

A PERFORMANCE GUIDE TO LUIGI NONO'S
POST-PRAE-LUDIUM NO. 1 "PER DONAU"

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Luigi Nono's work *Post-Prae-Ludium No.1 "per Donau"* represents a model for the emerging genre of electroacoustic tuba music. It is important to preserve this electroacoustic work because of its value to the tuba literature. Not only is it one of the first electroacoustic works for the tuba, but it also was composed by a man who is highly regarded in the field of music composition. Its preservation will be difficult because of the rapid advancement in technology. Within the last three decades of existence, the technology has evolved three times. An examination of the performance practice in *Post-Prae-Ludium* was undertaken to understand the demand on the performer required to play this work. This study will look at both non-traditional performance practices, as well as an inherent problem of how the advancement of technology can actually threaten the survival of a work dependent upon a specific version of electronic technology.

Nono worked in collaboration with Giancarlo Schiaffini to compose a work for tuba and live electronics. Correspondence with Schiaffini has provided his thoughts on the collaboration of *Post-Prae-Ludium* with Nono and given a better understanding of how to perform the work.

Technology will change, and these current adaptations of *Post-Prae-Ludium* may not be valid in one or two decades. However, with the description and instruction given by Nono and Schiaffini, in addition to recordings made of *Post-Prae-Ludium*, there is a record from which to reproduce this work. This study provides a source allowing performers to reproduce this work, thereby preserving it for future performers.

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CHAPTER 1

INTRODUCTION

During the second half of the twentieth century, solo literature for the tuba underwent vast changes, and as a result current tuba repertoire consists of several different genres. Examining the history and present direction of tuba literature provides the opportunity to preserve significant works by composers in each particular genre. Luigi Nono's work *Post-Prae-Ludium No.1 "per Donau"* represents a model for the emerging genre of electroacoustic tuba music. It is important to preserve this work because of its value to the tuba literature. Not only is it one of the first live electronic works for the tuba, but it also was composed by a man who is highly regarded in the field of music composition.

An examination of the performance practice in *Post-Prae-Ludium No.1 "per Donau"* will be undertaken to understand the demands on the performer required to play this work. This study will examine both non-traditional performance practices as well as the advancement of technology, procedures which can actually threaten the survival of a work. *Post- Prae-Ludium No.1 "per Donau"* could be a work that is in danger of disappearing from our literature. While not all performers have the technical knowledge to perform electroacoustic works, this study will provide a source which gives them the ability to easily reproduce this work, thereby, preserving it for future performers.

Background and Significance

"Luigi Nono wanted to transform and extend the natural parameters of a sound, such as pitch, intensity, duration, dynamic envelope, and especially

timbre.”¹ In *Post-Prae-Ludium*, Luigi Nono executed these concepts very effectively. Completed in 1987, Luigi Nono worked in collaboration with Giancarlo Schiaffini to compose for tuba and live electronics. The work transforms the tuba in an uncharacteristic manner by having the tuba play in its extended register while the electronics alter the timbre. Other non-traditional performance practices that appear in *Post-Prae-Ludium* present Luigi Nono’s concept of transformation of sound into reality. He expands the concept of a tuba’s timbre by using these performance practices to redefine the sound of the tuba.

Post-Prae-Ludium No.1 “per Donau” is a work that is significant not only as one of the first works for tuba and live electronics, but as one composed by someone whose influence extends well beyond the tuba repertoire. The genre of electroacoustic tuba music has grown rapidly since the conception of this work. In addition, the rapid changes in technology since 1987 presented a challenge to the performer, namely, to find the appropriate equipment needed to perform the work. Finally, most performers do not have any background or understanding of how to produce electroacoustic music; thus, *Post-Prae-Ludium No.1 “per Donau”* should be examined and preserved for future tubists.

A key indicator that a musical work has significant value is its longevity. A work that can not be reproduced in the future will not have the same merit as a work that can be easily reproduced several decades after its premiere. A problem with live electronic works is the continuing evolution of technology. The equipment used to produce the sound the composer intended may not be available now.

¹ Haller, Peter Hans, “Nono in the studio-Nono in Concert-Nono and the interpreters,” *Contemporary Music Review*, 1999, Vol. 18, No. 2, 11-18

Joel Chadabe, in the article “Preserving Performance of Electronic Music,” states that electronic performance can be preserved by describing the sounds themselves so they can be performed.² In preserving *Post-Prae-Ludium*, Luigi Nono has provided sufficient description of sounds for the work to be reproduced so that it resembles its original conception. In addition, a recording produced by Giancarlo Schiaffini, the performer who collaborated with Luigi Nono and created at the Experimentalstudio of the Heinrich-Strobel-Foundation, SWF Freiburg, aurally preserved the original concept of *Post-Prae-Ludium*. Correspondence with Giancarlo Schiaffini provided insight on the collaboration of *Post-Prae-Ludium* with Luigi Nono and Giancarlo Schiaffini at Experimentalstudio. Furthermore, these correspondences gave a better understanding of how to perform the work because they included detailed descriptions and performance notes provided by Schiaffini in the score.

Other than two recordings and selected performances by Giancarlo Schiaffini and a few other tubists, *Post-Prae-Ludium* has not had much notoriety in the tuba community. In the tubists’ definitive guide to our repertoire, *The New Tuba Source Book*, *Post-Prae-Ludium* is mentioned in the second edition, but only by composer, title and publisher, and does not contain any other performance information.³

² Chadabe, Joel, “Preserving Performance of Electronic Music,” *Journal of New Music Research*, 2001, Vol. 30, No. 4, 303-305

³ Morris, R. Winston, and Perantoni, Daniel. *Guide to the Tuba Repertoire: The New Tuba Source Book*. Bloomington: Indiana University Press, 2006, 253.

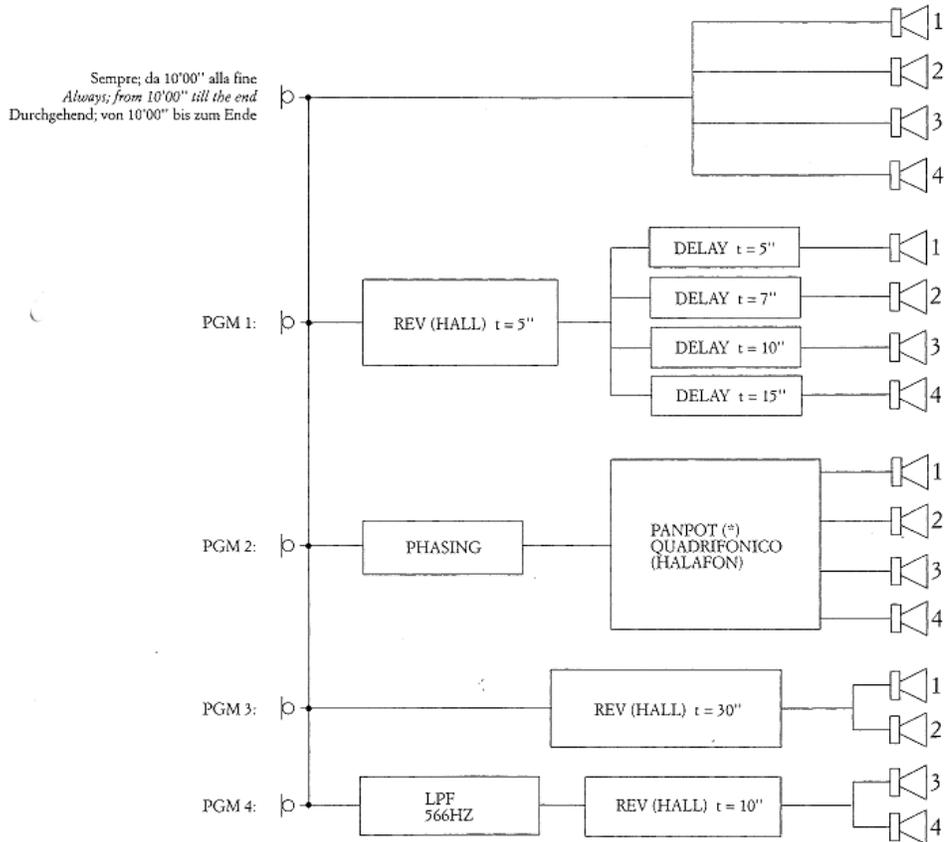
Method of Research

In order to better understand this work, an investigation in several areas was completed. A brief overview and definition of interactive electroacoustic music will be provided to help performers understand this genre. Knowledge of historical aspects surrounding the collaboration of Luigi Nono and Giancarlo Schiaffini at the Experimentalstudio of the Heinrich-Strobel-Foundation of the SWF Freiburg will provide insight into Luigi Nono's knowledge of the tuba.

By using the recordings and descriptions of the collaboration between Giancarlo Schiaffini and Luigi Nono, an explanation of the process of re-creating *Post-Prae-Ludium No.1 "per Donau"* will be offered. Both the non-performing practice and the electronic schematic of the work will be investigated. [See Example 1] Non-traditional performance practices that will be investigated may include but will not be limited to falsetto singing, half-valve techniques, vibrato notes, and multiphonics used within this work. A detailed description of how to reproduce the electronic schematic will be provided. An examination of the instructions of the electronic schematic given by Luigi Nono will be analyzed by the author in order to reproduce his work. This examination will not only provide instructions as to how to recreate the original concept but will also offer an example in which to recreate *Post-Prae-Ludium* with current technology.

These elements will provide insight regarding how to recreate the work and provide a way to make this work easily accessible to the serious performer. A demonstration will be made by playing the work with current technology to reproduce the original concept of *Post-Prae-Ludium*, showing that its longevity may be ensured with current technology.

EXAMPLE 1



* Due velocità (lente) con versi opposti. / *Two speeds (slow) with opposite directions.* / Zwei Schnelligkeiten (langsam) mit gegensätzlichen Richtungen.

CHAPTER 2

LUIGI NONO AND THE TUBA

At the time that Luigi Nono wrote *Post-Prae-Ludium*, he was in the last decade of his life, a period in which he composed several works for live electronics. He began to work at Experimentalstudio of the Heinrich-Strobel-Foundation in 1980. These compositions were not the first works that he had written for electronics. Nono's first works with electronics span as far back as 1960 with *Omaggio a Emillo Vedova*.⁴ However, it was not until Nono began working with the technicians Roberto Fabbriciani and Hans Peter Haller at the Experimentalstudio that he would compose many of his compositions with live electronics. In collaboration with live performers, they produced several electronic works. More importantly, with the help of Giancarlo Schiaffini, several works utilized tuba in the instrumentation from this period of Nono's life. Some of these works include: *Guai ai gelidi mostri*, *Prometeo*, and *Risonanze erranti*. However, *Post-Prae-Ludium* was Luigi Nono's only work for solo tuba. This work composed for Tuba in Fa and live electronics was *Post-Prae-Ludium No. 1 "per Donau"*. This composition came to be because Luigi Nono wanted to start composing a series of *Post-Prae-Ludium* for solo instruments.⁵ Additionally, *Post Prae-Ludium, No. 1 "per Donau"* was the first and only work in the series that was composed for a solo instrument.

⁴ L'Archivio Luigi Nono. "Fondazione Archivio Luigi Nono, Fondazione Archivio Luigi Nono Onlus." www.luiginono.it/en/ (accessed January 20, 2009).

⁵ Schiaffini, Giancarlo. E-mail to Scott Tignor. March 2, 2009.

Luigi Nono's initial step in the compositional process was to have a preconceived idea of the sounds world in which he wanted to produce and then superimpose this new concept of sound to the instrument.⁶ He wanted to transform and extend the natural parameters of sound.⁷ Nono would manipulate parameters such as pitch, duration, dynamics, and especially timbre.⁸ The use of Nono's sound world made this work unlike any other work that predated it in the tuba's repertoire. People who listen to *Post-Prae-Ludium* for the first time say, "Is that a tuba?" *Post-Prae-Ludium* has been described in a *New York Times* article as follows: "the tuba, echoed by electronics, sounds out the space around it with the sensuous care and quietness of someone touching a lover's body."⁹ Another article described the work as having "a steady, quiet beauty." It continued by saying, "the rhythm and interval are replaced by music as a steady stream."¹⁰ Not only did Nono use non-traditional performing techniques to produce his sound world, but he also used extreme dynamics, register and tempo to realize his new sound world.

Luigi Nono demanded the highest caliber of performer in order to make significant creative contributions. Moreover, he thought of the interpreter as an

⁶ Haller, Hans Peter, "Nono in the studio- Nono in concert-Nono and the interpreters," *Contemporary Music Review*, 1999, Vol. 18, Pt. 2. 11.

⁷ *Ibid.*, 11.

⁸ *Ibid.*, 11.

⁹ Griffiths, Paul. "Music; For a New Line of CD's, a Future Already Clouded" *New York Times*, June 10, 2001.

¹⁰ Holland, Bernard. "Music Review; The Language of Postwar Composers," *New York Times*, November 25, 1995.

equal partner in his work.¹¹ In the last decade of his life, he worked closely with a tubist named Giancarlo Schiaffini. Before composing *Post-Prae-Ludium No. 1 "per Donau"* in 1987, Luigi Nono had no specific experience with the tuba.¹² In 1980, Nono called Giancarlo Schiaffini to work with him on other compositions such as *Guai ai gelidi mostri*, *Prometeo*, and *Risonanze erranti*. During the collaboration of Nono and Schiaffini, Nono composed several works that utilized the tuba. These works included: *Quando Stanno Morendo* (1982), *Guai ai gelidi mostri* (1983), *Omaggio a Gyorgy Kurtag* (1983), *Liederzyklus has Massimo Cacciari* (1986), *Risonanze erranti* (1986), *Découvrir subversion Homage to Edmond Jabès* (1987), and *Post-Prae-Ludium No. 1 "per Donau"* (1987). Giancarlo Schiaffini's last notable involvement with Luigi Nono was that he played at a Luigi Nono Festival inaugurating the Kleine Philharmonie in Berlin (1988), and then at a seminar in Villeneuve d'Avignon (1989) about the music of Luigi Nono.¹³ The premiere of *Post-Prae-Ludium* by Giancarlo Schiaffini was at the Donaueschingen Festival in 1987. Featuring new music, the Donaueschingen Festival held in Germany since 1921 has included performances of works by composer such as Hindemith, Schoenberg, Berg, Webern, Cage Stockhausen, and Boulez, to name a few. Schiaffini's recollection of the audience's response to Nono was, "they were somewhat astonished for that kind of sound and atmosphere coming from a tuba."¹⁴

¹¹ Haller, Hans Peter, "Nono in the studio- Nono in concert-Nono and the interpreters," *Contemporary Music Review*, 1999, Vol. 18, Pt. 2. 13.

¹² Schiaffini, Giancarlo. E-mail to Scott Tignor. March 2, 2009.

¹³ Ibid.

¹⁴ Ibid.

Luigi Nono had never written for solo tuba before *Post-Prae-Ludium*. Giancarlo Schiaffini collaborated with Luigi Nono to help with the experimental sessions. While Luigi Nono worked closely with the performer, Nono and the technician conducted experimental sessions. Nono kept accurate records, so that it was possible to reproduce the explored material with precision.¹⁵ Schiaffini recalls, “We experimented with different instrumental and live-electronics techniques. Sometimes it was a kind of improv to be recorded and studied.”¹⁶ In addition, Nono was known for exploring his sound world by using these experimental sessions, then adapting the sound to the musician. Schiaffini states, “The composition was tailored to my technical possibilities; he wanted to know different transformation of sound (1st page), then the highest and the deepest pitch, the most powerful (loudest) and on these extremes (as **ffff** and **ppppppp**) he built the composition.”¹⁷

As of 2006, the *The New Tuba Source Book* contained only eighty-one works for tuba and electronic media, which is small in comparison to other genres.¹⁸ Approximately three thousand works for tuba and piano exist. *Post-Prae-Ludium* plays a significant role in the development of the genre of solo tuba and live electronics. The first important solo works of the emerging genre in the electronic media and tuba’s repertoire are *Malta* (1971) by Lejaren Hiller, *Cadence VI* (1974) by Hendri Lazarof and *Concerto with Tape* (1974) by Joseph

¹⁵ Haller, Hans Peter, “Nono in the studio- Nono in concert-Nono and the interpreters,” *Contemporary Music Review*, 1999, Vol. 18, Pt. 2. 12.

¹⁶ Schiaffini, Giancarlo. E-mail to Scott Tignor. March 2, 2009.

¹⁷ Ibid.

¹⁸ Morris, R. Winston, and Perantoni, Daniel. *Guide to the Tuba Repertoire: The New Tuba Source Book*. Bloomington: Indiana University Press, 2006, 249-255.

Ott. The foremost composer to create a solo work for tuba and live electronics would be Luigi Nono. Live electronics works are compositions that are wholly or largely based on live synthesis.¹⁹ *Post-Prae-Ludium* would lead to further compositions that would use solo tuba and live electronics. Representative compositions that follow *Post-Prae-Ludium* include *And Finally ...* (1993) by Melvyn Poore and *Battu* (2004) by Joseph Rován, both of which are scored for tuba and live electronics. The genre of tuba and live electronic music is extremely limited; however, more and more compositions are being added to the repertoire. These works tend to be performed only by select performers who experience in performing electroacoustic works. Consequently, in recent years more performers are establishing a connection with Luigi Nono through performing *Post-Prae-Ludium*. Some of these performers included Jesús Jara and Robin Hayward in addition to the artist Giancarlo Schiaffini who premiered the work.

¹⁹ Manning, Peter. *Electronic and Computer Music*. New York: Oxford Press, 2004, 157.

CHAPTER 3

EXAMINATION OF *POST-PRAE-LUDIUM*

Performers have been using non-traditional performance practices since the Twentieth Century. *Post-Prae-Ludium* uses special notations to express Nono's expansion of sound's natural parameters such as pitch, duration, dynamics, and timbre. This is accomplished through a variety of ways: singing through the instrument, playing half-valves, or perhaps something as simple as dynamics marked as soft as **ppppppp**. Nono's attention to detail in his notation is indicated in that the work is not only written for Tuba in Fa, or F tuba, but more specifically, an F Tuba with six-valves. In Nono's notes he states, "New possibilities of technical implantation of a six-cylinder tuba give the interrupter the continual freedom and create random sound events."²⁰ Although he composed the work for a six-valve tuba, any tuba can play this work. The material used at 7'53" and 11'12" calls for the use of the extra valves, but it can be achieved by using color-fingering effect. [See Example 2] The advantage of using a tuba with six-valves is that typically the fifth and sixth valves tend to be a quarter and three-quarter step.

EXAMPLE 2

Statisch + Hall + Filter 566Hz

The image shows a handwritten musical score for tuba. At the top, it is annotated with "Statisch + Hall + Filter 566Hz". The notation consists of a staff with a treble clef and a key signature of one flat. The first measure contains a quarter note with a dynamic marking of **pppp**. Below the staff, there is a bracketed section containing three notes labeled 'a', 'b', and 'c'. Below this bracketed section, the instruction "microintervall. alternare." is written.

²⁰ Nono, Luigi, *Post-Prae-Ludium No. 1 per "Donau.."* 3.

In one word, *Post-Prae-Ludium* can be described as extreme. Luigi Nono uses a multitude of musical elements. Schiaffini elaborated on Luigi Nono composer: “Nono was always extreme in looking for softness (in his music you often can see **ppppppp**-7 times p!) slow tempo, fermatas. He wanted to outline the quality of a kind of primary sound.”²¹ In *Post-Prae-Ludium*, Nono combined extreme range, dynamics, and tempo.

The range of the work demands the tubist play in the lowest register of the instrument, playing a pedal C (CC) as the lowest note in the work. More importantly, Luigi Nono’s use of the extreme high range exists throughout most of the work. The highest note of f^2 permits the performer a range with which to play this note. [See Example 3] It is very uncommon for a tubist to play in this range, as the tendency is in the middle to high range. Schiaffini recalls, “It was particularly towards the higher frequencies that Nono wanted peripheral sounds to be played.”²² Schiaffini continues, “We found that in a certain range tuba and flute generate practically a pure sine wave if played softly, without attack transient.”²³

EXAMPLE 3



²¹ Schiaffini, Giancarlo. E-mail to Scott Tignor. March 2, 2009.

²² Ibid.

²³ Ibid.

The first page of the score indicates that the material used should be played from piano (*p*) to pianissisissimo (*pppppp*). [See Example 4] When examining the recording of Giancarlo Schiaffini, he plays these dynamics not

EXAMPLE 4

1/2 Ventil	<i>PPPP</i> → <i>PPP</i> → <i>PP</i>
Falsetto	<i>PPP</i> → <i>PP</i> → <i>P</i>
Vibrato	<i>PPPPP</i> → <i>PPP</i> → <i>P</i>
Cantato	<i>PPP</i> → <i>P</i> → <i>PPPPP</i> → <i>PP</i>

as a solo with live electronics accompaniment, but by blending the tuba and electronics. When performing this new sound, the audience will not perceive individual parts of the work but perceive the material as a whole. Schiaffini explained, “Nono liked this very much and sometimes, in his chamber music, you could not realize which instrument was playing.”²⁴ Later in the score at the climax of the work, the performer will crescendo to fortississimo (*fff*) to provide contrast to the softer dynamics.

Although Luigi Nono uses a type of proportional notation based on a timeline, the tempo is also used in an extreme manner. The first section begins with a tempo marking of quarter note equals thirty. [See Example 5]

EXAMPLE 5

tempo | 0'00" . . .

²⁴ Schiaffini, Giancarlo. E-mail to Scott Tignor. March 2, 2009.

The work is divided into five sections. Each section has new material for the performer to play. The first section has most of the non-traditional playing. The next two sections demonstrate the extreme range of the instrument. Luigi Nono in the second section has the performer play within a range between c^1 to f^2 . Then in the following section, Luigi Nono has the performer play a CC. The fourth section uses microintervals concluding with crescendos to the point that does not to surpass the Larsen effect.²⁵ The final material has the performer rapidly playing vibrato notes while doing half-valve motion.

Four types of non-traditional playing appear on the first page of the score. This section according to Giancarlo should be “magma-like and wave-like without any regularity.”²⁶ The four non-traditional playing techniques are half-valve playing, singing within the instrument, notes that are played with vibrato, and multiphonic playing. Each of the musical ideas is separated. Luigi Nono gives the instruction: “Choose, and vary ad libitum the different colour path with the dynamics and tempos indicated and with other rest interested-omitted.”²⁷ Half-valve sounds are created by varying the fingering pattern with the valves always being depressed half-down. Some indication of pitch exists, but it is only used as a reference. [See Example 6] Schiaffini explains, “The notation of the first line of the first page (half-valve) should be considered a notation of “action,” not “effect.” Attention must be paid above all to variability of timbre rather than pitch, which is any hard to control with that particular kind of emission.”²⁸

²⁵ The Larsen effect is a special kind of audio feedback, which occurs when a sound loops between the input and output.

²⁶ Nono, Luigi, *Post-Prae-Ludium No. 1 “per Donau.”* 3.

²⁷ *Ibid.*, 2.

²⁸ *Ibid.*, 3.

EXAMPLE 6

Scegliere, variandoli a piacere, i percorsi in colore, con le dinamiche e i tempi indicati e con altre pause inserite - sospese.



Interspersed in conjunction with the half-valve material that is being played, the performer must sing falsetto into the instrument. This is as simple as the performer singing the indicated pitches through the instrument. [See Example 7]

EXAMPLE 7



Yet another playing technique Nono uses is playing notes with a slight vibrato, whereby the performer plays the notated pitch while adding vibrato to the note. [See Example 8]

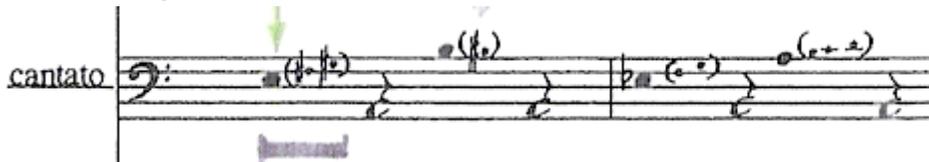
EXAMPLE 8



Luigi Nono calls his final technique cantata; a technique more commonly referred to as multiphonics. [See Example 9] The direction that Nono gives is

“notes are to be contemporaneously played and sung.”²⁹ Multiphonics is the simultaneous production of more than one pitch on one instrument.³⁰

EXAMPLE 9



Seven different colors provide a path in which to play the material on the first page. The color order presented by Nono is green, dark blue, yellow, dark red, grey, blue and red. These can be played in a descending pattern or played in a random order. Schiaffini stated, “the performer can switch from one sequence to another or follow the system; it is a kind of improvise with given material.”³¹ Schiaffini further acknowledged, “there are fixed pitches or assigned ranges (like C to F) in which you can move.”³² Luigi Nono marks the first four colors as quarter note equals thirty, while for the last three colors the quarter note is marked as equaling sixty. The material is closely oriented to time. The first formal section is marked from 0’ 00” to 5’ 20.” The first four colors are to be played between 0’ 00” to 4’ 16.” This suggests that the color is to be played approximately 1’ 23” each. The last three color paths are to be played between 4’ 17” to 5’ 20” and suggest that each color’s material is to be played for 23” each. The material that Luigi Nono uses alternates between the four different

²⁹ Nono, Luigi, *Post-Prae-Ludium No. 1 “per Donau.”* 2.

³⁰ Burton, Cumming. *The Contemporary Tuba*. New London, CT: Werden Music Company, 1984. 1.

³¹ Schiaffini, Giancarlo. E-mail to Scott Tignor. March 2, 2009.

³² *Ibid.*

extended playing techniques by simultaneously adjusting the dynamics in each of the extended playing techniques. This section needs to be played slowly and softly according to the recording of Schiaffini. If the material is played too fast or too loud, the sound world Luigi Nono attempted to establish tends to break down and the electronics and tuba do not blend into one instrument. Schiaffini recalls working with Luigi Nono: “We worked very much on pianissimo and lentissimo.”³³ When working on *Post-Prae-Ludium*, attention must be made to playing softly and slowly.

The next section is between 5’20 through 7’00.” Going from c^1 to f^2 , this is the highest pitched material of the entire work. [See Example 10] This instruction

EXAMPLE 10

tells the performer to play long and very fast sounds.³⁴ Giancarlo Schiaffini offers the performer helpful suggestions by saying, “The very high notes (5’ 20” – 7’00”) must be extremely faint and insubstantial over an echo of the preceding material slowly dying down.”³⁵ After listening to the recording, the listener better understands the concept of the sound that Luigi Nono intended. The pitch

³³ Schiaffini, Giancarlo. E-mail to Scott Tignor. March 2, 2009.

³⁴ Nono, Luigi, *Post-Prae-Ludium No. 1 “per Donau.”* 2..

³⁵ Nono, Luigi, *Post-Prae-Ludium No. 1 “per Donau.”* 3.

material is played on a repeated pitch, and even though the repeated notes are to be played rapidly, they are very subtle. Repeated patterns of the material can change pitch. As the performer gets closer to the 7'00" mark, the material becomes more predominant as the previous electronic material fades.

During the next 53 seconds, the performer will play a continuous CC. [See Example 11]. Although some performers can circular breath, Nono does not

EXAMPLE 11

(ca. 53")

Internal machine = Hall
 suono lontanissimo e
 piu mobile possibile
 con microintervalli

7'00" pppppp

expect the performer to be able to do this. His instruction suggests that the material should be "as continuous as possible, concealing breath-taking with delay. Sound with microintervals, as mobile (in timbre) as possible. Very distant."³⁶ Giancarlo Schiaffini adds, "As far as possible the low C (7'00" -7" 53") must sound uninterrupted and continually varied in timbre and micro-intonation."³⁷ Again the material is marked at **pppppp**. The performer should blend the tuba with the electronic sounds.

Luigi Nono calls for the performer to play microintervals in the next section. This technique, also called colored fingering technique, is where the performer changes the fingering on a repeated note.³⁸ On tubas that have

³⁶ Nono, Luigi, *Post-Prae-Ludium No. 1 "per Donau."* 2.

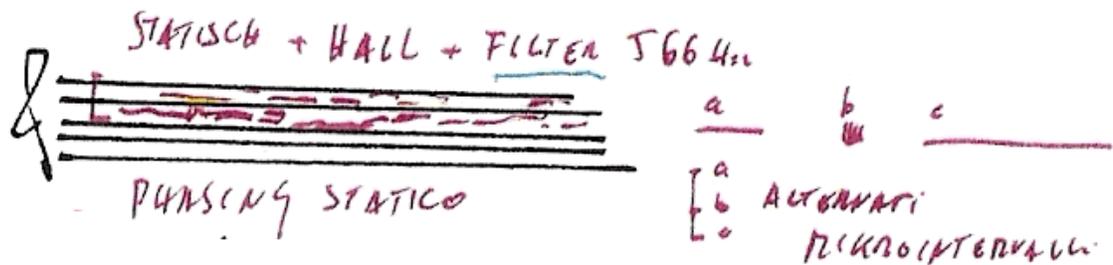
³⁷ *Ibid.*, 3.

³⁸ Burton, Cumming. *The Contemporary Tuba*. New London, CT: Werden Music Company, 1984. 2.

quarter step and three-quarter steps, this can be accomplished by using those valves. If a performer does not have those valve systems, this can be accomplished by alternating the note with alternate fingerings from the overtone series. For example, the performer could play middle open c with the alternate valve combination one and three on F tuba.

The next formal section contains two different musical materials. The first material begins in 7'53" and goes to 10'00." In the autograph, the notes are notated between c^1 to f^2 , and the instruction states, "the range must be transposed down an octave."³⁹ [See Example 12] This is adjusted in the

EXAMPLE 12



published addition. In the score three different patterns are given: "Sounds of length types a, b and c alternating ad libitum with microintervals."⁴⁰ Giancarlo Schiaffini elaborates by saying, "This can be achieved by using different kinds of emission (dijeridu technique) and fingerings (alternative fingerings, $\frac{1}{2}$ valve, ect.)."⁴¹⁴² The alternating microintervals are played at different durations throughout this material.

³⁹ Nono, Luigi, *Post-Prae-Ludium No. 1 "per Donau."* 2.

⁴⁰ *Ibid.*, 2.

⁴¹ *Ibid.*, 3.

The instruction of the second part of this section tells the performer to use “variable dynamics within the crescendo *ppppp* to *ffff*. [See Example 13]

EXAMPLE 13



Independent rests and note values never proportional or symmetrical but different from one another (long – short – not so long – longer – very short). Rest always varied.”⁴³ This is between 10’00” to 11’12” and leads to the climax of the work. The instruction continues: “The crescendo (10’00” – 11’12”) must reach a final (powerful) volume that literally fills the space, up to the Larsen effect, but naturally without distortion. The quality of volume must naturally be obtained with adjustments for each space.”⁴⁴ This is done on a repeated pitch of f^1 and allows the material to grow to a climatic point for the work.

The last section concludes with ideas from previous sections. It acts like a coda and concludes the material of the work by gradually dissipating until the end of the work. The instructions state: “Very long, increasingly “suspended”; also with slight vibrato and very fast $\frac{1}{2}$ valve on F and in the interval d^1 to a^1 .”⁴⁵ Schiaffini gives further explanation on this section. “They are just examples.

⁴² The dijeridu technique is in reference to the Aborigine instrument from Australia.

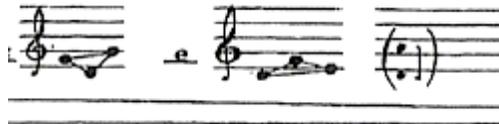
⁴³ Nono, Luigi, *Post-Prae-Ludium No. 1* “per Donau.” 2.

⁴⁴ *Ibid.*, 3.

⁴⁵ *Ibid.*, 2.

While the delays hold the big F until the end, the performer can freely choose materials from the first part, with some preferential frequencies near F (E, D, G)⁴⁶ [See Example 14] The ideas of vibrato and half-valve notes return from the first section. In addition, the microinterval idea from the fourth section along with the sustainable F is kept. The piece concludes by the music growing more and more distant until silent.

EXAMPLE 14



⁴⁶ Schiaffini, Giancarlo. E-mail to Scott Tignor. March 2, 2009.

CHAPTER 4

THE USE OF ELECTONICS IN *POST-PRAE-LUDIUM*

After examining the playing components of the tuba within *Post-Prae-Ludium*, the performer now needs to examine how the tuba is incorporated with the electronics. By looking at the notation, even though it has detailed information about how to perform the work, a shortage of information in how to conceive the work exists. The performer needs to conceive the playing components of the instrument as well as to conceive a concept of the overall sound world that Luigi Nono desired. Consequently, this work becomes different from other works through the realization of the performance.

The preservation of electronic performances not only needs to be described and notated by the composer, but also a record of performers who have worked on the work with the composer would help the work's preservation.⁴⁷ Currently two recordings are available of *Post-Prae-Ludium*. One was done by Giancarlo Schiaffini in collaboration with Luigi Nono. This is a live unaltered recording of the premiere at the Donaueschingen Festival in 1987.⁴⁸ This recording will be used as the definitive record, since it was done with Luigi Nono's supervision. Jesús Jara does the second recording.⁴⁹ This is a new

⁴⁷ Chadabe, Joel, "Preserving Performance of Electronic Music," *Journal of New Music Research*, 2001, Vol. 30, No. 4, 303-305.

⁴⁸ Nono, Luigi. *Orchestra Works and Chamber Music*. Col Legno, WWE1CD 20505, 2000. CD.

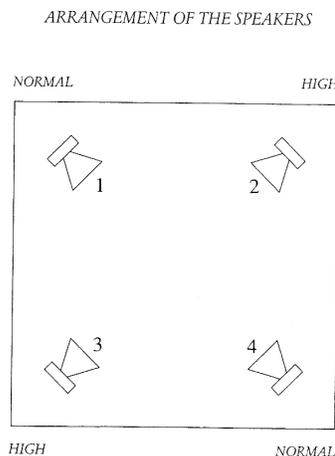
⁴⁹ Jara, Jesús. *Obres per Tuba I Eletrònica*. Sèrie Phonos / Ars Harmonica, AH163, 2006. CD.

recording and will be used in this study as a secondary source for performance practice.

The examination of the notation is just the beginning of the process. Traditional notation does not address the sounds that Luigi Nono conceived. When looking at the score, this factor must be acknowledged. Luigi Nono has used a form of proportional notation: a timeline is added for the performer to manage when new programs or materials are to begin. In addition to the timeline, an electronic diagram is used to illustrate when the amplification, input, output and feedback are to be adjusted.

The specific performing space was a fundamental component of Luigi Nono's compositions. He searched for a sound which was mobile in emission and in spatialization.⁵⁰ Performers had to get used to the acoustical surrounding before performing the work.⁵¹ Spatialization is set up with four speakers. [See Example 15] Speaker one and two are in the front of the auditorium, while

EXAMPLE 15



⁵⁰ Fabbriciani, Roberto, "Walking with Gigi," *Contemporary Music Review*, 1999, Vol. 18, Pt. 1. 10.

⁵¹ Haller, Hans Peter, "Nono in the studio- Nono in concert-Nono and the interpreters," *Contemporary Music Review*, 1999, Vol. 18, Pt. 2. 18

speakers three and four are in the rear. Luigi Nono suggests using two technicians to achieve true randomness in the input and output. Both Program I and Program II use Spatialization. Unfortunately, the recordings do not do justice to Luigi Nono's concept of spatialization; Nono's sound world can only be realized by experimentation in rehearsal.

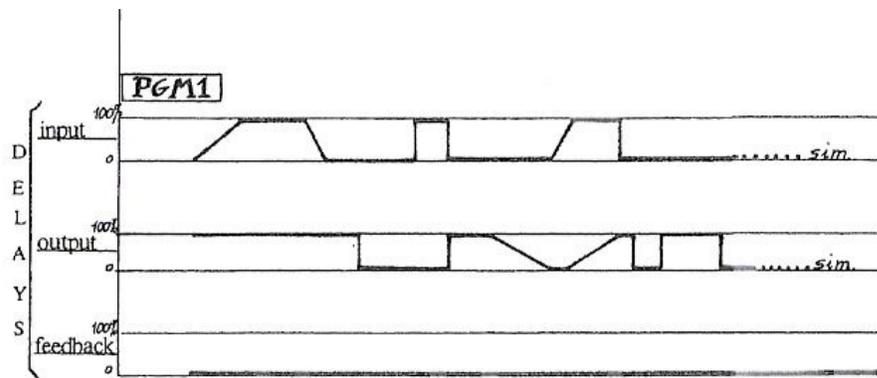
As the performer begins to rehearse the work, the next issue is to examine what Luigi Nono calls the alteration of the instrument by the live electronics. This work calls for four programs to be used, one for each section of the work with the last section using program one again. Luigi Nono calls for some common electronic modification to be done to the tuba in each of these programs. These modifications are amplification, feedback, delay, reverb, quadraphonic or halafon, phasing, and low-pass filter (LPF). Delay is an audio signal that is replayed after a period of time. Reverb, similar to delay, is where the modifications are heard after the initial sound is produced, but the process sound is modified and the volume is decayed. Quadraphonic or halafon uses a spatialization device that was designed by Hans Peter Haller. It is a process where the sound is modified by alternating the sound between different sets of speakers; this is also known as panpot. The processing technique, phasing, takes time delays then mixes the source and delays the results in amplification of certain frequencies and cancellation of others.⁵² Lastly, low-pass filter is a modification that blocks frequencies above or below the indicated frequency in the sound source.

Program I calls for the use of Reverb set to a five second delay followed by different delays sent to the individual speakers. Speaker one calls for a five

⁵² Manning, Peter. *Electronic and Computer Music*. New York: Oxford Press, 2004, 170.

second delay while speaker two calls for a seven second delay. The third speaker is delayed for ten seconds, and then the fourth speaker is delayed for fifteen seconds. This results in a consistent circling of the audience. This program is used between 0'00" to 5'20." The input and output are to be randomly adjusted until 4'40." Giancarlo Schiaffini suggests, "This can best render during sound processing by two technicians controlling input and outputs completely independent."⁵³ [See Example 16] He says this increases the random

EXAMPLE 16



nature of the technicians' interventions. This is restated in the instruction: "Close input immediately and gradually reduce adjustment of input of delays is carried out from time to time in independently and randomly by opening or closing the input of the delays at varying speeds."⁵⁴ The output then needs to be adjusted by a technician. In this current adaptation of *Post-Prae-Ludium*, Max/MSP is controlling the input and outputs. From 4'30" onwards, the feedback of delays is increased gradually up to 100%. It is highly suggested that MIDI sliders are to be

⁵³ Nono, Luigi, *Post-Prae-Ludium No. 1 "per Donau."* 3.

⁵⁴ *Ibid.*, 2.

used if the computer does not control the gradual increase of the delay. This section is very subtle, yet the sounds are not to be harsh. Sounds that are produced should be continuous.

When examining the material, definite differences between the two recordings are apparent. Giancarlo Schiaffini's recording tends to have a thinner texture than the recording by Jesús Jara. The difference comes from the adjustments between the input and output to the very slow and soft material being played.

From 5'20" to 7'00," the next program begins. Program II contains both phasing and halafon. As the performer begins to play the range of c^1 to f^2 starting at 5'20," the feedback and delay output are to be gradually reduced to zero. The performer plays in a high tessitura. This program is the most difficult to realize because of the wide variety of the possibilities with phasing. The amount of a phase shift is barely noticeable due to extreme "filtering" effects. Schiaffini suggested that the "phasing was actually just pitch multiple transposition of less than a semitone."⁵⁵ As the effect is being generated, the sounds of the output are being switched between opposite speakers. As the material fades, the effects become more noticeable. In the Schiaffini recording, the repeated patterns have less articulation than the Jara recording. Schiaffini uses breath pulses to articulate the repeated notes.⁵⁶ In addition, in the Schiaffini recording, the presence of the phasing becomes more noticeable with the appearance of microintervals.

⁵⁵ Schiaffini, Giancarlo. E-mail to Scott Tignor. March 2, 2009.

⁵⁶ Schiaffini, Giancarlo. E-mail to Scott Tignor. March 9, 2009.

The performer now begins to play a CC with the dynamics marked as *pppppp*. The reverb is set to the largest delay of thirty seconds and is the only effect used in Program III. This is marked in the score from 7'00 to 7'53." Luigi Nono wants the tubist to play as continuously as possible and suggests concealing the breath with the delay.⁵⁷ The music sounds very distant. The performer plays extremely softly allowing the overtones to be produced. Both recordings tend to have the same overall sound concept although the Jara recording does produce more overtones.

Program IV begins at 7'53" in the score. This program calls for LPF (566 Hz) with the decay of the reverb set to ten seconds. This begins the microtonal section. Using the color fingering technique, the pitch will pass through a filter and any frequencies over 566 Hz will be omitted. The recordings present the material from this section slowly, alternating the fingerings to get subtle changes. The material then is interspersed with bursts of rapid timbral changes created by the alternate fingerings.

The score calls for the use of Program I to begin again starting at 10'00" and continuing until the end of the work. This is also where the amplification of the tuba begins. In addition, the output level and delay feedback needs to be increased gradually up to circa 90%. While the amplification of the tuba reaches 90%, the performer is to crescendo to the loudest dynamic marking of the work. Schiaffini states, "The performer must reach a final volume that literally fills the space up to the threshold of the Larsen effect, but naturally without distortion."⁵⁸ In the recordings, each performer plays the static pitch with different durations

⁵⁷ Nono, Luigi, *Post-Prae-Ludium No. 1 "per Donau."*2.

⁵⁸ , Luigi, *Post-Prae-Ludium No. 1 "per Donau."*3.

and rests in between increasing the dynamics to resonate throughout the room. In the recording by Schiaffini, it contains the most variation in note duration and speed of the dynamics, thus, reaching the goal of providing enough material so that it can gradually diminish in the next section.

The ending section begins at 11'12" in the score. At this point the input immediately goes to zero. Then from 11'12 to 12'15" the feedback and delay output are to be gradually reduced to zero and have the amplification follow thereafter. In both recordings, the material gradually disappears; although, in the recording done by Schiaffini, the material disappears faster than in the recording done by Jara. All electronic material should disappear by the end of 12'15." The amplification is reduced, leaving only the tuba to conclude the work.

CHAPTER 5

PERFORMING *POST-PRAE-LUDIUM*

Luigi Nono wanted to produce a new sound world for every composition.⁵⁹ *Post-Prae-Ludium* is a direct result of this concept. This work is unlike any other work in the tuba repertoire because of the unique sound that the tuba produces. Its preservation will be difficult because of the rapid advancement in technology. Within the last three decades of existence, the technology has advanced three times using different equipment each time. Schiaffini lists the first equipment that he used: “multi effect Publison #90 for transposition, harmonization, reverberation, then patches, digital delays and Halafon (Spatialization device designed by the Director of Studio, Hans Peter Haller) where it was built in a local lab called Freie Elektronik.”⁶⁰ Schiaffini continued discussing the microphone he used: “Nothing special, just a Shure SM 58 near the bell (or sometimes an AKG clip).”⁶¹ In the 90s, Schiaffini used current technology to play *Post-Prae-Ludium*. Schiaffini continues, “By the way, during 90s I could use commercial “effects” like Digitech, Yamaha, Roland and so on.”⁶² In recent performances of the work, performers are using MAX software. One existing patch was created by Silvia Lanzalone for a performance at the “Universita degli Studi di Roma Tor Vergata” in collaboration with the “Conservatorio di Musica

⁵⁹ Fabbriciani, Roberto, “Walking with Gigi,” *Contemporary Music Review*, 1999, Vol. 18, Pt. 1. 10.

⁶⁰ Schiaffini, Giancarlo. E-mail to Scott Tignor. March 2, 2009.

⁶¹ Ibid.

⁶² Ibid.

Santa Cecilia” of Rome by tubist, Matteo Caramaschi.⁶³ Dániel Péter Biró and Randy Jones originally created the patch used for this performance at Vancouver New Music performance in March 2008: Max Murray, tuba; Dániel Péter Biró, Randy Jones, Kirk McNally, live electronics. Richard Chilott continued to edit the patch for the performance. This patch combines the information obtained from the lecture by Silvia Lanzalone in addition to making sure that the patch is a true reproduction of the recording by Schiaffini.

It was important to Luigi Nono that performers make a creative reproduction of the work.⁶⁴ The performer must be aware of the notational demands of the work in addition to having a concept of the sounds of *Post-Prae-Ludium*. It is very important that the performers listen to recordings of the work to become aware of Nono’s concept. However, even though the performer strives to perform the work exactly as the recording, a large amount of improvisation indicated throughout the work would create a new experience for the listener and performer for every performance.

Hans Peter Haller says this about the interpretation of Nono’s works: “Not only is that which sounds beautiful and perfect good and right. Not only is that which is played with virtuosity good and right. It can well be good and right which seems defective.”⁶⁵ This interpretation was echoed by the performer Robin Hayward, “while recording *Post-Prae-Ludium* (at the Experimentalstudio of the

⁶³ Lanzalone, Silvia. “Post-Prae-Ludium ‘Per Donau,’ for Tuba and Live Electronics by Luigi Nono, The Algorithm for Real Time Performance Implemented with Max-MSP.” (paper presented at Understanding and Creating Music Conference, Rome in June 2005).

⁶⁴ Haller, Hans Peter, “Nono in the studio- Nono in concert-Nono and the interpreters,” *Contemporary Music Review*, 1999, Vol. 18, Pt. 2. 13.

⁶⁵ *Ibid.* 13.

Heinrich-Strobel-Foundation) they actually told me I tended to play it too perfectly - I'd worked out all the half-valves so I could play them precisely, whereas according to them Nono had deliberately written it to be imperfect. After reflecting on this I now use strategies in the performance which mean I don't always have complete control - it's more important that the human side of performance is present than that everything is perfect. In fact it would actually be aesthetically wrong if everything were perfect in the sense of being too clean and without risk."⁶⁶

This work is unique in the tuba repertoire because of the use of the sound that the tuba produces and technical demands of the live electronics. Most musicians do not have the expertise to perform electroacoustic works. However, the MAX patch and the simple requirements of the audio equipment will allow more tubists to be able to perform this work. Technology will change and these current adaptations of *Post-Prae-Ludium* may not be valid in one or two decades. However, the description and instruction given by Luigi Nono and Giancarlo Schiaffini, in addition to recordings made of *Post-Prae-Ludium*, provides documentation in which to reproduce this work. Schiaffini gives his thoughts on the future of *Post-Prae-Ludium*: "I think that the piece is still valid. There is an amount of improv within certain limits. The core of the piece is the sound which must be beautiful, soft and powerful but never grotesque."⁶⁷

⁶⁶ Hayward, Robin. E-mail to Scott Tignor. March 4, 2009.

⁶⁷ Schiaffini, Giancarlo. E-mail to Scott Tignor. March 2, 2009.

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