lqs 02 fftv
michiel helbig

photo interactive station
+360°installation
matrix art project bxl
exhibition 15.07.055

video file: lqs02.7
chapter 16

10°

02:17:00

open

layout
moiré images
hz patterns hz colors

specific technology
fft frequency values
to 3d sound object position

explore

turn

rhythmic space

bel.51n13, 4e25, antwerp

lqs 02
+artist showcase
26.05.2004 Mr.wav10
+concerts
15.07.2004 lqs constructs
29.07.2004 closing party

tone color space

testbild, sound feedback

768
points/lines

14.4 khz

384
points/lines

440 hz

256
points/lines

20 hz

192
points/lines

fftv digital architect

fftv
michiel helbig*labau

fftv
michiel helbig
*labau

fftv, michiel helbig
digital architect

lqs 02 fftv, march04-april05

snm: rhythmic space

explore

concept-links: lqs03 theme,
metatarsus > sound reactive space,
sonic space > frequency to 3D
sound - feedback

tech: fft_functions
metatarsus

Prt Scr
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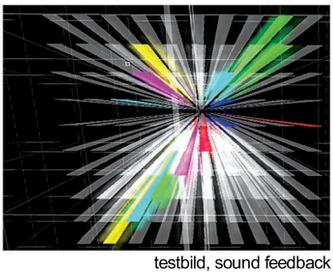
y= 010
z= 135



testbild, 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 Fourrier 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 Scope/Spectrum 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 moiré 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 reacting 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 Helbig, 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.

turn

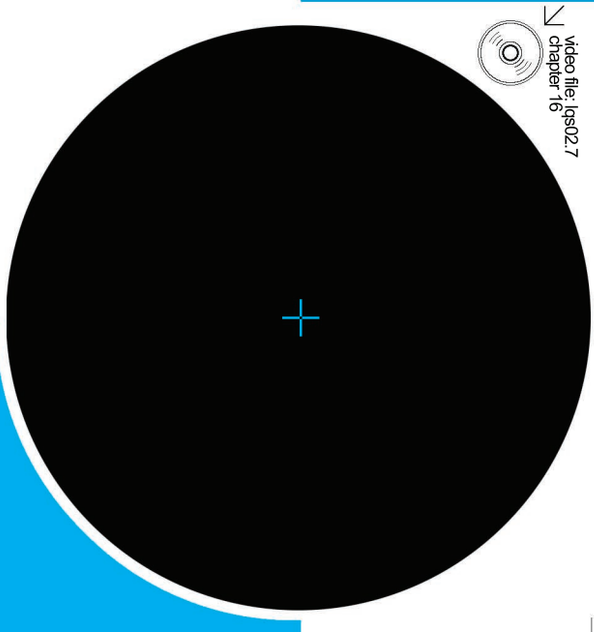
def: testbild
image to calibrate
Tv monitors and to
test its quality

key concepts _ fftv:
moiré images
hz patterns
hz colors to 3D space
=
tone color space

michiel helbig project:
www.ballroom.8m.com

open

video file: lqs02.7
chapter 16



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antwerp
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