



liquid space  
labau

deSIGNing  
interactive  
immersive  
sonographic  
performative  
real-time  
constructs

workshop  
lecture  
performance  
installation  
exhibition

0'

300'  
100'  
50000'  
200'  
1000000'



liquid space 02  
liquid space 01  
space navigable music  
liquid space



Be	Project 01
particle labau	Project 01
curator	Project 01
multimed	Project 01
new media	Project 01
diffusion center	Project 01
curator	Project 01
track	Project 01
work art	Project 01
diagram	Project 01
diagram	Project 01
numbers	Project 01
game	Project 01
liquid space 02	Project 01
empirical urban infrastructure	Project 01

Project 01  
Project 01  
Project 01  
Project 01  
Project 01  
Project 01  
Project 01  
Project 01  
Project 01  
Project 01  
Project 01  
Project 01



void	Project 01
void	Project 01
urban, low and graphic line	Project 01
for	Project 01
laboratory	Project 01
the city, landscape	Project 01
3d paper	Project 01
model	Project 01
multimedia	Project 01
research	Project 01
research: space	Project 01
the city	Project 01
research: the space	Project 01
space	Project 01
liquid space 01	Project 01
architecture	Project 01

Project 01  
Project 01  
Project 01  
Project 01  
Project 01  
Project 01  
Project 01  
Project 01  
Project 01  
Project 01  
Project 01  
Project 01  
Project 01

particle synthesis space
work space
work space
dynamic space
creation space
work space
work space
space navigable music



Project 01

ipa theory labau
labau

ipa theory music work
ipa theory for music work
ipa practice theory
ipa01-02 performance
ipa02 exhibition
research: cultural urban space
ipa02 exhibition
research: the project + urban infrastructure
ipa01-02 morphology
liquid space



Project 01

00:00:00  
01:00:00  
02:00:00  
03:00:00



liquid space  
labau



liquid space  
labau

architectural and urban  
design studio

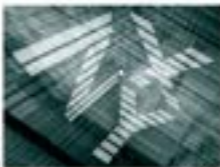
Geert van Boven

liquid space cycles  
slow, liberality for architecture and urbanism  
designing spatial autonomy

theory  
MetaDesign  
parameter design  
practice  
collaborative agency  
workshop  
design  
space / navigable music  
architecture  
top exhibition

→ explore

the city  
in 117  
in 407  
in 1048



metadesign

... The technological developments of the past thirty years constitute a major shift from the industrial to the post-industrial information society, where the unit of information, its structures, processes and systems increasingly define notions such as body, matter, space and time. It introduces in their definition new parameters such as immersion and interactivity ( perception / cognition ) but also the one of networks ( shared resources / tele-presence ) as the one of materiality ( analog / digital ) - among many other aspects. Technologies based on the transmission, editing and computation of information thus more and more influence organization models ( modes of production, of work and of knowledge ) and affect the communication process ( code, signs... ) and the social, economic... relations as well as their spatialization.

LAB[au]: In order to examine these implications of new communication and computation technologies within spatio-temporal structures LAB[au] develops a transdisciplinary approach based on different artistic, scientific and theoretic methods. As a collaborative agency, including different partners from different disciplines, LAB[au] sets up a network of transdisciplinary work focusing on the specific modalities of IC technologies in their setting of languages as well as their founding of a discipline, MetaDesign.

Through these structures, lab[au] pursues since its foundation in 1995 the objective to link theoretical research the lab with the specific conditions in the elaboration and production of informational projects labau. LAB[au] thus constitutes a critical space of reflection and experimentation to examine the transformation of architecture and urbanism in its founding and methods according to the technological progress leading to the development and definition of new practices - 'metadesign'

mf

LAB[au] >> MediaRuinTe: In this general quest, LAB[au] initiated the MediaRuinTe to create an experimental platform dedicated to the emerging digital culture. Envisioning an exchange in between the artist, topics differ from an aesthetic, historic and technological discourse situated in digital art, digital architecture, interactive performances, electronic music... as it tries to give an understanding of emerging disciplines. Here LAB[au]'s own transdisciplinary and collaborative approach broadens the field of investigation by the development of new technologies & new media as the main vector of nowadays cultural production.

lqs

LAB[au] >> liquid space: The liquid space project is a platform for experimentations in interactive digital art. As a starting point it is using the space navigable music project and confronting this conceptual and technical framework to collaborating artist approaches inside a workshop format. The multimedia nature of the project opens it to all different disciplines (trans disciplinary) as much as it tries to focus on the specificities of computer media. Ultimately Liquid space is a project that lives through several modalities including workshop, performances and exhibitions spreading methods, codes and aesthetic in digital design. This book is a stepstone but is by no mean a final point, liquid space continues to expand in space and time.

lab

LAB[au]  
(fr) (en) writing of  
the french word 'lab'  
lab + au (constructor)  
= LAB[au] &  
Manual Research  
Jacqueline Cassin  
& Veronique  
Associated  
Associates Perennouk  
Peter Heermann



LAB[au] laboratory for  
architecture + urbanism  
Brussels  
tel 32 (0)2 462 4022

MediaRuinTe  
digital platform of Paris  
Brussels  
tel 32 (0)2 462 4022

liquid space  
books

www.labau.com



liquid space 01+02 workshop  
invited artists\*labau

designing spatial audiovisuals

lqs workshops =

thematic + lqs01+02

+ thematic + lqs theory

+ artists + lqs 01+02

+ technological + lqs

digital media presentation

explore



collaborative design

In collaboration with different cultural organizations LAB[au] is setting up a series of artistic workshops based on collaborative design processes. The main focus is to cross artistic practice with theoretical reflection and technological research in order to design spatial audiovisual devices resulting in exhibitions and performances. Besides the general quest of exploring the language of digital media which stands under the theme of MetaDesign, each workshop focuses on a specific theme framing the common reflection and exchange process. In order to stimulate these processes external media theorists and participating artists are invited to present and to perform their productions during the workshop. For the workshop the invited artists use as starting point Lab[au]'s artistic and technological platform, the space navigable music engine, which allows to combine sonic, visual and spatial data and to experience them in 3d real time. Here the participating artists can "import" their files ( .jpg, .wav, .avi, ... all standard formats are possible ) and combine and interrelate them with others in order to create their own interactive spatial and visual music files.

01

liquid space 01 workshop: deSIGNforms

11.11. – 18.11.2003 Art Center Nabi, Seoul South Korea

LAB[au] + 10 Korean artists

Ryu Biho, KimTae-Eun, Choi, Byoungil, Byul, Doug Lee, Futureyelectronic,

Lee Eun-taek, Ryu HanMin Sunggi, Byungjin, Yeo Un-jin

curator: Suhjung Hur

organized by Art Center Nabi, Seoul in collaboration with refest korea03

02

liquid space 02 workshop: deSIGNing by numbers spatial audiovisuals

17.05. – 31.05.2004 MediaRuimte, Brussels Belgium

LAB[au] + 14 artists

Jemy Galle, Kathleen de Bodt, Xavier Gazon, Michel Heibig, Yannick

Jacquet, Haeyoung Kim, Marc Wathieu, Thomas Cibrecht, Ludovic Prié,

Arno Riedinger, pitch visuelle, Chris Burke, Marc Riesbols, Dirk Standaert

organized by LAB[au] with the support of VAF (Vlaams Audiovisueel Fonds)

following up:

Call for participation:

04.2004 – 11.05.2004

info days:

20.04.2004 – 20.05.2004 MediaRuimte, Brussels Belgium

02.05. – 03.05.2004 MAP: matrix art project, Brussels Belgium

On-line forum: 04.05.2004 – 17.05.2004

Artist presentations, practice:

14.05.2004 Mr:ni 01 Fuzzylogic presentation + Bubblyfish concert

25.05.2004 Mr:read 03 Stanza lecture &amp; Deacoy concert

26.05.2004 Mr:wav10 Stanza performance &amp; Michel Heibig presentation

11.06.2004 Mr:wav 11 Etschberry concert

Theory:

20.05.2004 Mr:bt 04 Dirk Huylebrouck 'The origin of numbers' lecture

24.05. – 27.05.2004 Stanza discussion panel

during the exhibition.

06.07.2004 Lev Manovich lecture

15.07.2004 Marcos Novak lecture

03

planned liquid space 03 \_ designing feedback loop systems

04.05. – 14.05.2005 Babels Grand, Amsterdam – the Netherlands

lab

lab

"... the meaning of  
all media is the  
experience of using  
those expressions  
of yourself, meaning  
is not 'content' but an  
active relationship"

1011 Marshall

McLuhan

www.labau.com

www.labau.com

2001 workshop  
art center nabi, seoul  
4.11.03, 100002002 workshop  
mediaruimte, brussels  
17.05.04, 1000lqs workshops  
invited artists\*labau

lqs02 = 360° exhibition  
selected artist list

designing 360° e space,  
immersion

lqs 360° installation =  
40 screens + 200°  
+ e motion space

4 speakers + subwoofer  
+ surround sound + sonic space

4 computers + network rendering

4 web-cams + computer vision  
+ cam space

explore



immersion

The main installation of the liquid space exhibition is the 360° multi-screen space, where the visitors can experiment with all the different artist projects during the exhibition hours and where at specific moments performances take place. Based on four up to eight rear (two-sided) translucent projection screens, the installation forms a complete 'surround' space inside the screens as it proposes a multi-vision space in its surroundings, a space of immersion and exploration. Unlike the exhibition stations for the personal artist works, each constituting an individual space, this scenography is based on a common space underlining the collaborative and collective aspects of the design projects. Additionally it allows underlining the themes of the liquid space cycles according to which performances, concerts and presentations are scheduled.

In the liquid space cycles the invited artists compose in and through electronic space their navigable music. This spatial logic through which they conceive and perform their compositions combines sonic, visual, textual... codes. The 360° multi-screen setting to diffuse these spatial compositions was chosen for an obvious reason: it immerses the audience in the same settings the artist / performer is when creating its navigable music space. For both the audience and the performer, the quadraphonic sound and the 360° visuals build a spatial experience linking the structure of the electronic space, the computer vision and the electronic sound parameters, to the one of the body space, perception. Here seeing and vision, hearing and virtual listeners, being inside the four projection screens and user position inside the 3d space, converge to form an audiovisual space... electronically and physically. In this manner the 360° multi-screen installation reinforces the performative qualities of the artistic design as its immersion, while it transmits in form of collective experiences the main quest of the liquid space project, being 'parameter design'.

01 liquid space 01 \_ [ no exhibition ]

02 liquid space 02 exhibition  
06.07 - 20.07 2004 Map, matrix art project, Brussels Belgium  
exhibition scenography by LAT[au] realised with the support of VAF  
specific performance program + lqs performance page

Exhibited projects in 360° mode:

nan \_ fuzzylogic, Jerry Galle + Kathleen de Bodt(b)

drumster \_ etschabery, Xavier Gazon(b)

flv \_ Michiel Helbig(b)

nutshell \_ Marc Watheux(b)

numbers \_ giomag, Chris Burke(usa)

+ lqs02 project page

03 Next: liquid space-03, designing feedback loop systems

10.05 - 14.05.2005 liquid space-01/02 [ selection ] \_ exhibition 360°  
Bakke-Grond Amsterdam, the Netherlands

10.08 - 26.08.2005 liquid space-03 \_ exhibition 360°  
Tent Posthof Amsterdam, the Netherlands

lat



def immersion

a method for projecting  
images such that the  
viewer's peripheral  
vision is engaged  
either by using head  
mounted displays or  
cave techniques

state of being over-  
familiar or deeply  
absorbed, deep  
engagement



lqs02 exhibition  
matrix art project  
Brussels  
06.07.04 - 20.07.04

lqs = exhibitions  
360° immersion

www.lqs02.com



lat  
lat[au]

lqs02 = interactive exhibition  
selected sites list

designing interactive  
audio-visual constructs

for interactive stations =

5 playful light tables

5 computers

5 designed user interfaces

↳ explore



metadesign

The liquid space exhibition consists of a 300° multi-screen projection space on the one hand and a series of hanging and color-enlightened Plexiglas tables (in correspondence to the color of the liquid space edition) on the other hand. At first sight, the scenography of the stations appears as a light installation but at closer range it unveils the specific space of the artists' projects. Whereas the 300° installation focuses on the immersive and performative qualities of the designed artistic projects, the stations focus on user interactivity. Therefore the 'stations' are specifically designed for each of the selected projects, including all necessary and specific hardware interfaces such as microphones, cameras, joysticks, headphones etc... as they allow to be adapted to the interactive and perceptive modalities the different spatial audiovisual projects require.

The interactive stations reflect one of the major themes of the liquid space cycles: the setting of a language and codes in parametric design, and the way we interact and perceive within these digital constructs. But the conception and realization of 3D real-time interactive projects need besides the possibilities to use all kind of digital formats the possibility to explore and experiment with different hardware interfaces. In this concern the space navigable music authoring tool is based on the compatibility of digital formats and most standard protocols whereas the 'stations' offer to exhibit them in an adequate manner.

01

liquid space 01 deSIGNforms [ no exhibition ]

4 computers for audience interaction during the performance

19.11 + 20.11.2003

02

liquid space 02 deSIGNing by numbers, spatial visual music

Exhibition 08.07 - 29.07.2004

Map matrix art project, Brussels, Belgium

exhibition scenography by LAB[au] with the support of VWF

Exhibited projects, interactive tables:

nan \_ fuzzylogic, Jerry Galle + Kathleen de Bodt(b)

flv \_ Michiel Helbig(b)

drumster \_ etschaberry, Xavier Gazon(b)

particle lake \_ bubblyfish, Haeyoung Kim (usa)

track \_ Ludovic Phil (f)

rutshell \_ Marc Watheux(b)

03

Next:

Exhibition \_ interactive tables

10.05 - 14.05.2005 liquid space 01/02 [ selection ]

Duikse Grand Amsterdam, the Netherlands

lab



def interactivity

two-way systems

characteristics of systems  
which accept user input  
as well as delivering  
related audio, video,  
graphics  
Distinguishes  
for example  
conventional TV or  
video from digital  
design

www.metadesign.be



metadesign



lqs02 exhibition  
table art project  
Brussels  
04.07.02 - 4.02



liquid space 01+02 performances  
participating artists\*labau  
spatial audio concepts  
and presentations

lqs performances +  
360° panoramic + 4 meter space → explore  
+ quadraphonic + sonic space  
+ immersive + 3Dspace  
+ in real time + space  
concepts / performances



real time

Besides the orientation towards collaborative design processes (workshop/practice) and interactive systems (exhibition) the liquid space cycles focus on the performative potential of the designed projects. This aspect extends the questions of real-time interactivity to performative settings, a direct inter-acting between the audience and the artist. In order to stimulate the reflections about 'performative spaces' during the entire cycles various kinds of performances are organized. During the workshop the participants are invited to present their personal works in open session, while during the exhibition period a series of live performances are organized to present the artists' designed creations.

Therefore the scenography of the liquid space exhibition combines different aspects; whereas the audience stations have a focus on the interactive qualities of the designed projects, the 360° multi-screen environment, constituting the main space of the exhibition, introduces the question of immersion. The spatial and sonic logics of creating a performative space within the 360° projection and surround sound, reinforces the exploration of spatial audio + visuals outlining their immersive and performative qualities. In the work about 'performative' space the above mentioned spatial logics are extended to the one of real-time navigation, a moment where the composed files turn into a spatial instrument. In this manner the aspects of real-time performances complete the general proposal of the liquid space cycles, exploring digital design from theoretic and methodological aspects to practice and experience.

01

liquid space 01\_ performances:  
19.11. + 20.11.2003 Alumni Hall, Yonsei University Seoul, South Korea  
LAB[au] + 10 Korean artists  
organized by: Art Center Nabi & nestest.korea03

02

liquid space 02\_ performances:  
08.07 - 29.07.2004 Map, matrix art project, Brussels, Belgium  
LAB[au] + invited artists  
organized by: LAB[au], with the support of VAF (Visions Audiovisual Fonds)  
program:

- 1\_ exhibition opening, 08.07.2004  
lecture by Lev Manovich: 'MetaDeSign' + spa(z)e 360° concert by glomag
- 2\_ micro cultures, event, 10.07.2004  
liquid space 02 performance & exhibition installations +  
gameboy music by: bubblyfish + nostramo
- 3\_ liquid space \_ constructs, 15.07.2004  
Lecture by: Marcos Novak: 'liquid architecture' +  
liquid space 01+02\_ screening + performance
- 4\_ liquid space \_ until the end party, 29.07.2004  
Concert + performance by participating + invited artists  
zufurik, Marc Morgan, etchaberry, erzatz, halofaust...

03

\*labrest: liquid space 03\_ designing feedback loop systems  
10.06 - 26.06.2005 performances: Test-Pool Festival,  
Amsterdam, the Netherlands

lab

lab  
real-time systems  
respond to input  
immediately, where  
all data is processed  
in actual time. They  
are used for such tasks  
as navigation, in which  
the computer must  
lead to a steady flow  
of new information  
without interruption.

www.labau.com/lab



www.labau.com/lab



lqs01  
all party info &  
request: www.  
labau.com

lqs02  
workshops &  
info at project: Brussels  
lab@labau.com

lqs performances  
participating artists\*labau

lqs praxis  
stanzatop: sonic and spatial patterns  
in digital media designin the context of  
sound space workshop  
at MediaLabs, Brusselspresentations  
25.05.2004  
8:30am  
25.05.2004  
multimedia performance  
24.05-27.05  
discussion panel

explore



patterns, structures

Stanza's works deal with the notion of space and sound in such a manner that it is possible only with the aid of computer medium. Focusing on the notion of interactivity, he is one of the few artists who's approach includes the programming of systems. His approach is strongly based on practice, as such most of his works can be qualified as interactive real time experiments, using data as the bare material.

#### about stanza:

Stanza is a UK based artist who specialises in net art, multimedia, and electronic music. His award winning online-projects have been invited for exhibition in digital festivals around the world, and Stanza also travels extensively to present his net art, lecturing and giving performances of his audiovisual interactions. Stanza is interested in the engagement of the public / audience as a creative user across a variety of formats, from the web to cd rom and gallery installation, and his extensive explorations gives him a high level of expertise in this field.

Also giving focus to the technologies which address the issues around the protocols of the net as a medium, Stanza's work crosses borders between artistic, technological and scientific sectors. Stanza creates participatory digital artworks that invite viewers to guide data flows or to simply observe self-generating compositions. His digital paintings shift through abstract and iconic patterns, which people can explore akin to virtual environments. Interactive and visually appealing, his style also maintains the substantive power through multifaceted content. This artist has won international praise and awards for his new media works that invite collaboration. Projects include Subvergence, which subverts and fragments the notion of our old browser, where in its stead we have a full screen desktop takeover. Transportron includes generative audio and image environments built into 3D spaces. The Central City is an audio visual, interactive, internet art experience, all made for the internet. The city becomes an organic network of grids and diagrams, juxtaposing urban sounds and sights. Amorphoscapes is a whole site dedicated to new digital interactive paintings.

Stanza also curates the acclaimed [www.soundtoys.net](http://www.soundtoys.net) site which he instigated to provide a platform for exhibition of new audiovisual communication made possible through the fusion of audio and visual output by the new technologies available from computing and the Internet. It includes highlights from the online web based exhibition, plus a selection of offline works including CD-ROMs, DVDs and custom built software. The exhibition 'divergence' at the ICA, featured over hundred artists works exhibited under the soundtoys umbrella.

lqs

resources by  
stanza

the central city

self cities

soundcity

soundmaps

orbcity

amorphoscapes

creative europe  
DIGITAL HUBlqs praxis  
stanza

www.soundtoys.net



www.soundtoys.net



lqs theory lev manovich

lqs + metadesign, parameter design,  
navigable spaceLecture 08/07 2004  
abstraction and complexity,  
generative software art  
and design in  
technical perspectiveMain results of project  
in the context of  
liquid space 02 exhibition opening

↳ explore



info aesthetics

Inviting Lev Manovich for the liquid space 02 edition was a main interest because he is probably one of the few to raise the question of methodology, naming such "digital era methodology" meta-design, as a deliberate reference to Bauhaus/Industrial era which witnessed the birth of design. This point of view which defines the "artistic approach" as "methodology", "support" as "media" and "aesthetics" as "structure" is the base of of the liquid space reflections.

#### On...navigable space

"While all these answers make sense, it would be unsatisfactory to see navigable space as only the end of a historical trajectory, rather than as a new beginning. The few computer spaces discussed here point toward some of the aesthetic possibilities of this form; more possibilities are contained in the works of modern painters, installation artists and architects. Theoretically as well, navigable space represents a new challenge. Rather than only considering topology, geometry and logic of a static space, we need to take into account the new way in which space functions in computer culture: as something traversed by a subject, as a trajectory rather than an area."

#### On...abstraction and complexity

"I am now ready to name the larger paradigm I see behind the visual diversity of this practice (software abstraction): This paradigm is complexity. If modernist art followed modern science in reducing the mediums of art – as well as our sensorial, ontological, and epistemological experiences and models reality – to basic elements and simple structures, contemporary software abstraction instead recognizes the essential complexity of the world. It is therefore not accidental that often software works develop in a way that is directly opposite to the reduction that took place over the number of years in Mondrian's paintings – from a detailed figurative image of a tree to a composition consisting from a just a few abstract elements. Today we are more likely to encounter the opposite: animated or interactive works that begin with an empty screen or a few minimal elements that quickly evolve into a complex and constantly changing image. And while the style of these works is often rather minimal – vector graphics and pixel patterns rather than an orgy of abstract expressionism – the images formed by these lines are typically the opposite of the geometric essentialism of Mondrian, Malevich, and other modernists. The patterns of lines suggest the inherent complexity of the world that is not reducible to some geometric phenotype."

#### On...tools in "navigable space"

"...in the case of new media we should look not only at the finished objects but first of all at the software tools, their organization and default settings. This is particularly important because in new media the relation between the production tools and the products is one of continuity; in fact, it is often hard to establish the boundary between them..."



Lev Manovich studied fine arts, architecture, animation, and programming before starting to work with computer media in 1984. He is an Associate Professor in the Visual Arts department, University of California, San Diego where he teaches courses in new media art and theory. He is the author of *The Language of New Media* (The MIT Press, 2001). Manovich is in demand to lecture on new media; since 1999 he delivered over 180 lectures in North and South America, Europe, and Asia.



keywords / links by  
lev manovich + lqs  
navigable space  
language of new media  
metadesign,  
intermedium  
abstraction and  
complexity  
information aesthetics  
cinema as cultural  
interface



lev manovich  
san diego  
university of california  
ca 92092, 117400



lqs theory marcos novak

lqs + liquid architecture  
navigate music cyberspaceLecture: 15.07.2004  
liquid architecture, transvergenceMap, matrix and project  
in the context of  
"liquid space constructs"  
15.07.04 performance  
right

→ explore



liquid architecture

"Novak introduced the concept of "liquid architecture," a fluid, imaginary landscape that only exists in the digital domain. Novak suggests a type of architecture cut loose from the expectations of logic, perspective, and the laws of gravity, one that does not conform to the rational constraints of Euclidean geometries. He views trans-architecture as an expression of the "4th dimension" that incorporates time alongside space among its primary elements."

The general title of the project 'liquid space', suggested by Suhjung Hur from the Curatorial Team of Art Center Nabi, was directly related to Marcos Novak's theories, and its declinations exploring the multiple transformations of space through IC technologies. The proposal of 'liquid' corresponds to LAB[au]'s quest to make different experiences in the way we can think and construct this rhizomatic reality, the architecture of this networked and electronic space / society, we are getting into.

"Space is no longer innocent. Under the impact of science and technology, ordinary space has become just a subset of a composite "newspace" that interweaves local, remote, telepresent, interactivated, and virtual spacetime into the new spatial continuum that is the focus of emerging trans - architectures."

"New realities require new vocabularies. I have coined the terms liquid architectures, transarchitectures, eversion, transmodernity, and others to begin to articulate the new conditions that we encounter on our journey to virtuality. In this sense, the overall work is an instance of transarchitectures ; the phenomena it explores belong to the idea of "eversion," the casting out of the virtual onto the actual, a concept that is the natural complement to the idea of "immersion" ; and the work is offered as an artifact of the cultural outlook of transmodernity."

all quotes collected from Marcos Novak interview by Alessandro Lubiano  
<http://www.neural.it/english/marcosnovak.htm>

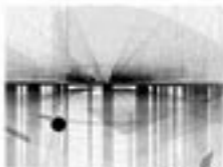
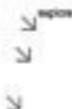
Marcos Novak describes himself as a "trans-architect," due to his work with computer-generated architectural designs conceived specifically for the virtual domain, which do not exist in the physical world. His immersive, 3-dimensional creations are responsive to the viewer, transformable through user interaction. Exploring the potential of abstract and mathematically conceived forms, Novak has introduced a set of conceptual tools for thinking and constructing territories in cyberspace.

lqs

navigate / lqs by  
marcos novak + lqslqs architecture  
lqs modernity  
lqs digitalityliquid architecture  
cyberspacenavigate music  
navigate cinema

transvergence

[www.lqstheory.org](http://www.lqstheory.org)navigate / lqs by  
marcos novak + lqsmarcos novak  
internally: sarita barbero  
celina  
uk, 34.02, 11.04.02lqs theory  
marcos novak

lqs theory/labau  
metaDeSIGNliquid space cycles  
space (re)configurable music  
the bookinteractive, immersive  
performative, scenographic  
constructions + liquid spaceMetaDesign - liquid space  
Marius IonescuMetaDesign - int. aesthetics  
Luis Mercedes

metadesign

A technology is not an independent or alien object, it complements integrally our sensorial and cognitive system; as a medium, it conditions not only communication modes but also the way we perceive and conceive our environment.

Computation and communication technologies extend our very 'senses', where the notions of body, matter, space and time are increasingly defined by the unit of information; its structures, processes and systems introducing new parameters of space and time - presence, such as immersion (real/virtual) and interaction (real-time/entropy) in its definition. Within this context the concept of MetaDeSIGN constitutes a methodology based on the specifics of IC technologies in the conception and production of artifacts.

MetaDeSIGN combines two notions: the one of Meta and the one of Design, both very known in the field of computer science as in aesthetics. In computer science 'Meta' describes the type of information necessary to instruct any kind of communication or computation process, it defines as well its spatial, morphologic or semantic parameters; in short the data needed to build any kind of representation / structuring. In consequence, technology delivers not only content but also through its codes and structures, a specific meaning. Thus it describes an upper hierarchy of information; it is information about information. In this manner the use of the word 'Meta' underlines the relation between technology, its structures / processes and its determination of signs. Triggered by technological advances, new codes (semantics) and methods (practices) appear often revealed by the term that is used to qualify them, as for example the word 'design' came up in the beginning of the last century. The emergence of the concept of 'design' around Bauhaus had the intended purpose of qualifying artistic concerns in relation to the technological and social changes in order to reintroduce them in the concept of art, itself.

These considerations and specifics of information technologies show that as far as design is concerned, one has actually to design the meta-level, i.e. the codes the information will be processed both in technical and representational aspects. This specificity of digital technologies brings up new design methodologies; it reveals digital production - becoming a process and system itself. Therefore Metadesign is a practice grounded on the inherent logics of IC technologies in the visualisation and formalisation of inFORMATION processes in textual, graphical, spatial constructs. As a discipline MetaDesign is about the setting of codes / language drawn from concepts of communication and information sciences - cognitive science with that of process methods, design and spatial constructs, architecture.

#### MetaDeSIGN >> liquid space

According to these considerations, the 'liquid space' cycles reflect the approach of LAB(au) to confront these questions in theory and practice and to share them with others; collaborative design. In order to structure these collaborative processes and workshops, each cycle is structured according to different themes pointing out aspects of the general quest according to which installations, exhibitions and performances result.

> parametric design  
is the mapping of  
spatial, visual, sonic,  
temporal data  
to relative values  
such as geometry  
or color values

This mapping  
defines new codes,  
such as space order  
through programming  
leading to new  
forms of representation  
such as color maps  
being space maps...

read further  
www.labau.com/inter  
design/eng.htm

process



LAB(au) Laboratory for  
architecture + urbanism  
042 517601, 4021

space navigable music

metaLab[au] by lab[au]

space navigable music

designer: piggius since 2000

interacting, immersive

performative, scenographic

construction: + liquid space

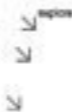
project since

1997-1997 ...

with: space engine

[3D scene]

C++



methodology

The 'liquid space' cycles are based on the technological and conceptual work of the sPACE, navigable music platform, a 3D engine Lab[au] develops as a software art in progress since 2000. It is based on the principle of integrating different media (text, image, sound...) in a structural, programmed manner, inside and through electronic space. In this manner the project focuses on a parametric setting of spatial, temporal and sonic data and on its specific modalities we can perceive and interact with. According to the general objectives of Lab[au] the project constitutes as much a space for theoretical research as a space for experimentation on the forms of spatial, visual and sonic interactions in mixed reality spaces combining mainly architecture, visual art, music and cinema.

... in sPACE, navigable music, the electronic space is generated in real time according to the position and movements of the user. Operating on the assignment of spatial (x,y,z), temporal (t-movements) parameters of navigation to the visual and sonic ones, each interaction by the user, transforms the rendered scene. The 'Navigable Music' constitutes a space, in which the user experiments cyberspace by dropping sounds into space, mixing music throughout navigation... a kinetic music clip, a sharable sonic space, where the multi-user space even extend the project to collective interactions. In this manner it relates and synchronizes space to music and cinematic techniques dealing not only with new ways to compose, share, perform and diffuse music through electronic space but also questions the construct of music and architecture itself... 'space\_music'.

... spa[2]e 360° proposes an installation based on the complete immersion in electronic space on the one hand through a quadraphonic-to polyphonic sound system and on the other where 3,4,5,6, ... projection screens disposed to form a panoramic (360°) space or even the one of a complete spheric projection. In this manner one gets immersed in the 3D visual and sonic environment. Here the sharing of the rendered music is the sharing of the sensation of movements in and through the digital matrix, spa[2]e music. A specific focus is the real-time setting of the project reinforcing its technological, performative, immersive character.

According to the different procedural and systematic set ups of the project it constitutes a research about a media-specific way to think music and architecture. Therefore its interconnection through networks, protocols, hardware extensions like captures... leads not only to new ways to conceive music but also incorporates new architectural spaces, mixed realities in-between physical, electronic and networked spaces. In order to illustrate the influence of information mapping... the assignments of sonic, visual, spatial... parameters, and the determining of signforms through programming logics and its display in coherent spatial ways, different aspects from the recent project 'sPACE, navigable music by lab[au] are presented:

color space, sonic space, e-motion space, rhythmic space, cam space  
voice space, particle-synthesis space

text



concrete  
space[2]e  
+ location  
+ navigation  
+ movement in  
a space according  
to variables of  
perception and  
cognition

+ parametric design  
mapping: spatial  
visual, sonic data

www.lab-au.com/piggius



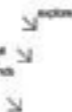
space navigable music



LAB[au] laboratory for  
architecture + urbanism  
Studio  
tel: 33700 400

space navigable music

www\_lab[au]

sonic space  
meta, 2007, by labaureal 3D sound  
real 3D moving sound objects  
real 3D sound topologiestop 3D objects 3D sound  
objects to quadruphonyconcepts like: meta, 2007, by labau  
real 3D sound  
real 3D moving sound objects  
real 3D sound topologies  
real 3D sound objects to quadruphony  
real 3D sound objects to quadruphony  
real 3D sound objects to quadruphony

spatial to sonic data

The specificity of the digital medium is the reduction of all information to a binary signal, be it a picture, a text, a space or a sound - all data is recorded as a binary sequence. Therefore it is the medium, which, through its processes, unifies information as much on the structural level as on the semantic one. From this point of view structuring data is not only about hypertexting, but also about the mapping of data from one media into another. Take an audio visualizing tool for example: the frequency of a sound can be transcribed in a coordinate of space or a color allowing sine waves to be seen. When these colors or topographies are displayed music is made visible, spatial. This kind of information mapping leads to a tremendous amount of possibilities in the combination of data, creation. Since these processes must be described through programming, structured language, these data mappings determine through their logics new signforms, aesthetics.

In the space navigable music project, the theme of sonic space covers a broad range of researches on the ways to relate sonic, visual and spatial data. The main development consists in the spatialisation of sound controlled and structured through 3D space. For example the location of a sound-object [xyz] according to the user position inside the 3D space [distance] defines the way sound is diffused, spatialised through the quadruphonic device. The relative position between the sound objects and the user position, listener, defines whether this sound is to be played on the front left, front right, rear left or rear right speaker and the distance in between them influences the volume the sound sample is played. Here 'being close' to a sound object leads to the sound being played loud [100% volume] 'being far' to be muted [0% volume]. Both parameters position [xyz] and distance [m] influence the sound diffusion [db on channel 1,2,3,4].

As users navigate through the electronic environment these values are permanently triggered allowing to play/compose music through navigation. Navigating music depends on the way the sound objects are organized inside the 3D space, its architecture, and the way one navigates and interacts with these environments. In this parametric setting, distance and space become time, and composing inside the electronic space amounts to building a navigable sound architecture. To diffuse these spatial compositions in form of a spatial, 360° projection, based on 4 screens or on a complete sphere projection, is more than evident; it immerses the audience in the same setting. For example a sound object which appears at the rear screen is diffused at the rear speaker... thus the spatial structure of the composition becomes visible. For both, the audience and the performer, these sonic and visual principles build an audiovisual experience linking the structure of the electronic space to the one of the body, the physical space. In this manner representation is directly linked to experience forming a spatial notation system, a sound map... all in one. This mapping of one media into another allows us to think new forms of music not only inside and through electronic space but also on the level on how we perceive and diffuse it through spatialised visuals and sounds inside the physical space. "Sonic space" thus can be defined as the study of systemic relations between humans and acoustic environments.

time

concepts like:

- sound to space
- quadruphony
- user position to frequency
- sound object set to navigate
- sound topologies
- moving sound objects to analyzed paths to orbits to attraction

sonic space  
meta, 2007, by labau  
real 3D sound  
real 3D moving sound objects  
real 3D sound topologies



LABAU | Laboratory for  
Architecture + Urbanism  
Strasbourg  
tel 33(0)3 80 00 00







1) motion space  
real-time 3D by labau

2) 360° multi-screen projection  
real-time 3D real-time projection  
of 3D off-axis projection

3) 3D objects, 360° projection +  
dynamic FOV to sound pitch

→ explore



cinematic vision

4) 3D space engine  
3D real-time + open 3D standard

→

When moving through any electronic 3D real-time environment, we perceive its space through specific points of view: 'internally' we perceive space on the flat surface of the screen and 'externally' through electronic eyes, cameras, both conditioning our understanding and the feeling of being inside... immersion. Conceiving electronic space is thus working on specific modalities of perception, external and internal. This correlation conducts us directly to the cinematic construct of space where motion is the key parameter to produce the feeling of 'insiderness'. In this manner spatial data representations, like the space navigable music engine, are conditioned by filmic techniques, from the 'internal' usage of panoramic vision or subjective cameras to perceptive modalities of navigation such as camera pans, travellings, orbits... to editing techniques (= specific navigation and rendering parameters): like cut, overlays, fade-in/out... Further it questions the modalities we perceive and interact within real time constructs, from 360° multi-screen and spherical projections to stereoscopic and mirror screens. Just like in cinema, where the camera and montage techniques have built its language and where the black box with its frontal viewpoint and its Dolby sound has become the space of the audience's emotional, sensitive realm, the srm project constitutes an architectural view of the cinematic experience of space transposed to the digital one, from motion to emotion, e motion space.

Based on these reflections and through the variable setting of these internal and external elements the project researches new possibilities in 'imagining' visual and sonic experience shaping time, light and movement into space. Concretely speaking a development such as the dynamic assignment of the camera values (field of view) through which one navigates inside the electronic space to the frequency values of the 3d sound objects constituting the 3d scene, already shows the way the traditional static and central perspective of space can be extended to temporal parameters such as rhythm, frequency, tension... This development allows the user to pitch the sound samples each time he changes its field of view, starting from a standard value of 60°, where growing the camera field of view to 180°, fish eye vision, leads to high accelerated tones, and navigating in 10°, macro-zoom, to very low bass tones. Therefore, if the pitching of a sound - the change of its frequency to specific values - leads to the complete chord of a sound then playing on the fixed camera angles is playing music.

Furtherwise the specific camera values can be related to the one of the projections. For example four synchronized computers, each rendering a 90° view allows to set up a 360° multi-screen projection inside which the audience experiences the electronic space physically. In this way orthogonal, x-off axis... projections can lead to a variety of spatial, scenographic settings interweaving computer to human vision [ refer to "the 10th sphere" LABAU realized in 2003 or the 360° multi-screen exhibition scenography for liquid space ]. The above-mentioned example illustrates the idea on how the dynamic settings and assignments of the internal and external parameters of vision and hearing can shape the one of sonic vision, to conceive new architectural constructs, electronic motion spaces.

labau



concepts

labau: 3d, 360°, 3d

3D real-time, 360°, 3d

cinematic

attach camera to clients

camera pitch

dynamic FOV to sound

pitch

3D real-time

360° multi-screen

projection

of 3D off-axis

projection

real-time 3D

by labau

3D real-time

360° multi-screen

projection

of 3D off-axis

projection

real-time 3D

by labau

3D real-time  
360° multi-screen  
projection



labau



LABAU laboratory for  
architecture + urbanism  
Duisburg  
(0212) 4030

www.e.motion.space  
labau

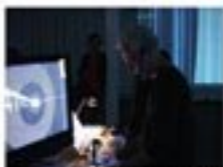
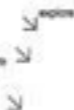
rhythmic space  
meta-level, by labau

fft → sound analyzer  
of → 3D → to object mesh

fft → mapping internal  
→ internal sound dynamics

parameters → → to object color size  
R → → to 3D sound position

with space engine  
→ fast Fourier transform  
data mapper



sonic to 3D object behavior

#### Patterns and dynamics in visual/sonic space

Rhythmic space differs from 'sonic space' in the sense that it proposes to map the sound dynamics to 3D object behavior. Sound dynamics are expressed in terms of peaks and of frequency bands, referring to a certain domain of the sound spectrum (20 Hz to 20000 Hz is the audible range, below is the domain of infra bass, above is the domain of ultra-sounds). In space navigable music sound dynamics evolve according to listener-sound distance (loudness through navigation) and the inner properties of the sound.

The so called "Fast Fourier transform \_ FFT functions" allows you to achieve in real time an array of frequency/peak values of the sound produced through navigation. These values are used to instruct an object's behavior inside the electronic space, mapping the dynamics of the sound to the color, transparency, position, rotation or topology properties of the object. The environment reflects thus not only the navigation but also the sound structure produced through navigation; an environment, an architecture producing and produced by sound.

In electronic music, rhythmic patterns are one of the main research focuses and probably its major contribution to music in general. The spatial representation of these rhythmic patterns builds coherence between sounds and visuals, through the underlying unifying parameter "space". This principle immerses the audience in a dynamic environment where everything is related and synchronized.

The use of real time sound analyses banded together with the ones of 3D techniques illustrates again one of the major specificity of digital media, its binary nature, the inherent unification of media and the multiple manners of data mappings and processes it permits.

fft



parameters

frequency values to  
object position, scale  
rotation, color,  
transparency

frequency values to  
vertical axis position  
spin, wrap, level  
object mesh

frequency to 3D sound  
position, scale...

frequency range  
20Hz-20000Hz



LABAU laboratory for  
architecture + urbanism  
struck  
tel 50700, 400

www.rhythmic-space.com

2004

www.labau.com



sonic space K+40

cam space

meta\_Cam/3D by labau

depth, real time features

color\_image recognition

top: standard out: web-cams

infrared cameras ...

concept/idea

/

tech: space engine

openGL

↙ explore

↘



computer vision

The [ webdyv... ] cam space development is based on the interrelation of 3d techniques to external, physical cameras. A camera turned to the "outside" world can fulfill several purposes, from the simple "sampling" of images to the complexity of an "electronic eye", giving the computer the sense of vision.

As a simple sampling device, it acts first as a "window", a flat textured surface inside the electronic space, an application directly relating the electronic space to the physical one. From this principle originates a series of interesting possibilities to overcome the simple use of real-time textures as pure 'windows'. For example the recording of the captured images can be used to build a 'history' sampling along the navigation or any other defined path. Here the trace of the navigation establishes a 3d image strip displaying in a temporal and spatial logic the captured images. Backward navigation and passages through this trace lead to interesting temporal constructs overlaying the already captured images with the news ones. This principle samples different time sequences one over the other, constituting a kind of real-time montage through 3D navigation.

Perhaps the most relevant of all settings is the one that truly reveals the system, its features and its limits: the feedback loop. By turning the camera so that it captures the projected image, the output is directly linked to the input. While controlling the amount of "pass through" signal, one can control the feedback effect. The "loop" is the main feature of the camera, the way it binds "inside" and "outside". The limit is the feedback effect, when the loop grows beyond control and that the captured image is an image of the captured image...

On the side of computer vision, the aim is to use the camera as an electronic eye, the computer taking care of making sense out of the camera image. This quite 'cpu' intensive task involves many algorithms and decision-making models drawn from the fields of Cognitive science and Artificial intelligence labs. From the 'simple' color zones identification, to shape extraction or to identification through movement contrast and depth, all these operations are based on the range of image parameters.

Through this software technology the electronic space can react to external conditions, and the human body becomes a recognizable and meaningful figure, opening a full set of interaction possibilities, complementing the ones that use sound or voice and mechanical action (keyboard, mouse...).

cam



concepts/idea

web-cam / de-cam

add frame

real time images

stream images

to features

image shape /

pattern recognition

contour shape

track points

set the timer to

image frames

www.labau.com

CD-ROM  
Screenshots

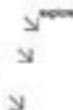
LABAU Laboratory for  
Architecture + Urbanism  
Strada  
104 50700, 4-00

with cam space  
2000

voice space  
metaLabau by labau  
pitch\_voice recognition

top: standard format for  
all projects

concept time  
frequency space + 3D sounds  
track + continuous navigation  
shape frequency 3D polyline  
tech: space engine  
3D: virtual, 2D: 2D



real-time voice interaction

In the general quest of the space navigable music project to examine spatial audiovisuals and new manners to conceive and perceive space, architecture, through programming logics, a multitude of software and hardware developments have been undertaken. These developments cover a broad range of researches, involving not only diverse forms of interesting media such as text, image, sound... but also the way we can interact within these constructs. Interfacing different data formats and protocols, its codes and parameters thus become a major focus involving programming logics such as 'hyperlinking' and 'datamapping' as the experimentation of new hardware interfaces.

Such is the development of 'voice space', which acts on the semantic level emerging both through programming as through new performative ways of interaction. The starting point is a voice recognition system allowing the user to navigate in real time the 3D space through voice instructions, to create entirely its sonic and spatial architecture and to control its rendering parameters. This setting allows the user to place even a 3D object and/or a 3D sound on the position he is at that moment inside the 3D space, each time he pronounces a word and depending on the word he pronounces. In this manner, through his voice he transforms the empty black space into an entire navigable sonic, visual and spatial construct, rendered in quadraphonic and in a 360° projection. In regards to navigation control the different instructions can modify the general speed of 25m/s through comments like faster, slower, stop... as its orientation like forwards, backwards, left, right... and where instructions like 'jump' can call recorded positions to switch instantaneously from one position to the other. Here the possibilities to relate voice instructions to action and control are immense since every possible G.U.I., graphical user interface, or mouse operation can be replaced by voice instructions. From a sonic point of view it allows to introduce the user's voice in the space navigable music project, thus extending the visual, sonic and graphic codes to the semantics of spoken words.

Nevertheless the development of such a device involves a series of questions on the level of interaction and on the conceptual one - the logics/ semantics of interrelating data in-between words, images, 3d objects and sounds. For example: which word creates what kind of object and sound and which ones will be used for navigation... etc. It involves an entire language combining the logics of programming with different cultural, technological codes of the employed media. To draw an example: a spoken word like 'time' could lead to: display the local time of the computer, to place a sound sample of a metronome, to transform the color of the rendered scene into red, to pitch down the sound samples, to display a 3d object in form of watch... the possibilities are endless. In relation to this wide range of possibilities the 'voice space' development focuses on the semantic abilities of the device to underline the parameters and codes of digital media itself, as to increase the performative qualities of the project allowing the audience inside the spatial 360° projection to anticipate the real time processes. So to say: a device where the artist as the public immersed themselves in the spatial phonetics of navigable music.

time



voice constructs  
frequency + volume  
+ recognition  
to 3D words  
to actions  
to create 3D sounds  
to create objects  
to create positions  
to transfer object  
text, position, color...  
to control user  
processing effects  
noise, blur, glow



LABAU laboratory for  
architecture + urbanism  
STREUM  
341 51700, 400

with voice space  
2004

www.labau.com



voice space  
LABAU



particle synthesis space

1994-2000/01 by labau

title: particle engine

1994 granular sound engine

top: system design

concept line

particle line + point emitter

left: space engine

not published

space



granular synthesis \_ particle engine

"All sound is an integration of grains, of elementary sonic particles, of sonic quanta." Iannis Xenakis (1971).

Particle Synthesis started from the idea to combine 3D particle technologies (Particle engines) with granular sound synthesis, a research mainly motivated by the possible convergence of visual and sonic structures through electronic space; as it is the general principle / quest in the space navigable music project. Both technologies are considering a shape, a form or a sound as the result of many combined elementary "grains", which would be individually neither visible neither audible. Both allow each so called grain, a tiny program which determines its evolution in time, to carry its own behaviour.

Furthermore the concept of particles are closely related to digital technologies. For example digital sound has a sample rate or a number of sound elements per second, any digital information is thus constituted of a set of elementary data container ("binary" data), in this case as in the one of particles the result is the sum of very small elements. In 3D computer technology these elementary grains are often named "particles", in granular synthesis many names exist: "sonal", "sonic quanta", ... The idea is not dissimilar to the one that saw the birth of granular synthesis, while it was closely related to "spatial sound" and as Xenakis introduced it in his piece "PH concert" intended to be played on 400 speakers integrated in the Philips pavilion of 1958 World Fair in Brussels. Iannis Xenakis, as its further projects of the "polytopes" show, achieved in a coherent manner to relate new ways of creating sound, think music, with spatial principles, architecture. In regard to these researches in the space navigable music installation, its sound spatialisation (quadra-, octa-, n-phony) and the 360° projection, are playing on the same level in the conception and perception of the underlying sonic and visual processes. In the "particle synthesis" development, granular synthesis as a tool is complemented by parameters such as: position, orientation, speed, movement ... while the particle engine is complemented by the ones of sound synthesis. The design of particle synthesis is the design of a system made out of processes where no predetermined shapes exist in themselves; it is a consideration focusing on the digital nature and on the real-time and interactive feature of the space navigable music project.

The key construct is that it's all about the process as being a sum of elements, the synthesis of hundreds of these grains, leading to the creation of a "sound-shape" where its spatial organisation is ruled by the parameters attributed to each sonic particle, such as weight, emission rates, lifetime ... In this manner the produced sound-scape of 'particle synthesis' is the result of the interaction of all the different particles, a synthesis of the behaviours and parameters which are attributed to the spatial and sonic particles / grains. All of these introduce the construct of "scale", from the "elementary" to the "whole", into process logics, a topic which one could track in any description of our world even the one that is provided by fundamental physics. And as mentioned before, the spatial display of these real-time processes in a 360° projection gives to these very abstract principles an astonishing concreteness.

top



concept line

particle

line: size speed  
source: position fal  
add: kind weight  
rot: offset emission  
shape: circular motion

emitter

adaptive duration  
line emission rate  
top: rotation scale

to

granular sound



Labau | Laboratory for  
Architecture + Urbanism  
D-50667 Köln | 4020

www.particle-synthesis.com

www.labau.com

L'Arbeitsraum K  
L'Arbeitsraum K



## 10 Korean artists/lab[au]

liquid space 01 de SIGNForum  
 2003.04.20 (jeudi) 18h00 / workshop  
 2003.05.02 (samedi) / performance  
 2003.05.03 (samedi) / lecture  
 by: workshop, performances,  
 lecture

concept: de SIGNForum  
 + poster design

with: space-navigable-music

Ryu biho, Kim Tae-eun,  
 Choi Byoungil, Byul,  
 Doug Lee,  
 futureyetronica - Lee Eun-baik,  
 daytripper - Ryu Han Kim,  
 transistorhead - Min Sungg,  
 Byungun,  
 rampacket - Yeo Un-jin,

collaborative design

Exchanges and collaboration have become circumstances for creative activities in the realm of media arts, overturning the conventional ways of artistic practices. Through an online forum, mailing list and following wiki, blogs, and open source movements, creativity is nurtured and enhanced by sharing knowledge and information. Liquid Space 01 started as a collaborative project between ten Korean artists and LAB[au] in 2003 as an attempt to cross the boundaries between art forms, genres, cultures and the relations between author and audience. First launched as an online forum to facilitate dialogue among the participating artists from Brussels, Montreal, Tokyo, and Seoul and followed by a two week-long workshop, Liquid Space started to take shape and metamorphose simultaneously.

sPACE: Navigable Music, a software art developed by LAB[au], is both a technical and artistic platform where Liquid Space is acted out. As is often the case with media art, sPACE: Navigable Music, is an artwork as well as an authoring tool with which the user can make, execute, play and be immersed in a 3D visual and quadraphonic sound environment. The open structure of sPACE can be easily modified and adapted to embrace individual proposals by means of simple coding. Conventions for virtual objects and navigation, new forms of narratives using space and time all emerge in sPACE: Navigable Music, bridging such diverse genres as cinema, electronic music, and architecture.

Twelve artists ranging from musicians, graphic designers, visual artists to programmers, worked as individuals or as a team to explore the idea of how human perception, sensibility and experience shift in a digital environment and developed their own perspectives toward it. While sound artists were challenged to probe cinematic aspects of the composition in sPACE - for example, by way of jumping between two remote sound objects as in a montage strategy, sequential sampling could be achieved -, visual artists should deal with the interface which is more responsive to sound than to visual. Each taking different approaches, the project encompasses a diverse array of forms, from commercial symbols to simulated models, abstract figures, photographic images through texts. Notably contrast to LAB[au]'s own tendency toward abstract sound and spatial notions, Korean artists showed a penchant for narrative and storytelling as exemplified in Sense, Lies, and Graphic Files by Byul, Korean artists collective.

The mode of 'liquid', which Marcos Novak has developed to represent the fluid nature of electronic space, denotes the state of constant flow and changes made in response to the interactions among all the participants in Liquid Space. Completed with the participation of the audience who navigates through a gravity-free, boundary-free environment, Liquid Space mutates into infinity whenever a new habitant navigates and communicates with the space. Resembling the ephemerality, openness and freedom of music, Liquid Space will go beyond the boundaries of our own perception.

Suhjung Hur, Curator  
 Art Center Nabi (Seoul, Korea)  
[www.nabi.or.kr](http://www.nabi.or.kr)

lab[au]  
 ↓  
 de/ design  
 + sign  
 + form  
 + form  
 de SIGNForum

lab[au]  
[www.liquid-space.net](http://www.liquid-space.net)

de/ design  
 + sign  
 + form  
 + form  
 de SIGNForum



2003 de SIGNForum  
 2003.04.20 - 2003.05.03  
 18h00 - 21h00 (jeudi)  
 10h00 - 18h00 (samedi)

de SIGNForum  
 2003.04.20 - 2003.05.03



byungjun, musician

KQ-01 crossword novel

www.kq01.com

crossword album for  
subtitles - 30/sonic grammar  
30/paper - 30/forts  
subtitles - 30/moving sounds  
text moving 30 sounds



Hangeul

"Every object is a moving sound that has a specific direction for its movement. Overlapped, crossed, passed by, and gone by, these objects create a phonetic environment combining consonants and vowels in Hangeul, Korean alphabet. As if playing crossword puzzle, you make new linguistic meaning by navigating through space."

Suhjung Hur

Hangeul is the Korean alphabet, 'Han' means 'Korean' and 'geul' means 'script', the alphabet consists of 24 letters. While Hangeul writing may appear ideographic, it is actually phonetic. The shapes of the consonants gk, n, s, m and ng are graphical representations of the speech organs used to pronounce them. Due to its similarity with one of the fundamental concepts of space navigable music, this link in between the sound and its graphical representation has become the key element of this composition.

The environment is a black matrix whose boundaries seem infinite, divided by a unit grid. The composition in itself is structured horizontally in five levels. Like the Hangeul, consonants are derived from 5 ways of forming sounds with the speech organs - "molar sounds", "lingual sounds", "labial sounds", "dental sounds" and "throat sounds". On the horizontal plane and at each level, the line formed by the consonants is crossed by vowels. All horizontal layers are vertically linked by punctuation and other common signs. On each of these structural lines a never ending flow of the 24 sound-letters (phonemes) is transported at a constant speed. At the cross points of these lines, one can witness "on the regular tempo" the birth of improbable words and of a "non westernized" characterized melody. Once named "into my mouth" rather than crosswords, this piece illustrates the speech and its written representation as a system composed of short elements (or information units) in which all ideas emerge, often through accidental association.

As strictly structured as it can be spatial, on a linguistic level "chaos" is dominating while "order" or "meaning" is as accidental as any other "un-meaningful" event, covering the system with a strong "abstract" feeling. From a Western point of view Crosswords presents a strange method, a way of designing which is "plain" and very "intricate" at the same time. Perhaps what for us westerners is called "music" isn't to be dissociated from what we call "speech" and that in this case we would rather acknowledge that these are simply "sounds". We could as well acknowledge that "randomness" or "chaos" is as aesthetic as order and that abstraction is somehow dissociated from figuration by common sense. Quite uncommon concepts from a Western point of view, yet a guess at what happens when two cultures meet: new ideas and sign-forms emerge ^\_^ + -)

Byungjun, musician, started as a member of Tomato in 1993. Byungjun continued his alt rock band to Piplong Stocking (1996) and Wonderbird (1999). Currently working on an electronic music project 'Mozosonyon' with DJ Debaran, he has collaborated with fashion designers, visual artists, film makers, and choreographers making music for a film 'Rub love' in 1997, a play 'Roberto Zucchi' in 2002, a film 'Wurung-gak-si' in 2002 among others.

tab

of Hangeul  
Screen-30/forts  
24 letters  
14 consonants  
10 vowels  
Han + Green  
guk-hyeol

www.byungjun.com

CD  
1 sound by words



2000-2004

www.kq01.com

KQ-01

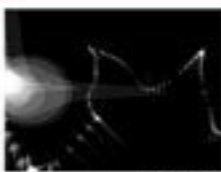
choi byoungil, visual artist

top of mnemonic spine, no.02

with sonic space  
sound duplication in  
voice space

concept into, pushed  
thru.led + 3D sonic generator  
back + 3D sound sampler

top  
voice recognition + back



3D sequence

"Unending navigation forms Möbius Strip-like path as the voice repeats its own monologue. Looping on the same trail, the movement expands its memory and information to the infinity and to the impossibility. Like Funes depicted by Jorge Luis Borges, who got robbed of the ability of memory, we don't stop our journey for the unknowable truth."

Guhjung Hur

Sonic spike shapes are duplicated as the camera moves along a never-ending looping path, alternating the color of the shapes, either white each 44 frames, or red each 22 frames, resulting in a binary rhythmic/visual pattern, a spatial sound sequencer. The motion path duration of 3480 frames is unevenly divided by 22 to the floating point number of 158.18181818... These figures imply that at each passage the added soundshapes are slightly shifted compared to the previous passage. Through this time shift in the shape duplication process, the space is gradually filled with soundshapes, resulting in a fast paced rhythm, as it becomes almost completely filled, the sound becoming a continuous "noise" and the visuals are giving a whitelish "stroboscope" effect.

Conceptually speaking, the very spatial (three dimensional) and well ordered being the piece is giving in the beginning, contrasts with a very mono-dimensional "colored noise" ending, as rhythm continuously increases. Yet (time/speed/T) is in fact a constant parameter in this piece, expressing its three "dimensions": past, present and future thanks to the other "non stretching" dimensions making space (XYZ). Indeed in the 360° projection of the installation, the direction of the path movement indicates precisely the "past" in front, the "now" in the center and the "future" in the back, letting the audience anticipate in the process, navigating along a timeline, watching it as it is "filled" with information or, from a narrative point of view, populated with "memories". All this is intentional and is the expression of the "computer machine", of its binary nature, of its purely objective memory and of its blind "will" to "execute" and "calculate". It shows a distinctive lack of discernment compared to the "human machine" which needs to give "meaning" to its actions and has comparatively a very subjective memory. In Mnemonic Spine the human factor is introduced by voice recognition. A narrator is reading a list of words (information -white-red-human-black-sound-binary-memory-spine...) which the machine (if it recognizes it) turns into a written word and a matching voice-sound repeating the word in loop. More and more words are added, the human voice being gradually masked by the computer sounds, the system and electronic space are invading the material space. Like automatic poetry filling the air with words without any other meaning than the one you are yourself giving to them, the story comes from your interpretation and your imagination.

Choi Byoungil, studied visual art and design at Seoul National University and Cranbrook Academy in U.S. His work from web to video, typography to interactive installation, using diverse new media, is in line with his experimental art making. In his recent solo exhibition *infected*, Choi showed how the relation between representation and reality became more convoluted and problematic in digital environment. He also won the first prizes for the audiovisual category in Korean Electronic Music Competition in 1997 and 1998.

tabu

↓

def  
name(nobody)  
+  
memory(memory all)  
+  
top(new technologies  
information and  
communication)  
+  
spine(website  
organization)  
+  
infected(CSPNE)

choi byoungil  
www.hardcore.comP. MEMOIR  
C. SPINE

transistorhead, mr. sunggi  
musical, rhythmic, soft  
tip of metatarsus, red

with rhythmic space

connect into  
numbers, ratchets  
crossing, taking flows  
→ moving 2D sounds

tech:  
Bv + 8 stages



machine aesthetic

"The repetitive mechanical movements dominate the immense space of the universe. As nonlinear sound loop and glitch sounds flow along the rail of metatarsus, soundscape turns industrial structure subtly into organic wave."

Sujung Hur

Dubbed metatarsus, Transistorhead's composition goes well beyond this simple analogy; using the full range of sound-space interactions the space navigable music engine offers in order to build a half-machine half-organism environment. Structured as five music sequences placed on prismoid cross-section shaped lines intersecting in space, the composition tends to build an organic system out of sounds and architecture thanks to animated objects, FFT reacting objects, moving sounds and color effects.

Drill machines, deep synthetic bass, short clicks and other "weird" sounds are here strictly organized along these five FFT reacting animated "bones" constructing an artificial and mechanical but also living landscape. This 'Iron' like universe immerses the user in the machine space, the system in itself. With silence filling the space in between the different sound beams, each line leads to a specific sound frequency subset and is dynamically scaled to the beat, thereby visualizing sound proximity.

As a rather unusual choice for a space composition, the author took the decision to hide visually all individual sound "containers", leaving the reacting objects, the beams, as the only transducers of the sound's positions and proximity, highlighting the intention to let the architecture "be" the sound.

As a repetitive, looped and closed circuit, the system can be assimilated to a highly effective, well polished machine, but in contrast to a linear system/composition, the user can here choose to navigate any line at any speed; music structure is user's movements, space is the sound, architecture is the transducer.



Transistorhead aka Sunggi Min, electronic musician, experiments from IDM to granular synthesis. Previously held the very first rave parties in Korea such as Moonstruck99 and Aurasoma by himself, he participated in the first techno compilation album 'techno@kr' and 'PLUR' with Japanese musicians. In 2000, Transistorhead released his first solo album 'HOUSOLOGY' in 2000 through which he declared an academic approach to techno while drawing great interest among techno manias and professionals. Always being on the edge of electronic scenes of Korea, he is currently preparing his second solo album.



of Metatarsus

Part of the foot that lies just beyond the tarsus. The skeleton of the metatarsus consists of five (5) metatarsals. From the Great toe, beyond tarsus, to tarsus + beyond the tarsus.



Crotch leg head



transistorhead, mr. sunggi

metatarsus  
transistorhead



byho ryu, visual artist  
futureyetrónica, musician

top of falling flowers, 2002

left: color space  
object color to object position

connect into  
metaphor + moving sounds  
sense, line and graphic line  
+ variable space

top: LCD to moving  
3D sounds



metaphor

"Starting point of navigation is the very moment of suicide, a choice for escape from dreaded and desperate modern life. Falling in gravity-free space, however, does not mean the end any more. The space of falling turns into a habitat where order and chaos, birth and death, creation and destruction coexist in odd harmony."

Suhjung Hur

The whole environment is an indexation system, the color cube, taken as an "aesthetically adapted readymade" from space navigable music (all color space) (256 x 256 x 256 = 16,777,216) 2D planes have each a different color resulting from mapping their respective XYZ positions to their RGB equivalent (0 to 255). This system has been chosen on purpose for being visually very well organized, very "static" and very "unequivocal".

As a metaphor for another system, Falling Flowers uses the color cube as an image and equivalent of the Korean society which is perceived as very "well organized", very "static" and very "unequivocal". So to speak all subsequent statements are "imagined" and not "unequivocal". Here the color cube is representing the universal and the "whole" while displaying all the possible screen colors with its endless color plates, the space appears immensely big at a individual scale (1/16,777,216). The sign here becomes the equivalent to a color, the individual "qualities" of a color are totally enclosed inside the color system, a color acquiring its value by its comparison with other colors and its integration in the system. Sound-wise and compared to the rigidity and static state of the color system, everything is moving. Moving sounds are describing vertical movements, again in opposition to the horizontal color planes. In the gaps between the color plates, these sounds are "falling". First only represented by an icon they switch to a body shape on closer examination, a technique usually described as a LOD(level of detail) switch. A lot of these bodies are falling, each transporting a sound, making music together. These bodies are made out of a reflective skin, reacting to their environment. Some bodies are floating in the air like being suspended in time, these are empty shells but when entered they reveal a rainbow like landscape: colorful, fragile and ephemeral.

Biho Ryu, media image activist, studied painting in Hongik University in Seoul and completed graduate studies in Visual Art in Yonsei University. His works have been constructed around his concerns with social and public issues, from education system to public surveillance and to national status as divided country. His video works seem to be inextricably linked to the medium of his art making: digital.

Futureyetrónica, electronic musician, has been involved with electronic music since his performance at 'World Wide Network Art' in 1995. Futureyetrónica, Eun-Taek Lee, has earned great attention after the release of his ambient, drum'n'bass album 'Cyber City' in 2000. His live audio-visual performances and works, organized by Korean Electronic Music Association among others, put him in Korea as one of the most active musicians working between the fields of electronic music and media art.

top

LCD level of detail  
technology which  
allows dynamically  
to add the render  
quality such as  
the number of  
object vertices  
controlling the 3D  
scene according to  
user position  
(distance)

www.biho.org  
www.futureyetrónica.com

© 2004 Futureyetrónica  
www.futureyetrónica.com



2004-2005  
M+30  
Museum of Modern Art  
New York City

www.futureyetrónica.com



byul  
illustrator, graphic designer  
top of sense, lies and graphic files, no.03

with a motion space

young-uk  
filmmaker, director + narrative space

with 2000/04/04/04/04/04/04  
+ 1000/00/00/00/00/00/00/00  
73 30/00/00 + 10/00/00

→

→

→

byul  
young-uk  
labau



© 2003

"Lies so polished and refined are exchanged everyday without any pang of conscience, which lead to my own unconscious corruption. Under this circumstance, paintings and music are made, picked up, sold, and collected..."

Suhjung Hur

From the magic lantern that fills the four walls of a child's room with pictures, to city walls filled with advertisement and screens, graphic files and signforms are just basically everywhere. Not dissimilar to these 2 analogies, "sense, lies and graphic files" is a space filled with icons, emphasizing the values and the "body" we give to them even if in this case they are purely immaterial, just some lights splashed on a screen. While putting meanings and values on each successive billboard, your eye is captured and you ask yourself what is the sense of it...

At the beginning was innocence, naivety; a childhood of blue skies, filled with bunnies, and fairytale animals ... Common sense? Codified icons? Or perhaps already lies? Objectively just images, the rest are interpretation but interpretation is "meaning"! Then come items, toys, whatever ... as long as you can draw it, you can name it. Indistinguishably items become icons and icons become brands, identities ... choose your lifestyle through your objects of desire, build your values on your beliefs... Icons are among us since Christ was painted on his cross, the color is blood red, the sense can be a lie but as long as you believe in it, is this still a lie?

As the only piece of storytelling made with space navigable music, "sense, lies and graphic files" is quite unique, yet it illustrates a common radical statement about visual culture, perception and cognition, while grabbing and trapping the audiences' attention inside the 360° magic lanterns projection, musically appeasing and charming them with an Indian/Hawaiian/electronic indie music convergence.



Byul, an artist collective, formed in 2000 have been tapping into diverse fields of art from poetry, music, installation to graphic design. Their obscure yet unique identity is presented through text, image and sound samples in Byul's website [www.byul.org](http://www.byul.org) and in their magazine 'Monthly Vampire'. Recently, Byul made music for the acclaimed film 'Take Care of My Cat' and graphic design for Korean Pavilion in Venice Biennale 2003.



comment  
the sense, lies and  
graphic files inspired  
by  
the sense, lies and  
graphic files + film by  
young-uk through  
with-dominant  
contemporary life and  
relationship driven by  
technology-feedback

byul, artist collective  
[www.byul.org](http://www.byul.org)



© 2003/04/04/04/04/04/04/04

byul  
young-uk  
labau

© 2003/04/04/04/04/04/04/04



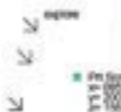
Daytripper, aka Han Kil  
Ryu, artist and musician, aka

top of yellow road

with some space

concept into  
mediums + artificial nature

with post-processing  
+ somewhat clutter



artificial nature

"By deconstructing and reconstructing his track Ryefield from his album 'Collector', he remixes his number in space and through visuals. Ryefield could be either our small claustrophobic room where all the city noises are flooded in or the parched grey cityscape that became the nature to modern city dwellers."

Suhjung Hur

Exploring the living microcosm of his own small room, catching sounds which have become 'transparent' because they are too tiny or rather because they are just always there, Daytripper composed out of them a small artificial world like you would plan a Zen garden.

A cube which from outside seems quite flat, grey and impersonal, reveals once entered, a landscape, made of aligned plant shapes, themselves clearly distinguished in 2 parts, up/down, the branch/foilage and the roots. It is a ryefield, a place expressing dialectics, visible/hidden, inside/outside, straight/wounded ... not natural, not artificial, a bit of both. It is like the grey cityscape that became the nature to modern city dwellers shouldn't be considered otherwise than a living entity made of billions of small events, all life indicators, as for example all these noises of everyday life and the white noise cluster they form together.

All these phenomena are artificial but they are beyond human control and thus live a life of their own. It's the main duality expressed in ryefield. Divided by a common ground two layers of sounds, one above the ground the other underground, are sharing the same samples, yet one seems noisy while the other seems more melodic, but on closer look difference is made only through the way these sounds are structured in space and time.

All 3d scene rendering take the form of an ascii\* colored matrix, somehow fattening this 3D world in text symbols, adding noise and life to the otherwise too smooth computer image. These universal symbols are everywhere as we tend more and more to share our experiences through them.

Daytripper aka Han Kil Ryu, artist and musician adopts raw sounds and noises of everyday life as well represented in his lo-fi noise album 'Collector' released in 2001. Before he started his solo project 'Daytripper' (as an electronic musician and deejay), he worked in modern rock bands 'Uneenae Ebalikwan' and 'Dolsipior' as a keyboardist. As a visual artist, he also participated in numerous group exhibitions such as 'Cross-Talk' and 'Cham-sil Reconstruction Project' in Seoul and is currently preparing an exchange music project called 'Life Recording Workshop' with Russian and Japanese experimental sound artists.

top



top text  
"American Standard  
Code for Information  
Interchange" a 128-bit  
multibyte code  
used for rendering  
and saving text files

post-processing  
The original scene  
of the 3D scene is  
passed through a  
second render step  
allowing to apply  
specific "filters" such as  
the ascii.

top part of  
www.studiob.com



ARTIST AND  
MUSICIAN

ARTIST AND  
MUSICIAN

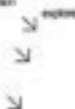
## 14 artists/labau

liquid space 02 numbers  
media materials / workshop  
playful matrix art project / exhibition

top: workshop, performances,  
exhibition, lecture

concept into  
designing by numbers  
+ generative design

bottom: space reconfigurable music



Luzylogic - jerry gale + kathleen  
de bock, etschaberry - xavier  
gaston, michael heibig, legoman -  
yannick jacquet, bubblyfish -  
haeryoung kim, marc wathieu  
thomas oibrecht, ludovic pré,  
arno redinger, patch visualive,  
glomag - chris burke, noisbrow -  
marc resibois, dink standaert

collaborative design

"1. Mathematics is the language of nature. 2. Everything around us can be represented and understood through numbers. 3. If you graph the numbers of any system, patterns emerge. Therefore: There are patterns everywhere in nature."

movie "PI", by Darren Aronofsky

**general approach:** submissions for the open call of the liquid space 02 workshop / exhibition organized by LAB[au] have been solicited from musicians, graphic designers, programmers, architects, video and media artists. The main topic of the workshop is spatial audiovisual music or in short: how to produce an artwork where music and images merge thanks to the concept of space. In regards to this topic, movie making practices and techniques, music composing techniques and architectural structural practices merge. Interdependency of sounds and images open a brand new range of experiments especially when considering the digital nature of the work permitting both real-time manipulation of parameters (performance setting) and interaction targeted towards visitors (exhibition setting). All these considerations lead to a brand new field in an artist's register, designing processes and systems rather than "closed" results. Liquid space thus stands for a trans-disciplinary approach but also for an explorative work in merging codes and signs of different media. In this manner the workshop focused on the production of interactive 3D real time spatial and visual music files which takes into account different performative settings such as 'live' playing, concerts, and user interaction installations.

**thematic approach:** liquid space 02 followed the theme of numbers where number theories have been motivated to stimulate the visualization of the inherent INFORMATION logics in computation and communication processing technologies. In this manner the different participants worldviews express each the different established inter-relationships of media through this common code in order to visualize its parametric and structural setting, the language of the digital media. Here the thematic frame also establishes a common vector to relate the different files produced in the workshop (period 1) to create a common view all participants exchange, exhibit, perform and present the works in a coherent manner, exhibition (period 2). In order to stimulate the general view different international theorists and artists have been invited during two-work periods to engage with the participant artists via lectures and discussion panels, on the topic of relating number theories to the aesthetics of the digital media.

Workshop period: 17.05. - 31.05.2004 MediaRuimte [...>workshop]

Exhibition: 08.07.-29.7.2004 matrix art project [...>exhibition]

Invited speakers:

Lev Manovich [theory...>]

Stanza [practice...>]

Marcos Novak [theory...>]

Dirk Huylebrouck [...>workshop]

Liquid space 02 has been realized with the support of  
Vlaamse Audiovisuele Fonds

lab

lab

liquid space 02 external links

MediaRuimte  
www.mediaruimte.be

lab  
www.lab.be



workshop +  
exhibition  
matrix art project / exhibition  
lab (05.05. - 06.07)

workshop  
performances, lecture  
matrix art project / exhibition  
lab (05.05. - 06.07)  
thanks to all loggers

liquid space 02  
14 artists/labau

liquid space 02  
www.liquid-space.be



Vlaamse Audiovisuele  
Fonds



glomag chris burke  
 musician, multimedia artist  
 ipa02 numbers may03-july04

art: sonic space  
 a: motion space

concept links ipa 02 themes  
 structure, elements  
 + 3D sonic grammar  
 grid compositions

test:  
 switch features/mix position  
 3D montage + jump modes



artwork ipa 02

As Spazje Music demonstrates, digital media have brought us to a point at which sound and vision can be linked in a virtual space, where beats are subdivisions of time just as lines are subdivisions of space. The relationship between the two, specified digitally in numbers, is experienced in "Numbers". Music induces time into space.

"My first experience with the Kraftwerk song "Numbers" was seeing a basketball game on a neighborhood court in New York City in 1980. The music blasted from a boom box as the players enacted their complex ballet around the court. The understanding of the relationship of beat to time to space did not need to be expressed. It was innately understood by the players and seemed to facilitate their movements as I passed. Besides the fact that the verbal counting in the piece was done in a number of languages, several of which are certainly spoken on a New York City basketball court, the game was ruled by the beat which specified where the player should be at a given moment.

Lab[au] have designed a digital space for Numbers that expresses this relationship on its most basic level. A grid of sound objects is made navigable with hidden layers that are accessed in real time performance. Time is experienced through the relationship of the grid to the music and voices. At one set of coordinates "Ein, zwei, drei..." is prominent. A few virtual steps away, the counting continues but in Japanese, the German decreasing in loudness with each step. The beat delineates time from one point to the next. Lab[au] have also implemented a time-warp effect, that jumps the user to a far outpost with a unique sound mix, looking back on and hearing the grid from a distance. With every movement, music maps out time as it relates to space. Kraftwerk's original was enormously influential and has been referenced in music many times over. In addition to my translation and fragmentation of the original, I worked in as many of these as I could find. Afrika Bambaata and Arthur Baker's "Planet Rock" lifted the melody from an earlier Kraftwerk song and the live version includes the Japanese counting from Numbers as a call and response with the crowd. It was a short hop from that to Run DMC's "It's Like That" the beat of which owes a bit to Kraftwerk via Bambaata. More distant are the counting chorus fragments from "Einstein on the Beach" by Philip Glass and the the short wave radio voices from "The Numbers Stations". Throughout the world there are stations broadcasting human voices reading a set of numbers. Are they used by governments? Banks? They are numbers moving across the world, delineating time and space."

Chris Burke

Glomag is a sound collageist and a gameboy artist based in New York. He released several records under the name of Chris Burke and with his band Glorified Magnified in the 1990's, including "All Wave Super" on Sire Records in 1994. He is also the owner of Bong+Dem, a music production company that has pioneered work in web-based music such as an interactive remix of Björk's "I've seen it all". Being a sound designer and a composer, Glomag borrows sometimes his material from 80's new wave music (one must listen to his Normal Grace Jones "Warm Leatherette" remix).

song lyrics  
 numbers\_kraftwerk

[ein zwei drei vier  
 fünf sechs sieben acht  
 (German)  
 One two  
 (English)  
 Uno dos tres cuatro  
 (Spanish)  
 Ich bin ein japaner  
 (Japanese)  
 Ich bin ein russian  
 (Russian)]



ipa02 numbers  
 ipa02 numbers  
 ipa02 numbers

ipa02 numbers  
 ipa02 numbers



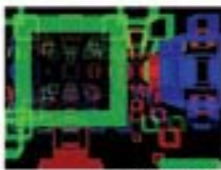
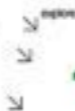
etschaberry, xavier gazon  
musician

bp 02 drumuter may-july 04

11m: sonic space  
sound gate + 30 sound object

concept idea: cubical  
look: interactive space  
+ 3D sonic general

look:  
low defined layout



3D drum computer

"It's a three dimensional sequence, the ultimate combinatory audiovisual drum computer, triggered by motion, speed, directions, collisions, there is an infinite number of possibilities, it became an instrument of its own, I nicknamed it the Drumuter."

etschaberry

Most electronic music is composed by designing "loops", which are constituted by a number of measures subdivided in the ubiquitous 4/4, filling your "patterns" with soundsamples triggered by a bpm paced playhead, a kind of push-buttons "game". Such a restricted or quite mechanic way of doing can be perceived as having creative limitations but can, thanks to the computer, become a fantastic combinatory machine. Let's take a visual example. Imagine a simple cube divided by 8 on each side, it holds 512 smaller cells. Fill each cell with a different sound sample. Triggering and listening to all these sounds can take a while even if played sequentially (linearly). If one considers music as being the combination of smaller music elements or sounds in time, then even considering you can only use line-movements in this matrix exploring all the possibilities is almost endless, as the sequential order depends of your precise path in the cube. Drumuter uses such a matrix, composed of 512 3D sound-objects triggered (playing sound) when a user's proximity has reached a minimum limit. If a user stands still depending on his exact position, he will hear either silence, either the same sound played forever and ever. If a user moves slower than the sample time he will hear successively all the line's sounds, moving faster cuts the sounds, slipping the faster he goes into "clicks and cuts" aesthetics.

Drumuter is clearly based on the principle of a drum computer, it's a box in which sounds are placed in linear trajectories, its general structure being a three dimensional matrix, the many vectors which cross a point are as many combination of sounds, in a drum computer logic one could name these combinations, "loops" or "patterns". Sounds are distinguished through a color code, each color is a sound category or "ambiance". Ambiances can be contrasted as color are contrasted, linking sound aesthetics (frequency, bpm,...) to visual aesthetics (shape, color,...) and navigation to composition (pace, rhythm, sequence). Looping user movements to a collision box which replaces the user on its displacement vector, music becomes a combinatory play of parameters as turn angle (0 to 360°), direction vector (forward, backward, up down) and speed (0 to 100 meters/second). Drumuter is a spatial, 3d real time instrument within which the musician is integrated in the machine, quite similar to an electronic instrument in its main principles, but the interactive modalities and visual representation make it very specific to computer technology.



Xavier Gazon, aka Etschaberry, is a musician from Malmédy, Belgium. Since 2000 he is running the "Einhiko" label, a platform for digital artists which has been organising a lot of events in the Liège area. Describing himself as being more of a chaotic experimenter than a very straightminded composer, he nevertheless has been working as a remixer for Sony Music, has released a first solo album and has been working as composer for the national theater of Belgium, brussels.



del drumuter  
drum  
+  
computer  
+  
machine  
label user  
sound pattern

drumuter  
www.drumuter.com



drumuter.com  
www.drumuter.com

del drumuter  
drumuter



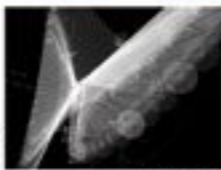


nan: fuzzylogic  
any game + software de tool  
fractals, digital artwork  
for 3D nan, fuzzylogic projects

with: sonic space  
animated sound objects

connect: mix, musical  
particle rules, 3d paper  
+ randomness

with: mixing 3D sounds,  
self-organizing algorithms  
full-dynamic mesh generation



strange attractor

Numbers can't fully represent reality because of their accuracy, consequently they can't reproduce the level of randomness (production of variation) which takes place in nature or in astrophysics for instance. This fact has a major impact on the usage of digital loops in programming which leads in many cases to unwanted repetition. In chaos theory certain equations known as attractors are alternative systems which provide less predictable results. An attractor is characterized by a set of coupled nonlinear differential equations, a 'set', 'curve', or 'space' that a system irreversibly evolves to, if left undisturbed.

The so-called "strange attractor" is a non-periodic attractor, yet its chaotic processes are not random; they follow rules which can be expressed as a series of equations. Under certain conditions, the motion of an object described by such a system will neither converge to a steady state nor diverge to infinity, but will stay in a bounded but chaotically defined region. It creates patterns in Chaos, a kind of dynamic equilibrium inside a chaotic system. The object appears to move randomly, and yet obeys a deeper order, since it never leaves the attractor. In this manner an attractor describes a region in the phase space of the solution to certain systems of non-linear differential equations. It is an example of deterministic chaos which like complex (natural) systems runs through some kind of cycle and where no exact duplication or repetition is going on, but a search for equilibrium or harmonics.

The NAN project is based on these self similar, recursive equations repeated on top of each other over and over again. By plotting the differential equations the coded attractors (i.e. Lorenz, Duffing, Chua and Rössler) produce visual three-dimensional scapes because of their self similarity in time and space; they are graphical representation of time variation. Attaching sound samples to the replicating nodes and minor random variations on the rhythm leads to a harmonic evolution of sound in space-time, a continuous stream of music without actually looping. The fact that NAN could keep on going for days, months, years... without actually repeating was an appealing idea. So not a loop but NAN.

\* The title of the work NAN, Not A Number, comes from the debugging software, where at some point the game engine fails to manage the amount of data (chaos), which results in this error message. NAN

Used attractors:

- 1\_ Lorenz attractor
- 2\_ Rössler attractor
- 3\_ Duffing attractor
- 4\_ Chua attractor
- 5\_ Circular limit

FuzzyLogic, Belgian based digital studio, works on graphics and sound combined in an interactive environment. Interactivity in the sense of visual interfaces triggering musical structures. The result is generative, different each time you play with the interface or start the application. The experiments are a by-product of research into linking visuals and sound. They might be a failure, but out of the failures (or the accident) might spring something unexpected - which leads to new ideas and/or new approaches. The work is open source, download it, play with it and hack it.

nan

diff  
strange attractors  
fractals  
level of physical  
properties toward  
which a system  
tends to evolve,  
regardless of the  
starting conditions of  
the system  
change  
An attractor to  
which the approach  
to the final set of  
physical properties  
is chaotic



any game  
fractals  
for 3D nan, fuzzylogic projects

with: mix, musical  
particle rules  
for 3D nan, fuzzylogic projects

with: nan, not a number  
fuzzylogic

www.fuzzylogic.be



nan

not a number

fuzzylogic

nan

not a number

fuzzylogic

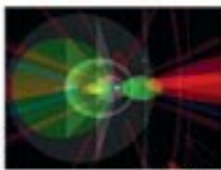


nutshell, marc wathieu

musician, multimedia artist

1st CD: nutshell, may04-july04

with sonic space

concept/idea: crosswords  
structure: mirrored space  
+ 3D sonic palettetools: moving 3D sounds, orbits  
color spatial emission  
linden sound sequencer

sound universe

"What I wanted to create was a sequencer working like a tempo-galaxy: the user navigates or jumps through the orbits, composing music with sounding planets. Each orbit has its own sound-landscape where the number of planets is equivalent to divisions of measure. Stephen Hawking's book "The Universe in a Nutshell" inspired me, cutting edge of theoretical physics, hard but exciting"

Marc Wathieu

In space there are 3 ways to perceive a sound-landscape, either you move the listener, either you move the sounds, either you combine both movements. In space navigable music the spatial parameters of static sounds is the smallest subset of coordinates and parameters based on the position, an emitting radius (the distance from the position "center" which defines the range and its boundaries in between which the sound will be gradually faded) of a sound sample. Here the sound sample in itself is the only time varying perceptible phenomena. In contrast using moving sounds the time parameter is bound to spatial parameters as well and thus defines new notions of speed, sequence, space-loop, etc. This kind of composition goes even more in the direction of designing a complete sonic system that can, like in nutshell, be simply resolved by conceptually and perceptively linking the sample-time to the motion-time.

Knowing the playing time of sound samples, Marc Wathieu calculated the angular velocity, linking speed and key position with subdivision of the music's measures. Music's traditional notation-system of a rhythmic and tonal structure | horizontally and vertically | transposed to the three-dimensionality of space results in Nutshell; an analysis of musical measure in shape of a circular organization where orbits spatialise: the paces 1/1, 1/4, 1/8, 1/16...

According to the thematic focus "numbers", the numeric reference of the project defines the metric and rhythmic measure as an inference to the notion of speed,  $v = \frac{m}{t}$  on the level of both the metric [ m ] as the temporal [  $t = 1$  ] structure. Whereas the project's title is referring to the elementary "shape of sounds", sonically emitting with same values in all directions, Nutshell's visualization is underlined by an emission of circular shapes = trails, constituting a time-based mapping.



Marc Wathieu, musician and multimedia artist, born 30 April 1962. He studied fine Arts and started his professional career as illustrator. As self-taught musician, singer and songwriter, he started his debut bands in the mid 80's with 'Object Lune' and 'Les révérends du Prince Albert'. Best known under the name of 'Marc Morgan' he released several albums and achieved international recognition. Switching from this French pop field to electronica, he has since worked on 'MAST-R', a full digital project exploring minimalist way in sound creativity.



def: measure  
1 amount of space  
occupied by something  
2 patterned, recurring  
sequence of occurring  
elements, such as  
divided and  
unrepeated notes in  
music  
beat, distance,  
velocity, meter,  
rhythm, swing

1/8  
1/16



1/8  
1/16



particle lake, bubblyfish  
haeyoung kim mukwon

tp:02 particle lake, march04-apr05

with particle synthesis

crossed into  
net, 7 randomness  
numbers, 4 gameboy music

top: 3D particle engine  
3D particle synthesis



granular synthesis, low space

"Gameboy music consists of individual, discreet events written into a matrix. Each of these synthetic digital sounds is made of samples coded on 8bit. In many ways this digital matter can be interpreted to be analogous to the sonic "grains" in the realm of granular synthesis. Based on this comparison in the "Particle Lake" project the sound elements are 3D pixel-like elements, particles evolving in the three dimensions of the electronic space. These "grains" form a visual and sonic pattern, transformed by energy (loudness) to form "waves", which affect neighboring patterns and create a back and forth, fluid movement.

Each resulting sound is the combination of hundreds of particles, each particle emitting a microsound, a water drop, or a seed. A microsound is defined by its very short length, under 300 milliseconds. Its fast replication and its movement pattern managed by emitters, is the key element to achieve what could be called fluid synthesis. The main target of the project is how you can morph these sounds/images, music/visuals to become almost like manipulating fluid matter.

The sounds are intentionally very low in definition, the length is measured in milliseconds, everything is quite reduced to evoke "grains", the process transforms these grains in fluids, all of these are emphasizing the digital nature of the computer medium, an aesthetic consideration which is part of my work. Particle lake is a file that makes you feel like a scientist experimenting with fluid dynamics, yet rather with the approach and curiosity of a child than with the one of an engineer."

Haeyoung Kim relocated to US from Korea in 1992. With a background in classical piano, she explores the territory of sounds and their cultural representation. Currently, under the name bubblyfish, she has been creating 10-bit, 8-bit sound works and minimal electronic compositions. Haeyoung is working as a composer, sound designer, and audio engineer; her works have been presented in various venues, clubs, festivals and galleries including The American Museum of the Moving Image, New Museum...

\* definition (from answers.com) \_ granular synthesis:

Granular synthesis is a sound synthesis method for digital musical instruments (synthesizers). Its based on the same principles as Digital sampling. The samples are not used directly however, they are split in small pieces of around 1 to 50 ms (milliseconds) in length. These small pieces are called grains. Multiple grains are layered on top of each other all playing at different speed, phase and volume. The result is no single tone, but a sound scape that is subject to manipulation in a way unlike any natural sound and also unlike the sounds produced by other synthesis techniques. By varying the selection, organization, and density of the grains many different sounds can be produced.

tp:02

tp:02 10-bit music  
"low fidelity"  
in digital audio 10-bit  
usually refers to an  
audio file with a lower  
bit rate, and thus a  
lower sound quality.

10-bit music is a musical  
genre which uses 10-bit  
encoding practices.  
The aim is often  
sound "authenticity"  
referring to old au-  
dio-tapes, computers  
... such like gameboys.



haeyoung kim  
bubblyfish\*labau

tp:02 particle lake  
bubblyfish

tp:02 10-bit music



tp:02 10-bit music



By: michiel herbig  
digital architect

top 10 ffv, march 04 april 05

with: rhythmic space

current links: top 10 theme  
metabolic + sound feedback space,  
sonic space + frequency to 3D  
sound - feedback

with: R. Lindner  
metabolic



metabolic sound feedback

A sound can be analysed in form of strings of numbers expressing its sonic structures such as tones values or harmonies but also the ones of music, rhythm and melody. One of the known algorithms to analyse and describe sonic structures in real time is the Fast Fourier Transform, known as FFT. The 'Fourier fast transform' functions in essence, decomposes or separates a waveform or function into different frequencies sets. It distinguishes frequency sinusoids and their respective amplitudes and thus is one of the few frequency ScopeSpectrum analyzers that feature a real time accurate decimation in time and in frequency. FFT functions are widely used in solving problems in science and engineering such as: linear systems analysis, antenna studies, random process modeling, probability theory boundary-value problems... 'Fast Fourier transform functions' translates sound signals into numbers which can easily be re-assigned to visual parameters, colour and shapes, or spatial parameters such as 3D objects size, position, behaviours, orientation... This translation of sound into numbers allows the visualisation of music and to display its structures and values dynamically, from tone-colour images to rhythmic space.

The 'Testbild' known from analogue image processing technologies, television, is testing visually emitted frequencies in form of colour spectrum and more patterns, it is a tone-colour representation testing its frequency ranges. The FFTv project is based on the idea to build up a spatial tone colour environment out of frequency, thus assigning sound input to object behaviours such as positions, orientation and/or its colours and size. According to this principle a specific sound leads to a specific spatial and visual configuration of the objects constituting the 3D environment. But rather than using complex external sounds the project uses pure frequency tones, such as the 440 Hertz sine tone of the 'Testbild'. Furthermore each 3D object inside the space is a sound emitter itself. This principle can lead to a kind of feedback principle where the users proximity inside the 3d space to an object / sound raises the signal values, which, if further assigned to position values of the object, moves the object away thus decreasing the signal / values, hence bringing back the object to the user's position... A permanent instable situation is created in between the user's position and the reading sounds negotiating their position to find equilibrium. Navigating inside the 3Dspace leads to a collapsing effect where all objects are in permanent movement. Here a deconstructing spatial environment is constructed out of the elements of the 'Testbild' where tones become staccato rhythms out of the fast moving sound objects and where navigation turns into an ever varying play within sonic patterns... based on the codes of tone-images and its frequencies, a navigable FFTv composition.



Michiel Herbig, digital architect and musician, became interested by the possibilities of digital media during his architecture studies, due to which he left for Barcelona to follow a Master degree in 'Artes Digitales'. He practices and researches architecture at the conceptual level, his interests going towards interactivity, digital sounds and images more than building and planning. Although he is not concentrating on architecture's practice, an architectural way of thinking is still at the base of his interactive and audiovisual projects.



def: testbild  
image to calibrate  
TV monitors and to  
test its quality

key concepts: ffv  
most images  
for patterns  
for tones to 3D space  
+ time-color space



metabolic  
space  
metabolic + sound

top 10 ffv  
michiel herbig



liquid space  
\*labou

< turn >

