

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

Boulez +: New Music for Violin and Electronics in Brazil
an Analysis of Scriptio and TransScriptio by Flo Menezes

A thesis submitted in partial fulfillment of the requirements for the degree of
Masters of Music in Music, Performance

By
Ivan Paula Santos Machado Dantas

August 2017

The thesis of Ivan Paula Santos Machado Dantas is approved:

Diane Roscetti

Date

Alexandra Monchick

Date

Lorenz Gamma, Chair

Date

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

Acknowledgments

To Dr. Lorenz Gamma for being such a great mentor and source of inspiration. Thank you for helping me to develop my playing, my artistry, and for sharing your artistic and philosophical views on music.

To Dr. Alexandra Monchick for your friendship and for encouraging my interest in writing and research.

To Prof. Diane Roscetti, for all your help and advice during the duration of this program, since the first email I wrote almost three years ago when I started considering apply to CSUN.

To Dr. Liviu Marinescu, for instigating my interest in new music.

To my family, for all the support, guidance, and love.

Table of Contents

Signature Page.....	ii
Acknowledgments.....	iii
List of Figures.....	v
Abstract.....	vi
Chapter I - Boulez + and the Série +	
Série +.....	1
Boulez +.....	2
Chapter II - Flo Menezes.....	6
Chapter III - Scriptio	
Conceptual Foundation.....	9
Profil Principal.....	12
Pitch Material, Rhythmic Organization, and Development of Materials.....	14
Chapter IV - TransScriptio	
TransScriptio.....	22
Electronics.....	24
Fenêtres.....	26
Conclusion.....	29
Bibliography.....	31

List of Figures

Figure 1: movement of the interpreter during the work.....	11
Figure 2: Profil Principal.....	12
Figure 3: Harmonic Entity from the drafts of <i>Le Marteau Sans Maître</i>	15
Figure 4: Harmonic Entity transposed a major third up.....	15
Figure 5: Cyclic Module technique applied to the main harmonic entity in <i>Scriptio</i>	17
Figure 6: permutations to create rhythmic configurations.....	20
Figure 7: <i>Scriptio</i> , measures 1 and 2.....	21
Figure 8: Max/MSP patch for <i>TransScriptio</i>	25
Figure 9: opening of “fenêtre 1”.....	27

Abstract

Boulez +: New Music for Violin and Electronics in Brazil
an Analysis of Scriptio and TransScriptio by Flo Menezes

by

Ivan Paula Santos Machado Dantas
Master of Music in Music, Performance

In spite of many adversities, such as lack of funding, few professional ensembles specializing in playing new music, and the small number of concerts showcasing new composers, Brazilian composers have been creating an impressive number of outstanding works in the past few years. One can argue that the new music scene is having one of its best periods in recent decades with several initiatives that are being implemented pointing to a better future for contemporary music in the country. The topic of this thesis is one of these initiatives, the DVD Boulez +, part of a series of new recordings combining seminal works of the 20th Century with music created by Brazilian composers in dialogue with these important works.

Through a detailed analysis of Scriptio and its live electronics double TransScriptio, by Flo Menezes, I discuss the importance of the works not only within the composer's catalogue, but also as a representing work of the quality of new music being produced in Brazil at the moment. The reasons to choose this work for the analysis and not one of the other compositions in the Boulez + DVD were first the importance of

Menezes as a pioneer of electronic music in Brazil and as a composer both in Brazil and internationally, being one of the most acclaimed Brazilian avant-garde composer, having received several awards and published many books and articles. Secondly, Menezes, who holds a teaching position in one of the most respected universities in Brazil, has been for the past two decades an important mentor for many of the young composers seeking to develop an aesthetic style of complexity and experimentalism, particularly in electroacoustic music. Therefore, works of the caliber of *Scriptio* and *TransScriptio* are certain to impact the creations of the new generation of Brazilian composers.

Chapter I

Boulez + and the *Série +*

Série +

The *Série +* is a Brazilian based project conceived by conductor and percussionist Ricardo Bologna and flautist Cássia Carrascoza with the support of the Brazilian record label *Selo SESC*. This recording label is only one of the many branches of SESC, an acronym for Social Service of Commerce in the Portuguese language, a private non-profit institution that offers health, sports and arts for the general community in all twenty-seven Brazilian states. The revenue for this institution comes from a 1.5% payroll tax imposed on Brazilian companies,¹ making it the largest arts financing institution in the country. The total budget for the 2016 year was over one billion Brazilian Reais,² which equates to approximately \$320 million.

The main goal of the *Série +* project is to commission new compositions by Brazilian composers by establishing a compositional dialogue between the new commissioned pieces and some seminal works by some of the most important composers from the twentieth century, creating in this way what could be called a dialectic compositional process. In a country where contemporary concert music is marginal and

¹ Larry Rohter, “Brazil’s Unique Culture Group Stays Busy Sharing the Wealth,” New York Times, March 27, 2012. < <http://www.nytimes.com/2012/03/27/arts/brazils-leading-arts-financing-group-shares-the-wealth.html> > (accessed August 6, 2017)

² Sesc’s Annual Budget Worksheet, 2016. < <http://www.sesc.com.br/wps/wcm/connect/5ad36d87-a2a0-4eef-96ee-e9dec0db588d/Execução+Orçamentária+AN+-+Orçamento+Inicial+2016.PDF?MOD=AJPERES&CACHEID=5ad36d87-a2a0-4eef-96ee-e9dec0db588d> > (accessed August 6, 2017)

there are few opportunities for composers to have their works performed, the extreme success of the *Série +* makes it one of the most important projects in the field of new music in Brazil.

The project is also responsible for the first recording of some of these important works from the twentieth century featuring performers born or naturalized in Brazil. The first edition of the *Série +* was *Berio +*, released in 2007. The CD contained the first Brazilian recording of Folk Songs and new compositions by Arrigo Barnabé and Eduardo Guimarães Álvarez. This CD was followed in 2013 by *Ligeti +*, with the composer's Chamber Concerto and works by Marcus Siqueira and Cláudio de Freitas. The edition that preceded *Boulez +* was *Cage+*, released in 2014, which contained recordings of works for percussion, prepared piano, and violin, besides new commissions by the composers Leonardo Martinelli and Mateus Bitondi, utilizing the same instrumentation as Cage's compositions.

Boulez +

Boulez + was released in 2015, the year that the composer and conductor celebrated his ninetieth anniversary. The compositions on the DVD started as a project of the *Studio PANaroma*, founded by Flo Menezes in 1994 and located at the Arts Institute on the São Paulo State University Campus. Menezes had been conceiving these projects since the beginning of the Studio, focusing on mixed electroacoustic composition by different composers who would be invited to create pieces for the same instrumental formation, utilizing PANaroma's facilities to create the electronics, and collaborating

with acclaimed instrumentalists. In this particular project, the director of the studio invited five other composers to create works for the violin and electronics, using the studio's excellent resources. This project culminated in a live concert at the concert hall of Sesc Consolação in São Paulo in 2014, with French-American violinist Elissa Cassini. After that concert, when Menezes was approached by the directors of *Selo Sesc* to conceive a CD on the *Série +*, he suggested adding to the project Boulez's dual work, *Anthèmes 1 and 2*, which shares the same aesthetic approach to the other compositions, especially with Menezes' *Scriptio* and its double *TransScriptio*.

The fourth product of the *Série +*, *Boulez +* has some differences from the previous CDs. It contains the works of more Brazilian composers than the previous editions, a total of six composers and eight new works, plus Boulez's *Anthèmes 1 and 2*. All the compositions were written for violin and electronics (with the exception of *Anthèmes 1* and *Scriptio* for solo violin, by Boulez and Menezes respectively). It is also the first item in this series to be made into a DVD media instead of a CD, the reason being, surprisingly, not to include images or video, but to have access to better audio possibilities. Spatialization is one of the most fundamental parameters in electroacoustic compositions; Flo Menezes compares a stereophonic recording version of an electronic piece with listening to a piano reduction of a romantic symphonic work. Therefore, he decided to utilize the DVD platform to be able to include a surround version (5.1 surround DTS, 96 kHz sample rate at 24-bit) maintaining most of the spatial characteristics of the pieces and delivering the audio at a much higher standard than a regular CD. Another merit of this DVD is that it is the first commercial recording of

Boulez's *Anthèmes 1* ever, and first surround recording of *Anthèmes 2*. Since the DVD format also supports image, the video maker Raimo Benedetti was invited to create videos to accompany the works. However, Menezes reiterates that the works are musically autonomous and that the videos were conceived later. They are not audiovisual pieces, but in his words "[the videos] establish a curious dialectic intratextuality with the sounds and sound structures."³

The compositions on the DVD fall into two distinct categories: works for violin and electronics, with the electronics conceived and pre-composed in a studio; and works for violin and electronics in real time, in which all the electroacoustic sounds occur by real-time processing of the sounds emanating from the violin, or where they are triggered by the instrument itself. The composers who chose to write in the latter method are Flo Menezes with *TransScriptio*, Tiago Gati with *Nomoi 2*, and Alexandre Lunsqui with *Quaestio*. The works for violin and electronics (pre-conceived sounds) are Sergio Kafejian's *Entre o Arco e o Ar*, Marcus Siqueira's *A Onda*, and Martin Herraiz's *Relato de Insônia*. *Anthèmes 2* does fall clearly into either of these categories: the sounds are processed in real time, however many of them are prerecorded violin samples going through computer processes that are triggered using a Score Follower software.

Brazilian violinist Claudio Cruz, former concertmaster of the São Paulo State Symphony Orchestra for twenty-four years and winner of a Latin Grammy Award, made all the violin recordings for the project. He used two violins from his collection, a Pietro

³ Flo Menezes, "Booklet for Boulez +," DVD, Selo Sesc, 2015, p. 9

Guarnieri for Boulez's and Menezes's pieces and a Lorenzo Guadagnini for the other works.

The DVD was released in November of 2015, during the IRCAM Forum in São Paulo and just a few months prior to Boulez's death, in January of 2016. Sadly Boulez's death helped elevate the interest in the composer's music, and many celebrations of his works occurred worldwide. *Boulez +* was received to great critical acclaim and was awarded the 2016 Concerto Award for best CD/DVD/Book by the most prestigious Brazilian classical music Magazine, *Revista Concerto*.⁴

By analyzing *Scriptio* and its live electronics double *TransScriptio* I will show the importance of the works not only within the composer's catalogue, but also as a representing work of the level of new music being produced in Brazil in recent years. The reasons for choosing this work for the analysis, and not one of the other compositions in the Boulez + DVD, were first the importance of Menezes as a composer and pioneer of electronic music in Brazil. Secondly, Menezes, who holds a teaching position in one of the most respected universities in Brazil, has been a mentor for many aspiring composers seeking to develop an aesthetic style of complexity and experimentalism, particularly in electroacoustic music. Due to his distinguished place in the Brazilian new music scene, *Scriptio* and *TransScriptio* are certain to be a touch stone and influence the works of the new generation of Brazilian composers.

⁴ "DVD Boulez+ vence o Prêmio CONCERTO 2016 na categoria CD / DVD / Livro," *Revista Concerto*, January 2017.

Chapter II

Flo Menezes

The son and brother of important poets, Florivaldo Menezes was born in São Paulo in 1962. His house was frequented by the intelligentsia of that time. Menezes was introduced to *avant-garde* music at an early age by two key figures who used to attend his father's gatherings: Willy Correia de Oliveira and Gilberto Mendes. Both were composers trying to embrace a modernist aesthetic at a time when most of Brazilian composers were attracted to nationalism and were mainly influenced by the works of Villa-Lobos and Camargo Guarnieri. Oliveira and Mendes were students of Hans-Joachim Koellreutter, a German born composer, musicologist, and teacher, who emigrated to Brazil in the 1940's and was responsible to bring dodecaphonic music to the attention of Brazilian composers and students. Menezes recounts how the presence of these two musicians was crucial to his development.⁵ They would show him recordings of works by integral serialist composers, and bring scores of works of the second Viennese school, that at that time were unavailable almost anywhere else in Brazil. Menezes attended the São Paulo University, where he graduated in both composition and conducting, studying with his mentor, Willy Correia de Oliveira. During that time, he organized new music concerts and conducted the Brazilian premiere of Webern's *Konzert op. 24*. When he was only twenty-two years old, he wrote the treatise *Apoteose de*

⁵ Information attained by the author during attendance of classes taught by Menezes.

Schoenberg (Schoenberg's Apotheosis, 1987). Until today this book is still one of the most comprehensive sources of analysis of works from the second Viennese school available in the Portuguese language.

Menezes received a grant from DAAD (*Deutscher Akademischer Austauschdienst*, German Academic Exchange Service) to study with Hans Humpert at the *Studio für Elektronische Musik* of the *Musikhochschule* Cologne, receiving his Diploma in 1989. In 1991 he worked at the *Centro di Sonologia Computazionale (CSC)* in Padua, Italy to study computer music. He also attended courses in France with Pierre Boulez (1988) and with Brian Ferneyhough (1995), in Austria with Luciano Berio (1989), and in Germany with Karlheinz Stockhausen (1998). The relationship that he established with Berio led to a number of research and compositional projects: a doctorate completed in Liège under the supervision of Henri Pousseur, a post-doctorate study on Berio's manuscripts at the Paul Sacher Stiftung in Switzerland, and an analysis of Luciano Berio's *Visage*.

Menezes received many awards for both his research work and compositions,⁶ some of them include an award for his analysis of *Visage* at the 1st International Musicology Competition, Italy in 1990; an international selection from UNESCO of the electronic work *Contextures I (Hommage à Berio)*, in 1991; a composition-prize at the TRIMALCA (International Rostrum of Composers in Radio Corporations of Latin America - Argentina) for his electroacoustic piece *Profils Écartelés* (1988) for piano and tape in 1993; Prix Ars Electronica in Linz, Austria, for his composition *Parcours de l'Entité*

⁶ Flo Menezes, "Biography", < http://www.flomenezes.mus.br/flomenezes/biography_eng/biography.html > (accessed August 6, 2017)

(1994) for flutes, percussion and tape, in 1995; First Prize at the Luigi Russolo International Electroacoustic Music Contest in Italy for *A Viagem sobre os Grãos* (1993; 1996), for 2 percussion players and tape, in 1996; Prêmio Cultural Sergio Motta for *Coiores (Phila: In Praesentia)* (2000), in 2002; Bolsa Vitae de Artes for *labORAtorio* (1991; 2005; 2003) in 2003; Giga-Hertz-Preis for *La Novità del Suono* (2006), in 2007.

In July 1994, upon his return to Brazil, he founded the *Studio PANaroma* at São Paulo State University (UNESP), where he stills teaches electroacoustic composition. This studio was pioneering and is today a primary reference in the study of electroacoustic music in South America. Stockhausen invited him to become Professor of Analysis of his works at the Stockhausen-Kurse in Kürten, Germany in 1999 and 2001; he was a composer in residence at IRCAM (Institut de Recherché et Coordination Acoustique/Musique) in 1997; in 2004 and 2005, he served as a visiting professor at the University of Cologne. He has published over ten books in both Brazil and Europe and has two others in progress, one about sound objects and its relation to composition and the other analyzing the works of Karlheinz Stockhausen.

Besides his full-time professorship at São Paulo State University and direction of the *Studio PANaroma*, Menezes is a prolific composer with an impressive catalogue of works. His music is regularly played by some of the worlds leading contemporary music ensembles and is featured in the most important festivals throughout the world.

Chapter III

Scriptio

Conceptual Foundation

The title of the work comes from the latin word *scriptio*, making a reference to the act of writing. During the conceptual elaboration of the piece, Menezes was taking in consideration the French term *écriture*, which has been used for centuries in music education in that country. He was specially interested by Roland Barthe's definition of *écriture*, in his literary criticism books. The composer sees *écriture* as a process of formal elaboration, in opposition to notation - traditionally the final product of the compositional process. It is interesting to see how the *écriture* - the intellectual process - is still present even in pure electroacoustic music that makes no use of notation. In the foreword to the score, which is entirely in French, Menezes states that:

*L'essence de toute écriture est la processualité (...) l'élaboration des données structurelles et structurales qui cohabite l'espace de la création avec les affections dont l'amalgama détermine l'essence même de la musique: une espèce de mathématique des affections.*⁷

His emphasis on the process of how the composer transposes his ideas onto the music notation code, and how the performer deciphers this code and transform it into actual sounds, is observed throughout the piece at the high level of detail he indicates on

⁷ “the essence of all scripture (...) is the processuality, the elaboration of the structural and structuring data cohabiting the space of creation with the affects, whose amalgam determines the very essence of music: a kind of mathematics of affects.” Flo Menezes, “Booklet for Boulez +,” DVD, Selo Sesc, 2015, p. 21 (translation by the composer)

the score. Notation, to him, subsists in the complex relationship of the author to the paper. In the same way a poet uses words to create signs, seen here in a *Peircian* semiotic context, to be deciphered by the reader, the composer is writing signs from his inner musical imagination to be interpreted by an instrumentalist, using the medium of musical notation as a vehicle for his own expression. Dialectically, the composer is not only expressing himself through the notation but he is also being formed by it - from every input he writes down he receives feedback and learns from his own work.

Having this dialectical process in mind, Menezes decided to give himself more freedom in terms of the writing of the notational details in his work *Scriptio*, than most of his other works, in which even the micro aspects of the composition are guided by a strong structural principal. He let himself be guided by his pencil, even surprised, not necessarily needing an omnipotent consciousness, but rather allowing himself to relinquish some of the control over the compositional process.

Another interesting feature of this work is the way that the space of the performance is explored by the composer. Menezes determined the place on stage where the performer is playing during each moment of the composition, as can be seen in the table below:

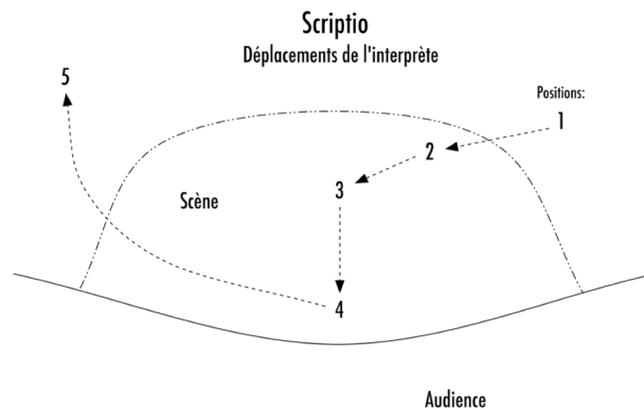


Figure 1: movement of the interpreter during the work⁸

There are five positions in total. Each one of them serves the function of determining important structural sections of the work. While the interpreter is moving from one position to the next, there are points of *stasis* of the musical flow, sometimes by a note that is held for a long time or a trill. As one can see on Figure 1, the performer begins and ends the work from off stage. In the beginning, the musician starts playing even before the audience is quiet, the public just realizes the music has begun after a while, as the performer slowly walks into the stage already playing. The ending is similar: the violinist plays sections from the *Profil Principal* by memory alternating with long notes on the open G string of the violin, walking off the stage as far as possible until the point that the sounds coming from the violin are inaudible.

⁸ Flo Menezes, “*Scriptio*” Score, 2013. < http://flomenezes.mus.br/flomenezes/works_en/2013-scriptio.html > (accessed August 6, 2017), p. A.

Profil Principal

Taking in consideration the many singularities of this work, the analyst who seeks a deeper understanding of the composition cannot use any previously conceived formula of analysis and must begin his work from a detailed look at the gestures and fragments of the work itself. For that reason I have not used theories frequently employed in the analysis of contemporary music, such as set-theory, opting for an individualized approach to the composition itself.

Therefore, the starting point of the present analysis is the understanding of the *Profil Principal* (main profile), which occurs after approximately eight minutes of music and can be found on the score at rehearsal letter D, *Position 4*. Menezes utilized as material for the *Profil Principal* a harmonic entity taken from the manuscripts of Pierre Boulez's seminal work *Le Marteau Sans Maître* (1955), however, according to Menezes,⁹ it is not a citation since this entity was only in the sketches for the work and it is not found in the finished composition.

The image shows a musical score for 'Profil Principal' starting at rehearsal letter D, 'Position 4'. The score is divided into two systems. The first system contains measures 106 to 111, and the second system contains measures 112 to 118. Above the notes, there are annotations for 'groupes de notes' (groups of notes) with numbers 7, 9, 6, 10, 8, and 5, and their characteristics: [accél.], [rit.], [apériodicité], [périodicité], [périodicité/apériodicité], and [appogg./note]. Below the notes, there are durations for these groups: 2" (+ ^), 3,4", 2,6", 1,6", 5,1", and ca. 0,9". The score includes various musical notations such as dynamics (pp, p, f, ff, mf), articulation (accents, slurs), and performance instructions like 'multo espressivo' and 'pizzicato'. The tempo is marked as ♩ = 89 and ♩ = 94. The time signature is 6/8.

Figure 2: *Profil Principal*

⁹ Flo Menezes, "Lecture on *TransScriptio*," presented at Forum-IRCAM, Brazil 2015. <<https://www.youtube.com/watch?v=BWsi3HyAId0>> (accessed August 6, 2017)

The *Profil Principal* is formed by eleven measures, or rather groups of notes, each one with a different number of notes (from one to eleven), time signature, length of notes, articulation, profile, and temporal organization (written *accelerando* and *ritardando*). The composer writes what is the main agogic idea of each group in parenthesis above the score. Each pair of groups is conceived in a way that there is a binary opposition of the agogic, with the exception of the single note group, which is a reference to the Mozartian gesture of one repeated note — such as in the famous aria “*Der Hölle Rache kocht in meinem Herzen*” (“Hell's vengeance boils in my heart”) from *Die Zauberflöte* (The Magic Flute). This gesture occurs at the tenth group, marked as “*note repiquée ‘à la Mozart’*” and consists only of repeating wedged F sharps reaching a long, molto vibrato, note. This figure appears often in the works of Menezes. He is known for telling his students, in a humorous way, that Mozart was the first to use the basic idea of granular synthesis — almost two centuries before Xenakis.

This very dense passage is used by Menezes, in his own words, as a “morphological matrix”¹⁰ from which all the material from the work is derived. The *Profil Principal* is followed by a slightly varied repeat, labelled on the score as “*ritornello*”, where all the pitches appear in the same exact order with only minor rhythmic reconfigurations. This repetition assures the listener of the importance of this profile and helps him to apprehend it in his memory, creating connections to what was heard earlier on the piece and preparing the listener to the virtuosic variations to follow.

¹⁰ Flo Menezes, “Booklet for Boulez +,” DVD, Selo Sesc, 2015, p. 23

During the Forum-IRCAM Brazil 2015, the composer himself presented a lecture guiding the viewers through his manuscripts, thought process, and compositional techniques used in *Scriptio* and *TransScriptio*. This type of primary source is rarely available to a music theorist and is of extreme importance. For that reason I will present a detailed analysis of the materials exposed in the lecture, however without abdicating my own perception and interpretation of the work. In other words, I will avoid quoting the lecture too much. Instead I will use the composer's reflections about his work to support my own analysis.

Pitch Material, Rhythmic Organization, Directionality, and Development of Materials

The pitch material used in the *Profil Principal*, as previously mentioned, comes directly from a harmonic entity (Figure 3) found by Menezes in the facsimile edition of Boulez's *Le Marteau sans Maître*, edited by the Paul Sacher Stiftung; it includes not only the score, but also many drafts related to the work. According to Menezes, the aggregate used by does not make an appearance in Boulez's finished work. Menezes seldom uses quotations or reutilizes harmonic entities from other composers, however, in this case he was drawn by the potential and richness of this particular aggregate: its high density, containing all twelve pitches, its non-symmetrical configuration. The first procedure the composer took was to transpose the entity a major third up (the bottom note from E flat to G, as seen on Figure 4) so that it would fit the range of the violin.



Figure 3: Harmonic Entity from the drafts of *Le Marteau Sans Maître*.



Figure 4: Harmonic Entity transposed a major third up.

Menezes has frequently used in his works original compositional techniques that he started to develop while still in his youth and that are first presented in his treatise *Apoteose de Schoenberg* (1987). These techniques have been greatly expanded and applied in different ways throughout his compositional *oeuvre*, however always following the same principle and concepts when he first conceived these techniques. As will be demonstrated, some of these techniques are present in *Scriptio* both as means to conceive the basic materials and structures as well as ways to develop them further.

Menezes calls the first technique I will discuss as “*Módulos Cíclicos*” (“Cyclic Modules”). In essence, it allows the composer to project a certain harmonic entity in time, creating a horizontal expansion: a harmonic field in which the intervals are drawn from the original entity, giving cohesion to the pitch material. Two influences to the development of this technique were Henri Pousseur’s “Cyclic Serial Permutation” and

Olivier Messiaen's "Modes of Limited Transposition." The technique consists of the horizontalization of the original entity, beginning with the lowest pitch and ending in the highest; then the highest note works as pivot-note and the entire intervallic structure of the original entity is repeated using this note as bass. Menezes calls this a "retrotransposition"; this process is repeated until the original notes of the aggregate are reached. The number of retrotranspositions of the original entity is determined by the interval (in the range of an octave) of the extreme notes of the aggregate, its lowest and highest pitches. This interval will determine the number of transpositions that are possible before one returns to the original pitch configuration. The highest and lowest notes of the entity used in *Scriptio* (G and F) form a major second (or minor seventh). Therefore, this entity has six possible retrotranspositions before repeating the notes of the first configuration (G to F). If one would apply this technique to an entity that has an augmented fourth between its extreme notes one would find only two possible retrotranspositions. The entirety of notes achieved by this process is what is called the Cyclic Module itself and we can deduce a formula to obtain the number of notes that a certain entity will produce in its harmonic field upon the use of this technique: the number of notes in the original entity multiplied by the number of possible transpositions, minus this number (since each transposition starts in the note that ended the previous one), equals the total number of notes in a Cyclic Module. Using the entity from *Scriptio* as an example this calculation would be:

$$12 \times 6 - 6 = 66.$$

Therefore, 66 is the total number of notes in the Cyclic Module from which most of the pitch material in the work is derived.

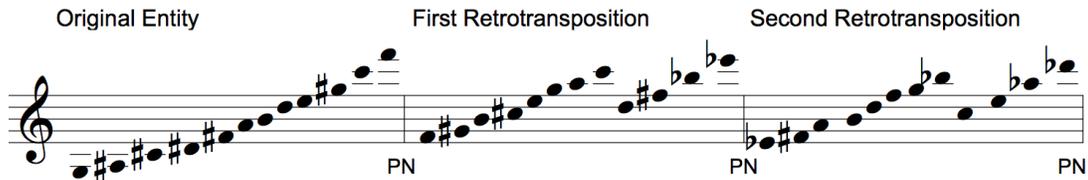


Figure 5: The Cyclic Module technique applied to the main harmonic entity in *Scriptio*.

The example above (Figure 5) illustrates the usage of this technique applied to the harmonic entity from *Scriptio*, but only the original entity and its first and second retrotranspositions are shown. If this process is repeated six times, the notes will be the same as the original entity. The last note of each measure is the pivot note (marked as PN), in which the next transposition starts.

The second technique developed by Menezes and often used in his works is “*Projeções Proporcionais*” (“Proportional Projections”). This technique involves expansions and compressions of a certain entity or melodic profile in a way that the total range is modified but the relationship of intervals is kept proportional to the original. This often involves notes that are not in the tempered spectrum, leading the composer to use microtonal notes to achieve the right proportion. Menezes has been using this technique in instrumental, mixed instrumental and electronics, and purely electroacoustic works. What is most interesting about this technique is that it is analogous to the temporal procedures that have been used for centuries, especially in contrapuntal music. Techniques such as augmentation and diminution by proportionally changing the note values of a determined theme operate in a similar way in the temporal paradigm. On the

other hand, Proportional Projections expand the idea to the pitch aspect. Karlheinz Stockhausen's theory of unity was influential to Menezes in the development of this technique.¹¹ In summary, Stockhausen understands pitch, duration, timbre, and intensity, as different aspects of a larger spectrum. For example, any periodic rhythm, when accelerated to a certain point, will sound as a defined pitch of a particular timbre. This was very clear after his research on electronic music in the 1950's.

If we consider the main entity of *Scriptio*, which has a range of two octaves and a minor seventh, it could be expanded or compressed by this technique into many different aggregates. For example, it can be expanded into an aggregate that spans four octaves, or compressed into a much denser chord with a range of one octave. All the intervals are modified to comply with the original proportions between the notes, creating a cohesiveness among both aggregates, that in spite of being virtually impossible to be apprehended by ear, gives the material a strong sense of unity. The advantages of this technique are even greater when applied to a melodic profile, in which the range would be compressed or expanded, but the general contour would be the same. This contour is much more easily followed by the ear and the attentive listener can make direct connections with the original profile. Combined with the Cyclic Modules technique and different permutation procedures, the Proportional Projections allows the composer to explore a much larger harmonic field (including microtones) without abdicating cohesion and logic of the pitches used in the work.

¹¹ Karlheinz Stockhausen and Elaine Barkin, "The Concept of Unity in Electronic Music," *Perspectives of New Music*, vol. 1, no. 1, (Autumn, 1962), pp. 39-48.

Upon establishing the harmonic field with which he would be working, that is to say, using the Cyclic Modules technique, the next task of the composer was to conceive a main profile and directionality that would organically fit the instrumental medium of the violin. For that he used another idea that is recurrent in his work: melodic contours that are analogous to the different waveforms (square, triangular, sine, and saw-tooth waves). Within the first few groups of the main profile, Menezes establishes a binary opposition between a triangular wave contour (measures 106, 108, 110) and a phase of a saw-tooth wave (measures 107, 109, 111). Towards the end of the main profile, this binary opposition is diluted and the contour is analogous to a square wave pattern (measures 114 to 116). Based on this contour, he divided the profile in eleven groups, each containing from one to eleven notes, as mentioned earlier. To attribute the duration of each group he used a permutation of the number of notes in the second group succeeding it to define a number of thirty-second notes that each group would have to fit in, generating an interesting rhythmic configuration. For example, the first group has seven notes, and the third group (the second next group) has six notes, so the seven notes of the first group would be played in the duration of six thirty-second notes. On top of that Menezes used the same type of permutation to define the proportion of triplets¹² used in each group. The permutations are shown in the next table (figure 6). Finally, to attribute a character to

¹² According to the Grove Music Online, triplets are: “A temporary increase or decrease in the number of notes subdividing a beat from what is standard for a given time signature. Triplets are usually notated with a numeral or ratio that indicates the number of notes to be performed within the beat.” — “Triplets,” Grove Music Online, Edited by Deane Root, February 2013. <<http://oxfordindex.oup.com/view/10.1093/gmo/9781561592630.article.2233258>> (accessed August 6, 2017)

each group, Menezes also establishes binary oppositions by using different agogics for each group, as described earlier in this chapter.¹³

Number of Notes	7	9	6	10	8	5	4	3	11	1	2
Duration in 32nd's	6	10	8	5	4	3	11	1	2	7	9
Tuplets proportion	8/6	5/10	4/8	3/5	4/11	3/1	2/11	7/1	9/2	6/7	10/9

Figure 6: permutations to create rhythmic configurations.

Form

According to Menezes,¹⁴ while most of the traditional musical forms have been abandoned by the twentieth century *avant-garde*, the idea of theme and variations is still present in the work of even the most radical composer, although the concept of theme was expanded to embrace all sorts of material. In *Scriptio* the main profile, which takes the place of the theme, occurs in the middle of the piece (not only in terms of time length, but also spatially, as the performer reaches the center of the stage), and everything that precedes and succeeds it is a transformation of this profile by the techniques already mentioned.

The entire profile is already contained inside the trill that opens the work, but compressed to the maximum degree: a minor second (*a* on Figure 7). In the second

¹³ p. 13

¹⁴ Flo Menezes, "Lecture on *TransScriptio*," presented at Forum-IRCAM, Brazil 2015. <<https://www.youtube.com/watch?v=BWsi3HyAId0>> (accessed August 6, 2017)

measure there is another proportional compression, this time comprising a major second plus a quarter tone (*b* on Figure 7), which is directly derived from the main profile.

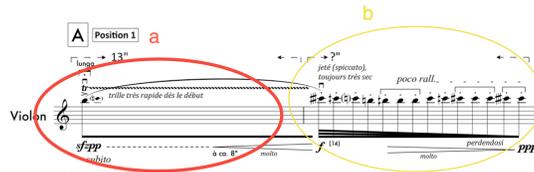


Figure 7: *Scriptio*, measures 1 and 2

After the opening two measures in the mid-high register of the violin we observe a tendency of slow expansion towards the lower register with sudden peaks in the very high register. This directionality represents, in a way, the instrument discovering itself. Only after the entire range is explored and the low fourth string played, does the main profile is executed. This process of discovery is paralleled by the performer, who starts to play from off-stage and progressively makes his way to the center of the stage.

The end of the work establishes a circular structure, with the performer leaving the stage while playing excerpts from the main profile by memory and long open G string notes, until the point where sound is no more audible to the audience. The concept of Total Space for a musical performance is a very important element of Menezes’s aesthetics. We encounter it here as the performer walks onto the stage playing, and as the audience is captivated as if in a ritual. As the music fades with the violinist leaving the stage there is an invitation to “[...] a cyclical eternalization of the space,”¹⁵ concluding what the composer considers as his tribute to the violin.

¹⁵ Flo Menezes, “Lecture on *TransScriptio*,” presented at Forum-IRCAM, Brazil 2015. <<https://www.youtube.com/watch?v=BWsi3HyAId0>> (accessed August 6, 2017)

Chapter IV

TransScriptio

TransScriptio

With a better understanding of the acoustic work *Scriptio*, it is possible to delve in the particularities of its electronic double, *TransScriptio*. The idea for these compositions came first to the composer as a work for violin and live electronics, but as the writing for the instrument proved interesting and enjoyable he decided to put the electronic project aside and wrote a solo violin work first, which he conceived as his tribute to the instrument. There is a nuance in the title of the mixed electronics work: it is not the word *transcriptio* (Latin for transcription) — it includes a capital S in the middle, suggesting not a mere adaption for the live electronics medium — but a transgression of the acoustic work in its structural level. Once he had finished *Scriptio*, which works as the structural pillar from where this transgression departs, he proposed himself a question: What is the role of the electronics in interaction with a live performer?¹⁶

To answer this conundrum, Menezes turned to Boulez's writings which propose that the electronics have a multiplicative function in the composition. Departing from this statement Menezes concluded that these multiplications occur essentially in three distinct levels:

- Structural
- Spectral

¹⁶ Flo Menezes, "Lecture on *TransScriptio*," presented at Forum-IRCAM, Brazil 2015. <<https://www.youtube.com/watch?v=BWsi3HyAId0>> (accessed August 6, 2017)

— Spatial

The first multiplication occurs when the electronics add or modify an element from the structure of the piece. The simplest example of this kind of multiplication is the use of a delay, which repeats certain structures in a defined time. However, much more complex ways to transform the structure can be used. In *TransScriptio* a pitch multiplication which multiplies each note of the violin by a series of pre-determined intervals is used in certain key moments of the work. Yet another example of structural multiplication is the use of freeze effects, in which one or more pitches are held for a longer duration, creating a harmonic fabric that would be unattainable for a solo player.

Spectral multiplication occurs when the timbral characteristics are expanded beyond the limits and characteristics of the instrument's physical body. This includes any type of modulation, distortion, or synthesis. Even a subtractive synthesis by the usage of filters, which omits some of the partials in the spectrum, is still considered a multiplicative process. According to Menezes, since the acoustic sound of the violin is being expanded its spectral possibilities are being multiplied.¹⁷

Finally, the third kind of multiplication involves the spatial aspect of the composition, which is paramount to electronic music since it is a feature that pure instrumental music seldom is able to explore. According to Menezes, the spatial parameter should not be merely decorative, it should be poetically structured in the

¹⁷ Flo Menezes, "Lecture on *TransScriptio*," presented at Forum-IRCAM, Brazil 2015. <<https://www.youtube.com/watch?v=BWsi3HyAId0>> (accessed August 6, 2017)

composition.¹⁸ Therefore, he uses certain strategies to spatialize the sounds coming from the acoustic source; for example, every time a freeze is used, the sounds move in a circular fashion in the hall, which is equivalent to a sine wave form. When pitch multiplications happen, they describe random elliptical curves in the hall. These types of strategies not only assure a poetic and coherent use of the spatial possibilities, but also can allow a listener to perceive and apprehend some of the effects and recognize them when they are repeated.

Electronics

All the electronic sounds are captured and processed in real time during the performance. The work does not use any pre-recorded sounds. All its electronics are conceived in Max/MSP (a software first developed at IRCAM, and currently owned by the company Cycling '74). The Max/MSP patch requires a person to operate it and change the set-ups as the violinist performs the work. This patch (Figure 8, on the next page) includes all the seven different types of transformations, the spatialization figures, and the *fenêtres*, that will be discussed later during this chapter.

¹⁸ Flo Menezes, “Lecture on *TransScriptio*,” presented at Forum-IRCAM, Brazil 2015. <<https://www.youtube.com/watch?v=BWsi3HyAId0>> (accessed August 6, 2017)

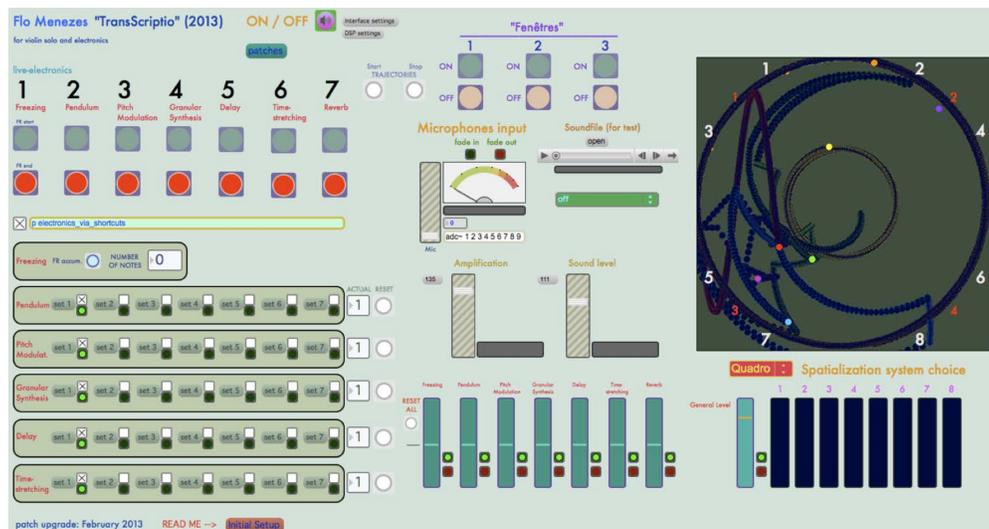


Figure 8: Max/MSP patch for *TransScriptio*

As shown in the upper left part of the image, there are seven different types of transformations of the original sound source. The seven types of transformations, their description, and the number of times used during the entire piece (excluding the *fenêtres*) are:

- Freezing; numerical blocks that hold specific pitches stationary; 3 times.
- Pendulum; multiplication of notes by use of pitch-shifting associated to delays; 7 times.
- Pitch modulation; pitch shifting groups with chorus effect, sometimes resulting in a distortion of the sound; 5 times.
- Granular synthesis; using fragments recorded in real time; 3 times.
- Delay; repetition of sound fragments; 7 times.
- Time stretching; stretching the duration of fragments recorded in real time; 5 times.
- Reverb; prolonged reverberation of the sound source; 4 times.

With the exception of freezing and reverb, each of these transformations have seven different pre-sets (lower left side of figure 8) with different parameter configurations, creating diversity within the same type of effect. These pre-sets can be chosen by the person operating the electronics or automated, in which case the computer randomly chooses a different pre-set after every use of a certain type of transformation.

Fenêtres

Most of the music composed for performer and live electronics use the electronics as one way lane; it responds to the sound input and transforms it in a large array of different possibilities, but rare are the occasions in which the performer has to respond to the electronics. Menezes questioned himself of why it has to be this way and tried to find a solution that would restore the tension that is experienced by the performer during a chamber music or orchestral concert — where a musician has to be aware of the input given by other instrumentalists or by the conductor. This idea is related to Philippe Manoury's concept of *partition virtuelle* (virtual score), first used in his work *Pluton* from 1989, and developed in collaboration with Miller Puckette (the creator of Max/MSP) at IRCAM¹⁹.

To be able to create this interactivity, Menezes introduced *fenêtres* (windows) in certain important moments of the score. In three different instances in the score there are indications of these windows along with colored notes. In these instances, during a

¹⁹ Philippe Manoury, “Program Notes for Pluton,” B.R.A.H.M.S., IRCAM < <http://brahms.ircam.fr/works/work/10493/> > (accessed August 6, 2017)

random time frame, a pitch recognition function is active, identifying the frequencies coming from the violin. If the performer plays the colored notes with exact intonation, and if this coincides with the random time frame that the pitch recognition is active, the patch freezes one of these notes which starts to circle around the speakers. At this point, if the performer realizes that one of these notes was frozen, he or she moves to a different music stand and plays from a different page that is in the appendix of *TransScriptio*'s score. These windows allow the performer to physically and structurally transgress the score by abandoning it, moving to a different music stand, and executing a different music that is not part of the score itself. Figure 9 shows the first time one of these windows occur in the work. The window is opened from measure 26 to measure 35. If any of the colored notes in the score are played in perfect intonation and while the pitch recognition is on, it will trigger the electronics, the pitch played will be frozen, and the performer will proceed to play the first window.

The image shows two staves of musical notation for a violin part. The top staff covers measures 26 to 35, with a bracket labeled 'avant-fenêtre 1* (Éventuellement Freezing)'. Below this staff, a horizontal bar indicates 'Fenêtre 1 - ON' from measure 26 to 35. The bottom staff covers measures 32 to 41, with a bracket labeled 'fenêtre 1' above it. A horizontal bar below this staff indicates 'Fenêtre 1 - OFF' from measure 32 to 41. Various musical notations are present, including dynamics (ppp, ff, mf, p), articulation (accents, slurs), and performance instructions like 'au violon', 'pizzicato', and 'post. (NV)'. Some notes are highlighted in red and green.

Figure 9: opening of “fenêtre 1.”

There is a directionality in the probability of each window being played. The first window has a very high probability of happening, while the third window is much less likely to be played due to factors such as the duration of the notes, how hard they are to

be executed, and the time frame in which the pitch recognition is on. This directionality is paralleled by an increase in the degree of transformation of each window. The first *fenêtre* adds color to a melodic fragment by pitch multiplication, based on the technique of Proportional Projections. The third *fenêtre*, the most radical, explores more aggressive electronic transformations and techniques such as the bow being played slowly over the bridge, resulting in a pitchless noise, introducing a high degree of inharmonicity and sonic pollution.

These windows establish a dynamic in which the performer may trigger the electronics. If the electronics respond to the performer he or she needs to be able to realize this and respond back by playing something different that is not in the score itself. Therefore, this creates a retroactivity and a certain degree of tension, typical of the interactivity among players in an ensemble. In this way the electronics are not only operating in a single way by transforming inputs anymore, but also are actively changing the course and structure of the work.

Conclusion

One may argue that the new music scene in Brazil is having one of its best periods in the past few decades. There have been new initiatives to promote contemporary music, and the number of opportunities for composers to have their works performed have been increasing. In spite of the current political and economic situation and the many challenges faced by Brazilian composers, such as lack of funding, few professional ensembles specializing in the performance of new music, and also the still small number of concerts showcasing new composers, there is a growing interest of a new generation of musicians in both the performance and creation of contemporary music. Projects such as the *Série +* are of utmost importance to keep this interest growing, and to give access to this genre of music that so often seems neglected. They allow both veteran and younger composers to have a chance of showcasing their work to an audience wider than the small niche of new music concertgoers.

Boulez +, with its innovative format, high quality of the presented works, and critical acclaim, is certain to make its mark on the development of the forthcoming generation of composers and performers of new music. In particular with *Scriptio* and *TransScriptio* and their remarkable originality and high degree of refinement, it is works such as these that present touchstones within the output of Brazilian electroacoustic works, and most will agree that a detailed analysis is deserved. Some of the compositional techniques used by Menezes, such as Proportional Projections and Cyclic Modules, were also discussed in this thesis, showing the composer's concern for

developing a personal compositional language that is both new and colorful, but that still has considerable ties with traditions, especially integral serialism. The "poetically structured" use of electronics, as Menezes himself puts it, is certainly another noteworthy aspect of his compositions. The composer's skill of creating a sense of freedom and beauty without ever abandoning a certain logic and cohesive structure is one the most unique features encountered in both *Scriptio* and *TransScriptio*. As works of one of the most important living Brazilian composers, with a faculty position in a leading composition program, *Scriptio* and *TransScriptio* will certainly continue to have a direct influence on the works of many aspiring composers who are interested in developing their language in an aesthetic of experimentalism and complexity, as well as of those venturing into the realm of electronic music.

Besides exposing the importance that *Scriptio* and *TransScriptio* will carry in the local context of Brazil, there were two other main goals of my analysis of these works. The first one was to make an academic contribution for anyone who is interested in having a better understanding of works that fall outside the sphere of American and European composers. The second goal was to demonstrate the level of elaboration, complexity, and structural rigor, of *Scriptio* and *TransScriptio*. The quality of these works are by no means inferior to the works of the world's most prominent living composers who enjoy a higher degree of exposure due to political and geographical reasons.

Bibliography

Books and Articles:

Menezes, Flo. “Apoteose de Schoenberg – Ensaio sobre os arquétipos da harmonia contemporânea,” Ateliê Editorial, São Paulo, 2002.

Menezes, Flo. “Booklet for Boulez +,” DVD, Selo Sesc, 2015.

Menezes, Flo. “Música Eletroacústica, História e Estéticas,” Edusp, São Paulo, 2009.

Stockhausen, Karlheinz; Barkin, Elaine. “The Concept of Unity in Electronic Music,” *Perspectives of New Music*, Vol. 1, No. 1 (Autumn, 1962), pp. 39-48.

Electronic Resources:

“DVD Boulez+ vence o Prêmio CONCERTO 2016 na categoria CD / DVD / Livro,” *Revista Concerto*, January 2017. < <http://www.concerto.com.br/contraponto.asp?id=3616> > (accessed August 6, 2017)

Manoury, Philippe, “Program Notes for Pluton,” B.R.A.H.M.S., IRCAM < <http://brahms.ircam.fr/works/work/10493/> > (accessed August 6, 2017)

Menezes, Flo. “Biography”, < http://www.flomenezes.mus.br/flomenezes/biography_eng/biography.html > (accessed August 6, 2017)

Menezes, Flo. “Lecture on *TransScriptio*,” presented at Forum-IRCAM, Brazil 2015. < <https://www.youtube.com/watch?v=BWsi3HyAId0> > (accessed August 6, 2017)

Menezes, Flo. “*Scriptio*” Score, 2013. < http://flomenezes.mus.br/flomenezes/works_en/2013-scriptio.html > (accessed August 6, 2017)

Menezes, Flo. “*TransScriptio*” Score, 2013. < http://flomenezes.mus.br/flomenezes/works_en/2013-transscriptio.html > (accessed August 6, 2017)

Rohter, Larry. “Brazil’s Unique Culture Group Stays Busy Sharing the Wealth,” *New York Times*, March 27, 2012. < <http://www.nytimes.com/2012/03/27/arts/brazils-leading-arts-financing-group-shares-the-wealth.html> > (accessed August 6, 2017)

Sesc's Annual Budget Worksheet, 2016. < <http://www.sesc.com.br/wps/wcm/connect/5ad36d87-a2a0-4eef-96ee-e9dec0db588d/Execução+Orçamentária+AN+-+Orçamento+Inicial+2016.PDF?MOD=AJPERES&CACHEID=5ad36d87-a2a0-4eef-96ee-e9dec0db588d> > (accessed August 6, 2017)

Sound Recordings:

Menezes, Flo. “*TransScriptio*”, live performance at Forum-IRCAM, Brazil 2015, Cláudio Cruz, violin. < <https://www.youtube.com/watch?v=nhAaTZNNc5s&t=766s> > (accessed August 6, 2017)

Various Composers. “Boulez +,” DVD, Selo Sesc, CB 7898444701132, 2015.