

Peter Ablinger's *Quadraturen IV* ("self-portrait with Berlin")

Perception and reproduction of environmental sound through instrumental music

Christopher Luna-Mega

1. ABSTRACT

Peter Ablinger's *Quadraturen IV* ("self-portrait with Berlin") is a six movement piece derived from a spectral analysis of six field recordings of Berlin soundscapes. The analysis of the six recordings becomes the score for an ensemble comprised of flute, 2 cl., 2 vl., vla., 2 vc., 3 keyboards and CD, which performs the music synchronized to the original recordings. In his program notes for the piece, Ablinger mentions the following:

"The music becomes an observer of reality. Compared with 'reality', 'music' is defined in terms of a scanner (with horizontal rhythm and vertical pitch). To be precise, in terms of a very rough scanner which hobbles far behind the complexity of reality. But at the same time, such hobbling reflects the truth of the observation process as well as being an aesthetic phenomenon in itself".¹

This paper begins with an overview of the salient musical and conceptual features of

¹ Ablinger, Peter. "Quadraturen IV". <http://ablinger.mur.at/docu11.html#qu4>. Accessed February 10, 2017

Quadraturen IV. It then explores different connections of the piece as a translation of “reality” through music notation, orchestration and performance with theories of perception developed by biologist Humberto Maturana, cyberneticist Gregory Bateson and art critic Jonathan Crary. Lastly, as a reading of Bateson’s *multiple versions of the world*, Maturana’s ideas about perception in *Autopoiesis and cognition*, and Ablinger’s techniques used in *Quadraturen IV*, an alternate experimental idea of a spectral analysis and translation to music for performers is provided. This model is an example of a different approach to composition that would incorporate simultaneous modes of perception and instrumentations of the same environmental recording.

2. A BRIEF DESCRIPTION OF *QUADRATUREN IV*

Quadraturen IV (“*self-portrait with Berlin*”), as mentioned above, is a 17’ six movement piece for fl., 2 cl. (doubling bass clarinets), 2 vl., vla., 2 vc., 3 keyboards and CD. Written between 1995 and 1998, it is part of a cycle of installation, electroacoustic and concert pieces composed between 1997 and 2004. With regards to *Quadraturen IV*, Ablinger explains:

“The original material consists of 6 different microphone recordings with ambient sounds of the city. These form both the (raw) accompaniment to and basic material for the instruments, which, parallel to the recordings, play the analysis resulting from the temporal and spectral scan of the latter. Here, one might also speak of the maximum integration of instrumental sounds in environmental recordings”.²

² *Ibid.*

Concept

The title of the entire cycle, *Quadraturen*, is the German for “squarings”. In this sense, Ablinger is alluding to his process of translation of the environmental, speech, and musical recordings, in which the time and frequency of the acoustic photograph, the *phonograph*, is broken into a grid of squares that become the score. The score is then reproduced on traditional instruments, computer controlled piano, or white noise. The spectral analysis software, implemented by Thomas Musil at the Institut für Elektronische Musik (IEM) at Graz, used temporal screening –a series of rapid static analyses–, which could be understood as a spectral grid. Ablinger decided to sequence the spectral screens one after the other in relation to the timeline of the original recordings. Time and frequency are dissolved into a grid of small “squares” of , for example, 1 second (time) to 1 second (interval). The result of this is, in his words, is a “broken continuity: the digital reconstruction of sound and time”. This is characteristic of the *Quadraturen* pieces, and especially of *Quadraturen IV*, as the instruments do not characterize the sound of reality as a continuum but as a grid. Throughout the cycle there are varying degrees of resolution depending on the square sizes in the grid. Depending on the resolution, the degree of brokenness of continuity varies.

Resolution / Time grid

The resolution of the spectral and temporal grid in *Quadraturen IV* is low in comparison with that of other pieces in the *Quadraturen* cycle that are reproduced with electronic means and not performed by human instrumentalists. While the computer-controlled piano is able to reproduce up to 16 units per second with precise frequency and amplitude in *Quadraturen III – Deus Cantando*, average instrumentalists necessitate the grid to be enlarged in order for it to be

playable in a score. Ablinger mentions that when “using a smaller grain, e.g. 16 units per second, the original source approaches the border of recognition within the reproduction”. However, in an enlarged grid, which is an inevitable condition of notated instrumental music, recognition is considerably hindered and the listener is only able to perceive glimpses of similarities between the original and its musical version.

In *Quadraturen IV*, the *quadraturen–squarings–broken continuities*, are translated into the score mostly as a heterophony in which all the parts follow successions of repetitive rhythm, which are felt like pulse *ostinati*. The constant, repetitive attacks at each pulse are breaking the continuum of the environmental recordings in the same way in which digital spectral analysis fragments the audio signal into a given number of discrete units. In this sense, each attack may be understood as the division of each spectral screen that is sequenced one after the other. In other words, each attack is a square in the grid of time.

QUADRATUREN IV („Selbstportrait mit Berlin“)

PETER ABLINGER

0:05 0:06.1 0:07.6 0:08.8 0:11.8 0:13 0:14 0:16.3 0:18.2 0:19 0:20

FL *f sempre*

B-KL *f sempre*

B-KL *f sempre*

VL 1 *mf sempre*

VL 2 *mf sempre*

VA *mf sempre*

VC 2 *mf sempre*

MUTA IN B-FL

♩ = 160

Figure 1
Quadraturen IV, movement I.

Throughout the six movements of *Quadraturen IV*, the resolution time grid develops and changes over time (fig. 2). Whenever there is a rhythmic or agogic fluctuation, there is a change in the time grid and therefore in the resolution. The longer the value, the lower the resolution and vice-versa. In contrast with the way in which Ablinger treats the frequency domain, or grid, in *Quadraturen* –semitones remain constant as the frequency resolution throughout the piece–, the time domain fluctuations are an extremely dynamic resource for development in the piece. They imply a poly-faceted perspective on reality, with different degrees of proximity and distance to the acoustic object, as if the observer was constantly metamorphosing the perceptual apparatus.

The image shows a handwritten musical score for the first movement of *Quadraturen IV*. The score is organized into three measures, each with a time signature: 1:47,7, 1:50,7, and 1:53,7. The instruments listed are Fl (Flute), Kl (Clarinete), and B-Kl (Bassklarinete). The notation includes various rhythmic values, accidentals, and dynamic markings. The score is divided into three measures by vertical bar lines. The first measure is marked with a circled '57'. The notation is dense and complex, with many notes and rests. The time signatures are written in a stylized, handwritten font. The overall appearance is that of a working draft or a composer's sketch.

Figure 2
Quadraturen IV, movement I. Simultaneous different time grids.

In the previous example (Fig. 2, 3 and 4), bar 57 presents two simultaneous time grids. The first three staves –fl., cl. 1 and cl. 2– are on a time grid at a meter of 4/4, with a tempo of eighth note = 160 bpm. This time grid is the starting grid of the piece. The remaining staves, vl. 1 and 2, vla., and vc. 1 and 2, present the new time grid –superimposed to the previous one–, playing slightly longer durations (approximately a dotted sixteenth longer) with respect to those of fl. and cl. 1 and 2. To be precise, the strings are now playing rhythmic values of quarter notes within quintuplets (they attack every four sixteenth notes within successive quintuplets) (fig. 3). That new superimposed time grid played by the strings is equivalent to a tempo of quarter note = 100, which becomes the general tempo in the next section of the first movement.

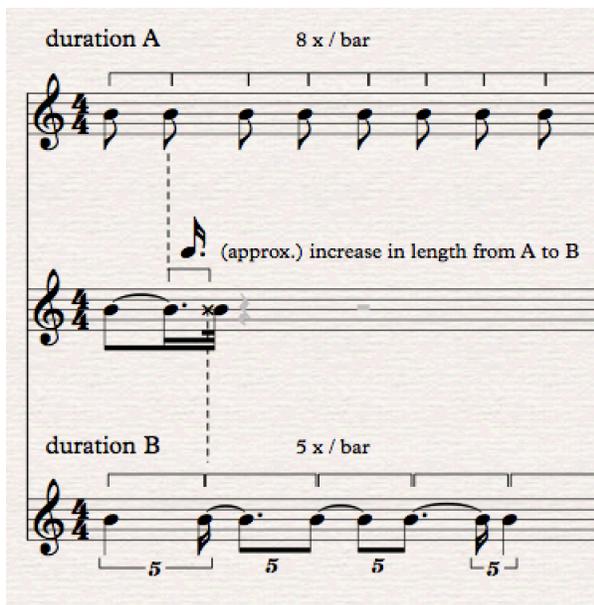


Figure 3
Duration/Time grid transformation from duration A to duration B

Similar processes follow throughout the score. A new time grid is introduced in the form of a new rhythmically generated pulse that is superimposed to the current one and that either

works as a polytempo or gradually substitutes the previous tempo and establishes itself as the new tempo in a simpler, non-tuplet form (i.e., instead of tied tuplet values producing the sense of a pulse, a rhythmic value establishes itself as the pulse). The following sketch by Peter Ablinger illustrates how this principle works in movements I through V:

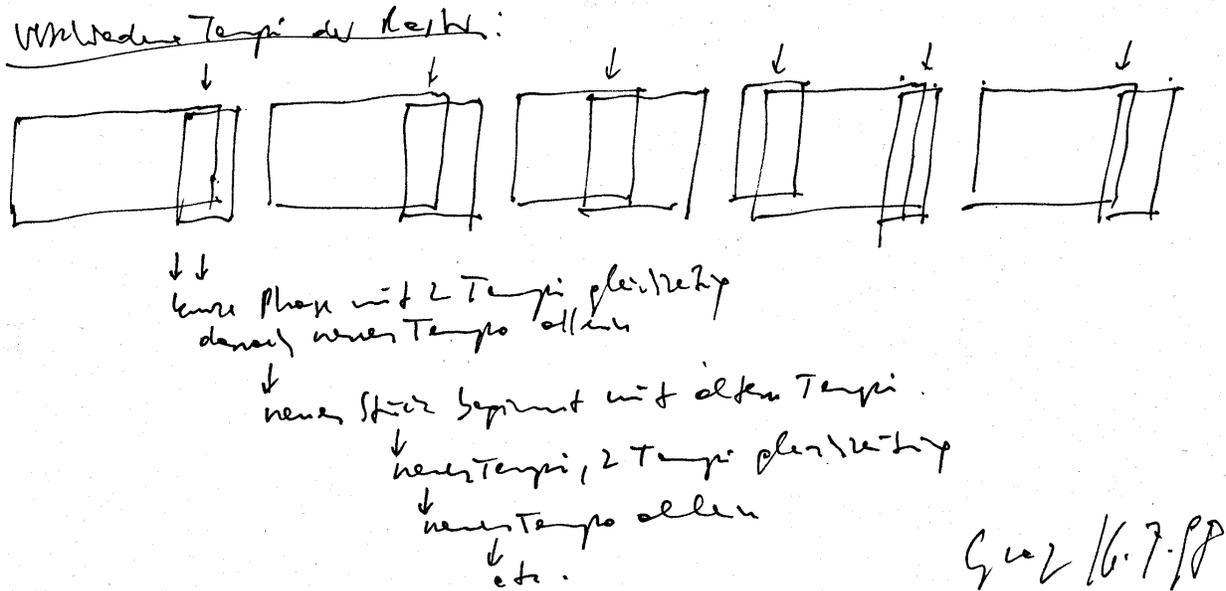


Figure 4
“Time changes with its overlapping zones; drawing from note-books”³

Amplitude segmentation / Orchestration

The pitch domain and orchestration in *Quadraturen IV* was determined after an amplitude stratification of the partials resulting from the spectral analysis. As explained above, the partials are presented in a frequency resolution of semitones. Depending on their amplitude, the partials are situated among a spectrum of amplitude strata ranging from *p* to *ff*, laid out vertically. In the

³ Peter Ablinger, e-mail message to the author, March 2, 2017.

first movement, there are five amplitude zones in decibels. From loudest to quietest:

<i>ff</i>	0.0 ... -20.0 dB
<i>f</i>	-20.0 ... -24.0 dB
<i>mf</i>	-24.0 ... -26.5 dB
<i>mp</i>	-26.5 ... -29.0 dB
<i>p</i>	-29.0 ... -31.5 dB

The criteria for the orchestration is plainly to assign an amplitude segment or a group of segments to specific instrumental sections of the ensemble. Ablinger explains the criteria for the first movement:

“the *ff* layer goes to the wind trio

the *f* to the string 5-tet

mf, *mp* and *p* goes to the 3 keyboards

if one chord in one layer contains more voices than available instruments, I took just the loudest notes of that layer”.⁴

Below is a fragment of the spectral analysis for the opening movement of *Quadraturen IV*. We can observe the distribution of the partials among two of the five amplitude or dynamic regions. The document also reveals the time-grid resolution in the upper left of the image, in which we can see “8 x 377.5 ms”, which shows how the 8th note is 377.5 ms long at a pulse of

⁴ *Ibid.*

160 beats per minute. Another feature revealed in the chart is the composer's choice of groupings for the 8th notes, from which the meters of the piece are derived.

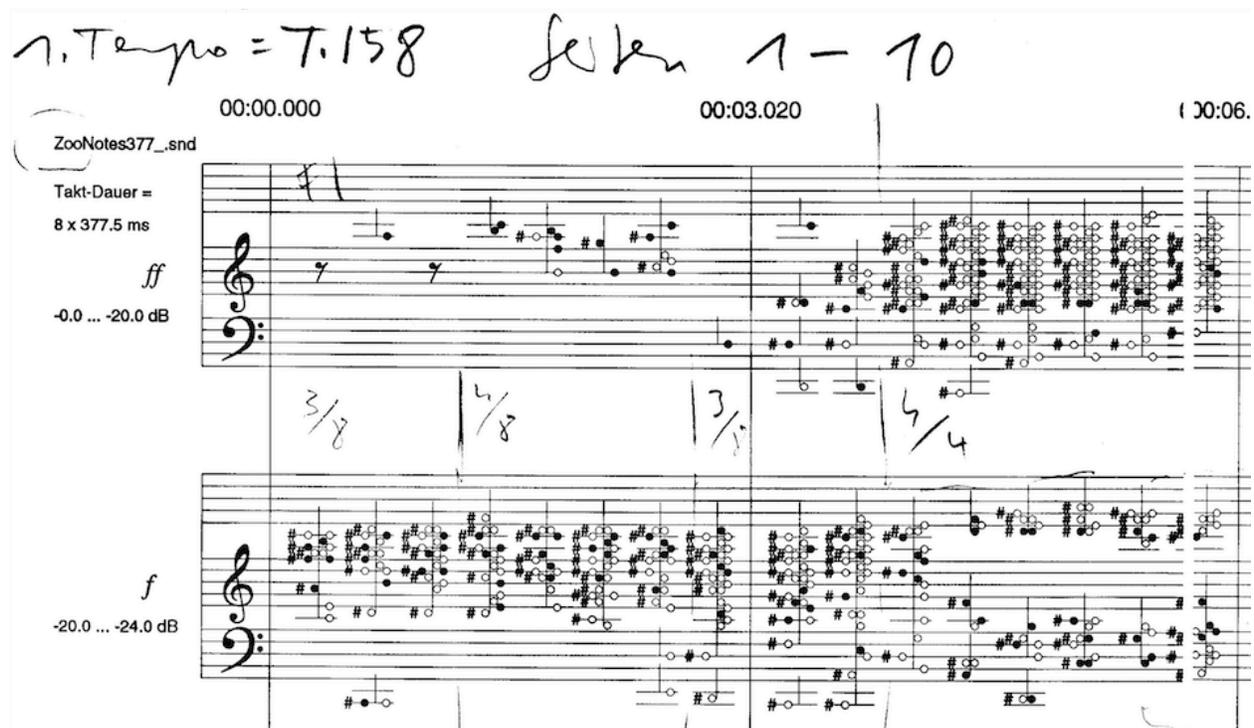


Figure 5
“Note Analysis”⁵ (fragment).

The two staff groups shown in the example above are the source material for the wind trio and string quintet, respectively, as explained by Ablinger. In the score, the dynamics are slightly modified for musical and orchestration reasons. The wind trio plays *f sempre* while the string quintet plays *mf sempre*. The same distribution displaying the winds on the foreground and the keyboards on the background in terms of dynamics is used throughout the entire piece for the layout of the instrumentalists on stage as well (Fig. 6). The loudspeakers are placed stereo at both ends of the front of the stage.

⁵ *Ibid.*

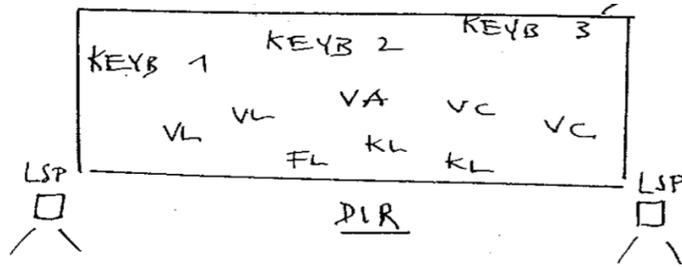


Figure 6
Stage setup⁶

3. TRANSLATION OF REALITY. SOME PERCEPTUAL IMPLICATIONS

The self-portrait

The subtitle of the piece, “self-portrait with Berlin”, which presents the music as a self-portrait of the composer with Berlin, reveals a fundamental preoccupation of Ablinger: presenting the view of the observer instead of presenting the observer himself and that which is viewed (the object). It is “what I see (and hear) that forms the subject of the piece. In other words the portrait reveals the view of the observer (...)”.⁷ The observer is the composer who is analyzing, transcribing and translating the acoustic reality which, in the case of this cycle, is a series of field recordings of Berlin. The observer is using tools of music and electronics in order to share his view, and these tools present conditions that will transform the original environmental recording and reproduce it devoid of its natural complexity. This translational condition is not exclusive of music and its tools, it extends to a broad expanse of human activities. Ablinger poses the problem from the perspective of painting.

⁶ Ablinger, Peter. *Quadraturen IV* (“Selbstportrait mit Berlin”), performance notes.

⁷ Ablinger, Peter. “Quadraturen IV”. <http://ablinger.mur.at/docu11.html#qu4>. Accessed February 10, 2017.

Cézanne, Photorealism and Music

With a background in the visual arts before devoting himself to composing with sound, Ablinger expresses a particular interest in Cézanne's notions on perception. In his lecture *Cézanne and Music* (2013), presented at the Historical and Contemporary Modes of Musical Listening Symposium in Graz, Austria, lies a connection between his understanding of Cézanne's notions of cubism and his idea for *Quadraturen IV*. Ablinger recalls that when Cézanne painted a line, the result was its deconstruction. "If as an exercise we would subject ourselves to insistent and precise observation, we would recognize that a line is actually not a line –that it jumps here and there, that it is sometimes stronger and sometimes weaker, sometimes sharper and sometimes more blurred (...). Cézanne did not paint what he saw, he painted seeing"⁸. He was not painting reality: he was painting his perception of reality. This is a shared fundamental concept in *Quadraturen IV* in that it presents "the truth of the observation process" and derives from it an "aesthetic phenomenon". The observation process is revealed in the music as the varying pulsed grid indicative of the various degrees of resolution we are able to attain through our perception and our technological tools –in the case of *Quadraturen IV*, spectral analysis.

Perception and representation of reality present a different kind of complexity in instrumental music –*Quadraturen IV*'s medium– than in painting. Painting translates the forms of environments of the real world in a way in which the spectator does not need any pointer or program note to realize that a reference to the real world is being made. On the other hand, when an ensemble of musicians with ad-hoc musical instruments is the medium through which a

⁸ Peter Ablinger, "Cézanne and Music," *Ear|Wave|Event* Issue 1 (2014): 2

composer translates the sound of an environment of the real world into music, the resemblance of the music to the real world environment is more complicated and, in most renditions, requires program notes for the spectator to be able to establish the relationship. In *Quadraturen IV*, this situation may be seen as an oversimplification of reality when it is perceived through the tools of music analysis, notation and instrumentation.

Translation and reproduction of the real world objects has been a prominent practice in most arts throughout history. Painters have studied the anatomy of the human body, the color temperature in landscapes, perspective in facades and so on, to then reproduce the subjects of their perception through the language and tools of painting. Writers reproduce and recreate the real world through words that evoke images, emotions and situations often situated in time. With the exception of dance and instrumental music, there are several more examples of other art forms in which the artist is an observer of a reality that is reproduced to a degree in which the spectator does not need previous explanation to know that what is being presented is a reproduction of a given reality (i.e., a person, an object of nature, etc.). In painting, the material for production is paint; in instrumental music, the material for production is the sound that the instrument makes. Paint, brushes and the various canvases available to the painter are able to present the qualities of the shapes, colors, texture, etc., of a given object that is being translated from the real world into the painting. On the other hand, the timbre, amplitude, rhythm and frequency palettes proper of musical instruments present more difficulties to translate the qualities of a given sound in the world in a way in which it is clear to the spectator. If one takes into consideration the differences in affordances proper to drawing lines in painting versus making melodies in instrumental music, there is a striking difference that reveals how

instrumental music has a significant limitation related to resolution. We know that real world sounds most often exist as complex continua that, in the parameter of frequency, by far transcend the resolution of the octave divided in five, twelve, twenty-two, and so on tones, depending on the standard tuning in use. It is perhaps because of these limits in the affordances of the materials and techniques in instrumental music that representation of environmental sounds has not taken the route of a precise reproduction. The only representational route taken by instrumental music to reproduce sounds of the world has been the metaphor –the presentation of sounds that possess similar characteristics to those of the original in pitch, duration, density, etc. This distinctive aspect of program music makes program notes become essential to point the listener’s imagination towards a given represented/reproduced subject. *Quadraturen IV* is an intent to achieve a more precise representation of the acoustic reality. This music is not aiming at a metaphoric representation of acoustic reality. Ablinger’s use of the word "phonograph" as related to the word “photograph” is not gratuitous. While an "image" may imply various degrees of distance or proximity to reality, the word "photograph" arguably presents a more detailed translation of reality. The goal in the *Quadraturen* cycle is to grasp the phonographs' frequency, time and amplitude as closely as the media of translation (music technology, including notation and electronics) and reproduction (musical instruments and musicians) allow. In this sense, Ablinger establishes the connection between the time/frequency grid proper of spectral analysis and the gridding technique used by photorealist painters to achieve high degrees of resolution in the translation of the photograph to the painting.

“The reproduction of ‘phonographs’ by instruments can be compared to photo-realist painting, or - what describes the technical aspect of the "Quadraturen" more precisely -

with techniques in the graphic arts that use grids to transform photos into prints.”⁹

Reality through Music

Despite the point of departure of the phonograph and its translation into music, the ultimate objective of *Quadraturen IV* and the entirety of the *Quadraturen* cycle is not the literal reproduction of the phonograph itself, but the boundaries between “abstract musical structure” and “phonorealism”. In other words, Ablinger’s ultimate purpose is to explore the observation of “reality” through “music”. Throughout the cycle, reality is presented through different degrees of distance and proximity depending on the tools that are being used for translation and reproduction. The contact between musical abstraction and the original recording –the resemblance between the music and the original– is less frequent in *Quadraturen IV* than in other pieces of the *Quadraturen* cycle in which the means of reproduction are electronically driven. In this sense, the analyses and translations of original recordings into instrumental music present less proximity to the originals than the translations into electronically manipulated instruments or media. This distance from the original is related to the affordances of instrumental performance. In this sense, Ablinger mentions that “when using humanly played instruments (which is the case in *Quadraturen IV*) the grid has to be enlarged (slowed down) to remain playable – thus the result of the transformation is not so much a reproduction of the original but an approach to or a situation of comparison between instrumental sounds and the original sound source”¹⁰. On the other hand, when reality is explored through the affordances of electronic music, the translations

⁹ Ablinger, Peter. “Quadraturen IV”. <http://ablinger.mur.at/phonorealism.html>. Accessed March 23, 2017.

¹⁰ Ablinger, Peter. “Quadraturen IV”. <http://ablinger.mur.at/docu11.html#principles>. Accessed January 25, 2017.

present a higher resolution –a grid of smaller squares and therefore a higher quantity of sonic information per second– and the reality is reproduced with a higher degree of proximity to the original. Such is the case in *Quadraturen III –Deus Cantando*, for computer-controlled piano and screened text. In this piece, the piano is reproducing the spectral analysis of the Declaration of the International Environmental Criminal Court, by Adolfo Pérez Esquivel and the XIV Dalai Lama. The similarities of the sound of the computer-controlled piano and the sound of human speech are striking. In contrast, the pieces in the *Quadraturen* cycle that involve orchestration and human performance present a lower resolution in order for the material to be performable. The result –which yields the important reflection on the limits of perception– is a transformed reality, simplified and reduced to comparatively larger squares on a grid, which is a condition of musical language itself. This distance from reality due to the limits of human perception and of the tools of music as translators of objective parameters of environmental sounds results in a unique and new sound world that is still, however, quantifiably –objectively– related to reality. The end result of the limitations of the translation is, as Ablinger states, “an aesthetic phenomenon in itself”.

4. LIMITS OF PERCEPTION AND COMPLEMENTARITY

As suggested above, *Quadraturen* may be seen as a study of varying modes of listening, *ergo*, the perception of sound. With regards to perception, Humberto Maturana, biologist involved with studies in second order cybernetics, alerts us about epistemological and linguistic

limits: "One can only say with a given language what a given language permits" ¹¹.

Environments outside of musical thought, either natural or urban, possess a complexity that human perception and musical tools are able to express and reproduce only in a limited resolution. Through the language of Digital Signal Processing it is possible to reproduce the sound of any musical instrument through additive synthesis. However, the reproduction will inevitably exclude minute aspects of the original sound and we will hear the gridded language of signal processing that is unable to reach the complex sound of the real instrument. Furthermore, if a single, discrete, musical instrument of either periodic or aperiodic sound presents such difficulties to be perceived (analyzed) and reproduced, the degree of complexity that non-musical sounds and entire environments –natural and urban– may present is far greater. The sound of busy intersection in a city, with a multiplicity of bodies of various materials generating vibrations expressed in periodic or a-periodic sounds, presents a complexity that exceeds our sonic perception, musical language and means of representation through instrumental sounds. In Maturana's terms, *Quadraturen IV* explores what musical language permits to say about an acoustic reality or environmental recording.

Autopoiesis

With regards to his initial observation on the limits of language, Maturana suggests that a new approach to cognition must be considered: we are required to "treat seriously the activity of the nervous system as determined by the nervous system itself, and not by the external world; thus the external world would only have a triggering role in the release of the internally-

¹¹ Humberto Maturana, *Autopoiesis and cognition* (Holland: D. Reidel Publishing Company, 1980), Introduction, xiii.

determined activity of the nervous system”¹². This idea is the basis for the concept that he coined as *autopoiesis*¹³, which refers to the self-organization of a living system. The principle of *autopoiesis* applies to the relation between the music of *Quadraturen IV* and the recording or phonograph from which it is derived. The nervous system described by Maturana is analogous to our musical tools, which in *Quadraturen* include the spectral analysis, the composer’s interpretation of it, and the existing musical notation and orchestration resources. The external world is the recording, or phonograph, of Berlin. The activity of the nervous system is the musical translation of the external world –the recording of Berlin. Such activity or musical translation becomes a new version of the external world and not its reproduction. An example in *Quadraturen IV* is the rhythmic resolution, which is mostly ostinato quarter and eighth notes in all parts, while the frequency resolution is semitones. This translational feature is determined by the tools of music and the composer perceiving a soundscape of Berlin, and not by the soundscape of Berlin itself. This idea is further developed by Maturana as an observation resulting from a study of frog and pigeon vision: “perception should not be viewed as a grasping of an external reality, but rather as the specification of one, because no distinction was possible between perception and hallucination in the operation of the nervous system as a closed network”¹⁴.

Deficiency of attention

Another aspect of that is relevant in *Quadraturen* is Jonathan Crary’s idea regarding the

¹² Maturana, *Autopoiesis and cognition*, xv.

¹³ Maturana, *Autopoiesis and cognition*, xxii.

¹⁴ Maturana, *Autopoiesis and cognition*, xv.

“deficiency of attention”¹⁵, which Ablinger expresses as: “to pay attention to one thing means withdrawing it from many other simultaneous things”¹⁶. In *Quadraturen IV*, what Ablinger calls an “oversimplification of reality” may not only apply to the enlargement of the squares in the grid that defines the resolution of the translation, but also to the deficiency of attention that results from privileging only one aspect or a limited group of aspects of the phonograph and, at the same time, withdrawing the attention from many other qualities in the sound. For example, the technical affordances of the spectral analysis tools exclude the definition of discrete sound objects featured in the recording, i. e., the Doppler effect of a bus passing by. The spectral analysis focuses on the totality of the harmonic spectrum of the recording, withdrawing its focus from discrete events with their specific timbres and envelopes. If, on another translation of *Quadraturen IV*, the attention was focused on the sound object of the bus passing by, then it would be withdrawn from the totality of the harmonic spectra of the general soundscape. This is of course a limit of our perceptual apparatus, and this idea is brilliantly instilled –perhaps even with a slight degree of irony– in the sound of *Quadraturen IV*. With regards to ways of perceiving paintings, Crary proposes “to construct some of the field of their *exterior*, to multiply the links to this exterior, ‘to remain attentive to the plural’, where ‘everything signifies ceaselessly and several times’”¹⁷. This mode of perception as a spectator may as well shed light on how to perceive from the perspective of the translator of reality into art. In the particular case of translating environmental sound into music for performers, “to remain attentive to the plural” may be understood as including as many aspects of the recording that we may be overlooking

¹⁵ Jonathan Crary, *Suspensions of Perception: Attention, Spectacle, and Modern Culture* (Cambridge: MIT Press, 1999), Introduction, 1.

¹⁶ Peter Ablinger, “Cézanne and Music,” *Ear|Wave|Event* Issue 1 (2014): 3.

¹⁷ Crary, *Suspensions of Perception*, Introduction, 9.

due to the “paying attention” to a specific aspect of the recording. This notion of Cray points towards complementarity, which anthropologists, and cyberneticist Gregory Bateson features as a chapter in *Mind and Nature*.

Complementarity

From an evolutionary standpoint, Gregory Bateson states the importance of combining pieces of information.

“The evolutionary process must depend upon such double increments of information.

Every evolutionary step is an addition of information to an already existing system.

Because this is so, the combinations, harmonies, and discords between successive pieces and layers of information will present many problems of survival and determine many directions of change”¹⁸.

An approach to the translation of environmental sounds into music for performers that includes more than one method of analysis and notation would generate additional information to the existing system. From a Batesonian perspective, this approach would affect the evolutionary process of the understanding of our environmental sounds and the tools that we use to study and reproduce them. The result of this combination of methods of translation of a phonograph into instrumental music could also be described using a metaphor with Bateson’s description of binocular vision:

¹⁸ Gregory Bateson, *Mind and Nature* (E. P. Dutton, 1979), Introduction, 19.

“The binocular image, which appears to be undivided, is in fact a synthesis of information from the left front in the right brain and a corresponding synthesis of material from the right front in the left brain. Later these two synthesized aggregates of information are themselves synthesized into a single subjective picture from which all traces of the vertical boundary have disappeared”¹⁹.

The synthesis of the information from the right and left brain that takes place in binocular vision is analogous to what would take place with two or more systems of translation of the same phonograph into instrumental music. Those systems, or notations, would be synthesized either by superimposition (simultaneously) or by collage (jumping from one system to the other in various orders and proportions). *Quadraturen IV* presents various sections in which there is a superimposition of time resolution expressed in a simultaneity of pulses (Fig. 2). “From this elaborate arrangement, two sorts of advantage accrue. The seer is able to improve resolution at edges and contrasts; and better able to read when the print is small or the illumination poor”²⁰.

5. CONCLUSIONS: A COMPOSITIONAL PROPOSAL

Spectrally and quantifiably based translation of environmental sounds into music for instrumentalists is a compositional practice that has been scarcely explored. With exceptions such as the transcriptions of bird calls by Olivier Messiaen, the zoomusicological explorations of François-Bernard Mâche, René Lussier’s transcriptions of speech in *Le trésor de la langue*, and

¹⁹ Bateson, *Mind and Nature*, 65

²⁰ *Ibid.*

other valuable examples, instrumental music representing environmental sound has done so in a way in which the connection between the original phonograph and the resulting music are more freely than quantifiably connected. Despite the significant number of years since it was composed and premiered, Peter Ablinger's *Quadraturen IV* stands as one of the works in this still young niche of music composition that translates environmental recordings into music for performers with an objective perspective –quantifiable through signal analysis. This work brings forth important considerations regarding the various potential and unique aesthetic phenomena that may result from the limits and different modes of perception, skills, technologies and choices involved in the translation processes.

The analysis of *Quadraturen IV* suggests that different musical tools and languages of observation and reproduction yield different complementary versions of an acoustic reality. While one version may present a higher degree of resolution in some features of a given soundscape from the real world, another version may present a lower resolution in the same features and at the same time offer other valuable angles of that reality. As a result of the limitations and complementarity of perceptions, translations and reproductions, the idea of a superimposition and/or successive juxtapositions of different processes of translation of the same environmental soundscape is a promising path for further work based on environmental soundscape translation. In *Quadraturen IV* there is a systematic decrease and increase in resolutions of time that result in superimposed or juxtaposed tempi. This notion of simultaneity of angles of perception may be the antecedent of a simultaneity of musical systems and versions that originate from the same source but that are a result of a different processes. This artistic and conceptual approach to the translation of environmental sounds into instrumental music can

potentially offer a richer and more complete understanding of the sounds of our world. In his proposal of *multiple versions of the world*, Gregory Bateson states that “the difference between the information provided by the one retina and that provided by the other is itself information of a *different logical type*. From this new sort of information, the seer adds an extra *dimension* to seeing”²¹. Similarly, with the imprint of the composer and her/his tools, different processes of translation and instrumentation of environmental recordings add extra dimensions to listening, in which objective observation of the structure of the sound is fused with the subjective characteristics of the translator. As Ablinger states in his subtitle for *Quadraturen IV*, such extra dimension to listening is in fact a *self-portrait* with the acoustic phonograph, a fusion between the listener and the sound.

²¹ Bateson, *Mind and Nature*, 65

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