

Journeying Through Sound: A Survey of Digital Music Art

With this essay I would like to offer a picture of some current experimentations in digital art and music, which play with the proliferation of digital communication tools and the ensuing reconfiguration of social and cultural relationships.¹ Among the selected artworks, there is a clear (perhaps inevitable) predominance of experimentations carried out in Anglophone cultural circles. The concentration of the most significant experiences in this linguistic area does not depend on a matter of ‘cultural climate’. On the contrary, it is due to the larger support (in economic and logistic terms) that some countries have been able to offer to young artists and researchers in the field. Nevertheless, if we take into account the passports of the artists discussed in this survey, it becomes evident that the map of their geographical origins extends well beyond the usual U.S.-Northern Europe axis. This situation reflects the global interest that such issues are generating and – at the same time – the irrelevance of national borders in relation to artistic urgency.

The artworks analyzed here have all been developed in the last few years. In a free paraphrase of Arjun Appadurai’s terminology, I have grouped them under the categories of *Dailyscape*, *Naturalscape*, *Machinescape*, *Urbanscape* and *Mythscape*. I am indebted not only to Appadurai’s summary of contemporary major global cultural flows through categories such as “ethnoscapes”, “technoscapes”, “mediascapes”, “finanscapes” and “ideoscapes”, but also to the Canadian writer and composer Raymond Murray Schafer, who sheds light on the specificity of the contemporary soundscape in his discussion of the transition from rural to urban soundscape in terms of *hi-fi* and *lo-fi*. According to Schafer, the *hi-fi* system is characterized by a low level of environmental noise: it is therefore possible to hear the individual sounds clearly. The *lo-fi* soundscape, created by the Industrial Revolution and later intensified by the ‘electric revolution’, is characterized by the congestion of sounds.²

Here, *Dailyscape* includes objects, acts and intentions that produce our daily routines in a world dominated by the media. *Naturalscape* represents an attempt to rediscover the relationship with natural elements and with the environment, without escaping the mediation of technological tools. *Machinescape* includes artworks which put the machine at the very centre of their research, focusing on the analysis of dynamics that seem autonomous from human control. With *Urbanscape* I have tried to analyse a few works based on the concept of ‘urban location’ and its implications. Finally, *Mythscape* groups together artworks that deal with the concept of

¹ Former versions of most of the following reviews have been published previously in the magazine *Neural* <<http://www.neural.it>, 19 December 2009>. I would like to thank Alessandro Ludovico, editor in chief of *Neural*, for his kind support.

² See Arjun Appadurai, *Modernity at Large: Cultural Dimensions of Globalization* (Minneapolis, MN: University of Minnesota Press, 1996); and Raymond Murray Schafer, *The Tuning of the World: The Soundscape* (New York: Knopf, 1977).

myth in a literal sense, but also with beliefs and habits that have a mythological connotation, due to their continuous repetition.

This categorization may seem arbitrary, but it is meant as a device for analysing some of the trends emerging from the field of artistic musical experimentations related to digital media. I aim neither setting up a taxonomy of approaches, nor offering a complete and exhaustive picture of the trends in current research. Connections will be dictated, instead, by arbitrary associations and aesthetic affinities. However, I believe that the resulting picture may help stimulate a wider reflection on the state of the art in recent musical and digital media.

In particular, it may be possible to speak of a common ground for the artists included in this survey, namely the adoption of a realistic approach. I am using the term ‘realistic’ in the sense suggested by Umberto Eco’s seminal criticism of both “apocalyptic” and “integrated” critical attitudes towards new mass-media and technological advancements. All the artists discussed here avoid both the temptation of idolatrizing technology as a value in itself (as an integrated intellectual would), and that of panicking over the cultural ruin and barbarity to which the technological drift may lead humankind (as an apocalyptic intellectual would).³ A realistic approach, instead, would open up windows on the reality we are living in, by focusing, in particular, on the condition of cohabitation with technology that characterizes our presence in real spaces as well as (and even more so than) in virtual ones.

³ Umberto Eco, *Apocalittici e integrati. Comunicazioni di massa e teorie della cultura di massa* (Milan: Bompiani, 1964).

From this point of view, the work by this generation of media artists is presented here as a further attempt to represent the ‘electronic society’, a representation electronic music has always engaged with (from the earliest futurist experimentations by Luigi Russolo to Kraftwerk, techno music and all the way to the last decade of the twentieth century). Nowadays, under the pressure of constant technological change, a ‘digital society’ is taking shape: in the following pages, I will attempt to sketch out how these artworks offer an array of perspectives on technology, witnessing processes that are taking place before our very eyes.

Dailyscape

BeatBox

New Zealander artist Karl D.D. Willis, known for his collaboration with the Japanese label “Progressive Form” and the *Sonosphere* (2004) project with Nao Tokui, has also been appreciated for his innovative prototypes, including *BeatBox* (2007).⁴ As the name itself suggests, the installation consists in a small box created to give voice to the sound universe of our desktops: usually, when we are sitting at our (home or work) desk, we are too busy to notice the amount of small sounds we produce when

⁴ See <<http://www.darcy.co.nz/highlights/sonosphere>>, 19 December 2009; and <<http://www.darcy.co.nz/research/boxbeat>>, 19 December 2009.

typing on the keyboard, madly moving the mouse, drawing, flipping a book or simply nervously pattering with our fingers.

Willis focuses on this aural background, creating a tool able to transform these small noises into musical beats. *BeatBox* uses some contact microphones to record sound vibrations produced on a flat surface, while a quite simple software transforms them into audio samples that are subsequently played back by small loud speakers. This tool may help us enjoy the rhythms produced by our work stations, which, the impersonal relationship we have with them notwithstanding, provide the soundscape of our average working day.

Uokand (Tapelake)

Audiotapes, a medium which offered millions of people endless possibilities to recombine sounds and emotions and introduced the concept of self-produced compilation, have nowadays become a distant memory. The MP3 generation, used to processing huge quantities of digital data with a few simple clicks, can only smile condescendingly at the limits of such a technology. Not surprisingly, Currys, one of the biggest electronic retail chains in England (with over 500 stores), has announced that it won't sell any more audiotapes when the current stock is exhausted.⁵ This can be read as an epitaph; however – as often happens – a commercially dead object can live a new life by becoming raw material for artistic productions.

As a matter of fact, audiotapes, while disappearing from store shelves, are becoming the staple of many installations and performances all over the world. Particularly interesting is a 2006 installation by US DJ Dan Perrone, consisting in a lunar landscape wrapped in the tape of many cassettes. A radio-controlled model car with the reading head of a walkman attached at the bottom runs across the surface, producing strange sounds. These sounds, associated with the visual aspect of the installation, generate an interactive perceptive environment into which the viewer is invited to plunge. *Uokand (Tapelake)*, as the installation is called, is a way to recover an obsolete technology that can testify to how our world tends to be defined by the way we perceive it.⁶

Stationsraum fur assimilativen Zahlwitz

This is the title of an audio installation created in 2004 by Thomas Kubli with the support of the Academy of Media Arts in Cologne.⁷

Ten jelly cubes are placed in a room, parallel to the walls. Each cube contains a voice coil that sends audio signals into the gelatinous body. Entering the room, the viewer feels immersed inside an acoustically animated environment. This effect is obtained by hanging some loudspeakers on the external wall surfaces; this way, the vibrations are sent into the surrounding space while the sound source is hidden, and the

⁵ Amit Roy, "MP3 generation ejects audio tape", *The Telegraph* (8 May 2007) <http://www.telegraphindia.com/1070508/asp/frontpage/story_7748884.asp>, 19 December 2009.

⁶ See <<http://www.danperrone.com>>, 19 December 2009.

⁷ See <http://www.khm.de/~kubli/Assets/pdfs/stationsraum_engl.pdf>, 19 December 2009.

viewer instinctively concentrates her/his attention on the cubes. Each cube emanates a sort of mantra, as it reads a number series which changes continuously. The gelatinous objects can be touched, and this takes the experience onto a physical, tactile plane. The viewer has the impression she/he is touching the numerical sequences and surrenders to the alternation between virtual and material, physical and psychic space, body and mind.

Kubli's installation can therefore be interpreted as the attempt to push the dialectical tension between the elements of human perception to its limit, by aesthetically reinterpreting a typical contemporary environment, that is, a space where interaction is mediated by technology. Moreover, Kubli's ironic use of jelly is particularly interesting, as collagen (or jelly) is the basal membrane that is the most abundant protein in mammals and is associated with the function of communication, in a way not dissimilar from the cosmetic industry.

Save the Waves

What is the sound of electricity? One of the possible answers to this question is *Save the Waves* (2004), a giant installation built by Canadian artist Jean-Pierre Aubé at the Darling Foundry in Ottawa. The foundry is placed near a Hydro-Quebec transformer (one of the major players in the North America electric energy market), producing a continuous buzz at 60Hz, the wavelength that, according to Aubé, is the soundtrack of our domestic lives.

The installation is constituted by four VLF (Very Long Frequency) antennas, placed in the old foundry in order to intercept the disturbances generated by the many electric elements in the area.⁸ The signal is sent to a first computer, controlled by a second one that acts as a tuner, triggering the oscillation and the circulation of sounds through a specific software based on a simple mathematical formula (a sine curve).

In order to amplify the signal as much as possible, Aubé has also built an octophonic sound system, constituted by 24 loud speakers. This system is placed in the middle of the foundry and broadcasts in every direction the sounds created by the magnetic fields. These are modulated by a software based on its own induced wavelength variations.

The intention of the artist is to reproduce an amplified version of daily life conditions. These conditions are unavoidably marked by the frequencies of household appliances, such as, for example, refrigerators. We are surrounded by electromagnetic energy, with which we coexist – often unconsciously.

Naturalscape

IIE - Interactive Infrasonic Installation

IIE (2009) is an interactive sound installation in which Reinhard Gupfinger

⁸ Very low frequency or VLF refers to radio frequencies (RF) in the range of 3 kHz to 30 kHz. Since there is not much bandwidth in this band of the radio spectrum, only the simplest signals are used, such as those employed for radio navigation. Also known as the myriameter band or myriameter wave, as its wavelengths range from ten to one myriameters (an obsolete metric unit equal to 10 kilometers); see <<http://en.wikipedia.org/wiki/VLF>>, 19 December 2009.

⁹ See <<http://www.gupfinger.net/projects/iie.htm>>, 19 December 2009.

investigates infrasonic sounds, i.e. sounds which lie below the threshold of human audibility, having a frequency of less than 20/16 Hertz (20/16 cycles per second).⁹

Though the ear is insensitive to these sounds, the human body is nonetheless able to perceive them as vibrations: the Austrian artist explores the phenomenon by exposing the audience to this kind of perception. Infrasound is in fact very common in the natural environment, as it is produced by atmospheric phenomena such as thunder and wind, as well as by some animals (whales, elephants, etc.), which use them to communicate. However, even road traffic or industrial facilities may produce infrasounds under certain circumstances.

The amount of low frequencies in the environment is so great as to stimulate a reflection on their role in contemporary culture. The *IIE* project is an attempt to free human perception from the monopoly of noise, in order to open it to those sounds which although inaudible are no less important in determining our daily soundscape. Gupfinger has created an installation which brings together disparate elements, such as a 250 inches long organ pipe, a wind generator and a video-tracking interface for multi-user interaction. This installation allows the public not only to perceive infrasounds generated during the performance but also to interact with them: for example, the wind generator which blows into the organ pipe is set in motion (thanks to the video-tracking interface) by the users' movements in the space surrounding the installation. This produces a change in both the volume and speed of frequencies. In other words the users, with their movements, produce variations in the sound and this helps them to increase their *acoustic awareness* of the infrasound phenomenon.

¹⁰ See <http://www.miyamasaoka.com/interdisciplinary/brainwaves_plants/pieces_for_plants.html>, 19 December 2009.

Akousmaflores

The digital art world has recently seen the birth of many nature-themed interactive audio-installations. A common inspiration can be found here, starting with *Green Music*, created by John Lifton in the late Sixties, followed by *Pieces for Plants* by Masaoka,¹⁰ and including *Akousmaflores* (2007) by French group Scenocosme (Grégory Lasserre and Anaïs met den Ancxt).¹¹

¹¹ See <http://www.scenocosme.com/akousmaflores_en.htm>, 19 December 2009.

What connects the abovementioned projects is the desire to represent the sound dimension that invisibly permeates any context inhabited by plants. The hybridization of plants and digital technologies can therefore be read as an attempt to show the interactions between the electric field surrounding us (our aura) and all natural environments. This is undoubtedly the basis for Scenocosme's latest installation: a garden of interactive plants and flowers which by reacting to the visitors' movements turns into an orchestra.

By inserting tiny sensors in the leaves, the French artists turn plants into musical instruments, but at the same time stress another characteristic

of plants: their ability to act as living elements, sensitive to changes in their environment. The fact that the sound vibrations produced in *Akousmaflöre* are the output of digital technology (a sound flow is just another form of data flow) also allows the natural environment to be viewed as a place where biological elements and their digital representations can interact.

Auditory Seismology

Auditory Seismology (2004) is a project developed by Florian Dombois, director of the Institute for Transdisciplinarity at Bern University of the Arts.¹²

His starting point is the observation that the frequency spectrum of a seismic wave is below 1 Hz, while the human audio spectrum is circa 20 Hz. In order to make the inaudible audible, Dombois has compressed a seismograph time data, up to 2000 times its usual power, and then sent the calculated signals to amplified speakers. The stunning result is nothing less than the sound produced by an earth tremor.

The experiment has a double edge: on the one hand it makes audible a phenomenon usually analyzed only visually, offering the opportunity of taking into account new aspects of the seismic process; on the other, it offers the opportunity to hear an amazing representation of what could be called *the sound of the Earth*, the noise produced by its countless underground layers in their ceaseless, very slow, movement.

The importance of the experiment must not be underestimated. Dumbois has accomplished a great feat. His installations have brought about an important linguistic shift – a shift which lies at the very heart of contemporary art – and have given us the opportunity to listen to phenomena usually represented only through visual curves, graphs and 3D models, so that we are induced to abandon one sensorial domain (sight) to enter another (sound).

Machinescape

Harddisko

Harddisko (2004) is an installation created by Valentina Vuksic, a former Media Art student at the Zurich University of Design and Arts.¹³ It focuses on what is really at the core of any computer music discourse, the raw sounds produced by the heart of any PC: its hard disk.

The project starts with actually finding flawed hard disks in the area where the installation is built. The hard disks must be obtained for free, even by



Fig. 1: *Akousmaflöre*, 2007, courtesy of Scenocosme.

¹² See <<http://www.auditory-seismology.org/version2004>>, 19 December 2009.

¹³ <See <http://www.harddisko.ch>>, 19 December 2009.



Fig. 2: *Harddisko*, 2004, courtesy of Valentina Vuksic.

digging into electronic waste, and must be produced by different producers and with different characteristics.

Then the cases of the hard disks are removed, a special pickup is mounted on the head of the drive and connected to a sound mixer. As soon as the hard disks are plugged in, the head starts to generate sounds due to the movements required by basic start up procedure.

The fact that every hard disk is noticeably different from the others (different producers, models, firmware versions, etc.) guarantees a surprising diversity of sounds. It is a

diversity that naturally fascinates: each with its own peculiar sound, each with its own story to tell.

The conductor of this futuristic orchestra holds a switch (instead of the classic stick) with which she/he plugs or unplugs each disk, embodying the On/Off logic present in any computer process.

¹⁴ See <<http://qotile.net/dotmatrix.html>>, 19 December 2009>.

¹⁵ See <<http://www.seseyann.com/plinkjet>>, 19 December 2009.

Plink Jet

One of the most common practices in the media art field has always been the emphatic exhibition of everyday tools, like the countless devices that

expand our own computer potential. In recent years, a specific trend has been developed, which uses different kinds of printers with a pure performative approach. After the paradigmatic *Dot Matrix Synth* (an in-progress project started by Paul Slocum in 2004) there has been a long creative series of installations and (more or less fortunate) attempts at rethinking these output devices for different purposes.¹⁴ The latest at the time of writing is *Plink Jet* (2007), a robotic musical instrument created by Lesley Flanigan and Andrew Doro, former students from the Tisch School of Arts at New York University.¹⁵

Four inkjet printers have been transformed each into a musical instrument: the result is an unusual ensemble which can be 'played'; yet it can also produce sounds autonomously, and even work combining these two modes. The user can choose among several levels of manual control, all easily accessible, each corresponding to a different degree of man/machine interaction.

The result of these collaborative performances is unpredictable, while the quality of the sounds produced,

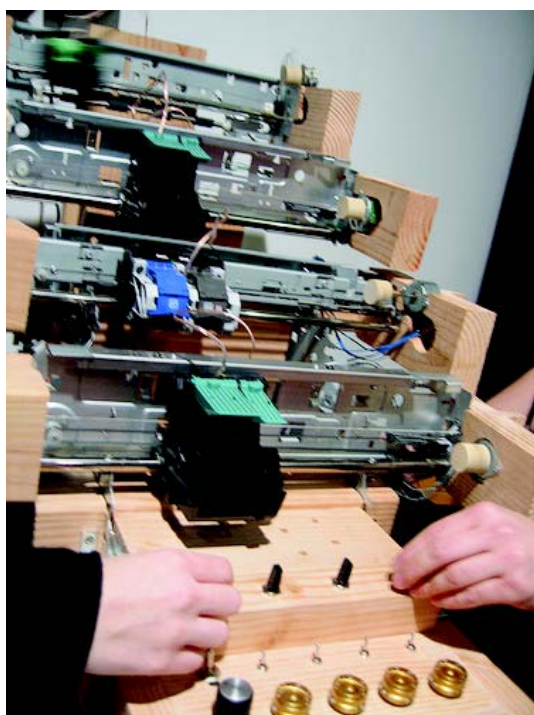


Fig. 3: *Plink Jet*, 2007, courtesy of Lesley Flanigan and Andrew Doro.

quite obviously, depends on the sensitivity and expertise of the individual user interacting with the machine.

SoleNoid β

Tap-dance rhythmic lines are the protagonists in *SoleNoid β* (2009) by Peter William Holden. Eight glossy tap-dance shoes, placed symmetrically in a circle, are animated by a computer connected with circuits controlling electromechanical valves (solenoid valves) and compressed air hydraulic pistons.¹⁶ The *living shoes* move in a multiplicity of directions beating the time of a Marko Wild composition on special circular platforms. Inserts on the soles, typical of tip-tap footwear, amplify the continuous movement of the tip-toe-toe-tip that occurs sometimes in sync and sometimes in different backbeats. The resulting effect is a concert of many different tones, in which the audience becomes the spectator in a theatre of machinic movements, orchestrated by a synthetic brain. In fact these clothing accessories, now rid of their human controllers, embody the deconstruction of the binary division between the tangibility of what is perceived through the senses and the virtuality of the corps de ballet.

¹⁶ See <<http://www.peter-william-holden.com/installations/solenoid/solenoid.html>>, 19 December 2009.

Bufferrrbreakkkdownnn Arkestra

Singapore musician Marcos Destructos (aka Marc Chia, aka One Man Nation) has completed a compelling investigation of data transmission over computer networks with his *Bufferrrbreakkkdownnn Arkestra* (2008).¹⁷

Destructos's goal has been to highlight the role that the delay in data transmission (which depends on the amount of data traffic on each network) has in artistic performances involving streaming processes. To test this, eight audio sine wave files were sent to eight different points of a single streaming server operating system. If the networks work at the same speed, this should result in a single sound formed by the eight original sinusoidal tones. Actually, what happens is that uploading and downloading speeds vary considerably. This causes a breakdown of any ideal unique sound into different rhythms determined solely by the different operating speeds of the networks involved.

The imperfections of the medium become a constituent element of the One Man Nation performance: through a reversal of perspective, the delay that continues to characterize computer network transmissions (rightly deprecated by all good performers) is 'redeemed' and turned into a specifically aesthetic feature.

¹⁷ See <<http://onemannation.com/content/new-media/the-idea-i-thought-of-to-be-so-wonderful>>, 19 December 2009.



Fig 4: *Bufferrrbreakkkdownnn Arkestra*, 2008, courtesy of Marcos Destructos.

¹⁸ See <<http://www.csl.sony.fr/items/2002/the-continuator>>, 19 December 2009.

The Continuator

The Continuator (2002-2007) is a research project directed by François Pachet (Sony Computer Science Laboratory in Paris).¹⁸ It is an experiment focused on real time interaction with a system that can distinguish and memorize different music styles. The characteristics singled out enable a dialogue to take place between the musician and *The Continuator*. The system can produce musical phrases which can perfectly reproduce the style of a musician chosen by the user. Therefore such phrases are a sort of continuation of the stored sound incipit.

Another important characteristic of this project is the capacity to accumulate meaningful data after each session. The dialogue becomes more and more interesting as the system learns the musician's style. These learning skills mark the difference between *The Continuator* and other interactive music systems developed in recent years.

From an architectural point of view, we can identify two modules: the first (dedicated to analysis) receives its input from the MIDI interface; the second (dedicated to the generation of sounds) can work either in a "continuous" mode (producing sounds unceasingly after the input) or in a "question and answer" mode (every input generates only one output).

So far, *The Continuator* has mostly been used by avant-garde musicians (Bernard Lubat, Claude Barthélémy, György Kurtág, etc.) and very young children; as regards the latter, the system has been extraordinarily successful in improving preschool children's listening abilities, which are still in an early stage of development.

Urbanscape

Street Radio

¹⁹ See <<http://www.thenextlayer.org/node/378>>, 19 December 2009.

The public installation *Street Radio* (2008) was developed by Austrian Armin Medosch at the central railway station in Southampton.¹⁹ Medosch has realized a radio network drawing on Hivenetworks technology and with the help of Alexei Blinov, a Raylabs artist who has already contributed to countless media artworks. The network is constituted by ten public nodes, broadcasting stories selected from the Southampton Oral History Archive and adapted to match the characteristics of each site where the nodes were implemented.

Street Radio uses a set of technologies that have become available – even outside the scientific research *sancta sanctorum* – thanks to the virtuous circle put into operation by the free software movement. Now they lend themselves to various DIY approaches, like that of *Street Radio*.

Every installation node is made up of a small weather resistant box (weather in this port city is far from mild); the inside hardware/software combination, developed by Hivenetworks, enables the loop playing of

audio files through FM radio waves (89.0 MHz). The boxes are supplied with a small USB charger; they can spread the audio waves up to 30 meters away and are also able to register the presence of a Bluetooth enabled mobile. Remote connections are used only for the maintenance of the devices, which are definitely not access points.

One of the most interesting aspects of this experiment is its involvement of the newest forms of communication and technical innovation with oral tradition, thereby making room for a new, emergent form of orality. The *Street Radio* project can then be interpreted as the nth disproof of the short-sighted forecast stating that oral tradition would be wiped out by the computer society.

Yesnation

One of the most fascinating challenges posed by the gathering of huge amounts of digital data is to find effective ways of visualising them. Current software mapping features are so advanced that early technology – such as the green letters displayed on the black background of the first terminals – seems almost to belong to a distant geological age.

Amongst the most popular experiments are those which try to establish a relationship between the source and its geographical position. It seems that we are lost in the universe of digital (or digitalized) information and so we feel the need to recontextualize ourselves in the real world.

This need lies behind *Yesnation* (2006), a Flash application developed by Yes.net.²⁰ On the background of a U.S. map (with the borders of the states outlined), the titles of the tunes broadcast by the vast network of U.S. radio stations pop up in real time. Each title appears and is related to the particular place where the radio station is placed by a red dot appearing on the map, and then it suddenly disappears without a trace.

It could seem banal to underline that in California there are lots of titles in Spanish, while in Montana multi-culturalism is still a utopia. But in the end the most interesting element of *Yesnation* is to give us a snapshot of the U.S. radio universe: an ephemeral snapshot, indeed, because it is intended to disappear at once, making space for a new one.

34s56w.org

Brian Mackern (director of *Artefactos virtuales* and creator of *Netart_latino*) is a Uruguayan artist of the Net generation.²¹ His research is to be located within a tradition of creative experimentation – going back to the 1900 avant-garde movements – which linked audio and visual objects. In the Web it has finally found an ideal ground in which to achieve depth and visibility.

Thanks to the opportunities introduced by new digital tools, the dialectic tension between sounds and images has become the object of endless

²⁰ See <<http://yes.com/yesnation>>, 19 December 2009.

²¹ See <<http://www.internet.com.uy/vibri>>, 19 December 2009; and <<http://netart.org.uy/latino>>, 19 December 2009.

thinking and investigations, all connected to the spreading of new cultural paradigms. Among them – above all – the self-consciousness and self-sufficient life of digital objects.

Within this frame, Mackern offers his personal answer to the need to find new modes of mediation between sounds and images, an answer characterized by a sense of rootedness and of belonging to a specific culture. In this sense, the artist's reinterpretation of the so-called "Tormenta de Santa Rosa" in his *34s56w.org* project, is of central importance.²² Isabel Flores de Oliva (1586-1617), beatified with the name of Santa Rosa of Lima, patron of the Catholic Church in Latin America and the Philippines, is celebrated on August 30. In 1615, a great storm prevented an enemy from landing on the coast and believers attributed the storm to Rosa's prayers. The worship of Santa Rosa in the Rio de la Plata is celebrated at the end of August, when frequent floods, rains and electrical activity hit the area. These natural phenomena are associated, in popular belief, to the presence of the Saint and are known as the "Storm of Santa Rosa".²³

²² See
<www.meteorologia.com.uy>,
19 December 2009.

²³ See <http://34s56w.org>, 19
December 2009.

Since 2002, between the end of August and the beginning of September Mackern has carried out several recordings of electrical interferences on radiofrequencies caused by the proximity of the storm in Montevideo. Recorded sounds were afterwards associated to fragmented images distributed on the map of Montevideo (34s56w are Montevideo's geographical coordinates). This way, the installation outlines a psychogeography where noise becomes a religious element that is deemed to reveal the presence of the Saint.

Mythscape

Ex Pharao

Ex Pharao (2006) is a re-elaboration of *Moses und Aaron* by Arnold Schönberg.²⁴ André and Michel Décosterd, a musician and an architect working together under the name of Cod.Act, have attempted to visualize Schönberg's work in an installation where the viewer is an actor who turns into a conductor. By moving within the installation and interacting with it, she/he can change the intensity of the orchestra and the choir, replying to the statements of the prophets and eventually coming to embody the people of Israel.

This installation elaborates the scene where Moses and Aaron try to convince the sceptical people of Israel. The Décosterd brothers have rewritten the score according to a serial logic, so as to adapt it perfectly to the sound manipulation software. As a result of this effort, in *Ex Pharao* the sound alterations triggered in real time by the interaction of the visitors never produce any significant variation with respect to Schönberg's original work.

²⁴ A video of this
installation may be found
in the **Multimedia** section.

See also <[http://
www.codact.ch/gb/
pharaogb.html](http://www.codact.ch/gb/pharaogb.html)>, 19
December 2009.

The installation is a corridor delimited by two sets of ropes which represent the physical context of Schönberg's work. The cables control the rotation of two levers with a loudspeaker at each end. These two loudspeakers, according to the authors, represent Moses and Aaron.

When a visitor enters the corridor, she/he literally stands in front of the prophets and, by pulling the cables, she/he can tweak the sound parameters, changing the expressiveness of the orchestra and choir. Proceeding through the corridor, the visitor is then reached by the prophets' voices. She/he is part of the drama with all her/his senses.

This is a unique occasion to live a truly multisensorial experience whose interactive nature creates the context for a profound relationship with Schönberg's work, and at the same time to absorb the power of the myth and feel the destiny of the 'chosen people' as one's own.

Sonic Wargame

Club Transmediale (the venue that traditionally hosts musical and audiovisual performances during the *Transmediale* festival in Berlin) was transformed in 2007 into an arena where valiant performers fight with one another using such weapons as scratches, samples and effects.²⁵

The battlefield was offered by *Sonic Wargame* (2007), a quadriphonic installation created by the Dutch musician Xavier Van Wersch, which allows four single players (or two teams of two players each) to compete under the supervision of a referee and with the participation of the audience. The players, positioned at the corners of this installation, are able to use a console and a loudspeaker and vote for the other players through a switch.²⁶ Each time one of the players gets two or three preferences, the system begins playing that player's sounds.

The transition between the sounds of one player and the next is very fast, but some coloured light bulbs tell, by lighting up, who is voting for whom and whose sounds are being played at that moment. At the same time, a video signal projected on a wall will give the audience additional information (such as each player's score).

One of the most interesting aspects of this installation is that the players are interconnected so that they receive the other players' sounds and can interact with them. The result is a continuously regenerating quadriphonic sound mix.



Fig 5: *Ex Pharao*, 2006, courtesy of André and Michel Décosterd.

²⁵ *Transmediale* is a leading international annual festival of art and digital culture, presenting experiments in digital art that reflect the socio-cultural impact of new technologies. The program includes a conference, an exhibition, live performances, film and video programs and a variety of partner events throughout Berlin. See <www.transmediale.de>, 19 December 2009.

²⁶ See <<http://www.sonic-wargame.net>>, 19 December 2009.



Fig. 6: *Sonic Wargame*, 2007, courtesy of Xavier Van Wersch.

Sonic Wargame is a new way of experiencing collective audio performances where the border between collaboration and competition is blurred, and the cross-voting element determines a situation of continuous passage from absolute control of sound to anarchic drifts where sound defies any pretension to ownership. In the background is the myth of the elections, almost a metaphor of modern democratic systems and of the huge lotteries that sanction their legitimacy.

At the end of this journey through sound in digital art music, what emerges – and is worth noting in these conclusive remarks – is that

despite the plurality of approaches, the heterogeneity of the media employed, the specificity of individual backgrounds and the different aesthetic forms of these artworks, what binds these artistic experimentations is the common attempt at interpreting the rapid changes that have overwhelmed society, culture, and landscape in the wake of the ‘digital society’. As McLuhan already guessed, “the artist picks up the message of cultural and technological challenge decades before its transforming impact occurs”.²⁷ As a consequence, these works may help identifying possible viewpoints on a contemporaneity in which society has been projected by technology all too rapidly. We do not have the tools to decode the reality that surrounds us (yet): the aesthetic elaboration of what it means to live in a state of ‘cohabitation with technology’ can offer us such an array of tools.

²⁷ Marshall McLuhan, *Understanding Media: The Extensions of Man* (New York: McGraw Hill, 1964) 65.