
from left: Daniel Teruggi, Yann Orlarey, Andrew Gerzso

Yann Orlarey

was born in 1959. He is a composer, researcher and scientific director of Grame. While studying economics and computer science at the University of Lyon, Yann Orlarey also attended the electro-acoustic music class at the Conservatory of Saint-Etienne. He has been member of Grame since 1983 and he is currently the scientific director of this institution. His own research is concerned mainly with programming languages for signal processing and music composition, and real-time operating systems. He has designed and implemented, alone or as part of a team, a number of musical systems and programs. He is the designer and main developer of the Faust programming language. His music repertoire includes pieces for tape, live-electronic and ensemble. Most of his works bring in computing techniques, either for the performers' instrumental playing situations or in the compositional process as such. His pieces have been performed in Europe, United States, Canada and China.

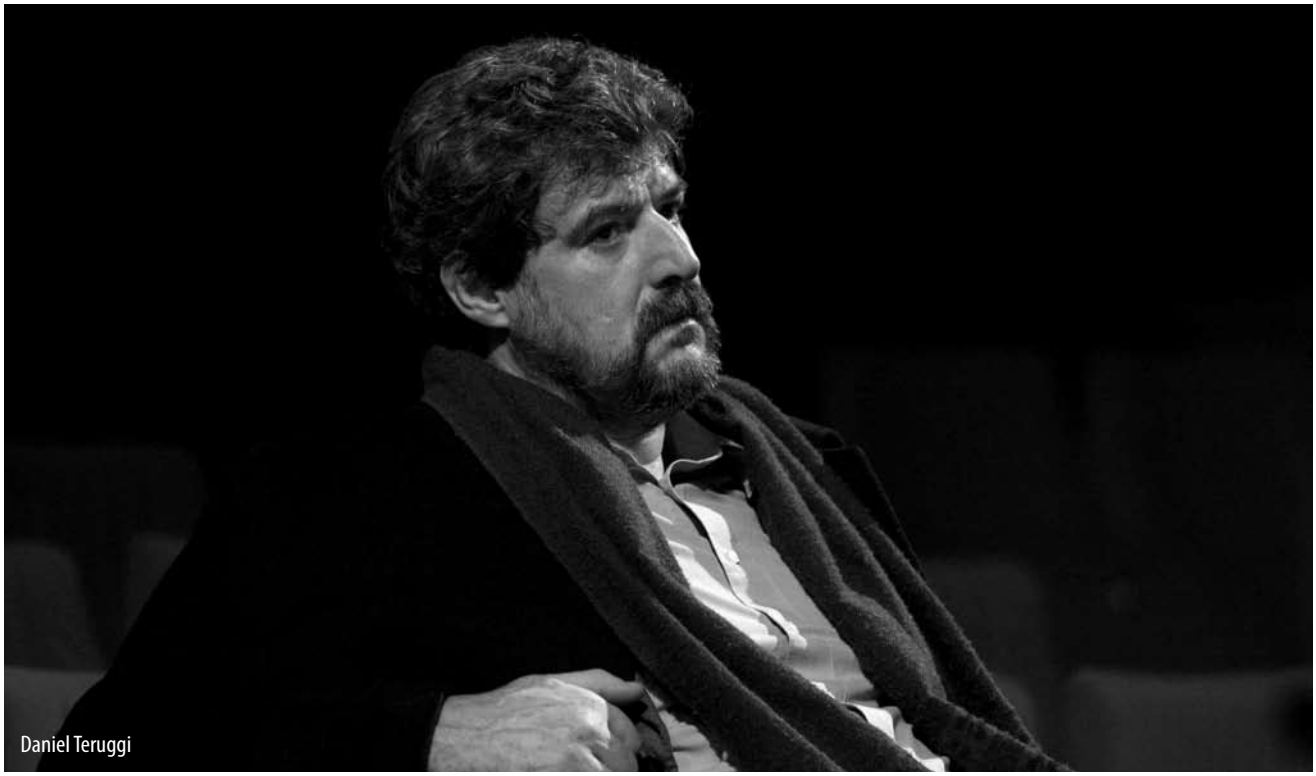
Daniel Teruggi

Born in 1952 in Argentine. He studied physics, composition and piano in Argentina. In 1977 he came to France to study at the Paris Conservatory. In 1981, he began working at INA (National Audiovisual Institute), at the Groupe de Recherches Musicales (GRM). In 1997 he became Director of the Groupe de Recherches Musicales.

Since October 2001 he also directs the Research and Experimentation Department in INA.

He holds a PhD in Art and Technology from Paris VIII University. He teaches Sound and Visual Arts at Paris I Sorbonne University. He is director of a Seminar on new technology applied to Musical analysis at Paris IV University. He has developed an important activity as composer (more than 80 works) and researcher, mainly on the relations between creation and technology and on problems related to sound perception.

In recent years, he has been actively in work on the preservation of audiovisual collections, particularly – of electro-acoustic music, where traditional models of conservation are not effective. He has been the coordinator of the FP6 European project PrestoSpace. Currently he coordinates the FP7 European project PrestoPRIME and participates in the "Europeana" project. He is a founding member of the Electroacoustic Musical Studies network (www.ems-network.org), in charge of an annual conference on electro-acoustic music analysis.



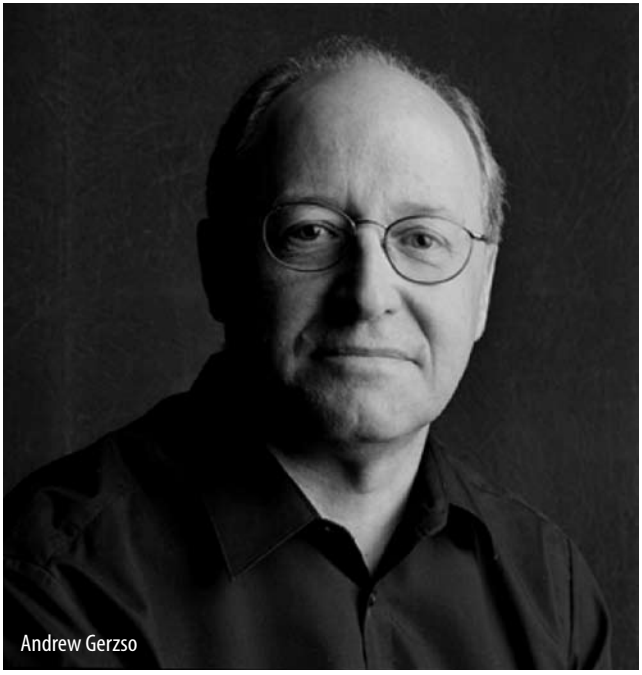
Daniel Teruggi

Andrew Gerzso

Born in Mexico City, he studied flute and composition at the New England Conservatory in Boston, California Institute of the Arts in Los Angeles and the Royal Conservatory in The Hague.

As a member of IRCAM's permanent staff since 1977, he has held a number of positions over the years: researcher, Technical Director, Director of Musical Research, Director of the Production Department, founder and manager of the IRCAM Forum (the institute's software user group), founder of the Pôle Spectacle and Director of the Pedagogical Department. Since 2006, he is director of a new department mediating the interaction between the artistic and scientific sectors of the institute. He has published articles on computer music in journals such as La Recherche, Pour la Science, Scientific American and Leonardo.

Since 1980 he has been a close collaborator of Pierre Boulez at IRCAM (for whom he did the electro-acoustic realization for "Répons" in 1981, "Dialogue de l'Ombre Double" in 1985, "Explosante-fixe" in 1991 and "Anthèmes 2" in 1997) and at the College de France (for the annual seminars until 1995).



Andrew Gerzso

A Thumbnail Story of Live Electronics

Live electronic music has its roots in the first experiments with records by Edgar Varèse in 1936 and John Cage's composition *Imaginary Landscapes* in 1942 for a variable speed record player. Following these and other experiments, two paths opened up very quickly. On the one hand, in the 1950s Pierre Schaeffer and Pierre Henry produced the first works of what was called "musique concrète". In this approach the composer did not create the sounds directly but rather chose existing sounds, both musical and non-musical (noises from everyday life, for example). On the other hand an approach – called "electronic music" – was concerned with creating "pure electronic" sounds directly from electronic devices (using generators, for example) and gave rise to works such as Karlheinz Stockhausen's *Studien I and II.*

In both cases – "concrete" and "electronic" – the sounds were usually transformed (using filters, reverberators etc.) and mixed together to create a composition on tape. These tapes were then "performed" in public by mixing the sounds for diffusion over a large number of loudspeakers. Sometimes the tapes were combined with instruments as in Edgar Varèse's work *Déserts* in 1954 for "musique concrète" and orchestra. Another approach called "electro-acoustic music" emerged which combined both the "pure" and "concrete" sounds, the classic example being the work of Karlheinz Stockhausen, *Gesang der Junglinge* in 1956.

It was during the 1950s and 60s that research in the above areas motivated the creation of the GRM in Paris, the Cologne studio, IRCAM in Paris, CCRMA at Stanford University, CNMAT in Berkeley, GRAME in Lyon, the Bourges studios, the Sonology Institute in Utrecht and many other institutions.

In the 1960s analog synthesizers, based on the ideas developed during the early days of electronic music, were developed in order to meet the needs of musicians who wanted a real time "instrumental" approach to creating electronic sounds. These synthesizers typically offered the musician a collection of modules (sound generators, filters, reverberators etc.) which could be inter-connected ("patched") and controlled in real time using knobs, faders, etc. However, this approach suffered from two drawbacks: lack of precision (in setting an exact frequency, for example) due to the analog technology itself on the one hand, and on the other – the difficulty in changing quickly from one configuration of "patched" modules to another. The latter drawback made it difficult to match the speed with which during a performance one can move from one group of instruments to another in the orchestra, for example.

The arrival of the computer in the 1960s opened up new perspectives. Early computer music languages such a Music V and Music 10 gave composers unprecedented precision and control over the emerging vocabulary of the electronic medium and gave rise to electronic works such as John Chowning's *Stria* in 1977 and electro-acoustic works such as Jonathan Harvey's *Mortuos Plango* in 1980. However, the main problem here came from the production of these works purely on tape because of the inability of the computers at that time to calculate their results in real time.

For those composers – such as Luciano Berio and Pierre Boulez in the early 1980s at IRCAM – who wished to take advantage of the new possibilities of computer music in combination with traditional instruments, tape music had a major drawback in the form of its inflexible temporal nature incompatible with the usual give-and-take one finds in music performance – typically in chamber music. This motivated IRCAM's invention of a series of real time computers leading up to the 4X (created by Giuseppe di Giugno) that was used for the première of *Répons* by Pierre Boulez in 1981. This technology was a major step forward since it proposed a machine which solved the problems related to accuracy and flexibility found in analog synthesizers on the one hand and the inflexibility of tape music on the other.

At first the real time capabilities were used for sound transformation only; but it then became clear that if this new relationship – the performer interacting "live" in real time with the computer – were to be really fruitful, the computer would have to become more "intelligent". Thus automatic "score following" was created which enabled the performer to be synchronized precisely with the electronic part of the piece. Philippe Manoury's piece *Jupiter* in 1987 pioneered this work and paved the way for *Explosante-Fixe* by Pierre Boulez in 1991. The work of Manoury is interesting in another respect since it introduced the practice of real time composition; that is, the capability of generating musical material in real time as a function of the way the score is interpreted by the instrumentalist.

How has live computer music affected the traditional musical practices of composition, interpretation, instrument building and presentation (the form and context in which a work is shown to the public)?

In a very traditional view, which was still more or less valid up to the middle of the twentieth century, the process of composition has evolved from a practice where the composer composed a work and recorded this process indelibly in a score – towards one where the score may vary from one performance to the next physically and/

or virtually, or even cease to exist as such; the "score" becoming more the description of a musical process than anything else. Today computer aided composition allows the composer to "formalize" elements of his musical language and entrust certain aspects of the compositional process to computer programs executed in real time whose result may depend in turn on the musical performance itself (as we saw in the work of Manoury above).

In the past a performer traditionally interpreted a (fixed) score. Today, a performer is confronted with other challenges. He or she may interact sonically and/or gesturally with a computer or other musicians and thus create a real dialog that may be (very) different from one performance to the next.

Next to the physical musical instruments – that embody the important aspects of a mutually agreed upon musical language – virtual instruments (embodied in hardware and software synthesizers) have emerged. The playing of traditional instruments involves two processes: sound generation (coming from the instrument) and its control (via the bow, the fingers, the breath…). The computer music counterparts of these two processes are sound synthesis (through the work on various types of synthesis: additive, granular, formant, physical model) and motion capture for the gestural control in real time. Today, the design and production of computer music instruments evolves at the rate at which computers can be programmed; and they can be played and recombined at any speed that the music may demand.

Another major area of musical practice that has undergone crucial conceptual changes concerns where and in what form music is performed. Traditionally, music was performed in spaces that made many assumptions concerning the acoustics, how the audience was placed, how the instruments were disposed on the stage or in an orchestra pit. Few composers in the past – with the notable exception of Richard Wagner's Bayreuth Festspielhaus – created their own acoustic environment intimately tied with the artistic project, although many adapted in a creative manner to the environment they were obliged to work in. Progress in room acoustics, three dimensional sound systems, commercial formats (stereo, quadraphonic, 5.1), have broken up the traditional model for presenting music. For example, halls are now capable of having variable acoustics and thus adapt to the works that may have a specific acoustical environment in mind. Sound sources can now be placed practically anywhere relative to the listener thus enabling the composer to explore dynamically evolving source/listener relationships, be they positional (horizontal, vertical…) or acoustic (dry and reverberant spaces). High-speed networks enlarge the performance space physically and conceptually, by connecting audiences and players over large distances.

A final point concerning musical practice concerns the order in which they took place. Traditionally, the order was: composition, score production, interpretation and performance – with instrument building evolving in parallel as the musical languages changed in conjunction with the slow evolution of technologies (mastery of the craftsmanship of wood, the technologies of steel…). Today, composition, score generation, interpretation and presentation may interact highly even within a single performance. So the clean distinctions of the past have become blurred. The slow evolution of instruments tied to physical materials has accelerated as the new instruments have become dematerialized and linked with the evolution of computers.

Andrew Gerzso

from left: Yann Orlarey, Andrew Gerzso, Xavier Serra, Daniel Teruggi

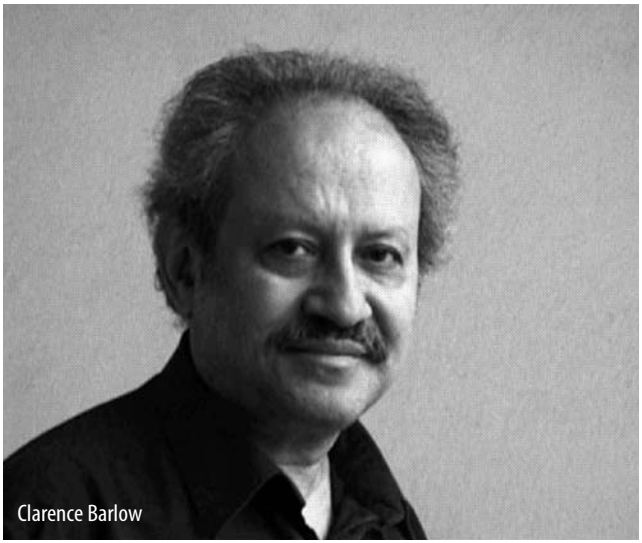
Session 3

Musical Innovation and the Changing Role of Studios and Festivals

- New genres and trends, description of general characteristics
- New arenas and methods for distribution and performances
- Does this development change the role of the studios?
- What is the current role of studios?
- Is the time for large institutions over, as often proposed in the "underground"?
- Festivals, should they be inclusive or have a sharper edge?

Chair: Clarence Barlow
Panelists: Kim Cascone, Jøran Rudi, Lars Petter Hagen

from left: Jøran Rudi, Clarence Barlow, Lars Petter Hagen, Kim Cascone


Clarence Barlow

Clarence Barlow
see page 36

Musical Innovation and the Changing Role of Studios and Festivals

Keynote speech

In this current age, when computer music technology is available to representatives of fields ranging widely from pop music to the avant-garde, it is amazing for us to reflect that only a half-century ago the technology of electronic and computer music was in its infancy and was cultivated by a mere handful of experimenters. In this context, a studio was at that time a necessity, with its expensive sound generators, modulators, recording equipment and possibly large computers containing a few kilobytes of memory, shared by groups of people with common interests. In the meantime computers and their cost have shrunk dramatically, speed and memory have vastly expanded, so that the question may arise as to whether a non-private electronic music studio is at all relevant at the present time.

In order to address this question, I would like to first attempt a brief review of some of the developmental phases that have taken place over the last five decades, and then look at the current situation. While doing so, I will in the interest of brevity be deliberately very general in my comments, not referring to any specific sound technology or person or group of persons; some of the gaps I will fill in later.

After the initial use of machines dedicated to generating one type of sound wave at a time – sine, sawtooth and the like – the first significant change was the introduction of commercially available synthesizers in the 1960s. Earlier attempts had been few, far between and somewhat isolated. By the late 1960s and continuing through the 1970s the price of synthesizers had dropped to a level that permitted private purchase... and pop musicians entered the field. However, these affordable synthesizers had their limitations, not allowing certain types of algorithmic sound generation that only the bigger synthesizers and main-frame computers could. Thus, at least for algorithmic composition, a setup of ambitious electronic music equipment was still a necessity, and one after the other, various institutions in North America and Europe came up with their own studios, each with its own individual constellation of hard- and software.

A curious side-effect of the differences between the studios – particularly the digital ones – is that certain visiting composers wholeheartedly accepted the technology and the technical assistance offered them, a fact often reflected in the aesthetics of the resulting music. Thus schools of electronic music composers came to be, in whose music the technology was reflected. The music of more independent composers, however, did not reveal the place of origin as obviously, because they used the technology in a more neutral, flexible and even untypical way.

Naturally, the more adventurous of this innovative music was appreciated only by specialised audiences, for whom concerts and festivals were organised. On the other hand, pop musicians continued to do what they had always done – play in concert or in the recording studio, now with their synthesizers at hand. In general, the equipment needed in order to play back the electronic sounds suitably well was prohibitive for the private consumer and was therefore limited to studio and concert venues. Some of this music was broadcast, live or in recorded form, long-playing records were released, and the satisfaction of the listener at home depended on the quality of the sound equipment there.
With the introduction of MIDI in the mid-1980s, a vast library of sounds as well as a new breed of synthesizers became affordable and available. It was now common for musicians to generate sounds at home. However the studio was still needed for processing and mixing purposes. And, for those who were not satisfied with the sounds emanating from a MIDI module, there was still the computer, not yet quite affordable, but accessible in studios, in which new techniques continued to be researched, developed, used for making music and presented at conferences.

In the late 1980s and continuing into the 1990s, the first affordable computers began to take their place in households, replete with software for the processing and mixing of sounds. This trend – with computers and software getting faster and cheaper – has continued until the present day. And while concerts and festivals still provide music for the informed listener, recording media quality and home sound equipment have improved enormously and new arenas and venues such as self-produced recordings and the internet have opened up, making almost all kinds of music available to practically everybody who is interested.

So one might ask, why would a studio, why would a concert or a festival be necessary today?

To me it is clear that sound generating and processing equipment (including software) that is too expensive for the private user will always exist. Think of high-speed computers with the largest available internal and external memory. Think of large mixing boards and large numbers of high-quality loudspeakers. Think of specially designed spaces for individualised performance. And there are some dedicated pieces of specialised sound processing and generating hardware that have not yet been emulated on the computer. Furthermore, in addition to providing sophisticated equipment funded by small to large institutions, the studio also brings developers and users together, generating an atmosphere of sociability, mutual inspiration and creation. Over the decades one could observe the constant development of new approaches, techniques and aesthetics, indeed of new genres of electronic music and sonic art, due in no uncertain measure to the collaborative aspect of individual studios and the vision of their leadership. This has played a significant role since the very beginning and there is no reason why this should cease to be. In addition, conferences have been for very long an important venue for the presentation of new developments of studios and the individuals who work in them.

As far as concerts and festivals go, there is and has always been the aspect of social exchange, of the presentation of selected types of music in concentrated form and giving several listeners the opportunity of experiencing performances together, thus furthering the possibilities of discussion and therewith the spread and deepening of knowledge. People who listen on the radio, television and the internet in different households are not likely to come together soon after and discuss what they have heard.

Some people are of the opinion that concerts and festivals should contain more mixed fare, to ease the appreciation of the unusual. While this standpoint may have some validity in a general situation – and such situations abound – there should also be events for the informed, in which different demanding works are presented; at such an event, the knowledgeable listener's mind would place these works into a context of comparison in relation to a larger whole. Not every concert serves the purpose of simple relaxation; some are there also, if not mainly, to inform.

Concerning recorded media, even though one could access a large number of recordings online, there is no guarantee that one would always find a certain piece of music in the internet. This can be ensured by procuring a recording, either as a sound file or on recording media, which can be referred to at any time.

The theses expressed above can lead to the following discussable questions:

1. Why were studios deemed necessary in the past and do the reasons still hold?
2. Why were concerts deemed necessary in the past and do the reasons still hold?
3. Why were lectures deemed necessary in the past and do the reasons still hold?
4. What genres of electronic music have arisen during the past fifty years?
5. What techniques of sound design have arisen during the past fifty years?
6. What venues of distribution have been available during the past fifty years?
7. Does the music of some composers reflect the studio technology used to make it?
8. Does the increased affordability of equipment obviate the need for studios?
9. Does the increased availability of information obviate the need for concerts or lectures?

My own answers to these questions will be presented in the form of charts or verbally.
It is my hope that this brief review provides food for thought and discussion.

Clarence Barlow, University of California, Santa Barbara

Kim Cascone
has long been involved with electronic music: he received his formal training in electronic music at the Berklee College of Music in the early 1970's, and in 1976 continued his studies with Dana McCurdy at the New School in New York City. In the 1980's, after moving to San Francisco and gaining experience as an audio technician, Cascone worked with David Lynch as Assistant Music Editor on both *Twin Peaks* and *Wild at Heart*. Cascone left the film industry in 1991 to concentrate on Silent Records, a label that he founded in 1986, transforming it into the U.S.'s premier electronic music label. At the height of Silent's success, he sold the company in early 1996 to pursue a career as a sound designer and went to work for Thomas Dolby's company Headspace. After a two year stint at Headspace he worked for Staccato Systems as the Director of Content where he oversaw sound design using algorithmic synthesis for video games.
Since 2001 Kim has been touring Europe performing, conducting workshops and lecturing on post-digital aesthetics in sound art. Kim has released more than 30 albums of electronic music since 1984 and has recorded/performed with Merzbow, Keith Rowe, Tony Conrad, Scanner, John Tilbury, and Pauline Oliveros among others. Cascone is the founder of the microsound list which focuses on issues concerning post-digital music and laptop performance (www.microsound.org) and his writing has been published in Computer Music Journal (MIT Press), Artbyte, Contemporary Music Review, Soundcultures, Parachute Journal, Junk Jet and Geometer.

The Electronic Music Studio

- Has the physical 'studio' become irrelevant due to its displacement into the digital domain?

"the medium is no longer the message, the tool has become the message."
– Kim Cascone

Historical Context

- Electronic music studios were run by institutions (universities or state owned radio studios)
- Restrictions to access and usage
- Bureaucratic hierarchies
- Cult of personality

Attracted composers from academic sources
Existed in a social/cultural network
No direct connection between creation & publication

Laptop

Definition of 'laptop' = portable computer containing the software needed to produce a sonic artifact

Then & Now

Composer & instrument – (hear/compose ideas)
Manuscript – (editing/storage)
Instrumentalist – (performance)

Composer & laptop – (hear/compose ideas)
Laptop – (editing/storage)
Laptop – (performance)
Laptop/Internet – (publication/broadcast)

What is a studio?

Where creative work is performed

Workshop, laboratory, atelier, study
Photographers, dancers, painters, writers, instrumentalists,

Composers studio: piano, manuscript paper, pencils and (most importantly) erasers

Electronic Music Studio 1960

Workflow:
idea → audience/marketplace
Complex chain → assembly line → division of labor
Mode: process oriented

Electronic Music Studio 2010

Workflow:
Idea → audience/marketplace
Laptop → Internet
Simple chain in virtual space → no assembly line
→ no division of labor
Mode: achievement/result oriented

Compositional time

Compositional time → real-time

We are in an age of 'publish-then-filter' cultural production

Spacebar Music

Achievement: Laptop → Artifact
trumps
Process: Workflow → Studio
'Created a space where ideas could mingle swap and create new forms'
- *Separation* between creation and performance fosters a process oriented workflow
- *Removal* of barrier between creation and performance fosters an achievement oriented workflow because creation tends to occur in near real-time

Think Outside the Box

Workflow takes place primarily inside the laptop
Recent discussion about the effect computers and Internet are having on our ability for deeper undistracted and concentrated thinking
'The Shallows' by Nicholas Carr
Less division between tool and workflow

Studio | Stage

Laptop has removed the barrier between stage and studio
Blur of stage and studio workflow
Effects of the tool on the user
Real-time composition relies on improvisational skills in both environments

Software → Soundcloud in 15 minutes

Watched a software demo where a short downtempo piece was created in real-time

This phrase 'real-time' was repeatedly used as a buzzword throughout the demo

i.e. 'the tool didn't get in the way of creation'
<Read Jean-Claude's text here>

Back to the Future

Innovation requires building on the past
not mimicking what's found in the present

'I keep telling them: read, read, read, read, read. If you do not read, you will not become a great filmmaker.' -- Werner Herzog – interview: Planet-Mag.com

Post digital era calls for a redistribution of workflow
Redirect a portion from virtual space back into meat space
Computer acts as a node in a network but not the entire network
Laptop as oven, preparation and creation happens before food is cooked not while it is being cooked

Studio

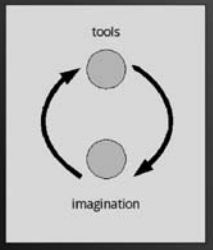
Back to the Future

Software companies move into hardware:
Controller surfaces i.e. mixing desks for Pro Tools systems, Lemur, monome, Tenori-On, iPad etc.
A new surge of interest in analog modular synthesizers
Studios are becoming more like electronic music studios in the 60/70's again

Digital media centers

Early 2000's I visited a couple of digital media centers
Example: MaMa/Zagreb
http://materialism.mi2.hr/mama
MoMa a FOSS repository, media culture reading library, lecture/workshop space, desktop computers on Internet, DJ booth, and a volunteer staff willing to share their knowledge with others

We shape the tools then they shape us



The post-digital studio

Update and expand the concept of a studio
Use MaMa/Zagreb as a possible model
Where education is put in front of creative consumption
Attention to structure and planning
Less reliance on improvised structures that are arrived at 'by ear'

Point Shoot Leave

Photographer friend says he spends much less time composing shots with a digital camera vs a 35mm

commercial work needs pushbutton results

Some good sources

'Teaching in the Digital Age' – Dr. George Eastman

http://www.berklee.edu/bt/131/teaching.html?action=print

'Cognitive Surplus' – Clay Shirkey

'Composing in Real-time?' – Jean-Claude Risset

Contemporary Music Review – Volume 18/Part 3

'Liveness' – Philip Auslander

'A Brief Morphology of Electric Sound' – Dick Raaijmakers

'The Postdigital Membrane' – Robert Pepperell & Michael Punt

Consumption

The real problem is not technology
But how we consume it
passive consumers (tv) → creative consumers (or passive producers) who need to consume in order to produce
Most electronic music has become a logo or advertisement jingle for a technology

Grand Wrap up

"Creating new circuits in art means creating them in the brain."
– Gilles Deleuze

Corollary

Desktop publishing of the late 80's ushered in the DIY newsletter/party announcement
filled with clip art, banners and dingbats
designed by people who simply used templates and examples from friends and peers
(sort of like this Powerpoint presentation!)

Jøran Rudi
has been working with music technology since he stopped playing in bands in 1981, first in a personal, analog studio that was built from simpler tools such as synthesizers and multi-track tape machines. After the advent of digitalization, the studio included MIDI-gear, and finally digital sound processing tools as they started to become available during the late eighties and early nineties. His formal education is from New York University, and he returned to Europe in 1990.

NOTAM
was established in 1992-3, at the very tail end of the period when studios were necessary collections of resources. Fast computers were still too expensive for mass private purchase, the WWW was in its infancy, and in Norway, MIDI and digital sound processing was practically unknown throughout the country. Rudi, until late fall 2009, was responsible for building a national centre for music technology in Norway, and for adapting it to the changing art scene. NOTAM has been supporting composers, musicians, artists, academics and students from all over Norway – and internationally – since the beginning of 1994.

Are Studios Still Relevant for Musical Innovation?

This text was originally presented at the Symposium *"Electronics meets challenges of the 21st century"*, produced by the Polish Music Information Centre and NOTAM during the Warsaw Autumn Festival 2010. The text is a position paper, and concerns itself with the new challenges that face traditional institutions such as electronic music studios in the age when cheap and affordable music technology and the Internet have changed both the face of the music and its social contexts. These institutions still have important social functions, especially in those areas of artistic and technical development where the liberalized economy is unable or unwilling to reach.

Introduction

In his chapter elsewhere in this book, Clarence Barlow reflects on the development of technology and the current situation, briefly described as consisting of a wide array of new genres and expressions, with a base in cheap technology and broad distribution possibilities through the Internet. This situation is seen to have largely eroded the studios' functions as centers for expertise, expensive technology, and musical experimentation and innovation.

It is clear that the changes in music technology and the use of it have had direct consequences for how the studios can operate and hope to function, and for the social roles of music and sonic arts in our societies. Our species has produced technology in order to change its life conditions – to live safely and comfortably, to expand its reach and horizon across time and space, to create tools for expressing itself creatively by means other than its physical bodies and in its physical locations and situations. We have expanded our reach. We have, to sum up the greatest achievements in music technology, invented:

- notation, which created the foundation for a musical canon, projected across time and space;
- electrical representation of sound, which allowed telegraph and (live) radio transmissions. In modern musical terms we can think of it as the difference between MIDI (only control signals) and DSP (digital signal processing on the sound itself);
- recording technology, allowing users to work with sound independently of time and place;
- electronic sound, generation of artificially created sound, and processing of all sounds;
- digitalization, with its possibilities for new types of sound processing of any particular instant, direct couplings of data between different disciplines, and complex human interaction with sound.

A long deceased composer once said that he liked to think of culture as a collection of symbols that helps us understand one another, and – I might add – perhaps also ourselves. What he must have meant was that actions and objects also point to things beyond themselves; something that connects them with our experiences in a comprehensive manner. What does the current use of music technology point to?

New material, expansion of the music

At the core of innovation in the arts is art's production of new thoughts and new reflections. This does not happen in a vacuum; art develops in the contemporary situation, it relates to it, and the expansion of what is considered to be relevant material reflects our changing reality. The development is often one of implied critique and opposition, where new development springs forth as a critique of past practices, but still its character depends on the same past. At the core of this process is *appropriation*. Appropriation of material means that listeners posit new material as relevant for aesthetic consideration. Physical noise was for example a demanding concept when the futurists developed their ideas of noise music, Pierre Schaeffer allowed any sound to be considered as an object for musical use, whereas John Cage

introduced silence as a container for reflection on salience, and also expanded Edgar Varèse's definition of music as 'organized sound' to include listening to any environment as it is – if that is at all possible. Murray Schafer and others have continued this development into what we currently know as soundscape composition, where we find music in every situation, if we listen holistically to how the sounds connect and interact, and what they refer to. Also in visual arts, referentiality has been crucial in the sound art strand since the genre's beginnings in the 70s. In addition to *noise music*, we should also consider *turntablism* and *mashup*, where existing works are reduced to raw material in more dramatic ways than remixes typically do. The notion of music is continually expanding.

In this development, the studios have been important centers for technical and aesthetical expertise, availability of hardware, software and production facilities – essential for supporting and nourishing innovation in the arts. And some studios have left a significant imprint on the aesthetics of the composers – one can in many instances hear *where* the composers have been working, and on which equipment. However, this tendency is no longer so pronounced, except in the few instances where spatialization is tied to specialized performance spaces that are only found in certain institutions.

Expansion of studios

The contemporary situation in music as a whole is first and foremost characterized by a huge domination of popular culture, and a widespread competence in dealing with digital tools for sound and image. Everybody can do it, and the platforms are many, cheap and easy to use. We can see a fascination with technology, radically different from the skepticism towards technology which was typical of the 1970s.

Most of the music we hear is mediated through technology; music technology is completely integrated in how we live with music – and with that, a level of abstraction and sense of representation is currently more of a norm rather than an exception. We have seen a development from synthesis to signal processing, from non-real-time work to real-time work, from a situation dominated by music from fixed media to a situation dominated by interactive expressions.

Technology is also a precondition for the staging of "new" materials such as noise and field recordings, and as an extension of time and space, it produces new thoughts and ideas. Electronic music has become the new folk music, globalized as well as tribalized.

With the ascent of social media as a hugely important arena for personal networking, digital technology has become crucial for how we develop and consider many aspects of our relationships to other people, instrumentalized as *networks*.

There can be no doubt that the cost/yield ratio in technology and the development of social media has had democratizing effects, facilitating broad participation, and thus social consequences. However, what has been called the 'cult of the amateur', roughly described as the belief that user-generated content has equal or even superior value as compared to that of professionals, places challenges on both studios and festivals. Some of the functions of studios have changed, and the studio no longer represents the only authority on what quality is, and consequently it needs to balance technical and aesthetical competence, as well as knowledge of tradition and craft with the non-hierarchical demands for participation of the new user-groups.

Circuit bending is an example of a relatively new artistic practice. On one side, it is aesthetically in keeping with artistic traditions such as *arte povera* and *punk music*, with more than a strong undertone of political opposition to the established genres that have enjoyed institutional support. These are good impulses ideologically, and on the technical side, exploration of unknown possibilities hidden in current commodities is tempting. On the other hand, it is quite a different task to design and make electronic equipment to realize a specific artistic idea, and most benders are incapable of that, while the studios often have electrical engineering competence on staff. The studio plays a role in both ends, by giving visibility and support to the new genre of circuit bending, and by keeping the necessary expertise in building electronics.

Maintaining a tradition is best done by changing it. This is easy to write, but somewhat more difficult to realize, because the tradition of electro-acoustic music itself is under pressure. But the studios are *tools* for support of the arts, not *goals* in themselves, and since the studios' areas of responsibility are expanding, rather than contracting – it is no longer sufficient to carve out a niche and sustain a tradition in a landscape

mainly populated by instrumental music; the task is to support a much wider array of aesthetic expressions than was the case only fifteen years ago. We are in a situation where the studios do not 'lead from the front', but where they need to be clear and flexible resources *within* the musical development. This is a renegotiation of the studios' traditional positions in the societies that nourish them.

Important tasks

The following is a summarized list of important tasks that studios can solve:

General functions:
- maintain professional standards and knowledge in the era of the cult of the amateur,
- retain the function of supporting art beyond what commercial enterprise does,
- support new generations of composers and artists following their education.

Artistic function:
- centers for artistic research beyond the focus of individual artists,
- sustain non-trivial use of music technology (which in itself has become very trivial),
- support new genres and experiments that cannot find commercial or academic support,
- hubs for musical innovation.

Equipment:
- maintain good studios and listening conditions, out of reach for most sonic artists,
- maintain and develop broad technical competence in both hard- and software – the bar is constantly being raised above what is normally accessible for anyone.

Research and development:
- hubs for reflection and understanding – theoretical, artistic and technical research,
- hubs for critical discussions of both tradition and contemporary development,
- hubs for competence and expertise, employed or freelance, non-employed,

from left: Jøran Rudi, Clarence Barlow

- hubs for technical innovation, synthesizing from broad experience,
- support and initiatives for larger projects that go beyond a specific piece of music,
- provide research and development, especially where academia is uninterested.

Important challenges
- how to defend the obvious needs for public service in a liberalized art situation, where the idea of a society as a common responsibility from – and for – everyone is eroding;
- how to develop a broad interest in new aesthetical developments among the public; artists and user groups are changing quickly;
- how to interpret and mediate tradition and reflection without stagnation and petrification;
- how to develop and maintain a recognizable studio profile with a constant focus on change;
- how to develop staff that can remain relevant over time, in pace with these changes.

It seems that research and development, and constant artistic re-orientation are the most important areas for a studio to focus on. Sustaining past tendencies will have to be less important.

Jøran Rudi, September 2010


Lars Petter Hagen

Lars Petter Hagen
born in 1975, studied composition at the Norwegian State Academy of Music. His list of works includes instrumental and electro-acoustic music as well as sound installations and music for stage and film.
Hagen's music has been presented at such events as the Donaueschinger Musiktage, Maerzmusik, Gaudeamus Music Week, Huddersfield Contemporary Music Festival and the Ultima festival. His commissions include pieces for SWR Symphony Orchestra, Ensemble Modern, Neue Vocalsolisten Stuttgart and Oslo Philharmonic Orchestra.
Hagen has been the artistic director of Ultima Oslo Contemporary Music Festival, Nordic Music Days and the Norwegian Section of ISCM.

Comments on Clarence Barlow's paper 'Musical Innovation and the Changing Role of Studios and Festivals'

For me it is, in one way, quite simple: musical innovation is dependent on change, which means that accepting change as a permanent situation is therefore a necessity for anyone dealing with contemporary music. To me, as a festival director and composer, the most interesting consequence of the technological development that Clarence Barlow has shown us in his paper, is that the power structures within the music business are changing. And the biggest revolution is that the definition of quality is becoming more democratic. Suddenly it has become extremely clear that one cannot discuss quality without also discussing context.

The practical consequence of this is that the hegemony of late modernism in international contemporary music is over. At the same time large music institutions, whether it be opera houses or copyright bureaus, are challenged by the underground. These are interesting times – because it is hard to grasp the situation in its entirety. It is

important to stress that this does not mean that the time for large institutions is over, or that late modernist music is no longer written. It simply means that the situation is more chaotic and dynamic and that we have to relate to a much greater extent to parallel musical universes. We do not have to like it, but on the other hand, we cannot pretend that everything is still the way it used to be.

I like to call this a *modulation* in power (I prefer modulation to revolution). A lot of people feel threatened by this modulation in power influence, with good reasons, and there are also problematic aspects of this development. But a situation as open as this also contains fantastic possibilities. And it is up to us to explore them.

This year the topic for the Ultima festival was *Craftsmanship* and one of the directions we explored was the Do It Yourself (DIY) aesthetic that has been going on for quite a while in the art music field. As musicians, we talk often and gladly about craftsmanship, whether it refers to the number of rehearsal hours or studies in counterpoint. But in the complex musical reality of contemporary music today, the concept of craftsmanship has various meanings in different aesthetic paradigms.
The DIY attitude in music is often linked to punk and other sub-cultural forms of expression, and to art movements such as Futurism, Dadaism and Fluxus. At the moment, it looks as if this attitude is finding its way back into the traditionally more academic field of contemporary music, maybe as a result of technological developments freeing the production and distribution of music from institutional and/or commercial middlemen and opening up the definition of quality in an interesting way.

It is now very clear that the term contemporary music is as diverse as contemporary art or contemporary theatre. Contemporary music is not about style or technique or format. For me it is about attitude, critical investigation. It is about challenging tradition and challenging convention so that music can develop even further. One of Mr. Barlow's interesting questions was: "Why were concerts deemed necessary in the past and do the reasons still hold?" It is existential, isn't it? The subtext is huge, because the underlying question is: why do we need art? Which is complicated (though highly interesting).

My honest answer would be that I do not think the reasons why we need concerts have changed significantly in comparison with the past. And that is why it is so important that we continue to move and do not get self-contented and lazy in the generally comfortable contemporary music environment. We know this as composers: If you say the same as someone else did 100 years ago, it does not mean the same today. History and context add meaning. If you want to tell someone that you love them in a sincere way, you need to avoid the worst clichés, because if you unaware of them, the context will change your message – and it will get very embarrassing. 100 years ago atonality in itself was considered critical and challenging. Today it is not. So we have to continue to develop, and since we do not know what the future will bring, it is crucial to be extremely open.

I consider my main task as a director of the Ultima festival, to showcase the diversity in the work of today's musicians and composers, simply because it is the sum of their artistic practises that defines and constantly re-defines the term "contemporary music". An interesting development is that more and more composers and musicians tend to do work that is site- and media-specific. The moment everything seems possible in terms of technology, institutional infrastructure and the level of performers, composers begin to seek limitation elsewhere.

A festival is a limitation. It is a context, a format, an arena for investigation and discourse. It is about establishing and breaking rules and therefore it is crucial to be very clear about what the festival's curatorial practise is. I provide a framework and develop the festival in collaboration with the artists. Nowadays the artist could be described as *rhizomatic* – a web or chain of cultural producers crisscrossing countries and continents, intersecting with, affecting, and influencing one another. Deleuze and Guattari, anticipating these developments thirty years ago, wrote: "any point of a rhizome can be connected to anything other and must be".

Lars Petter Hagen

from left: Lars Petter Hagen, Kim Cascone

Session 4

Electronics in Music Education

- What might be the role, importance and potential of the electro-acoustic music/technique in the training of the sound/music sensitivity?
- Which computer programs are the best for music education?
- What might be the role of the Internet in music education?
- Electro-acoustics in music school
- What educational experiences could you share with other teachers?

Chair: Krzysztof Knittel
Panel: Jadwiga Radkiewicz, Andrea Cohen, Andrei Smirnov, Marek Chołoniewski

THE SOUNDSON PROGRAMME

Andrea Cohen

Wiska Radkiewicz

from left: Marek Chołoniewski, Andrei Smirnov, Krzysztof Knittel, Andrea Cohen, Jadwiga Radkiewicz

Krzysztof Knittel
see page 12

Electronics in Music Education Keynote speech

I teach electro-acoustic composition in the Academy of Music in Łódź, where my subject is obligatory only for students of composition. For students majoring in other subjects – music theory, eurhythmics, artistic education, and instrument playing – my classes are facultative, which means that students may but need not attend them. Still, my impression is that, since these are the only practical classes related to composition available to these future music teachers or soloists and members of symphony orchestras, these classes should be compulsory for all of them. Creating music by means of computer music programs is an excellent introduction to every job connected with making and teaching music, as also are the vocal and instrumental improvisation workshops. The opportunity to have direct contact with sound and all the problems related to shaping musical structure, the choice of sound colours, and even the performance itself which appear in the process of recording materials for an electroacoustic composition, as well to familiarise themselves with different technological solutions available to those producing works in a computer studio – all this is a unique experience and chance for students who receive an otherwise traditional musical education.

Music schools and academies in Poland, just as in many other European countries, teach music history, interpretation of historical works as well as mastery of performance, but do not pay enough attention to creativity and to contemporary aesthetic and artistic issues facing everyone who starts any kind of compositional work, also in the field of electroacoustic music. At rehearsals with orchestral musicians I have repeatedly observed that their understanding of the canons of the beauty of instrumental sound is limited to those kinds of sounds that appear during the performance of classical works from a past, in most cases many centuries removed from our time. The experimental sound techniques of Helmut Lachenmann are greeted by traditionally educated musicians with reserve, if not reluctantly. In the world, there are excellent ensembles or even symphony orchestras that specialise in the performance of new music, and yet it does not change the fact that for most orchestral musicians new music and the search for new sound colours and solutions expanding their knowledge and interpretative possibilities are completely outside their sphere of interest.

What can change this attitude and motivate them to explore sound colours, new performance techniques, what can release their imagination and creative drive? First of all, what we need in schools, not only in musical education, are creative classes involving a creative experiment. Composing in a computer studio yields very good results in this context, as also do all kinds of creative workshops teaching various types of improvisation. Techniques of improvisation are a subject which, with very few exceptions, is virtually absent from school curricula. When I say improvisation, I am thinking primarily about instrumental or vocal music, but this absence is even more obvious in the case of electronic music, computers, interactive systems, sound synthesis controlled by acoustic instruments, experiments with sound transformation, etc. Electronic education needs not only to be talked about, but actually practised by music teachers sought out for this purpose. This and related problems will be discussed during our panel on the place of electronics in school education.

Andrea Cohen and Jadwiga Radkiewicz, working in the British Institute of Creative Technologies in Montfort University, are the authors of the internet project SOUNDSON, designed for students without any musical background interested in composing their own works out of the sounds of their environment and in exchanging their compositions with students from other schools and places in Europe.

Marek Chołoniewski directs and lectures in the Electro-acoustic Music Studio of the Academy of Music in Kraków. He also teaches numerous artistic workshops for music amateurs interested in developing their abilities in the field of computer music. Some of the programs he presents can be used even by persons with merely a basic musical education who are enthusiastic about developing their own artistic ideas by means of computer music technologies.

Andrei Smirnov, Professor of the Pyotr Tchaikovsky Conservatory in Moscow, runs a computer studio and the Theremin Institute in that school. For many years he has collaborated with young talented Russian musicians, with whom he has started, among others, an ensemble of computer improvisers called Moscow Laptop Cyber Orchestra.
One more general remark: most of the projects and artistic methods that we are going to talk about during our panel on education do not even require the knowledge of music notation or the ability to play any of the traditional music instruments. We hope that these projects and methods will be of interest to the teachers of the subject called "music" in general education systems as well as – or perhaps first and foremost – to persons whose aim is to create their own unique musical projects.

Krzysztof Knittel, Ph.D., Director of the Computer Music Studio in the Academy of Music in Łódź


Jadwiga Radkiewicz

Jadwiga Radkiewicz

Ph.D., is an Associate Researcher at the Institute of Creative Technologies, De Montfort University, Leicester, UK, as well as an electronic music composer, sound and video artist. She received training at the Music Academy of Warsaw, Poland (music theory), at the University of Paris-Sorbonne (musicology), at the Groupe de Recherches Musicales – Conservatory of Paris (electronic music composition), at the City University of New York (computer music composition), and at Princeton University, where she obtained a doctoral degree in music composition.

Her interests range from musical improvisation, electronic composition and music pedagogy to radio and video work. In her recent video works and poetic texts she has been exploring both the relationships between sounds and images and the possibility of creating audio-visual works perceived as compositions rather than narrative films. In parallel she has been pursuing, from the time of her studies at the GRM in Paris, her interests in developing new musical pedagogy based on the early involvement of students in creating music. In 2000 she and Dr. Andrea Cohen created an original educational program SOUNDSON supported by an organization Tempo Primo based in Paris and the Institute Of Creative Technologies, De Montfort University, Leicester, UK. The Soundson program is a web-based environment in which composers or amateurs / students living in different countries jointly create a sound composition through an ongoing exchange of sounds recorded by the participants. For the last ten years the Soundson program has been brought to many schools and universities throughout Europe, North and Latin America. Dr. Radkiewicz lives and works in Roosevelt, New Jersey, USA.


Andrea Cohen

Andrea Cohen
is a performing artist, sound artist, composer and radio producer. Born in Argentina, she has been living in Paris since 1974. She is the author and performer of several musical theater works in which musical and theatrical elements are integrated into a personal, multidisciplinary language. She has also composed incidental music for the theater, video, the radio and an opera: *Fois il était une deux trois*, played by children
Her project *Figures d'accompagnement* won an Award of the Societé civile des auteurs multimedia (S.C.A.M) in 1991, and the series *Variations sur tristes tropiques* was selected by the Arles Festival in 2003. In 2005 she was awarded a doctorate by the University of Paris-Sorbonne, where she successfully defended her thesis entitled "Composers and Radio Art".
Andrea Cohen has been a creator of many radiophonic programs and experimental radio pieces for France Culture, RADIO FRANCE since 1985. Since 2007 she is Associate Researcher of the IOCT (Institute of Creative Technologies) at De Monfort University, Leicester, UK.

The Soundson Programme: New Tools for New Musical Education

Introduction
The Internet is a network, an environment of long-distance instantaneous communications or exchanges. Among the broad spectrum of users, it is mostly a network used for textual exchanges, also photographs and video materials are often sent, but rarely sounds. Of course, musicians and sound artists use it widely, and there are a number of initiatives that popularize recording and sound transfer, but there are no initiatives, to our knowledge, that introduce the concept of collective composition online in a process of sound exchange into musical education. The Soundson programme we created in 2000 is such an initiative.

Soundson is an experimental "art-in-education" music programme which uses technology to implement new musical composition concepts while exploring the notion of learning through international exchange. An objective of this programme is to integrate multicultural elements in musical, environmental, and technological education within the same project.

The programme creates a platform for communication between people of different languages by sounds only, without dialogue or image. It consists of the transfer of sounds via the Internet between groups from different countries. Participants create a collaborative composition using the environmental sounds previously recorded and then exchanged. The interdisciplinary nature of the programme rests in four areas: music, computing, intercultural exchanges and environment. The musical activity consists of collecting different sound materials and combining them into a composition in a process of exchange. Doing so, students become aware of their own sound environment while discovering new aspects of a foreign culture through "sound dialogue". The participants learn sound recording and sound processing, using technology as both the support and the tool for creative activities. Pedagogical objectives of the Soundson programme are diverse: the students develop sensitivity towards the world of sounds that surrounds them, they also develop their listening skills and musical imagination; they acquire cooperative mechanisms and greater curiosity for other cultures and places, and finally, they build critical thinking skills and forge personal tastes.

The idea of creating the Soundson programme came to us from our personal experience. Our friendship goes back to the years when we both, Andrea Cohen and myself, lived in Paris. When I moved to the USA we started to record a lot of sounds, ones that would depict our respective environments and ones that would convey the events of our respective lives: trips, family gatherings, every-day routine, etc. There was no Internet then, so we were exchanging the cassettes or minidisks by mail, like letters. The exchange was cumbersome and slow, so we have gradually accumulated a lot of recordings, a sort of personal archives. When the Internet became available we have continued the exchange using the FTP systems (file transfer program) and our correspondence-by-sound grew livelier. We decided to compose together – always in a process of exchange – a sound composition comprising all these materials accumulated and exchanged over the years. That is how "A deux voix moments" came to being. We were at

the time both involved in musical pedagogy and we came up with the idea that students of all ages and living in different countries could be introduced to musical composition in a similar process. We have called this process Soundson (sound in English and son in French). The key components of the new project are: collaborative composition, group work and international exchange.

Besides this anecdotal circumstance in which a music education model with a strong socio-cultural agenda was created, the idea was also inspired by research in human sciences (pedagogy, psychology, philosophy, etc.) that strongly supports interaction as a crucial component of learning and creative processes. I will mention only very briefly three 19th century-born thinkers that left a mark on our research:

Lev Vygodsky (1896-1934), a Russian psychologist, who saw learning as a social activity as much as an individual one. He found that what students can achieve at certain age under guidance, in collaboration and in groups, they can achieve independently only a few years later (Interaction between Learning and Development in Mind in Society).
"Learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in this environment and in cooperation with his peers." (Mind in Society, Cambridge: Harvard University Press, 1978)

Mikhail Bakhtin (1895-1975), a Russian philosopher and literary critic who saw every expression (textual, verbal or artistic) as dynamic and in a constant dialogue with, or as a reverberation of other expressions (Speech Genres and Other Late Essays and The Dialogic Imagination).
"In the realm of culture, outsideness is the most powerful factor in understanding. It is only in the eyes of other culture that foreign culture reveals itself fully and profoundly. We raise new questions for a foreign culture, ones that it did not raise itself, we seek answers to our own questions in it; and the foreign culture responds to us by revealing to us its new aspects and new semantic depths." (Speech Genres and Other Late Essays, Austin: University of Texas Press, 1986)

Martin Buber (1878-1965), an Austrian-born Jewish philosopher best known for his philosophy of dialogue. In I and Thou, Buber introduced his thesis of dialogical existence.
"All actual life is encounter. […] Before the immediacy of the relationship everything mediated becomes negligible […] Relation is reciprocity […] Our students teach us, our works form us. How are we educated by children, by animals! Inscrutably involved, we live in the current of universal reciprocity." (I and Thou, New York: Scriber, 2000)

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from left: Marek Chołoniewski, Andrei Smirnov, Krzysztof Knittel, Andrea Cohen, Jadwiga Radkiewicz


"Soundson" programme working group and audience


"Soundson" programme working group

Sound Materials in the Soundson Programme

One of the objectives of the Soundson programme is to document everyday life of the participants through recorded sounds. For the purpose of the programme we use mainly two different types of sounds to be recorded and exchanged: sounds of the environment of the participants and vocal sounds in which each language appears. The reason for choosing these two types of sounds is that the students are surrounded with them on a daily basis. These recordings express important aspects of the respective cultures of the participants because they represent places where the participants live or they contain words of their language. Yet, in our programme, the sounds are heard not only for what they represent but also for their sonic and musical qualities.

One can listen to environmental sounds as musical materials focusing on their textures, timbres or shapes. The musicality of

the vocal sounds comes from the language itself, and particularly when it is not understood. Since the groups don't understand their respective languages, the words of each one become musical sounds to the others and can be listen to for their melody, rhythm and timbre.

Soundscape

We apply the concept of soundscape to the environmental sounds. This English word created by Murray Schafer is a neologism, a conjunction of two words: sound and landscape. The author developed the notion of "soundscape" as a field of general acoustic study and analyzed the sonic environment from an acoustic, symbolic and musical point of view but the ecological approach prevails. In fact, Murray Schafer wants to establish the bases for a new discipline that he calls the acoustic ecology, whose aim is to study the soundscape in order to enhance sound environment. In his work he denounces the sound pollution that occurs when we become unaware of noise. Schafer establishes a difference between the notion of "sound object" (defined by Pierre Schaeffer[1]) and what he calls "sound event" which is «the smallest self-contained particle of a soundscape» (Murray Schafer, 1977). Those two notions differ, according to Schafer, because the sound object is an abstract acoustical object, while the sound event is a symbolic, semantic or structural object. In our pedagogy we approach the concept of soundscape mostly from a musical perspective. In a process of composing sound pieces we use recorded environmental sounds as "found objects" (objets trouvés) in same the way as Schafer defines sound event.

Human Voice

The recorded voice is a very special sound since human voice implies human presence. For Luciano Berio "the voice always means something; it returns to something other than itself and creates a wide range of associations; cultural, musical, everyday, emotional, psychological" (Berio, 1983). When composing with vocal sounds, one establishes dialectics between meaning and sound, between the semantic content of a word and the sound of the voice telling a word.

In the Soundson programme students use language as sound (idioms, little poems, songs, riddles, tong twister, etc), as well as non-verbal utterances (exclamations, onomatopoeias). Whether the students compose with the vocal sounds or with the soundscape, they are facing the polysemy of the sound: a sound can be a musical, a narrative or a poetic element with all the possible combinations depending on the way it is used within a sound piece.

Recording of Sound Materials

In the first phase of the programme, we ask students to record the sounds surrounding them. The stage of recording is very important from the pedagogical point of view because students need to develop a different way of listening to the world around them. At this stage, the objective is to develop sensitive listening skills, which leads to hearing environmental sounds differently: as special sounds to be captured. So, by finding sounds to be recorded by the microphone (the link between us and the sound world), the students alter their perception of the environment: they must listen with new ears. As a consequence of recording one can notice the details of a captured sound, otherwise not audible to our ears. Through this focussed listening to the immediate sound world that is often unnoticed, the activity of recording sounds develops a higher acoustic awareness.

We teach students basic recording techniques; for example, we point out that the captured sound will vary depending on the distance between the microphone and the source, thus we can hear a sound in a close up, far away or in between. We also discuss with the students two types of recording: recording of sounds as found objects (soundscape) and recording of sounds produced deliberately in front of a microphone (mostly vocal sounds). Each type of recording requires a different attitude and technique: the latter implies discovery, the former invention. Finally, because a recorded sound can be stored and reproduced, it can become a material for a sound composition.

Dr. Andrea Cohen

The Internet as a Tool for Exchange, Exchange as a Tool for Learning and Composing

In all phases of the Soundson programme (sound recording, sound exchange, composing in a process of exchange) students work in connection with each other. Interaction between the students is a building block of the programme. In its course students experience two levels of interaction: they work in groups in their classrooms and they create a single composition in a collaborative long-distance exchange between the groups. The latter requires the use of the Internet.

[1] According to Pierre Schaeffer, the notion of sound object is not based on the intrinsic qualities of the sound but on a listening attitude. In his view, the act of listening has to be turned toward the sound itself. In this situation we go beyond sound references and values; they are forgotten, renewed for the benefit of a single perception, an unusual, but irrefutable perception: we neglect the source and the meaning and perceive the sound object.

In order to keep the Soundson programme as accessible as possible to the widest array of schools, we use the Internet in its simplest form without a custom designed interface. For file exchange we use an interactive page that functions as a mailbox to upload and download the sounds and compositions. Our goal is to utilize technology for building a social interface, which in turn will serve as a tool for creative activities. We hope that our approach will challenge the students' habits of passively interacting with the computer. We also hope to challenge the overload of information experienced by most online users by proposing a focused activity requiring attention and imagination.

Over the years of conducting Soundson activities we have observed several outcomes in the domain of group work, sound exchange and collective composition.

Working in Groups

Traditionally we have thought of learning as an activity of an individual mind. In a group learning takes place at the level of the group and at the individual level. By being involved in a joint activity, students learn from each other. They also learn how to collaborate by negotiating differences between the participants, and in this process they notice that these differences might eventually constitute a creative power of the group. Working in groups turns out to be beneficial for some students that otherwise would be too shy or too uncertain of themselves to participate. Group work creates a more equal interaction and it provides theses students with a support system.

Groups are creative by merging ideas from individual perspectives. All learning is fundamentally social: language or music are never private, they are situated in society, culture and history.

Learning and Creating through Exchange

In a situation of exchange, students apply themselves by having a partner who acts like an audience. The fact of being part of a dialogue helps students to focus on listening because an "answer" is required. By listening, I mean listening attentively, listening to details and listening critically, which means to be able to qualify the sound in some ways, verbally or by comparing it to another sound. During the exchange students access and interpret sounds sent to them from abroad – this creates a context for developing broader skills, such as, learning about other culture, about geography and about the world at large. In turn, the confrontation with other cultures produces undoubtedly a greater curiosity towards and awareness of one's own surroundings and cultural landscape. The international exchange might create lasting cross-cultural communities.

We propose an activity that is experimental and goal-oriented. Although the output in a context of exchange might be more informal than in a traditional classroom setting because it is not directed to the teacher, we provide the students with an environment in which there is a space to learn by working on each response. By choosing the format of an exchange-correspondence rather than exchange in real time we give the students the necessary time to reflect and prepare their reply with the help of the teacher. The teacher has a role of a facilitator rather than of a person who transmits knowledge.

There are many challenges to managing a complex collaborative project, like this one. One needs to make sure that all students participate as effectively as possible, and that the leaders do not monopolize the work; that each group sends the sounds on time without stalling the work of others; that everyone agrees on and follows the same instructions, etc. A difficult situation arises when there are more than one group participating in the exchange. We have confronted it during a short project European Week is Schools we have conducted in 2008, when seven schools from five countries were involved. We have designed several ways of creating a sound collage, each based on a different rule that we called the games. Each game was circulating from group to group in a preset order in such a way that at every moment each group was busy with a different project. At the end the students came up with one collage per game with everyone participating in building every collage.

Summary

- correspondence-by-sound creates a new dynamic situation: a climate of expectation where students anticipate the arrival of new sounds;
- students use sounds to communicate with others;
- they learn by articulating differences and similarities between their own environment and the environment of others;
- the variety of responses from abroad makes students aware of the inherent richness of the world of sound around them and of the endless possibilities of invention and organization in the domain of sound composition.

Collaborative Composition

To compose is to create something new, meaningful and intentional. In the case of our programme the composition process is quite specific: the students will need to develop acute sound perception that will allow them to hear an extraordinary sound within an ordinary sound environment to which they are accustomed. They will then take this sound out of its context by recording it and will bring it to an open space (future composition) ready for new connections. They will then work in groups on editing, transforming,

and assembling these sounds in a process of exchange between the groups. The piece grows by being alternatively transformed and expanded by each participating group. In this process, the sounds gradually acquire a new musical meaning in addition to their original anecdotal meaning.

Composition with students without formal musical training is an entirely different process from the work of a mature composer. It is an educational process in which the young people discover the world of sounds and they acquire basic tools to organize sounds. That is why we often refer to the students' works as collages.

For the beginners we propose a series of game-exercises, each offering a specific rule for assembling the sounds. For example, there is a domino game in which the students, when adding a new sound, have to "match" the end of the previous sound with the beginning of the next one in a series of simple juxtapositions. As the participants become more familiar with the concept of composing with sounds, the rules become progressively less strict, leaving room for imagination and intuition.

At this point one might ask a simple question: why teach composition in schools, especially to students with no or little musical background? Composition requires experimentation, revising, using judgment and argumentation. One has to make logs, analyze what happens and critique the work. A composer has to manage several elements, has to arrive at a finished product and decide when it is finished. We believe that by composing at the basic level students will grow more musically expressive; they will better understand the work of others and will develop critical thinking as well as their personal tastes. In the situation of collaborative work, such as featured in the Soundson programme, where students always build on previously composed fragments sent to them by their partners, the additional elements of interaction, cooperation and exposure to different cultures substantially enrich the compositional process.

Future Perspectives

For the last ten years we have conducted the Soundson programme in Europe, USA and Latin America. Many educators we have worked with expressed the desire to continue and expand the exchanges. In order to develop our programme and make it more widely available, we need to focus now on two initiatives: creating an environment for organizing teacher training workshops and developing an educational website enabling a large number of teachers to participate in the program. We also would like to expand the geographic range within which the program operates. Reaching schools from developing countries will not only open great opportunities for richer and more diverse cultural exchanges, but it might create a venue for bringing technological advances to those countries.

Dr. Jadwiga Radkiewicz

Andrei Smirnov

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Education at the Theremin Center

The Theremin Centre was founded in 1992 as a private non-profit institution envisioned by its organizers as a working environment for young musicians, composers and artists who: are interested in the applications of new technologies in Sonic and Visual Arts, have uncommon creative ideas, and integrate different professional skills in multimedia projects and cross-disciplinary research. The space for the Center was provided by the Acoustic Laboratory at Moscow State Conservatory. In 1999 the Theremin Center was officially integrated into the structure of the Conservatory as a Sector for Electronic Music of the Laboratory for Sound Recording. In 2005 the Theremin Center became a part of the Center for Electroacoustic Music at Moscow State Conservatory.

The Theremin Center is a kind of "interface" linking the academic institution and a wide community of freelance artists and independent musicians. Our goal was to create a crossroads, where representatives of most diverse trends in the arts, different artistic schools, aesthetics, studios etc. would inevitably meet. We called it the Cross-Media project. It was a kind of provocation. We held cross-media seminars, involving both artists and composers, initiating different collaborative projects. In 1995 we set up a multimedia studio, which combined in a single computer network – a studio of computer music, computer graphics and video. In other words, the Cross-Media project was an attempt to create a working environment, which would unite young musicians, composers, multi-disciplinary artists, animators, programmers, and technologists, who showed interest in the use of the latest electronic technologies in art. We expected to achieve a creative symbiosis, or, more likely, the unity and struggle of the opposites. In any case, we provoked an exchange of ideas, concepts, experiences, cooperation and co-creation.

The lecture by James Fei (US) at the Theremin Center, Moscow, 15.12.2004.

Today, when most artists have their own laptops and home studios, the Theremin Center mainly functions as a meeting place as well as an archive and the source of unusual tools, gadgets and sound sources. We use various optical and infra-red detectors, light harps, theremins and theremin-sensors, various electromagnetic, volumetric and other electronic systems, power-gloves, bio-amplifiers, systems for the registration of bio-potentials of muscles and the brain, etc.

Within the Center for Electroacoustic Music at Moscow Conservatory, the Theremin Center is responsible for the introductory course "The Theory and Practice of Electroacoustic Music" as well as the workshops and various multimedia projects. At our courses we emphasize the discovery of novel ways of mastering traditional and new media, novel forms of creative and artistic expression and content with focus on the intersections between music, art, technology and computation, psychology, creating new research areas in virtual environments, live performance and interaction, multi-sensory and multi-modal interfaces etc.

Leon Theremin during his concert in Kazan, Russia, 1975.