in the new edition in this essay, as shown below (see Figure 2.21).

The image shows a musical score for two violins in bar 29. The top staff is for the 1<sup>st</sup> Violin (1° Vno) and the bottom staff is for the 2<sup>nd</sup> Violin (2° Vno). The tempo is marked as ♩ = Ca. 72. The 1<sup>st</sup> Violin part begins with a triplet of eighth notes, followed by a quarter note, and then another triplet of eighth notes. The 2<sup>nd</sup> Violin part begins with a half note, followed by a quarter note, and then a triplet of eighth notes. The 1<sup>st</sup> Violin part has dynamics *sf* and *sfff*. The 2<sup>nd</sup> Violin part has dynamics *ppp* and *sfff*. There are markings for 'TASTO CRINI' and 'PONTE CRINI' for the 1<sup>st</sup> Violin, and 'CRINI TASTO' and 'PONTE' for the 2<sup>nd</sup> Violin. The bar ends with a fermata and a 'Ca'' marking.

Figure 2.20: “*Hay Que Caminar*” *Soñando*, section 1, bar 29 (Original)

Figure 2.21: “Hay Que Caminar” Soñando; Section 1, bar 29  
(Edited by Irvine Arditti)

In “Hay Que Caminar” Soñando, the rhythmic problem is quite obvious, and there may be similar problems in *La Lontananza*. However, it is hard to identify such errors without the time signature. Simultaneously, we can recognise similar elements in the two works. These materials reveal to us Nono’s consideration about the rhythmical structure.

For example, the element in the 1<sup>st</sup> violin part in Figure 2.19 appears in the 1<sup>st</sup> section of *La Lontananza* (see Figure 2.22). The resultant pitches in Figure 2.22 are exactly the same as the phrase in Figure 2.19. Actually, the rhythm here is the same as the element in “Hay Que Caminar” Soñando.

Figure 2.22: *La Lontananza Nostalgica Utopica Futura*, section 1, bars 25 (Original)

These kinds of uncertainties in the notation give a difficult situation to the work for two violins. The rhythmic errors in the notation mean it does not give a precise idea of how to coordinate between two violins. It is essential to give the same rhythmic values to the two violin parts in "*Hay Que Caminar*" *Soñando*. Therefore, the rhythmic values are changed where it is appropriate in the edition in this thesis.

## 2.4 Techniques

### 2.4.1 *Sul tasto*

Up until the twentieth century, *sul tasto* was often used for making soft dynamics in violin repertoires,<sup>109</sup> and was thought to change the depth of sound quality.<sup>110</sup> After the twentieth century, *sul tasto* has appeared in compositions for the purpose of creating a characteristic timbre. In the twentieth century, it seems *sul tasto* was commonly used as a contrasting technique with *sul ponticello*; however, *sul tasto* was not a technique to be always paired with *sul ponticello* in previous centuries. The definition of *sul tasto* has changed dramatically throughout history.

What is the nature of *sul tasto*? It can be presumed that the fundamental factors of *sul tasto* are, firstly, a position of a sound post in the inside of the violin. A bridge on the violin and the sound post control the sound balance between the lower strings and higher strings, and particularly the sound post is a device that determines the sound projection.<sup>111</sup> Usually, the sound post works best when it is played at the ordinal bow position; thus, if the bow strokes are near the bridge and sound post, the instrument can provide optimal sound projections.<sup>112</sup> So, *sul tasto* is a counter-effect of the common violin setting.

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<sup>109</sup> For example, see Flesch, C., 1924. *The Art of Violin Playing*. Translated from German by F.H. Martens. (New York: Carl Fischer, Inc.), p.92; and also J.C. Schelleng, J.C., 1973. *The Bowed String and the Player*. *Journal of Acoustical Society of America* 53, p.30.

<sup>110</sup> Flesch, C., 1924. *The Art of Violin Playing*. Translated from German by F. H. Martens. (New York: Carl Fischer, Inc.), p.100.

<sup>111</sup> Johnson, E., 1981. *The Acoustics of the Violin*. PhD. University of Salford.P.77; and also Raman, C.V., 1918. On the Mechanical Theory of the Vibrations of Bowed Strings and of Musical Instruments of the Violin Family, with Experimental Verification of the Results – Part I. *Bulletin, Indian Association for the Cultivation of Science*, 15, pp.246.

<sup>112</sup> *Ibid.*, p.83.



Secondly, string curve between G to E strings hugely affects the violin's sound quality. The string curve is decided by a bridge on each instrument, and the standard bridge design used for modern violins makes a moderato string curve at a point between fingerboard and bridge, and then the curve becomes flat towards the violin's scroll. This makes it possible to give more pressure on each string when it is played at the ordinal bow position by normal bow strokes, because of the string angle between each string. If there is not sufficient depth when the string is pressed, the bow touches other strings during a bow stroke, and it restricts the bow pressure.

Let us consider the definition of *sul tasto*, in the case where it is used as an opposite term of *sul ponticello*. *Sul ponticello* can be described as harsh sounds, and it can be a way of creating varieties of noise. So, *sul tasto* should have the reverse effect. Is the purpose of *sul tasto* to produce pure tones? Alternatively, it can be imagined to make soft sounds. And then, what is a definition of the ordinal bow stroke? The ordinal sounds should be aimed to make pure tones as well. It is premature to treat *sul tasto* and *sul ponticello* as contrasting techniques, as it would somehow neglect the nature of the violin.

In the meantime, the impact of the string's Helmholtz motion has been greatly researched,<sup>113</sup> including its effect on sound, in the subject of physics and music acoustics. The strings' 'torsional waves'<sup>114</sup> could, in principle, have an important effect on the sound produced because they affect the motion of the contact point between bow

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<sup>113</sup> Helmholtz motion is 'the steady state motion of an idealised, one-dimensional, bowed string.' See Bavu, E., Smith, J. and Wolfe, J. 2005. *Torsional waves in a bowed string*. Thesis. Music Acoustics, School of Physics, University of New South Wales, p.4.

<sup>114</sup> 'In torsional waves the displacement of the medium is a twist in a plane perpendicular to the direction of propagation of the wave.' See KET Distance Learning. 2012. *Physics Companion* [online] At: <<http://www.dl.ket.org/physics/companion>> [Accessed 14 April, 2013].

and string.’<sup>115</sup> Furthermore, ‘the force at the bridge from each string mode is proportional to its amplitude. An increase in bow speed or a change in position will change the amplitude by altering the distance the string moves in the time interval between capture and release.’<sup>116</sup>

The physicist C.V. Raman’s study at the beginning of the twentieth century identifies the relation between the bow position and vibration of the strings.<sup>117</sup> A few decades after Raman’s examination, John Schelleng undertook research on the bow position and the sound results, the results of which are particularly significant when considering *sul tasto* and *sul ponticello*. A ‘Schelleng diagram’ in his article<sup>118</sup> displays a change of sound quality caused by the balance between the bow pressure and the bow position. In this diagram, on the cello, *sul tasto* can be a ‘raucous scratching’ sound when the bow pressure reaches over 100gms. Meanwhile, *sul ponticello* or a near bridge bow position will produce a ‘raucous’ sound when the bow weight reaches over 1000gms.<sup>119</sup> The diagram is a result of observing ‘bow force and bow position at constant bow velocity for sustained tones’.<sup>120</sup> Therefore, the dynamics are not a factor in this examination. Schelleng also says, ‘usually one increases volume by increasing both velocity and force or by bowing closer to the bridge and increasing force.’<sup>121</sup> So, the timbre will be varied by combining the bow pressure and speed at the different bow

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<sup>115</sup> Ibid.

<sup>116</sup> Johnson, E., 1981. *The Acoustics of the Violin*. PhD. University of Salford. p.46.

<sup>117</sup> Raman, C.V., 1918. ‘On the Mechanical Theory of the Vibrations of Bowed Strings and of Musical Instruments of the Violin Family, with Experimental Verification of the Results – Part I.’ *Bulletin, Indian Association for the Cultivation of Science*, 15, pp.244-278.

<sup>118</sup> Schelleng, J.C., 1973. ‘The Bowed String and the Player.’ *Journal of Acoustical Society of America* 53.

<sup>119</sup> Ibid., p.31.

<sup>120</sup> Ibid.

<sup>121</sup> Ibid., p.30.

positions. The cellist Gerhard Mantel (1995, p.122) supports Schelleng's statement regarding the sound volume:

In order to achieve greater volume it is necessary to exert greater pressure on the string. At the same time either the speed of the bow must be increased or the contact point must be shifted closer to the bridge.

In addition, Mantel mentions 'the comparable contact points of all four strings are not the same. On the lower strings they are somewhat closer to the fingerboard than on the higher strings.'<sup>122</sup> Mantel's observation implies that we cannot generalise the sound results by the different strings. This has already been identified by Schelleng, and his study shows us dissimilarities of 'torsional velocities and impedances' even among the strings of different materials.<sup>123</sup> According to Schelleng's examination, inharmonicity on a violin gut G string is 2.3, while an E string made with the same material is 0.027. However, a steel G string is 3.2.<sup>124</sup> The influence of these factors cannot be dismissed when considering the sound quality of *sul tasto*.

I would like to point out that *sul tasto* cannot simply be a contrasted technique with *sul ponticello*. Firstly, *sul tasto* is more reliant on the instrument setup and other factors of the instrument, while *sul ponticello* can make a similar timbre with any type of violin bridge. Moreover, as each violin is set differently, the sound result of *sul tasto* can be varied by the different violin settings.

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<sup>122</sup> Mantel, G., 1995. *Cello Technique, Principles and Forms of Movement*. Translated from German by Thiem, B.H. (Bloomington: Indiana University Press), p.126.

<sup>123</sup> Schelleng, J.C., 1973. The Bowed String and the Player. *Journal of Acoustical Society of America* 53, p.39.

<sup>124</sup> *Ibid.*, p.38.

Secondly, both *sul tasto* and *sul ponticello* can possibly produce ‘raucous’ sounds by changing the bow pressure. Qualities of ‘noise’ would be contrasted; however, Schelleng’s study identifies change of tone quality by the bow pressure. Also, his idea denies a direct reverse effect between the opposite bow positions. Many contemporary physicists identify the function of dynamics on the bowed instruments by examining the string length, types of strings, bridge, bow positions, velocity of the bow, left finger, and torsional motion of the strings.<sup>125</sup> The mathematical formulas created for string instruments are not the subject of this thesis. However, in the contemporary repertoires, many composers use *sul tasto* with louder dynamics, and studies in music acoustics imply unexpected sound results by this setting. *Sul tasto* and *sul ponticello* have been used since string instruments were invented.<sup>126</sup> Considering the current trend to use *sul tasto* in new compositions, the classification of those bowing techniques has clearly changed since previous centuries, and it needs to find a new sound definition along with the compositional style.



**Figure 2.23: Nono, *La Lontananza*, section 1, bar 22**

In Figure 2.23, *sul tasto* is given to the semitone double stop, which requires D and A strings. Is this a reasonable idea to give the dynamics *ff* and *crescendo* to these pitches? It would be hard to give a strong bow pressure in order to generate the *ff*.

<sup>125</sup> For example, see Inácio, O.J.P.F., 2008. A Modal Method for the Simulation of Nonlinear Dynamical Systems with Application to Bowed Musical Instruments. Ph.D. University of Southampton. pp.54-56.

<sup>126</sup> Boyden, D.D., 1965. *The History of Violin Playing from its Origins to 1761*. (New York: Oxford University Press), p.77.

However, if a violinist could move the bow fast, it would not need a great deal of bow pressure to produce a loud sound.<sup>127</sup>

Another factor that needs to be considered with *sul tasto* is the distance between a left hand position and the bow. In practice, the measurement of the string decides the pitch; for example, the harmonics system on string instruments is built with the physical theory of string length.<sup>128</sup> In general, the distance between the left finger and the bow needs to be well balanced. The bow position for the ordinal sound is different when the left hand is on a very high position; the bow needs to be placed just near the bridge. *Sul tasto* certainly prefers the bow to be placed over the fingerboard. However, if the pitch is so high, how can it be possible to place the bow over the fingerboard?



**Figure 2.24: Nono, *La Lontananza*, section 1, bar 26**

However, Nono had no hesitation in using the high register with *sul tasto*. Figure 2.24 is an extreme example of *sul tasto*. It requires B flat, which is just on the edge of the fingerboard. Would it be possible to achieve this pitch with *sul tasto*? If a violinist wants to play the B flat in a traditional performance, the bowing has to compromise its position; *sul tasto* means placing the bow over the fingerboard. Simultaneously, the

<sup>127</sup> As well as Schelleng, the cellist Mantel says in order to achieve greater volume it is necessary to exert greater pressure on the string.' See Mantel, G., 1995. *Cello Technique*. Translated from German by B.B.Thiem. (Bloomington: Indiana University Press), p.122.

<sup>128</sup> Zukofsky, P., 1968. On Violin Harmonics. *Perspectives of New Music*. Vol. 6, No. 2, Spring-Summer, pp.174-181.

sound result could be just a noise or even a hiss. It is still possible to place the left finger and the bow on adjacent positions, but the violin would probably produce an unexpected sound.

While *sul ponticello* would be able to create a harsh noise, the sound result of *sul tasto* is varied. So, if one assumes *sul tasto* is an opposite effect of *sul ponticello*, and it is believed that *sul tasto* would produce more depth in the sound while keeping the sound level the same with the ordinal bow stroke, the result would be very disappointing. The soft dynamics is still the most suitable to use for this purpose. *Sul tasto* with loud dynamics does not maintain sound quality: once it is compelled to make a louder dynamic, the sound result becomes the opposite. Therefore, some noises tend to appear.

*Sul tasto* has developed with the violin's mechanism. It is a delicate technique to achieve; however, it widens the sound possibilities on the string instrument.

### 2.4.2 *Sul ponticello*

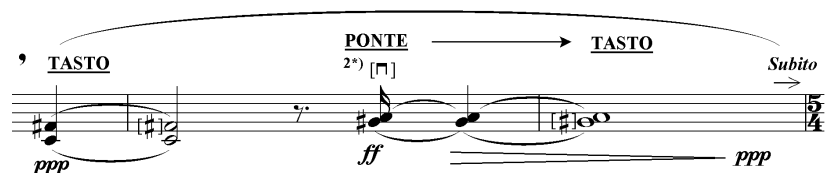


Figure 2.25: Nono, *La Lontananza*, section 4, bars 1-3

Figures 2.25-2.28 display *sul ponticello* in *La Lontananza*. In Figure 2.25, *sul ponticello* is gradually transferred towards *sul tasto*. Figure 2.26 shows us the material

which combines *sul ponticello* with *col legno*. Meanwhile, the dynamics are kept very soft: *ppppp*. In Figure 2.27, the *sul ponticello* is given an extreme dynamics with *sfffff*, and Nono instructs to use the bottom of the bow (*tallone*). This allows the violinist to put the heaviest bow pressure on the strings. Figure 2.28 is a combination of *sul ponticello* and an artificial harmonic. The register for the harmonic is acceptable, so *sul ponticello* would contribute in producing more overtones with the harmonic.

Nono has explored the timbre effect of *sul ponticello* by combining it with other factors, such as dynamics and harmonics. A different pairing of techniques can result in a dissimilarity of timbres.

ALLA  
PUNTA  
CRINI + LEGNO  
PONTE

12

*ppppp*

Figure 2.26: Nono, *La Lontananza*, section 4, bars 12

→ Tempo Base

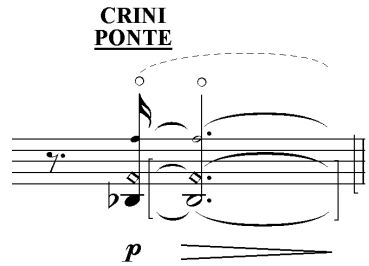
CRINI + LEGNO TASTO Al

TALLONE CRINI PONTE

5

*ppp*      *ppp* > *sfffff*

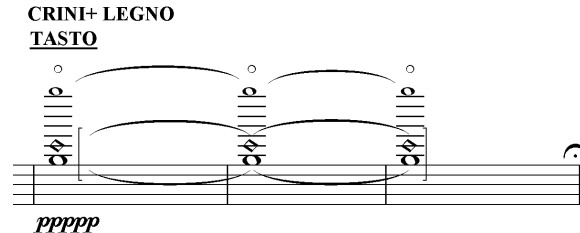
Figure 2.27: Nono, *La Lontananza*, section 1, bars 5-6



**Figure 2.28:** Nono, *La Lontananza*, section 1, bar 9

A combination of dynamics and *sul ponticello* determines sound qualities in various ways. The amount of roughness in the sound would be much reduced with softer dynamics applied to *sul ponticello*, while louder dynamics combined with *sul ponticello* could be related to a category of noise.

### 2.4.3 *Col legno*



**Figure 2.29:** Nono, *La Lontananza*, section 2, bars 16-18

Figure 2.29 is a combination of a harmonic and *col legno*. Nono allows the violinist to use the bow hair with *col legno*. Furthermore, he indicates *sul tasto* for this example. A combination of the bow hair and *col legno* usually provides clearer pitches compared with only performing *col legno*; however, the pitch here is instructed to be *ppppp*. Even if this is played by an ordinal bow stroke, the soft dynamic demands a well-controlled bow stroke. Obviously, the violin bow is not designed for *col legno*, and making a smooth bow stroke by *col legno* is not a simple task.





**Figure 2.30: Nono, *La Lontananza*, section 2, bar 51**

Figure 2.30 is also played by *col legno*, but the dynamic here is *fff*. A combination of *fff* and *sul ponticello* can make a raucous sound, but adding *col legno* makes a rough sound.

The violin part of *La Lontananza* appears to be a conventional style of composition, and each technique used in this work is a traditional violin technique. However, Nono made unimaginable mixtures of techniques, and the sound result is a fantastic artwork.

## **2.5 A performance edition of *La Lontananza Nostalgica Utopica Futura*: Irvine Arditti edition**

### **2.5.1 Editorial process**

The source material for the edition of *La Lontananza*, as presented in this thesis, is a manuscript published by Casa Ricordi (Version KOE 232; Catalogue no. 134798/1). The original score was, however, not completed in an ideal fashion. There are many errors in the harmonic notation. There are also inconsistencies in all points of notation, as well as many technical terms being placed ambiguously.

During the editing process, I first copied the manuscript to a Sibelius file. Secondly, I marked all questionable details and asked about ways of correcting to Irvine Arditti. At this point, most of the questions I asked were related to obvious pitch errors. Thirdly, these corrections were reflected on the Sibelius file. Finally, I made a critical commentary, which also describes the original state of the manuscript.

In the editorial process, I tried to preserve Nono's original notational style as much as possible. Therefore, Nono's notational style was copied to the Sibelius file in the same manner. For example, he writes some performance instructions across the part, as if they are scribbles, but in an artistic way. The font used for the Sibelius file could not convey the same aesthetical visual message as the handwriting; even so, the same style was used in the Sibelius file. In the same way, I copied the tempo markings and bowing techniques as they were formatted in the manuscript. However, it is easier to read the part if the markings are placed on the same horizontal position. So, I placed the markings on the same visual level.

After the copying process, I started marking some places that I thought might be problematic for the violinist. Before making the Sibelius file, I already had an opportunity to perform *La Lontananza*; so, during the practice, I was already aware of some notational problems. These problems were then brought to Arditti, with whom I have had the opportunity to have violin lessons. He kindly showed me his own part used for concerts, and we discussed most of the problems. After the meeting, there were still many details I wanted to discuss with him. We discussed further details via email. The process lasted over few months, between August 2009 and January 2010, and there were a few minor corrections made after this date.

From a violinist's point of view, a major problem in the manuscript is the way harmonics were written. Nono always writes resultant pitch and fingerings for the harmonics. However, quite often they are not identical, but the violinist has to make a choice during a performance. There are many choices that can be made; however, I was particularly willing to discuss the problems with Arditti, to make a record of his performance practice.

Also, there were many contradictions among the bowing techniques. For example, Nono often writes *sul tasto* and *sul ponticello* at the same time. From a practical point of view, the two techniques cannot be done at the same time. I discussed these problems with Arditti, and the commentaries show how they were notated in the manuscript.

I have also noticed there are many tempo markings written in the manuscript, but sometimes there are inconsistencies. Again, this point was discussed with Arditti, and some tempo markings were added to the part as instructions. All details amended from the manuscripts are explained in the commentary.

Regarding the harmonics, Arditti took the resultant pitch as a major resource, and amended the fingerings. The decision was also made for practicality. Musicologists might say we needed to consider the fingerings that appeared in the manuscript. However, the error seems to occur irregularly, and to follow Nono's fingering would only confuse the violinist. Because the edition here is a performance edition, I wanted to make all details absolutely playable. So, I support Arditti's decision for the harmonics.

Regarding the bowing technique, the violinist has to decide or be instructed clearly, and it was also my intention to choose one bowing technique per pitch. However, some people working in the field of improvisation might have different opinions. As another possibility, the bow could shift between *sul tasto* and *sul ponticello* very quickly, and it would produce varieties of timbre. However, my other criteria for this decision were the eight-channel tape materials performed by the violinist Gidon Kremer. When I tried one bowing technique per pitch, rather than just moving the bow over the string, the sound was almost exactly identical with the materials used in the tape. In my opinion, the tape and violin part is a set, and the violin part needs to be resolved with the sound in the tape. Hence, as the edition shows, I still think the violinist needs to decide which bowing technique to play.

Although Nono occasionally used time signatures, and the time signatures are added to the edition, I think *La Lontananza* could be written without it. In "*Hay Que Caminar*" *Soñando*, having the time signatures in the score is more important. In this work, unfortunately there were many errors between the two violin parts, and often two parts were given different beats within the same bar. In this case, probably the time signature gives a clearer idea. Indeed, there are many similar materials used in two works, and they could be played in the same way. However, after adding the time

signatures, many rhythms had to be replaced. As a possibility, *La Lontananza* could be without time signatures and bar lines in the majority of the parts.

Because this edition is Arditti's edition, the bowings and fingerings show his idea. Nono did not add any of the details and, unlike Cage's violin work, it does not restrict the performer's own choice.

### **2.5.2 Editorial note**

The following section shows a performance edition for the violin part of Nono's *La Lontananza Nostalgica Utopica Futura* for solo violin and 8-channel tape tracks. All editorial comments added to the original texts are either marked with square brackets or explained in the commentary. However, some details are changed from the original source without being mentioned in the new score; these six exceptions are noted below.

Nono places an arrow where there is either an extra space at the end of the system or there is a shortage of space and, therefore, has to do a system break in the middle of a bar. In this new version, the arrows are omitted and systems and bars are modified in the appropriate style.

The way Nono notates the harmonics is inconsistent. In the first section, (*leggio* 1) he uses stem-less and non-valued note heads to indicate fingering positions. However, he starts using stems for the fingering positions in other sections. This edition uses the stems with the fingering positions in all sections. Also, dashed slurs that Nono uses for harmonics positions are replaced with normal slurs in the second and third sections (*leggio* 2 and 3). The resultant pitches are indicated by using small note heads in this edition.

Direction of stems, slurs and other symbols are mostly placed as in the manuscript; however, they are sometimes changed in order to make them more consistent. Nono often adds phrasing slurs, but these slurs are sometimes abruptly finished in the middle of sustained notes. In this edition, the phrasing marks are extended to the end of each sustained note.

Nono writes note names where there are high pitches with many ledger lines above the system. In this edition they are omitted.

Time signatures are only used in *leggio* 4; however, they are often mistakes. In the new edition, time signatures are added in all sections to give the performer a firmer basis for understanding the rhythms, although the work should be eventually played quite freely. Time signatures without brackets can be found in the manuscript. Time signatures with brackets are added. When the rhythms have been adjusted, there is an explanation in the commentary.

In the original manuscript, Nono writes all texts in upper-case letters. However, different fonts are applied in the new edition, as below:

- Tempo markings: boxed text
- *Accelerando/Rallentando*: italic in lower-case letters
- *Crini/Legno/Tallone/Alla Punta*: upper-case letters
- *Tasto/Pont*: upper-case letters underlined. Nono always underlines these two terms in the 1st section (*leggio* 1).

All other texts not mentioned above are indicated with italic capitalized letters.

As this is a performance edition based on the work of Irvine Arditti, all technical details, rhythmical matters, time signatures and unclear notation were edited

with his consultation, and this edition fully reflects his ideas and opinions. With Irvine Arditti as a primary source for this edition, the editor made a comparison between Nono's manuscript and Arditti's great expertise in a critical commentary. It explains why the original material has changed, and also it shows a clear picture of the state of the manuscript.

### **2.5.3 A performance edition**

**Luigi Nono**

**La Lontananza Nostalgica Utopica Futura**

**Madrigale per più “caminantes” con Gidon Kremer**

**For solo violin and 8 channels pre-recorded tape**

**(1988-1989)**

**Edited by Irvine Arditti**

**solo violin part**



# La Lontananza Nostalgica Utopica Futura - Leggio 1 -

Luigi Nono  
 Edited by Irvine Arditti

TEMPO BASE ← 30 → 40 : CIOE ANCHE MENO 30 - SEMPRE VARIABLE - DOVE 72 = 72

*Suono Rotto Pausato Con Memoria Lontananza*  
**Con Accento**  
 CRINI + LEGNO | TASTO | VERSO IL PONTE

1<sup>a</sup>) CRINI + LEGNO TASTO *p*  
 2<sup>a</sup>) *Dolcissimo Lontano* SUL PONTE CRINI *pppp*  
 3<sup>a</sup>) *Rotto e Lontanissimo* + LEGNO *p*  
 4<sup>a</sup>) *Con Accento* CRINI + LEGNO TASTO | VERSO IL PONTE *mf mp*  
 [Hold] *Ca. 40"*  
 5<sup>a</sup>) *Rapidissimo Irregolare Durissimo* AL TALLONE PONTE *fff*

*rallentando* *oltre 30*

Tempo Base  
 CRINI + LEGNO TASTO *ppp*  
 4<sup>a</sup>) [V] *ppp* → *fffff*  
 TALLONE CRINI PONTE  
 5<sup>a</sup>) CRINI TASTO Suono *mf*  
 6<sup>a</sup>) *Tutto Arco* + LEGNO PONTE *ppp*  
 7<sup>a</sup>) *Molta Pressione* *Molta Pieno* *mf fff*  
 8<sup>a</sup>) CRINI PONTE *p*

*Dolcissimo - Pausato - Rotto*  
 CRINI + LEGNO TASTO → AL PONTE

7<sup>a</sup>) TASTO *ppp*  
 8<sup>a</sup>) *Duro TALLONE PONTE* *mf* → *fff*  
 9<sup>a</sup>) *ppppp* [30] → [40] → [30]

Tempo Base  
 TASTO - LEGNO

Ca.40 [72] *Durissimo* CRINI PONTE  
 8<sup>a</sup>) [III 4] *f* → *fff* → *fffff*  
 9<sup>a</sup>) *ppp*  
 10<sup>a</sup>) CRINI + TASTO LEGNO TASTO *sf* → *ppp*  
 11<sup>a</sup>) CRINI PONTE *fff*  
 [30] TASTO - CRINI + LEGNO [V] *ppppp*

19 *ppppp* *accelerando* **72**

*ppppp* **Ca.72** *Rapidissimo Irregolare* TALLONE PONTE TASTO [V] CRINI PONTE *sffff* *ff* *sffff*

23 *Leggero Lontano* CRINI CRINI TASTO **Ca.72** CRINI + LEGNO PONTE **72** TALLONE PONTE TASTO **[30]** 17°) *Tempo PONTE* CRINI + LEGNO TASTO *ppppp*

*Leggero Lontano* CRINI CRINI TASTO **Ca.72** CRINI + LEGNO PONTE **72** TALLONE PONTE TASTO **[30]** 17°) *Tempo PONTE* CRINI + LEGNO TASTO *f* *sffff* *mf* *ppppp*

25 **30** **40** **72** *Precipitando* *Al* CRINI TASTO **30** *Tempo Base* CRINI TASTO **72** *accelerando* PONTE - LEGNO CRINI TASTO **30** *ppp* *mf* *ff pp*

**30** **40** **72** *Precipitando* *Al* CRINI TASTO **30** *Tempo Base* CRINI TASTO **72** *accelerando* PONTE - LEGNO CRINI TASTO **30** *ppp* *mf* *ff pp*

27 *rallentando* *pp* CRINI TASTO CRINI PONTE LEGNO PONTE LEGNO - CRINI TASTO **30** *oltre* *Perdendosi Nella Lontananza* CAMMINA LENTAMENTE CON IMPROVISE FERMATE COME E CERCANDO E ANDANDO VERSO IL II LEGGIO = n.2 FINE **n.1**

*rallentando* *pp* CRINI TASTO CRINI PONTE LEGNO PONTE LEGNO - CRINI TASTO **30** *oltre* *Perdendosi Nella Lontananza* CAMMINA LENTAMENTE CON IMPROVISE FERMATE COME E CERCANDO E ANDANDO VERSO IL II LEGGIO = n.2 FINE **n.1**

# La Lontananza Nostalgica Utopica Futura - Leggio 2 -

**TUTTO CANTATO (ARCO - CRINI - VOCE) DOLCISSIMO COME RICORDI COME SOGNI COME ECHI**

TEMPO BASE: 30 → 40 → **72 - 120 - 142 - 144**  
 SEMPRE VARIABLE

Luigi Nono  
 Edited by Irvine Arditti

ARCO = **SEMPRE CANTANDO** ; ANCHE CON VOCE LA DOVE POSSIBILE : UNISON - V ↕ - VIII ↕

*Dolcissimo*  
*Come Ricordi*  
*O Sogni*  
*Pechi*

*Suono Sempre Mobile Per Meno Di 1/16 Mai Statico - Spesso = Interrotto - Il Suono Va e Viene -*

72 → accelerando → 120 | 30

13

19

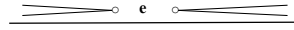
Cantando Dolcissimo

72 accelerando | - - - - - | 142

**IL SUONO = ALTEZZA SEMPRE MOBILE PER MIKRO INTERVALLI MINORI di 1/16**

**MAI STATICO**

**DINAMICA = COME IL SUONO VA E VIENE - SPARISCE**



23

CRINI TASTO

PONTE [V]

*Cantando Dolcissimo*

ppp p fff sffff ppp

11\*)

*Suono Sempre Mobile Per Meno Di 1/16 Mai Statico - Spesso = Interrotto - Il Suono Va e Viene -*

26

Flautato TASTO

72 → 120

PONTE

30

13\*)

TASTO

PONTE CRINI + LEGNO

ppp f sffff ppp ffff p p

30

120

30

TALLONE TASTO [V]

*Cantando Dolcissimo*

CRINI + LEGNO TASTO → LEGNO PONTE → LEGNO + TASTO

14\*)

sffff ppppp

1 2  
II 4  
III 3

35

CRINI PONTE

TASTO

CRINI TASTO

TASTO

15\*)

PONTE

LEGNO TASTO

ppppp f f fff sffff

40

CRINI PONTE

TASTO+ LEGNO

ppppp p p

45

16<sup>a</sup>) *Flautato Rapidissimo CRINI + TASTO* *pppp*

17<sup>a</sup>) *Arpeggiato Rapidissimo CRINI PONTE*

18<sup>a</sup>) *Leggero CRINI PONTE*

19<sup>a</sup>) *Flautato PONTE*

20<sup>a</sup>) *CRINI + LEGNO TASTO*

20<sup>a</sup>) *Flautato Rapidissimo LEGNO - PONTE*

21<sup>a</sup>) *Cantando CRINI TASTO* [*mp*] *mp* *ppppp*

49

22<sup>a</sup>) [*V*] *ppppp* *mp*

23<sup>a</sup>) [*V*] *Rapidissimo Flautato LEGNO - PONTE* *mp* *fff*

24<sup>a</sup>) [*V*] *CRINI PONTE* *ppppp*

24<sup>a</sup>) [*V*] *CRINI + LEGNO TASTO* *fff* *fff* *ppppp*

Ma Sonoro CRINI TASTO

53

25<sup>a</sup>) [*V*] *fff* *CRINI PONTE*

26<sup>a</sup>) [*V*] *ppppp* *CRINI + LEGNO TASTO*

26<sup>a</sup>) [*V*] *ppppp* *CRINI PONTE*

27<sup>a</sup>) [*V*] *ppppp* *LEGNO*

28<sup>a</sup>) [*V*] *ppppp* *TASTO LEGNO + CRINI*

58

72 *accelerando* [-----] 144

*All'estremo Violento CRINI PONTE*

28<sup>a</sup>) [*V*] *ppppp* *fff*

144 *rallentando* [-----] 30

CRINI PONTE

Strappate o Arpeggiato Sulle 3

Altezze NORMALE

62

29<sup>a</sup>) [*V*] 5 3 3 [*V*] [*V*]

30<sup>a</sup>) [*V*] *ca 11"*

(ANCHE L'ULTIMO = 30) LENTISSIMO ARPEGGIO!!!

FINE [N.2]

CAMMINA LENTAMENTE CON IMPROVISE FERMATE COME E CERCANDO E ANDANDO NON DIRETTAMENTO AL LEGGIO 3 = [N.3]

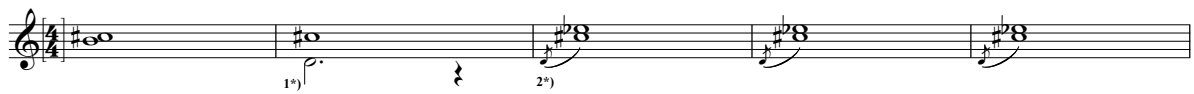
# La Lontananza Nostalgica Utopica Futura - Leggio 3 -

Luigi Nono  
Edited by Irvine Arditti

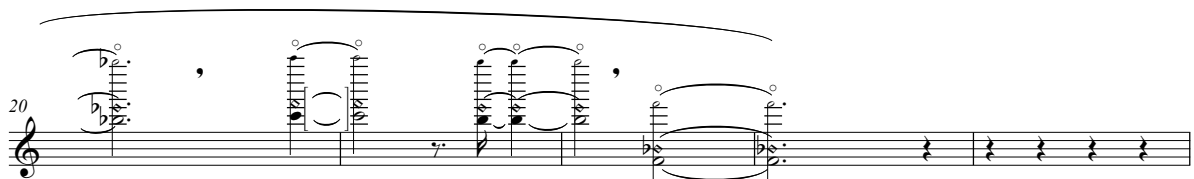
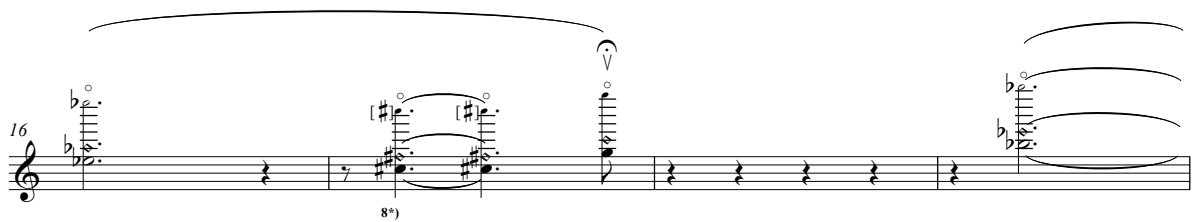
**TUTTO P P P P P P P P CANTANDO DOLCISSIMO CON VOCE**  
**QUASI INAUDIBILE OVE POSSIBILE : UNISSONO**

**8a V° CON SERENA VISIONARIA LA LONTANANZA UTOPICA QUASI : CERCANDO IL SUONO**

[*Tutto Flautato Crini Leggerissimo*]



*Tutto Flautato Crini Leggerissimo*





GUARPA CERCANDO POL CAMMINA  
 QUASI INCERTO - (TORNANDO INDIETRO  
 E CAMBIANDO DIREZIONE) VERSO  
 IL LEGGIO VI = N.4



**FINE**  
N.3

# La Lontananza Nostalgica Utopica Futura - Leggio 4 -

TEMPO **30** → **144** RALLENT — ACCEL — → ∞

ALLA PUNTA VELOCISSIMO  
ARPEGGIATO

Luigi Nono  
Edited by Irvine Arditti

Arpeggiato  
Arpeggiato TASTO → PONTE TALLONE  
sfff sffff sfffff ppp ff ppp  
PONTE → TASTO  
Subito

**144** *rallentando* |-----| *rallentando* |-----| **30**  
TASTO |-----| 3a)  
4 pp pppppp

5 p mf p sfff ppppp 4a) ppp 5a) ppp 6a) ppp p  
PONTE Arpeggiato TASTO  
ALLA PUNTA TASTO Rapidissimo  
TASTO → ALLA PUNTA PONTE

8 pp ppppp pp ppp ppp ppp ppppp  
Stesso Tempo ALLA PUNTA TASTO  
CRINI ALLA PUNTA PONTE

9 ppppp Cantando p mp f  
LEGNO + CRINI TASTO PONTE TASTO 8a) Arpeggiato PONTE Arpeggiato TASTO  
ALLA PUNTA TASTO



12

ALLA PUNTA CRINI + LEGNO PONTE

*ppppp*

*Arpeggiato TASTO*

*accelerando* 144

5

30

ALLA PUNTA TASTO CRINI + LEGNO

*ppppp*

72

CRINI PONTE

12<sup>a</sup>)

11<sup>a</sup>)

ALLA PUNTA TASTO

*ppppp*

*rallent* 30

15

30

Grande Arcate 13<sup>a</sup>)

*fffff*

Arpeggiature CRINI PONTE

14<sup>a</sup>)

[Irregular arpeggio]

15<sup>a</sup>)

144

PONTE

3

15a<sup>a</sup>)

180

ALLA PUNTA PONTE

5

3

3

15b<sup>a</sup>)

Velocissimo

17

Libero

Durate Variate

ALLA PUNTA TASTO PONTE

180

Velocissimo

ALLA PUNTA TASTO

16<sup>a</sup>)

*fff* *fff* *fff* *p*

*ppp*

17<sup>a</sup>)

17a<sup>a</sup>)

*fffff*

ALLA PUNTA Rapidissimo CRINI + LEGNO

72

*rallent*

30

21

Velocissimo

CRINI + LEGNO PONTE

7:8

18<sup>a</sup>)

19<sup>a</sup>)

[III] [II]

*ppppp* *p* *ppppp*

CRINI ALLA PUNTA TASTO

20<sup>a</sup>)

21<sup>a</sup>)

*ppppp*

22<sup>a</sup>)

21a<sup>a</sup>)

5

*ppppp*

23

CRINI PONTE

CRINI + LEGNO

ALLA PUNTA CRINI

30

30

23<sup>a</sup>)

24<sup>a</sup>)

25<sup>a</sup>)

26<sup>a</sup>)

26a<sup>a</sup>)

27<sup>a</sup>)

26b<sup>a</sup>)

*ppp* *ppp < pp < p* *ppppp*

*ppppp*

*Velocissimo*

**144**  
*Velocissimo*  
 Arpeggiature

28\*)  
 PONTE TASTO

29\*)  
*fff*

CRINI  
 Al  
 PONTE

TASTO

30

ALLA PUNTA  
 PONTE

CRINI + LEGNO  
 TASTO

*ppppp*

*p*

More than one arpeggiature

28a\*)  
 30\*)

29

PONTE  
 CRINI+LEGNO

TASTO  
 LEGNO

PONTE  
 CRINI

Arpeggiato  
*Velocissimo*  
 TASTO

*ppppp*

*fffff*

31\*)

*acceler* |-----|

72

*accelerando* |-----|

**144** **30**

34

32\*) 32a\*) 33\*)

32b\*) 32c\*)

34\*)

35\*)

*Libero*  
 ALLA PUNTA

TASTO

TASTO PONTE

72 *accel* |-----|

**144**

36\*) [o] [o] [o] [o]

37\*) [1 4]

ALLA PUNTA  
 PONTE - CRINI  
 TENERE

LUNGAMENTE

CAMMINARE  
 LENTAMENTE  
 CON IMPROVISE  
 FERMATE  
 COME E  
 CERLANDO E  
 ANDONDO  
 VERSOIL N.5  
 LEGGIO IV

ossia

# La Lontananza Nostalgica Utopica Futura - Leggio 5 -

Luigi Nono  
 Edited by Irvine Arditti

DOVE POSSIBILE USARE LA IV CORDA  
 CON SUONO MOLTO PREGNO DI CANTO  
 SUONI MOBILI PER MENO DI 1/16 COME CERCANDOSI



SUONI MOBILI PER MIKRO INT. NON STATICE

30  
 TASTO

7

13

18

accel. 120 rall. 30

SUONI MOBILI PER MIKRO INT. NON STATICHE

21 *ppppp* *PPP* *ff* *p* *p*

ALLA PUNTA

10 10

23 *f* *fff* *p* *sff* *ppppp* *fff* *p*

4\*)

5\*)

6\*)

accl. [-----] 120 30 TASTO

PONTE 3

ossia

26 *ppppp* *sff* *ppppp* *ppppppp*

PONTE - CRINI

7\*)

8\*)

PONTE 3

TASTO

ALLA PUNTA

LEGNO Al PONTE

31 *ppp* *ppp* *ppppp*

ossia

CRINI

TASTO

TASTO

PONTE

TASTO

PONTE

TASTO 3

[V]

ppp ppppp

36 *mf* *ppppp* *ppppppp*

LEGNO + CRINI 9\*)

PONTE

[Normale] 10\*)

TASTO 3

42 TASTO

PONTE - LEGNO

TASTO - CRINI

*ppp* *pppppp* *ppppp* *pppppppp*

48

PONTE - LEGNO

TASTO - CRINI [V]

*ppppppp* *ppppp* *ppp*

12\*) 13\*)

53

TASTO - CRINI

LEGNO + CRINI PONTE

144

PONTE - CRINI

*ppppp* *fff*

14\*) 15\*) 16\*) 16a\*) 16a\*)

56

CRINI TASTO

PONTE

17a\*)

17\*)

17a\*)

CRINI TASTO

PONTE

18\*)

18a\*)

TASTO

*ppppp* *pp < p < f* *fff* *ppp* *ppppppp* *pp*

60

*p* *mf* *ppp* *pp*

19\*)

III II  
4 1

FINE [N.5]  
CAMMINARE VAGANDO INCERTO  
VERSO IL LEGGIO VI = [N.6]

# La Lontananza Nostalgica Utopica Futura - Leggio 6 -

Luigi Nono  
 Edited by Irvine Arditti

## SUONO MOBILE PER MIKRO INT - MINORI E 16/1 - MAI STATICO COME CERCANDOSU

180                      30 - 40

TASTO Intenso                      PONTE TALLONE Durissimi                      TASTO                      PONTE

*f*                      *sfff*                      *ppppp*

7                      180                      30 - 40

PONTE (TALLONE) Duro                      PONTE TASTO PONTE                      Flautato TASTO

*f*                      *sfff*

11                      180 (TALLONE)

Flautato PONTE                      Flautato TASTO                      TASTO PONTE

*sfff*                      3<sup>a</sup>)

14                      30 - 40

(TALLONE) PONTE                      TASTO                      PONTE                      Flautato TASTO                      Flautato PONTE                      Flautato TASTO

*p*                      *sffff*                      4<sup>a</sup>)                      4a<sup>a</sup>)                      4b<sup>a</sup>)                      4c<sup>a</sup>)                      5<sup>a</sup>)                      6<sup>a</sup>)                      7<sup>a</sup>)

17                      Flautato PONTE                      3                      3                      3

8<sup>a</sup>)                      9<sup>a</sup>)

19 *Flautato*  
**TASTO**

**PONTE**

*Flautato*  
**TASTO**

22

**PONTE**

*Flautato*  
**TASTO**

26

**PONTE**

**TASTO**

30

**TASTO**

**180**  
*Velocissimo*  
**PONTE - CRINI**

**PPP**

34

**30 - 40**  
**TASTO**

*Flautato*

**PONTE**

38

21\*)

Flautato

TASTO

42

Flautato PONTE

Flautato TASTO

Flautato

47 PONTE

TASTO

PONTE

Flautato

52

TASTO

TASTO

Il Violinista

Flautato

58

CONTINUA REGISTRATO

LENTISSIMO

Se Ne Esce Pian Piano Dalla Scena



## 2.5.4 Critical Commentary

### *Words and abbreviation*

IA: Irvine Arditti

Crini: using the bow hair

Legno: using wood of bow

Ponte: playing very close to the bridge

Punta: playing at the point of the bow

Tallone: playing near the frog of the bow

Tasto: on the fingerboard

Quarter note: crotchet

8<sup>th</sup> note: quaver

16<sup>th</sup> note: semiquaver

32<sup>nd</sup> note: demisemiquaver

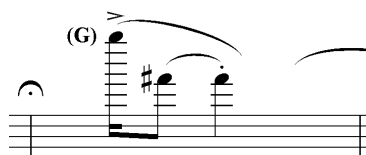
64<sup>th</sup> note: hemidemisemiquaver

## *Leggio 1*

1\*) The original harmonics have been modified here. The original fingering positions are as below:



2\*) As bars 1 and 3 are 4/4 bars, it is reasonable to assume that bar 2 is also 4/4. Bar 2 was written in the manuscript as follows:



The F# has been elongated to fill the value of a 4/4 measure.

3\*) In the manuscript, the technical details are placed abstractedly. *Tasto* is initially only applied on the first beat of bar 1. The rest of the beat in bar 1 should be performed *sul ponte*. Bar 2 should start *tasto*, and then gradually change into *ponte* towards the end of bar 3. However, it looks like *tasto* in bar 2 is placed on the 2<sup>nd</sup> note in the manuscript. As there is a pause between bar 1 and 2, the previous indication of *ponte* does not seem to be continued in bar 2. It would seem to make more sense if the performer starts with *tasto* from the beginning of bar 2.

4\*) The slur from bar 5 to the end of the following bar is interpreted to be a phrasing slur. Because of the slow tempo, it is probably necessary to change the bow on each pitch.

5\*) It is better to use two bows here, a down bow for the *diminuendo* and an up bow for the *crescendo*.

6\*) Bar 9 was originally notated as follows:

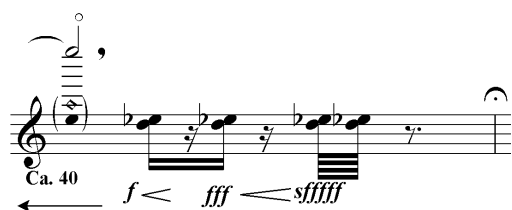


The bar is given slightly more than four beats. The dot has been removed from the first note.

7\*) A bar line is missing at the end of bar 9, and a slur is missing at the beginning of bar 10. There is a slur at the end of the previous bar, so the first pitch of the bar 10 must be tied.

8\*) IA suggests here that the bottom pitch D is played with a harmonic on the D string for sureness of intonation.

9\*) Bar 15 was originally written as follows:



The total rhythmic value is slightly less than four beats. The last two pitches have been changed to double value.

10\*) Originally, the chord in bar 17 is given double dots as follows:



It is assumed there is a dot for each note but, because the pitches are notated in the same horizontal position, both notes should only be single dotted.

11\*) In the manuscript, Nono indicates *crini+tasto ponte* on the third beat of bar 18. It is, of course, a contradiction using *tasto* and *ponte* at the same time. As the dynamic marking is *sfff*, *ponte* is more suitable than *tasto*. Hence, *tasto* is omitted.

12\*) The first note in bar 22 was originally double dotted as below:



The notes are single dotted, as in the previous example.

13\*) The fingering combination for the 6<sup>th</sup> note in bar 23 was originally written as follows:



14\*) Bar 23 contains slightly less than four beats in the manuscript, as is shown below:



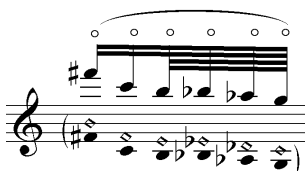
The quintuplet has been changed to double values.

15\*) The lower note E is suggested to be played as a harmonic on the A string.

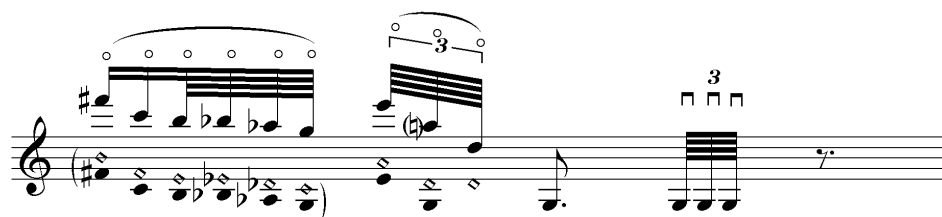
16\*) *Tallone* is written over the two double stops on the first beat of bar 24 in the manuscript. A dashed line is used in this edition to make this clear.

17\*) Nono writes *tempo* here in the manuscript. As we can see in bars 23 and 25, *tempo* means the metronome marking 30. The actual re-marking of 30 is more useful for the performer than just the word *tempo*.

18\*) The fingering position on the first resultant F# pitch has changed. The original fingering position in the manuscript is as below. The original fingering produces the same resultant F# pitch; however, using a natural 6<sup>th</sup> harmonic makes left-hand shifting easier to facilitate when moving to the following harmonics. IA suggests this is a possible alternative, although the original notation can be used.



19\*) The rhythmic value does not add up, as in commentary 14. Bar 25 appears in the manuscript as follows:



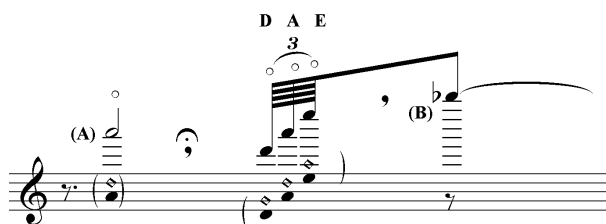
This bar has been changed in accordance with other similar corrections in the piece. Pitches 3-9 and the last triplet have been changed to half speed, and thus the bar is written as a 3/4 measure.

20\*) Fingering positions are changed. The original fingering in the manuscript is as follows:



The second pitch in the triplet above is wrong. The bottom 5<sup>th</sup> harmonic produces a D, not an A. Also, a natural sign seems to be missing on the resultant A. Nono always puts accidentals on each pitch; therefore, this should be A natural, not a flattened A, as in the pitch three notes earlier.

21\*) The rhythm in bar 26 was originally written as follows:

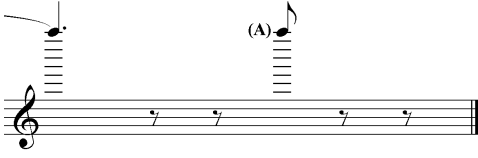


This bar is again slightly shorter than a 4/4 measure. As before, the triplet has been changed to half speed. Also, in order to make the bar rhythmically coherent, the 16<sup>th</sup> note rests under two commas are added.

22\*) A harmonic 'o' indication is missing on the A in bars 27-28. The A in bar 27 is clearly a 4<sup>th</sup> harmonic notation and this is obviously just an error. The first pitch in bar 28 is also a harmonic, as it is tied to the previous A.

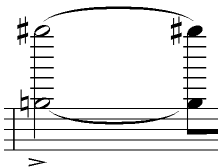
23\*) The last pitch in bar 28 was not written as a harmonic in the manuscript.

24\*) The last quarter note rest was originally two 8<sup>th</sup> note rests, as follows:



## Leggio 2

1\*) The original writing for the double stop in the manuscript is as follows:



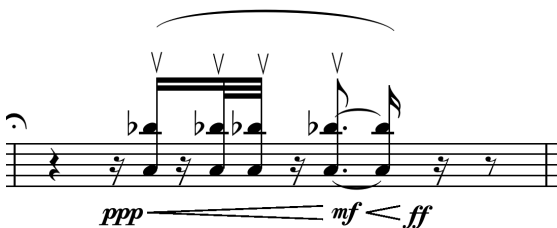
This double stop demands a very wide left-hand stretch. IA's practical solution is to finger the top note as a harmonic.

2\*) The original writing for the double stop in the manuscript is as follows:



This is the same as 1\*) above. The major tenth is possible to stretch but, by fingering the top note, again with a harmonic, the fingering keeps the hand in the same position as the previous double stop.

3\*) The last rest in bar 7 was originally written as a 16<sup>th</sup> note and an 8<sup>th</sup> note rest. See below:



4\*) The original harmonic in the manuscript is as follows:



This harmonic produces a G, not a C.

5\*) *Tallone* is written over the two F#-B double stops in the manuscript. Therefore, a dashed line indicates clearly that both double-stops are to be played *tallone*. However,

*fff* is only written on the first double stop, but IA suggests that they should both be played *ffff*.

6\*) The original writing in the manuscript is as follows:



The double stops on the first and third beats are originally B-F#. The interval of a 12<sup>th</sup> is really too far to stretch. IA suggests that this is a mistake and the bottom note B should be replaced with the open G string, to be the same chords as the second and last beats of the bar.

7) The rhythm in bar 11 was originally written as follows:



The rhythm values again add up to less than four beats. The quintuplet (7a) and last two notes (7b) are changed to double values in the edition.

8\*) Nono writes the words 'Fis (F#)' on this pitch, but the harmonic produces F natural. IA suggests that this pitch should be F natural.

9\*) A tie from the 2<sup>nd</sup> beat of bar 20 to the 1<sup>st</sup> beat of bar 21 was added in this edition. The 1<sup>st</sup> beat of bar 21 was not originally written as a harmonic; however, it is reasonable to suggest sustaining the F harmonic over the bar line, considering there is also a phrasing slur over two and a half bars at this point. IA suggests that this omission is a mistake in the manuscript. A question also arises within this phrasing slur for the last pitch G in bar 21, and the 1<sup>st</sup> pitch G in bar 22, as to whether they should be tied or not. However, the 1<sup>st</sup> pitch G in bar 22 is indicated to be *ponte* while the previous G is *tasto*. Therefore, a bow change will help to facilitate the horizontal bow movement.



10\*) The original rhythm in bar 22 is also less than four beats:



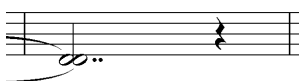
The sextuplet is changed to double values.

11\*) The unison chord in bar 25 was originally double dotted, as follows:



As with previous examples, a single dot is used.

12\*) As with previous examples, a single dot is used.



13\*) *Ponte* is written again in the beginning of bar 27 in the manuscript. A dashed line is used to make this clearer.

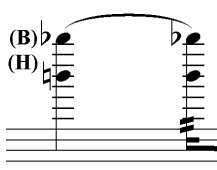
14\*) An additional and unnecessary *tasto* marking is deleted to make things clearer.

15\*) *Crini + legno* are written at the beginning of bar 39. As the dynamic marking is *crescendo* to *fff*, IA suggests omitting the *legno* marking and playing with the hair.

16\*) In the manuscript, the first chord in bar 45 is not indicated as an *arpeggiato*. The second chord is. Both chords are indicated to be played *rapidissimo*. IA suggests that this is a mistake and the first chord should also be played *arpeggiato*.

17\*) *pppp* is added in this edition. In the previous bar, Nono writes *diminuendo* into silence, so a dynamic marking is needed from bar 45. The next marking in the score is *mp*. IA suggests a much softer dynamic level of *pppp* for bars 45 and 46.

18\*) It seems a slur is missing between the two B naturals. The original notation is as follows:



IA suggests that the *tremolo* on the 16<sup>th</sup> note value is a mistake and the two pitches should be sustained legato.

19\*) The bottom note B flat was not originally written to be tied over to the first beat of bar 45, as shown below:



Of course, the trichord cannot be sustained if played *legato*. As all other trichords are *tremolo-arpeggio* in bar 45-6, IA suggests that the *tremolo* marking should be added here on all three pitches for the total duration.

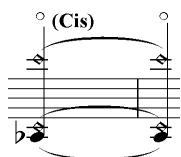
20\*) The same as 16\*).

21\*) *mp* is added in this edition. As mentioned in 17\*), a dynamic marking is missing at the beginning of bar 47. As the phrasing starts from the first beat of the bar, it is more sensible to anticipate the *mp* by three beats.

22\*) The G and C sharp double stop was originally notated in two voices, as shown below:



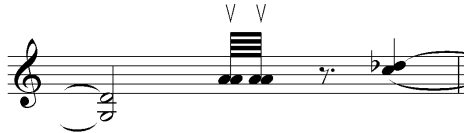
23\*) Nono writes 'Cis (C#)' on this pitch in the manuscript. However, as the harmonic and resultant pitch gives a C, IA plays a C here. The original is as follows:



Also, Nono uses a third harmonic for the fingering in above. IA prefers to use fourth harmonics as he finds the result more secure. The resultant pitches are originally notated with diamond note heads; however, they are corrected to be the same format as other resultant pitches.

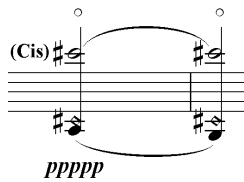
24\*) The second unison double stop D is originally given an up-bow marking in the manuscript. The double stop needs to be *crescendo*, at the same time it should be *sfff*. Hence, IA considers a down bow more suitable for this.

25\*) The rhythm in bar 53 was originally written as follows:

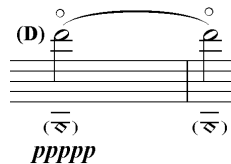


Again, the values do not add up to a 4/4 measure. IA suggests that two pitches at the beginning of the third beat should be double values, especially bearing in mind Nono's indication to play both pitches as up bows.

26\*) The original is as follows:



The second fingering position is different from the first. As the resultant pitches are tied, it is reasonable to assume that this is simply a mistake and the C# should remain throughout. The fingering position is replaced by a fourth harmonic in this edition.



27\*) The original is as follows:

The fingering positions are wrong. Therefore, they have been corrected.

28\*) Bar 61 was originally written as follows:

The quintuplet has been changed to double values.

29\*) The rhythm in bar 62 originally appeared as follows:

The musical score for bar 62 is shown in a single staff. It begins with a tempo marking of 144 and the instruction 'CRINI PONTE'. The tempo is then marked 'RALLENTANDO'. The first five measures consist of a single chord arpeggiated in groups of five notes. The next two measures consist of a single chord arpeggiated in groups of three notes. The final measure features a single note with a fermata above it and the instruction 'TASTO' below it. A double bar line follows. Above the staff, a box containing the number '30' is connected to the end of the bar by a horizontal line. Below the staff, the instruction 'ca 11'' is written.

IA suggests that this bar is notated incorrectly. In order to achieve a more regular *rallentando*, the values have been changed. IA also suggests an immediate rapid *rallentando* from tempo 144 in order to make the chords playable.

30\*) *Tasto* is written in the manuscript on the last pitch. Nevertheless, the last pitch should be held for eleven seconds with strong bow pressure. IA suggests that *tasto* is not practical; therefore, it is replaced with *normalle*.

### *Leggio 3*

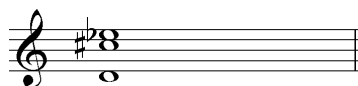
*Leggio 3* is notated to be played at a dynamic level of nine *pianos*. As this is impossible to realise at a literal level, it is taken to mean as intimate a realisation as possible. As the violinist is moving through six different positions on the stage and in the auditorium, IA chooses a position close to the audience and close to the sound projectionist for this section of the work. There is also an optional vocal part in this section, which IA chooses to omit.

A particular issue of notation in *leggio 3* is Nono's use of multiple voice lines. For a violinist, it gives an interpretational idea; however, in practice, it is easier to read when notated with double-stops, as in this edition.

1\*) The original notation is as follows:



2\*) The original notation for the chords between bars 3-6 is as follows:



The three pitches cannot be sustained for four beats. The notation is a realisation of IA's performance practice.

3\*) The original notation is as follows:



The three pitches cannot be sustained for four beats. The notation is a realisation of IA's performance practice.

4\*) The original notation is as follows:



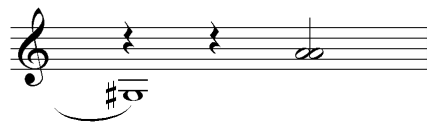
On the third beat, the notation requires the violinist to hold four pitches at once. The new notation is a realisation of IA's performance practice.

5\*) The original notation is as follows:



A unison D can only be played on the G and D strings. Hence, there is no possible way to hold the unison D and the low G# at the same time. The two redundant rests have been deleted. The notation is a realisation of IA's performance practice.

6\*) The original notation is as follows:



The three pitches cannot be held together for two beats. The notation is a realisation of IA's performance practice.

7\*) The original notation is as follows:









17\*) The original notation is as follows:



The three pitches cannot be held together. The notation is a realisation of IA's performance practice.

18\*) The original notation is as below:



The double unisons cannot be held together. The two rests (18a) are deleted in the edition.

The notation is a realisation of IA's performance practice.

### *Leggio 4*

1\*) Again, the values do not add up:



The second and third notes have been changed to double values.

2\*) A down bow here is suggested by IA. The down bow is suitable for a long *diminuendo*.

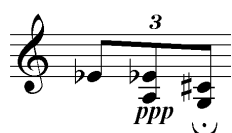
3\*) In the manuscript, *tasto* is written twice at the beginning of bar 4. In this edition, one *tasto* is deleted, and a dotted line is inserted to make this clear.

4\*) In the manuscript, there is no change to 2/4 in bar 6. Theoretically, it should still be a 4/4 bar; however, the two dotted 8<sup>th</sup> notes and two 16<sup>th</sup> note rests suggest that this bar has only two beats.

5\*) The *tremolo* values seem to be varied between bars 6 -7. However, *rapidissimo* is marked and it is safe to assume that the differences in *tremolo* are just due to unclear handwriting. IA interprets all *tremolos* in a fast manner.

6\*) Bar 7 has four beats. As the previous bar is changed to 2/4 in this edition, 4/4 is reinstated in bar 7.

7\*) The fourth beat of bar 8 was written in the manuscript as follows:



The last chord in the triplet above cannot be played on the violin. Both notes can only be found on the G string. IA transposes it an octave higher. For consistency of line here, he suggests that all three notes of the triplet are transposed up.

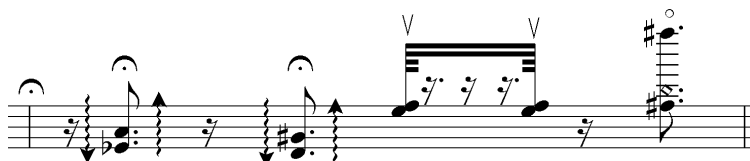
8\*) *Tasto* is placed ambiguously. IA logically interprets the *tasto* to start from the second beat of the bar.

9\*) Bar 10 had originally less than four beats:



The 8<sup>th</sup> note rest has been dotted.

10\*) The 3<sup>rd</sup> beat of bar 11 is notated incorrectly:



IA suggests doubling the value of each pitch in this beat.

11\*) IA assumes that, in the triplet 64<sup>th</sup> notes, the bottom B pitches are to be flat, taking this accidental from the first note of the bar.

12\*) Bar 14 appears in the manuscript as follows:



Again, the triplet is miscalculated, and should be double value.

13\*) Nono indicates *tasto* for the first beat in bar 15. As the bar is marked five *fortes*, IA suggests that, in order to achieve this dynamic, the *tasto* is omitted.

14\*) IA suggests that the *arpeggios* should be irregular.

15\*) Nono indicates that bar 16 should be a 5/4 bar. However, the total number of beats is slightly less than five. The original version is as follows:



To adjust the rhythm, the triplet (15a) on the third beat is given double value, and the following rest is deleted. The quintuplet in the fourth beat (15b) is also given double value. IA suggests that this is fast enough in order to be able to articulate the double stops clearly.

16\*) The original writing in bar 17 is as follows:

ALLA PUNTA  
TASTO PONTE  
LIBERO

180

ALLA PUNTA  
PUNTA  
TASTO

⌢ DURATE VARIATE

*fff* *fff* *VELOCISSIMO* *fff* *p*

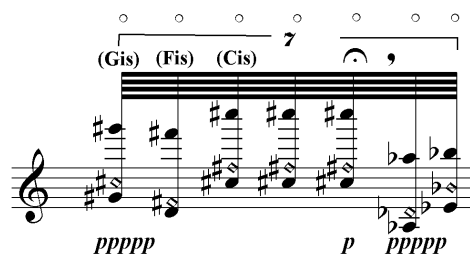
The last *tremolo* in the bar cannot be played on the violin. Again, both notes can be found only on the G string. IA transposes only the low G, an octave higher, leaving the C sharp in the original register. IA suggests that this is a dramatic point in the piece and that the material is best left in the lowest possible register.

17\*) The *tremolos* in bar 19 were originally notated as follows:



The two *tremolos* were given different speeds. However, in practice, the first *tremolo* (17a) is too fast to play, so the speed of the second *tremolo* has been adopted for both chords.

18\*) The original writing for the harmonics in bar 21 is as below:



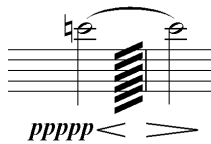
There are no errors here between the written harmonics and the resultant notes; however, IA suggests some different harmonics, achieving the same resultant pitches in a closer hand position, which makes the sequence much easier to perform.

19\*) The septuplet in bar 21 was originally written as below:



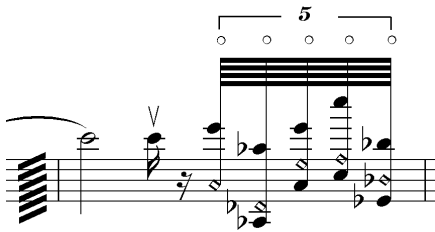
Again, the first beat has been notated with double values.

20\*) The original notation for the *tremolo* is as below:



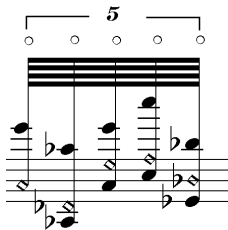
The notation above may suggest using two strings for this *tremolo*. IA suggests that Nono actually wanted a normal *tremolo* on one string, but just used this as a shorthand notation. The new edition reflects this with a *tremolo* sign on each note stem.

21\*) Bar 22 is a 3/4 measure; however, the rhythms still do not add up:



It seems the quintuplet should be at half speed.

22\*) The original writing for the quintuplet is as follows:



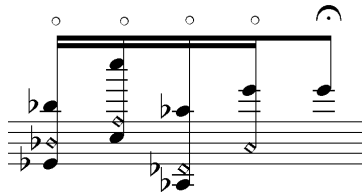
The first harmonic in the quintuplet is incorrect. It does not produce E, but A. None of the following harmonics are incorrect, but the last is changed to a fourth harmonic, purely as a point of personal taste, as IA finds it a more reliable fingering.

23\*) The original writing for the first beat in bar 23 is as below:



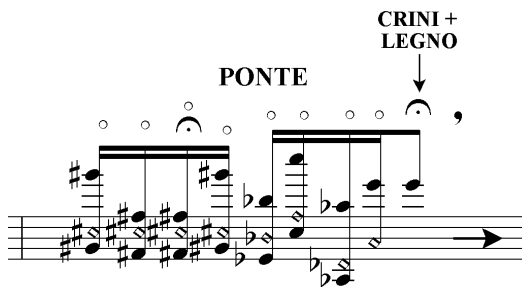
The resultant pitch for the middle two harmonics is incorrect. IA suggests, at this point, to play the note that the harmonics produce, C# and not F#. Both 4<sup>th</sup> and 5<sup>th</sup> harmonics can be fingered in one extended position on the D string.

24\*) The original writing for the second beat in bar 23 is as follows:

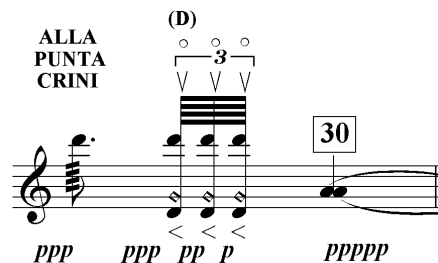


There are sharps on the C and F, earlier in the bar, so the second harmonic needs to be naturalised. Also the fingering positioning for the penultimate harmonic above is incorrect. A harmonic on A does not produce a resultant pitch E.

25\*) A time signature of 9/8 is added to clarify Nono's manuscript:



There is a system break, then...



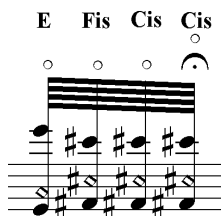
Again, as the bar does not add up, the last triplet is given double value.

26\*) Bar 24 is also one 16<sup>th</sup> note too short:



Again, a dot is removed on the first unison chord to avoid confusion and the last notes are given double values.

27\*) The original writing was as follows:



The second harmonic is obviously incorrect. As with many other ambiguities in this work, one has to some degree use intuition and deduce what Nono actually wanted. The harmonic and resultant pitch gives C#. The indication in words is that Fis, F# should be played. IA chooses to play F# because the same figuration appears in “*Hay Que Caminar*” *Soñando*, and it is clearly written as an F# there.

28\*) Bar 26 was originally written as follows:



There is a system break.



VELOCISSIMO TASTO  
CRINI AL PONTE  
G C  
3 3 3 3  
ppppp p

Again, the notes in the third beat are given double value.

29\*) IA suggests that, even though rapid and within a short time period, the arpeggiations should be irregular.

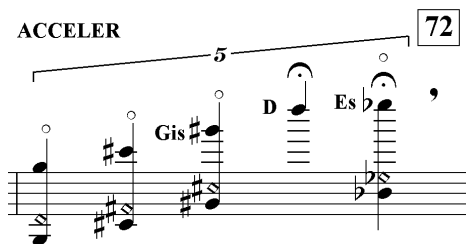
30\*) The original notation is as follows:

G C  
3 3 3 3  
ppppp

The high C is an error. The note should be G as the lower harmonic notation suggests. (See a similar passage in “*Hay Que Caminar*” *Soñando*.) The third harmonic fingering for the last four repetitions has been replaced with a 6<sup>th</sup> harmonic to allow less position changes.

IA suggests that the tempo of 144 is rather unrealistic for this group of notes and it should be played as *velocissimo* as possible.

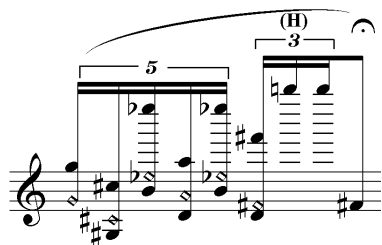
31\*) The original notation is as follows:



The fourth pitch in the quintuplet was not written as a harmonic. However, because of the high register, it would be better either to use the harmonic for this pitch or not to use harmonics for the last two pitches. It is interesting that, in “*Hay Que Caminar*” *Soñando*, where the same passage appears, Nono writes the first four notes as harmonics and the last as a normal note at pitch.

The fingering position for the last harmonic is incorrect. It does not produce Es (E flat). In “*Hay Que Caminar*” *Soñando* it is clear that the last pitch is E flat.

32\*) The original writing for the first beat in bar 34 is as below:



The fingering position for the second harmonic (32a) above is incorrect. IA suggests playing a C# harmonic, sounding one octave higher than in the original resultant pitch. Nono’s pitch could be realised with an octave harmonic on the low C#, but this involves a rather awkward hand position and is difficult to realise at the given tempo.

In this bar, IA has suggested using different harmonic fingerings, which achieve the same result and offer much less position movement for the left hand.

33\*) The original notation from bar 34 to the end is as follows:

144 30

ACCELERANDO

5

(H)

3

ALLA PUNTA

TASTO PONTE — TASTO

LIBERO

(H)

72 ACCEL

144

ALLA PUNTA  
PONTE - CRINI  
TENERE

LUNGAMENTE

CAMMINARE  
LENTAMENTE  
CON IMPROVISE  
FERMATE  
COME E  
CERLANDO E  
ANDONDO  
VERSO IL N.5  
LEGGIO IV

In this edition, the system above is divided differently from the original. The third beat of bar 34 is again given double values and this beat ends the bar, making it a 3/4 measure. The next three pitches are marked *Libero* and are now contained in a separate bar. The next bar is notated as a 4/4 measure and runs until the end of the *Leggio*, incorporating Nono's original two 2/4 bars. In the last beat of the movement, the first two notes are again doubled in value.

34\*) The original notation for the second beat in bar 34 is as follows:

In this example, except for the last two octave harmonics, all the fingering positions are incorrect. The harmonic mark 'o' is also missing from all harmonics in bar 34 in the manuscript.

The last pitch of the bar is suggested by IA to be played at pitch as an octave harmonic. There is an *ossia* suggested for those who cannot make this stretch, but this gives a pitch one octave higher.

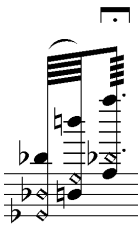
35\*) Because of the two repeated pitches in the 4<sup>th</sup> and 5<sup>th</sup> notes, IA suggests a different slurring for the 8<sup>th</sup> notes.

36\*) The original writing is as follows:



The fingering positions are correct. However, IA changes the fingering for the B to a fifth harmonic. This allows the three pitches to be played on one string.

37\*) The original writing is as follows:



Because of the rapidity of the first two pitches, IA uses a non-harmonic fingering for the B flat on the A string and then fingers the extended octave position to play the B harmonic in position on the E string. The last harmonic fingering is unclear. In the original, it looks like a C flat but is obviously a B flat.

### *Leggio 5*

1\*) The first rest in bar 18 was originally a dotted 8<sup>th</sup> note as below:



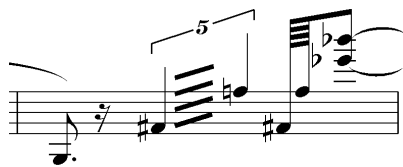
However, IA's suggestion this time is to leave the notes at the fast tempo and add a dot to the first rest.

2\*) Bar 20 was originally written as follows:



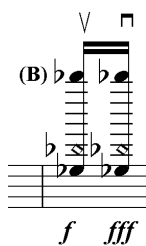
To correct the rhythm in the second beat, the two pitches have had their value doubled.

3\*) The amount of beats in this bar is unclear, as shown below:



IA suggests that the *tremolo* should be over two beats and should contain ten notes to each beat.

4\*) The original is as follows:



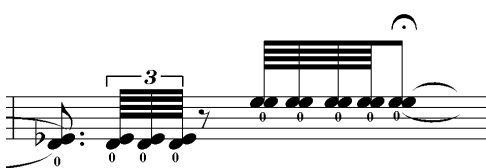
The fingering positions produce a B flat one octave too low.

5\*) The third beat in bar 24 was originally written as below:



The values do not quite add up, so the last rest has been modified.

6\*) The original rhythm in bar 25 is as follows:



This bar is given a 5/8 time signature. As with many previous examples, both fast note groupings have been given double values.

7\*) A slur is missing between the two F pitches in the top line.

8\*) Because of the very soft dynamic, IA suggests that, as an *ossia*, the D natural from bars 28 to 31 can be played as a harmonic.

9\*) In the original, the *crini* is placed somewhat haphazardly in bar 39. IA suggests that the whole long held note should be played '*legno + crini, ponte*'.

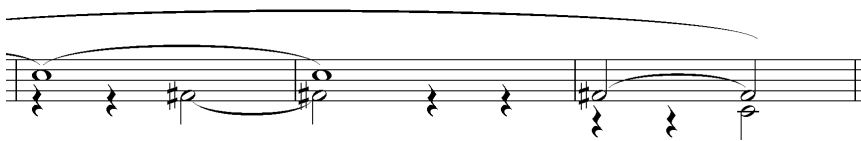
10\*) The previous pitch is notated '*legno + crini*'. Theoretically, this should continue, but IA decided that, with the *tasto* indication, it should be *normale (crini)*.

11\*) The original notation is as follows:



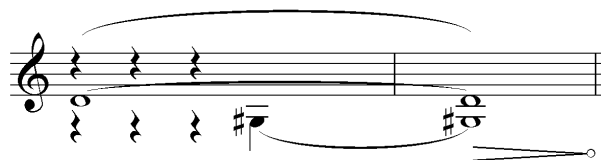
The notation has changed for clarity.

12\*) The original notation is as follows:



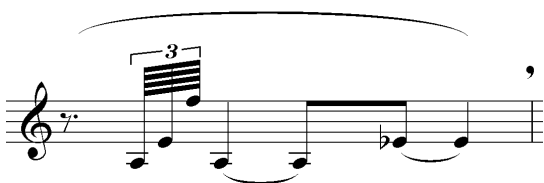
The notation has changed for clarity.

13\*) The original notation is as follows:



It is unclear why bar 52 is notated in three voices. The notation has changed for clarity.

14\*) The original bar does not add up:



The triplet is changed to double values.

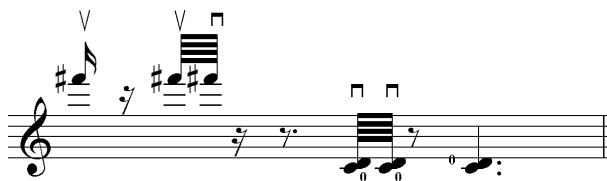
15\*) In the manuscript, on the second beat *ponte* is marked again. However, it is already *ponte* from the beginning of the bar. The second *ponte* is, therefore, deleted to avoid confusion.

16\*) The rhythm in bar 55 also does not add up:



The usual changes are made to double the value of the notes in the second and fourth beats.

17\*) Here is bar 57 as it appears in the original:



Both pitch groupings are doubled in value.

18\*) Bar 58 is notated in the manuscript as follows:



The triplet is doubled in valued, and the first rest is elongated to fill out the rest of the beat.

19\*) The original:

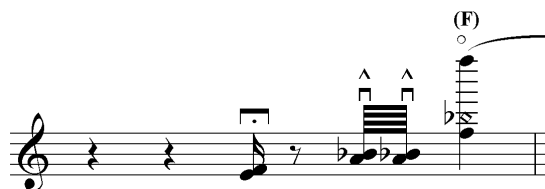


Because of the reduction from two voice writing, the rests are deleted in the edition.



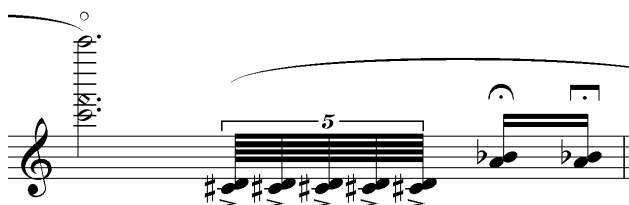
*Leggio 6*

1\*) Bar 1 as in the original notation:



The last two pitches of the third beat are doubled in value.

2\*) Bar 8 is also notated incorrectly:



The quintuplet has its values doubled.

3\*) The original is as follows:



The value of the triplet has been doubled.

4\*) The original is as follows:



Rhythmic adjustments again need to be made. The quintuplet and triplet groups have been doubled in value, not only to make the bar add up but also because of the very fast tempo. IA suggests a slightly slower tempo is more realistic. A dot is removed from the paused note in order for the bar to add up correctly. This does not in any way change the rhythm because of the *fermata*.

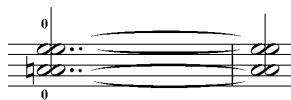
5\*) In the original, *tasto* is written on the second beat of bar 14. However, as it appears on the diad immediately before, the second *tasto* is omitted.

6\*) The *tremolo* marking is omitted on the first quarter note in bar 15:



It is assumed that the *tremolo* is continuous.

7\*) The original is as follows:



The four pitches cannot be held together. In previous examples of this problem, we have arpeggiated two of the pitches, as grace notes. However, this is not possible, as there are only two different pitches here. Therefore, the unisons are omitted. The double dot is also removed for clarity.

8\*) The original chord is as below:



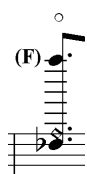
As discussed in 7\*), the above chord cannot be played. The same solution is offered here, omitting the unisons.

9\*) A natural sign is added, to cancel the E flat from the first beat of this bar.

10\*) In the original, A slur is omitted for the lower part.

11\*) The first chord in bar 25 was originally double-dotted. It has been again changed for clarity.

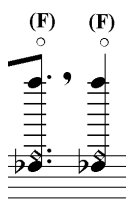
12\*) In the manuscript, the fingering position for the first pitch in bar 28 is a third harmonic, as follows:



A fourth harmonic replaces the third.

13\*) The 2<sup>nd</sup> note in bar 28 has been changed to a 16<sup>th</sup> note.

14\*) The original is as follows:

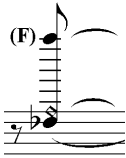


As 12\*).

15\*) The first quarter note rest in bar 29 was originally divided into two 8<sup>th</sup> note rests, as follows:

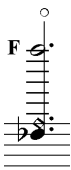


16\*) The original is as follows:



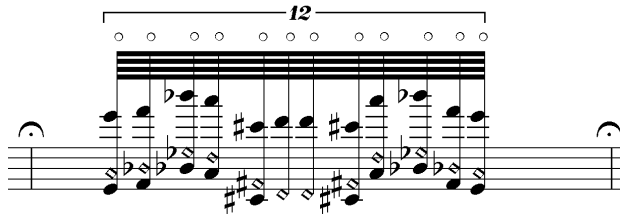
As 12\*).

17\*) The original writing is as follows:



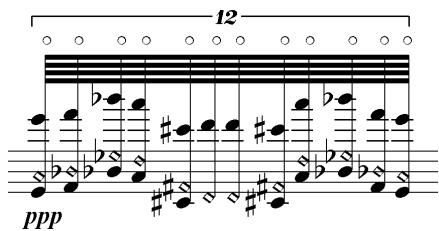
As 12\*).

18\*) The 12 pitches in bar 33 were originally written as below:



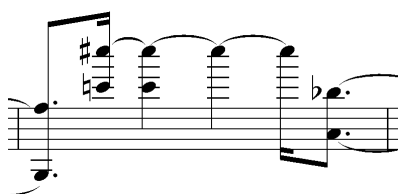
The tempo is much too fast, and the values are doubled. IA suggests that, at tempo180, it is still too fast for this 1/4 bar and a slower tempo should be adopted.

19\*) The harmonics in bar 33 were originally written as below:



The 6<sup>th</sup> and 7<sup>th</sup> harmonics have been replaced as they are incorrect above. They give a D, one octave too low.

20\*) In bar 36, slurs are originally missing between the lower C natural, as below:



IA also suggests that the double-stop should be sustained.

21\*) *Ponte* is redundantly written on the first beat of bar 38. As it is already *ponte*, the second *ponte* is omitted.

22\*) Bar 53 was originally given more than four beats, as is shown below:



The last rest has been changed to a 16<sup>th</sup> note.

## 2.6 Conclusion

Performing with a tape is a new ensemble style for acoustic instruments, and exploring possible performance strategies leads us to a further consideration about the sounds: the quality, loudness, pitch, etc.

In this chapter, the details of the eight-channel tape were mentioned, and a performance strategy was explored with the details of the tape. As an initial plan of a performance strategy in this essay, a one-hour length of the tape is simply divided into six sections, along with a number of sections in the violin part. So, a duration for each section is ten minutes, including the violinist's choregraphical movement. There are places where the tape only produces soft sounds during the period between 20'00" and 30'00", so it is only a matter of which quiet moment a violinist chooses to perform with.

In section 3, the violinist may be required to decide how to establish '*quasi inaudibile*' sounds, while deciding how to exhibit '*quasi inaudibile*' with the tape would be a challenge for section 3. As to my own choice in performing '*quasi inaudibile*', I would focus on the sound quality to achieve a feeling of inaudibility. One way of achieving this instruction is to convey sound frequencies to the listeners, even if the audience cannot hear the sound. Long held notes in this movement need bow controls, and to make even sounds would be a main focus.

When walking between the sections, the silence would be an important part in this work, and I respect such an aspect in this work. However, I think the live performance is a response to the tape, as the tape describes Gidon Kremer, including his physical motion. There are many footsteps and talking sounds in the tape and, in the same way, the violinist could cause footsteps during the performance. There is no need

to keep walking between two sections; so, if the violinist wants to create a silence, it is recommended to choose the shortest route between the music stands, and to stop walking in order to create the silences.

Needless to say, the sound projectionist has a responsibility to control the tape. However, there are distinctive soft and loud materials in the tape. If the violinist knows the timing of those materials, he could also control the sound mixing between the violin and tape.

In the second part of this chapter, some prominent notational issues in Nono's *La Lontananza* and "*Hay Que Caminar*" *Soñando* are observed. Firstly, the issue of Nono's harmonic writing was discussed. Secondly, some solutions for the impractical notes, the double stop 'G-C sharp', were explained. Finally, the notational issues in Nono's rhythmic writing were raised. The main concern here was how to resolve these issues; therefore, giving much clearer and practically correct information was always the intention in order to produce the performance edition in this thesis. Hence, none of the discussions here finally deny Nono's creative idea. However, the errors remain as issues for the violinist.

In order to make a decision for a fingering position, it is necessary to consider a transition between one pitch and the next pitch. Also, a third harmonic is awkward for the violinist. In the edition in this thesis, the fingerings are replaced with more practical ways for the violinist. There might be a question regarding different timbre between the third and fourth harmonics. However, most of the violinists would attempt a performance without blemish, rather than leave the sounds rough. I would prefer having comfortable finger combinations than explore the sound timbre during a performance.

In order to create varieties of sound results, microtones and different bowing techniques are very effective in *La Lontananza*. As Nono instructed, it may be possible to allow microtones to be used throughout this work. In fact, when listening to the tape, some fragments played by Kremer often sounded like microtones. If a violinist could try microtones, even changing the intonation during one bow stroke, the live sound would resolve with the pre-recorded sound. Combinations of *arco*, *col legno*, *sul ponticello* and *sul tasto* also produce varieties of timbre, but the violinist could explore the sound by using more than one stable bowing style. In particular, it is possible to try some qualities of *col legno* sounds. The timbre would be varied by different angles of the bow, and would be possible to roll over during a bow stroke. Unlike an ordinal bow stroke, *col legno* would not change the sound volume as a result of the violinist changing the bow angle, unless he added some pressure on the bow.

For *La Lontananza*, considering the sound concept for making the expression would be meaningful. Understanding the tape is another way of expression. The method of mixing the violin part and the electronics could be varied in every performance. Time is a measurement to play along with the tape, and also sound mixture between the two parts can depict different expression. It is always possible to find new tone colours in every performance.



### 3 Pierre Boulez' *Anthèmes 1* for solo violin and *Anthèmes 2* for violin and real-time devices

The very first version of Pierre Boulez' *Anthèmes* for solo violin was completed, and then premièred, by Irvine Arditti on 19 November 1991. Arditti (2009) describes the occasion as follows:

Boulez' *Anthèmes* first version was written for the 90th birthday of Alfred Schlee in 1991. The Arditti Quartet played a concert in Vienna at the Konzerthaus on 18th November with 34 short tribute pieces. The pieces were supposed to be one minute long, but some were longer, like the Boulez and the solo viola movement *Loop* from Ligeti's viola sonata. Berio also wrote a short quartet piece which was the forerunner of his quartet *Notturmo*. None of the pieces were commissioned, but written as a tribute to Schlee, the president of Universal Edition.

*Anthèmes* was revised several times after its première, and the most recognisable version of *Anthèmes 1* was completed for the international Yehudi Menuhin Competition in 1992.<sup>129</sup> Moreover, it was further extended to *Anthèmes 2* for violin and real-time devices in 1997.<sup>130</sup>

*Anthèmes* was originally written as part of Boulez' earlier work ...*explosante-fixe...*,<sup>131</sup> which 'originated in 1971 as Boulez' contribution to the collection of sixteen

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<sup>129</sup> Boulez, P., 1992. *Anthèmes 1* [Music Score] (Vienna: Universal Edition).

<sup>130</sup> Boulez, P., 1997. *Anthèmes 2 pour violon et dispositif électronique* [Music Score]. (Vienna: Universal Edition).

<sup>131</sup> Boulez, P. and Fink, W., 2000. 'Wolfgang Fink in Conversation with Pierre Boulez. 'Translated from French by S. Spencer [A sleeve note] (Berlin: Deutsche Grammophon), pp.11-15.

small pieces written for and published in *Tempo* under the title *Canons and Epitaph*.<sup>132</sup> Boulez explains ‘in writing *Anthèmes 1*, I took part in the original violin line from ...*explosante-fixe*..., and, using it rather like a brick from an existing monument, turned it into something new.’<sup>133</sup>

*Anthèmes 2* for violin and real-time devices ‘has evolved from *Anthèmes 1*.’<sup>134</sup> According to the website of the publisher, Universal Edition, *Anthèmes 2* is about 24 minutes<sup>135</sup> long, while *Anthèmes 1* takes about ten minutes.<sup>136</sup> Also, the duration of *Anthèmes 2* is varied. For example, a recording performed by the violinist Hae-Sun Kang takes only 20 minutes 27 seconds,<sup>137</sup> while my own performances take about 17-18 minutes.

When describing *Anthèmes 2*, Wolfgang Fink states: it ‘provides us with both an analysis and an interpretation of *Anthèmes 1*: it is a text in its own right and at the same time a subtext of the earlier piece.’<sup>138</sup> Certainly, there is a strong link between *Anthèmes 1* and *Anthèmes 2*. Meanwhile, Boulez mentions (2000, p.11) the relationship between ...*explosante-fixe*..., *Anthèmes 1* and *Anthèmes 2* as follows:

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<sup>132</sup>Bradshaw, S.,1973. ‘...*explosante-fixe*...’ *Tempo*, New Series, No. 106 (Sep.1973), pp.58-59.

<sup>133</sup> Boulez, P. and Fink, W., 2000. ‘Wolfgang Fink in Conversation with Pierre Boulez.’ Translated from French by S. Spencer [A sleeve note] (Berlin: Deutsche Grammophon), p.11.

<sup>134</sup> Fink, W., 2000. ‘Metamorphoses of solo music in three works by Pierre Boulez.’ [A sleeve note] (Berlin: Deutsche Grammophon), p.8.

<sup>135</sup>Universal Edition, ‘Pierre Boulez *Anthèmes 2*’ [online] Available at:<<http://www.universaledition.com>>[Accessed 27 May, 2009].

<sup>136</sup> Universal Edition, ‘Pierre Boulez *Anthèmes 1*’ [online] Available at:<<http://www.universaledition.com>>[Accessed 23 May 2009].

<sup>137</sup> Boulez, P., 2000. *Anthèmes 2, Messagesquise, Sur Incises*. Performed by Ensemble Intercontemporain and Pierre Boulez. [CD] (Berlin: Deutsche Grammophon).

<sup>138</sup> Fink, W., 2000. ‘Metamorphoses of solo music in three works by Pierre Boulez.’ [A sleeve note] (Berlin: Deutsche Grammophon), p.9.

*Anthèmes 1* is still fairly close to the part from ...*explosante-fixe*..., although I must stress that it was only a very brief passage that was involved. *Anthèmes 2*, by contrast, takes up and develops *Anthèmes(1)* using live electronics resources and is no longer directly related to ...*explosante-fixe*...

*Anthèmes 2* requires an electronic patch using the Max/MSP software, which has been developed by IRCAM in recent years. It requires eight speakers: two for amplified violin and six for electronic projections.<sup>139</sup> The feature of the electronics is a 'score following' system. Boulez (2001, p.68) mentions the idea of the score, as follows:

The 'score follower', where the computer follows the score which you then can have, acts as a triggering mechanism within the performance. Later still I linked the instrumentalist and the score to a third aspect, called an 'artificial score'. Here the computer reads the data of the performer's performance to modify the artificial score and have an interaction between the player and the machine, as in the violin part interacting with the computer in *Anthèmes 2*.

Before Boulez conceived of the idea of allowing a computer to follow the performer, performing with a pre-recorded sound material had gained in popularity. However, as was discussed in the previous chapter, performing with the pre-recorded tape restricts the performer. With a pre-recorded tape, the performer accompanies the electronics, and there is no inter-communicative relationship between the two mediums. So, giving a hearing function to the electronics might be such an innovative idea.

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<sup>139</sup> IRCAM. ed., 1997-2005. Performance Handbook *Anthèmes 2*, Pierre Boulez (Paris: IRCAM).

Regarding the electronic part, Boulez says ‘electronics are really an expansion of the instrumental world.’<sup>140</sup> He also says ‘the goal of electronics in this piece is to thicken [charge] the sound.’<sup>141</sup> More importantly, how to perform with the electronics is a question for the performer. As we can see in the above quotations, Boulez provides a new concept of performing with the electronics. It seems he tries to change the performance environment when we use electronics. If Boulez’ idea is achieved to be real, the violinist should be able to play with the electronics comfortably: can a violinist play with the electronics the way he plays with other musicians, or is it still a new experience?

Now, let me draw your attention to the construction of the two *Anthèmes*. Firstly, what does the title imply? Boulez explains that *Anthèmes* ‘is a reference to both hymn and theme’.<sup>142</sup> He then follows ‘it is a hymn in that there is a succession of verses and paragraphs which are constructed as hymns, that is as a kind of refrain’.<sup>143</sup> So, is this a structure of the *Anthèmes*, and were they constructed in such a simple way?

It will be useful to understand the structure of these works, and how they are developed from the old version to the electronic version. Boulez (2001, p.70) gives an answer:

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<sup>140</sup> Boulez, P. and Mawhinney, S., 2001. ‘Composer in Interview: Pierre Boulez.’ *Tempo*, New Series. No.216 (Apr., 2001), p.3.

<sup>141</sup> Boulez, P. 1997. ‘Public discussion on *Anthèmes 2* with Peter Szendy.’ Translated from French by J. Goldman. In: Goldman, J., 2001. *Analyzing Pierre Boulez. Notes on Anthèmes for violin solo: Creating a labyrinth out of another labyrinth*. M.A. Université de Montréal, p.109.

<sup>142</sup> Ibid., p.106.

<sup>143</sup> Ibid.

In both *Anthèmes* there are strophes, but the ideas are always coming back in a different order. That is what I call a ‘mosaic type form’, which happens also in ...*explosante-fixe*... . Ideas come back, but you never can foresee when they come back. That is a dialectic between recognition and the impossibility of foreseeing the recognition, as happens in *Répons* with the spiral form... Here, the musical ideas are enriched by what they have encountered. It is always the same form or arch with changing combinations or mosaics.

The above quotation confirms that there is a strict rule when organising all the elements in both works. On the other hand, Boulez mentions there is an aleatoric aspect, particularly in *Anthèmes 2*, and this point concerns the relationship between the performer and electronics. Boulez (2001, p.71) further explains:

The electronics have nothing to do with the form. It has to do with the motives played by the violin[...] For instance, when there is some action on the violin, when it is prolonged by some electronic devices, let’s say sampling and so on, you can have *pizzicatti* which are very irregular in the violin and which are accompanied by samplings of *pizzicatti* in the computer, but completely aleatoric. Then you have a mixture of the aleatoric and written-down values, which is very interesting because it is completely unforeseeable.

Doubtless, the strictly organised form is juxtaposed with aleatoric aspects in *Anthèmes 2*. It is a dichotomy between highly organised and unorganised elements. The basic construction in the two *Anthèmes* can be very similar, but the concepts are not exactly the same. Also, the sound impact is hugely different between the acoustic work and the electronic version.

A discussion in this essay will be focused on understanding the compositional style of both *Anthèmes* by doing a musical analysis. Furthermore, a study will explore a

performance style to perform with the electronics. In this essay, the sections are divided, as shown in Figure 3.1 below. The section numbers are given according to *Anthèmes 2*.

<b>Libre</b>	<b>/I</b>	<b>I</b>	<b>1/II</b>	<b>II</b>	<b>II/III</b>	<b>III/IV</b>	<b>IV</b>	<b>IV/V</b>	<b>V</b>	<b>V/VI</b>	<b>VI-1</b>	<b>VI-2</b>	<b>VI-3</b>
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**Figure 3.1: section numbers in *Anthèmes 1* and *2***

### 3.1 Compositional process – from *Anthèmes* to *Anthèmes 1*

In this section, I would like to focus on *Anthèmes*, which is the first version of *Anthèmes 1*. *Anthèmes* is much shorter than the current version of *Anthèmes 1*. Arditti has recorded an excerpt of *Anthèmes*, which takes 3'14". In the recording, Arditti plays from section VI and, for later versions of *Anthèmes*, section VI lasts for about half of the piece. So, presumably the first version of *Anthèmes* takes about six and a half minutes, which is much shorter than *Anthèmes 1*.<sup>144</sup>

The materials in *Anthèmes* are much simpler when compared to *Anthèmes 1*. A dramatic development between *Anthèmes* and *Anthèmes 1* takes place in the last section, section VI. Figure 3.2 below shows the beginning of section VI-2 in *Anthèmes*. The pitches are kept simple, without double stops. On the other hand, there are some double stops applied to the material in *Anthèmes 1* (see figure 3.3). Each material is varied by pitches being added in *Anthèmes 1*.

Figure 3.2: the beginning of section VI-2, *Anthèmes*<sup>145</sup>

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<sup>144</sup> According to Universal Edition's website, *Anthèmes 1* is about 10 minutes. Universal Edition, Pierre Boulez 'Anthèmes 1' [online] Available at: <<http://www.universaledition.com>> [Accessed 23 May 2009].

<sup>145</sup> Boulez, P., 1991. *Anthèmes* [Music Score] (Vienna: Universal Edition).



**Figure 3.3: the beginning of section VI-2, *Anthèmes 1***

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Similarly, section IV was a much simpler form in *Anthèmes* (see Figures 3.4 and 3.5). The pitches appearing in the top line of *Anthèmes 1* have already been used in *Anthèmes*; however, they were originally just a single line in *Anthèmes*.



**Figure 3.4: the beginning of section IV, *Anthèmes***



**Figure 3.5: the beginning of section 4, *Anthèmes 1***

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Also, the greatest difference between the two versions is the beginning. Surprisingly, the opening section, *Libre* of *Anthèmes 1*, is not included in *Anthèmes*; section I is the beginning of the piece in this version. Therefore, it can be presumed that section I was written earlier, while the opening section of *Anthèmes 1* was perceived in the later stages of the composition.

Appendix 3.1 shows us a number of different versions of *Anthèmes* to the first publication of *Anthèmes 1* from Universal Edition.



In 2008, scores used by the Arditti Quartet have been catalogued and copies have been archived in the Paul Sacher Foundation, in Basel, Switzerland. The scores mentioned in Appendix 3.1 are part of the collection. Catalogue numbers described in the list are given by a librarian of the archive, and it appears that the numbers are in chronological order.

Among these manuscripts and different engraved copies, a huge development was made between catalogue number 1006 and 1009. In 1008, sections IV and VI are revised to the style, which has remained in the current version of *Anthèmes I*. However, in no. 1008, it still begins from the current version's section I. Finally, the opening of *Anthèmes I* can be recognised in no. 1009.

In any compositions, the beginning might be the most important part, as the motif appearing in the beginning is developed and constructs the composition. Hence, it is easy to believe the composer starts writing from the beginning to the end in order. Nevertheless, this belief could be dismissed for *Anthèmes*.

Apart from the manuscripts in the collection of the Arditti Quartet, Boulez' sketch materials are separately kept in the Paul Sacher Foundation. Among these, a sketch (catalogue no. 589-0453) appears to be an important draft, as it contains all materials used in *Anthèmes*. It is difficult to guess when this sketch was made. Although the sketch appears to be a draft, double stops in section VI used in no. 1008 have already appeared in this sketch. Also, the section order in this sketch is intriguing, as summarised in Figure 3.6 below:

<b>Section Numbers</b>	VI-1 and VI-3	II	I	III	V	IV	VI-2
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**Figure 3.6: the section order in a sketch  
(Catalogue no. 589-0453, the Paul Sacher Foundation)**

If sketch no. 589-0453 was made just before version 1005, it might reveal an order of the compositional process. If this is a sketch written just before version 1008, it still demonstrates an order of revision. Either way, it implies the writing order. It would be possible to guess that Boulez started working from the last section, then changes the section order in the final score.

Figure 3.7 shows extracts from Boulez' sketch (catalogue no. 589-0446). The date of this sketch is unclear, but the materials written in the sketch look to be a rhythmic chart, and it can be positively believed that this is a sketch made in the early stages of composition.

In sketch catalogue no. 589-0448, some draft materials for section III can be recognised. Figure 3.8 is also an extract from no. 589-0448. The material looks to be a draft chart for the rhythm. Here, we can see that different rhythmic values, dynamics and pitches are systematically combined. As it shows '3x4' on the left, the pitches are displayed in three layers, and each layer consists of four pitches.

From catalogue nos. 589-0446 and 589-0448, we can learn that the rhythm has been mathematically planned for *Anthèmes*. No. 589-0448 particularly tells us that the pitch and rhythm have been made coherently.



**Figure 3.7: Boulez' early sketch for *Anthèmes***  
(Catalogue no. 589-0446, the Paul Sacher Foundation)

12

3 x 4

<i>ff</i>	<i>mf</i>	<i>ff</i>	<i>ff</i>	<i>mf</i>	<i>p</i>	<i>p</i>	<i>mf</i>	<i>f</i>	<i>f</i>	<i>mf</i>	<i>ff</i>
sol $\flat$	la	do	la $\flat$	mi	fa	sib	la $\flat$	sol $\flat$	do $\flat$	mi $\flat$	re $\flat$
//	[musical notation]		/	/	/	/	/	/	/	/	//

**Figure 3.8: Boulez' early sketch for *Anthèmes***  
(Catalogue no. 589-0448, the Paul Sacher Foundation)

The above discovery is meaningful when understanding the compositional process. However, would there be any practicality in knowing the compositional process for the performer? In fact, I reflected the compositional process in my practice sessions. So, I practised the sections in the order they were constructed, rather than just to play through from the beginning to the end. I found this way of practice productive, and some aspects of this work I know have gained from my own way of fragmented practice. So, I was able to re-build the composition through my own practice. The performance can deliver many aspects of the composition to the audience. A part of it could be the understanding of the compositional process.

## 3.2 Pitch, form, space and time

In this section, some details in *Anthèmes 1* and *2* will be closely examined. Boulez (1989, p.9) mentions some important aspects in his music, as follows:

What I really want is this relationship between pitch, form, space and time. All the distribution of material is conceived like that. And this dialogue of space, time, form and pitch affects the very writing of the piece in every detail.

As Boulez states above, this section considers ‘pitch, form and time’ in the two *Anthèmes*. Firstly, the pitches will be considered by focusing on the septuplets in section I. Secondly, proportions of *Anthèmes 1* and *2* will be observed, focusing in particular on their forms. Finally, the concept of time will be discussed by considering the temporal structure and nature of the electronics.

### 3.2.1 Analysis of *Anthèmes 1* for solo violin

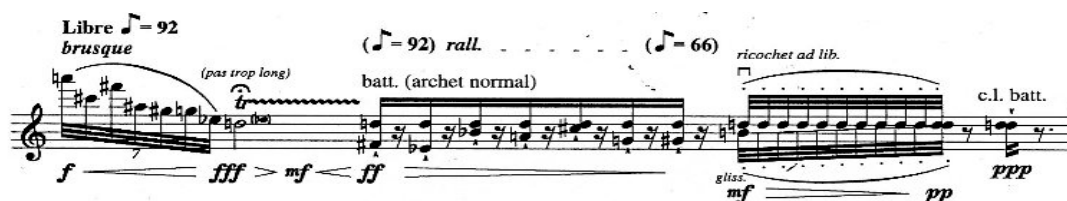
In the musicologist Jonathan Goldman’s thesis,<sup>146</sup> Goldman attempts a semiotic analysis on *Anthèmes 1*. However, his arguments in the thesis are often not supported well enough. For example, Goldman says the ‘A#’, which is one of pitches used for a septuplet in the opening of *Anthèmes 1* (see figure 3.9, below), ‘will be treated as ornamental.’<sup>147</sup> He explains the reason as ‘the pitch-class set which is finally opted for (i.e. the seven notes of the opening figure minus A#, plus the D which follows the

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<sup>146</sup> Goldman, J., 2001. Analyzing Pierre Boulez. Notes on *Anthèmes* for violin solo: Creating a labyrinth out of another labyrinth. M.A. Université de Montréal, pp.85-98.

<sup>147</sup> Ibid., p.87

septuplet) has more explanatory value in the piece.’<sup>148</sup> Indeed, Boulez mentions the importance of D in *Anthèmes 2*.<sup>149</sup> However, Goldman does not provide a good enough evidence to make a link between the selection of six pitches and D. Moreover, as there are extra pitches between the first septuplet and the D trill in the opening of *Anthèmes 2*, it is presumed that the septuplet and pitch D are not a set; therefore, it is more difficult to understand a direct connection between septuplet and D.



**Figure 3.9: the beginning of *Anthèmes 1, Libre***

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As a study in the previous section reveals, the section order of the piece might not show compositional order. Hence, it is doubtful to believe the beginning of this work shows the main pitch row used in this piece. The set of the pitches in the opening section might be transformed into different shapes, and appears in several sections in this work. However, it is difficult to discover systematic development of the opening pitch. For example, the intervals of the opening septuplet are irregular, but also the same intervals appear in the septuplets in the section I.

<sup>148</sup> Goldman, J., 2001. *Analyzing Pierre Boulez. Notes on Anthèmes for violin solo: Creating a labyrinth out of another labyrinth*. M.A. Université de Montréal, p.87.

<sup>149</sup>Boulez, P. 1997. 'Public discussion on *Anthèmes 2* with Peter Szendy.' Translated from French by J. Goldman. In: Goldman, J., 2001. *Analyzing Pierre Boulez. Notes on Anthèmes for violin solo: Creating a labyrinth out of another labyrinth*. M.A. Université de Montréal, p.107. Boulez explains the last note D as: 'this ending is already alluded to at the very beginning, in which there is already a polarization around the note D.'

The most ambiguous section is section II. This is the most rigorous section in the piece, and is recapitulated later in section VI-2. Apparently, the construction here is not clear, and intervals on double stops are unsystematic.

There is a difficulty in finding a logical way to understand the construction. Some motives seem regularly developed while, at the same time, many elements are transformed spontaneously.

### 3.2.2 Pitch

As was mentioned, *Anthèmes* is derived from an early composition ...*explosante-fixe*...<sup>150</sup> Boulez (1997, p.107) explains the relation between ...*explosante-fixe*... and the two *Anthèmes* as follows:

[...] In this case it is a tiny fragment of...*explosante-fixe*... To be precise, it begins with a mere seven notes. I find that starting points are not of great importance. What is important is the trajectory that one takes. And this trajectory, as you say, is seven notes which lasts perhaps five seconds; as the piece lasts twenty minutes, there is much room for invention.

So, it is the seven notes in the two *Anthèmes* linking to ...*explosante-fixe*... In this section, taking into account the above statement, a series of seven pitches in *Anthèmes I* are examined.

Appendix 3.2 shows a study on septuplets used in section I. The septuplets are a mixture of descending and ascending scales. There is no evidence that ascending septuplets are retrograde forms of descending septuplets. Hence, descending scales are reordered in retrograde form to compare equally with the ascending scales. In the table

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<sup>150</sup> Bradshaw, S., 1973. '...*explosante-fixe*...' *Tempo*, New Series, No. 106, September, pp.58-59.

here, the pitches are transformed into pitch classes, and are also aggregated. As Boulez mentions, ‘at the very beginning [...] there is a polarization around the note D’<sup>151</sup> and, therefore, D is set to be fixed-zero in this analysis.

It is hard to find rules among the septuplets. Septuplet 1 appears in the opening *Libre*. The pitch class of septuplet 1 consists of five chromatic pitches and two isolated pitches, with interval-class 2 constructing the septuplet.

Septuplets 5 and 6 are very similar. Both septuplets include three chromatic pitches, interval-class 2, single pitch, interval-class 2, three chromatic pitches, interval-class 2 and single pitch.

Although there are no clear coherences within those septuplets, there are some corresponding features among the septuplets. Firstly, the same pitch has never been repeated within the same septuplet. This reveals an aspect of the serial structure in *Anthèmes 1*. Secondly, apart from septuplet 1, two or three sets of chromatic pitches and one or two single pitches construct the septuplets. Interval-class 2 connects between the group of chromatic pitches and the single pitches.

It seems the septuplets are written systematically; however, the rule is not strictly followed. They are freely developed, and it is rather difficult to find a serial structure behind the development.

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<sup>151</sup>Boulez, P. 1997. ‘Public discussion on *Anthèmes 2* with Peter Szendy.’ Translated from French by J. Goldman. In: Goldman, J., 2001. *Analyzing Pierre Boulez. Notes on Anthèmes for violin solo: Creating a labyrinth out of another labyrinth*. M.A. Université de Montréal, p.107.

### 3.2.3 A comparative study of *Anthèmes 1* and *Anthèmes 2*

In this section, *Anthèmes 1* and *2* are compared in detail. As was mentioned before, the material used in *Anthèmes 1* is further developed in *Anthèmes 2* by adding new elements to the original material.<sup>152</sup> A comparison chart (see Appendix 3.3) in this essay shows us a compositional development from *Anthèmes 1* to *Anthèmes 2*.

Figure 3.10 shows us that the bar numbers and proportions of *Anthèmes 1* take up *Anthèmes 2*. Therefore, the percentages here tell us directly how mathematically *Anthèmes 2* is expanded from *Anthèmes 1*.

**Figure 3.10: numbers of bars in Boulez' *Anthèmes 1* and *Anthèmes 2***

Sections	<i>Anthèmes 1</i> (bars)	<i>Anthèmes 2</i> (bars)	Proportions of <i>Anthèmes 1</i> in <i>Anthèmes 2</i> (%)
<b>Libre</b>	1	3	33
<b>/I</b>	1	1	
<b>I</b>	11	16	69
<b>I/II</b>	1	1	
<b>II</b>	30	118	25
<b>II/III</b>	1	1	
<b>III</b>	20	58	34
<b>III/IV</b>	1	1	
<b>IV</b>	22	39	56
<b>IV/V</b>	1	1	
<b>V</b>	7	29	24
<b>V/VI</b>	1	1	
<b>VI-1</b>	15	53	28
<b>VI-2</b>	31	110	
<b>VI-3</b>	22	46	48

<sup>152</sup>Fink, W., 2000. *Metamorphoses of solo music in three works by Pierre Boulez*. [A sleeve note] (Berlin: Deutsche Grammophon), p. 8.



The proportion of *Anthèmes 1* appearing in *Anthèmes 2* is much less in sections II, V and VI-1. Sections I, IV and VI-3 are almost doubled, and the opening section and section III are expanded three times in *Anthèmes 2*. Figure 3.10 proves the two *Anthèmes* are expanded irregularly.

Appendix 3.4 is a list of expression markings and metronome markings in the two *Anthèmes*. Some expression markings are the same in both works; however, they are not always the same. In particular, metronome markings are often different.

As a hypothesis, *Anthèmes 2* may need a more precise tempo setting in order to coordinate with the electronics. However, in the case of *Anthèmes 2*, the violinist is supposed to be followed by the electronics.<sup>153</sup> Also, as we can see, the expression markings, such as '*très flexible*', allow the violinist to have temporal freedom. This point will be discussed with the details of the electronics later in this chapter.

The dynamics are another contrasting element in the two works. The levels of dynamics are quite often changed more significantly in *Anthèmes 2*: a little *crescendo* and *diminuendo* are added to many more places than *Anthèmes 1*.

Although the styles are the same in the two works, there are a couple of new violin techniques used in *Anthèmes 2*. In section I, there are trills with a moving melody, which form double stops in *Anthèmes 1* (figure 3.11). These are changed into a single line in *Anthèmes 2*, while the time signature is also changed (figure 3.12). Also, three triplets with a slur, which should be played by a *ricochet*<sup>154</sup> in section VI-3, is a

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<sup>153</sup> Pietro, R.D., 2001. *Dialogues with Boulez*. (Maryland: Scarecrow Press, Inc.), pp. 68-71.

<sup>154</sup> 'In this bowstroke the bow is thrown on the string, making contact in its upper half, so that it will bounce or 'ricochet' off the string from two to six or more times.' Walls, P., 2010. Bow In: Laura Macy, ed. 2007. *Grove Music Online*. [online] Available at: <<http://www.oxfordmusiconline.com>> [Accessed on 18 November 2010].

new element in *Anthèmes 2* (figure 3.13). The technical details in both *Anthèmes* are summarised in Appendix 3.5.



Figure 3.11: from section I, *Anthèmes 1*



Figure 3.12: from section I, *Anthèmes 2*



Figure 3.13: from section VI-3, *Anthèmes 2*

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It has been proved that the basic construction has not changed in the two works. In other words, very few details have been eliminated from *Anthèmes 1*. Therefore, the main concept of *Anthèmes* has not changed, even when transformed into the electronic version, being a modern ensemble style.

### 3.2.4 Tempo markings, time and the electronics

As mentioned, one of the significant differences between *Anthèmes 1* and *2* is metronome markings, and *Anthèmes 2* is given more detailed tempo changes (See Appendix 3.4). In section I, the metronome marking is ‘a quaver = 92 (a crotchet = 46)’

in *Anthèmes 1*. In *Anthèmes 2*, the same is indicated as ‘a quaver = 92/98’. In fact, *Anthèmes 2* shows us more variety in the metronome markings. For example, section VI-2 is given a different metronome marking almost every three or four bars. Moreover, *Anthèmes 1* is only given one metronome marking in section III. However, the metronome markings are changed nine times in the same section of *Anthèmes 2*.

The metronome marking is obviously a tool by which to control ‘time’. Time is such a significant aspect in music. Boulez (1997, p.112) mentions his notion regarding time as follows:

We can define time briefly as two categories which are superimposed and which can be used precisely in a superimposed manner. Time is first of all numerical relationships – a measure of 4/4, with a dotted eighth note, an eighth, etc. There is a time signature, time with a pulsation made up of greater or smaller values which are placed in relation to this pulsation. This I call ‘numerical time.’ This sort of time is discontinuous. Continuous time, on the other hand, is velocity. The numerical relationships can be altered by changing this velocity.

In the above statement, Boulez clearly separates the two dimensions in the concept of time. One is ‘numerical time’, and another dimension is ‘velocity’. However, a remarkable point is that Boulez includes the rhythmic relations of the pitches within ‘numerical time’, therefore using the rhythm as a part of a tool to control ‘velocity’. So, the above statement reveals Boulez’ way of constructing the composition. Time signature and rhythm construct small segments of the work, then metronome markings control them. Furthermore, the metronome markings control the ‘velocity’ of the performance.

The role of the electronics partly explains the temporal settings in *Anthèmes 2*. A function of the electronic part to follow the violinist is an IRCAM-based system called *Antescofo*. This ‘is a modular anticipatory score following system that holds both instrumental and electronic scores together and is capable of executing electronic scores in synchronisation with a live performance and using various controls over time.’<sup>155</sup> The feature of the system is that ‘it enables concurrent representation and recognition of different audio descriptors (rather than pitch), control over various time scales used in music writing, and enables temporal interaction between the performance and the electronic score.’<sup>156</sup> So, this explains how a performer’s tempo setting can trigger the system.

In order to perform with electronics, has the detailed tempo structure developed? Boulez (1997, p.107-8) explains his musical concept for *Anthèmes 2* as follows:

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<sup>155</sup> Cont, A., 2008. *Antescofo: Anticipatory Synchronization and Control of Interactive Parameters in Computer Music*. UCSD, Music Department and IRCAM. [online] Available at: <<http://cosmal.ucsd.edu/arshia/index.php?n=Antescofo.About?action=bibentry&bibfile=mypapers.bib&bibref=cont08a>> [Accessed 10 June 2009]

<sup>156</sup> Ibid.

For me, what is interesting about the electronic piece is that the violinist supplies all the material which we require of him, with all the necessary freedom. There is absolutely no constraint on him, no temporal constraint; in particular, he need not worry about synchronization, which could otherwise stifle his imagination. On the contrary, we take what the violinist plays in order to make something else out of it. It seems to me that there is an interesting relationship here between what is produced by a human being, and what can be produced by a machine, which is, of course, also the product of a human being, only obtained through other circuits. There are then two circuits: an extremely direct, intuitive circuit and a much more analytical one. And it is in a particular piece that these two circuits intersect.

In Boulez' original notion, performing with electronics does not mean restriction for the violinist. Boulez clearly says that he wants the violinist to react as freely as his musicianship allows. Indeed, the *Antiscofo*'s system specification is mostly based on the performer's temporal reaction. If the violinist keeps a precise tempo as it is written in the score, will it lead to a better performance result?

Boulez' idea to grant freedom to the performer in order to play with the electronics is such an innovative idea. At the same time, the performance result should be a union between the human and electronics. Having being free of limitations does not mean a performer can be ignorant of the electronics. In any style of ensembles in the acoustic compositions, the performers usually listen to each other, and aim to play together. Why, then, should we expect such a detached relationship once a human starts to play with electronics? In the composition discussed here, there may be some options the violinist can take in order to work with the electronics.

The various speed differences could be made by the violinist's own interpretations within a performance, and often they are as a result of expression. So, the

expression is another aspect in the performance, which might affect the speed of a performance. However, when the performer needs to play with the electronics, is it still permissible to have flexibility of the tempo?

As to *Anthèmes 2*, the tempo is a vital part of the performance. Firstly, the electronic patch of *Anthèmes 2* is built to be able to accommodate the violinist's tempo.<sup>157</sup> This is so that the electronic patch is given the temporal information in order to recognise the violin part at a live performance. Secondly, there are few fixed pre-recorded sounds in the electronic patch, and it does not give a temporal flexibility. The tempo indication is also a guidance to perform with the electronics and, if the violinist maintains a strict tempo, he can automatically coordinate with the pre-recorded electronic part. Ideally, the violinist needs to follow the tempo markings as accurately as possible.

Tempo is such an important aspect for performing with the electronics. However, the recording analysis of the *Freeman Etudes* showed us that the establishment of a regular tempo is not an easy task for the performers. In summary, four aspects need to be considered for a performance: time, tempo (which is given by the composer), temporal flexibility in the performance, and expression. Time and tempo often have the same role in music. Nevertheless, while time can be used to indicate duration, tempo is a regular beat of the music. In other words, a performance speed can be established as time goes by; however, the tempo controls the speed of the performance in one habitual level.

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<sup>157</sup> Cont, A., 2008. *Antescofo: Anticipatory Synchronization and Control of Interactive Parameters in Computer Music*. UCSD, Music Department and IRCAM. [online] Available at: <<http://cosmal.ucsd.edu/arshia/index.php?n=Antescofo.About?action=bibentry&bibfile=mypapers.bib&bibref=cont08a>> [Accessed 10 June 2009].

Boulez indicates *rubato* where it is necessary. However, when the violinist plays along with the electronics, there are certain limits to temporal flexibility. On the other hand, fixed materials in the electronics part of *Anthèmes 2* are often very short. Boulez' term *rubato* seems not to imply rigid playing, but has a temporal flexibility over a passage over a short space of time.

If a violinist follows the notation, a performance will be well-controlled. The temporal instructions in the two *Anthèmes* precisely indicate Boulez' intention. However, they would not allow the violinist any freedom to change a performance speed in order to express his feelings. The violinist could be expressive; however, it should be achieved without changing notational information in the performance.

### 3.3 Techniques

#### 3.3.1 Sul ponticello

In *Anthèmes 1*, we can only find *sul ponticello* in two sections. In Figure 3.14, *sul ponticello* can be seen in bars 46-47 and 56-8.

**Figure 3.14: Boulez, *Anthèmes 1*, bars 46-58**

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Figure 3.15 is another *sul ponticello* section in *Anthèmes 1*. *Sul ponticello* is combined with varieties of double stop sequences. With regular rhythm patterns, the pitch progressions draw long phrases and the effect of the *sul ponticello* is great here.

In fact, *sul ponticello* in Figures 3.14 and 3.15 is given contrasted roles. In Figure 3.14, *sul ponticello* produces noisy and harsh sounds. Meanwhile, it seems *sul ponticello* helps to make more overtones with the pitches in Figure 3.15. In *Anthèmes 2*, the composer's intention is much clearer with *sul ponticello*, as contrasted electronic materials are applied to both sections. The material shown in Figure 3.14 is given a metallic sound, which has a similar sound as electric instruments. However, the section represented in Figure 3.15 is accompanied by reverbed sounds, and it is elegantly presented with the electronics.



Calme, mais sans traîner ♩ = 108, d'un mouvement très régulier

144 *mp* *pp* *mf* *pp*

147 *mf* *pp* *mp* *pp*

150 *mf* *pp* *mp* *pp*

152 *mp* *pp* *mf* *pp*

154 *mf* *p* *pp* *p* *pp*

157 *mf* *f* *p* *f* *p*

160 *f* *pp* *pp* *f*

163 *p* *ppp smorzando*

165 Libre sul tasto *ppp sempre* *ppp* *ppppp* c.l. batt.

Figure 3.15: Boulez, *Anthèmes 1*, bars 144-165

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The two examples from *Anthèmes* identify that the nature of *sul ponticello* is not only the brusque sound. Once it is mingled with other factors (e.g. pitches, rhythm, etc.), the varieties of timbres emerge. The way Boulez uses *sul ponticello* provides wider possibilities of *sul ponticello*.

### 3.3.2 Col legno

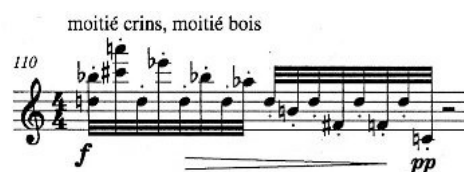


Figure 3.16: Boulez, *Anthèmes 1*, section VI-1

Figure 3.17: Boulez, *Anthèmes 2*, section VI-1

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Figures 3.16 and 3.17 are the same materials, which require *col legno* with the bow hair. Figure 3.16 is for unaccompanied violin, and Figure 3.17 will be with the electronics. After having rehearsed and performed these two works several times, I have discovered that the materials seen in Figures 3.16 and 3.17 are particularly complex and therefore make it difficult to create a good quality *col legno* sound. Firstly, the double stops make it even harder to produce sounds compared with the ordinal stroke. Secondly, it requires a diminuendo from *f* to *p*. It is particularly difficult to make *f* then gradual diminuendo with *col legno*. Thirdly, Figure 3.17 will be played with loud electronic sounds. Even if the violin was amplified, the violin's sound volume would not be changed only for the *col legno* pitches. Hence, the sound level for *col legno*

should be the same level with other materials played by the ordinal bow stroke. So, I tried to make *col legno* with *f* as loud as possible for performances of *Anthèmes 2* at two concerts; however, the sound was completely covered by the electronics. In fact, when I played *Anthèmes 1*, in spite of my effort to make loud dynamics for the *col legno* sections, the violin sound was barely audible. For my own performance, I play without *col legno*, because I think pitch and its transformation is very important in this section.

### 3.3.3 Vibrato

For repertoires written before the nineteenth century, most violinists would add the vibrato without any instruction by the composer. In the twentieth century, composers were more concerned about the vibrato, and often they included a statement regarding the vibrato in the foreword, while some composers would indicate the vibrato sign on the note to show where they wanted the vibrato.

Boulez does not provide an instruction regarding the vibrato in any version of *Anthèmes*. However, in the end of both works, Boulez states ‘non vibrato’ (see figure 3.18).

The image shows a musical score snippet on a single staff. It begins with the number '209' and the instruction 'Libre sul tasto'. The first note is marked 'ppp sempre (sul RÉ)'. Above the staff, there is a trill-like ornamentation. A second note is marked 'non vibr.' with the instruction 'arrêter le trille sur le signe de la régie informatique'. The third note is marked 'ppp' and has a '10"-12"' marking above it. The fourth note is marked 'pppp' and has the instruction 'assez long' above it. The final note is marked 'ppppp' and has the instruction 'd'un geste délibéré mais pas ostentatoire c.l.batt.' above it.

**Figure 3.18**

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In Figure 3.18, an indication of ‘non vibrato’ appears on the second note in this example. Is the violinist supposed to be using the vibrato for other pitches? In the meantime, *Anthèmes* are such virtuoso works and, in general, the vibrato would not be so suitable for materials such as quick passages, short notes, trills, harmonics, and

*pizzicato*. It is not appropriate to combine with some bouncing bowing techniques, as the combination of bouncing bow and vibrato might result in uneven sounds. In fact, the technical materials listed above occupy most parts of *Anthèmes 1* and *2*. As a matter of fact, it would be rather difficult to find materials which can bring out the effect of the vibrato.

Boulez has not mentioned the vibrato, so the violinist could create his own unique interpretation when using the vibrato, apart from the ending. However, materials in *Anthèmes* may restrict the amount of vibrato, so the vibrato would probably not be used while achieving such virtuoso passages on the violin.

### 3.4 Performing with electronics: *Anthèmes 2*

The electronic part for *Anthèmes 2* has been developed by members of IRCAM since 1997. It was initially designed with ‘a variant of IRCAM’s Max programming language, Max 0.26’<sup>158</sup> by Andrew Gerzso from 1997. Arshia Cont developed a score-following system and its integration in 2009, while Gilbert Nuono designed the Max5 electronic patch in 2010.<sup>159</sup>

The electronic system is described by Andrew Gerzso (2005, p.1), who built the electronic part of *Anthèmes 2*, as follows:

*Anthèmes 2* is a composition for violin and live electronics. The violin is equipped with a microphone used both for amplification and sound pickup for processing by the computer. The amplified violin sound is sent to two speakers to the left and right of the violinist and is also projected in the concert hall – together with the processed sounds – using a sound spatialization system which serves to create a virtual sound space surrounding the audience. The computer processing involves the transformation of the live sound of the violin [...] The processed sound is always sent to the spatialization system. The three elements – amplification, processing and spatialization – constitute the electronic part of the piece.

The description of the electronics reveals how each aspect was carefully built after Boulez’ compositional idea. As was mentioned, a score-following system is a feature of the electronic patch. In the beginning, the system was developed as follows (Gerzso, 2005, p.10):

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<sup>158</sup> Gerzso, A., 2005. *Pierre Boulez Anthèmes 2 pour violon et dispositif électronique, Technical Manual*. (Vienna: Universal Edition), p.10

<sup>159</sup> Nouno, Gilbert., 2011. *Pierre Boulez Anthèmes 2: Electronic documentation*. (Paris: IRCAM).

The computer listens to the soloist and compares what the soloist is playing with the score (which has been previously stored in its memory) in order to establish the precise moment for triggering modifications of the sound, using modules which affect the pitch, timbre, timing and spatial location of what is played by the soloist. Therefore, in the preparatory work for *Anthèmes 2*, a number of experiments were made to establish the different musical parameters of the violin (pitch, dynamics, time, etc.) which could be detected for use in the score following.

In here, it is mentioned that some aspects of the violin sounds are taken into account in order to make the electronic system work. In this case, can the violinist control the electronics by making different pitch qualities and temporal character? This section will explore the details of the electronics for the violinist. Simultaneously, it examines how to react to the electronics from the performer's point of view.

A recording of *Anthèmes 2*, which is performed by the author, can be found on the attached CD with this thesis.

### 3.4.1 Details of the electronics

Since 2008, IRCAM has developed a score-following system known as *Antescofo*.<sup>160</sup> For *Anthèmes 2*, *Antescofo* is an important part of the electronics. However, the latest electronic developer, Nuono, gives a performance instruction to use both manual function and automatic score-follower during a performance.<sup>161</sup>

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<sup>160</sup>Cont, A., 2008. *Antescofo: Anticipatory Synchronization and Control of Interactive Parameters in Computer Music*. UCSD, Music Department and IRCAM. [online] Available at: <<http://cosmal.ucsd.edu/arshia/index.php?n=Antescofo.About?action=bibentry&bibfile=mypapers.bib&ibref=cont08a>> [Accessed 10 June 2009].

<sup>161</sup> Nouno, Gilbert, 2011. *Pierre Boulez Anthèmes 2: Electronic documentation*. (Paris: IRCAM).

As was mentioned, performance speed is mainly a function of *Antescofo* to detect the real time performance,<sup>162</sup> meaning that other factors (pitch, dynamics) made by the performer do not affect the computer system. The system is much simpler than the earlier software development described by Gerzso, and is more focused. It also explains the temporal differences between *Anthèmes 1* and *Anthèmes 2*. For *Anthèmes 1*, the tempo setting is purely for musical expression; meanwhile, for *Anthèmes 2*, the tempo is also part of the cue for the electronics.

Although a main function in the electronic part is live electronics,<sup>163</sup> different types of materials construct the electronic part of *Anthèmes 2*. These are listed as follows:

- Frequency Shifter + Delay: This combined module takes the input signal and sends it to a frequency shifter, whose output is then sent to a delay module.
- Ring Modulation + Comb Filter: This combined module takes the input signal and sends it to two different ring modulators. The outputs of the two modulators are mixed and sent to a comb filter.
- Infinite Reverberation: This module reverberates a sound with a very long decay time giving the impression of a sustained (infinite) sound. There should be no ringing or modulation in the sustained reverberated sound. Main parameter: reverberation decay time (denoted as ‘Reverb. Time’ in the score) in seconds (typically between 3 and 60).

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<sup>162</sup> Cont, A., 2008. *Antescofo: Anticipatory Synchronization and Control of Interactive Parameters in Computer Music*. UCSD, Music Department and IRCAM. [online] Available at: <<http://cosmal.ucsd.edu/arshia/index.php?n=Antescofo.About?action=bibentry&bibfile=mypapers.bib&ibref=cont08a>> [Accessed 10 June 2009].

<sup>163</sup> Gerzso, A., 2005. *Pierre Boulez Anthèmes 2 pour violon et dispositif électronique*, Technical Manual. Vienna: Universal Edition, p.1.

•Harmonizer + Delay: This combined module takes the input signal and sends it to four harmonizers, whose output is then sent to a delay module. Main parameters: transposition interval in half steps denoted as ‘Transp.’ in the score (where positive values transpose up and negative values transpose down) and delay time denoted as ‘Delay’ in the score in milliseconds. If the delay is zero, this module becomes a harmonizer only. Each harmonizer/delay module has a level denoted as ‘Level’ in the score, which is in db where 0db is maximum level.

•Sampler: This module is used for playing sequences of pre-recorded sound samples. The sampler should contain the following collections of violin samples:

-*Pizzicati* with hard attack played forte (called ‘pizz’).

-*Pizzicati* with hard attack played forte (called ‘*pizz doux*’; the attack here is softened in the sampler in the attack portion of the envelope).

-Long notes played *mezzo-forte* (called ‘long’).

-Long notes played *piano* with lead mute (called ‘long lead mute’).

-Short notes played *arco fortissimo* (called ‘arco’).

-Long notes made of single sine waves (called ‘sinus’).<sup>164</sup>

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<sup>164</sup> Gerzso, A., 2005. Pierre Boulez Anthèmes 2 pour violon et dispositif électronique, Technical Manual. Vienna: Universal Edition, p.2-3



### 3.4.2 A documentation: performance experiences with different versions of Max/MSP patch

Before I completed this thesis, I had performed *Anthèmes 2* five times in public. Tom Mudd has worked on the electronics, and he helped me throughout all the performances.

Our first public performance was in June 2009, at Goldsmiths, University of London. The biggest task at this time was to understand the score-following system, *Antescofo* in the Max/MSP patch. We thought that, once a switch was on, it would work automatically. However, it was not straightforward. Gradually, we began to understand that some numbers in the score showed cues for the electronics.<sup>165</sup> So, there were automatic and manual functions, and if there were be problems with the automatic score-following system, there would be a manual function to trigger the electronics, and follow the violinist by mouse clicks.<sup>166</sup>

Figure 3.19 shows a list of problems we encountered during rehearsals in 2009. Mudd also recalled computer problems during the sessions. Often, the software stopped working, and he had to restart the computer.<sup>167</sup> However, this did not happen in the concert, and the performance went ahead very smoothly.

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<sup>165</sup> Mudd, T., 2013. *Discussion on Max/MSP patch* [Interview] (Personal communication, 21 February 2013).

<sup>166</sup> Mudd and Dr. Michael Young (Goldsmiths) have pointed out during the rehearsal sessions in 2009.

<sup>167</sup> Mudd, T., 2013. *Discussion on Max/MSP patch* [Interview] (Personal communication, 21 February 2013).

Sections	Problems
Intro	Electronic materials did not appear at the right places. This was solved in later version of patch.
Section I	Extra reverbs came out from the electronics. This was solved in later version of the patch.
Section II	The electronic sound (samplers) did not appear as it was supposed to be. This was solved by changing the way of playing the violin part. Although I kept the speed as instructed, the electronic sounded slower than my performance.
Section III	The score-follower did not work.
Section VI-1	The electronics did not follow the violin properly. This was caused by my understanding of the electronic part, as well as the patch problem. After 2010, Mudd used the manual system, and I also followed the electronics.

**Figure 3.19: Problems with Max/MSP patch used for the performance in 2009**

Sections	Performance suggestions
Section II	The violinist needs to keep the rhythm written in the part. The electronics provide clear rhythms in this section, so if the violinist does not wait for the electronics, whole sounds would be chaotic. The patch used by 2011 had a function to change the metronome marking, and a speed of the electronics could be adjusted by this function. <sup>168</sup>
Section III	The manual function is more secure.
Section IV	The electronics contain pre-recorded sampler, and the violinist has to follow the electronics.
Section VI-1	Using the manual function would be better for the electronics. The violinist needs to do <i>ritalrando</i> with the electronics. The speed is specified in the electronic part.

**Figure 3.20: A method of performing with Max/MSP patch**

<sup>168</sup> Mudd found this function during our rehearsals.

After this concert, we still had regular rehearsals and studied the score in detail. I must admit, I did not examine the score carefully prior to my first performance for this work. However, rehearsing with the electronics hugely assisted in my understanding, and we gradually established a performance style. Figure 3.20 displays the ways we solved the problems.

Regardless of which version of patches we were to play with, the details mentioned in Figure 3.20 might assist the violinist in future performances. A guidance to perform with the electronics is provided later in this chapter.

Our second concert was in March 2010, at the Royal Welsh College of Music and Drama. Dr Arshia Cont had consulted with us and provided us with a new patch. The new patch hugely reduced computer errors.<sup>169</sup> Section I had not caused any errors with this patch. We still performed section IV manually; however, the score-follower seemed to work much better.

The third performance was in September 2010, at Brunel University. We used the same patch as the performance in Wales. The patch worked steadily. By our second performance, I was using an old Italian violin. However, from the third performance, I started using a modern French violin. There was no particular reason why I changed the instrument. The French violin had been set up properly in early 2010, and I bought it simply to try it out at rehearsals. However, I instantly felt the electronics responded in a different way. This point will be discussed later in this chapter.

The next concert was in January 2012, at Goldsmiths. IRCAM kindly provided us a new patch, and this was dramatically developed since the last patch we used. The

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<sup>169</sup> Mudd, T., 2013. *Discussion on Max/MSP patch* [Interview] (Personal communication, 21 February 2013).

interface was much more colourful.<sup>170</sup> It was accompanied by a detailed documentation, which contained an instruction to use the patch.<sup>171</sup> We used this patch for concerts in December 2012 and January 2013, both at Goldsmiths.

Although I think the score-following system is an innovative system, Mudd mostly followed me by the manual function in our performances. In the documentation, Nouno, who is the latest software developer for *Anthèmes 2*, instructed as follows:

Some parts of the piece are not using *Antescofo* intentionally, because there is no need to. For example, section IV and VI are enough to trigger by hand.

The movements where *Antescofo* is used are:

Introduction (except for cue 3 and 4 that are triggered manually)

Section I

Section III

Section V

Section VI-A can optionally use *Antescofo*, but it really depends on your violinist as it is often too difficult.

All the harmonics parts (the transitions) are triggered by hand.<sup>172</sup>

Mudd mentioned *Antescofo* as an effective tool, and pointed out it works with other compositions. However, as Nouno explained above, some parts seem more reliable when performed by the manual function.

Although I think Mudd is neatly following me, he has pointed out some difficulties in making a precise triggering while using the manual function. For

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<sup>170</sup> Mudd, T., 2013. *Discussion on Max/MSP patch* [Interview] (Personal communication, 21 February 2013).

<sup>171</sup> Ibid.

<sup>172</sup> Nouno, Gilbert., 2011. *Pierre Boulez Anthèmes 2: Electronic documentation*. (Paris: IRCAM).

example, section VI-2 consists of three contrasted sections, and each section is given different electronic effects. Importantly, the beginning of each section should be triggered on time. The electronics in ‘*Brusque*’ sections contain pre-recorded tape materials, and if the electronics were triggered early, the violinist would lose a few seconds when finishing all materials on time.<sup>173</sup> For other sections, if the correct moment for triggering the electronics were to be missed, a violin sound in the previous section could be taken to the next section. It is difficult to remove the unnecessarily sound, and the situation would worsen if there was any reverb as part of the electronics.<sup>174</sup>

The electronic part of *Anthèmes 2* has intricate details, and it is not as simple as performing with a pre-recorded tape. However, the violin and electronics are inseparable parts, and I would like to aim at a performance where I can show a response to the electronics. Indeed, there were many problems when we started working on this piece; however, considering the issues here also gives me a chance to study the detail of the electronic part.

### **3.4.3 Using microphone with the violin**

To perform with or without a microphone could be a different experience for the performer. The microphone expands the sound, making it easy for the performer to make big sounds. Also, subtle sounds can be picked up by the microphone very well, so the level of audibility will be different compared with a non-amplified performance. The relation between the sound projection and the quality of sound should be given consideration in both cases. For a non-amplified performance, the string instruments

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<sup>173</sup> Mudd, T., 2013. *Discussion on Max/MSP patch* [Interview] (Personal communication, 21 February 2013).

<sup>174</sup> Ibid.

often require strong bow pressure in order to produce loud sounds. However, with the microphone, a heavy bow pressure would cause some noise against the electronic system.

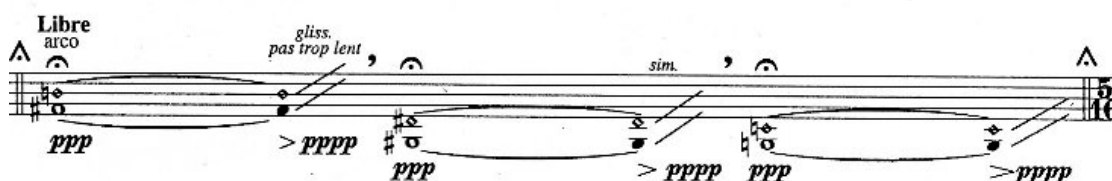


Figure 3.21: Boulez, *Anthèmes 1*, section II/III

Figure 3.22: Boulez, *Anthèmes 2*, section II/III

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Let me draw your attention to Figures 3.21 and 3.22. To achieve *pp* or *ppp* sounds, the bow strokes should be steady, and sounds need to be even throughout one stroke. If the bow is not carried by an equal arm pressure, it could disturb the creation of a long *diminuendo* line.

In the harmonic sections, the live electronics take the violin sound, and add a reverb effect to the original violin sounds in a live performance.<sup>175</sup> After having done several rehearsals, I concluded that the violin would not need to play the harmonic for a full length. If the violinist plays it short, then the electronics will sustain the sounds longer, and sounds will remain for their proper duration. This fact tells us that the notation is a sound result rather than performance guidance. So, the violinist needs to give a short sound to be sustained by the electronics, rather than holding the note as it is written. Also, because the electronics records the violin sound at real time, it requires clear sounds without noise. The noise can be picked up easily by the microphone and, once it is caught by the live electronics, it cannot be deleted and the audience will have listened to a distorted sound.

The concept of sound quality is greatly contrasted between the non-amplified violin and amplified violin works. The technology can increase the sound volume as a result; however, it hugely reduces the violinist's task of controlling the loudness of the instrument. At the same time, the amplification system does not offer much assistance for the soft dynamics. Even if the violinist provides tender sounds of good quality, once it is amplified the sound volume will be increased. Therefore, the physical hearing level between *p* and *f* in a performance played with the microphone would be narrower than a performance without the microphone.

Interpreting each composer's dynamics style would be an important idea for the performer to bring out the composer's character. For *Anthèmes 1* and *2*, in particular, concepts of *piano* might be different. *Piano* in *Anthèmes 1* can be as soft as a whisper,

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<sup>175</sup> Boulez, P., 1997. *Anthèmes 2 pour violon et dispositif électronique* [Music Score]. (Vienna: Universal Edition).

whereas the definition of *piano* in *Anthèmes 2* would not be a low sound volume. Is there any solution to producing a soft sound volume while using the microphone?

In fact, the recent updated electronic patch for *Anthèmes 2* gives some options when adjusting the volume of the electronics.<sup>176</sup> So, the technology has certainly developed. The violinist may be able to find a solution for the dynamics problem by changing the atmosphere. From a psychological point of view, ‘the experience of volume depends not only upon such physical aspects [...] but also very largely upon subjective factors.’<sup>177</sup> Furthermore, ‘we find large individual differences in the hearing of volume, and in the same individual from moment to moment, marked changes in the flux of receptive attitude.’<sup>178</sup> It would be crucial to change the physical sound level of the microphone; however, the violinist could give the impression that the quiet sounds have been created. In this case, the sound quality is an important factor when depicting an illusion in a performance. In order to have this feature, the *piano* sound should not have any edge. The sound should be tender, so that the audience should not be able to detect any bow attacks at the beginning and end of one bow stroke. The bow pressure should not be changed during a bow stroke, and any noise has to be excluded.

The details of the electronic part should also be taken into consideration when making any sound adjustment by the performer. At the same time, a prominent difference between works with the amplification system and works without it is the bow pressure and sound volume. The quality of sound is an important factor for any performance; however, different types of quality are needed in each case. The performer

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<sup>176</sup> Nouno, Gilbert., 2011. Pierre Boulez *Anthèmes 2*: Electronic documentation. (Paris: IRCAM).

<sup>177</sup> Seashore, C.W., 1967. *Psychology of Music* (New York: Dover Publications, Inc.), p.136.

<sup>178</sup> *Ibid.*, p.137.



should make a judgment by studying the length of the note, dynamics and details of the electronics in order to perform with the electronics.

### 3.4.4 A performing guide for a violinist: *Anthèmes 2*

The following pages explain the sort of electronic materials used for each section, and describe some performance suggestions for a violinist. Based on my experience, this is my advice when performing with the electronics. It highlights important electronic materials a violinist needs to focus on during a performance, and explains how to perform with the electronics.

#### Libre

**Electronics: Infinite reverberation; Sampler with infinite reverberation; Sampler; A frequency shifter without delay (bar 3)**

After a ‘brusque’ septuplet and other demisemiquavers in the opening, the electronic sounds will appear at the same time as when the violin begins the D trill. The violinist will have enough time to hold the trill as the electronics will automatically stop when the trills are finished.

The image displays a musical score for the first bar of 'Libre' from 'Anthèmes 2'. The top staff is for the violin, starting with a septuplet of eighth notes marked 'brusque' and 'f'. This is followed by a trill marked 'fff' and 'mf'. The bottom staff is for the electronics, labeled 'Electronics' and 'Sampler/pizz.', showing a sequence of notes in a treble clef with a key signature of one sharp (F#).

#### *Anthèmes 2, Libre bar 1*

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In bar 2, the electronics begin with the violin's first double stop: F sharp and D. As is shown below, however, the numbers of pitches from the electronics are systematically increased towards the end of bar 2. The violinist should not move on to the next chord before the electronic sequence is finished.

***Anthèmes 2, Libre bar 2***

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**/I ; II/III; III/IV; IV/V; V/VI**

**Electronics: 4 Harmonizers without delay; Sampler with infinite reverberation; Sampler; A frequency shifter without delay**

The electronic materials are always the same in the harmonic sections. The electronics immediately transpose the pitch played by the violin. The electronics also give a reverb effect for each harmonic. It is indicated as ‘reverb time: 30’’ in the score, and the electronics are supposed to remain eight seconds after the violin's sound has stopped. However, usually the concert hall's acoustics make the harmonic sounds longer than expected. The violinist has to be aware that the electronics will remain for a long time after he stops playing the harmonic. The reverb effect carries away the violin sounds more than expected. When there is no glissando at the end of the harmonic, it is not necessary for the violinist to hold the harmonics for a full length as notated.

## I

**Electronics: 4 Harmonizers without delay; Sampler; Sampler with infinite reverberation; Sampler; A frequency shifter without delay**

An issue in this section is the sound balance between the violin and the electronics. Only three dynamics, *pp*, *p* and *mp*, are given to the violin part. However, the amplified violin sounds and dense layers in the electronics part provide much louder sounds than is notated.

## II

**Electronics: Harmonizer + Delay; Sampler and Frequency Shifter + Delay**

In this section, the violin sounds mainly need to synchronise with samplers. The samplers should be triggered by the violin at specific places. The points each sampler needs to appear are marked in the score on the next page.<sup>179</sup> The samplers are not used between bars 63 to 72.

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<sup>179</sup> Music example for bars 56-118 are excluded in this thesis, for the purpose of copyright.

## II

Rapide, dynamique ♩ = 172, très rythmique, rigide

1 *pizz.* *mf* *sfz* *ff* *sempre*

2 3 4 5 6

7 8 9 *sfz* 10 11 12

13 14 15 16 17 18 *sfz* 19

20 *f* *sempre* *sfz* 21 22 23 24 25 26

27 28 29 30 31

32 *sfz* 33 34 35 *sfz* 36 37 *sfz* 38

39 *mf* *sempre* *sfz* 40 41 42 43 44 45

46 47 *sfz* 48 49 50 51 52

53 54 55 56 57 *sfz* 58 59 60 61 *sfz*

62 *mf* 63 *f* 64 65 *mf*

### III

**Electronics: 2 Ring modulators mixed to one comb filter; 4 Harmonizers without delay; Samplers (2); Sampler with infinite reverberation; Frequency Shifter + delay**

The electronic samplers are triggered automatically at bars 5, 15 and 24. The violinist can make a contrast between ‘*régulier*’ and ‘*irrégulier*’ without considering the electronics. The electronics follow the violin, so the violinist can decide *tempi*.

III

4

Lent ♩ = 86, régulier  
sul pont.

Nerveux, irrégulier ♩ = 116

→ pos. nat.  
staccatissimo

les dynamiques toujours abruptes, sans cresc. ou dim., les groupes ou notes ff à peine un peu plus étirés que les groupes ou notes mp  
enchaîner les groupes aussi rapidement que possible

Plus irrégulier ♩ = 112

prendre à peine un peu plus de temps pour séparer les dynamiques

les groupes ou notes ff un peu plus lourds, les groupes ou notes p toujours rapides et légers

Extrêmement irrégulier ♩ = 108

prendre un peu plus de temps pour séparer les dynamiques

les groupes ou notes ff très lourds, les groupes ou notes pp toujours rapides et légers

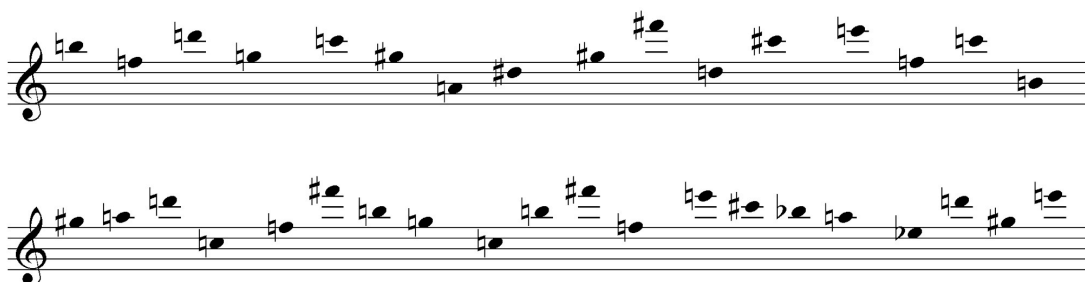
## IV

### **Electronics: Sampler with infinite reverberation (2)**

The violinist will be performing with only a sampler. Therefore, the electronics are not affected by the violin sounds; however, the violinist has to follow the sampler for bars 1-11 and 25-39. Between bars 12 and 24, there will be a second sampler, and the violin sounds will trigger pre-recorded sounds; hence, it is not necessary for the violinist to follow the second sampler. The first sampler will be finished after a certain length: each pitch takes 960 milliseconds, meaning the first sampler will be taking a quaver = 125. As it is notated, it allows the violinist to have flexible tempi between a quaver = 112-132; however, it is essential to keep the tempo for this section.



### **The sampler for bars 1-11, section IV**



### **The sampler for bars 25-39, section IV**

## V

**Electronics – *Trés lent*: 4 Harmonizers without delay; Samplers; Frequency Shifter without delay / *Sub. nerveux et extrêmement irrégulier*: 4 Harmonizers without delay; Samplers (2); Sampler with infinite reverberation**

This section is similar to section III. Therefore, the violinist can freely express the different dynamics and *tempi*.

## VI-1

**Electronics: 2 Samplers**

The violinist will play with two samplers. The first sampler is combined with trills, and the second sampler is triggered by *moitié crins/ moitié bois* (half hair/half wooden place of the bow) passage in the violin part. The sampler should start with the violin either by the score follower or the manual function. However, it is still the violinist's task to decide when to begin the next element after the samplers. Tempo is fixed by the electronics in this section.

For the first sampler, according to the score, the violinist is supposed to start immediately after the sampler's last pitch. The violinist has to stop the trill at the same time the electronics finish a sequence of pitches.

For the second sampler, the *moitié crins/ moitié bois* passage is given '*poco rallentando*.' However, the second sampler is going faster, from 'a semiquaver = 214 milliseconds' to '227 milliseconds'. In fact, 'a semiquaver = 214 milliseconds' is the



same value with 'a quaver = 140'.<sup>180</sup> So, the violinist needs to start with the electronics, and gradually shift to the slower tempo against the electronics. Also, the last two pitches of the sampler have to be with the next material played by the violin.

## **VI-2**

**Electronics - Calme, régulier: 4 Harmonizers without delay; Frequency Shifter / Agité: 4 Harmonizers without delay; Sampler with infinite reverberation / Brusque: Sampler / Calme, retenu: Sampler; 2 ring modulators mixed to one comb filter; infinite reverberation régulier**

### ***[Calme, régulier]***

The electronics follow the violin automatically, and change the frequency of the violin sounds. Regardless of the speed, the electronics can follow the violin.

### ***[Agité]***

The harmonizer will provide a predetermined pitch to each pizzicato sound played by the violin, and also rhythmically synchronise with the violin part. The violin's temporal change does not affect the electronics, so this section can be played at a slower tempo than is notated (a quaver = 126). It also seems that the electronics set the tempo based on a speed the violinist sets at the beginning of the section. Therefore, the violinist is free to choose the tempo for this section; however, once the tempo is decided, the same tempo has to be kept for the whole section.

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<sup>180</sup> This value was pointed out by Tom Mudd who had worked on the electronics for *Anthèmes 2* with me.

**[Brusque]**

This section is only with the sampler, and the tempo is already predetermined by the electronics. Hence, after a certain length of time, the sampler will be finished, and the violinist will have to finish the section before the electronic part reaches the end of the section. The violinist needs to keep the metronome marking: a quaver = 138/140. This means each Brusque section is given a duration, as follows:

Bar numbers	Duration (seconds)
59-60	3.42
74-75	3.85
94-97	6.85
106-109	6
119-123	7.71
125-128	6
141-143	6
150-152	5.14
155-156	3.85

**[Calme, retenu]**

The sampler produces a continuous chord for each section. It gives a different chord every time. The violinist does not need to be concerned about the sampler; however, as the electronics modulate the violin sounds, correct intonation is essential.

## VI-3

### **Electronics: Sampler with infinite reverberation (2)**

The sampler provides different pitch materials during the section; however, it is not necessary for the violinist to follow them. Also, the tempo can be slower than is notated, namely a quaver = 98/92, as the electronics do not take the violin sounds.

After bar 208, the violinist should be mindful of the intonation for pitch D. The electronics also produce the D, which is a fixed pitch. I once performed at A=440 hertz, and it sounded a little too low to synchronise with the pitch from the electronics. A=442 hertz or above would be recommended to tune the violin.

### **3.4.5 Performance results by different makes of instruments**

A certain type of violin gives different effects, particularly in sections II and III. I have tried two instruments when performing *Anthèmes 2*: one was an Italian instrument made in the eighteenth century, while the other was made in a French workshop ca. 1900. When I used the Italian violin, the sound result for section II was unsatisfactory. It seemed that the electronics did not pick up the violin sounds very well. The electronics did not react as was expected, and often the sampler disappeared. To solve this problem, the sound engineer adjusted the microphone and changed the electronic settings. I also tried several *tempi*: from the tempo as it is written in the score, to a slower tempo. None of these attempts managed to make a good performance result. However, once I changed the instrument to the French modern violin, it seemed that all the problems were solved, and the electronics sounded much better.

	Countries	Year of make and other descriptions	Temporary numbers in this study
Violins	Italy	ca. 1750	Violin 1
	France	ca. 1900	Violin 2
Bows	France	Raffin, 2011	Bow 1
	Japan	Kitai, 1994 (a copy of bow 5)	Bow 2
	Germany	Bausch, probably ca.1900	Bow 3
	France	Unknown	Bow 4
	France	Unknown, a fine old bow	Bow 5

**Figure 3.23: List of instruments for the analysis**

To examine sounds results made by various instruments, I took recordings by using two violins and five bows. All instruments used for this study are listed in Figure 3.23. The recordings were analysed by *Sonic Visualiser*, and spectrograms here show melody lines that appear in the recordings. The microphone used for this study is a DPA, which is designed to hang behind the bridge. I have always used this microphone for my performances. A set of strings used on the two violins is Dominant for A, D and G strings; and E string is Pirastro, ‘Gold’ label. The condition of the strings is almost the same on both violins. I have been using the same strings for about three months, so they are well-settled. The microphone was carefully placed just an inch behind the bridge.

Figure 3.24 and 3.25 show the analysis results of section II. This section only requires pizzicato, so the bow is not used for the recordings. The sound samples for this analysis only record the electronic part. The spectrograms show melody lines appearing in the recordings, though they are not identical. There are horizontal lines in Figure 3.24, where 263hz is indicated on the left side. However, we cannot recognise the same lines in Figure 3.25. Rather, it shows us dense lines on high frequencies.

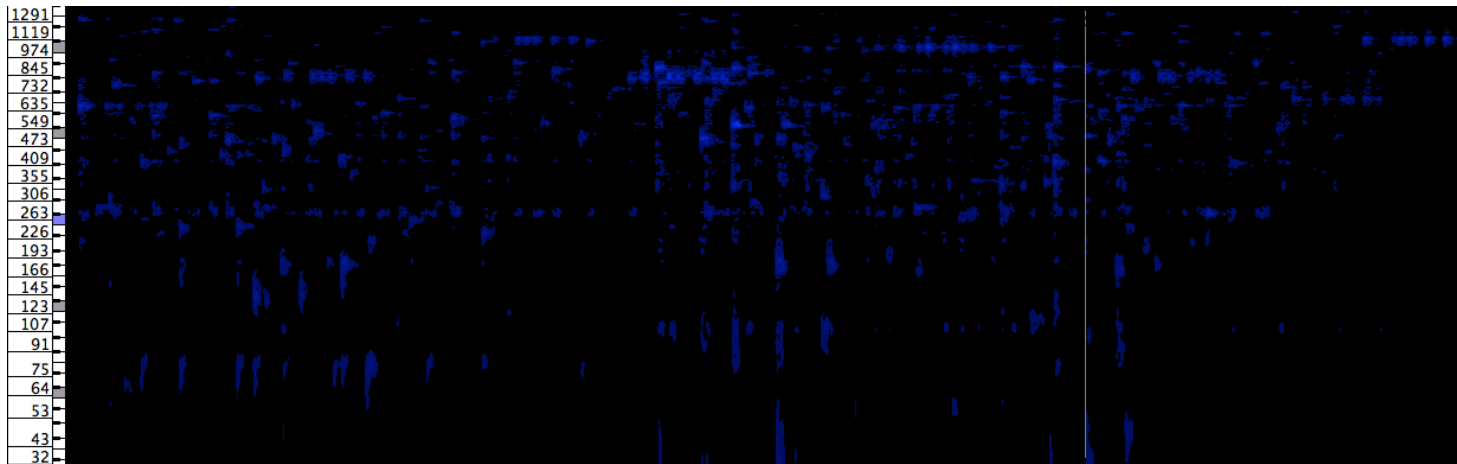


Figure 3.25: Melodic range spectrogram, *Anthèmes 2* section II, electronic part triggered by violin 2

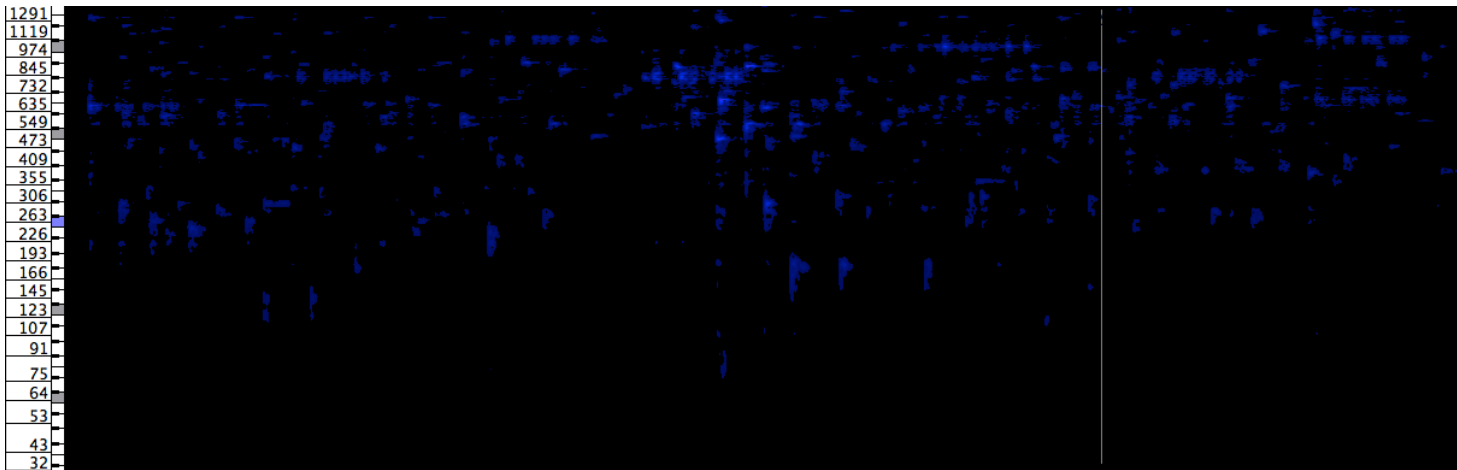


Figure 3.25: Melodic range spectrogram, *Anthèmes 2* section II, electronic part triggered by violin

Before concluding there are obvious differences when using two instruments, there would be other reasons causing the dissimilarities. The most obvious reason is my style of playing. I might play the two samples differently, for example. Although the two recordings were made on the same day in the same room, Mudd who controlled the electronics would change the sound balance between the recordings. Furthermore, the microphone could be a reason for the differences. As a result, we had another recording session.

In the second recording session, I played the section four times, and two recordings were made by each instrument. Mudd did not change any sound balances between the different recording takes. Also, a condensed microphone (AKG C451B) was used for the electronics. This time, the recordings combined the violin and electronics.

Spectrograms shown in Appendix 3.6 prove identical patterns between two recordings on the same instrument. It seems my playing was steady, and the method of achieving rhythm and pitches were almost the same between the different takes. However, again there is a prominent difference between the two violins. Violin 1 shows clear vertical lines when compared with violin 2. This time, spectrograms show lower frequencies of pitches in the sound samples played by violin 2. However, the spectrograms identify more sounds are triggered by violin 1, and the electronics are less responsive with violin 2. The spectrograms from the two recording sessions show similar sound characters. Hence, the different details recognised in the first recording session were not accidentally made. Even listening to the recordings, violin 2 triggers less samplers compared with violin 1. However, the recordings with violin 1 are sounded rather chaotic. In the recordings of violin 2, every detail is much clearer. It

seems violin 1 triggers too many electronic sounds.

Five bows displayed contrasted sound results in section III between bars 5 and 33. The electronics in section III is programmed by ‘chaotic process’ and ‘cloud process’. A full description of both processes can be found in Appendix 3.7. The electronics contain three types of *pizzicato* samplers, and the electronics also choose pitch, rest and dynamics by random choices. The random system is called ‘chaotic process’. However, as the description in Appendix 3.7 shows us, the random process is programmed systematically. Also, when I am listening to my recordings, distinctive electronic materials appear. In the performance guidance, Gerzso says ‘during the “chaotic” processes the balance should be such that the listener is not able to distinguish the live violin sound from the electronic sound.’<sup>181</sup> The electronics only provide the *pizzicato* samplers; however, it seems the different bows make diverse sound results.

The number of *pizzicato* samplers were contrasted by different bows, and particularly bow 2, 3 and 5 triggered less *pizzicato* sounds compared with other bows. I think bow 4 triggered the best number of *pizzicato* samplers on both violins, but unfortunately the maker for this bow is unknown. In fact, bow 2 and 5 are significantly heavier than other bows; however, the two bows did not trigger a satisfactory amount of electronics. Hence, the bow weight can be dismissed in relation to a response of the electronics. Although bow 3 can usually produce huge volumes of sounds, and is very easy to control, it did not trigger many samplers. The electronics were particularly less responsive to bow 3, and even the violin sounds were not taken into the electronics. Bow 1 works very well with violin 2, but not with violin 1. Appendix 3.8 shows analysis results made by *Sonic Visualiser*. Pitches appearing in the recordings are illustrated in the spectrograms. Indeed, none of the pictures prove identical melody lines.

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<sup>181</sup> Gerzso, A., 2005. Pierre Boulez Anthèmes 2 pour violon et dispositif électronique, Technical Manual [Music Score]. (Vienna: Universal Edition), p.9.

The original sound files used for this analysis can be found on the attached CD.

A study here examined bars 5-14. Hence, the same materials in section III, bars 15-33, bars 43-58, section V bars 4-21 can be explored by trying different bows during rehearsal sessions.

These differences could be caused by the nature of the electronics in these sections. The electronics in section II are a mixture of live electronics and fixed samplers. In *Anthèmes 2*, 'the violin sound is processed in real time using digital signal processing (DSP) modules. The piece uses standard (unless described otherwise) digital signal processing.'<sup>182</sup> So, the electronic sounds are produced based on the violin sounds when played live. Hence, we could actually expect different electronic sounds by non-identical violin sounds.

The live electronics is not a whole function of the electronics in section III. However, two samplers are triggered by the violin sounds, and the samplers will appear spontaneously according to the violin. It would be possible to guess that each bow gives different sound intensity (dB) and, when the sound is processed by the electronics, it triggers the electronics in various ways.

Also, the microphone picks up the sound near the instrument and, presumably, the modern violin gives stronger sounds than the Italian violin at this position. Some fine instruments make very soft sounds when we hear them near the instruments. Simultaneously, these types of sounds can be carried away and sound louder when we listen to them at some distance. However, with the microphone pick-up, using an instrument with a clear projection near the body of the violin would have a better result.

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<sup>182</sup> Gerzso, A., 2005. Pierre Boulez *Anthèmes 2* pour violon et dispositif électronique, Technical Manual [Music Score]. (Vienna: Universal Edition), p.2.



Another reason for such a difference might be the nature of the composition. Most pitches in *Anthèmes 2* are in a high register. In fact, the G string is rarely used in most of the parts. Section II does not require any pitch on the G string, and section III can be played by the top two strings. So, would it be advantageous to use an instrument with a good projection on the E string?

According to a luthier who sets up both violins, the sound post is placed at the E string side for the Italian violin, while he put the post on the G string side on the French violin. He did this according to the instruments' character. He stated that the Italian violin has good sound quality on the lower strings, so the top strings need more sound projections. However, the French violin can project a high register better than the lower strings, so the sound post was positioned in order to support the lower register. These remarks explain the nature of the instruments, and it would give a hint to understanding why the French instrument gives a better response to the electronics for the composition in order to use the high register of sounds.

So, apart from changing the instruments, are there any other ways of controlling the sound results? As was mentioned, *Anthèmes 2* mainly requires E and A strings. It seems brighter sound triggers the electronics, so the violinist could choose certain types of strings for with this purpose. Metal strings, or strong tension of strings on E and A strings, would probably help.

Instruments need to be decided by testing the sound with a microphone. The instrument is such an important sound source for *Anthèmes 2*, and the microphone brings out different aspects of the sound.

### 3.5 Conclusion

*Anthèmes* has been revised many times since its original version, to the electronic version we have today. However, the concept and construction has not changed since Boulez conceived the work. This chapter explores the details of *Anthèmes*, the compositional process and the construction. An understanding of the compositional structure is essential in order to build the musical elements in the performance.

In an earlier part of this essay, *Anthèmes 1* and *2* were compared, wherein it was discovered that *Anthèmes 1* was thoroughly fragmented and used in *Anthèmes 2*. Certain changes in the metronome and expression markings between the two works were discussed.

Electronic music is a prominent new genre, which appeared in the twentieth century. As the violinist has to face different approaches towards various ensemble styles, similarly there should be some special aspects the violinist has to consider in order to perform the works with electronics. As to whether the violinist needs to listen to the electronics or not, it can be concluded that, even if the electronic part follows the violinist, the violinist still needs to cooperate with the electronics.

The most problematic electronic material for the violinist is the sampler. When the sampler is given a function to follow the violin automatically, the violinist has nothing to worry about when performing with electronics. However, the violinist has to follow the electronics for bar 2 in *Libre*, sections IV, VI-1 and *Brusque* in VI-2.

Using a microphone with an acoustic instrument creates a huge impact on sounds. There are many places that have been given soft dynamics in the violin part. The violin's sound projection with the microphone is also a completely different

experience compared with acoustic compositions. The violinist does not need to force big sounds by the instrument itself. However, softer dynamics require extra care, but making a soft sound quality could help achieve the quiet dynamics.

For the harmonic sections, the part gives reverb effects to each harmonic. Therefore, it is not necessary to hold the sustained harmonic for the length that is written. Some experiments would be helpful to ascertain the reverb and to decide the playing time for each harmonic during the rehearsal.

Reading notation is often the performer's biggest task. However, the ways of approaching the notation for the acoustic composition and electronic music can be the same. Some details in the notation on the violin part do not need to be practised with the electronics, and the violinist can pursue the quality of technique without rehearsing with the electronics. The pitch, bowing, rhythm and tempo are those details the violinist can explore without the electronics. As a practice idea, I tend to perform the sections backward for *Anthèmes 2*. This is following the compositional order, and I find this is helpful in discovering more coherence between the sections.

The violinist also needs to have a clear notion regarding the tempo and time. The electronic patch of *Anthèmes 2* is developed with the temporal information. *Tempi* are important measurements for the violinist. However, performing with the electronics does not mean the violinist needs to be like a machine. There could be some aspects left for the performer to express freely. Tempo is a speed of a performance, and time provides a frame for the music. However, the tempo and time are strongly related to the technical possibility and expression.

A study here shows different sound results of the electronics by a variety of violins and bows. A modern violin, which is supposed to produce less timbre, seems to provide a clear sound source for the electronics. If a violinist wanted an unblemished electronic part to play with, probably using a modern violin would be a better choice. However, even using the same violin, it is recommended to try the electronic patch with different bows to explore the sound results. Also, changing the type of string would be effective. *Anthèmes 2* tends to have pitches on a high register, hence using a high tension on E and A strings might help the electronics to recognise the violin sounds. Unless a violinist has a specific reason for a performance result, it is not recommended to use a gut string. It could increase resonance, and sound with more timbre would make the electronics more uncontrollable.

Has the method of expression changed in the contemporary era? Perhaps the time frame in every composition restricts the performer more than music written before the twentieth century. In the works studied here, the idea of the ‘virtuoso’ is accomplished by using unconventional technical details. For the violinist, it is possible to realise demanding pitch combinations, which are unique and full of originality. Nevertheless, the new style of performance techniques is consumed by the tempo and time, meaning the violinist would have less flexibility against the time. However, the violinist can still convey personal character during the performance. An important factor in expressing the compositions by the performer is the sound quality, and this can be achieved without changing the tempo. Therefore, it is essential to have a clear notion regarding the sound sonority with or without the microphone, particularly on the aspect of the dynamics.

It is for the violinist to show how much of the composer's intention he can understand, and it can be part of a performer's expression. Composers' imaginative ideas on the virtuoso technique lead to a modern style of composition, as well as pave the way for the violin's new possibilities.

## Bibliography

### Primary sources

Boulez, P., 1991. *Anthèmes* [Music Score] (Vienna: Universal Edition).

\_\_\_\_\_, 1991. *Anthèmes*. [Manuscript] the Arditti Quartet Collection. 1005. Basel. The Paul Sacher Foundation.

\_\_\_\_\_, 1991. *Anthèmes*. [Manuscript] the Arditti Quartet Collection. 1008. Basel. The Paul Sacher Foundation.

\_\_\_\_\_, 1992. *Anthèmes I* [Music Score] (Vienna: Universal Edition).

\_\_\_\_\_, 1997. *Anthèmes 2 pour violon et dispositive électronique* [Music Score]. (Vienna: Universal Edition).

\_\_\_\_\_, 1981. *Freeman Etudes I-XVI Books 1 & 2*. [Music Score] (Edition Peters).

\_\_\_\_\_, 1990. *Freeman Etudes XVII-XXXII Books 3 & 4*. [Music Score] (Edition Peters).

Nono, L., 1989. “*Hay Que Caminar*” *Soñando*. [Music Score] (Milano: Ricordi).

\_\_\_\_\_, 1988. *La Lontananza Nostalgica Utopica Futura*. [Music Score] (Milano: Ricordi).

\_\_\_\_\_, 1988. *La Lontananza Nostalgica Utopica Futura*. [Manuscript] 59.09.01-59.11.0. Venice. The Luigi Nono Archive.

\_\_\_\_\_, 1988. *La Lontananza Nostalgica Utopica Futura*. [Manuscript] 59.11.02/01-09. Venice. The Luigi Nono Archive.

### Secondary sources

Anderson, J., and Wilson, C., 2007. Harmony, Late twentieth Century. In: Laura Macy, ed. 2007. *Grove Music Online*. [online] Available at: <<http://www.oxfordmusiconline.com>> [Accessed 1st July, 2009].

Arditti, I., 2009. *A première of ‘Anthèmes’*. [e-mail] (Personal communication, 30 October 2009).

Bavu, E., Smith, J. and Wolfe, J., 2005. *Torsional Waves in a Bowed String*. Thesis. Music Acoustics, School of Physics, University of New South Wales.

Bečvář, A., 1964. *Atlas Australis*. (Prague: Czechoslovak Academy of Sciences).

Bernstein, D. W. and Hatch, C. ed., 2001. *Writing through John Cage's Music, Poetry, and Art*. Chicago and London: The University of Chicago Press.

Blum, D. ed., 1987. *The Art of Quartet Playing – the Guarneri Quartet*. New York: Cornell University Press.

Boulez, P. and Fink, W., 2000. *Wolfgang Fink in Conversation with Pierre Boulez*. Translated from French by S. Spencer [A sleeve note] Berlin: Deutsche Gramophone, pp.11-15.

Boulez, P. and Mawhinney, S., 2001. 'Composer in Interview: Pierre Boulez.' *Tempo*, New Series. No. 216 (Apr., 2001), pp.2-5.

Boulez, P. and McCallum, P., 1989. 'An Interview with Pierre Boulez.' *The Musical Times*, Vol. 130, No. 1751 (January), pp.8-10.

Boulez, P., 1964. 'Alea'. Translated from French by D. Noakes and P. Jacobs., *Perspectives of New Music*, Vol. 3, No.1, pp.42-53.

\_\_\_\_\_, 1995. *From Vienna*. Performed by the Arditti String Quartet [CD] (Montaigne: MO782027).

\_\_\_\_\_, 1986. *Orientations*. Translated from French by M. Cooper and J-J. Nattiez. ed., (London: Faber and Faber Limited).

\_\_\_\_\_, 1991. *Stocktakings from an Apprenticeship*. Translated from French by S. Walsh (New York: Oxford University Press).

Boulez, P. 1997. 'Public discussion on *Anthèmes 2* with Peter Szendy.' Translated from French by J. Goldman. In: Goldman, J., 2001. *Analyzing Pierre Boulez. Notes on Anthèmes for violin solo: Creating a labyrinth out of another labyrinth*. M.A. Université de Montréal, pp.105-115.

\_\_\_\_\_, 2000. *Anthèmes 2, Messagesquise, Sur Incises*. Performed by Ensemble Intercontemporain and Pierre Boulez. [CD] (Berlin: Deutsche Grammophon) 476 2528.

\_\_\_\_\_, 2003. *Boulez on Conducting*. Translated from French by R. Stokes. (London: Faber and Faber Limited).

\_\_\_\_\_, 2005. *Leçons de Musique*. (Paris: Christian Bourgois Éditeur).

\_\_\_\_\_, 2003. *Boulez on Conducting*. Translated from French by R. Stokes. (London: Faber and Faber Limited).

Boyden, D. D., 1965. *The History of Violin Playing from its Origins to 1761*. (London: Oxford University Press).

\_\_\_\_\_, 2007. Scordatura. In: Mercy, L. ed, 2007. *Grove Music Online*. [online] Available at:<<http://www.oxfordmusiconline.com>>[Accessed 28 February 2010].

Boyden, D. D., Cochrane, L., and Walls, P., 2007. 'Jeté' In: Laura Macy, ed. 2007. *Grove Music Online*. [online] Available at:<<http://www.oxfordmusiconline.com>> [Accessed 5 July 2009].

Boyden, D. D. and Walls, P., 2007. Violin. In: Mercy, L. ed, 2007. *Grove Music Online*. [online] Available at:<<http://www.oxfordmusiconline.com>> [Accessed 5 August 2008].

Bradshaw, S., 1973. ...explosante-fixe.... *Tempo*, New Series, No. 106, September, pp.58-59.

Bunting, C., 1982. *Essay On the Craft of Cello-Playing, Volume 2 The Left Hand*. (London: Sangeeta Publications).

Cage, J. and Zukofsky, P., 1991. 'Freeman Etudes.' In: R. Kostelanetz, ed. 1993. *Writing About John Cage*. (Ann Arbor: The University of Michigan Press).

Cage, J. and Kostelanetz, R., 1988. 'His Own Music: Part Two.' *Perspectives of New Music*, Vol. 26, No.1. Winter, pp.26-49.

Cage, J., 1961. *Silence*. (Middletown: Wesleyan University Press).

Cage, J., 1981. *John Cage Chorals, Cheap Imitation, Freeman Etudes I-VIII*. Performed by Zukofsky, P., [CD] (New York: CP<sup>2</sup> Recordings) B000009J1L.

\_\_\_\_\_, 1982. *Freeman Etudes Book 1 I-XVI*. Arditti, I., [CD] (New York : Mode Records) Mode Records 32.

\_\_\_\_\_, 1985. *Freeman Etudes*. Performed by Négyesy, J., [CD] Reproduced by Newport Classics. (New York: Lovely Music, Ltd.) CD B00005NZLN.

Centre for the History and Analysis of recorded music, 2009. *Sonic Visualiser*. [online] Available at:<[http://www.charm.rhul.ac.uk/analysing/p9\\_0\\_1.html](http://www.charm.rhul.ac.uk/analysing/p9_0_1.html)>[Accessed 17 January 2009].

Cont, A., 2008. *Antescofo: Anticipatory Synchronization and Control of Interactive Parameters in Computer Music*'. UCSD, Music Department and IRCAM. [online] Available at: <<http://cosmal.ucsd.edu/arshia/index.php?n=Antescofo.About?action=bibentry&bibfile=mypapers.bib&bibref=cont08a>> [Accessed 10 June 2009].

\_\_\_\_\_, 2008. *Modeling Musical Anticipation - From the time of music to the music of time*. PhD. University of California San Diego and University of Pierre et Marie Curie.

Cooke, P., 2007. 'Ricochet.' In: Mercy, L. ed., 2007. *Grove Music Online*. [online] Available at:<<http://www.oxfordmusiconline.com>>[Accessed 22 September 2008].

Covell, G.C., 2004. *Nono's Shrug at Immortality: La lontananza nostalgica utopica future*. [A sleeve note] (Berlin: Polygram Records).

Dickinson, P., 2006. *CageTalk Dialogues with and about John Cage*. (New York: University of Rochester Press).

Donington, R., 2001. 'Ictus.' In: Sadie, S. Sadie, ed. 2001. *The New Grove Dictionary of Music and Musicians Volume Twelve*. ed. London: Macmillan Publishers Limited.

Drees, S., 1998. *Architektur und Fragment: Studien zu späten Kompositionen Luigi Nonos*. Saarbrücken: Pfau.



Duckworth, W., 1972. *Expanding Notational Parameters in the Music of John Cage*. PhD. University of Illinois at Urbana-Champaign. (Ann Arbor: University Microfilms).

\_\_\_\_\_, 1995. *Talking Music: Conversations with John Cage, Philip Glass, Laurie Anderson, and five generations of American experimental composers*. (New York: Schirmer Books, An Imprint of Simon & Schuster Macmillan).

Fink, W., 2000. *Metamorphoses of solo music in three works by Pierre Boulez*. [A sleeve note] (Berlin: Deutsche Grammophon) 476 2528, pp.7-10.

Flesch, C., 1924. *The Art of Violin Playing*. Translated from German by F.H. Martens. (New York: Carl Fischer, Inc.).

Fondazione Archivio Luigi Nono Onlus., *Catalogues* [online] Available at <<http://www.luiginono>>[Accessed 12 April, 2013].

Gagne, C. and Caras, T., 1982. *'John Cage', Sound pieces – Interviews with American Composers*. (Metuchen, N.J., London: the Scarecrow Press, Inc.).

Galamian, I., 1962. *Principles of Violin*. (Englewood Cliffs: Prentice-Hall, Inc.).

Gerzso, A., 2005. *Pierre Boulez Anthèmes 2 pour violon et dispositif électronique, Technical Manual*. (Vienna: Universal Edition).

Goldman, J., 2001. *Analyzing Pierre Boulez. Notes on Anthèmes for violin solo: Creating a labyrinth out of another labyrinth*. M.A. Université de Montréal.

Griffiths, P., 1979. *A Guide to Electronic Music*. (London: Thames and Hudson).

\_\_\_\_\_, 1981. *Cage*. (London: Oxford University Press).

\_\_\_\_\_, 2004. *The Penguin Companion to Classical Music*. (London: Penguin Group).

\_\_\_\_\_, 2007. 'Aleatory.' In: Mercy, L. ed, 2007. *Grove Music Online*. [online] Available at:<<http://www.oxfordmusiconline.com>>[Accessed 17 October 2008].

Hewett, I., 2005. 'The Ultimate Challenge.' *The Telegraph*. [online] Available at:<<http://www.telegraph.co.uk/culture/music/3647453/The-ultimatechallenge.html>>[Accessed 13 August 2012].

Hudson, R., 2007. 'Rubato.' In: Laura Macy, ed. 2007. *Grove Music Online*. [online] Available at:<<http://www.oxfordmusiconline.com>>[accessed 3 July 2012].

Inácio, O.J.P.F., 2008. *A Modal Method for the Simulation of Nonlinear Dynamical Systems with Application to Bowed Musical Instruments*. PhD. University of Southampton.

IRCAM. ed., 1997-2005. *Performance Handbook Anthèmes 2, Pierre Boulez*. (Paris: IRCAM).

Johnson, E., 1981. *The Acoustics of the Violin*. PhD. University of Salford.

- KET Distance Learning. 2012. *Physics Companion* [online] At: <<http://www.dl.ket.org/physics/companion>> [Accessed 14 April, 2013].
- Lester, J., 1989. *Analytic Approaches to Twentieth-Century Music*. (New York: W.W. Norton & Company, Inc.).
- Mantel, G., 1995. *Cello Technique, Principles and Forms of Movement*. Translated from German by Thiem, B.H. (Bloomington: Indiana University Press).
- Morio, G., 2007. 'Nono.' In: Mercy, L. ed, 2007. *Grove Music Online*. [online] Available at:<<http://www.oxfordmusiconline.com>>[Accessed 19 December 2009].
- Mudd, T., 2013. *Discussion on Max/MSP patch* [Interview] (Personal communication, 21 February 2013).
- Nono, L., 1993. *La Lontananza Nostalgica Utopica Futura*. Performed by Gidon Kremer. [CD] Berlin: Polygram Records.
- Nouno, G., 2011. *Pierre Boulez Anthèmes 2: Electronic documentation*. (Paris: IRCAM).
- Pietro, R. D., 2001. *Dialogues with Boulez*. (Maryland: Scarecrow Press, Inc.).
- Pritchett, J., 1993. *The Music of John Cage*. (Cambridge: University Press).
- \_\_\_\_\_, 1988. 'From Choice to Chance: John Cage's Concerto for Prepared Piano.' *Perspectives of New Music*, Vol. 26, No.1. Winter, pp.50-81.
- \_\_\_\_\_, 1988. *The development of chance techniques in the music of John Cage, 1950-1956*. PhD. New York University, Department of Music. (New York: UMI microfilms dissertations).
- \_\_\_\_\_, 1994. 'The Completion of John Cage's *Freeman Etudes*.' *Perspectives of New Music*, Vol. 32, No. 2. Summer, pp.264-270.
- \_\_\_\_\_, 2007. 'John Cage: Chance'. In: Laura Macy, ed. 2007. *Grove Music Online*. [online] Available at:<<http://www.oxfordmusiconline.com>>[Accessed 5 August 2008].
- Raman, C.V., 1918. 'On the Mechanical Theory of the Vibrations of Bowed Strings and of Musical Instruments of the Violin Family, with Experimental Verification of the Results – Part I.' *Bulletin, Indian Association for the Cultivation of Science*, 15, pp.244-278.
- Retallack, J. ed., 1996. *Musicage in Conversation with Joan Retallack*. (Hanover: Wesleyan University Press).
- Revill, D., 1992. *The Roaring Silence: John Cage: A Life*. (London: Bloomsbury).
- Richard, A., 1988. *Notes on sound direction: La Lontananza Nostalgica Utopica Futura*. (Milano: Ricordi).
- Ryan, D. and Lachenmann, H., 1999. 'Composer in Interview: Helmut Lachenmann.' *Tempo*, New Series, No. 210, October, pp.20-24.

- Schelleng, J.C., 1973. 'The Bowed String and the Player.' *Journal of Acoustical Society of America* 53, pp.26-41.
- Schoonderwaldt, E., 2009. *Mechanics and Acoustics of Violin Bowing*. PhD. KTH School of Computer Science and Communication.
- Seashore, C.W., 1967. *Psychology of Music* (New York: Dover Publications, Inc.).
- Shirai, T., 2009. *Discussion on violin setting*. [Interview] (Personal communication, 23 June 2009).
- Storr, A., 1992. *Music and the Mind*. (London: Harper Collins Publishers).
- Stowell, R., 2007. 'Violin, The instrument, its technique and its repertory.' In: Laura Macy, ed. 2007. *Grove Music Online*. [online] Available at: <<http://www.oxfordmusiconline.com>> [Accessed 5 August 2008].
- Szigeti, J., 1964. *A Violinist's Notebook*. Translated from German by D. Forsdyke. (London: Gerald Duckworth & Co. Ltd.).
- Tetzlaff, C., and Fischer, T., 2012. *15 Questions to Christian Tetzlaff*. [Online] Available at: <<http://www.tokafi.com/15questions/15-questions-christian-tetzlaff>> [Accessed 13 August 2012].
- Universal Edition, 2005. *Pierre Boulez 'Anthèmes 1'*. [online] Available at: <<http://www.universaledition.com>> [Accessed 23 May 2009].
- Universal Edition, 2005. *Pierre Boulez 'Anthèmes 2'*. [online] Available at: <<http://www.universaledition.com>> [Accessed 27 May, 2009].
- Trevarthen, C., Delafield-Butt, J. and Schögler, B., 2011. 'Psychology of Musical Gesture: Innate Rhythm, Harmony and Melody in Movements of Narration.' In: A. Gritten and E. King, ed. 2011. *New Perspectives on Music and Gesture*. (Farnham: Ashgate Publishing Limited).
- VanClay, M. and Lynn, S., 2000. *Violin Virtuosos*. (California: String Letter Publishing).
- Vermeil, J., 1996. *Conversations with Boulez: thoughts on conducting*. Translated from French by C. Naish. (Oregon: Amadeus Press).
- Walls, P., 2010. 'Bow.' In: Laura Macy, ed. 2007. *Grove Music Online*. [online] Available at: <<http://www.oxfordmusiconline.com>> [Accessed on 18 November 2010].
- Weiss, N., 2007. Quelques Propriétés De La Technique De Boulez De Multiplication Des Blocs Sonores. *l'Ouvert*. Issue no. 114. (Strasbourg: IREM de Strasbourg), pp.17-32.
- Zukofsky, P., 1968. 'On Violin Harmonics.' *Perspectives of New Music*. Vol. 6, No. 2, Spring-Summer, pp.174-181.
- \_\_\_\_\_, 1982. 'John Cage's recent violin music.' In: P. Gena and J. Brent, ed. 1982. *A John Cage Reader – in celebration of his 70<sup>th</sup> birthday*. (New York: C.F. Peters).

\_\_\_\_\_, 1992. 'Aspects of contemporary technique (with comments about Cage, Feldman, Scelsi and Babbitt).' In: R. Stowell, ed. 1992. *The Cambridge Companion to the Violin*. (Cambridge: Cambridge University Press).



John Cage *Freeman Etude I* with bar numbers and system numbers

The image displays a musical score for John Cage's *Freeman Etude I*, organized into six systems. Each system contains five staves of music, with bar numbers and system numbers indicated below the staves. The score includes various performance instructions such as dynamics (e.g., *fff*, *mf*, *mp*, *p*, *ppp*) and articulation (e.g., *Pizz. (naII)*, *ST III*, *IV*, *SP*, *I*, *II*, *III*, *IV*). The systems are labeled as follows:

- System 7: Bars 43-49
- System 8: Bars 50-56
- System 9: Bars 57-63
- System 10: Bars 64-70
- System 11: Bars 71-77
- System 12: Bars 78-84

## Appendix 1.2

'Note' from John Cage *Freeman Etudes Book 1 & 2*, Edition Peters

### Note:

Tones to be played *legato*, sometimes simulated, are connected with a beam. Below the staff are two lines, the lower giving the "measure", a constant length of time, the upper the appearance in space-time of the ictae. A violinist should establish a time-length for the measure and then maintain that tempo from system to system and from etude to etude. It should be short rather than long, as short a time-length as his virtuosity permits (circa three seconds). Tones are either conventionally pitched or indeterminately microtonally sharp (♯, ♯̣, ♯̣̣) or flat (♭, ♭̣, ♭̣̣). They are sometimes slightly inflected (∩, ∪, ∩̣, ∩̣̣, ∪̣, ∪̣̣, ∩̣̣̣, ∪̣̣̣, ∩̣̣̣̣, ∪̣̣̣̣). The stringing may be changed, but only if after due consideration on the part of a particular violinist it proves absolutely necessary. R means *ricochet*, the number accompanying it giving the number of sounds so produced. Four kinds of *martellato* are used √, √̣, √̣̣, — (beginning in space, ending on the string; starting on the string, ending in space; beginning and ending in space, hammering the string between; beginning and ending on the string).

I am grateful to Paul Zukofsky for his patient answering of my many questions; without this I would not have been able to write these pieces.

J.C.

## **Appendix 1.3**

### ***Interview with Irvine Arditti***

#### ***Introduction***

The British violinist Irvine Arditti has given numerous world premières, and collaborated with many composers. As was already mentioned in this essay, Arditti's performance of earlier numbers of the *Freeman Etudes* inspired Cage to complete the whole set of the work. It is meaningful to inquire into his notion and philosophy for performing the *Freeman Etudes*.

To conduct this interview, I first made a list of questions. Irvine Arditti kindly provided written answers to these questions. Next, I added some more questions to ask for further details on his answers. He then answered the extra questions. Finally, I edited the questions and answers for the purposes of this essay. We corresponded via e-mail, and the interview took place between July and August 2008.



***Questions about John Cage's Freeman Etudes, and collaboration with Cage***

1. How and when did you come to know John Cage's *Freeman Etudes*?

**Like most pieces, I came to know Cage's *Freeman Etudes* when I was first asked to play them in a concert at the Almeida Festival in London in June 1988.**

2. How well did you know Cage as a composer, before you played the *Freeman Etudes*?

**I suppose I was less familiar with Cage's music than that of the European Avant-garde. I knew pivotal pieces like the *Sonatas and Interludes for prepared piano* and many of the works involving transparencies, which I had performed in an improvisation group as a student.**

3. Did your impression of Cage change after you learned the *Freeman Etudes*?

**Oh yes, tremendously. I think my impression towards meeting the man and working with him was much more dramatic than just the learning of the piece beforehand. Obviously the *Freeman Etudes* is a peak in the contemporary virtuoso violin repertoire. No violinist would arrive in the afternoon of the concert to meet the composer without a thorough preparation of this very difficult score. Very few people would be able to respond at that stage to the composer's wishes. Perhaps, I still had to learn to react and digest what this composer didn't say rather than what most composers said. It was more an instruction on how one thinks about the way to do, rather than actually doing it. As we know Cage was a philosopher as**

**well as composer. Cage taught me how to think generally about situations, not just in music.**

4. John Cage's *Freeman Etudes*, as you know, uses chance operations. What do you think of chance operations in general?

**I must admit, I do not think much about or of chance operations. Certainly at the time, I was much more familiar with the music of Stockhausen, Ligeti, Xenakis and other European figures. Form, (control and organisation) played a very important role in their music. The concept of a music that had no composed direction was initially baffling to me.**

5. How do you think the chance operations affect the technical side of this piece?

**The chance operations affect the *Freeman Etudes* in a dramatic way. Because of the very nature of chance operations, there are no concessions to any traditional thinking concerning violin technique. I guess the violinist Paul Zukovsky advised Cage about how to make this piece more 'playable', and also suggested various string possibilities for different tone colours. Unfortunately, I have never had the opportunity to discuss this with Paul Zukovsky. Cage loved sounds that were rather unusual, that could be produced in very high positions on the lower three strings and with extreme ponticello or col legno.**

6. Cage said the *Freeman Etudes*' main purpose is 'the practicality of the impossible.'<sup>210</sup> When you first saw this music, did you think it was impossible to play?

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<sup>210</sup>Pritchett, J., 1994. The Completion of John Cage's *Freeman Etudes*. *Perspectives of New Music*, Vol. 32, No. 2. Summer.p.264.

Irvine Arditti once said, nothing is impossible if you spend enough time at it. Over the years, he has learnt to regret that remark, as there have been some pieces perhaps not worth the effort it takes to learn them. The *Freeman Etudes* is not one of those.

But seriously, Cage's remark is very important. Because, like much other virtuoso contemporary violin music, (Ferneyhough comes to mind here) it takes the performer to the absolute limit of possibility. Whilst playing, the performer makes that concrete connection with interpreting the piece. With such a challenging work, this 'connection' can change from performance to performance. So the interpretation is an ongoing process. This is closely linked with my relationship to this piece and the composer.

The score indicates that the performer should choose a speed and then play the piece proportionally in time-space notation. This speed should be as fast as possible. Each subsequent time I met Cage and performed the piece, I got faster and faster as I became better acquainted with the score. This was my way of dealing with keeping this score at a limit, or on the edge of possibility. This was and is my way of dealing with the practicality of the impossible.

7. What makes the *Freeman Etudes* so difficult?

The difficulty is based on the fact that Cage wanted to write such a piece and his desire or inability to write with any traditional 'classical' thinking with regard to technique. Even if you play the work much slower than I do, there are sections where the events follow each other at such a velocity; one can hardly read the notes fast enough.

There are also challenges in the other extreme of holding very long notes with a very slow bow. In rehearsal we both found this more effective than frequent bow changes although in some of the long notes one has to change bow. The slow bowing creates a rather 'pressed' sound which one would never use in classical playing but which is rather effective here.

8. Did you play the *Freeman Etudes* in Cage's presence? a) How many times did you play the piece for Cage? b) What did Cage say about your performance(s)? c) Did Cage make particular requests about your performance?

I only ever played the *Freeman Etudes* in Cage's presence, except for two occasions when I was 'allowed' to try out some of the new *Etudes* before performing all 32. In Brussels at the Ars Musica Festival in 1991 I played *Etudes 17-24* and in Milan a few months later the *Etudes 17-26* when he was not present. At first he was reluctant to allow me to play only a few of the new *Etudes* but I persuaded him that it would be easier to be able to try out the new ones before attempting them all. This began in Darmstadt in 1990 when he arrived at the beginning of the courses with the music to the new number 17. I told him I would be happy to learn the new *Etude* and play it at the end of the courses. I performed the *Etudes 15-17* in Speyer Cathedral in July 1990. It was the four performances of the *Etudes 1-16* before then that had inspired Cage to embark on finishing this project, which was planned many years before.

The complete 32 *Etudes* were premiered in Zurich in the Tonhalle on 29<sup>th</sup> June 1991. After that, I agreed with Cage never to play smaller groups of the *Etudes* again, either 1-16, 17-32 or 1-32. The piece was preferably to be experienced in its entirety, being also an experience in how time passes.

**I performed the *Etudes* again in his presence in Macerata, Italy in June 1992. The next performance that took place in September 1992 in Frankfurt was a very sad occasion. Cage had died one month before. I had lost my favourite listener. John Cage was the most wonderful person you could imagine. He was incredibly supportive of my playing, never questioning what I did. For him the complete *Etudes* were a long-term dream realised. For me, like the many quartets that would never have been written if it hadn't been for the Arditti quartet, this was a piece that never would have been completed if I hadn't been there.**

9. The fingerings in the *Freeman Etudes* are the result of the collaboration between Cage and Zukofsky, and the workings of chance operations. What do you think of the fingerings in the *Freeman Etudes*?

**I do not need to think about them. The fingerings suggested by Zukovsky were his idea to make the piece playable. Some high fingering on the lower strings I retain as the tone colour is very different and the composer and I enjoyed this difference. Cage made it very clear to me that I could follow the string indications only if I wanted to. The piece was now mine to do as I saw fit.**

10. In 1994, James Pritchett the musicologist commented on your work as follows:

In 1988, Cage heard Irvine Arditti's remarkable performance of the first sixteen etudes and subsequently realized how to solve his problems with the impossible eighteenth etude. Arditti treated the etudes as an ongoing project on which he worked diligently to improve his speed in playing them. In the score of the *Freeman Etudes*, Cage instructs the violinist to play "as fast as virtuosity permits," and Arditti took that to mean "as fast as possible," period. Cage had not seen things in this way before, and now realized that he could treat the impossible numbers of notes in a similar way: the performer would be told to play "as many as possible".

(Pritchett, 1994)

- a) Would you explain the point Pritchett mentioned more in detail?

It was quite a simple observation. In the score, the time-space units are measured so that the violinist can have a feeling of speed if not tempo, when playing through the piece. The score preface informs that the speed of these units should remain the same throughout. Cage informed me during our rehearsals that he didn't really care for each Etude to be exactly the same but just approximately the same. This is why on my Mode recording of the work, I didn't worry too much about these units being completely exact.

To get back to the point, there is also the instruction that these 'units' should be played as fast as possible.

I had heard Janos Négyesy play the work and his duration for the first 16 Etudes was just under 2 hours, indulging in a more expansive interpretation of the work.

When I first worked at the piece for the Almeida performance in 1988, I believe I took just a little more than one hour for the same.

I gave three subsequent performances of the first 16 Etudes, in the Hague Conservatoire in November 1988, at the Huddersfield Festival in November 1989 and in Wesleyan University, Middletown in February 1990, at all of which, Cage was present.

Each time, I practised and performed the work, I was able to play it faster. I did not work diligently at trying to increase the speed, it just came with familiarity.

I discussed this point with Cage and sought his advice as to how far I should go in this direction, because by the 4<sup>th</sup> performance, my duration was down to a little over 45 minutes. He became really inspired, and answered with, 'I think

this should be the minimum duration’, but continued, ‘I believe I now know how to complete the Etudes’, something that he had been pondering over for many years. He asked me if I could actually play all the notes in the first 16 Etudes at this speed, and I jokingly answered, ‘well, almost all of them’.

He took this comment into his thinking for the composition of the second half of the piece.

I do believe it is possible to play the first 16 Etudes accurately at approximately 3 minutes per Etude.

Although I did not quite appreciate at the time, my enthusiasm for the work had inspired Cage to ‘understand’ how to complete the piece and because of the extremely complexity of what was going to come, the encouragement also that it wasn’t just a work for the shelf, but one that could be played. For the most complex passages, Cage gave the performer a ‘way-out’ clause, in that he said in these passages, one should play as many notes as possible. I am sure this must have been inspired by my comment to him.

I must admit that I try to play all the pitches in these sections, even if it is impossible to incorporate all the dynamic inflections and maybe the tempo is not quite as rapid as it should be in some parts.

- You mention ‘speed’ and ‘tempo’ separately. Would you explain how your definitions are different for these two terms?

I think we are splitting hairs here. One can relate ‘tempo’ to more classically oriented music, or let us say music that has meter. (Time signature)

In the *Freeman Etudes* there is no meter, so perhaps I have been incorrect to relate to tempo, but maybe not. Are not speed and Tempo the same?

**Tempo means time and therefore the time something takes is dictated by its speed. The work's 'pace' or speed is measured in units and therefore the violinist reads in time-space notation. But, these areas of space are contained within equidistant units which run throughout the work.**

**If the violinist chooses to make each unit 3 seconds, one could say the speed of each unit was 3 seconds or the Tempo was unit = 20**

**Now, when this particular violinist performs this piece in concert, he finds himself sometimes accelerating in some passages of difficulty. One could say it was a rush of adrenelin. Is the violinist then guilty of the offence called 'speeding'?**

**Answer, probably, but only if caught by a music critic with a stop watch.**

b) I have some more specific questions

- Why did you treat the *Freeman Etudes* as an 'ongoing project'?

**The ongoing project aspect of the interpretation was to do with the first book and performances between June 1988 and 1990, with the increase of speed for each Etude. When I received the music to the second book, which had some sections of much greater difficulty, I had to initially reduce the speed of all Etudes until I could play all the Etudes at the same speed as the first book.**

- When you perform the *Freeman Etudes*, how much difficulty is there to keep, and maintain, the tempo?

**This is something that worried me at first but then became less of a problem. As I practised each Etude with a stopwatch close to hand, I learned to read the music at a more or less a constant pace. This means my eyes traced across the stave at more or less a constant speed. At first I used the stopwatch to check and correct this procedure, but then I realised that I had learnt the music at a**



**certain speed and didn't need to keep referring to the stopwatch. I use a stopwatch in performance as a guide to check the tempo of the first few Etudes and then to occasional see how I am doing. I do not regulate the music if I have strayed slightly. Strangely enough my performance timings for the 32 Etudes are usually within a few minutes of each other.**

c) Are there any details or aspects in the *Freeman Etudes* that you might think Cage was affected by in your performance?

**I think Cage was a composer least affected by details. Certainly long after the event of composition he was much more interested in the shape of the piece as a whole and the experience of listening. That was his responsibility, to guide and influence the audience. To teach them how to listen, if you like. He was very happy to allow me to make my choices with regard to any technical questions.**

11. Regarding the notation of the *Freeman Etudes*, I have a few more questions.

a) What do you think about the use of notation in the *Freeman Etudes* in general?

**In most cases, the notation is clear. There is some confusion with the length of non-beamed open notes (like minims). Cage encouraged the performer to find his (or her) own solutions to these questions.**

b) With this detailed notation, do you think the performers can still express themselves?

**This question can be asked of the performer in any virtuoso piece. In such music the challenge is renewed with each performance. To gain a greater level of**

**accuracy and fluency gives the direction towards expression of interpretation. Perhaps, with this monumental chance score, some aspects of ‘interpretation’ have to be limited. One is not following the composer’s formal plan to try to make these details more clear. One can only ‘deal’ with these stark building blocks, (the notes, dynamics and all other parameters) in a way to achieve a greater level of accuracy each time. One can, however, also explore the intensity of dynamics, make ever more accurate and extreme contrasts in dynamics and all articulations in order to ‘improve’ the interpretation.**

12. James Pritchett helped to rediscover the composition process of the *Freeman Etudes* after Cage resumed writing the piece.<sup>211</sup> Of this process, Pritchett asked Cage a question: ‘How were durations determined?’, and he replied, ‘using a graph of 10ths of an inch where there was available more than 1/10th not less than 2/10th, chance then determined the total length of the end of a legato passage and detached notes.’ (Pritchett, 269: 1994) So the durations in there were thoroughly decided, though the indications of the notation are not entirely as clear as some conventional classical Western-European notation.

a) How did you interpret rhythm in the piece?

**Rhythm is created by the proximity of one note to another in each event or proximity of each event. One does not have to worry about playing rhythms, just playing the piece.**

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<sup>211</sup>Pritchett, J, 1994. The Completion of John Cage’s *Freeman Etudes*, *Perspectives of New Music*, Vol. 32, No. 2. Summer, pp.264-270.

b) Pritchett says generally there are two types of bowing the performer needs to use: *legato* and *détaché*. He explained that these two types of bowing were decided by chance operations.

- Cage mentions '*tones to be played legato, sometimes simulated, are connected with a beam*' (see Appendix 1.2.) How did you interpret this explanation about the bowing?

**I am afraid I did not take too much notice of this. I would need to refer to the score which I don't have with me, but I believe I never really played any connections legato, (slurred, in the same bow) but when they were connected by a beam I played them without a break.**

- The isolated notes are supposed to be played *détaché*. However, these notes are quite often beamed to be held for an individual length. As *détaché* is supposed to be a short stroke, do you think this is still *détaché*?

**I think this is one of the points in question where the performer has to make his own decision about each of these anomalies. Cage would never want to answer these practical questions.**

13. Talking about your aesthetic as a performer:

a) What is the role of the performer in both the classical period and the contemporary period?

**The role of the performer is to be the direct link between composer and listener. To offer the music to the public in a fashion the public would expect to**

hear or to stimulate them with another way of thinking. There have been various different ways of thinking about how to perform classical music over time. Of course with contemporary music, it is slightly different because mostly the composer is at hand to consult and work with to formulate an interpretation that he or she would also like to hear. This does not mean that in time performances will not evolve and become more mature. This is something I have experienced with many composers' music over the years. Performance is no fixed thing. This is why a recording is only a measure at that moment.

b) Taking into account your general notion about a performer's role, do you think we performers need different attitudes to Cage's works?

I would say with many of Cage's works this is true, with the performer working with many free or improvisational techniques to co-create the end result. With the *Freeman Etudes*, this is not the case. The score is totally notated and the performer can treat it like most other fully notated scores.

c) You have played many virtuoso pieces which were written in or after the twentieth century. In comparison with other virtuoso pieces, how different is the aspect of difficulty in the *Freeman Etudes*? In the piece, there is neither extended technique nor mathematical rhythmic writing like the new complexity pieces. However the piece remains extremely virtuoso. May I ask why that is?

I think it is wrong to say that there is no mathematical writing in the *Freeman Etudes*. Of course, there is not as such, because the *Freeman Etudes* are written in time-space notation. But realistically, if one interprets the hieroglyphics accurately, then complex rhythmic relations will be heard. In fact, someone once

**commented how some complex moments in the *Freeman Etudes* might have been written by Ferneyhough.**

14. How much do you think Cage's whole aesthetic of indeterminacy and determinacy is reflected in the *Freeman Etudes*?

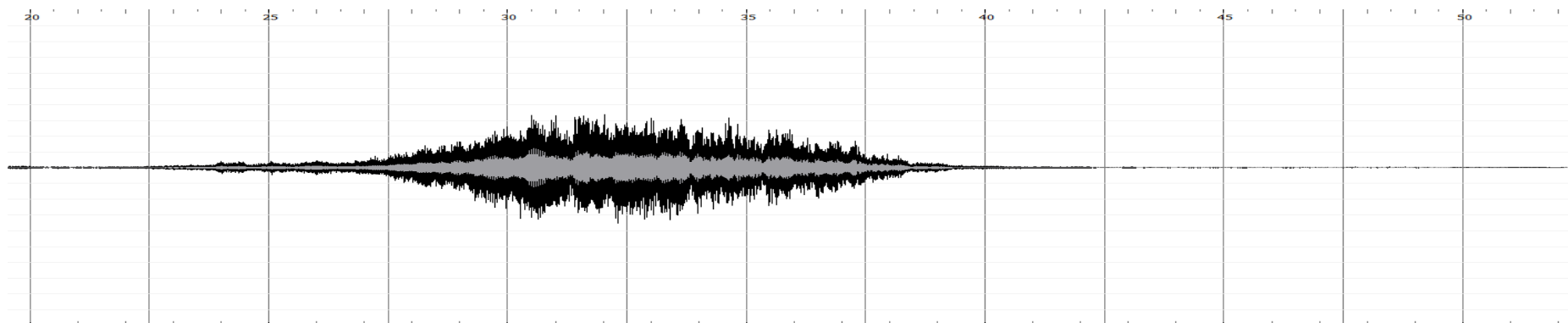
**As I have said, there are so many of Cage's works that are indeterminate. I do not think the *Freeman Etudes* is one of these.**

15. You have collaborated with many composers around the world. Could I finally ask how you like to collaborate with them?

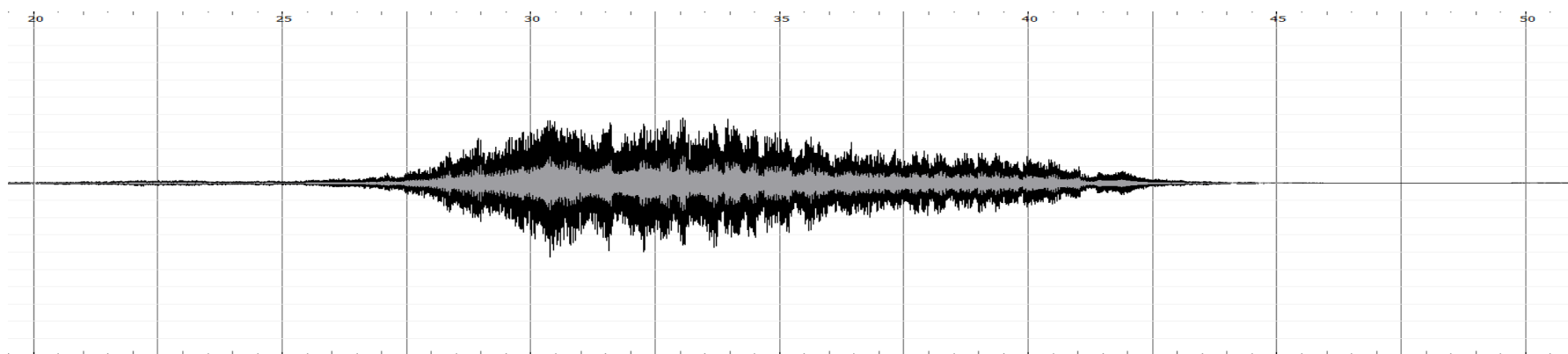
**Quite simply the collaboration is to find out how they like to have their music played and try to do that, of course injecting my own ideas and my many years of interpretation experience into the equation. I hope the result is always a mixture of these two things. Often I like to suggest different options and have the composer make the final decision.**

## **Appendix 2.1 – 8-channel tape, Luigi Nono *La Lontananza Nostalgica Utopica Futura***

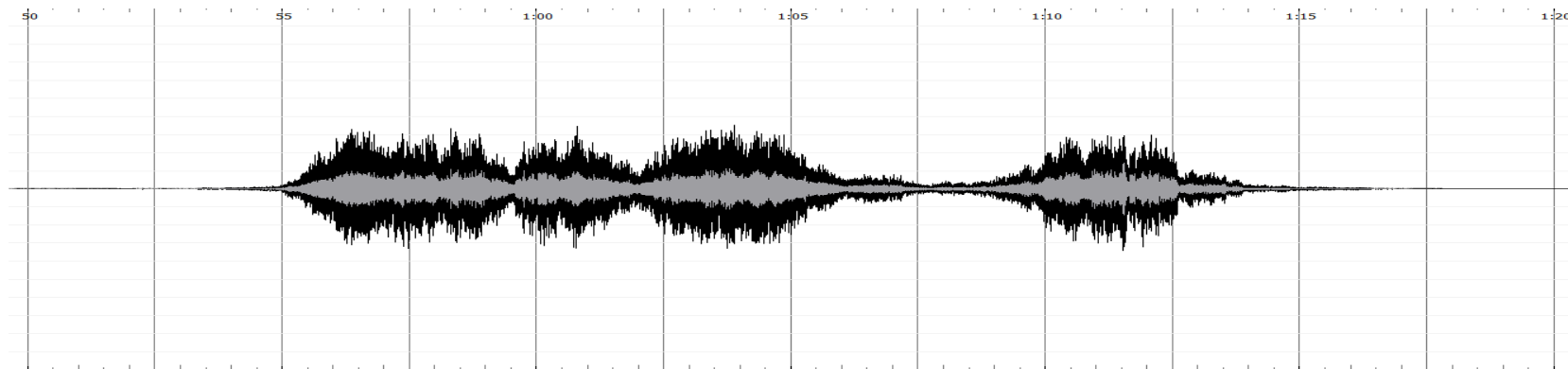
**The images in this appendix show sound waves and their amplitude.  
Vertical lines show a time progression by seconds. A space between two lines is 2.5 seconds.**



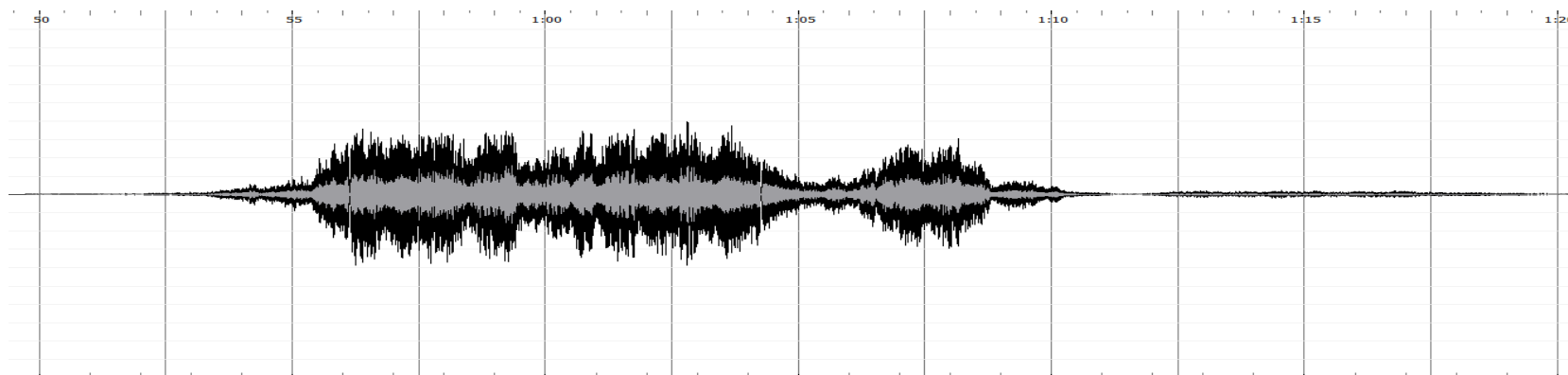
*La Lontananza* 8-channel tape, channel 1, 20" – 50"



*La Lontananza* 8-channel tape, channel 2, 20" – 50"



*La Lontananza 8-channel tape, channel 1, 50" – 1'20"*



*La Lontananza 8-channel tape, channel 2, 50" – 1'20"*

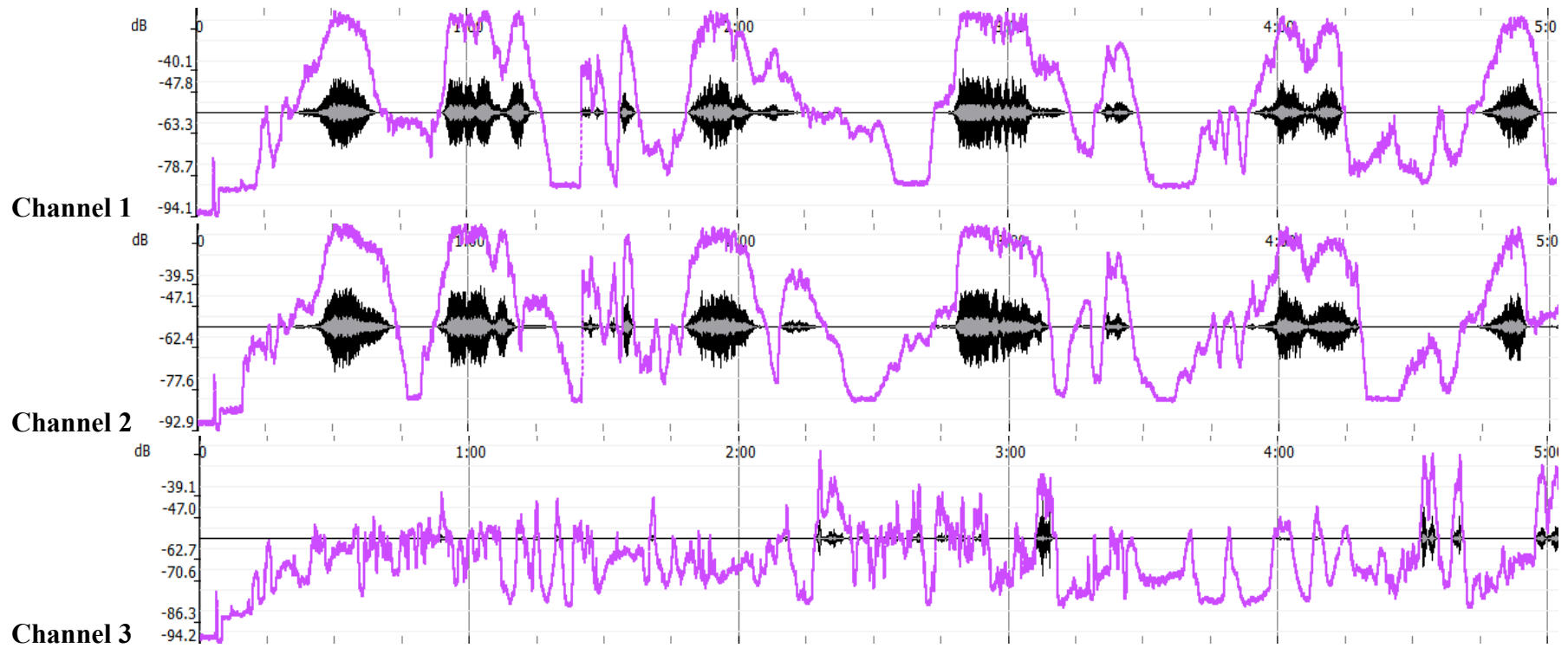


## **Appendix 2.2**

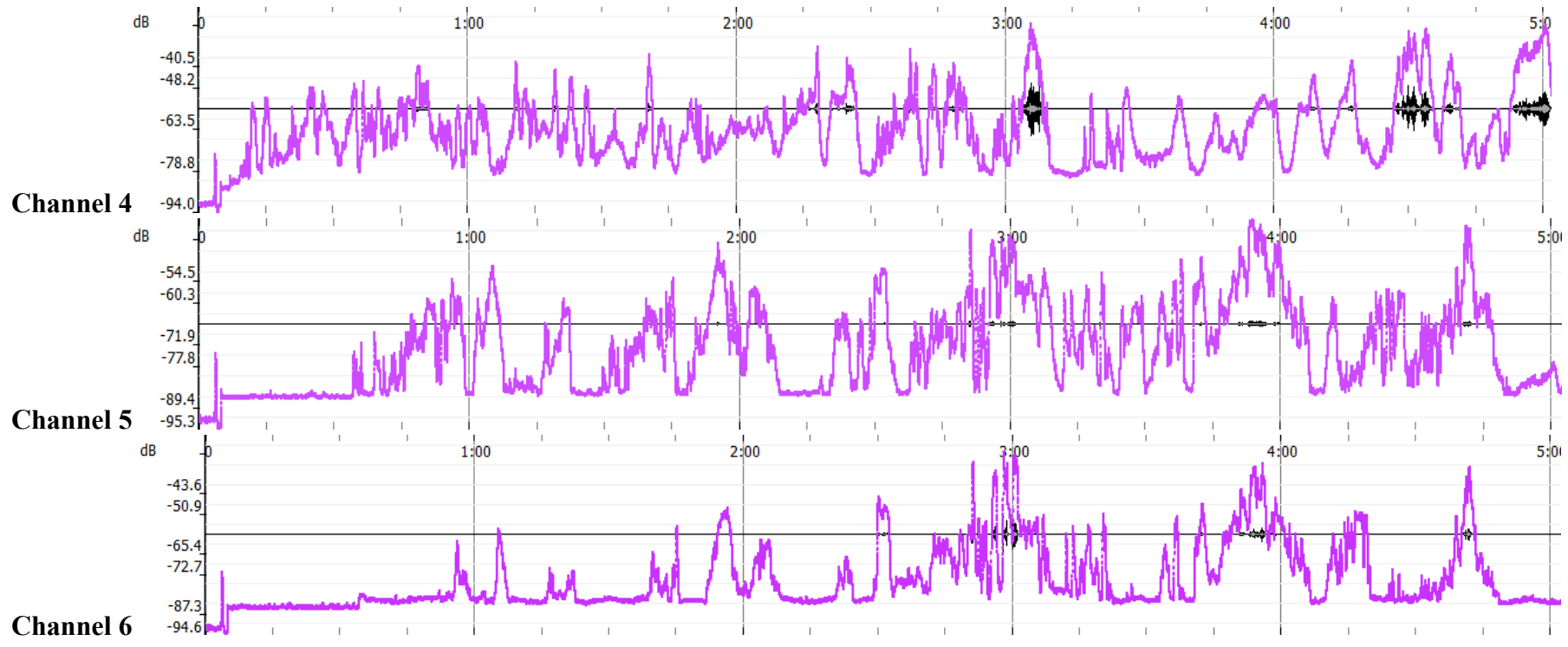
### ***La Lontananza* 8-channel tape**

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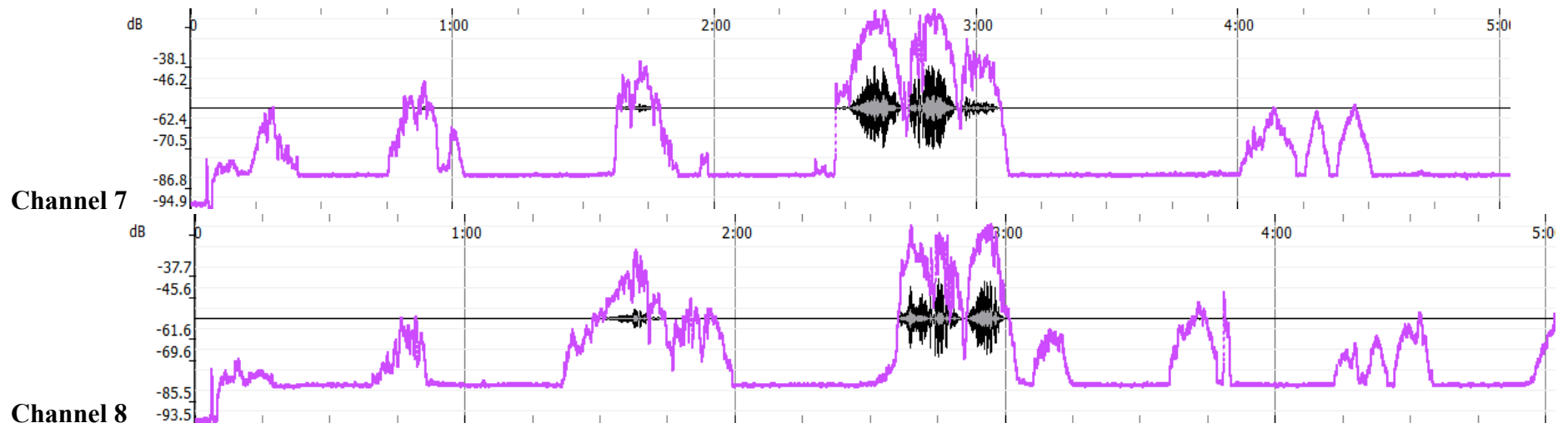
- **The images include sound waves and their amplitude.**
- **Vertical lines show a time progression by minutes. A space between two lines is one minute.**
- **A purple line in each image demonstrates analysis results, produced by ‘power curve plug-in’ with Sonic Visualiser. The line illustrates detailed amplitude level by decibel.**



*La Lontananza* 8-channel tape, 1'0" – 5'0", channels 1-3



***La Lontananza* 8-channel tape, 1'0" – 5'0", channels 4-6**



*La Lontananza* 8-channel tape, 1'0" – 5'0", channels 7-8

## **Appendix 2.3 - Luigi Nono, *La Lontananza***

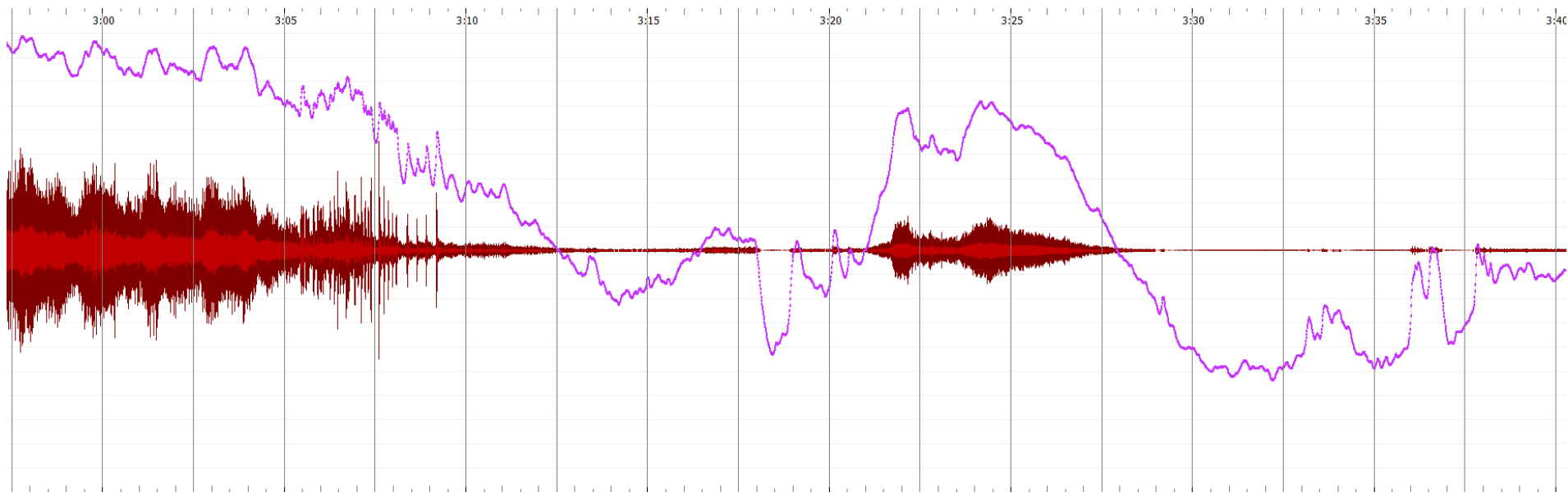
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## **Appendix 2.4**

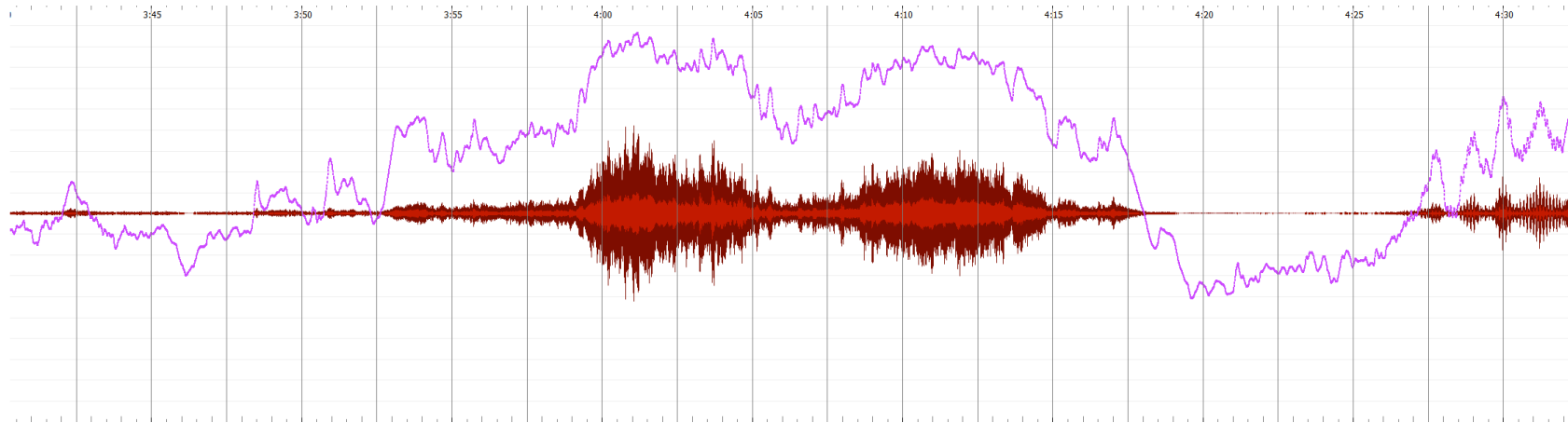
### ***La Lontananza* 8-channel tape, from 3'0" to 5'20"**

The images here contain information as follows:

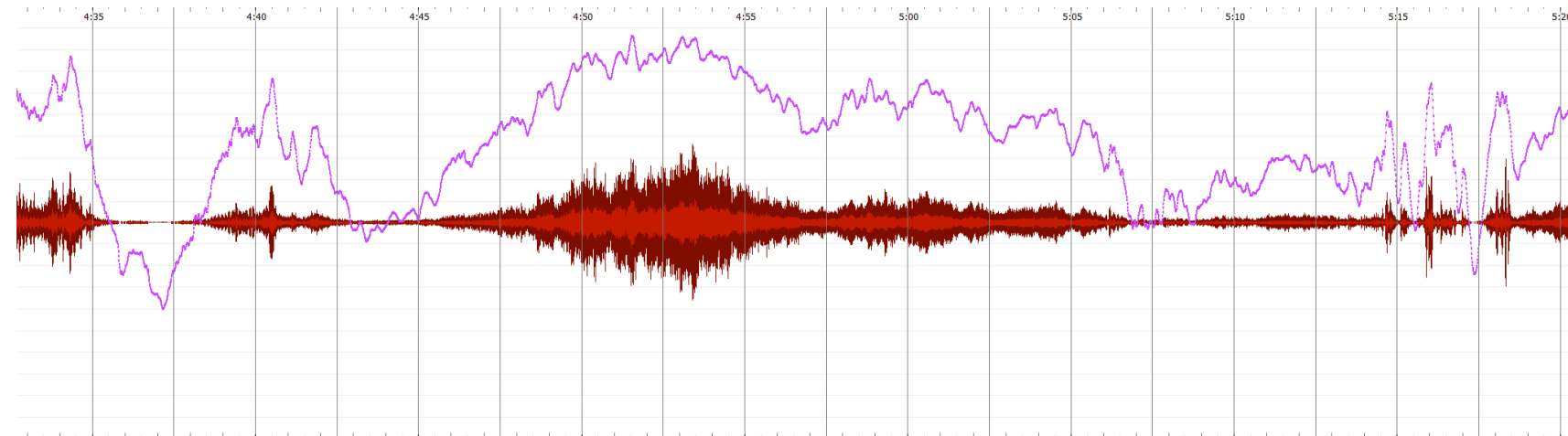
- **Vertical lines show a time progression by seconds. A space between two lines is 2.5 seconds.**
- **Images demonstrate sound wave by red colour.**
- **A purple line in each image displays analysis results, produced by 'power curve plug-in' in Sonic Visualiser. The line illustrates detailed amplitude level by decibel.**



***La Lontananza*** 8-channel tape, a combined channel, from 3'0" to 3'40"



***La Lontananza* 8-channel tape, a combined channel, from 3'40" to 4'30"**



***La Lontananza* 8-channel tape, a combined channel, 4'30" – 5'20"**

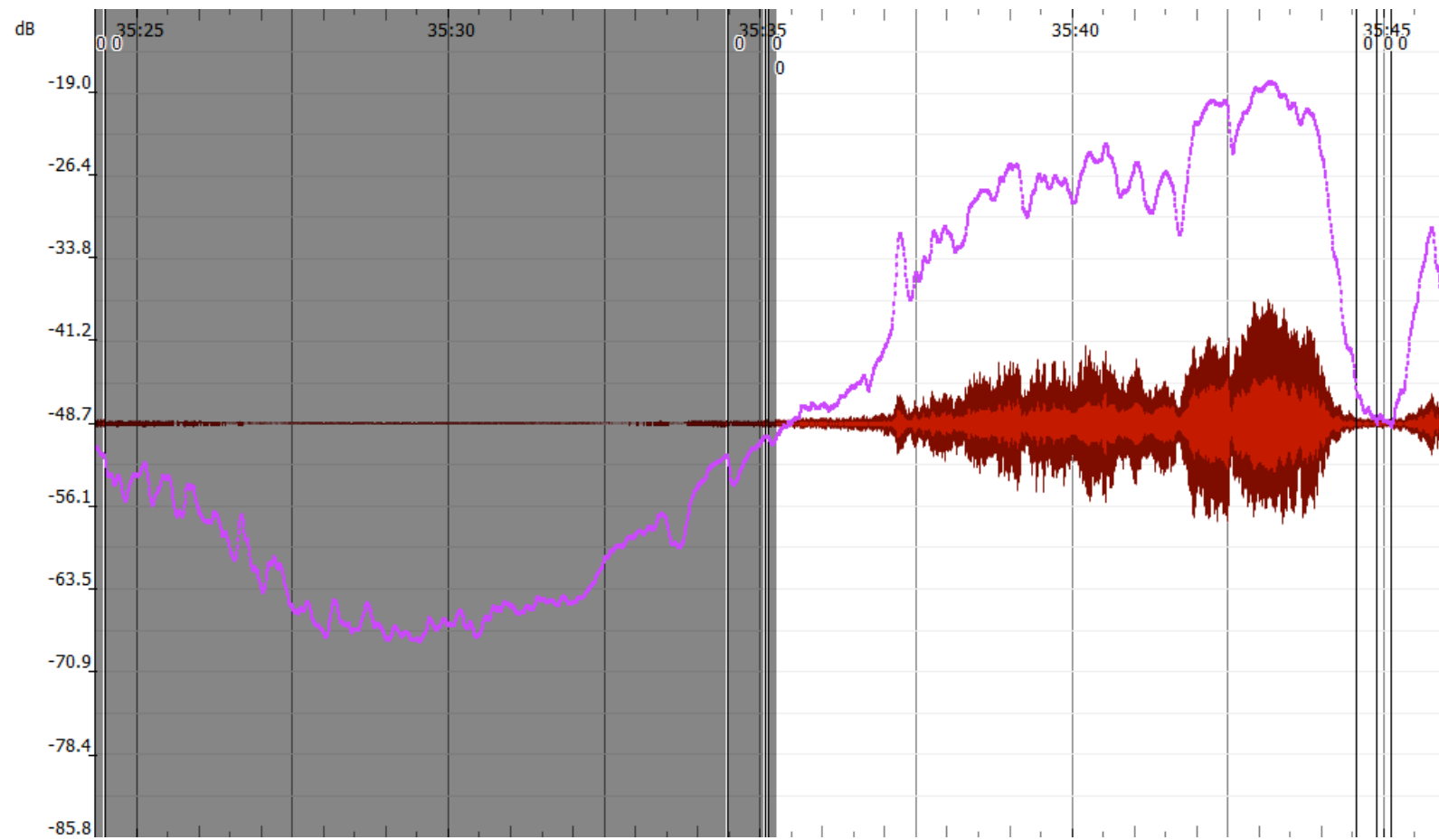


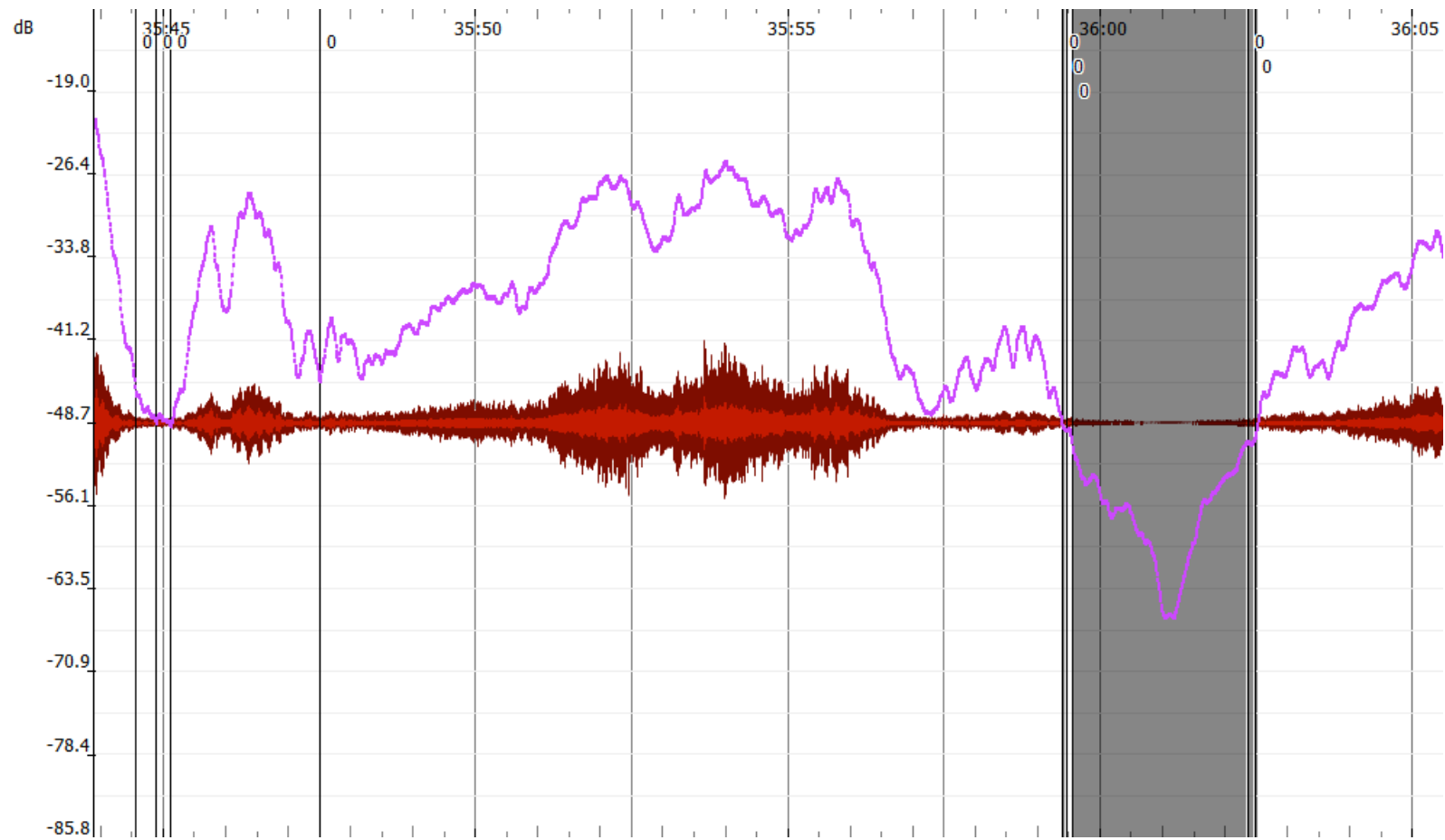
## **Appendix 2.5**

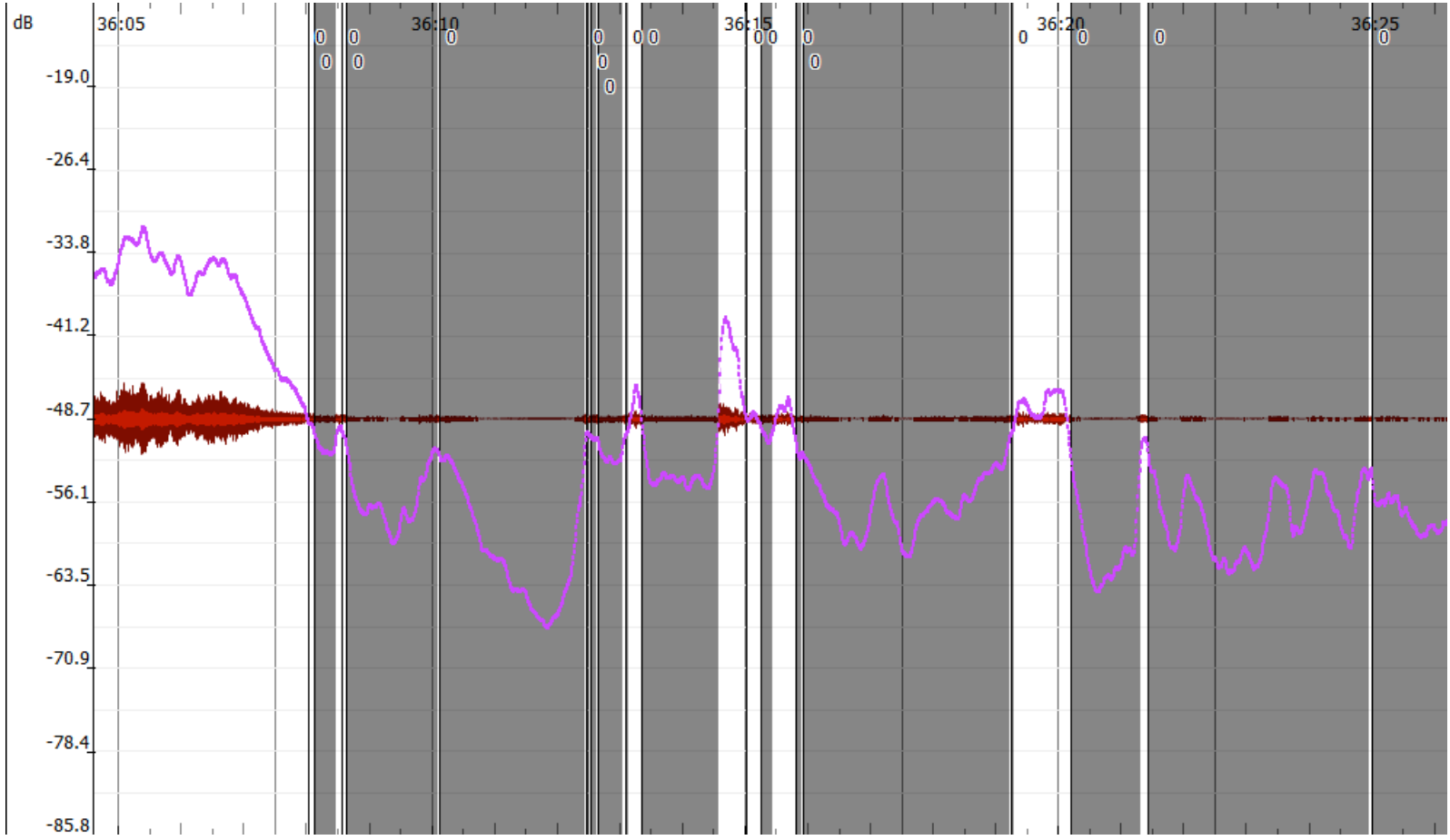
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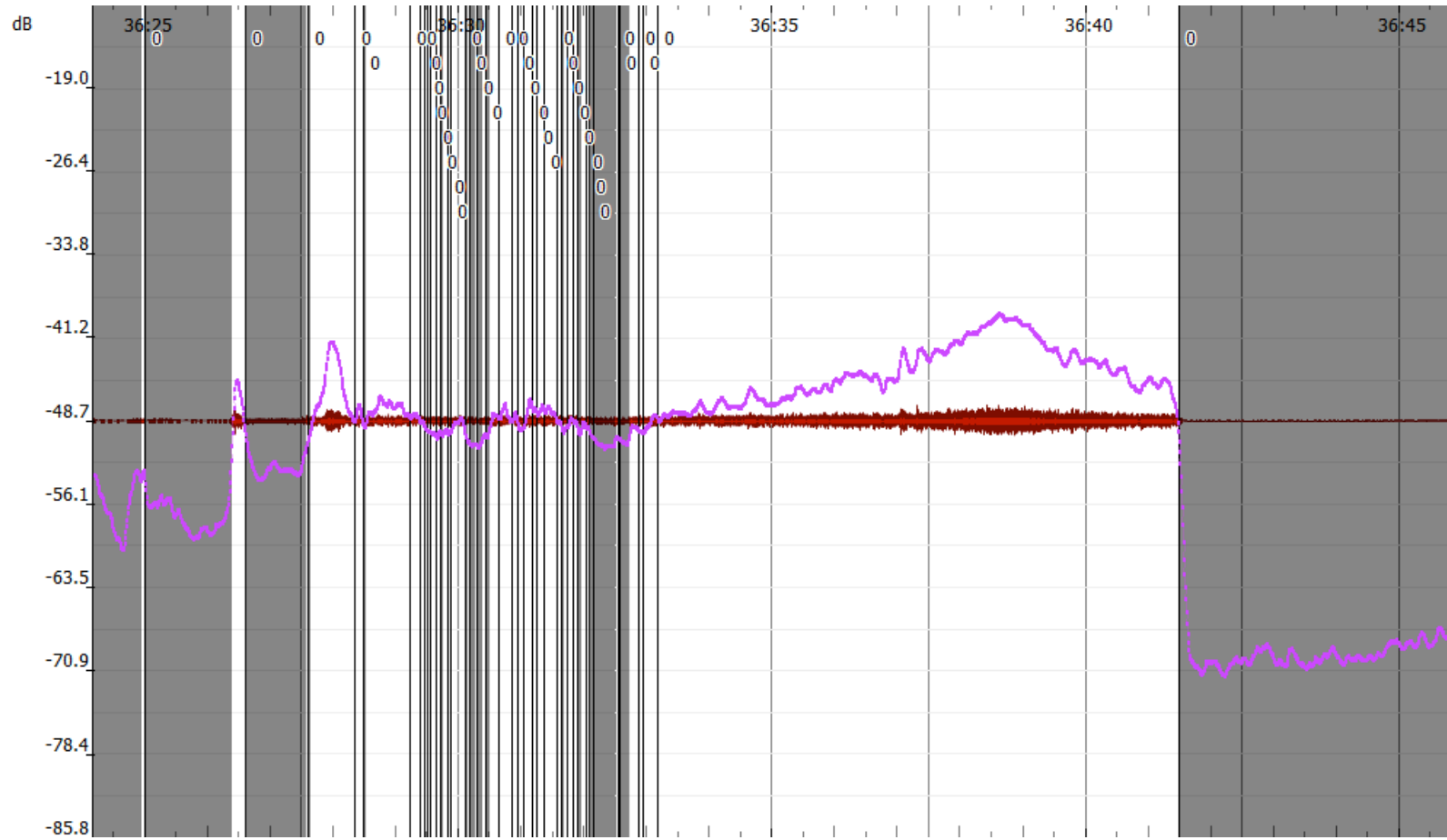
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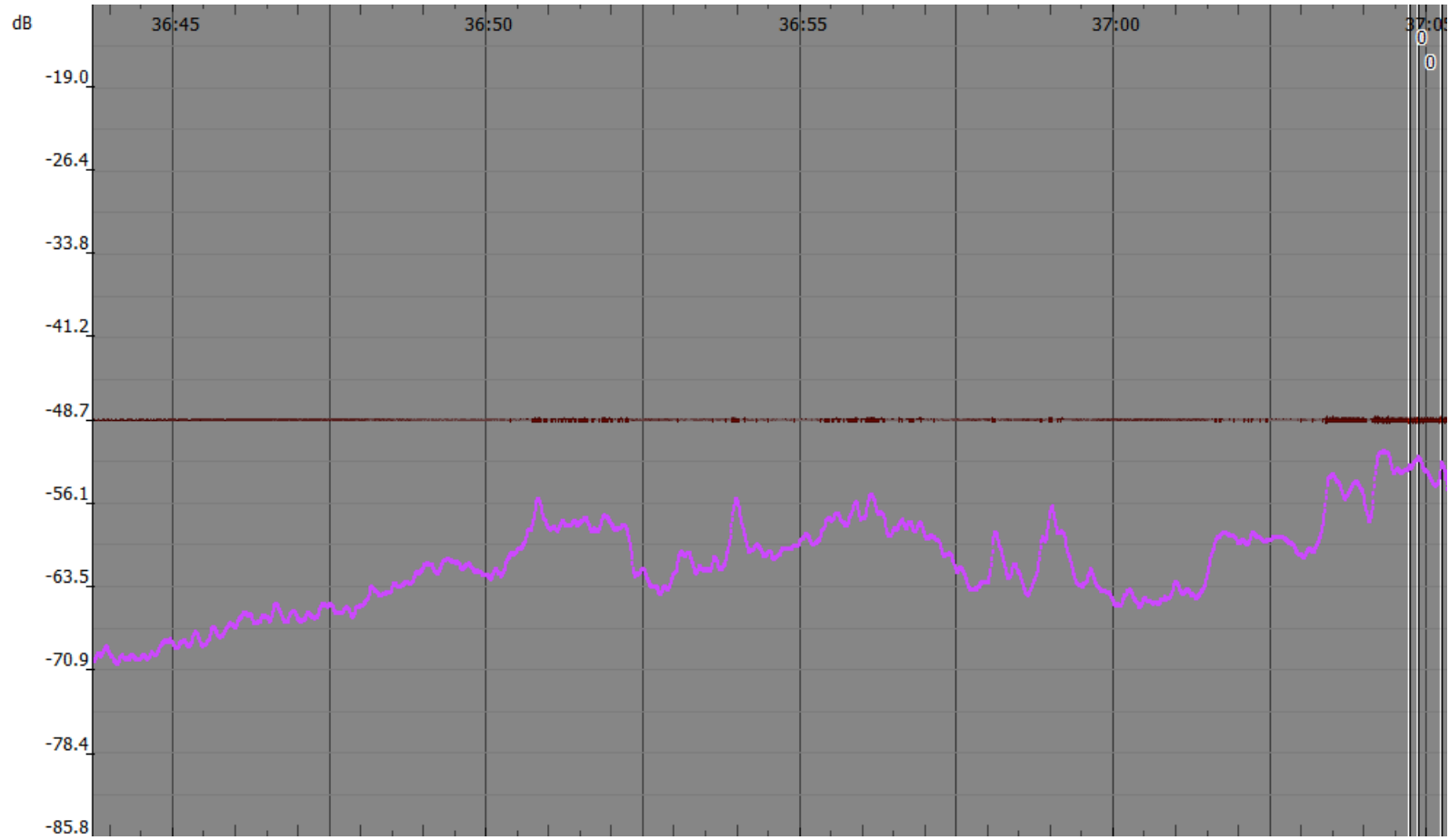
- **Vertical lines show time progression by minutes and seconds. A space between two lines is 2.5 seconds.**
- **Sound waves appear in each image by red colour. Eight channels have been combined into one channel.**
- **A purple line in each image displays analysis results, produced by 'power curve plug-in' in Sonic Visualiser. The line describes detailed amplitude level by decibel.**
- **Gray colour illustrates silences, which is analysed by 'Aubio Onset Detector' with Sonic Visualiser. The plug-in is set -80 db as a silence threshold.**

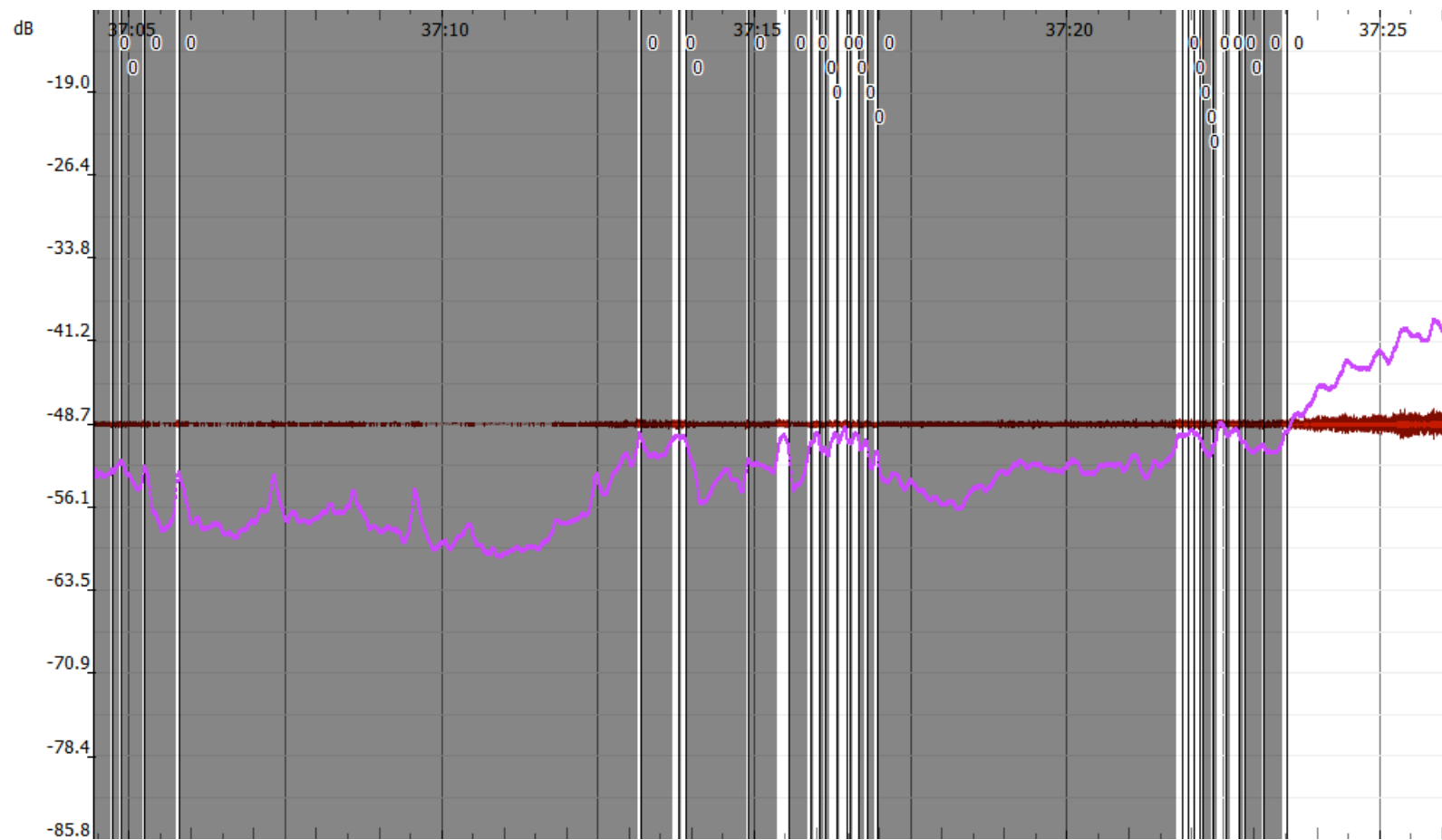


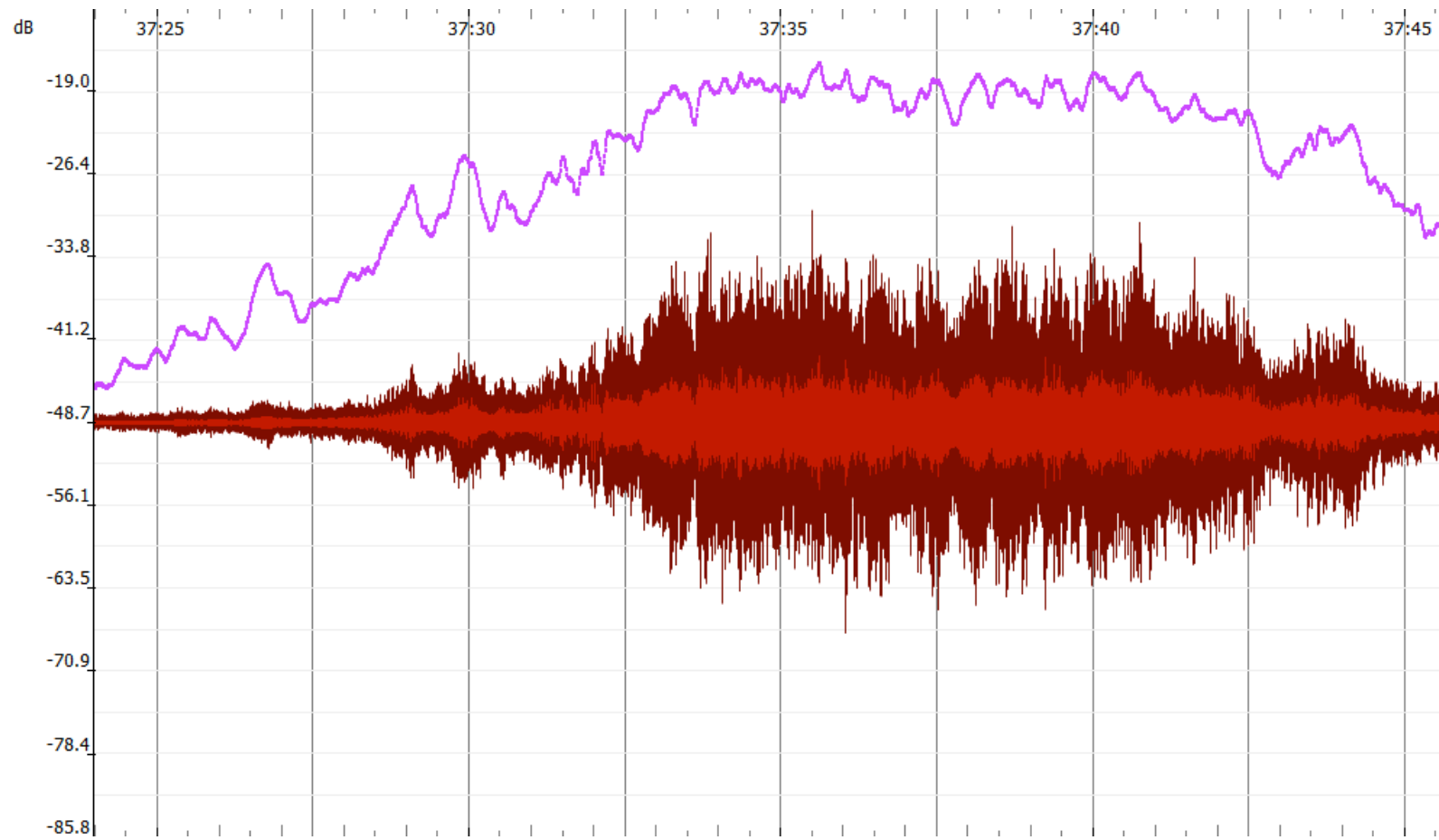




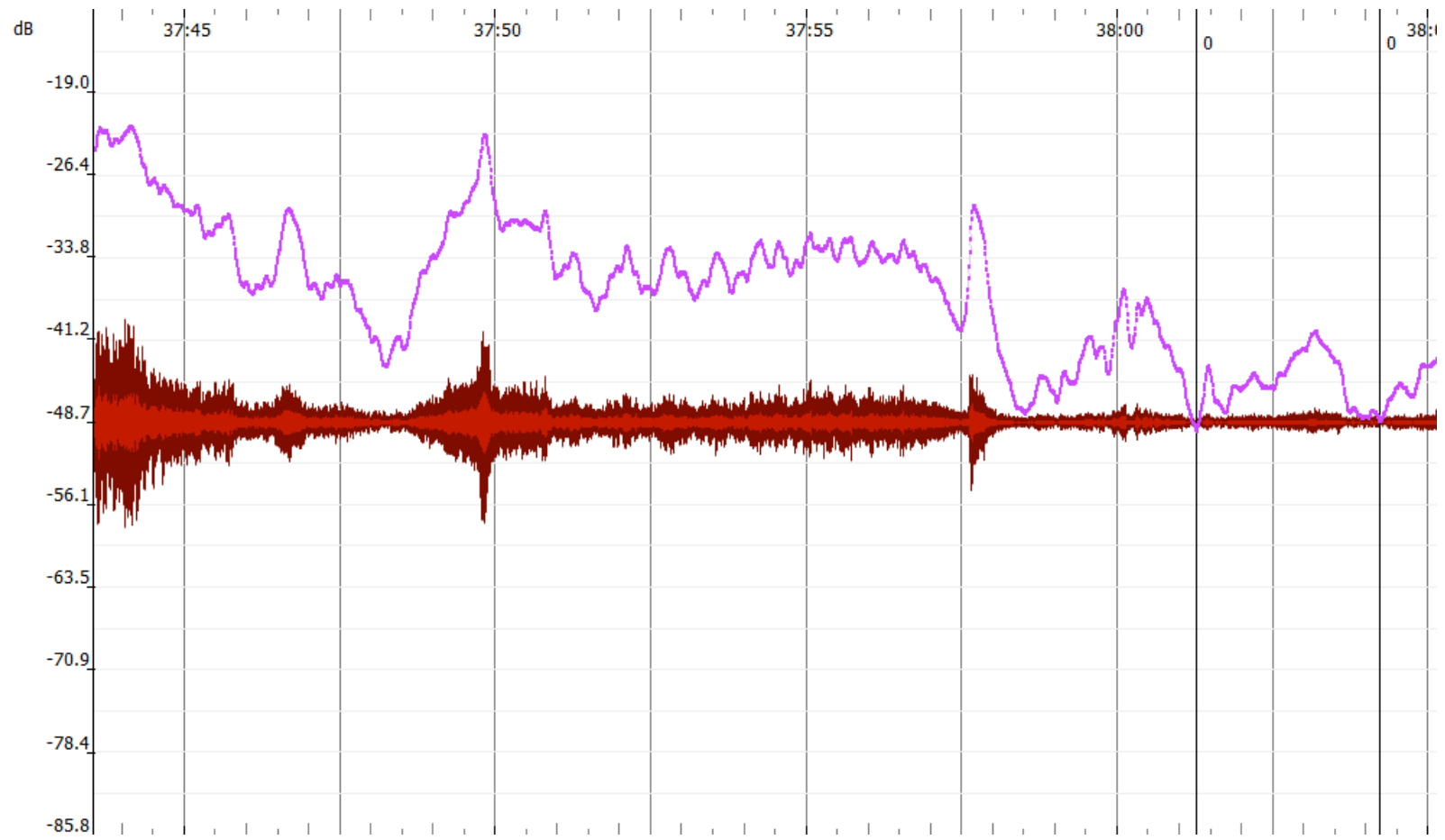


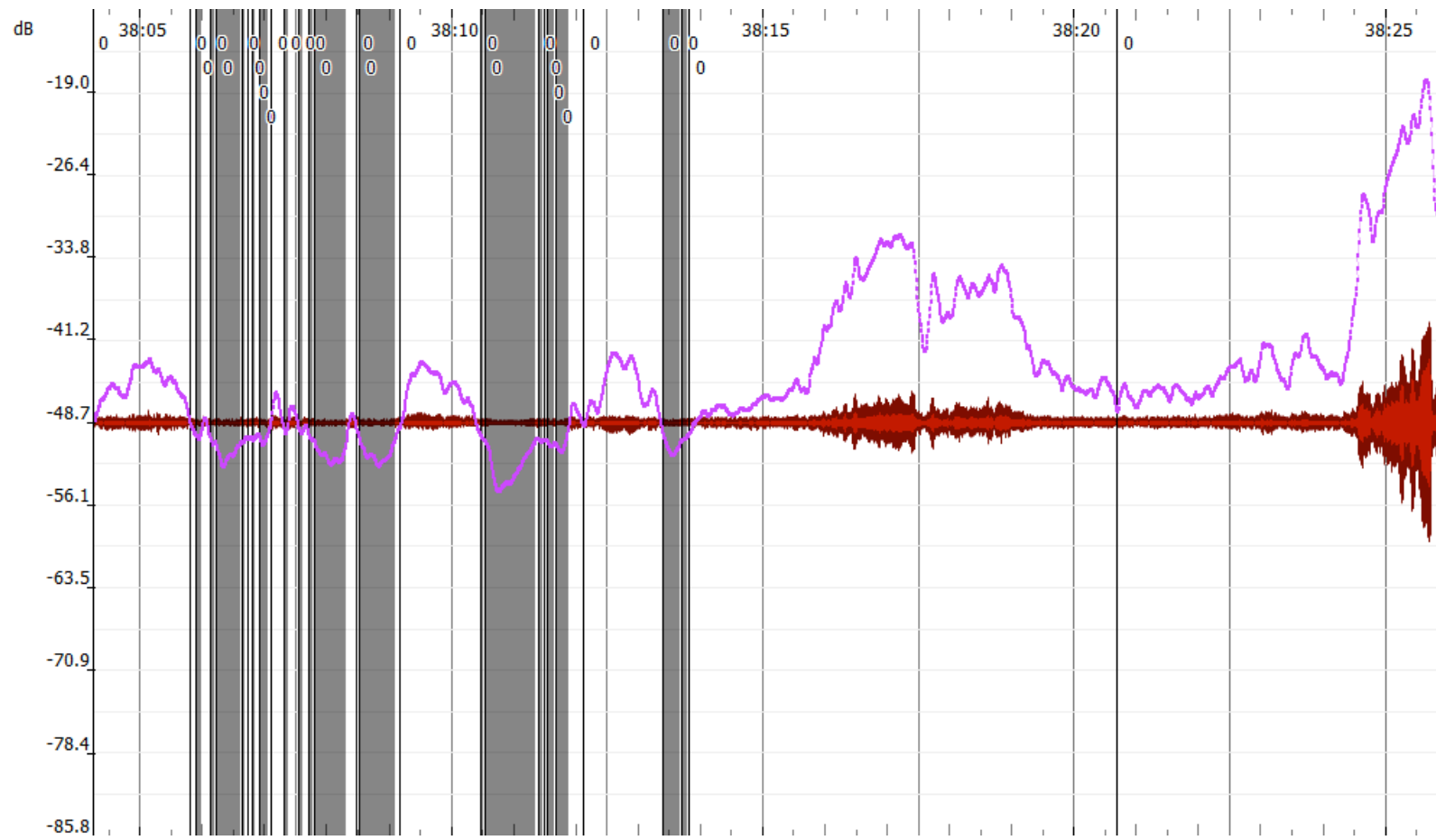


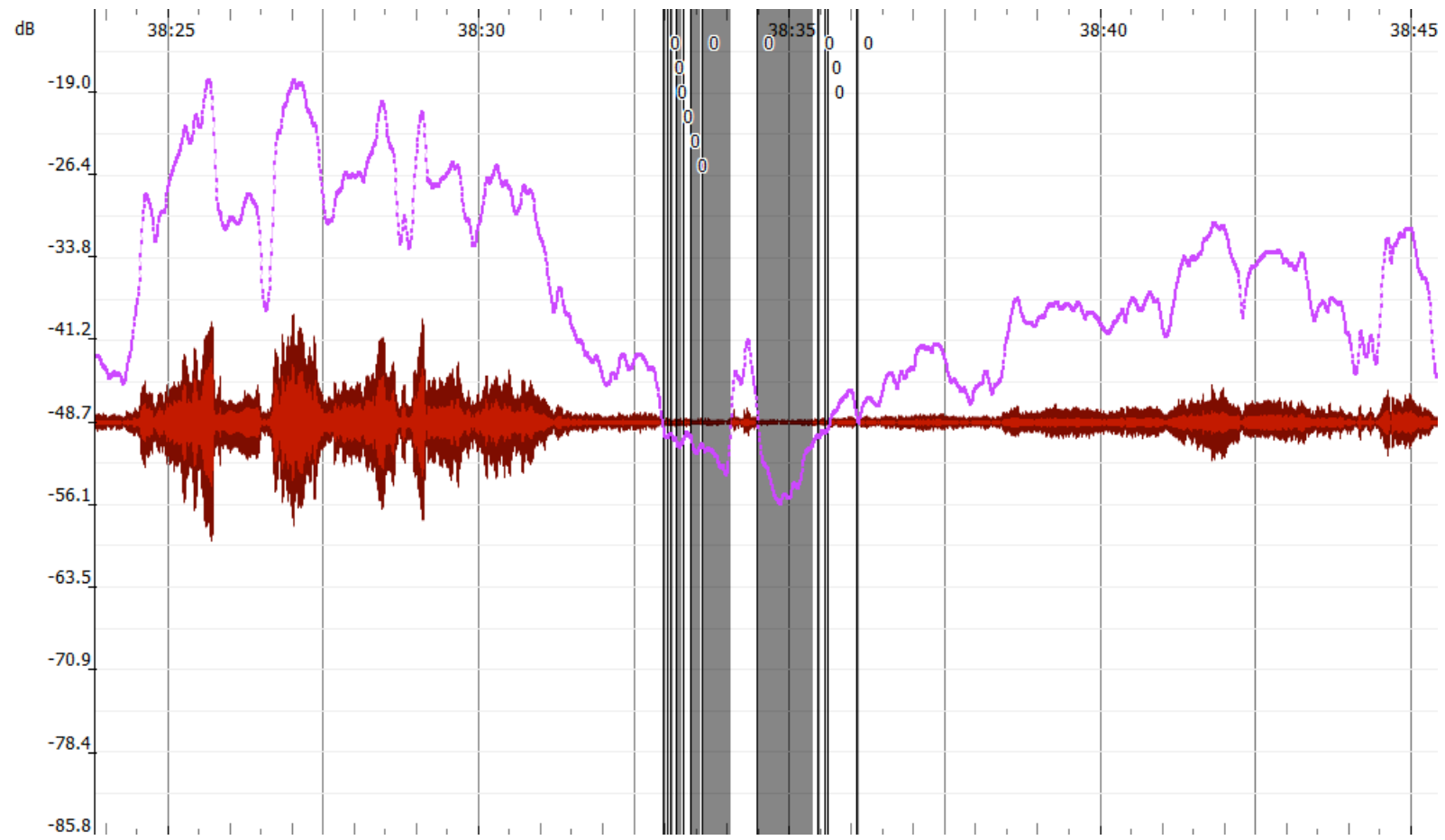


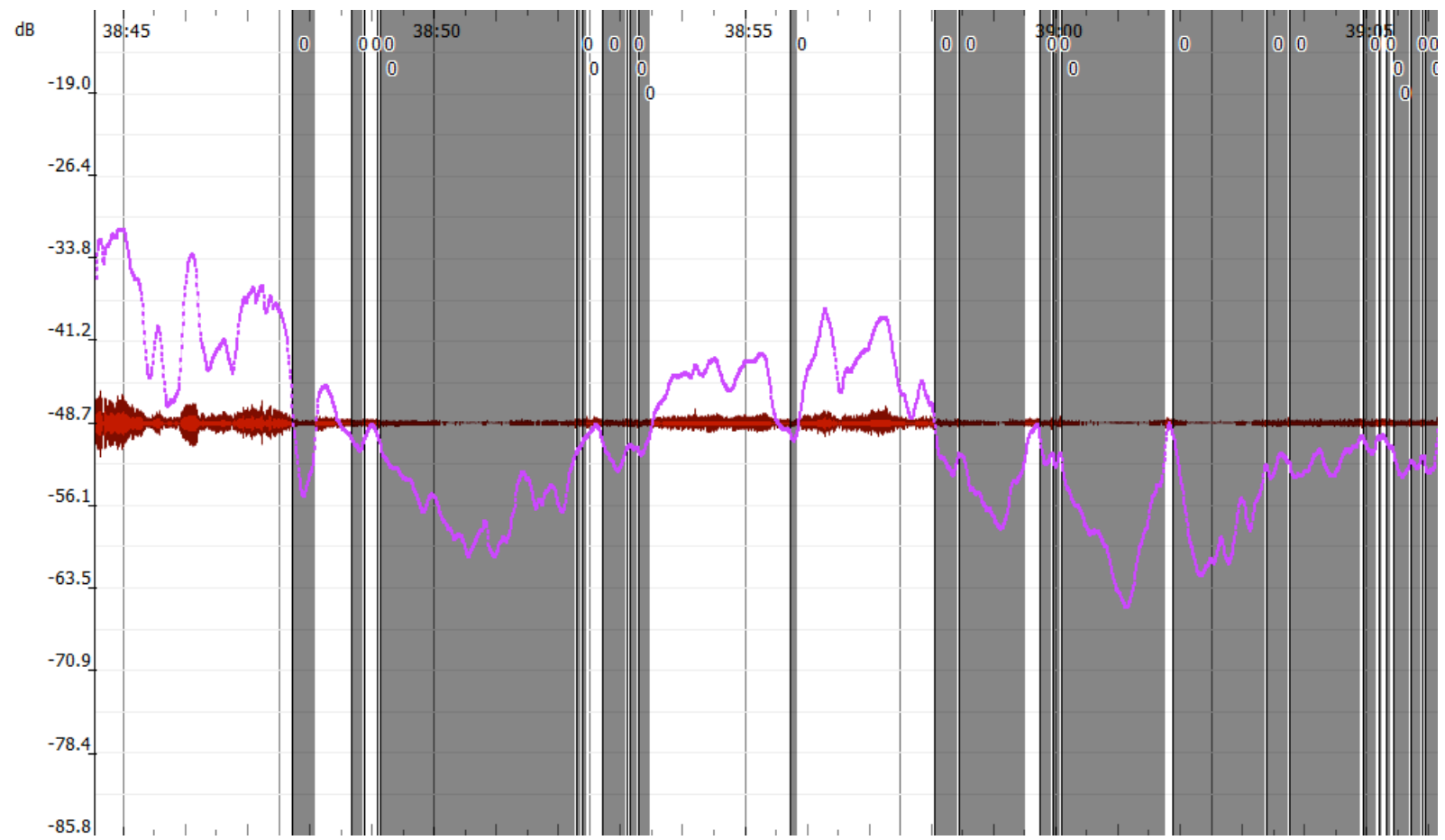


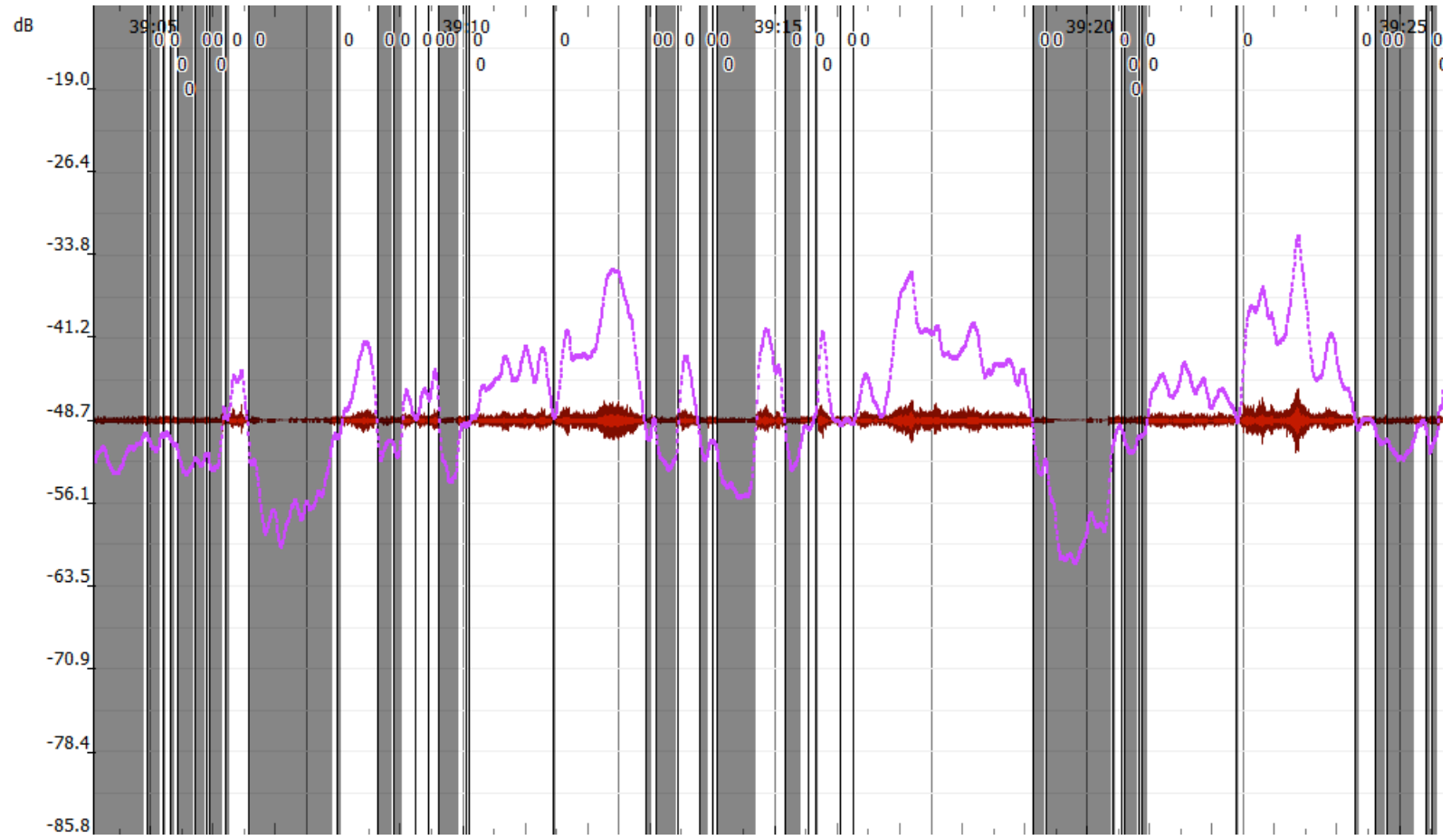


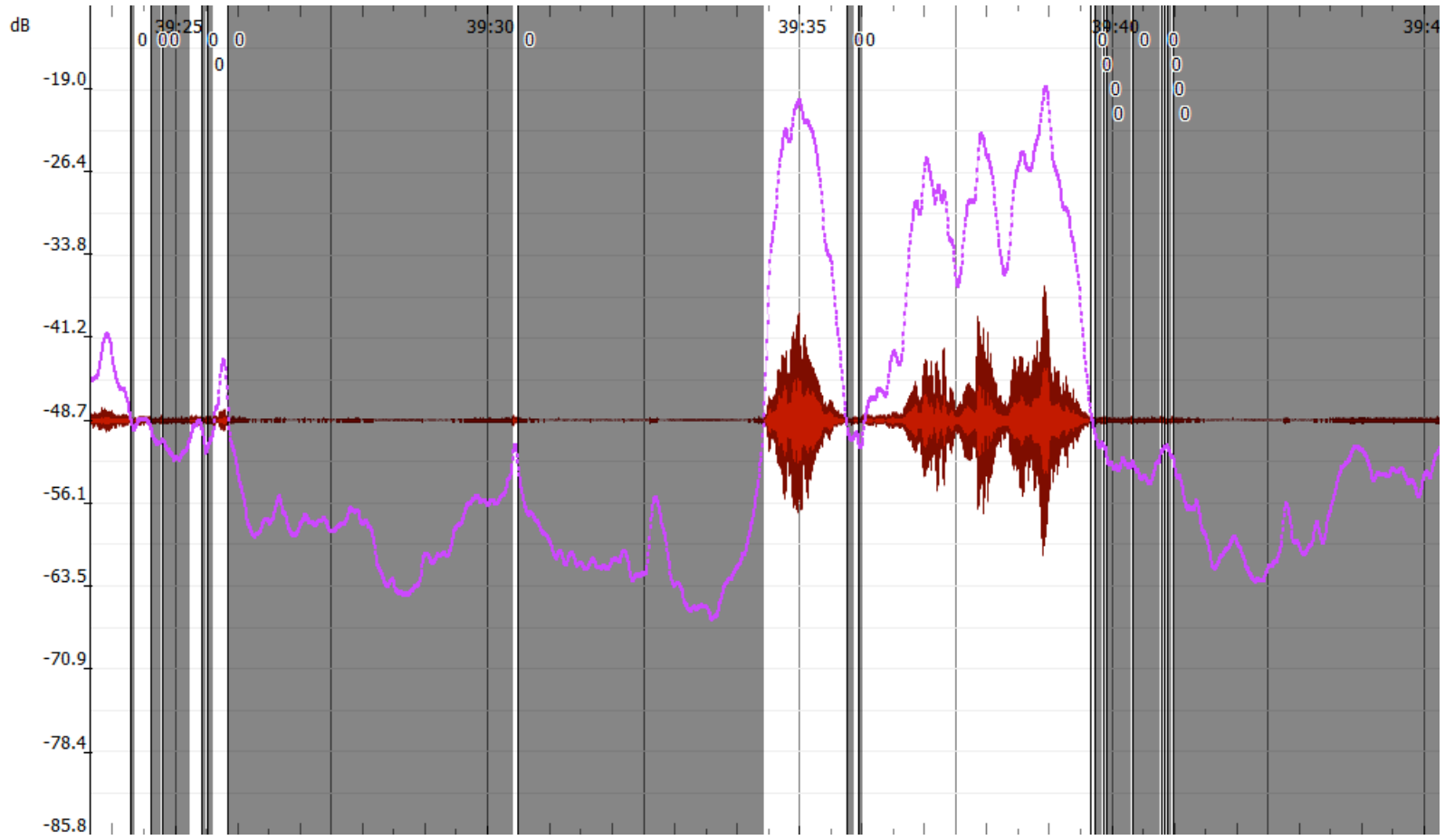


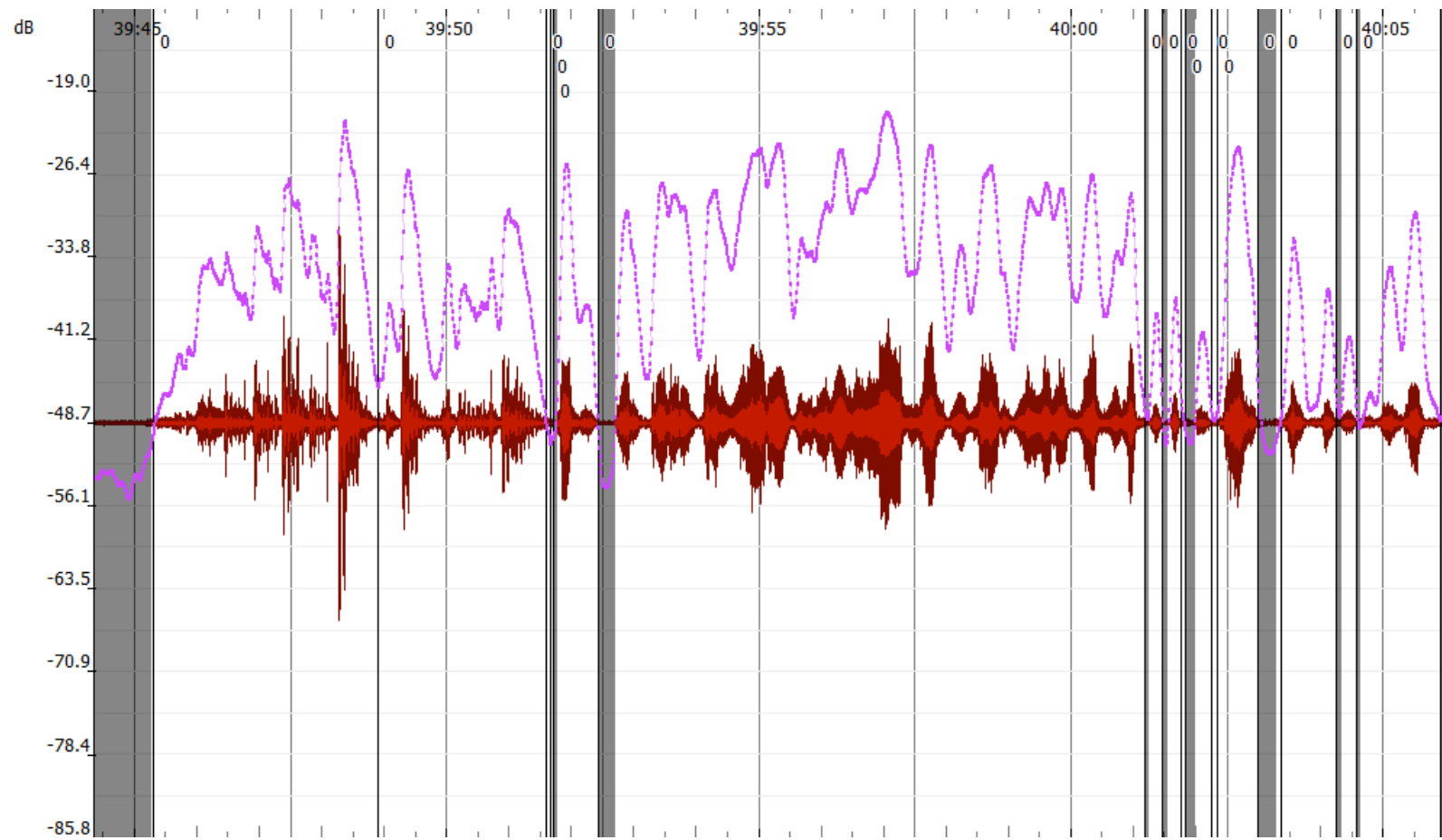










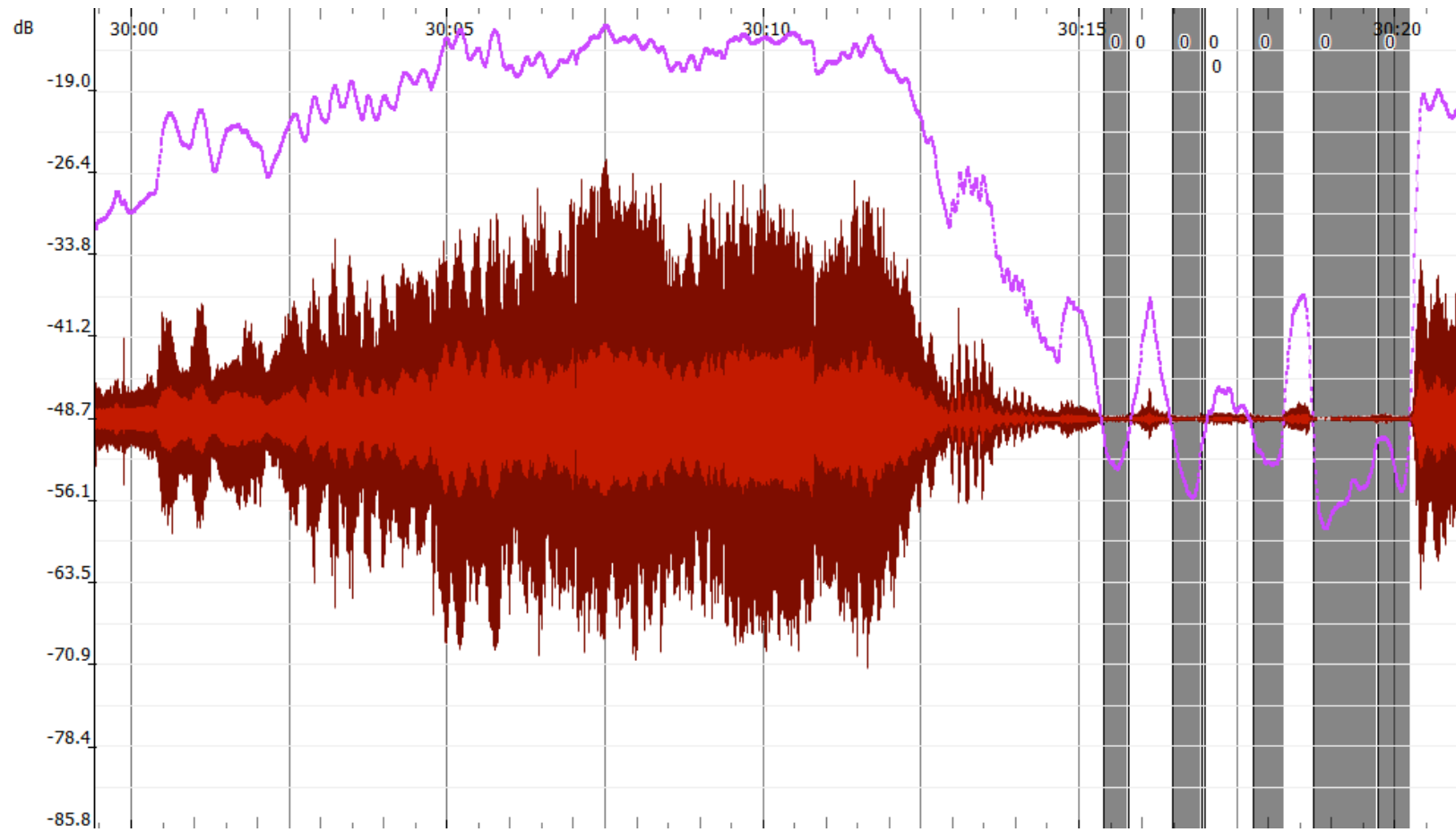


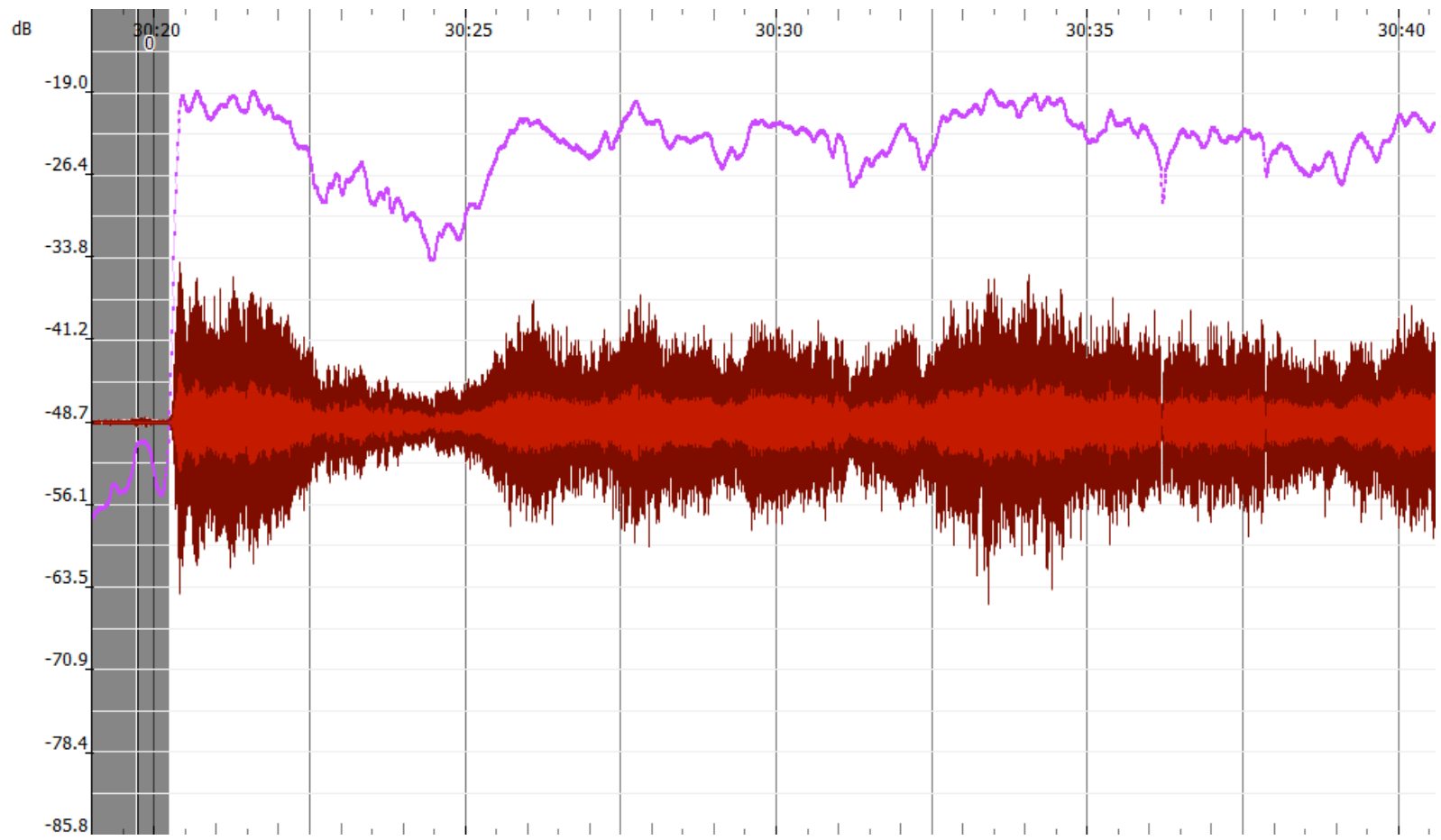
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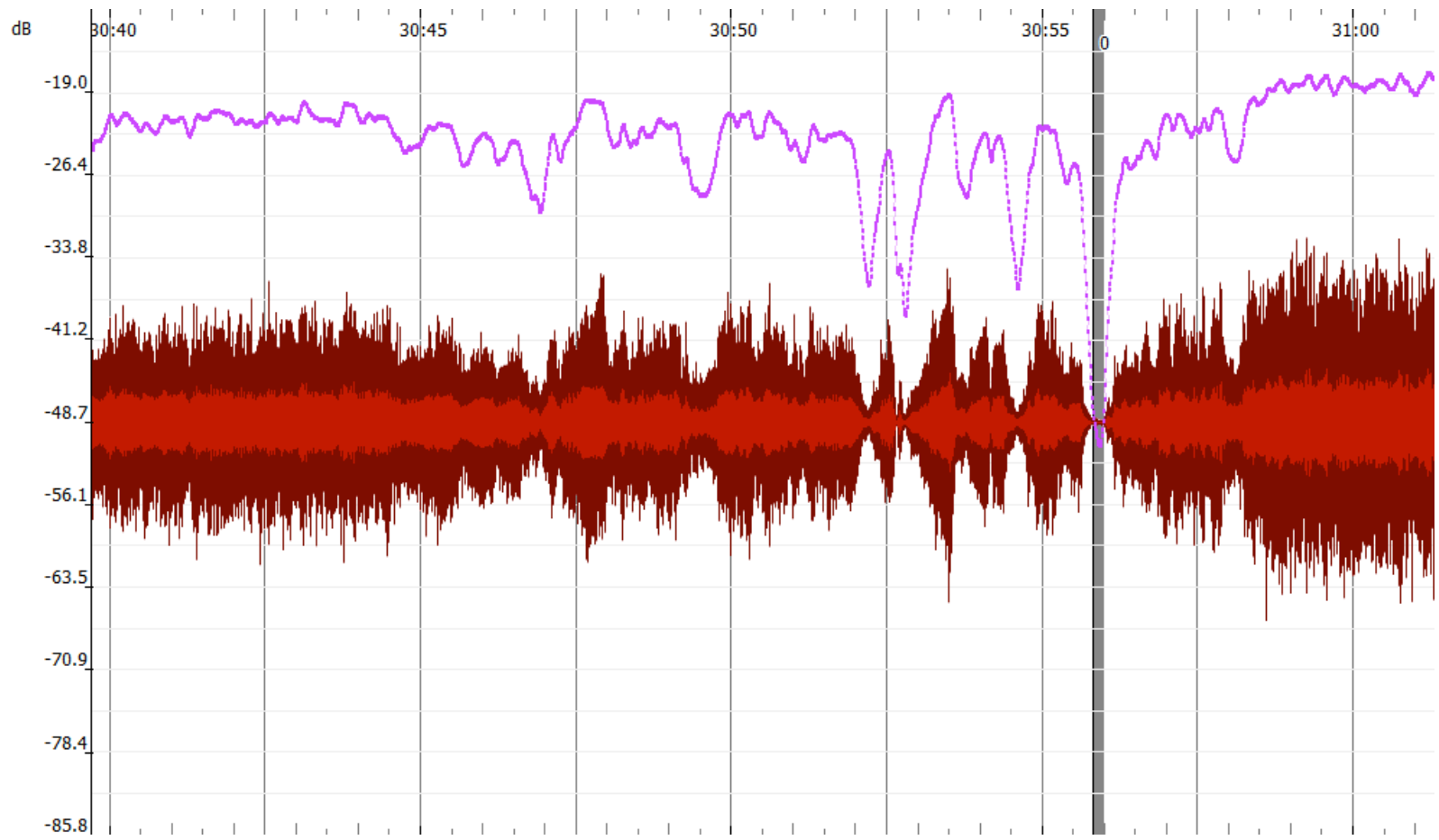
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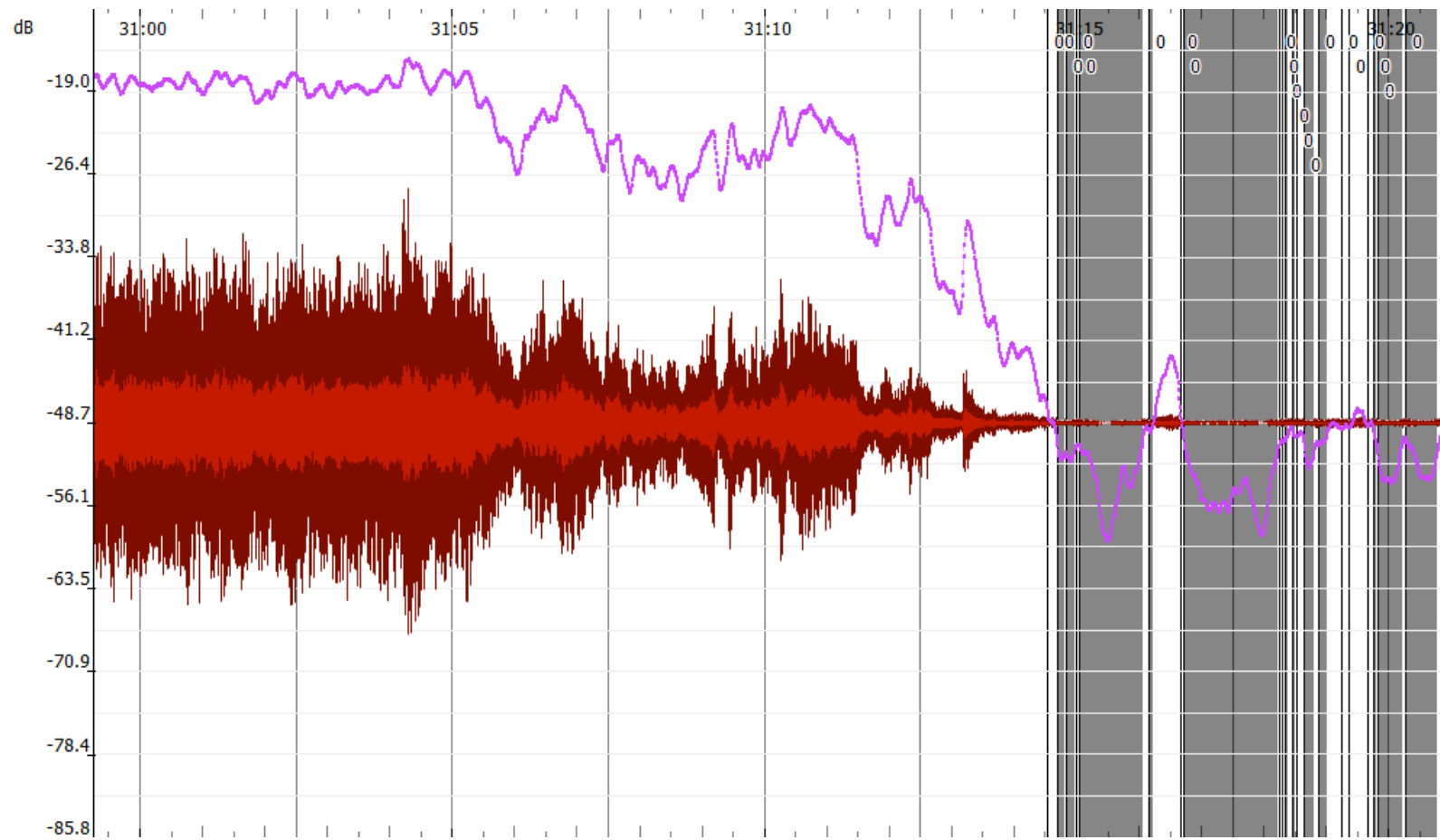
- **Vertical lines show us time progression by minutes and seconds. A space between two lines is 2.5 seconds.**
- **Sound waves appear in the images by red colour.**
- **A purple line in each image displays analysis results, produced by ‘power curve plug-in’ in Sonic Visualiser. The line describes detailed amplitude level by decibel.**
- **Gray colour illustrates silences, which is analysed by ‘Aubio Onset Detector’ in Sonic Visualiser. The plug-in is set -80 db as a silence threshold.**

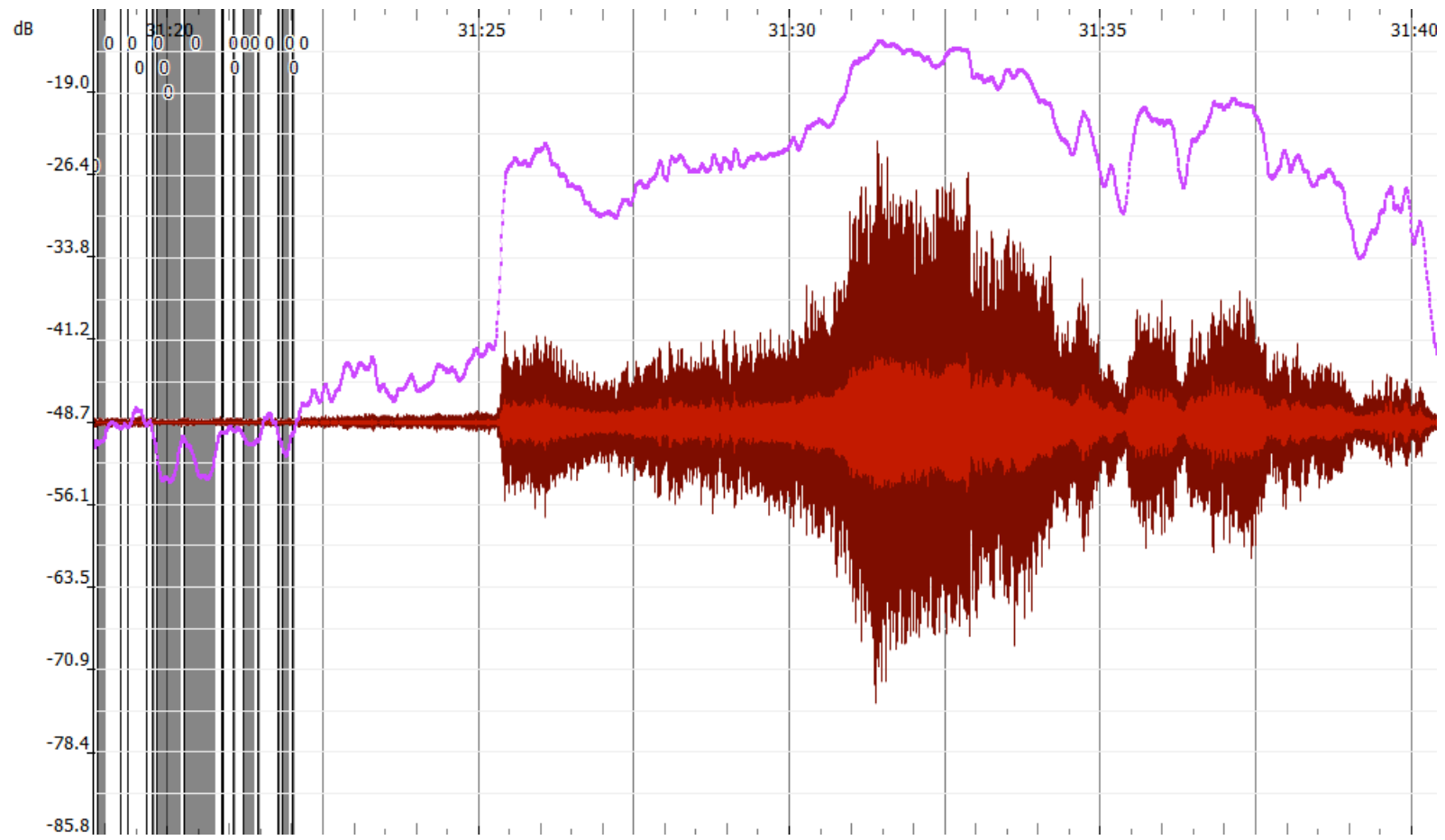


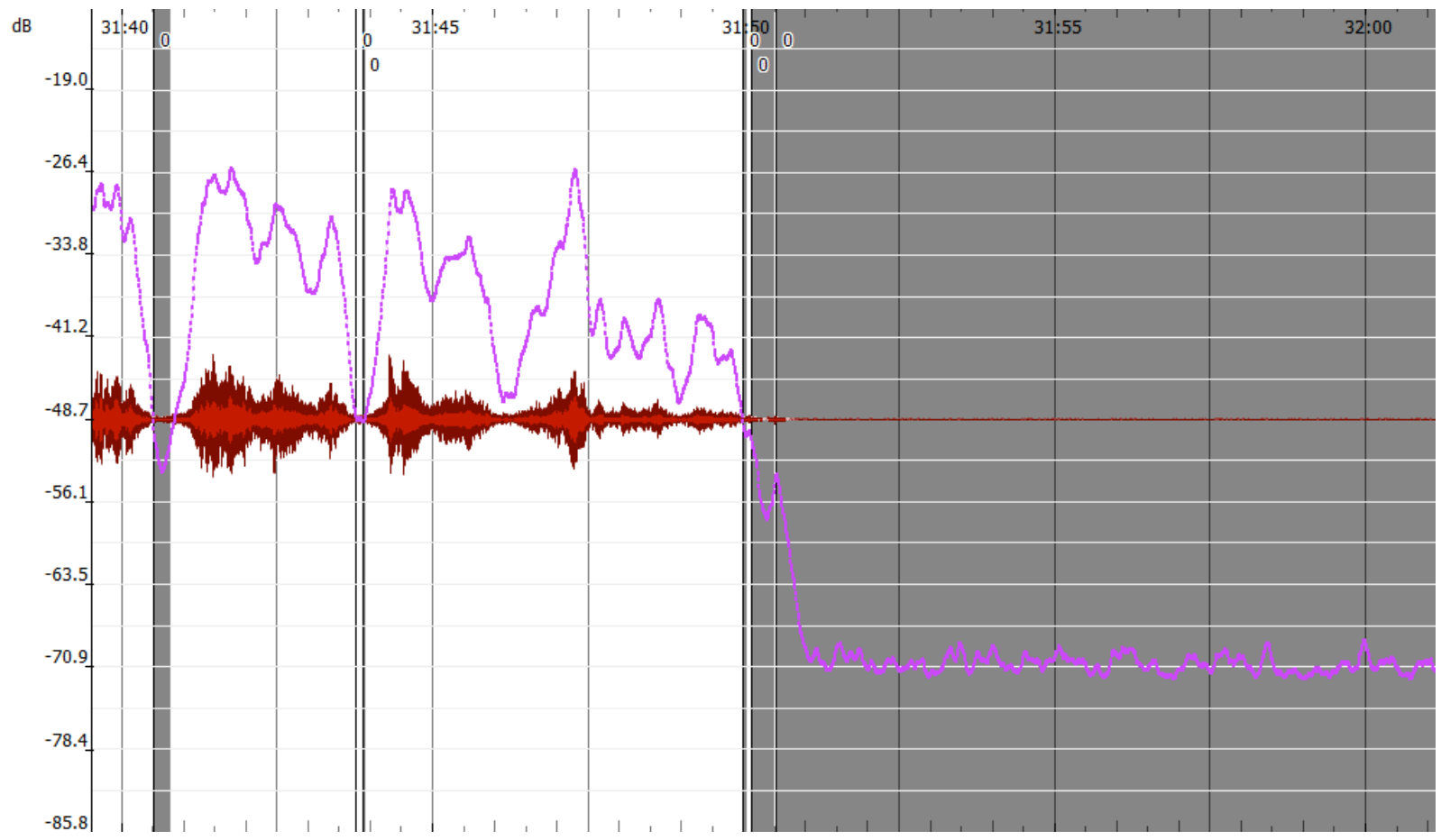


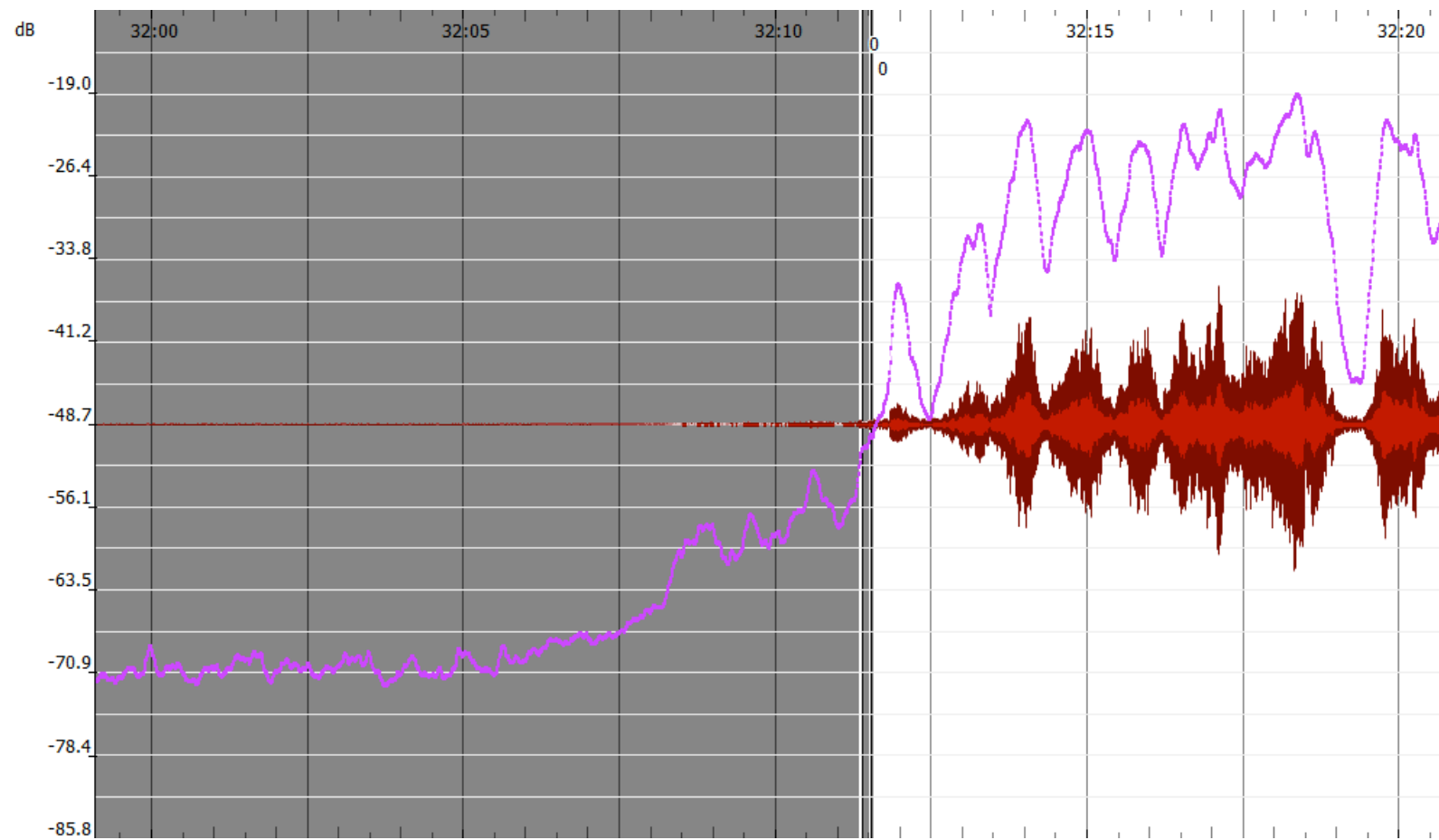










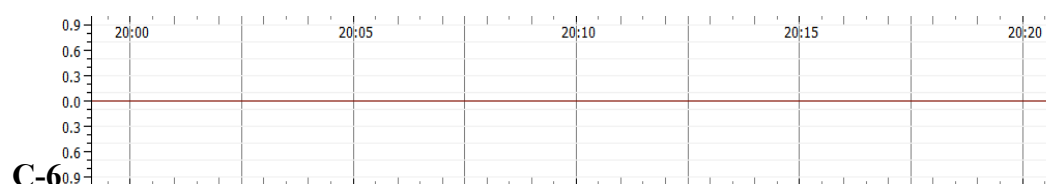
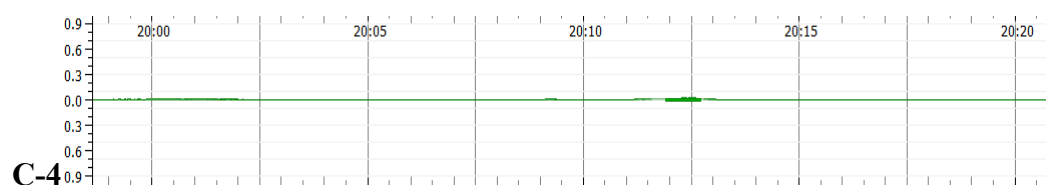
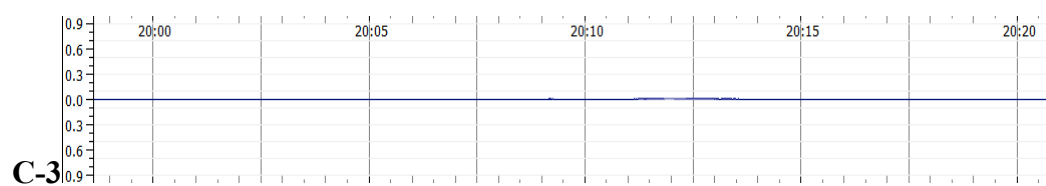
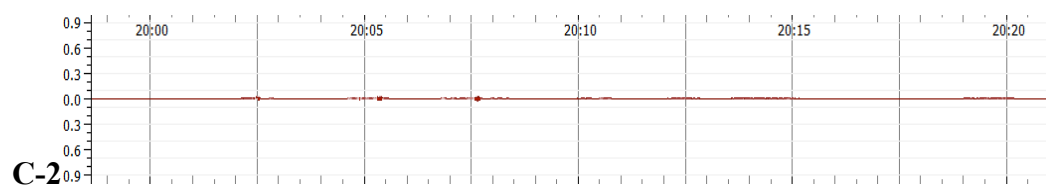
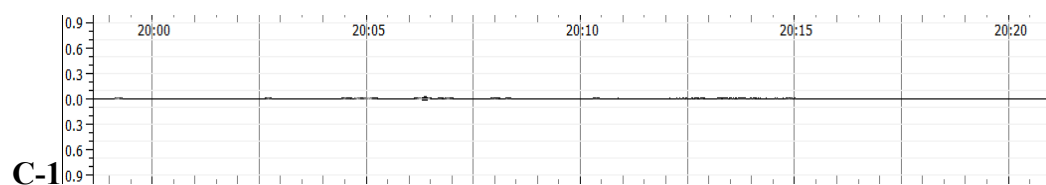


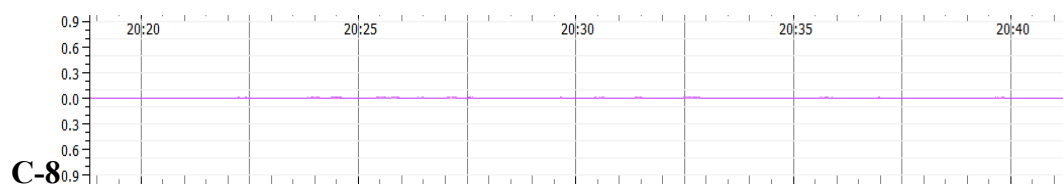
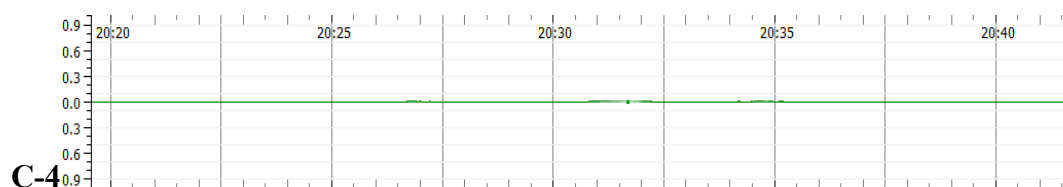
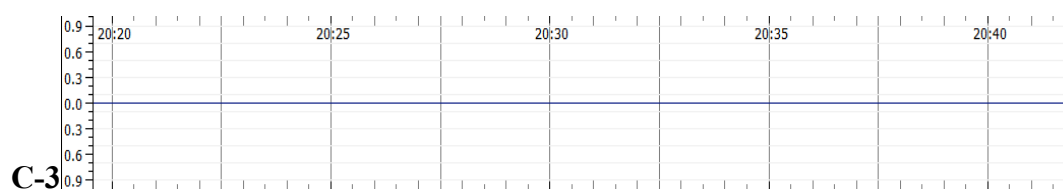
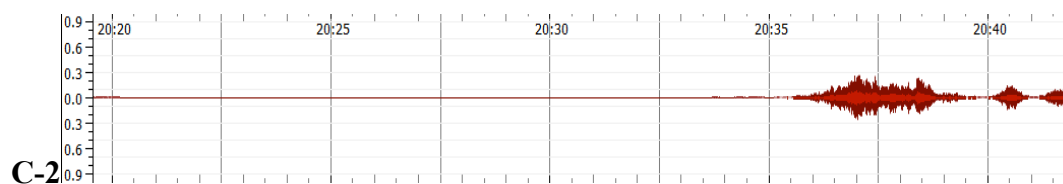
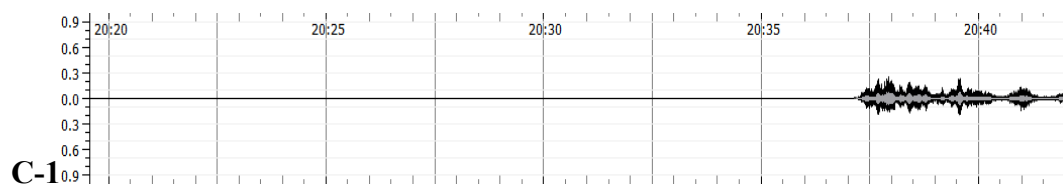
## **Appendix 2.7 - *La Lontananza*, 8-channel tape**

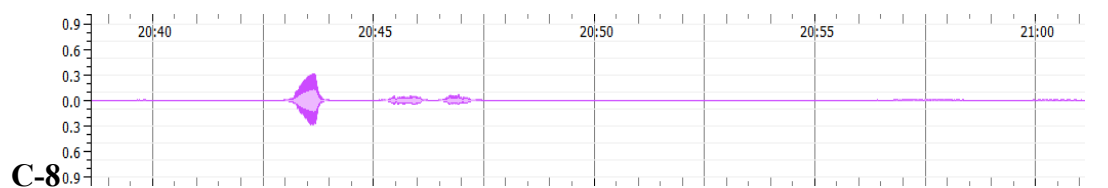
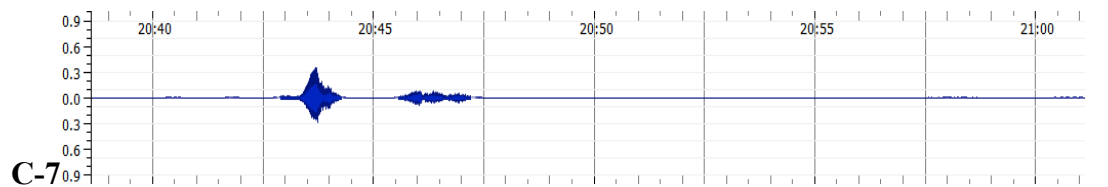
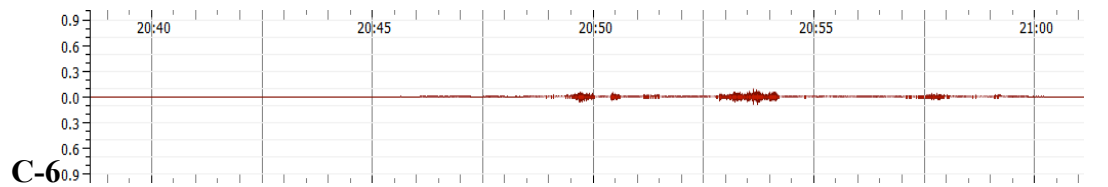
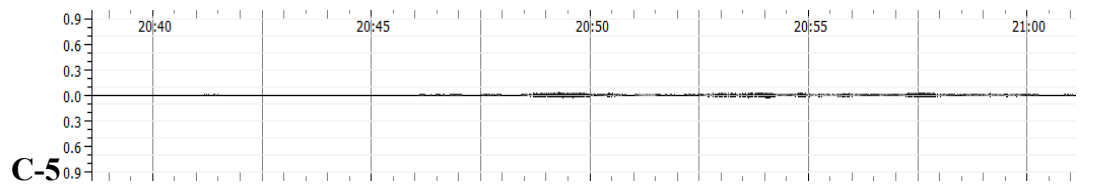
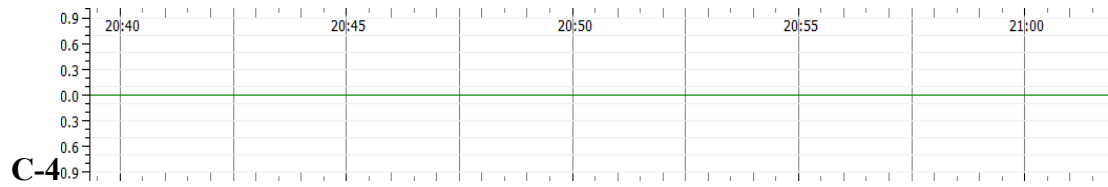
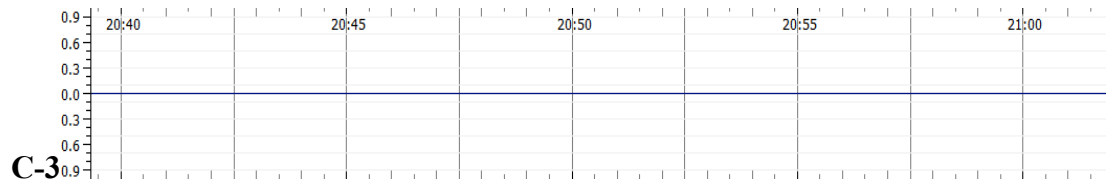
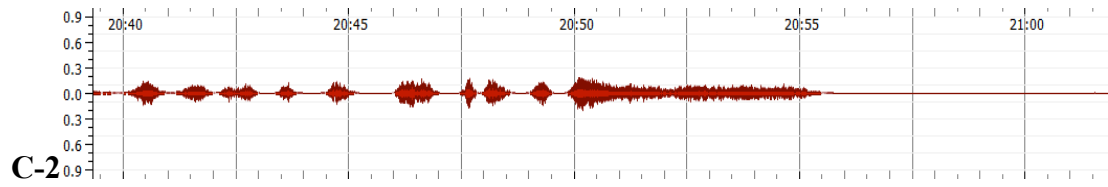
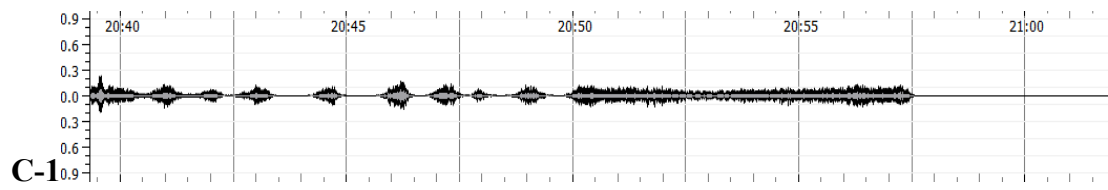
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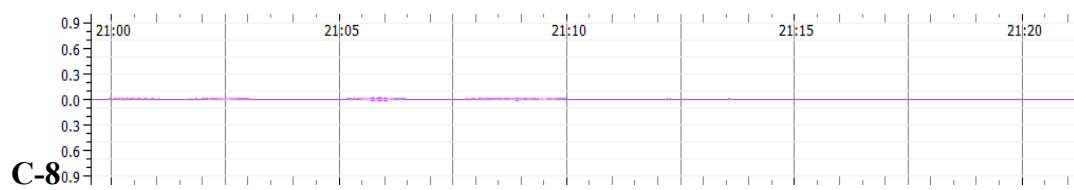
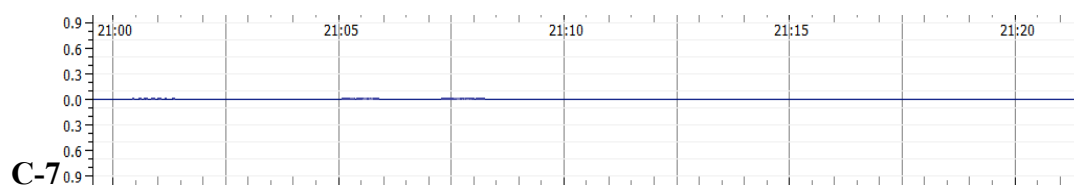
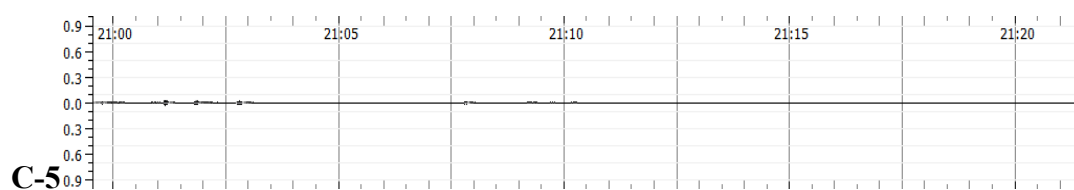
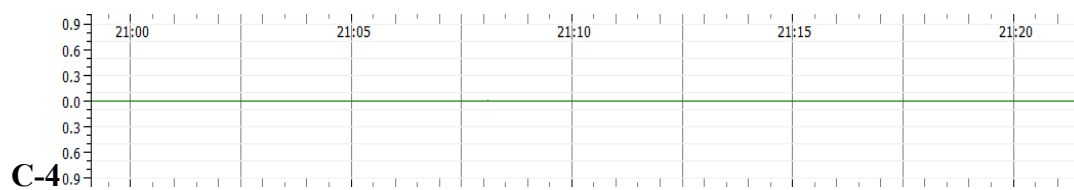
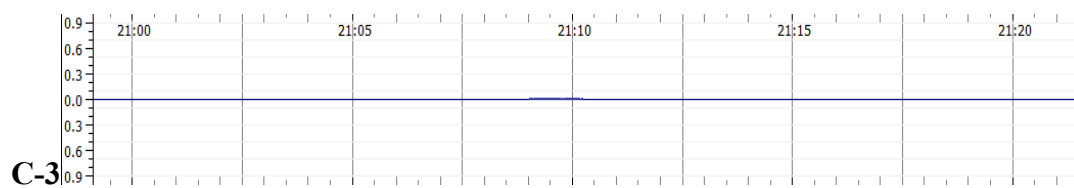
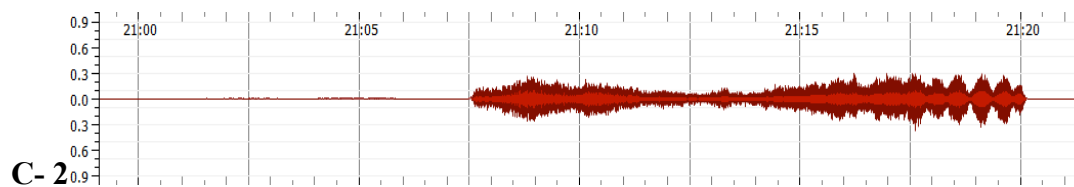
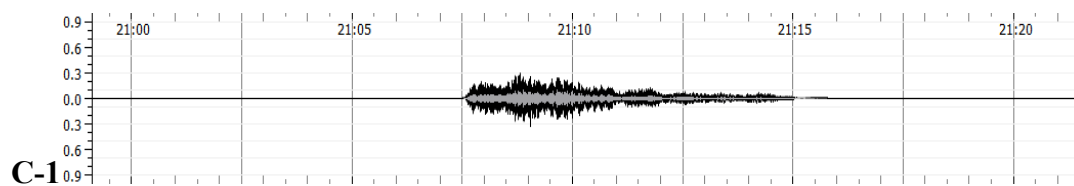
- **Vertical lines show a time progression by minutes and seconds.  
A space between two lines is 2.5 seconds.**
  
  - **C = channel / e.g. C-1 = channel 1**
-



**La Lontananza 8-channel tape, from 20'0" to 20'20"**

***La Lontananza*** 8-channel tape, from 20'20" to 2'40"

*La Lontananza* 8-channel tape, from 20'40" to 21'0"

***La Lontananza 8-channels Tape, from 21' to 21' 20''***

## Appendix 2.8

### Preface for a performance edition, *La Lontananza*

#### *Irvine Arditti*

When Mizuka Yamamoto asked me to help her construct a version of *La Lontananza* which was clear to read, eliminated errors, I understood that this was something very important and something that I wished had been done years ago.

Mizuka wanted to study the piece, both as a violinist and analyst. Like everyone, she found the manuscript difficult to decipher and because of this, wanted to make a version with the Sibelius computer programme that had clarity, a version that she and other violinists would have ease and pleasure to work from.

Even though the piece has an extreme free quality about it, both on paper and during performance, it is clear that the solo part was also constructed a little bit in this manner, where the look of the notes on paper, have more guidance to the way they should be played, than the rigidity of notating them precisely within his chosen metre. But, it is my feeling that alongside this, it is very important to have a ‘corrected’ and clear version of the piece that young violinists can begin to work from.

Mizuka originally asked for my help just to check that what she had done was correct. As the new version began to take shape it became increasingly clear that there were many things I had to correct. Some of these I had done years ago, when I first studied the work or had picked up along the way, but there were quite a few new decisions, in order to make the new score completely coherent.

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Unfortunately, I did not perform the piece in Nono's lifetime, so was unable to clarify these discrepancies with him personally. I do know that at that time, Nono was not in a good state of mind and began suffering miserably from the illness that he would eventually succumb to.

I did however give the premier, with David Alberman of his last work, "*Hay Que Caminar*" *Soñando* for 2 violins which is constructed mostly with material taken from *La Lontananza*.

We had discussed the work with Nono at a course for Centre Acanthes in Avignon a few months earlier. Nono was at that time very sick and reluctant to listen to the work, but offered some decisions on the obvious anomalies in the score. Leggio 3 contains a bar where there are 4 notes, seemingly to be sustained on all four strings at once. "*Hay Que Caminar*" *Soñando* has the same music in the last part of the work. I would like to dispel any doubts that Nono pursued this idea and wanted baroque or flat bridged violins standing by, in order to be able to perform this measure. He immediately asked us to cross out the unisons and adjusted the measure. Clearing up these points in "*Hay Que Caminar*" *Soñando*, and my many years of experience with his string quartet *Fragmente Stille*, stood me in good stead to approach *La Lontananza*.

I wish there had been more time and physical involvement with "*Hay Que Caminar*" *Soñando* at our meeting, as it was the last opportunity to discuss these matters with Nono. By the time the first performance of the work took place, he was too sick to travel and he never heard the work live.

It was always my understanding that Nono both in *La Lontananza* and "*Hay Que Caminar*" *Soñando* chose to have much less structural control compositionally. Both pieces were motivated by the movement of sounds in space, both with the violinist and violinists in the duo, changing positions and the 8 channel tape coming from as many speakers placed around the hall.

This work was written for the great violinist Gidon Kremer and the subtitle title of the work, *Madrigal for several 'travellers'* with Gidon Kremer, solo violin eight tapes and 8 to 10 music stands, contains the information of how the work was constructed.

Nono invited Kremer to the electronic studio in Freiburg where he encouraged him to play, whilst Nono recorded this. He then used extracts from Kremer's violin playing alongside other electronic and 'concrete' sounds to construct the 8 channels of the tape part. The concept of the piece is to choose and mix various channels of the tape,

accompanying, commenting on and occasionally obscuring the solo violin. I wonder if Nono were to have written the work earlier in his life, whether he might not have decided to make a 'fixed' tape part from the 8 channels. This would have involved much tighter control over both the solo part, the tape part and of course the mixture of the two, which is something that Nono obviously did not have the mind for or the desire to do at this point in his life.

The last part of the work's title, 8-10 music stands, gives an indication of the some of the ambiguity Nono wanted to surround the work, for placement of only 6 chapters of music: A variable number of stands for the violinist to place his music, not only on the stage, but at various points in the concert space. The concept that, alongside the way the piece is constructed, there should be an element of unpredictability as to where the violinist should be, in the space. Nono instructed that the violinist should perform each segment of the piece and then move silently, perhaps hesitating or reaching a stand that had no music on, before moving on to the next point of engagement. At these points, the focus of attention would move to the sound projectionist. In this piece more than any I know, the responsibility of the 'other' performer is actually far greater than that of the violinist.

I have often been disappointed during performance, that there wasn't a greater element of freedom in the solo part. Playing the work with André Richard, who is a master both in his knowledge of the tape part and his understanding of the work, I have sometimes I have felt that I needed more time before continuing between phrases. André had great experience with the piece, having worked alongside Nono for many years and assisted him in the first 3 performances with Gidon Kremer. I have to pay gratitude to André for making our many performances of the work special, each time achieving new 'heights' in projecting the tape part as a duo and reaching a level that I am sure Nono would have been proud of.

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## Appendix 2.9

**Luigi Nono**  
***“Hay Que Caminar” Soñando***  
**(1989)**  
**for two violins**

**Edited by Irvine Arditti**

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### ***Editorial note***

This is an edition for Luigi Nono's "*Hay Que Caminar*" *Soñando* for two violins. The edition is made based on a manuscript published by Casa Ricordi (Version KOE 20 A; Catalogue no. 134955/I). In the manuscript of "*Hay Que Caminar*" *Soñando*, there are similar problems with Nono's other work, *La Lontananza Nostalgica Utopica Futura*. The original score was, however, not completed in an ideal fashion. There are many errors in the notation of rhythm. There are also often inconsistencies in all points of notation, as well as many technical terms being placed ambiguously.

The purpose of this edition is to produce a version of the score, based on the performance practice of the violinist Irvine Arditti, who gave a première performance of this work with David Alberman. The original notation has been corrected and edited in order to be able to do this. Simultaneously, the edition aims to be accurate with Nono's ideas and wishes. All editorial comments added to the original texts are either marked with square brackets or explained in the commentary. However, some details are changed from the original source without being mentioned in the new score; these seven exceptions are noted below.

Nono places an arrow where there is either an extra space at the end of the system or there is a shortage of space and, therefore, has to do a system break in the middle of a bar. In this new version, the arrows are omitted and systems and bars are modified in the appropriate style.

In the manuscript, tempo markings are not always written on each violin part, but they are often placed on the top of staves. This new edition aims to create a usability for the performers, therefore the placement of the tempo markings are changed from the original writing. Dynamic markings are also written between the middle of two violin parts in the manuscript when both parts are given the same dynamics. However, dynamics are always placed underneath each part in this edition.

Nono writes the same dynamics, metronome markings and technical details (*crini*, *ponte* and *tasto*, etc.), often repeatedly. However, in this edition, the same details are not repeated until a different type of marking appears.

Direction of stems, slurs and other symbols are mostly placed as in the manuscript; however, they are sometimes changed in order to make them more consistent. Nono often adds phrasing slurs; however, the end of these slurs are

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sometimes abruptly finished in the middle of sustained notes. In this edition, the phrasing marks are extended to the end of each sustained note.

Nono writes note names where there are high pitches with many leger lines above the system. In this edition, they are omitted.

Originally, the time signature was not used in "*Hay Que Caminar*" *Soñando*. In the new edition, time signatures are added in all sections to give the performer a firmer basis for understanding the rhythms, although the work should be eventually played quite freely.

In the original manuscript, Nono writes all texts in upper-case letters. However, different fonts are applied in the new edition, as below:

- Accelerando/Rallentando: italic in lower-case letters
- Crini/Legno/Tallone/Alla Punta: upper-case letters
- Tasto/Pont: upper-case letters underlined.

All other texts not mentioned above are indicated with italic capitalised letters.

As this is a performance edition based on the work of Irvine Arditti, all technical details, rhythmical matters, time signatures and unclear notation were edited with his consultation, and this edition fully reflects his ideas and opinions. With Irvine Arditti as a primary source for this edition, the editor made a comparison between Nono's manuscript and Arditti's great expertise in a critical commentary. It explains why the original material has changed, and also shows a clear picture of the state of the manuscript.

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# "Hay Que Caminar" Soñando

- Leggio 1 -

Luigi Nono  
 Edited by Irvine Arditti

1  $\text{♩} = \text{Ca. } 30$  *accel.* [-----]  $\text{♩} = 72$

CRINI + LEGNO TASTO

PONTE

Arco PONTE

Ca. 5" Ca. 2"  $\text{♩} = \text{Ca. } 30$

Flautato Velocissimo LEGNO TASTO Ca. 2"

1° Vno

ppp p mp p ppp mf

Arco PONTE

pppp

Flautato Velocissimo CRINI + LEGNO TASTO PONTE

ppppp

Ca. 2"

2° Vno

$\text{♩} = \text{Ca. } 30$

CRINI + LEGNO TASTO

Ca. 5" Ca. 2" Arco PONTE

mf

pppp

ppppp

$\text{♩} = 72$   $\text{♩} = \text{Ca. } 30$

Ca. 2"

*Suono Non Statico Ma Modulato Per Meno di 1/16*

$\text{♩} = \text{Ca. } 72$  *rallentando* [-----]  $\text{♩} = \text{Ca. } 30$

LEGNO PONTE

CRINI TASTO

1° Vno

4

p

pppp

sfff

ppppp

CRINI PONTE

CRINI PONTE

LEGNO TASTO

+ CRINI PONTE

TASTO - CRINI + LEGNO

pp

p

sfff

ppp

ppppp

p

ppppp

ppppp

Arpeggiato Velocissimo Variato

CRINI PONTE

3°)

5°)

2°)

4°)

2° Vno

4

CRINI PONTE

TASTO

pp

p

sfff

ppp

ppppp

p

ppppp

ppppp

$\text{♩} = \text{Ca. } 72$  *rallentando* [-----]  $\text{♩} = \text{Ca. } 30$

*Suono Non Statico*

CRINI PONTE

TASTO

PONTE

Flautato Variato

1° Vno

7

PONTE

Ca. 5"  $\text{♩} = \text{Ca. } 30$

ppppp

ppp

ppppp

pp

CRINI TASTO

CRINI + LEGNO

TASTO

PONTE

CRINI TASTO

ppppp

ppppp

ppppp

p

2° Vno

7

PONTE

Ca. 5"

ppppp

ppp

ppppp

p

$\text{♩} = \text{Ca. } 30$

**TASTO**

11

1° Vno

CRINI TASTO

+ LEGNO PONTE

LEGNO PONTE

Arpeggiato Velocissimo

CRINI TASTO

*ppppp*

*fff*

2° Vno

11

TALLONE TASTO

5

6°)

*fff*

♩ = | Ca. 72 7<sup>o</sup>)

*Suono Non Statico*

♩ = Ca. 30

15 Ca. 7<sup>o</sup>)

1° Vno

8<sup>o</sup>)

CRINI + LEGNO TASTO

PONTE

TASTO

PONTE

*ppppp*

*p*

*ppppp*

*p*

2° Vno

15 Ca. 7<sup>o</sup>)

CRINI TASTO

PONTE

CRINI PONTE

+ LEGNO TASTO

PONTE

10<sup>o</sup>)

CRINI TASTO

*ppp*

*ppp*

9<sup>o</sup>)

*p*

*ppppp*

*p*

*ppp*

♩ = Ca. 30

♩ = Ca. 30

20

1° Vno

CRINI TASTO

*ppp*

♩ = Ca. 30

20

2° Vno

CRINI + LEGNO PONTE

CRINI + LEGNO TASTO

CRINI PONTE

11<sup>o</sup>)

CRINI PONTE

LRGNO TASTO

*f*

*ppppp*

*ppppp*

*ppppp*

2  $\text{♩} = \text{Ca. } 30$  *accelerando*  $\text{♩} = \text{Ca. } 72$   $\text{♩} = \text{Ca. } 30$  *Suono Non Statico* Flautato Velocissimo  
 12<sup>a</sup>) 24 Arpeggiato Velocissimo PONTE Ca. 7" TASTO CRINI + LEGNO CRINI + LEGNO PONTE  
 1° Vno *ppp* *p* *ppp* *ppppp*  
 13<sup>a</sup>) 24 TASTO Ca. 7" CRINI + LEGNO PONTE  
 2° Vno *ppp* *p* *ppp* *ppp*  
 $\text{♩} = \text{Ca. } 30$  *accelerando*  $\text{♩} = \text{Ca. } 72$   $\text{♩} = \text{Ca. } 30$

*accelerando* [-----]  $\text{♩} = \text{Ca. } 72$   
 [Libero] 28 CRINI TASTO → CRINI PONTE CRINI + LEGNO PONTE  
 1° Vno *ppppp* *sf* *fff* Ca. 2"  $\text{♩} = \text{Ca. } 30$   
 [Libero] 28 14<sup>a</sup>) CRINI TASTO → PONTE Flautato Velocissimo CRINI TASTO  
 2° Vno *ppppp* *ppp* *fff* Ca. 2" *ppppp*  $\text{♩} = \text{Ca. } 30$   
*accelerando* [-----]  $\text{♩} = \text{Ca. } 72$

*Suono Non Statico*  
 CRINI + LEGNO PONTE TASTO CRINI TASTO  
 1° Vno *ppppp*  
 CRINI + LEGNO PONTE CRINI + LEGNO PONTE  
 2° Vno *ppppp*  
 Flautato Velocissimo

*Suono Non Statico*

LEGNO + CRINI PONTE *accelerando* [-----] ♩ = Ca. 72 ♩ = Ca. 30

1° Vno

36 *ppppp*

2° Vno

36 *pppppp* *accelerando* [-----] ♩ = Ca. 72 ♩ = Ca. 30

CRINI TASTO

16<sup>a</sup> *sff* *ppppppp*

♩ = Ca. 72

LEGNO + CRINI PONTE

40 Ca. 5" *pppp*

CRINI PONTE

17<sup>a</sup> 3 *sff* *p* Ca. 5"

1° Vno

♩ = Ca. 72

40 Ca. 5" *sff*

17<sup>a</sup> 3 *p* Ca. 5"

2° Vno

♩ = Ca. 72

♩ = Ca. 30

# "Hay Que Caminar" Soñando

- Leggio 2 -

Luigi Nono  
 Edited by Irvine Arditti

1

♩ = Ca. 30

CRINI - TASTO

Arpeggiato Velocissimo Ca. 5"

CRINI + LEGNO PONTE

Ca. 7"

LEGNO TASTO

Ca. 5"

1° Vno

pp sf pp ppp ppp sfff ppppp

♩ = Ca. 30

CRINI - TASTO

Ca. 5"

CRINI + LEGNO PONTE 18\*)

TASTO 19\*)

Ca. 12"

2° Vno

pppp f

♩ = Ca. 72

Rall. → ♩ = Ca. 30

CRINI TASTO

PONTE

Ca. 3"

PONTE

sfff ffppp ff ppp ffppp ffppp ppppp

1° Vno

♩ = Ca. 72

Rall. → ♩ = Ca. 30

CRINI TASTO

PONTE

Ca. 3"

PONTE

p f ff < sfff mf ppppp

2° Vno

20\*)

3

3

Ca. 7"

CRINI TASTO → CRINI PONTE

♩ = Ca. 72

♩ = Ca. 30

Ca. 5"

Ca. 3"

pppp

♩ = Ca. 72

♩ = Ca. 30

Ca. 5"

TALLONE PONTE

Ca. 3"

CRINI TASTO

CRINI + LEGNO PONTE

Ca. 7"

21\*)

22\*)

3

pppp ppppp

1° Vno

2° Vno

1° Vno

53 Ca. 5"  $\text{♩} = \text{Ca. } 72$  [pppp] 23\*) Ca. 5" Ca. 3"  $\text{♩} = \text{Ca. } 30$  TASTO PONTE *mf ff* Arpeggiato Velocissimo ppppp Arpeggiato Velocissimo

2° Vno

53 CRINI PONTE TASTO ppppp  $\text{♩} = \text{Ca. } 72$  24\*) *Tutto* PONTE / TASTO + CRINI Ca. 5" Ca. 3" ppppp  $\text{♩} = \text{Ca. } 30$

1° Vno

57 Arpeggiato Velocissimo 25\*) TASTO *mf* ppppp 26\*)

2° Vno

57 *Tutto* PONTE / TASTO + CRINI TASTO 3 *mf* ppppp

1° Vno

62 27\*) ppppp ppppp

2° Vno

62 ppppp 28\*) TASTO 29\*) PONTE + CRINI 30\*) 30\*) TASTO PONTE 3 *mf* ppppp *fff*



2

66

1° Vno

2° Vno

TUTTO PONTE LEGNO + CRINI

ppppp

(PONTE) TUTTO PONTE LEGNO + CRINI

CRINI TASTO

71

1° Vno

2° Vno

LEGNO + CRINI PONTE

Ca. 4"

TASTO - CRINI

TALLONE! [ 31\*) Ca. 8"

5 3 3

sfff

ppppp

ppppp

75

1° Vno

2° Vno

TASTO - CRINI TASTO PONTE PONTE

ppppppp

ppp

f ppp p sfff

Ca. 72

Ca. 72

32\*)

♩ = Ca. 72

79 CRINI TASTO

1° Vno

*ppppp*

Ca. 4''

34\*)

♩ = Ca. 30

79 33\*) CRINI PONTE

2° Vno

*ppppp*

TASTO - CRINI

Ca. 4''

34\*)

♩ = Ca. 30

PONTE - CRINI

*ppppp*

83 CRINI PONTE

1° Vno

*ppppp*

TASTO - CRINI

83 CRINI PONTE

2° Vno

*ppppp*

35\*)

TASTO - CRINI

89 TASTO - CRINI

1° Vno

*ppppp*

89 TASTO - CRINI

2° Vno

*ppppp*

TASTO

PONTE

TASTO

3

1° Vno

2° Vno

95

ppppp

ppppppp

CRINI TASTO

Ca. 8'' Ca. 4''

95

PONTE

CRINI TASTO

PONTE

TASTO

Ca. 8'' Ca. 4''

ppppp

ppppppp

fff

fff

ppppppp

36\*

37\*

♩ = 72

100

CRINI PONTE

38a\*)

[V]

38b\*)

3

PONTE

TASTO Ca. 8''

CRINI + LEGNO TASTO

fff

p

fff

fff

p

fff

fff

fff

pppp

ppppp

x 3

38e\*)

♩ = 30

100

CRINI PONTE

38c\*)

38d\*)

3

PONTE

TASTO Ca. 8''

CRINI + LEGNO TASTO

fff

pppp

ppppp

103

CRINI + LEGNO TASTO

Ca. 12''

CRINI + LEGNO PONTE

ppppp

ppppppp

(trem.)

[III]

[II]

40\*

103

CRINI + LEGNO TASTO

Ca. 12''

CRINI + LEGNO PONTE

ppppp

ppppppp

# "Hay Que Caminar" Soñando

- Leggio 3 -

Luigi Nono  
Edited by Irvine Arditti

1

106

1° Vno

41<sup>a</sup>)

2° Vno

106

♩ = 92

CRINI PONTE

Ca. 3"

Ca. 1"

♩ = 88

TASTO

Ca. 4"

Ca. 2"

♩ = 72

PONTE

Ca. 5"

Ca. 3"

♩ = 54

PONTE

Ca. 7"

Ca. 4"

♩ = 30

TASTO

Ca. 11"

Ca. 3"

*fff* *p* *sf* *pp* *fff* *ppp* *f* *pppp* *mf* *ppppp*

♩ = 92

♩ = 88

♩ = 72

♩ = 54

♩ = 30

107

1° Vno

41<sup>a</sup>)

2° Vno

107

♩ = 92

Ca. 7"

♩ = 72

PONTE

43<sup>a</sup>)

Ca. 5"

♩ = 30

CRINI + LEGNO TASTO

Ca. 3"

Ca. 3"

CRINI PONTE

Ca. 12"

Ca. 7"

♩ = 92

*Apprggiato Velocissimo*

Ca. 7"

♩ = 72

43<sup>a</sup>)

Ca. 5"

PONTE

Ca. 3"

Ca. 3"

Ca. 3"

Ca. 12"

*ppp* *fff* *f* *p* *ppppp* *ppp*

110

1° Vno

41<sup>a</sup>)

2° Vno

110

♩ = 54

CRINI PONTE

Ca. 3"

Ca. 5"

♩ = 72

TASTO

Ca. 7"

Ca. 7"

PONTE

Ca. 11"

Ca. 3"

Ca. 5"

44<sup>a</sup>)

Ca. 3"

44<sup>a</sup>)

Ca. 7"

Ca. 3"

Ca. 11"

*ppp* *p* *f* *fff* *accel.* *ppp* *f* *fff*

♩ = 54

♩ = 72

♩ = 92

[ 9 ]

Ca. 11"

♩ = 72

CRINI TASTO

1° Vno

ppppp

7

♩ = 54

Ca. 7"

45b\*)

3

CRINI + LEGNO TASTO

Ca. 5"

46\*)

CRINI TASTO

2° Vno

ppppp

♩ = 72

5

PONTE

7

CRINI + LEGNO TASTO

Ca. 5"

♩ = 30

[9]

♩ = 30

1° Vno

ppppppp

Ca. 3"

♩ = 54

Ca. 11"

Ca. 3"

47b\*)

5

47c\*)

p

♩ = 30

2° Vno

ppppppp

47a\*)

Ca. 3"

♩ = 54

Ca. 11"

Ca. 3"

pppp

p

1° Vno

pppp

pp

pppp

pppp

mf

pppp

Ca. 5"

Ca. 5"

Ca. 3"

5

48c\*)

3

Ca. 3"

Ca. 5"

2° Vno

p

48a\*)

pp

mf

pppp

pppp

mf

pppp

Ca. 5"

48b\*)

Ca. 3"

48d\*)

Ca. 5"

114  $\text{♩} = 30$  **PPPPP** **ff**  $\text{♩} = 88$  **PONTE CRINI**  $\text{♩} = 30$  **TASTO**  $\text{♩} = 54$  **TASTO - CRINI + LEGNO**  
1° Vno **Ca. 7"** **Ca. 3"** **50°)**

114  $\text{♩} = 30$  **PPPPP** **ff**  $\text{♩} = 88$  **PONTE CRINI**  $\text{♩} = 30$  **TASTO**  $\text{♩} = 54$  **CRINI + LEGNO** **PONTE**  
2° Vno **Ca. 7"** **Ca. 3"** **50°)** **51°)**

116 **PONTE** *Arpeggiato* *Velocissimo* **Ca. 5"** **Ca. 3"** **Ca. 5"** **PONTE** **CRINI PONTE**  
1° Vno **ppppp** **sfff** **ppppp** **ppppp**

116  $\text{♩} = 88$   $\text{♩} = 30$  **TASTO** **CRINI TASTO** **Ca. 3"** **Ca. 5"** **52°)** **52°)** **3**  
2° Vno **Ca. 5"** **ppppp** **ppppp** **ppppp** **CRINI PONTE**

118 **Ca. 11"** **Ca. 3"** **CRINI + LEGNO TASTO** **CRINI PONTE** **CRINI + LEGNO TASTO** **Ca. 7"** **Ca. 3"**  
1° Vno **pppppp** **pppppp** **pppppp** **pppppp**

118 **CRINI + LEGNO TASTO** **CRINI PONTE** **CRINI + LEGNO TASTO** **CRINI PONTE**  $\text{♩} = 30$   
2° Vno **Ca. 11"** **Ca. 3"** **53a°)** **53b°)** **Ca. 7"** **Ca. 3"** **pppppp** **pppppp**

2

123

1° Vno

54\*)

CRINI PONTE

Ca. 3"

Ca. 5"

CRINI + LEGNO PONTE

55\*)

ALLA PUNTA *Velocissimo*

TASTO

Ca. 7"

ALLA PUNTA Ca. 7"

ppppp

$\text{♩} = 30$

TASTO - CRINI

mf ppp

p > ppp mf

ppp

2° Vno

123

Ca. 3"

Ca. 5"

ppp

127

1° Vno

56\*)

CRINI + LEGNO TASTO

PONTE

CRINI PONTE

Ca. 5"

mf ppp

p > ppp mf

$\text{♩} = 30$

57\*)

CRINI PONTE

Ca. 5"

2° Vno

127

131

1° Vno

58\*)

Arpeggiato *Varia Velocità*

ff

TASTO

59\*)

Ca. 3"

mf ppp

p > ppp mf

2° Vno

131

f

pppp

Ca. 3"

135

1° Vno

Arpeggiato *Varia Velocità*

p

ff

ppp

61\*)

PONTE TASTO

62\*)

ppppp

63\*)

63\*)

2° Vno

135

60\*)

PONTE TASTO

63\*)

ppppp

140

1° Vno

2° Vno

ALLA PUNTA

TASTO CRINI + LEGNO

ppp mf ppp p > ppp mf ppp

Arpeggiato Varia Velocità

TASTO CRINI + LEGNO 64°

ppp mf ppp

145

1° Vno

2° Vno

CRINI TASTO 65°

CRINI+ LEGNO PONTE

LEGGNO TASTO

pppppp

Arpeggiato Varia Velocità

LEGGNO TASTO

pppppppp

p ppp

3

149

1° Vno

2° Vno

CRINI PONTE

Ca. 3"

LEGNO TASTO

Ca. 7"

CRINI PONTE

mf pp ppppppp

mf Ca. 3"

Ca. 7"

ppppp

152

1° Vno

2° Vno

TASTO CRINI + LEGNO

Ca. 12"

ppppp

Tenere l'arco fermo sulla corda Ca. 12"

ppppp

Tenere l'arco fermo sulla corda → Ca. 12"



## Commentary

### Words and abbreviations

IA: Irvine Arditti

Crini: using the bow hair

Legno: using wood of bow

Ponte: playing very close to the bridge.

Punta: playing at the point of the bow.

Tallone: playing near the frog of the bow.

Tasto: on the fingerboard

8<sup>th</sup> note: quaver

16<sup>th</sup> note: semiquaver

32<sup>nd</sup> note: demisemiquaver

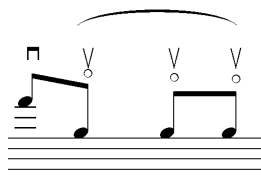
64<sup>th</sup> note: hemidemisemiquaver

## Luigi Nono *"Hay Que Caminar" Soñando* (1989)

### for two violins

#### *Leggio 1*

1\*) Nono indicates harmonic markings on three G pitches; however, he does not indicate fingerings. They appear in the manuscript as follows:



The fingering in the edition is suggested by IA.

2\*) Originally, the chord in bar 4 is given double dots as shown below:



It is assumed there is a dot for each note but, because the pitches are notated in the same horizontal position, both notes should only be single dotted.

3\*) The chord in bar 5 is given double dots as follows:



As was mentioned in 2\*), there is only one dot on each note.

4\*) The original writing for bar 6 is shown below:

In the manuscript, the 1<sup>st</sup> violin is allocated more than four quarter-note beats, while the 2<sup>nd</sup> violin is given only four. The edition amends the first eighth note in the 1<sup>st</sup> violin to a 16<sup>th</sup> note as IA discussed with the composer.

5\*) In the 2<sup>nd</sup> violin part, there is ‘tasto-crini’ from the third beat of bar 6. The chord B-F sharp is further sustained into bar 7 after a system break, and there is ‘crini + legno’ with an arrow. It is not clear whether Nono intended it to be changing gradually from ‘crini’ to ‘crini + legno’ or whether it is a mistake giving two different bowing indications for the sustained notes. IA rather amends it to ‘crini + legno’ from the beginning of the notes.

6\*) Bar 14 was described in the manuscript as follows:

The 2<sup>nd</sup> violin has less than four quarter-note beats, while the 1<sup>st</sup> violin part has four. The quintuplet on the last beat in the 2<sup>nd</sup> violin part has been changed in the edition to a 32<sup>nd</sup>-note quintuplet.

7\*) Only 'ca. 72' is written in the manuscript without qualification of what it refers to.

We have understood it to be a quarter note equals 72.

8\*) The original notation is shown as follows:

The 2nd violin is allocated four quarter notes. Meanwhile, the 1<sup>st</sup> violin part has an additional 16<sup>th</sup> note at the beginning of the bar. The quarter note rest in the 1<sup>st</sup> violin part is replaced by a dotted 8<sup>th</sup> note.

9\*) Originally, the chord in the 2<sup>nd</sup> violin, bar 16 was G sharp and B flat:

IA prefers the spelling of A flat and B flat, which makes the interval of one tone, clearer.

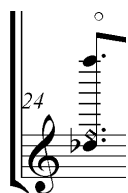
10\*) The fingering position in the manuscript is a third harmonic:

A fourth harmonic may be more comfortable for some violinists; hence, it is changed in this edition.

11\*) The original fingering position for the harmonic here was the same as 10\*).

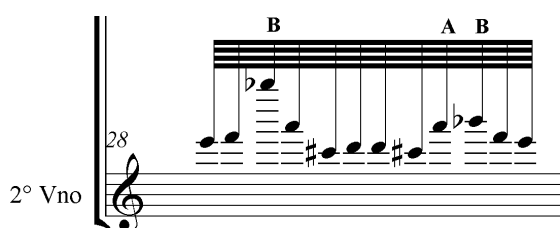
12\*) The first and second notes in the 1<sup>st</sup> violin part in bar 24 should be tied. The written slur is recognised to be a phrasing slur. Therefore, a second slur is added.

13\*) The fingering position in the manuscript is a third harmonic:



It has changed to a fourth harmonic in this edition.

14\*) This bar should be interpreted in a free fashion.



15\*) Bar 29 was originally written as follows:

The rhythmic values between the violins are not correct in the manuscript. The triplets on the second beat in the 1<sup>st</sup> violin are changed to 32<sup>nd</sup> note triplets; dots on the first minim in 2<sup>nd</sup> violin are deleted; and the last three chords in the 2<sup>nd</sup> violin are put under a triplet bracket. The bar is also adjusted to be a 3/4 measure.

16\*) The first unison chord D was double dotted in the manuscript:

Musical notation for measure 16, showing a unison chord D. The notation includes a treble clef, a key signature of one flat, and a double-dotted quarter note. The dynamic markings are *sfff* and *ppppppp*. The text "CRINI TASTO" is written above the staff.

17\*) The triplets in both parts were originally 64<sup>th</sup> note triplets, as follows:

Musical notation for measures 40-43, showing two staves for 1<sup>o</sup> Vno and 2<sup>o</sup> Vno. The notation includes dynamic markings (*pppp*, *sfff*, *p*), tempo markings ( $\text{♩} = \text{Ca. } 72$ ,  $\text{♩} = \text{Ca. } 30$ ), and performance instructions (LEGNO + CRINI PONTE, CRINI PONTE, CRINI TASTO, TASTO CRINI). The text "Ca' 5''" is written above the staves.

It is more realistic to assume that these notes were meant to be 32<sup>nd</sup> note triplets, in order to form a 4/4 bar.

## Leggio 2

18\*) The unison chord is again double dotted in the manuscript:



19\*) In bar 43, the rhythm appears as below:

Musical score for bars 43 and 44. The first violin (1° Vno) part shows a unison chord in bar 43, marked *ppp*, with a *Gis* (G sharp) note indicated above the staff. The second violin (2° Vno) part shows a rest in bar 43, followed by a *f* (forte) dynamic marking and a *TASTO* instruction above the staff in bar 44.

In the second beat, the 2<sup>nd</sup> violin is given two 64<sup>th</sup> notes, which are assumed to be 32<sup>nd</sup> notes.

20\*) Bar 45 was written in the manuscript as shown below:

Musical score for bar 45. The first violin (1° Vno) part shows a unison chord marked *CRINI TASTO* with a tempo marking  $\text{♩} = \text{Ca. } 72$ . The second violin (2° Vno) part shows a *p* (piano) dynamic marking, followed by a *f* (forte) dynamic marking, and a *CRINI TASTO* instruction below the staff. The 2° Vno part includes two triplet markings (3) over the notes.

Not only does the 2<sup>nd</sup> violin part not add up, it is given less than three quarter-note beats. Although 64<sup>th</sup> notes are replaced by 32<sup>nd</sup> notes in the edition, only three beats are allocated to the 2<sup>nd</sup> violin. Hence, the bar has been changed to a 3/4 measure.

21\*) Bar 49 was originally written as shown as follows:

Musical notation for Bar 49, showing the 1<sup>st</sup> and 2<sup>nd</sup> Violin parts. The 1<sup>st</sup> Violin part (1° Vno) is in treble clef and contains a single quarter note. The 2<sup>nd</sup> Violin part (2° Vno) is in treble clef and contains a quarter note followed by a triplet of 64<sup>th</sup> notes, marked with *fff* and **PONTE**.

64<sup>th</sup> notes are doubled in value to make the bar correct.

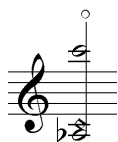
22\*) The original notation for bar 50 is shown as follows:

Musical notation for Bar 50, showing the 1<sup>st</sup> and 2<sup>nd</sup> Violin parts. The 1<sup>st</sup> Violin part (1° Vno) is in treble clef and contains a quarter note followed by a triplet of 64<sup>th</sup> notes, marked with *Ca' 5"*, *Ca' 3"*, and *Es*. The 2<sup>nd</sup> Violin part (2° Vno) is in treble clef and contains a triplet of 64<sup>th</sup> notes, marked with *Ca' 5"*, *Ca' 3"*, **TALLONE PONTE**, and *fff*. The 1<sup>st</sup> Violin part is marked with *pppp TASTO* and *J = Ca. 72*. The 2<sup>nd</sup> Violin part is marked with **PONTE TASTO** and *J = Ca. 30*.

The 64<sup>th</sup> note triplets are changed to 32<sup>nd</sup> notes in order to make the bar add up to 4/4.

23\*) The harmonic in the 1st violin part was formerly a third harmonic, as shown below:





IA prefers to use a fourth harmonic.

24\*) 'Tutto ponte/tasto + crini' is placed underneath bar 55 in the manuscript:

It is suggested that 'tutto ponte/tasto + crini' needs to start from the beginning of the long harmonic.

25\*) Bar 59 is printed in the manuscript as shown below:

In the third beat, the 1<sup>st</sup> violin's values have been doubled in the edition.

26\*) The harmonic in bar 61 in the 1<sup>st</sup> violin was originally notated as follows:



IA plays fourth harmonic rather than the third harmonic.

27\*) An erroneous low G has placed in the manuscript for the second harmonic in bar 62.

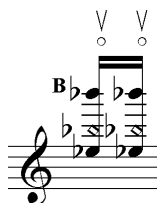


A correct playing position suggested by IA for the harmonic has been added.

28\*) ‘Tutto ponte/tasto + crini’ is originally placed in the middle of two staves. However, the first pitches in both parts are tied notes, and neither of the pitches are previously indicated to be ‘tutto ponte/tasto + crini.’ This insertion seems to be a mistake.

29\*) Originally, ‘ponte tasto + crini’ was placed at the end of bar 63. This is a contradiction using *tasto* and *ponte* at the same time. IA, rather, chooses *ponte + crini* for this chord.

30\*) The fingering for the 2<sup>nd</sup> violin harmonics in bar 64, appear in the manuscript as follows:



The edition shows IA’s fingering.

31\*) The quintuplet in bar 73 was originally a 64<sup>th</sup> note quintuplet:

Ca' 8''

5 3 3

*sfff*

Cis

Cis

Ca' 8''

*ppppp*

32\*) Bar 78 was originally written as below:

$\text{♩} = \text{Ca. } 72$

PONTE

Fis

TASTO CRINI

*f* *ppp* *p* *sff*

The 64<sup>th</sup> notes are replaced by 32<sup>nd</sup> notes in the 2<sup>nd</sup> violin part to make the bar add up.

33\*) Three triplets in bar 79 appear in the manuscript as shown below:

$\text{♩} = \text{Ca. } 72$

79

1° Vno

TASTO CRINI

*ppppp*

79

2° Vno

PONTE CRINI

*ppp* *ppp* *ppp*

The value of the three triplets in the 2<sup>nd</sup> violin are changed to 32<sup>nd</sup> notes in order to make the bar add up.

34\*) Bar 81 was formally notated in the manuscript as shown below:

The image shows two staves of musical notation. The top staff is marked with a 'B' and 'Ca' 4'' and contains a complex rhythmic passage with dynamic markings 'sfff' and 'ppppp'. The bottom staff is marked with 'Ca' 4'' and contains a similar rhythmic passage with dynamic markings 'sfff' and 'ppp'.

The value of the 64<sup>th</sup> notes are doubled in the edition in order to make the bar add up.

35\*) Rests were given as a second voice in bar 84, 2<sup>nd</sup> violin:

The image shows a single staff of musical notation with four rests in a row.

These rests are omitted in the edition.

36\*) Bar 98 is written in the manuscript as shown below:

The image shows two staves of musical notation. The top staff has a whole note G sharp. The bottom staff is marked 'PONTE' and contains a triplet of eighth notes followed by a quarter note.

The 64<sup>th</sup> notes are doubled in value. Also, 2<sup>nd</sup> violin C sharp has a dot added.

37\*) In the triplet in bar 99, the 2<sup>nd</sup> violin part was originally shown as below:

The 64<sup>th</sup> notes are doubled in value.

38\*) Bar 100 was written in the manuscript as shown below:

Extra crescendo markings on the first and second beat in the 1<sup>st</sup> violin part are deleted

(38a). In this bar, all 64<sup>th</sup> notes are replaced with 32<sup>nd</sup> notes.

39\*) Bar 101 is previously written in the manuscript as below:

♩ = 72

Ca' 8'''

*sfff* *pppp*

PONTE TASTO

Ca' 8'''

*sfff* *pppp*

64<sup>th</sup> notes are replaced by 32<sup>nd</sup> notes. IA suggests that this is too fast for two down bows here, so the bowing is changed.

40\*) According to IA, the tremolos in bar 104 should be over two strings, as discussed with the composer.

### Leggio 3

41\*) *Crini* is written on every system between bar 106-112:



However, it is omitted in this edition.

42\*) In the 2<sup>nd</sup> violin, in the last triplet of the fourth beat of bar 106, the doublestop is unplayable as both notes can only be played on the G string. All pitches within the triplet are transposed an octave higher.



43\*) Bar 107 is indicated in the manuscript as follows:

This bar is slightly shorter than a 4/4 measure. As before, 64<sup>th</sup> notes are replaced by 32<sup>nd</sup> notes.

43\*) In bar 110, 64<sup>th</sup> notes are replaced by 32<sup>nd</sup> notes.

\*A music example is deleted for the purpose of copyright

The *Tasto* indication has been clarified to start at the beginning of the 2<sup>nd</sup> beat for both violins. (44b)

45\*) Bar 111 is written in the manuscript as below:

The image shows a musical score for two violins (1<sup>o</sup> Vno and 2<sup>o</sup> Vno) in bar 111. The score is written in treble clef with a key signature of one sharp (F#). The tempo is marked as  $\text{♩} = 92$  TASTO. The first violin part begins with a *ppppp* dynamic marking and a *CRINI* instruction. Above the staff, fingerings are indicated: Gis, Fis, Cis, Cis, Cis. A *PONTE* instruction is placed above the staff with a downward arrow and the text "Ca. 7''". A *TASTO* instruction is placed below the staff with the text "Ca. 5''". The second violin part begins with a *ppppp* dynamic marking and a *CRINI* instruction. Above the staff, fingerings are indicated: Cis, Fis, Gis. A *PONTE* instruction is placed above the staff with a downward arrow and the text "Ca. 7''". A *TASTO* instruction is placed below the staff with the text "Ca. 5''". The score includes various performance markings such as *ppppp*, *CRINI*, *LEGNO*, *TASTO*, and *PONTE*. The tempo markings are  $\text{♩} = 92$ ,  $\text{♩} = 72$ ,  $\text{♩} = 54$ , and  $\text{♩} = 30$ .

Harmonics are correctly written above. The edition shows IA's suggested fingerings.

(45a)

Some of the rhythmic values have been modified in this bar.



46\*) Originally, there was no comma at the end of bar 111. However, IA suggested this addition here.

47\*) Bar 112 is written in the manuscript as below:

The image shows a musical score for two violins in bar 112. The 1st Violin part (1° Vno) starts with a tempo marking of quarter note = 30. It features a quintuplet of sixteenth notes, with the 64th note (the first note of the quintuplet) being a quarter note. The quintuplet is marked with a 'p' dynamic. Above the quintuplet, there are three notes marked 'Ca' 3'' (C sharp 3 double flat). The quintuplet itself is marked with a 'p' dynamic. The 2nd Violin part (2° Vno) starts with a tempo marking of quarter note = 30. It features a quintuplet of sixteenth notes, with the 64th note (the first note of the quintuplet) being a quarter note. The quintuplet is marked with a 'pppp' dynamic. Above the quintuplet, there are three notes marked 'Ca' 3'' (C sharp 3 double flat). The quintuplet itself is marked with a 'pppp' dynamic. The 2nd Violin part ends with a 'p' dynamic. Above the quintuplet, there are two notes marked 'C' and 'E'.

The lower voice in the 2<sup>nd</sup> violin has been adjusted, with the length of the B natural changed. (47a). The 64th note quintuplet in the 1<sup>st</sup> violin has been doubled in value. (47b). The playing position for the first harmonic of the quintuplet has also been corrected. (47c)

48\*) Bar 113 is notated in the manuscript as below:

The image shows a musical score for Bar 113, divided into two staves: 1° Vno (First Violin) and 2° Vno (Second Violin). The 1° Vno staff begins with a fermata labeled 'Ca. 5'' and contains notes with dynamics *pppp* and *pp*. The 2° Vno staff also begins with a fermata labeled 'Ca. 3'' and contains notes with dynamics *p*, *pp*, and *mf*. Both staves feature complex rhythmic patterns, including triplets and sixteenth notes. Fingerings and articulations like 'Ponte Crini' and 'Tasto' are indicated. The score ends with a final fermata labeled 'Ca. 5''.

IA suggests a different fingering for the C sharp harmonics in the 2<sup>nd</sup> violin (48a). The first A flat and D chord in the 2<sup>nd</sup> violin consists of two tied 16th notes (48b). The notation has been modified in the edition.

The values of the 64<sup>th</sup> notes in both parts have been doubled. (48c).

The last fermata of the 2<sup>nd</sup> violin was originally 6 seconds. (48d). IA corrects it to 3 seconds, so that both violinists end together.

49\*) In bar 114, 3<sup>rd</sup> beat, the values of the 64<sup>th</sup> notes in both parts have been doubled (49a).

The image shows a musical score for Bar 114, divided into two staves: 1° Vno (First Violin) and 2° Vno (Second Violin). The 1° Vno staff begins with a fermata labeled 'Ca. 5'' and contains notes with dynamics *ppppp* and *ff*. The 2° Vno staff also begins with a fermata labeled 'Ca. 3'' and contains notes with dynamics *ppppp* and *ff*. Both staves feature complex rhythmic patterns, including triplets and sixteenth notes. Fingerings and articulations like 'Ponte Crini' and 'Tasto' are indicated. The score ends with a final fermata labeled 'Ca. 3''.

The first two sixteenth notes in the 2<sup>nd</sup> violin have been halved in value. IA interprets the last beat of bar 114 as a subito *pp* in both parts. (49b).

50\*) In bar 115, 64<sup>th</sup> notes are adjusted to 32<sup>nd</sup> notes.

TASTO - CRINI + LEGNO

1° Vno

♩ = 54

2° Vno

TASTO                      PONTE  
CRINI + LEGNO

51\*) For the unison chord in bar 115, the 2<sup>nd</sup> violin was double dotted in the manuscript.

52\*) In bar 116, the 2<sup>nd</sup> violin is given less than four quarter-note beats:

ARPEGGIATO  
VELOCISSIMO

PONTE

Ca. 5"

Ca. 3" Ca. 5" PONTE

*sfff* <

♩ = 88 — Ca. 3" — ♩ = 30 *ppppp*

Ca. 5"

*ppppp*  
TASTO

TASTO  
CRINI

The 64th notes are doubled in their value.

53\*) In bar 119, in the 2nd violin part, the 64<sup>th</sup> notes are doubled in value. (53a)

There is also a register change, one octave higher for the whole bar for the 2<sup>nd</sup> violin as the original is unplayable on the violin (53b).

54\*): A resultant G pitch was given for the first harmonic in bar 123. However, the fingering position produces D, not G:

The fingering in the edition was suggested by IA.

55\*) Bar 125 was originally notated as follows:

It is assumed that the second B-C chord of the 1<sup>st</sup> violin is of an incorrect value. Hence it is transformed into a dotted eighth note in the edition.

56\*) The double dot has been clarified.

57\*) 'Crini Ponte' is originally placed in the beginning of 128. However, it is now placed at the beginning of the phrase from the last beat of bar 127.

58\*) In bar 131, the original notation is as follows:

59\*) The double dot is also removed for clarity.

60\*) The 2<sup>nd</sup> violin in bar 135 is incorrectly written in the manuscript:

**ARPEGGIATO  
VARIA  
VELOCITÀ**

1° Vno

2° Vno

The first voice of it does not add up. It is resolved by adding an 8<sup>th</sup> note rest to the last beat.

61\*) Bar 136 is written in the manuscript as below:

**PONTE TASTO**

*ppppppp*

**PONTE TASTO**

Notation is changed from the original writing.

62\*) Previously, the 1<sup>st</sup> violin is given seven *pianos* in the manuscript. However, IA rather suggests five *pianos* for practicality.

63\*) Bars 137-8 appear in the manuscript as follows:

ppppp

The notation is changed for clarity.

64\*) It seems dots are missing in the 2<sup>nd</sup> violin part, bar 144 in the manuscript:

*p* > *PPP*    *mf*    *PPP*

*mf*    *PPP*

65\*) Bar 146 is originally notated as follows:

PONTE CRINI + LEO

*ppppp*

ARPEGGIATO  
VARIA  
VELOCITÀ

*PPP*

*ppppp*

The four pitches in the 1<sup>st</sup> violin cannot be held together. The changed notation is a realization of IA's performance practice.







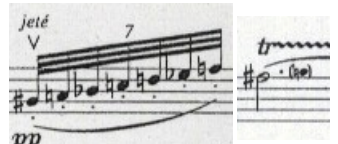
## Appendix 3.1




### Pierre Boulez *Anthèmes*

#### A list of versions, before the completion of *Anthèmes 1*

<b>Catalogue Number by Paul Sacher Foundation</b>  <b>(For the Arditti Quartet collection in the archive)</b>	<b>Note</b>
1005	A manuscript <i>Anthèmes</i> , first version, used by Irvine Arditti for its première.
1006	A exact copy of 1005, engraved by Universal Edition, copyright dated in 1991.
1007	A fair copy of 1006 which was used for the recording of the first version by Irvine Arditti.
1008	A manuscript, however some details are revised from 1005
1009	The title says 'Anthèmes, version mai 1992 - commande du concours international yehudi menuhin de la ville de paris.' This is engraved by Universai Edition, copyright dated in 1992.

## Appendix 3.2 - A septuplets analysis: *Anthèmes 1*, section I

No.	Septuplets in <i>Anthèmes 1</i>	Bar numbers	Pitches in the septuplets	Pitches in the septuplets, by chromatic order	Pitch classes [D=0]
1		1	A/C#/F#/A#/G#/G/Eb	F#/G/G#/A/A#/C#/Eb/	(4, 5,6,7,8,11, 1) 4-8, 11, 1
2		3,4	F#/A/C/C#/D/Eb/F	C/C#/D/Eb/F/F#/A	(10,11,0,1,3,4,7) 10-1, 3-4, 7
3		7,8	B/C/C#/D/E/F#/G	B/C/C#/D/E/F#/G	(9,10,11,0,2,4,5) 9-0, 2, 4-5
4		9,10	Bb/A/G/F#/E/D/Db	Db/D/E/F#/G/A/Bb	(11,0,2,4,5,7,8) 11-0, 2, 4-5, 7-8
5		10,11	G#/A/Bb/C/D/Eb/F	G#/A/Bb (A#) / C/D/Eb/F	(6,7,8,10,0,1,3) 6-8, 10, 0-1, 3

6		12,13	A#/B/C/D/E/F/G	A#/B/C/D/E/F/G	(8,9,10,0,2,3,5) 8-10, 0, 2-3, 5
7		90	D/Eb/F/F#/A/Bb/B	D/Eb/F/F#/A/Bb/B	(0,1,3,4,7,8,9) 0-1, 3-4, 7-9
8		96	Db/C/Bb/Ab/G/F#/F	F/F#/G/Ab(G#)/Bb(A#)/C/Db(C#)	(3,4,5,6,8,10,11) 3-6, 8, 10-11

## Appendix 3.3




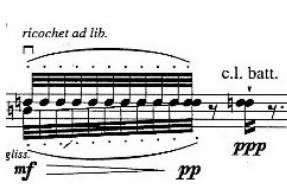
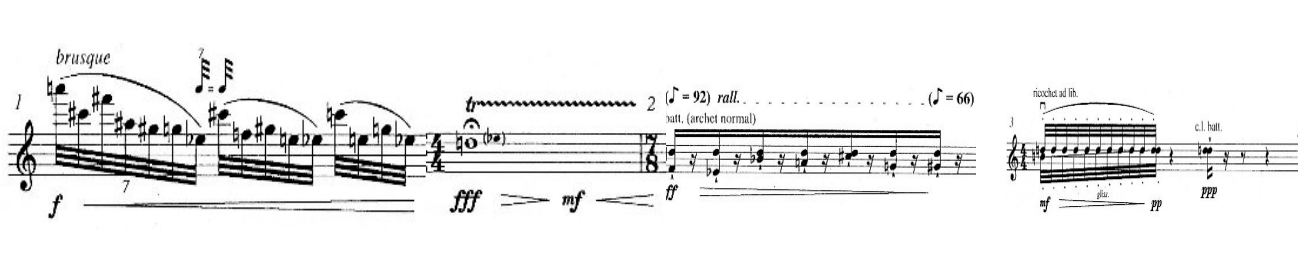
### *A Comparison Chart of Anthèmes 1 and Anthèmes 2*

In the music examples of *Anthèmes 2*:

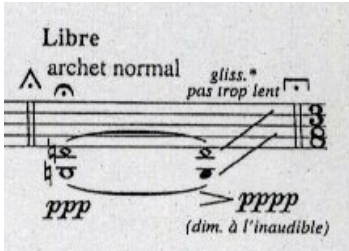
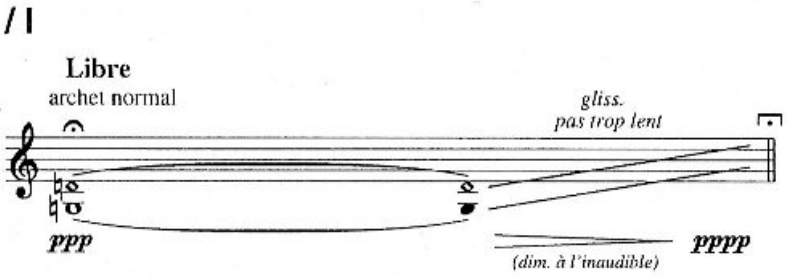
- a) Pitches marked by rectangle are identical elements with *Anthèmes 1*
- b) Pitches marked by circle are not obviously recognised in *Anthèmes 1*, however the relation with *Anthèmes 1* might be suggested
- c) Pitches with crossed mark are not used in *Anthèmes 1*

Sections /I, I/II, II/III, IV/V, a part of section II and VI-3 are excluded from this chart for the purpose of copyright.

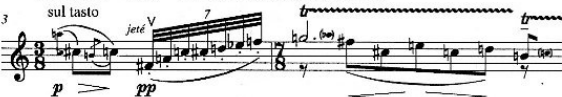

## The beginning: Libre

Bar numbers	1			
<i>Anthèmes 1</i>	<p>Libre ♩ = 92 brusque</p> 	<p><i>s trop long</i></p> 	<p>(♩ = 92) <i>rall.</i> . . . . . (♩ = 66)</p> <p>batt. (archet normal)</p> 	<p><i>ricochet ad lib.</i></p> 
differences between				
<i>Anthèmes 1</i> and	1.) No time signature 2.) A minim		1.) No time signature 1.) No time signature	
<i>Anthèmes 2</i>	1.) The scale is extended from <i>Anthèmes 1</i>	1.) time signature with 4/4  2.) A semibreve	1.) Time signature 7/8	1.) Time signature 4/4 2.) The length of the rests are longer than <i>Anthèmes 1</i>
Bar numbers	1		2	3
<i>Anthèmes 2</i>				

/I

<b>Bar numbers</b>	2
<i>Anthèmes 1</i>	 <p>Libre archet normal gliss.* pas trop lent</p> <p><i>ppp</i> <i>pppp</i> (dim. à l'inaudible)</p>
<b>differences between</b>	None
<i>Anthèmes 1</i> and	
<i>Anthèmes 2</i>	
<b>Bar numbers</b>	None
<i>Anthèmes 2</i>	 <p>/I</p> <p>Libre archet normal gliss. pas trop lent</p> <p><i>ppp</i> <i>pppp</i> (dim. à l'inaudible)</p>

# I (No.1)

Bar numbers	Bar 3-4		
<i>Anthèmes 1</i>	<p>Très lent ♩ = 92 (♩ = 46), avec beaucoup de flexibilité</p> 		
Differences	Time signature	Dynamics	Techniques
<i>Anthèmes 1</i>	7/8 at bar 4		Double stop trill at bar 4
<i>Anthèmes 2</i>	3/4, 3/8, 5/8 and 2/4 between bar 2-5.	mf at bar 3 and pp at bar 5 are new.	Double stops in <i>Anthèmes 1</i> are separated, and are replaced to single single line.
Bar numbers	1-5		
<i>Anthèmes 2</i>			

# I (No.2)

<b>Bar numbers</b>	4-6
<i>Anthèmes 1</i>	

Differences	Time signature	Dynamics	Techniques
<i>Anthèmes 1</i>	7/8 and 3/4		
<i>Anthèmes 2</i>	2/4, 7/8, 5/8, 6/8 and 3/8	P at bar 8 is new	Double stops in <i>Anthèmes 1</i> are separated. (bar 7-8)

<b>Bar numbers</b>	5-9
<i>Anthèmes 2</i>	



# I (No.3)

<b>Bar numbers</b>	7-8
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<i>Anthèmes 1</i>			
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Differences	Time signature	Dynamics	Techniques
<i>Anthèmes 1</i>			
<i>Anthèmes 2</i>			

<b>Bar numbers</b>	
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<i>Anthèmes 2</i>			
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# I (No.4)

<b>Bar numbers</b>	9-10		
<i>Anthèmes 1</i>			
<b>Differences</b>	<b>Time signature</b>	<b>Dynamics</b>	<b>Techniques</b>
<i>Anthèmes 1</i>			
<i>Anthèmes 2</i>	The same		At bar 12, extra notes are added to the appoggiaturas.
<b>Bar numbers</b>	12-13		
<i>Anthèmes 2</i>			

# I (No.5)

<b>Bar numbers</b>	11-13		
<i>Anthèmes 1</i>			
<b>Differences</b>	<b>Time signature</b>	<b>Dynamics</b>	<b>Techniques</b>
<i>Anthèmes 1</i>			
<i>Anthèmes 2</i>	The same	A crescendo mark at bar 14 is shorter than <i>Anthèmes 1</i> .	An extra note is added to the appoggiatura at bar 15.
<b>Bar numbers</b>	14-16		
<i>Anthèmes 2</i>			

## Section II

In both *Anthèmes*, section II is a vigorous pizzicato section. Only three types of note length – semiquaver, quaver and dotted quaver – are used in this section. These are combined with rapid change of time signatures. However, it is hard to find a structure in the time signatures. The time signatures that appear in *Anthèmes 1* are sometimes kept in *Anthèmes 2*. Simultaneously there are occasional changes between the two works.

Another transformation from *Anthèmes 1* to *Anthèmes 2* is the expression markings and the metronome markings. ‘*Dynamique*’ is added to *Anthèmes 2* as a part of the expression. Also, the metronome marking is ‘a quaver = 180’ in *Anthèmes 1*, but this is reduced to ‘a quaver = 176’ in *Anthèmes 2*.

The same type of dynamics is used in both *Anthèmes*. However, the dynamics range is increased in *Anthèmes 2* most of the time. We can see an example immediately in the beginning of the section. *f* at bar 16 in *Anthèmes 1* is replaced to *ff* at bar 2 in *Anthèmes 2*.

### *Anthèmes 1*, bar 15 - 20

Rapide ♩ = 180, très rythmique, rigide

15 pizz. *mf* *f* sempre

### *Anthèmes 2*, bar 1-6

Rapide, dynamique ♩ = 172, très rythmique, rigide

1 pizz. *mf* *ff* sempre 2 3 4 5 6

**Anthèmes 1, bar 20-24**
**Anthèmes 2, bar 7-12**
**Anthèmes 1, bar 25- 29**
**Anthèmes 2, bar 13-19**
**Anthèmes 2, bar 20 – 61**

Bars 20-61 in *Anthèmes 2* is a new extended part. After bar 62 in *Anthèmes 2*, materials from *Anthèmes 1* start appearing again. They are more fragmented, and are combined with new materials in *Anthèmes 2*.

#### *Anthèmes 1*, bar 32-35

#### *Anthèmes 2*, bar 66-70

In the places shown above, the same dynamics markings are used in both *Anthèmes*. *Anthèmes 2* demands gradual dynamics change over a long phrase, while dynamics development is more rapid in *Anthèmes 1*.

***Anthèmes 1*, bar 36-40**
***Anthèmes 2*, bar 71-77**

The original material is kept in bars 71-77 in *Anthèmes 2*. A new rest at bar 74 causes a change of the time signature in bars 73-75. Also, the dynamics are modified after bar 72.

***Anthèmes 1*, bar 41-44**
***Anthèmes 2*, bar 78 - 118**

In section II, all materials of *Anthèmes 1* can be recognised in *Anthèmes 2*. However, only G at bar 43 in *Anthèmes 1* seems missing.

## Section III

In section III, the original *Anthèmes 1* is more fragmented than in *Anthèmes 2*. Until section II/III, all the elements of *Anthèmes 1* can be found in *Anthèmes 2*. From section III, however, some elements in *Anthèmes 1* are not found in *Anthèmes 2*.

**Anthèmes 1**

Lent ♩ = 92, régulier  
sul pont. jeté (pont.) → pos. nat.  
46 mp pp ff

**Anthèmes 2**

Lent ♩ = 86, régulier  
sul pont. jeté (sul pont.) accel.  
1 2 3 4 mp pp ff

**Anthèmes 1**

staccatissimo (reprendre l'archet chaque fois)  
ff p ff ff p f ff ff

**Anthèmes 2**

**Anthèmes 2**

Nerveux, irrégulier ♩ = 116  
→ pos. nat. staccatissimo reprendre l'archet chaque fois sim. sempre  
5 6 7 8 ff mp ff mp ff mp ff mp  
les dynamiques toujours abruptes, sans cresc. ou dim., les groupes ou notes ff à peine un peu plus étirés que les groupes ou notes mp enchaîner les groupes aussi rapidement que possible

**Anthèmes 1**

staccatissimo (reprendre l'archet chaque fois)  
f ff p pp f f ff p f ff p f ff p ff

**Anthèmes**

**Anthèmes**

Nerveux, irrégulier ♩ = 116  
→ pos. nat. staccatissimo  
10 11 12 13 14 ff mp ff mp ff mp ff mp ff



A set of pitches C – F – F sharp at bar 54 in *Anthèmes 1* can be recognised at bar 12 in *Anthèmes 2*. This can be found in a more fragmented form in bars 15 to 17.

### *Anthèmes*

Plus irrégulier ♩ = 112  
prendre à peine un peu plus de temps pour séparer les dynamiques

2 les groupes ou notes ff un peu plus lourds, les groupes ou notes p toujours rapides et légers

*Anthèmes 2*, bars 19 to 28 are new elements.

Extrêmement irrégulier ♩ = 108

prendre un peu plus de temps pour séparer les dynamiques

sim. sempre

les groupes ou notes ff très lourds, les groupes ou notes pp toujours rapides et légers

*Anthèmes 2*, bar 29 – 33 are new elements, too. Also F-E at bar 31 appears at bar 52 in *Anthèmes 1*.

*Anthèmes 1*, bar 52

Anthèmes 1

Anthèmes 2

Anthèmes 1

Anthèmes 2

Nerveux et extrêmement irrégulier ♩ = 108


À peine moins irrégulier ♩ = 112

Irrégulier ♩ = 116

**Section III/IV**

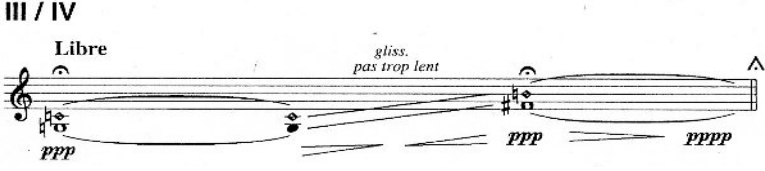
The harmonics in this section are the same in both *Anthèmes*; however, different dynamics are given.

*Anthèmes 1*



*Anthèmes 2*

III / IV



## Section IV

In section IV, the expression markings are rather simplified in *Anthèmes 2*. The metronome marking in *Anthèmes 2* allows more flexibility compared with *Anthèmes 1*.

67 Un peu plus rapide  $\text{♩} = 112$ , agité, instable

*Anthèmes 1*

*Anthèmes 2*

IV

Agité, instable  $\text{♩} = 112/132$

*Anthèmes 1*

*Anthèmes 1*

72

rythmiquement stable

*Anthèmes 2*

*Anthèmes 2*

12

Rythmiquement stable  $\text{♩} = 104$

*Anthèmes 1*

*Anthèmes 2*

*Anthèmes 1*

*Anthèmes 2*

*Anthèmes 1*

*Anthèmes 2*

Bar 24 in *Anthèmes 2* is the same as *Anthèmes 1*. However, the dynamics in the end of the bar is contrasted: a diminuendo is given for *Anthèmes 2*, while crescendo is applied to *Anthèmes 1*.

### Anthèmes 2

### Anthèmes 1

### Anthèmes 2

### Anthèmes 1

### Anthèmes 2

There are small dynamics differences at bar 35 in *Anthèmes 2* compared with *Anthèmes 1*. Two small diminuendo and crescendo are not used in *Anthèmes 1*. They may make a more smooth transition between rapid changes of dynamics.

The characteristic element in section IV is dynamics. Contrasting dynamics are applied to this section, and there are subtle changes between the two *Anthèmes*.

## Section V

In section V, all pitches in *Anthèmes 1* can be found in *Anthèmes 2*. This section is like a reminiscence of previous sections. *Anthèmes 1* is fully developed in *Anthèmes 2*, but the way it progresses is not entirely new. The trill with a melody at bar 96 in *Anthèmes 1* is transformed into a single line between bars 25 and 28 in *Anthèmes 2*. This style has already appeared before in section I.

Another distinction in this section is the metronome markings and expression markings. In *Anthèmes 1*, only one metronome marking is provided while there are seven metronome markings used in *Anthèmes 2*. Also, the metronome markings are accompanied by different types of expression markings.



*Anthèmes 1*

Très lent ♩ = 92 (♩ = 46)  
avec beaucoup de flexibilité  
sul tasto

assez irrégulier, mais rythmique  
→ pos. nat.

avec beaucoup de flexibilité  
sul tasto

90 *jeté* *V* *pp* *mp* *mf* *p* *mf* *p* *mf* *p* *mf* *p*

95 *mp* *pp* *jeté*

\*les valeurs *ff* plus longues, les valeurs *p* plus courtes

*Anthèmes 2*

V

Très lent ♩ = 92 / 98, avec beaucoup de flexibilité

1 *jeté* *V* *pp* *mp* *p* *mp* *pp* *poco rall.*

Sub. nerveux et extrêmement irrégulier ♩ = 108

4 *pos. nat.* *sub.* *ff* *p* *ff* *p* *ff* *p* *ff* *p* *ff* *p*

les groupes ou notes *ff* très lourds, les groupes ou notes *p* rapides et légers - séparer les deux groupes

À peine moins irrégulier ♩ = 112

8 *f* *p* *f* *p* *f* *p* *f* *p* *f* *p*

les groupes ou notes *f* encore lourds, les groupes ou notes *p* rapides et légers un peu moins de séparation entre les *f* et les *p*

Assez irrégulier mais rythmique ♩ = 116

10 *sim.* *f* *p* *f* *p* *mf* *p* *mf* *p* *mf* *p* *mf* *p*

enchaîner les groupes ou notes *mf-p* aussi rapidement que possible

Plus irrégulier ♩ = 112

16 *f* *p* *f* *p* *f* *p* *sim.* *f* *p*

les groupes ou notes *f* un peu plus lourds, les groupes ou notes *p* rapides et légers

Extrêmement irrégulier ♩ = 108

19 *f* *ff* *p* *ff* *p* *ff* *p* *ff* *p*

prendre un peu plus de temps pour séparer les dynamiques les groupes ou notes *ff* très lourds, les groupes ou notes *p* rapides et très légers

ralentir . . . . . Lent ♩ = 92 / 98, très flexible

22 *p* *mp* *pp* *p* *pp*

26 *p* *pp* *jeté* *V* *pp*

## Section V/VI

*Anthèmes 1*

Libre  
pos. nat.

*pppp* *PPPP*

*Anthèmes 2*

V / VI

*Anthèmes 2*

V / VI

Libre  
pos. nat.

*ppp* *ppp* *gliss. assez rapide* *pppp* *ppp* *pppp*

Numbers of harmonics are increased in *Anthèmes 2*. Also, a small diminuendo towards *pppp* on the last harmonics is new.

## Section VI-1

The metronome markings in the beginning of section VI-1 are clearly different in both *Anthèmes*. ‘A crotchet = 60’ is given for *Anthèmes 1*. This is the same as ‘a quaver = 120’. In *Anthèmes 2*, the metronome marking is ‘a quaver = 132/140’. So *Anthèmes 2* should be performed much quicker than *Anthèmes 1*.

The expression markings are dramatically changed in here. ‘*Lent*’ is given to *Anthèmes 1* and ‘*Allant*’ is allocated to *Anthèmes 2*.

*Anthèmes 1*

98 *Lent* ♩ = 60  
*veloce*  
*pp* *p* *mp* *f*  
*tr.* *tr.* *tr.* *tr.*  
*sim.*

102 *rall.*  
*p* *mp* *p* *pp*  
*moitié crins, moitié bois* *archet*

*Anthèmes 2*

VI

1. *Allant* ♩ = 132 / 140, assez serré dans le tempo

1 *veloce*  
*pp* *p* *pp* *mp* *p* *f*  
*tr.* *tr.* *tr.*

4 *p* *mf* *p* *mp* *p* *pp*  
*tr.* *tr.* *tr.*  
*moitié crins/moitié bois* *poco rall.*

*Anthèmes 2* – bars 7-33 are new elements.

**\*A music example is deleted for the purpose of copyright**

*Anthèmes 1*

Tempo normal

*pp* *f* *p* *mf*

*Anthèmes 2*

Tempo archet normal

34 *pp* *f* *p* *mf* 35

36 *mp* *pp*

*poco rall.*

moitié crins/moitié bois

*Anthèmes 1*

106 *pp*

*rall.*

moitié crins, moitié bois

*Anthèmes 2*

Tempo archet normal

37 *pp* *mf*

38 *f* *pp*

*poco rall.*

moitié crins/moitié bois

Plus souple archet normal

39 *p* *mf*


40 *mf* *pp*

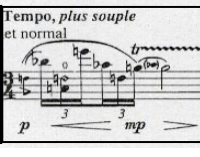
*poco rall.*

moitié crins/moitié bois

Tempo archet normal

41 *p* *mf*

Anthèmes1, bar 110 

Anthèmes 1, bar 107 

Tempo, plus souple et normal

Anthèmes2



42 *pp* *mp* *poco rall.* *Tempo*

43 moitié crins/moitié bois *mf* *pp*

44 archet normal *p* *mp*

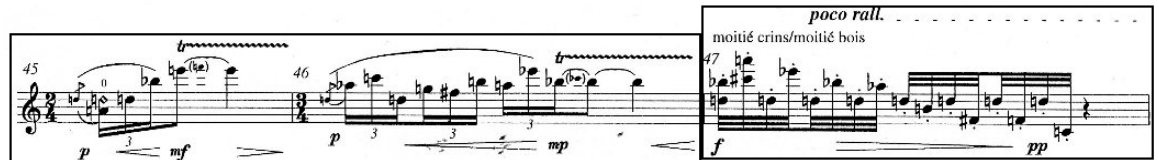
Anthèmes1, bars 108-110



*p* *mf* *p* *mp* *rall.* *f* *pp*

moitié crins, moitié bois archet

Anthèmes2



45 *p* *mf* 46 *p* *mp* 47 *f* *pp*

*poco rall.*

moitié crins/moitié bois

Tempo, détendu

normal

*p* *mf* *p* *mp*

Anthèmes 1

Anthèmes 2

poco rall. . . . .

51 moitié crins/moitié bois

52

53

Tempo  
archet normal

*mp* *pp* *p* *mf* *p* *mp*

## Section VI-2

There is no metronome marking given to section VI-2 in *Anthèmes 1*. Section VI-2 is a continuous part from the previous section; the metronome marking should be ‘a crotchet = 60’. In contrast, there are varieties of metronome markings in *Anthèmes 2*.

*Anthèmes 1*

*Anthèmes 2*

2. Calme, régulier ♩ = 98 / 100

*Anthèmes 1*

*Anthèmes 2*

Brusque ♩ = 138 / 140



*agité*  
pizz.  
mf  $\longleftarrow$  f

Anthèmes 1

Anthèmes 2

*Agité*  
pizz.  
mf  $\longleftarrow$  f

*calme, régulier* arco  
gliss. pp

*agité* pizz.  
mf  $\longleftarrow$  f

Anthèmes 1

Anthèmes 2

*Calme, régulier* arco  
pp

*Agité* pizz.  
mf  $\longleftarrow$  f

*calme, retenu* (pizz.) pp

*brusque* arco ff

Anthèmes 1

Anthèmes 2

70 mf  $\longleftarrow$  f

71 mf

72 *Calme, retenu* (pizz.) p

73 pp

74 *Brusque* arco ff *senpre*

*calme, retenu*  
pizz.

*pp* *p*

*Anthèmes 1*

*Anthèmes 2*

*Calme, retenu*

75 76 77 78 79 80

*mp* *pp* *mp*

*Anthèmes 1*

*agité*

122

*f* *mf* *f*

*Anthèmes 2*

*Agité*

81 82 83 84 85 86

*f* *mf* *f* *mf* *f* *pp*

*Calme, retenu*

*calme, retenu* *agité*

Anthèmes 1

## Anthèmes 2

## Anthèmes 2

*calme, régulier* *brusque*

Anthèmes 1

## Anthèmes 2

*calme, retenu*  
pizz.  
*p*

*Anthèmes 1**Anthèmes 2*

95 96 97 98 99

*Calme, retenu*  
pizz.  
*pp* *p* *pp*

*agité*

*mf* *f* *mf*

*Anthèmes 1**Anthèmes 2*

100 101 102

*Agité*

*mf* *f* *mf* *mf* *f* *mf*

*calme, régulier*  
arco  
*pp*

129

*Anthèmes 1**Anthèmes 2*

103 104 105

*Calme, régulier*  
arco  
*pp*

*mf* *f* *mf* *(Δ)*

*brusque* *cali*  
*pi*  
*ff*

*Anthèmes 1*

*Anthèmes 2*

**Brusque**  
 106 *ff sempre* 107 108 109

*calme, retenu* *agité*  
*pizz.*  
*p* *f* *mf* *f* *mf*

*Anthèmes 1*

*Anthèmes 2*

**Calme, retenu** **Agité**  
 110 *pizz.* *pp* 111 *p* 112 *pp* 113 *f* *mf* *f*  
 114 *mf* 115 *f*

*Anthèmes 2*

116 *mf* *f* 117 *f* *mf*  
**Brusque**  
 118 *mf* (A) 119 *arco* *ff sempre* 120 121

brusque arco  
ff  
calme, régulier  
p

Anthèmes 1

Anthèmes 2

122  
ff  
123  
124  
Calme, régulier  
p  
pp

125  
Brusque  
ff sempre  
126  
127  
128

brusque  
ff  
calme, régulier  
pp  
retenu pizz.  
p

Anthèmes 1

Anthèmes 2

129  
Calme, régulier  
pp  
130  
Calme, retenu  
pp  
pizz.  
131  
pizz.  
132  
pizz.  
133  
pizz.  
134  
mp

136  
agité  
f  
mf  
f

Anthèmes 1

Anthèmes 2

135  
Agité  
f  
136  
f  
mf  
f  
137  
f

calme, régulier  
arco  
pp

brusque  
ff

## Anthèmes 1

## Anthèmes 2

Calme, régulier  
arco  
pp

Brusque  
ff sempre

agité  
pizz.  
mf

f

## Anthèmes 1

## Anthèmes 2

Agité  
pizz.  
mf

f

calme, régulier  
arco  
pp

brusque  
ff

## Anthèmes 1

## Anthèmes 2

Calme, régulier  
arco  
pp

Brusque  
ff sempre

*Anthèmes 1*

calme, retenu pizz. *p*

141 régulier arco *pp*

144 brusque *ff*

*Anthèmes 2*

153 Calme, retenu pizz. *p*

154 Calme, régulier arco *pp*

155 Brusque *ff* *sempre*

156

*Anthèmes 1*

calme, retenu pizz. *p*

*Anthèmes 2*

Calme, retenu pizz. *pp*

157

158 *mp*

160 *pp*

2

*Anthèmes 1*

agité

*mf* *f* *mf*

*Anthèmes 2*

Agité

159 *mf* *f* *mf*

160 *f* *mf*



*calme, retenu*  
arco  
*pp*

*Anthèmes 1*

*Anthèmes 2*

161 *mf* 162 *f* 163 *pp*

*Calme, régulier*  
arco  
*pp*

## Section VI-3

Calme, mais sans traîner ♩ = 108, d'un mouvement très régulier

144 *mp* *pp*

sul pont.  
non legato (on string)

Anthèmes 1

Anthèmes 2

3. Calme ♩ = 98 / 92, sans traîner, d'un mouvement très régulier

164 *mp* *pp*

sul pont.  
non legato (on string)

pos. nat.  
stacc. (off string)

164 *mf* *pp*

rall.

Anthèmes 1

Anthèmes 2

pos. nat.  
stacc. (off string)

167 *mf* *pp* *mp* *pp*

poco rall. revenir au

D at bar 167, where a cross marking is given above, is originally B in *Anthèmes 1*.

Tempo

147 *mf* *pp*

rall.

Anthèmes 1

Anthèmes 2

Tempo

171 *mf* *p* *mf* *p* *mp* *pp*

poco rall. 5

C sharp and B at bar 172 in *Anthèmes 2* are placed in a reverse position in *Anthèmes 1*.

Tempo sul pont.  
non legato

*Anthèmes 1*

*mp* *pp*

*Anthèmes 2*

Tempo sul pont.

173 174 175 176

*mp* *p* *mp* *pp non legato*

pos. nat. sul pont.  
non legato

150 151 152 153

*mf* *pp*

*Anthèmes 2*

pos. nat. sul pont.

177 178 179 180

*mf* *mp* *mf* *p* *mp* *pp*

pos. nat. sul pont.

181 182 183 184

*mp* *pp*

*Anthèmes 2*

pos. nat. sul pont.

181 182 183 184

*mp* *pp*

pos. nat. → sul pont.

152

*mp* → *pp*

*Anthèmes 1*

Two double stops, which is given a cross marking in the above example, are missing in *Anthèmes 2*

*Anthèmes 2*

pos. nat. → sul pont.

184

*mp* → *pp*

*Anthèmes 1*

pos. nat. → sul pont.

187

*mf* → *pp*

*Anthèmes 2*

pos. nat. → sul pont.

187

*mf* → *pp*

*Anthèmes 1*

pos. nat. → sul pont. → pos. nat.

154

*mf* → *p* → *pp*

*(legato)*

*Anthèmes 2*

pos. nat.

190

*mf* → *p legato* → *pp* 3

*Anthèmes 1*

*p* *pp*

sul pont. pos. nat.

*Anthèmes 2*

192 193 194

*mp* *p* *pp*

sul pont. pos. nat.

*Anthèmes 1*

157

*mf* *f* *p*

sul pont.

*Anthèmes 2*

195 196

*mf* *f* *mf* *p*

sul pont.

*Anthèmes 1*

189 190

*f* *p*

pos. nat. sul pont.

*Anthèmes 2*

197 198

*f* *p*

pos. nat. sul pont.

*Anthèmes 1*

A pitch C, which is given a cross marking in the above example, is omitted from *Anthèmes 2*.

Quintuplets in *Anthèmes 2* are a new element.

*Anthèmes 2*

*Anthèmes 1*

*Anthèmes 2*

*Anthèmes 1*

*Anthèmes 2*

## Appendix 3.4

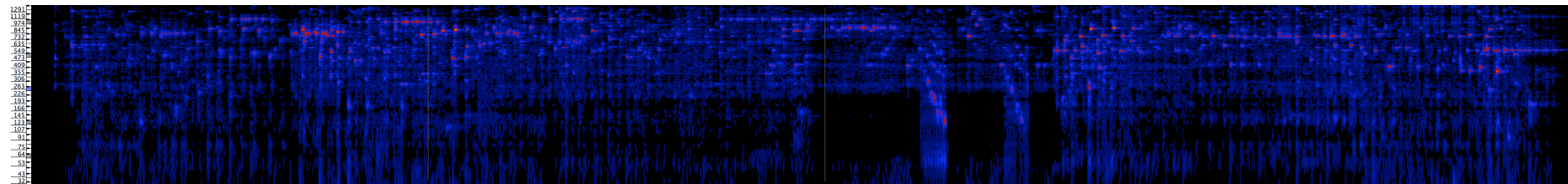
### The expression and metronome markings in *Anthèmes 1* and *Anthèmes 2*

Sections	<i>Anthèmes 1</i>	Bar no.	<i>Anthèmes 2</i>	Bar no.
Theme	Libre quaver = 92	1	Libre (quaver = 92)	1
	(quaver = 92) rall....(quaver = 66)		(quaver = 92) rall....(quaver = 66)	2
/I	Libre		Libre	
I	Très lent quaver = 92 (crotchet = 46), avec beaucoup de flexibilité		Très lent quaver = 92/98, avec beaucoup de flexibilité	
I/II	Libre		Libre	
II	Rapide quaver = 180, très rythmique, rigide		Rapide, dynamique quaver = 172, très rythmique, rigide	
II/III	Libre		Libre	
III	Lento quaver = 92, régulier	46	Lento quaver = 86, régulier	1 to 3
			accel...	
	très irrégulier	48	Nerveux, irrégulier quaver = 116	5
	irrégulier	56	Plus irrégulier quaver = 112	15
	très irrégulier	61		
			Ectrêmement irrégulier quaver = 108	24
			Sub. Lent quaver = 86, régulier	34
		Très calme quaver = 92/98, avec beaucoup de flexibilité	36	

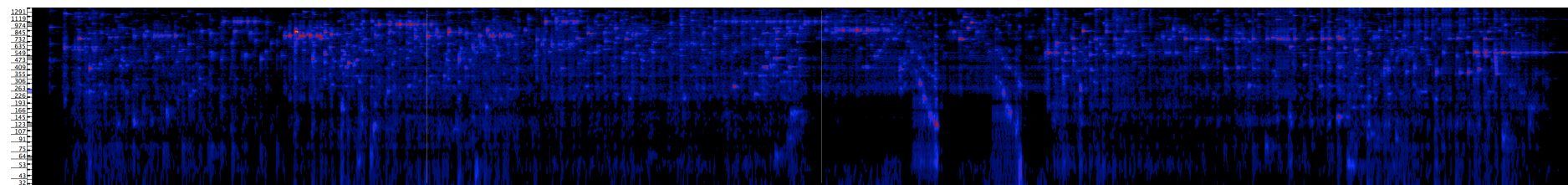
			Nerveux et extrêmement irrégulier quaver = 108	43
			À peine moins irrégulier quaver = 112	50
			Irrégulier quaver = 116	54
III / IV	Libre		Libre	
IV	Un peu plus rapide quaver = 112, agité, instable	67	Agité, instable quaver = 112/132	1
	Rythmiquement stable	72	Rythmiquement stable quaver = 104	12
			De nouveau instable	25
IV / V	Libre	89	Libre	
V	Très lent quaver = 92 (crotchet = 46) avec beaucoup de flexibilité	90	Très lent quaver = 92/98, avec beaucoup de flexibilité	1
	assez irrégulier, mais rythmique	92	Sub. nerveux et extrêmement irrégulier quaver = 108	
	avec beaucoup de flexibilité	94		
			À peine moins irrégulier quaver = 112	8
			Assez irrégulier mais rythmique quaver = 116	12
			Plus irrégulier quaver = 112	16
			Extrêmement irrégulier quaver = 108	20



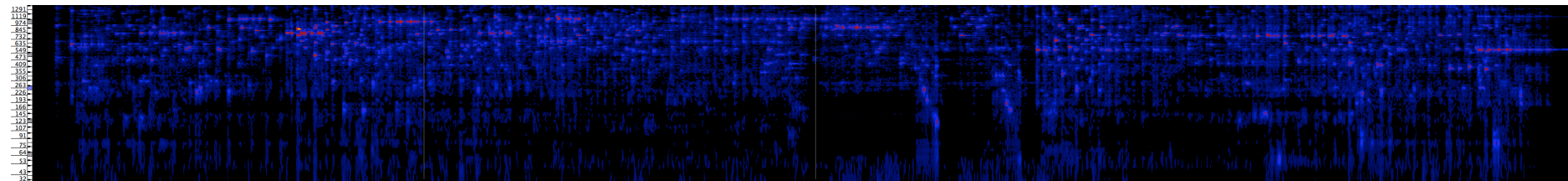
			prendre un peu plus de temps pour séparer les dynamiques	
			ralentir...	22
			Lent quaver = 92/98, très flexible	23
V / VI	Libre		Libre	
VI 1.	Lent crotchet = 60	98	Allant quaver = 132/140, assez serré dans le tempo	1
	Tempo, plus souple		Plus souple	39
VI 2.	calme, régulier		Calme, régulier quaver = 98/100	54
	agité		Agité quaver = 126	55
	Brusque		Brusque quaver = 138/140	59
	.		Agité	61
	.		Calme, régulier	66
	.		Agité	67
	.		Calme, retenu quaver = 92	72
	.		-	
	.		-	
VI 3.	Calme, mais sans traîner quaver = 108, d'nu mouvement très régulier	144	Calme quaver = 98 / 92, sans traîner d'nu mouvement très régulier	164
			(poco rall.....revenir au...)	168 to 169
	Libre		Libre	



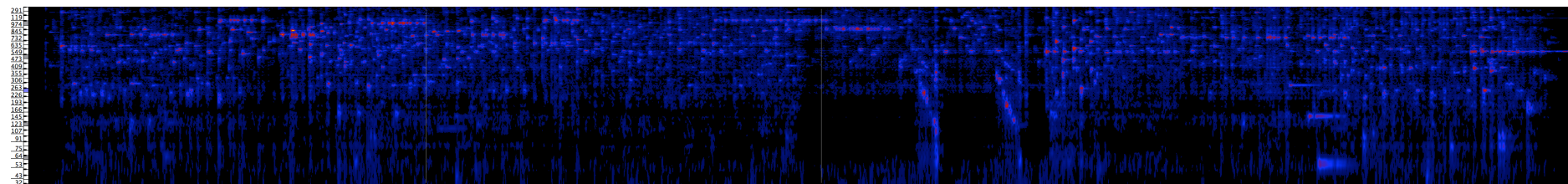
Section II violin 1 take 1



Section II violin 1 take 2, Melodic range detector



Section II violin 2 take 1



Section II violin 2 take 2

**Appendix 3.6 – Melodic range spectrograms: Electronic sounds triggered by different makes of violins**

## Appendix 3.7

**Chaotic process and cloud process: section III (Quoted from ‘Gerzso, A., 2005. *Pierre Boulez Anthèmes 2 pour violon et dispositive électronique, Technical Manual*. pp.6-7.’)**

Section III makes use of two different kinds of processes which generate musical material in real time. These will be called the ‘chaotic’ and ‘cloud’ processes.

### Chaotic process

This process (like the ‘cloud process’ below) is used in bars 5-33 and again bars 43-58 and consists of a series of cycles. Once cycle is made up of a number of note events followed by a number of rest events. The process uses the following data:

- A set of pitches
- The number of note events in one cycle
- The number of rest events in one cycle
- The event duration (which is the same for note events or rest events)
- A constant set of dynamics (0-6-9-12) in dB

Each cycle begin with a number of note events. Each note event is generated as follows:

- A random process chooses 0 or 1 weighted 3:1 in favour of 0
- If the random choice is 0, a grace note followed by a note will be generated in the following manner:

- For the grace note:

- Choose at random a note from the set of pitches
- Choose at random a dynamics from the set of dynamics then subtract 9dB
- Set the duration to 40% of the event duration
- Choose at random a 'pizz' or 'arco' sample

- For the note:

- Choose at random a note from the set of pitches
- Choose at random a dynamic from the set of dynamics then subtract 18dB
- Set the duration to 60% of the event duration
- Choose at random a 'pizz' or 'long' sample

- Play the grace note and note

- If the random choice is 1, a note will be generated in the following manner:
  - Choose at random a note from the set of pitches
  - Choose at random a dynamics from the set of dynamics then subtract 24dB
  - Set the duration to the event duration
  - Play the note with the 'pizz doux' sample

The cycle ends with a number of rest events where the process does nothing for a time equal to the event duration multiplied by the number of rest events. Then the cycle begins again with the note events and so on. The process is stopped on cue.

Section III uses two superposed processes of this kind in parallel. The first process uses the following parameters:

- The set of pitches given at the appropriate cue in the score
- Number of note events in one cycle: 9

- Number of rest events in one cycle: 3
- Event duration: 200msec

The second process uses the following parameters:

- The set of pitches given at the appropriate cue in the score
- Number of note events in one cycle: 11
- Number of rest events in one cycle: 4
- Event duration: 175msec

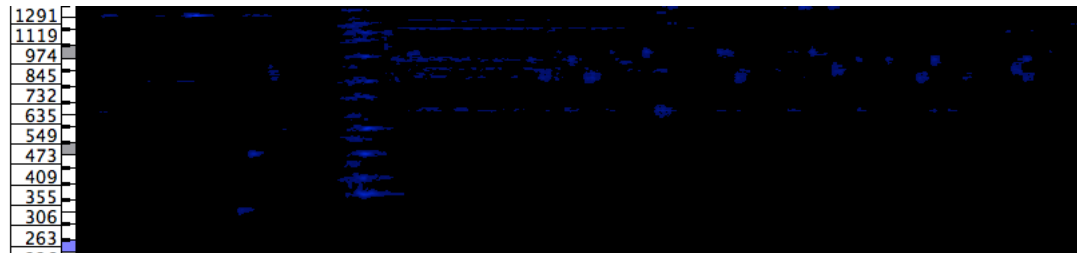
### 'Cloud' Process

- This process (like the 'chaotic process' above) is used in bars 5-33 and again bars 43-58. It uses the following data:
- A set of pitches
- The number of pitches in the rest

Each time the process is triggered at the appropriate cue, it executes the following steps a number of times equal to twice the number of pitches in the pitch set:

- Choose at random a note from the set of pitches
- Play the note with both the 'pizz doux' (with duration of 200msec) and the 'long' (with duration of 1000msec) samples.
- Wait for 20msec

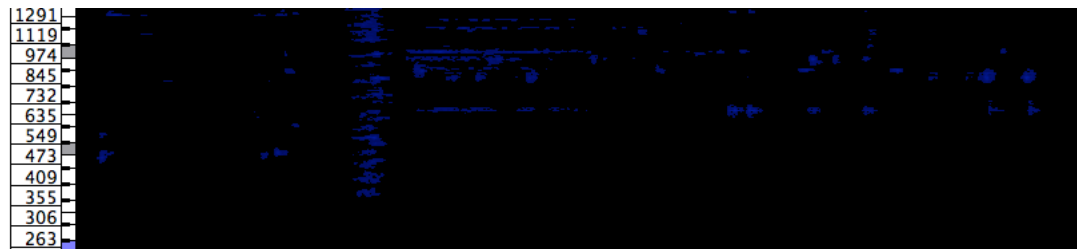
The process then stops.



Section III, violin 1, bow 1

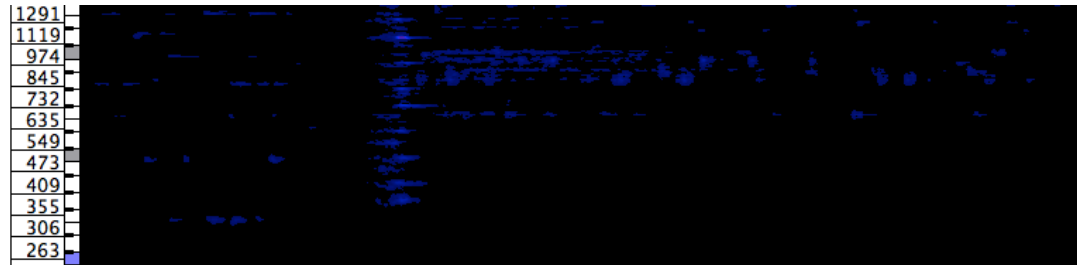


Section III, violin 1, bow 2

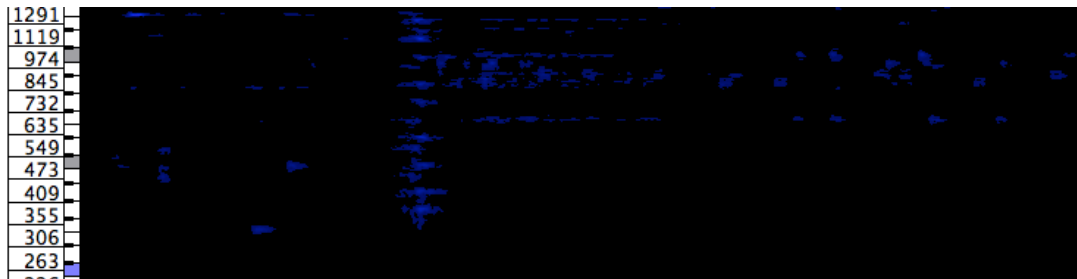


Section III, violin 1, bow 3

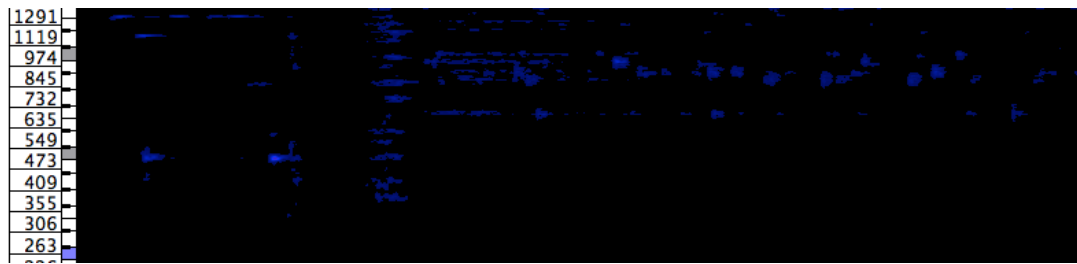
**Appendix 3.8 – Melodic range spectrograms: Electronic sounds triggered by different makes of violins**



Section III, violin 1, bow 4

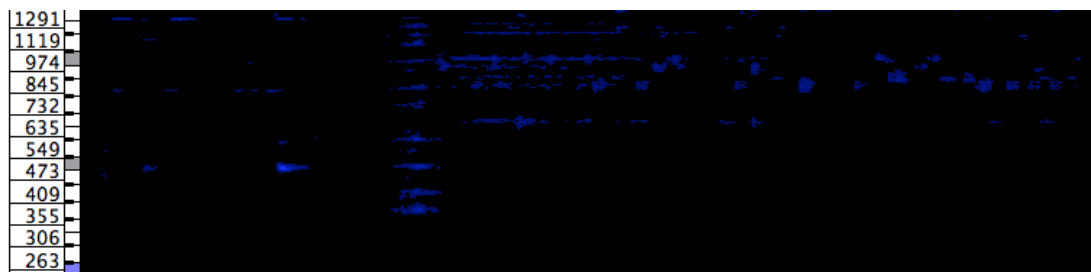


Section III, violin 1, bow 5

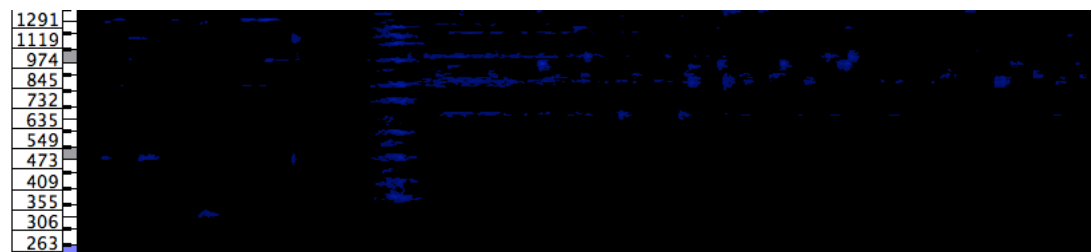


Section III, violin 2, bow 1

**Appendix 3.8 – Melodic range spectrograms: Electronic sounds triggered by different makes of violins**



Section III, violin 2, bow 2



Section III, violin 2, bow 3

**Appendix 3.8 – Melodic range spectrograms: Electronic sounds triggered by different makes of violins**





Section III, violin 2, bow 4



Section III, violin 2, bow 5

**Appendix 3.8 – Melodic range spectrograms: Electronic sounds triggered by different makes of violins**