

MUTATIONEN III FROM CLAUDIO SANTORO: A CASE STUDY OF ANALYSIS AND REINTERPRETATION OF A MIXED PIECE

Fabio Wanderley Janhan Sousa

Music School – Federal University of Minas Gerais
fabiojanhan@gmail.com

Margarida Borghoff

Music School - Federal University of Minas Gerais
guidaborghoff@gmail.com

ABSTRACT

Attempting to break the coldness of sitting in a room listening to fixed music, composers of electroacoustic music have been trying to add some vividness to the concert by adding live electronics, images, lighting or a human performer. Mixed music is the terminology we use to define the practice of composing for acoustic instruments accompanied by a pre-recorded electronic part. The present article describes a practical experience of reconstructing the pre-recorded part of the piece “Mutationen III” [1], written for pre-recorded sounds and piano by the Brazilian composer Claudio Santoro. With this experience and the research of new sonorities based on the documentation presented in the score, a new version of the work was developed using some of the most recent tools for audio manipulation. This exercise proved to be an excellent opportunity to develop both analytical and compositional skills, as well as the ability to the usage of digital audio manipulation tools.

1. INTRODUCTION

What we are used to call “acousmatic music” has a format that is fixed by the composer in a physical media, be that analogic or digital, in which is contained and realized the whole artistic planning of pitches, timbres, rhythms, gestures and textures parameters and developments. The listener, who simple hear the reproduction of it, is already relating himself with the plenitude of the piece. However, resources such as live spatialization, for example, historically come into play to solve the big problem of the acceptance of this kind of concert.

According to Amorim [2], “electroacoustic music, in its most primitive form, eliminates the interpreter and attributes to the composer a new function, that is to be responsible not only for the construction of the sound material as a formal structure, but also as a physical object which contains the work performance in a latent state”.

Throughout time this purely acousmatic music, most times considered cold and sterile from the listener point of view, searched for ways to relate with other elements,

mostly manipulated in real time, to be added to the performing practice. These manipulations normally follow three different approaches. The first one would be the spatialization in real time through multichannel systems diffusion, making the hearing of the piece a performance through the space of listening, most commonly executed by the composer himself, as explored by Vande Gorne [3] for example.

The second one would be what we usually call “live electronics”, which presents some kind of interface, be that an acoustic instrument, a computer, or any other device, to interfere with electronic sound, or to be interfered by them in real time during the performance.

A third one would be what we call “mixed music”, which can be put in between the other two by introducing the vividness of an interpreter to the cold performance of the tape music but avoiding the unpredictability and the limitations of the “live electronics”. Usually this type of music presents a pre-recorded part and a part that is assigned to an acoustic instrument for the interpreter to perform live.

According to Zattra [4], the first experiments on mixed music were made by Edgar Varèse (“Désert” – 1954), and Karlheinz Stockhausen (“Mantra” - 1969). The first one being an example of what we call “mixed music”, presenting the interpolation of electronic timbres with acoustic ones, and the second being an example of “live electronics” with sounds being generated and manipulated in real time, interacting with the acoustic sounds.

Claudio Santoro, a Brazilian composer born in 1919 in Manaus – Amazonas, wrote twelve pieces that could be defined as “mixed music”, presenting a pre-recorded part and a score for the instrument to be played on the stage. These pieces were written during his stay in Berlin and Heidelberg, in Germany. Among these twelve pieces, denominated “Mutationen”, the third one was written for piano and tape and has been the object of a few works in both composition and performance fields such as those from Guerra [5], Ventura [6] e Martins [7].

Since the tape part of this piece is relatively easy to make, a few of the above-mentioned authors propose that the performer could create it by himself. Although it is perfectly possible, our proposal was to create something beyond this simplicity, taking the most out of the piece through the collaboration of the performer with a sound engineer, which is also a composer.

2. RECREATING THE ELECTRONIC PART

The electronic part, describe in the score of “Mutationen III”, for piano and tape, is made with sounds recorded from the piano itself that are manipulated by processes which are relatively simple such as accumulations, acceleration, or slowdowns (with the change of the pitch), reverse, attack cuts and eventually literal reproductions of what was previously recorded.

As does Zattra [4], “we think that the knowledge of the historical period and instruments typical of the musical repertory is fundamental, because electronic music equipment, with their potentials and limits, influence the typology of sound, the compositional process, the performance and the listening”.

It is important to point out here that, although we intend to make a technologically informed recreation of the composition, we did not use tape manipulation itself. The main reasons would be the unavailability of these resources at the recording labs and the intention of developing an exercise that could be performed by students in music and technology classes, using relatively common materials and equipment. Therefore, the technological informed recreation is limited to the processes and not to the media or equipment.

We understand that those processes we called “simple” were the most technologically advanced tools the composer had available at the time of the composition, but still, to begin our experiments, we perform the creation of the tape part in the most faithful way it was possible, obtaining a “literal” version of what was suggested by the original score.

Although we used protocols software to make the electronic part, it could be accomplished at any DAW (digital audio workstation) such as Reaper, Sonar, Cubase, Digital Performer, etc, since the manipulations the piece requires are common to all of them. Cutting, accelerating, slowing down, reversing or accumulating sound tracks are “easy to make” processes at all the above-mentioned softwares.

Although the process of creating the electronic part of the song following the composer’s orientations present itself as a very interesting task, during the process, we found out excerpts that would benefit enormously from contemporary tools of digital audio manipulation to better translate the suggested graphics the composer present in the score. This led us to the development of a second version, we may say, “up to date” technologically.

3. CREATING A REVIEWED VERSION

As a research tool of the compositional process, we choose to generate a version as described by the composer and reflecting the limits we believe he had at the time of the composition. As an extension of the research process, we also propose ourselves to review the tape part discussing and proposing new solutions, which could be more interesting through the usage of a few contemporary tools. Following are the descriptions of three excerpts in which the recreation presented itself most improved and evident.

In the first system of the piece, the composer presents an electronic gesture that is generated from successive attacks of a chord at the piano keyboard by the performer that goes slowing down through time.

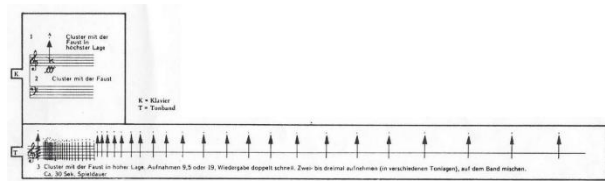


Figure 1. First system of the piece “Mutationen III”.

Link 1. www.youtube.com/watch?v=X_wVXguVRpc

According to the composer’s orientations, this gesture should be recorded in different piano regions, accumulated and played back simultaneously. While generating this electronic gesture, we faced two basic difficulties. The first difficulty is that the recording of multiple versions to be accumulated requires a lot of the musician’s musculature who has to repeat the same gesture multiple times in different regions of the piano. The second difficulty is the physical limitation and training of the musician that leads to very similar results regarding the initial time of repeated chords and the time between the chords while slowing down.

In the reviewed version we realized the electronic part as suggested by the composer but we also feed delay lines with feedback times that slows down trough time, as does the time parameter between the repetitions, accomplished by manipulating an automation line. This effect presented itself as richer in color and more linear rhythmically (fig 2).

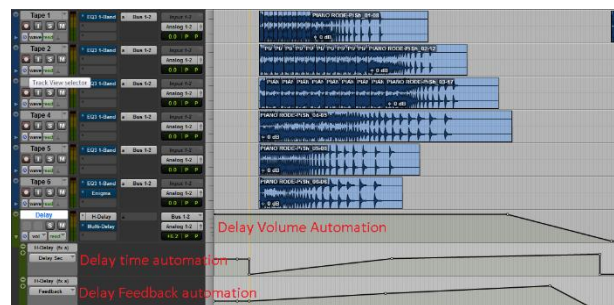


Figure 2. Accumulation of the recordings added to the delay line with Time, Feedback and Volume automation.

Link 2. www.youtube.com/watch?v=xMUcYUwRYNQ

In the half of the third system of the piece, we observe an electronic gesture, which, if performed using only recording methods as suggested by the resources described at the original score, can be extremely difficult to be executed by the pianist. At the score the composer wrote: “Staccato accelerando and diminuendo (Staccato stroke faster and faster and softer and softer), recording 3 3/4 or 7 1/2 ips, playback at double speed. The diminuendo can be produced during the recording with the aid of the volume control”.

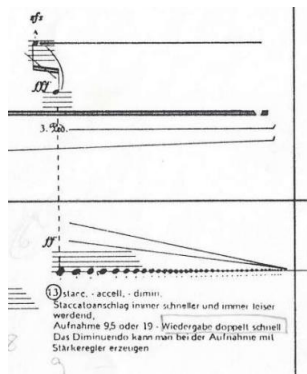


Figure 3. Gesture of the third system of the piece “Mutationen III”.

Link 3. www.youtube.com/watch?v=ll9MJJo_5kiM

At the reviewed version of this excerpt, we made the recording of a single strike and feed a delay plugin with it. By controlling both “time” and “volume” parameters through automation, the sound of the stroke repeats slowing down and getting quieter. This process is much simpler and controllable when performed by the computer than when performed by the musician.

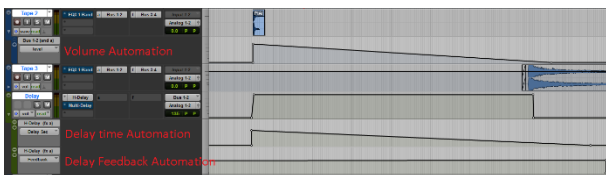


Figure 4. Implementation of the gesture in fig. 3

Link 4. www.youtube.com/watch?v=tCZ_6MHfFVY

Another observation we can make about this same excerpt is that, according to the composer’s orientations, the tape must be played back in the double speed. Such process, in the digital domain, is extremely simple to perform if a time compression / expansion tool is used, followed by a pitch shift in an octave higher than the real sound. The pitch shift manipulation is necessary since we must consider that, while manipulating tape recordings, this is exactly the effect that we would perceived. The sound is not just the double speed but also the double frequency, therefore, an octave higher than it sounds originally.

At the fourth system of the piece the composer suggests that we record several times an excerpt of the piano player touching the strings with his fingers and that this recording be repeated and accumulated. This results in a granular texture, which is also suggested by the graphics of the score itself.

Granulation tools have been developed mainly after the 1990’s and they perform the task of accumulation of sounds much more effectively and interestingly than just repeating and overlapping recordings, as suggested by the composer of the piece in several excerpts. In our reviewed version, we recorded the excerpt as suggested but instead of accumulating it with other copies, we feed a granulator plugin with it - in the occasion the Crystalizer from Sound Toys (fig. 6). This plugin cuts small samples between 15

ms to 25 ms long, alternates, repeats and toggles them in the time domain as well as in pitch, creating a much more interesting texture than the tools from the period of the composition could make possible.

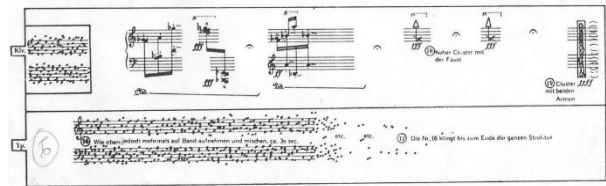


Figure 5. Fourth system of the piece “Mutationen III”.

Link 5. www.youtube.com/watch?v=I4JJEU9vs0Q



Figure 6. Crystalizer, plugin for audio granulation.

Link 6. www.youtube.com/watch?v=8VIYeKBkZTY

4. MAKING THE BEST OUT OF THE MUSICAL GESTURES

By exploring new tools to recreate musical gestures suggested by the graphical score of the piece and the notes made by the composer, we decided to add gestures in the electronic part and to elaborate the already existing ones, having in mind not to deprive the piece or corrupt the original material of the composition.

The composer himself, Claudio Santoro, is very open to such reinterpretation of his pieces and suggests that we explore such possibilities as reported by Lívoro [8]: “I have always been like this, I have never been a composer who wrote something to be played exactly as I think it should. I always let the performer to recreate the piece and give something from himself. I always thought this way and I believe that is why I have been both interpreter and composer”

The experience of recreating the piece enriched itself through the collaboration between a sound engineer who is also a composer and the performer. We created gestures more interconnected, related to each other and elaborated, making the piece as a whole something much closer to the contemporary aesthetics.

As an example of this contribution, we can point out the gesture presented at the end of the third system (fig. 7) and beginning of the fourth (fig. 5). According to the score, the recorded part present a second minor glissando with a coin performed directly at the strings of the piano, which should grow up in intensity and connect to a granular texture. The crescendo of a tone, which naturally decays such as those created by this specific gesture at the piano, can easily be implemented with the usage of a volume automation line.

In most times this raw manipulation sounds very artificial and obvious.

Therefore, in the reviewed version (fig. 8), we added to the original sound of the second minor glissando, the same second minor reversed, in such a way that it generates a crescendo that reaches the attack and then continues with its resonance. This resonance becomes granular through some random volume automation, which introduces the granular material that follows, which in turn, has its granular characteristics reinforced by a granular plugin, already mentioned.

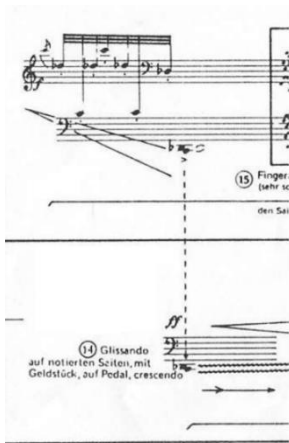


Figure 7. End of the third system of the piece “Mutationen III”.

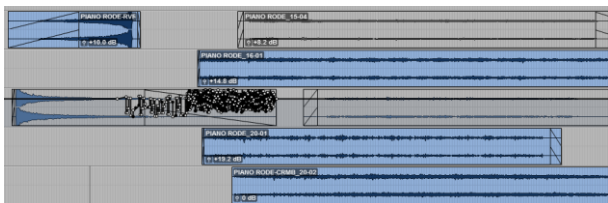


Figure 8. Implementation of fig. 7 and fig. 5 at Protocols.

Link 7. www.youtube.com/watch?v=4T52c41HOBY

A second example of these musical gestures improvements can be observed at the end of the fifth system (fig. 9) and the beginning of the sixtieth (fig. 10). In this excerpt, we used the pre-recorded harmonic sounds added to some extreme long resonances and followed by the attacks of these same resonances in reversed to culminate in the low pitch notes attacks (fig. 11). The creation of this texture, only suggested by the score, was developed by listening and analyzing the piece during the recording sessions. It enriches the pre-recorded part by blending the acoustic and tape parts, and expands the usage of the materials created by the composer.

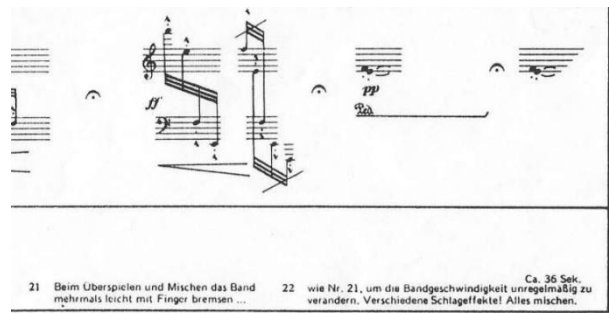


Figure 9. End of the fifth system of the piece “Mutationen III”

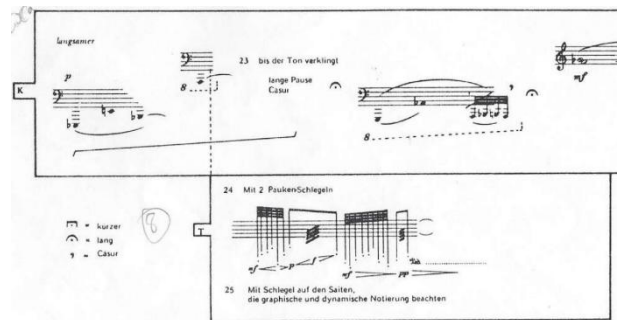


Figure 10. Beginning of the sixtieth system of the piece “Mutationen III”.

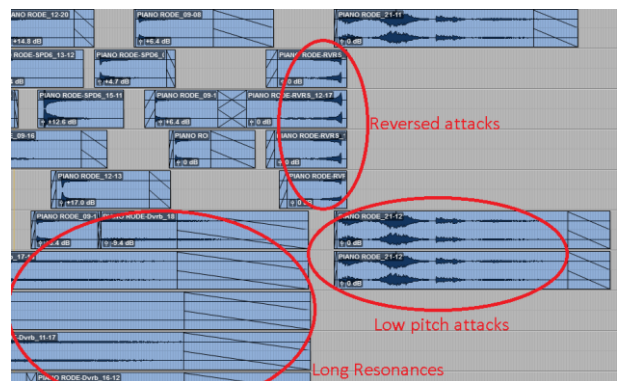


Figure 11. Implementation of fig. 9 and 10 at Protocols.

Link 8. www.youtube.com/watch?v=tRTbYa5yNUo

5. EDUCATIONAL EXPERIENCE WITH THE GENERATED MATERIAL

The rhizomatic characteristics of the described experience is worth been noticed since it starts as an analysis exercise, goes through the usage of technological tools of digital audio manipulation, demands the development of a musical performance, inspire some composition skills and goes back to musical education in the form of an exercise that was proposed inside the classroom.

The main intention of making this experience also a music technology exercise for composition students is based on the perceived need for them to manipulate digital audio in the composition studies as well as in their music production activities, imposed by recent media communication.

The recorded material generated by the reported experience was used as an exercise during an undergraduate class

at the Music School of the Federal University of Minas Gerais called “Digital audio manipulation”. The present author gave these classes during his teaching internship as a PhD student.

In this exercise, the students were asked to make the tape part using the original recordings, made by the author, and following the score. To master the proper digital audio manipulation tools to perform the cutting, accelerating, slowing down, reversing and accumulating sound tracks processes was the main goal of the classes. To discuss historically informed pieces of the XX century, the transformations of the notated references to sound manipulation and to assembly it in a digital audio workstation, as well as the formation of an audience aware to the aesthetics present, were secondary goals that was explored in the classes.

The acceptance of the exercise by the students was excellent since it brought them closer to practice and generates a production worth to be presented to the public. Topics such as the use of delays and granulation, which were also goals of the above-mentioned discipline, were received with much more interest since they are presented as practical solutions for compositional issues.

6. CONCLUSIONS

The delay is a phenomenon that is usually observed acoustically as an “eco” when its time is too long. Its usage in audio suffered a revolution and become more versatile after the process of digitalization that made possible the manipulation of very short and very long times. The usage of the delay as well as the automation of its parameters show themselves as important tools now a days that would certainly be used by the composer.

The granulator, as a recent developed tool, present itself as an alternative to generate sound textures which are very common in contemporary compositions and which, if it was available at the time of the piece, surely it would be very exploited by the composer, as the score itself suggested.

The process of recreating the electronic part of a piece after reflecting about its proposals and to seek new solutions using recent tools, showed itself to be an extreme thought-provoking and self-accomplisher task. Possibly if adopted in the training of contemporary composers, this experience could add as much in the development of their abilities of manipulation digital audio as in their analytical and creative abilities.

Developing activities that can cross different areas from analysis to composition, performance, research and musical education presented itself a very interesting and important method of improving teacher and students’ skills.

Acknowledgments

Acknowledgments to the pianists Guida Borghoff, for being available for the experience, to the Music Conservatory of Minas Gerais and to the School of Music of the Federal

University of Minas Gerais, where the recording sessions took place.

7. REFERENCES

- [1] Santoro, Claudio. “Mutationen III für klavier und tonband”. *Studienpartitur*. Tonos International, Darmstad, 1971.
- [2] Amorim, Felipe. “A Interpretação Fixada”, in *Revista Modus*, 8 / 13 Belo Horizonte – MG, 2013, pp. 51-58.
- [3] Vande Gorne, A. V. “L’interprétation spatiale”, in *Revue DEMéter- Revue Électronique*, Université de Lille-3, 2002.
- [4] Zattra, Laura. “Analysis and analyses of electroacoustic music”, in *Proceedings of the Sound and Music Computing International Conference*, Italy, 2005.
- [5] Guerra, Anselmo. “MUTATIONEN III de Cláudio Santoro: uma Releitura Eletroacústica”, available at <www.academia.edu/831932/MUTATIONEN_III_de_Cláudio_Santoro_uma_Releitura_Eletoacústica> Access in 09-12-2017.
- [6] Ventura, Fabio. “Mutationen III de Cláudio Santoro”, in *Anais do congresso da Anppom*, São Paulo - SP, 2007.
- [7] Martins, Denise A. F. “Análise da obra eletrônica Mutationen III de Cláudio Santoro”, in *Revista Eletrônica OPUS* 8, Brazil, 2002.
- [8] Lívero de Souza, I. “Santoro: uma história em miniaturas”. *Master Dissertation*, Campinas University – São Paulo, 2003.