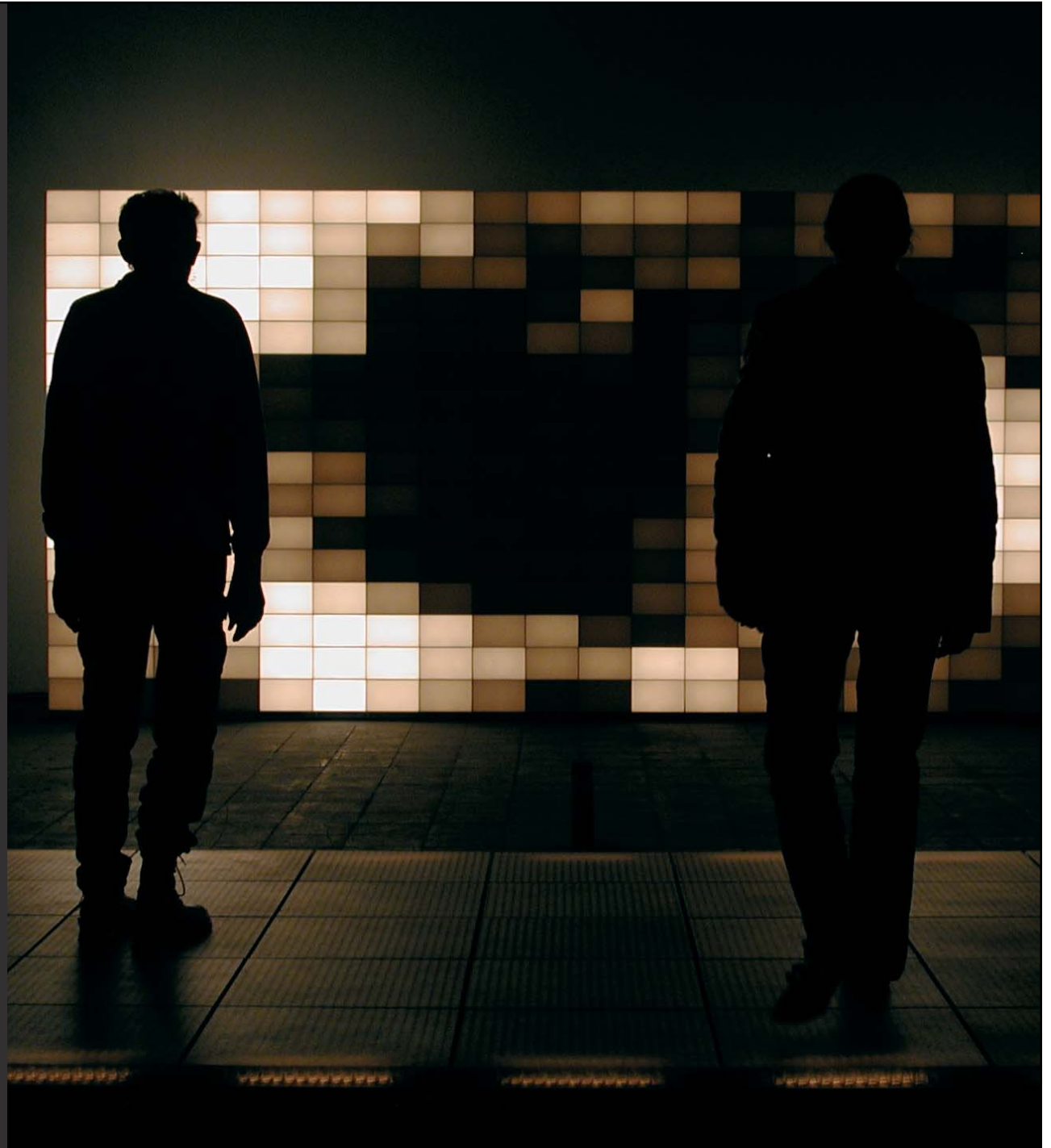


# TRICKSTR

an audiovisual environment  
with artificial personality

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## Description

A light-sound-text machine constitutes the medium of this environment.

A massive presence is established in the space by the pixel light wall, a gigantic illuminator finely articulated through many individual lamp modules.

Moving image patterns captivate the eye: rhythmical, abstract ornamentation dissolves into chaotic disorder; cycles oscillate producing pulsating light waves; and, color in gradients of sepia gives the impression that the physical materiality of the illuminator itself changes.

The impression of movement and dynamics is intensified by sound, which is so closely coupled with the image that it's not possible to decipher whether the sound has evoked the image or vice versa.

Whether through light or darkness, sound or silence the machine dynamically activates the space - including by means of a repeatedly-occurring voice!

**... slightly irritating; the machine speaks; sound is now suddenly semantically loaded and also no longer seemingly bound to the moving light image. Trickstr's recited leaps of thought concern a critic of the multiple worlds and levels out of which it has itself been constituted. Specific topics include the invention and developmental history of electricity, the computer, robots, and automats. The very concept of invention in itself is explored, as well as the definition of art since the 20th Century. In fact, Trickstr aims to question all formal systems in general and in particular their assumed irrefutability, as well as their fallibility. This fallibility is humorously underscored by Trickstr's own frequent 'error messages'. Paradoxes and contradictions within and between fields of thought are also pointed out. The voice is synthesized, trick and deceit, a faked simulation model of human communication.**

## an audiovisual Environment

We find ourselves seduced into anthropomorphizing this abstract environment.

But just as a text has been formulated, it already starts to dissolve again into its individual tonal parts merging with the sound machine.....

The fact that the machine can also be influenced is discovered by the exhibition visitor when she or he enters the „action space,“ a slightly raised stage located at some distance from the light wall.

By treading on this platform the player is confronted with her or his own pixelated image and an the sound of the acoustical Trickstr ‘trademark’ announces Trickstr’s awakening out of its self-absorbed mode. TRICKSTR is ready to play!

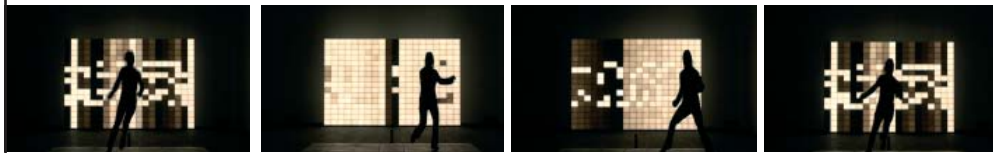
Different modules trickily alternate back and forth: sometimes the machine reacts intensely and dynamically to our movements. Just the smallest shifts of weight lead to light storms and sound tempests; then again it demonstrates its sluggishness and forces us to move faster and faster; at times it is a game to be played; at others it is a sound landscape to be explored...

...and then once again the aim is to just dance, really dance, like Trickstr loves it!

The player alone can decide how long this interactive mode is to last; as soon as the stage is empty, Trickstr – after personally saying good-bye – once again falls back into its own regenerative state.



# Concept



## Concept TRICKSTR

The intention is that the spectator-participant recognizes that Trickstr is a machine, but again and again catches her- or himself at being seduced into believing there is also something human about it, i.e., to discover a little of her- or himself in Trickstr. This is achieved through the mirroring of one's own mechanisms of perception which are imitated by the machine. In addition the machine, of course, has to be impressive, strong, powerfully present in the space, dominant and able to communicate. In short, big, beautiful, sensitive – and well – somehow charming...

Trickstr is thus somehow a theatrical test arrangement.

The Prima Ballerina of the environment is the pixel light wall, i.e., the light-sound image that is played upon it. Here it is especially apparent how we trick – and deceive – in that despite the wall's two-dimensional face, its overriding force is determined through three-dimensional effects as a sculptural body with depth. Reduced to just a few pixels but revealing nevertheless seemingly infinite possibilities of display variations, the image appears as just a glow, radiates, then fleetingly travels across the wall to make it light up. When the light goes out, the darkness – like the previous light – spreads out into the space. With the further trick and deception of conjoining sound to image and vice versa, the perception of how space is constructed and deconstructed in time and the submergence within this continuum are intensified.

The environment acts and reacts not only in visual and sonar abstract images, but it can also communicate with the exhibition visitors through text in writing or speech. Thereby it arouses the sense of the appearance of a subject. This personification of the "object" is a humorous trick, which aims to provoke thinking about the human and the machine and about playfully dealing with artificial intelligence.

In addition, the semantic component is also a prerequisite for describing Trickstr as an artificial personality – or more exactly, as an artistic artificial personality.

In principle Trickstr is capable of two different basic states: a generative mode, by which the exhibition visitor as spectator sits or stands outside of the active arena to enjoy the machinations of Trickstr as a closed-off image-sound world; as well as an interactive mode,

enjoy the machinations of Trickstr as a closed-off image-sound world; as well as an interactive mode, by which the exhibition visitor as player or participant disrupts this closed loop through the performative action of stepping on the stage. Through her or his movements the visual and auditory output is then co-determined accordingly with the rules of Trickstr.

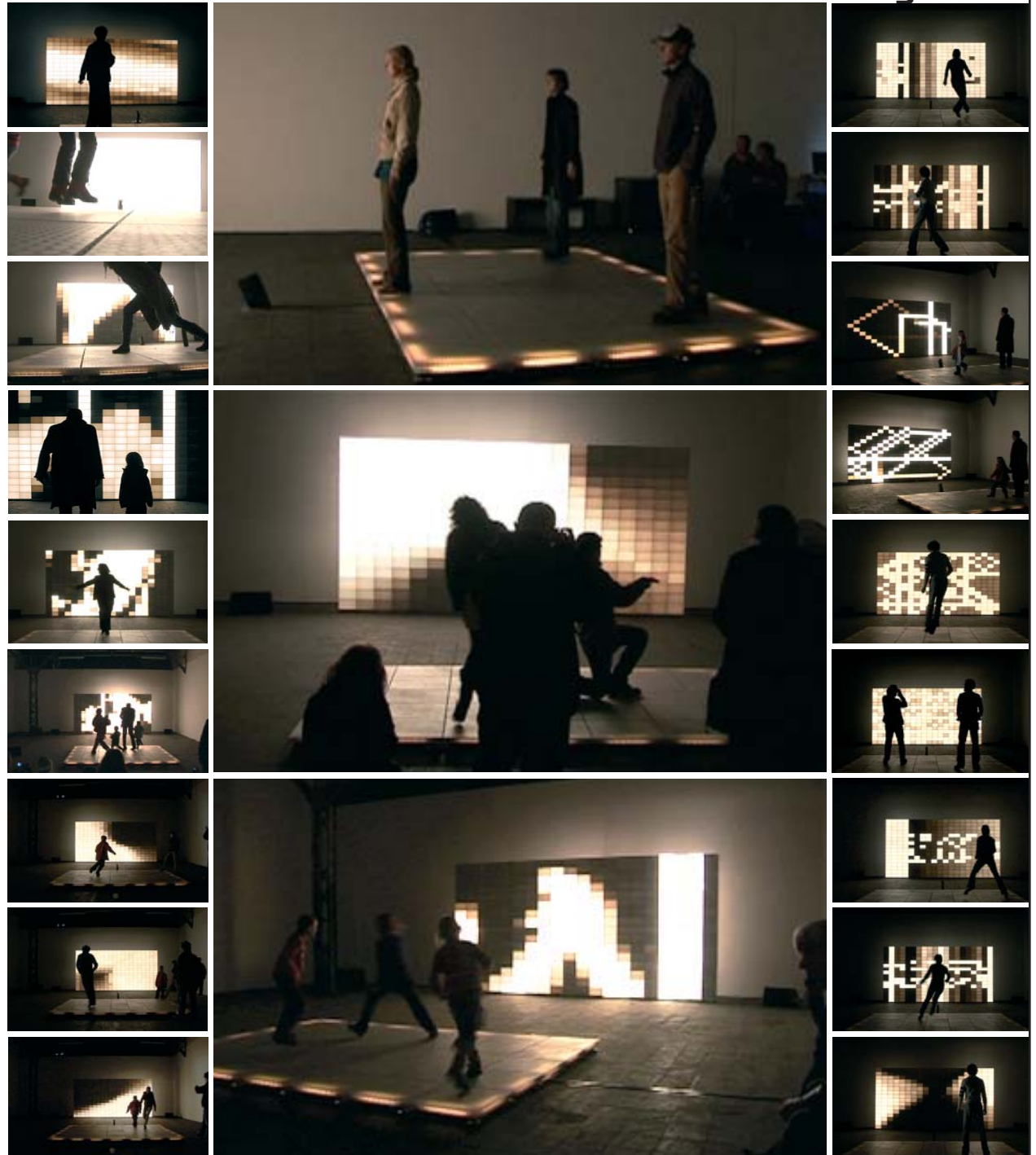
Spatially the basic two roles of perceiving the artwork – spectator and player – are signaled by the two kinds of exhibition viewer spaces: a slightly elevated podium, as well as sparse seating loosely arranged around this platform. The stage implies interacting, gesture, movement; the seating invites one to hang out, to watch. Thereby it's left up to the exhibition visitor whether to take on the role of viewer or player.

## Interactive Systems Statement

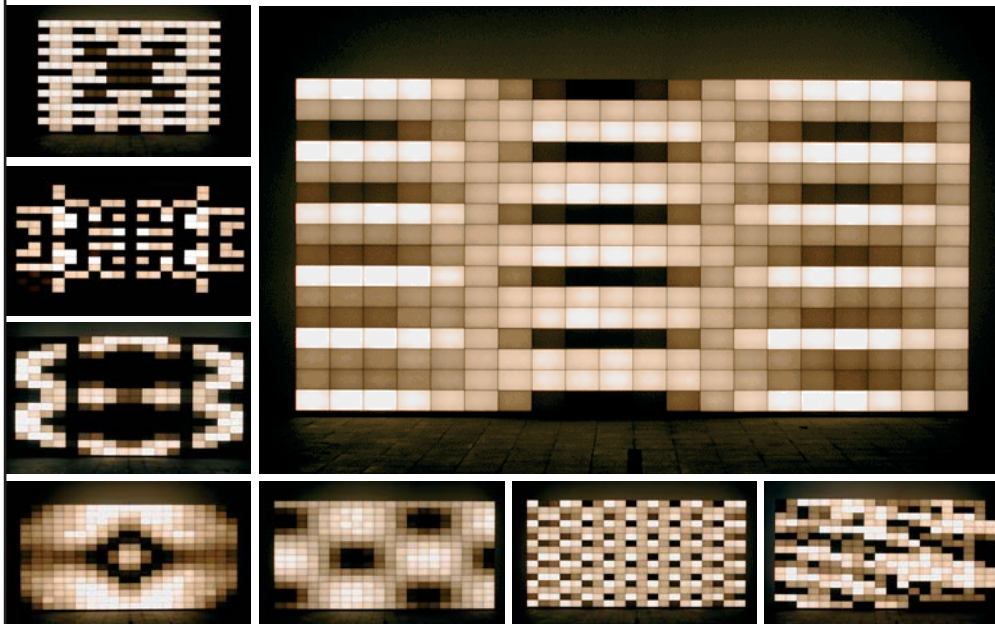
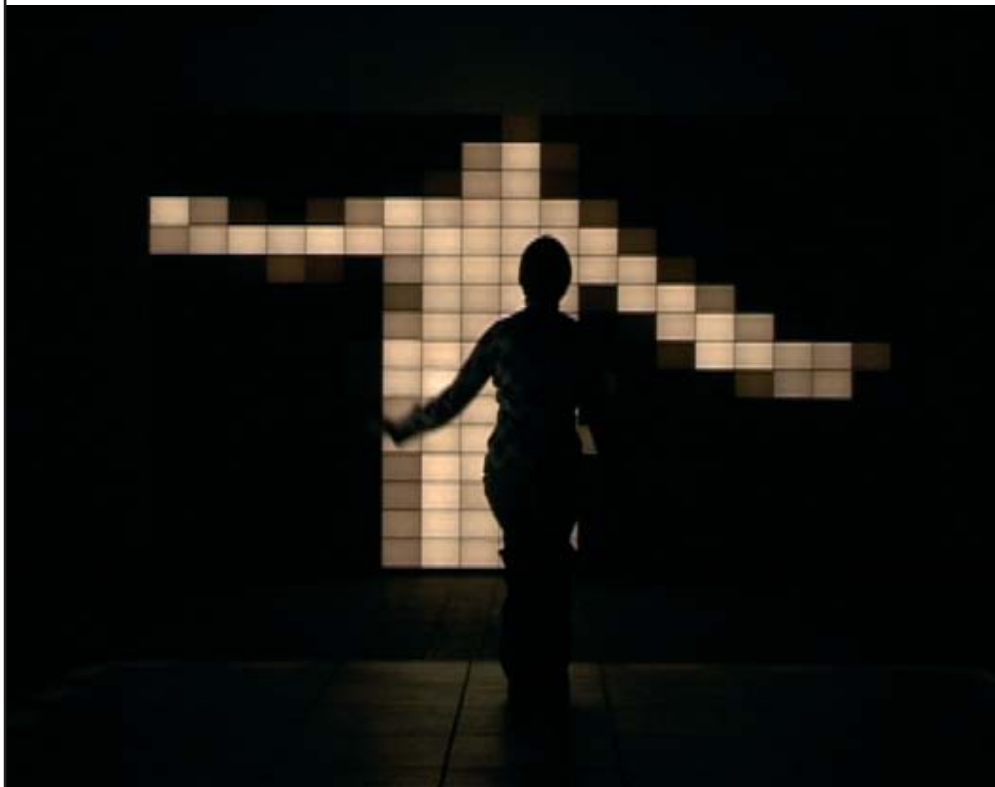
Interactive systems make perception possible through experience by means of sensory-motorical abilities. Interactive systems are a kind of abstract game, call for communication and create social space. Interactive systems call for staging, dramaturgy; they change themselves, they are living art.

We understand the term „interactive environment“ not only as an extension of the word „theatre“ but also as an extension of the concept of art.

.....in the sense that the components are the same or similar, rigid roles, however, are broken down: players become spectators and spectators become players, the stage is the set and, at the same time, it is one and the same with the designated space of the audience. Attention is focused less on what is presented than how an experimental test field is being explored....



# Software



## Software

In accordance with the character of a real being, Trickstr possess many different potential moods. The description of a mood with all the respective parameters, have been defined in so-called modules.

In addition to the algorithmic description of the generation of image and tone, each module contains artificially intelligent freedom of choice concerning the modulation of different parameters of the generators, as well as built-in rules determining the „lifetime“ of the module, i.e., the duration of the mood.

The decision defining the order of the modules, however, happens in a central component of Trickstr's software, i.e., Trickstr's brain. Trickstr's "brain" is equipped with a Markov chain of the first order, i.e., with a temporally limited capability of memory. Thereby it's possible not only to specify the frequency of the occurrence of individual modules, but also to consecutively assess the succession of selected modules. Thereby certain module combinations can be preferred or others completely excluded.

The control software basically differentiates between two different states (modes):

- the generative mode describes Trickstr's state of self-absorption, dreaming or reflecting. This includes modules which automatically generate content.
- in the interactive mode Trickstr indicates readiness to communicate with the outside world. This group includes all modules concerning the interaction with players.

The basic character of the generative mode is rather calm, dreamy and only occasionally articulated by short passages of greater bursts of energy or more spontaneous mathematical playfulness. In creating the individual modules we were inspired by different cellular automats (Conway's Game of Live, Wolfram's 1-dimensional universe), by examples of „Artificial Intelligence“ and „Artificial Live“, as well as chaotic feedback systems.

At this point it is important to once again mention that the database (Trickstr's memory) does not contain any prefabricated sequences. The basic algorithms generate all images and sounds at the moment of the appearance on the pixel wall. Through selective or also through coincidental modulation of individual parameters self-similar variations can repeatedly be produced, which gives an enigmatic diversity to Trickstr's outside appearance.

Also in the interactive mode different modules are available to the player. Each module surprises the player with ever new tracking methods; at times it is the spatial position that is detected, then next time it is alone the dynamics of shifting weight that causes change. In a further module both play a role and in yet another once again it is the extent of the body that determines sound and image.....

In the design of the course of interaction the world of computer games is likewise also represented, as in examples of similar procedures in the history of interaction and sound art. Thereby it doesn't matter if the references are recognized or not. On the contrary, history rather serves us as a rich source to use in creating a multi-layered field of experimentation, a differentiated space of improvisation. This arena is intended to serve many different kinds of participants – children, elderly, the physically-skilled as well as the movement-clumsy, etc. – as a more sensitive, surprising and reflective space of perception.

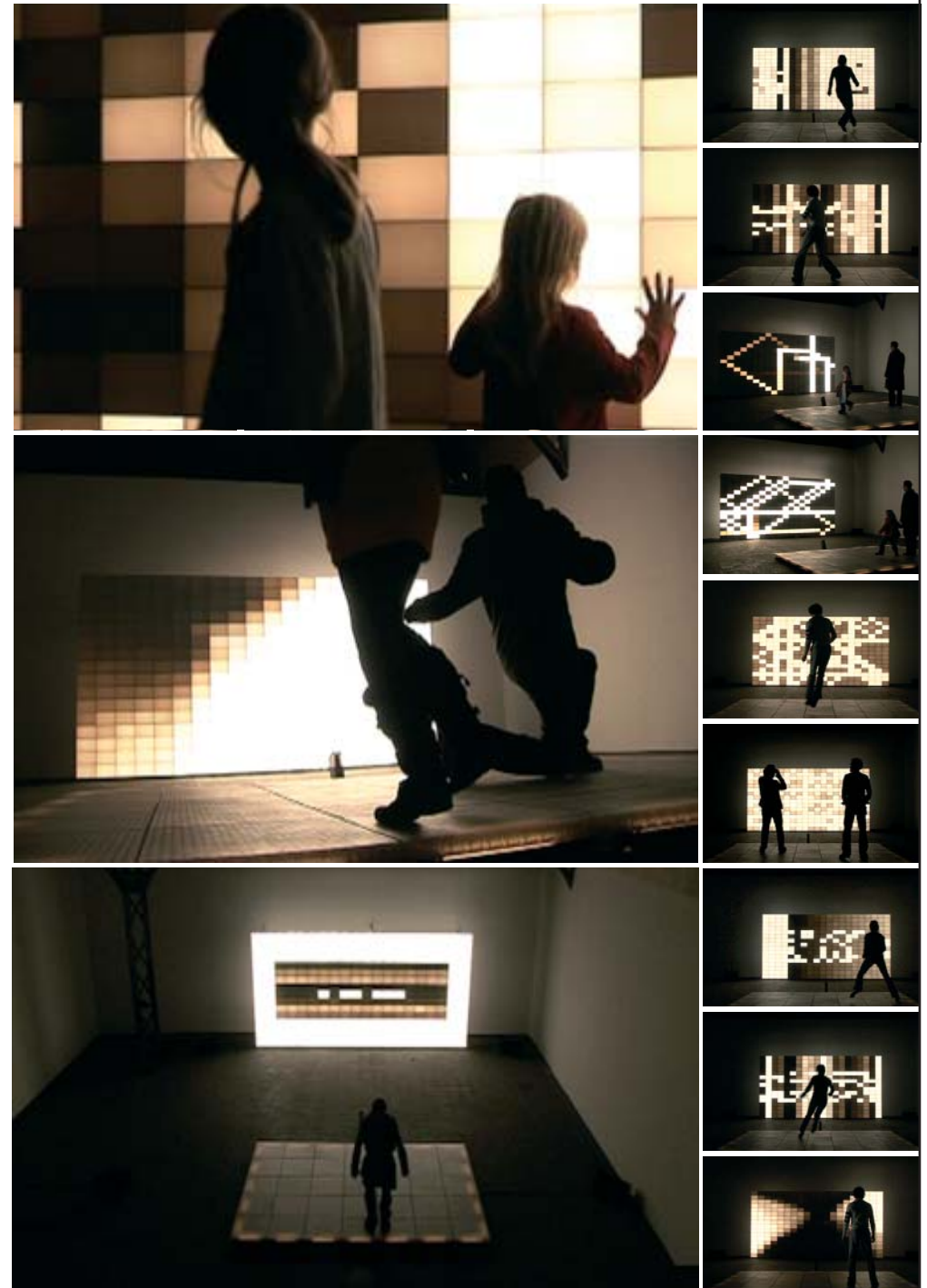
Each module has its own sound attributes. Different concepts are used to connect the sound to the image, whereby an explicit and coherent coupling of these two levels was particularly important to us.

Together tone and image are to suggest a being, a person, an entity. Changes in the image are intended to have a causal effect on the tone and vice versa. Despite all incalculabilities and apparent arbitrariness, which a complex character such as Trickstr can evoke, the image-tone relationship remains constantly explicit and stably traceable.

A model is the direct illustration of each light pixel achieved through a tone generator – altogether 320 in number. The brightness of the pixel steers the amplitude of the generator and the X-Y position of the pixel steers the pitch.

Often basic mathematical waveforms are employed, such as sine, triangle or rectangle, like those which are found in simple digital and analogue sound generators.

Trickstr's voice speaks pre-fabricated text extracted from a database of approx. 360 short fragments. MBROLA is used for synthesizing the speech. The necessary phonetics files are generated through the MaryTTS system, whereby we re-worked the prosodic results afterwards according to our own specifications. Additionally, when playing the speech files, the pitch, as well as the speed of speech, are modulated.



# Hardware



## Pixel Light Wall

The 20 individual modules of the pixel light wall are fabricated in 4mm thick aluminum sheet metal grids, each consisting of 16 chambers. On the front side or face inserted into each individual chamber is a sandpapered plexiglas sheet that is milled on the backside. The overall surface appears homogeneous and nevertheless is visibly finely structured without enabling thereby that light can penetrate into the neighboring chambers. Behind the plexiglas sheet an additional diffuser is attached so that each chamber is evenly illuminated. Two bulbs (25W) are inserted into each chamber.

Each of the 20 modules is equipped with its own 16-channel DMX dimmer pack, i.e., altogether 320 dimmable channels are available, which are steered through the computer via a USB-to-DMX converter.

Audio Map, Loudspeaker

The four-channel sound output is delivered via a Firewire audio interface (one stereo pair for sound and a separate pair for voice). Loudspeakers and amplifiers have to be adapted to the performance space.

Performance Action and Spectator Space

The dimensions of the podium (2.5 x 3.5 m floor area using 35 individual slabs) determine the radius of performance action for the interactive person. The individual slabs, transparent plastic honeycomb plates, are mounted with supports onto wood flooring slabs and underlaid with a total of 128 Piezo sensors. This sensor data is transferred in real time to the computer via a micro-controller through USB.

Seating equipment is intended to seduce the spectator into lingering, hanging out. Depending on the respective exhibition situation, they are modularly constructed, e.g., built up out of shipping crates or from the respectively available materials and/or seating according to the particular exhibition situation and venue.

3D-Camera

For „tracking“ of the moving person, we use the 3D-camera „Swiss Ranger“ produced by the CSEM Company, along with the pressure-sensitive floor. Through the additional 3rd dimensional „Z-axis“, we can keep persons apart. The infrared technique of the camera is not affected by the continuously changing lighting conditions. The maximum viewing range of seven meters covers the extent of our performance action space, i.e. whatever happens behind the performance action space is automatically excluded from detection. Communication occurs via the USB interface.



## Future Development

We don't think of an installation as finished after it has been presented for the first time. Rather, on the contrary, the experience with the exhibition situation, the visitors and their way of dealing with the machine serve us in the testing and re-evaluation of our concept.

We also try to constantly optimize our proposal to perform a programmable environment.

For upcoming exhibitions in autumn the text data bank will be revised and translated into English.

As well, performance situations can be re-created on-site using Trickstr. Although Trickstr was originally not conceived with the precise controllability of a/n (music) instrument, considering the interactive parameters a performance action space can be improvisationally designed and set up.

### PROJECT TEAM:

**Concept, Realisation, Interface Desig:** Hauert/Reichmuth

### Software:

**System- and Control Software:** Volker Böhm

**Image and Sound Generation:** Volker Böhm

**Camera-Trackingsoftware and Image-Generation:** Daniel Bisig

**DMX-Controller and Interface Software:** Michael und Max Egger

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