

Lines of Net Music

Golo Föllmer (translated by Martin Watson)

This article describes major lines of networked music as observed in the course of extended scholarship on the subject done by the author. The Internet protocols' condition of hosting systems for two-way communication is considered to mark the central difference from earlier media of audio diffusion. Musical uses of, and critical reflections on, this characteristic are shown to differ according to the diverse cultural lines or backgrounds of academic composition, media art or pop music. It is stated that the complexity of musical structures, of interaction schemes and the degree of reflection on the properties of the medium has increased steadily. While early expectations of the listener's total emancipation through the mere fact of the Internet's reciprocal communication structure had to be revised, the author proposes that musical systems based on non-hierarchical networks primarily support the development of music as a collective communal activity.

Keywords: Net Music; Collaborative Composition; Participative Music; Interactive Music; Communication; Internet

Introduction

In 1881, at the International Electro-technical Exhibition in Paris, people were fascinated when they were able to listen to an opera by telephone. With the advent of radio, the transmission of sound soon became commonplace. Following several years of broadcasting anarchy, radio was established as a one-way medium in the 1920s with the task of most participants restricted to listening—a state of affairs strongly criticized by Bertolt Brecht in his now famous 'theory of radio'.

The specific connection structure of the computer network provided a solution to the technically determined limitation of radio. In the mid-1990s, the huge potential created by the technical existence of a return channel of communication was presented to newcomers to the World Wide Web through the call up of simple websites. By typing an individual Internet address and pressing return, an action command is sent to a distant server to send specific data to that address, thereby opening a two-way communication.

Ensemble music making is normally based on a complex network of audio-visual interactions: on the cognitive exchange with a notation or with other visual pointers

to the material and form of the music; on the two-way communication between several individuals; on the feedback of an audience. Although physical separation and the impossibility of an exact synchronization of the participants pointed to enormous problems, the technology of the network appeared to satisfy the demands of patterns of musical interaction as the first medium of electronic transmission. Since about 1995, the number of projects has increased that bring to life the 'primitive fascination' described above, of communication over great distances in various forms at a musical level. The type of connecting structures used and the conceptual focalization (whether on the individual interaction with a piece, on the interaction of musicians or on the exchange between musicians and the audience) depends on the tradition in which the musicians and artists are rooted.

Lines of Performance

Many forms of net music are based on a naïve understanding of media. They rejoice in the pure technical possibility of transmission (in contrast to radio in a ping-pong relationship), often without drawing any consequences for the aesthetics, the form of interaction of the musical participants or the method of performance. The Live-Event *Absolut Jam* on 3 July 1999 linked musicians in this way in the cities of Montreux (DJ Spooky), Berlin (Psychonauts), Athens (DJane Lefki) and Cape Town (DJs Chesh + Anton). Audio and video were exchanged between the four cities via ISDN lines. Image and sound were streamed in parallel over the Internet. Like many comparable projects of the time, *Absolut Jam* was restricted to the audience and DJs being able to hear and see one another.

The Line of Pop Music

The Swedish distiller *Absolut* initiated a further Internet music initiative in 1999 in parallel with *Absolut Jam*. The sound toy *Absolut DJ*, which could be played online with *inter alia* sound material by DJ Spooky and Coldcut, linked basic components and typical working practices from the DJ movement, such as the use of samples, loops and modified patterns, with the possibilities of the graphical user interface of the computer and the World Wide Web.

The basic aesthetic principle of sound toys is improvisation ('Jam') with stylistically clear figures, typical of the rehearsal room culture of pop music. The wide distribution of sound toys can be traced to the fact that they are created largely by the easily accessible standard software of macromedia and can be mediated to users quickly and without complication. Sound toys are also developed to try out new concepts of screen-oriented musical interfaces. They function as the visible and audible surface of algorithmic sound and image compositions and of the type of audio-visual software art (i.e., of works that reflect the anthropological and socio-political impact of software).

In 1995, the server-based *Res Rocket* enabled musicians scattered across the globe to develop pieces online. Using special sequencer software, each participant could log

on, meet other musicians in virtual studio spaces and make music together almost as if in a practice room by exchanging very small and easily transmittable MIDI files. The idea of a transcultural musical jam was one driver of the developers of *Res Rocket*.

Jörg Stelken's network synthesizer *peersynth* was designed for collective jamming and is targeted at a broad clientele of young musicians in pop culture. *peersynth* offers an easily comprehensible, but acoustically typical and complex, instrument that enriches the practice of rehearsal room jamming by creating new acoustic and formal components.

The Academic Line

Long before the boom of the 1990s, Internet music concepts arose from streams of academic computer music. In the circle around the Center for Contemporary Music (CCM) at Mills College in California, Jim Horton, John Bischoff and Rich Gold (known collectively as the 'League of Automatic Music Composers') networked the first forerunners of the personal computer in 1977 to research its potential as a live instrument, something which until that point had received little attention. In doing so, they swam against the prevailing practice of computer music in most academic studios, whereby the composer programmed a gigantic mainframe computer with the aim of maintaining maximum control over a highly complex musical construct. Tim Perkis described the new challenge against this practice as follows:

One can conceive of a computer system as a framework for embodying systems offering complexity and surprise, rather than as a tool which performs the bookkeeping tasks associated with recording and organizing one's compositional materials. . . . Under this paradigm, composition is the design of a complex, even wild, system whose behavior leaves a trace: this trace is the music.¹

The composers of the League, following in the tradition of John Cage and David Tudor, decentralized the management of the combined compositional and instrumental system in order to challenge their playing with moments of innovation of the instruments used.

The group called 'The Hub' continued the tradition of the League of Automatic Music Composers following their dissolution. Each composition by this six-piece ensemble arose out of its own technical structure, which was equivalent to the creation of a basic compositional structure.

The content of the work is shaped by the design of the instruments being invented by the composers/performers. Each new piece conforms to a uniquely designed software/hardware configuration; new forms and new sounds based on these configurations subsequently emerge.²

Georg Hajdu's software *Quintet.net* takes from this the idea of the mutual influencing of a small group of performers and adds two program components for

the differing roles of the various participants: a conductor, up to five players and the listeners each receive a different 'instrument' and participate in the performance in varying degrees.

The Line of Media Artists

It is a characteristic of many examples of Internet music that the musical aesthetic is only one of several important components in the eyes of the authors. Themes such as the changes to the conditions of radio as a result of Internet radio, the copyleft-debate started by Napster and the demand to develop the Internet as a foundation of culturally productive peer-learning structures come to the foreground in the work of many artists.

When Heidi Grundmann founded Art Radio at the Viennese radio station ORF in 1987 she was close to telecommunication art. One of its protagonists, Robert Adrian X, had initiated the often-quoted project *The World in 24 Hours* at the *Ars Electronica* in Linz when participants from 14 cities around the globe communicated with Linz following a timetable.³ It was largely open to the contributors to decide how and what was communicated. Each station used whatever technology was available to it.

This project, which did not have a definitive acoustic dimension, became a model for a series of net performances. *Razionalnik*, a link-up of simultaneous concerts between Graz, Ljubljana and Trento in 1987 (with, among others, Seppo Gründler and Josef Klammer), was set up in such a way that all the participating musicians could directly take part in the performances at the other locations. The ambitious radio projects of the following years (*Horizontal Radio*, *Recycling the Future*, *SoundDrifting*, etc.) followed this pattern. The principle was reminiscent of the performances of the League of Automatic Music Composers and of The Hub.

However, there is a fundamental difference in the type and aim of technology utilization. While the Californian computer musicians were working with specifically constructed network configurations to create a new musical aesthetic, the Austrian artists consciously worked within the existing media space. In revealing data paths and information accesses, they aimed less to create an aesthetic product, but rather to create a discussion of media structures mediated through the auditory senses.

The Intermedial Line

Not all working practices of Internet musicians can be traced back to an existing tradition. Tools and system concepts were developed for *RadioMatic*, the conceptual automatic, constantly broadcasting online radio, which automatically fill and regulate collective multi-streaming with generative structures and small networks of participants playing online. The open concept engages with questions on the aesthetics of sound, on techniques of mixing and sampling, on radio and the links with visual media. The performances under the banner of *RadioMatic* were correspondingly open and unpretentious.

The project \An`a*tom''ic\ by the group *mXHz* follows the installation of a techno-socio-aesthetic network of artists whose purpose, rather than aim, lies in the development of integrated audio-visual strategies. Their aim lies in the idea of dissolving the divide between musicians and listeners through arranging a performance among a group of individuals with no passive listeners.

Possible Lines in the Future

Discussions have taken place in various places over the past ten years, ever since people have talked of an independent phenomenon called 'net music', as to the innovations electronic networks can bring to music making. At first, interest focused on the fascination of pure transmission and the interplay of distant musicians. In parallel, simple forms of interaction were offered at first, but these became increasingly more complex with the establishment of dynamic audio-visual formats of representation like 'Flash'. From the beginning (and indeed in 'Tracker' communities before the age of the World Wide Web), the Internet has been used to exchange electronic sounds, pieces of music and noises across groups, remix lists and live networks which functioned with horizontal, non-hierarchical structures.

Today, the excitement at the miracle of the technological apparatus has subsided. Highflying ideas of the total emancipation of the listener through a reciprocal communication structure have been modified, but not completely abandoned. The accessibility of communication options, of knowledge of experimental and all other musical forms together with the availability of every conceivable digital musical instrument facilitates the creation of forms of music making that can quickly transform the listener at various levels of competence to become collaborators in networked musical projects.

In the twenty-first century, computers represent musical instruments and the Internet is a medium for the exchange of musical ideas with fellow enthusiasts. Classical piano tuition and rehearsal room culture face competition. The young generation finds musical expression just as easily with small Flash sound toys; they swap their own compositions in stylistically highly developed peer groups and use experimental music software like Max and JSyn in online jams that in the past was the preserve of circles of academic composers.

The vision is not of a performance in which 1,200 visitors to a philharmonic concert collaborate as equal partners in the creation of a great musical composition. It is not a question of the creation of musical works of art, but rather of making music. The potential of Internet music lies in small groups of musicians who realize collaborative ideas at various levels of audio-visual expertise. That is why small performances of Internet music are possible. Loosely following in the footsteps of Max Neuhaus, who has been experimenting with networked media structures since the 1960s, Internet music is a musical form that does not have a work at its core, but rather exists as a collective communal activity similar to the musical cultures of antiquity. The CD-Rom on Internet music I compiled in 2004 for the *Neue Zeitschrift*

für Musik should be understood in that same spirit—not as a museum of classical works of Internet music, but rather as a collection of ideas and a workshop.

Notes

- [1] Tim Perkis (1996). Bringing digital music to life. *Computer Music Journal*, 20(2), 31.
- [2] Scot Gresham-Lancaster (1998). The aesthetics and history of the Hub: The effects of changing technology on network computer music. *Leonardo Music Journal*, 8, 40.
- [3] The stations were Frankfurt, Florence, Geneva, Amsterdam, Vienna, Dublin, Toronto, San Francisco, Pittsburgh, Vancouver, Hawaii, Sydney, Tokyo, Bath in the United Kingdom and Turkey. Among the participants were Henry Bull, Bill Bartlett and Roy Ascott.

This text first appeared in *Neue Zeitschrift für Musik*, 165(7), 2004.

The CD-Rom *Net Music* with audio and video clips, executable software, screenshots and other graphic material, texts by the artists and project descriptions (in German and English) of around 70 outstanding examples of net music can be obtained online at: <http://www.musikderzeit.de>