



TOUCHING

THE

INVISIBLE



Smart Studio

SmartStudio, a research group within the Interactive Institute, creates new fusions between art, science and technology. The research proceeds from an artistic perspective that uses and develops different applications in technology. For us, a successful research project is not defined from the point of view of function or use. Instead the essential thing is that the project serves as an intermediary of, or catalyst for issues and ideas.

Our definition of art, technology and science is continually formed, during our daily work. Nevertheless, it finds its starting point in a number of basic values;

**Art:** We direct our energies towards contemporary art, product design and architecture. Issues of aesthetics and interpretation as well as the critical potential of art, design and architecture play a central role in the work of the studio.

**Technology:** We see it as a stimulating working material that can be used in unexpected ways and in novel contexts. Technological applica-

tions are developed to create, influence and comment on social and cultural situations.

**Science:** Traditional scientific methods and a much more unrestrained yet consistent and qualitative artistic search characterize research at Smart. At the same time as the Studio utilizes reputed research methods from design science, and behavioural science it also attempts to establish art driven research.

Applying knowledge and experience from all these areas, our approach is to look for the exceptional and find the deviations rather than to follow any given methodology that might characterize each field on their own. Our goal is not to find »practical solutions« to problems, we rather want to destabilize familiar situations by adding conceptual and visual paradoxes in the result.

Research at SmartStudio is open for public inspection. Our goal is that the results of our own research will find an audience, be exposed to criticism, and be discussed pub-

licly. SmartStudio participates at conferences, exhibitions, public discussions and other forums not only to be affected by but also to exert an influence on the surrounding world.

Touching the Invisible characterizes the work performed at the SmartStudio and reflects how we work with the invisible flow of information. As it is channelled and directed into specific lines of investigation, the bits and waves transform through an eclectic mix of ideas into compound forms that become both visible and tangible. Our aim is always to bring the invisible out into the real space we inhabit, to invite the visitor for interaction, and overturn the outcome. The exhibition is built around six individual pieces representing different aspects and interpretations of the theme, that in different ways challenge our preconceived notions on flux and immobility, on thought and matter, on time and space.

The generative processes that lead to the final work can of-

ten start from discussions in the group, where we try to find associative paths between individual definitions, for example by delimiting an area of interest with keywords or images that may provoke a multitude of interpretations. The shifts of meaning that occur in the process are used as an asset that can add an unexpected twist to the issues and their realizations.

The Interactive Institute is a multidisciplinary, creative research institute, active in the borderland between enterprise and art, technology and science. It strives for innovation within the field of digital media. The Institute carries out and publishes internationally renowned research and creates innovative concepts for new digital products and services. Today the Interactive Institute has eleven studios, with over 130 researchers across Sweden.

The Interactive Institute is a wholly owned subsidiary company of the Swedish Foundation for Strategic Research.

BRAINBALL



KEYWORDS

telekinetics,

paradox,

desire for gain



PEOPLE

Smart Studio



Brainball is a two-player game where relaxation is counterbalanced with the desire to win. The little ball on the game's table is telekinetically controlled through the use of each player's brainwaves. Both a calm state and a stressed state have a direct influence on the match. The player who is most passive can watch the ball roll away towards the opponent's goal and a prospective win.

Brainball is a game that goes against the conventional competitive concept. Instead of activity and adrenalin, it is passivity and calmness that mark the truly successful Brainball player. Brainball is unique amongst machines since it is not controlled by the player's rational and strategic thoughts and decisions. On the contrary, the participants are dependent on their body's own intuitive reactions to the game machine.

At first glance, Brainball seems similar to a traditional two-player game: two people challenge one another and take their respective positions

at each end of a table that is marked with two goals. The rest of the game's equipment is more special. Both players wear a strap around their forehead that contains electrodes and is wired up to a bio-sensor system. This system, that is used to measure the body's biological signals, is fastened to the forehead and registers the electrical activity in the brain – the so called EEG (electroencephalogram).

The brainwaves that move the ball forward, increasing the chance of victory, are called alpha and theta waves. They are generated in the brain when one is calm and relaxed. A considerably stressed player will therefore lose.

Brainball is an exciting and social game but also an interesting tool for learning how to control your mental states. It has been exhibited in as widely different contexts as art and design exhibitions and medical fairs, and is seen as one of the studio's most successful hybrid objects.

BRAINBARA

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KEYWORDS

metabolism, •

integrity, •

immaterial •

currency •

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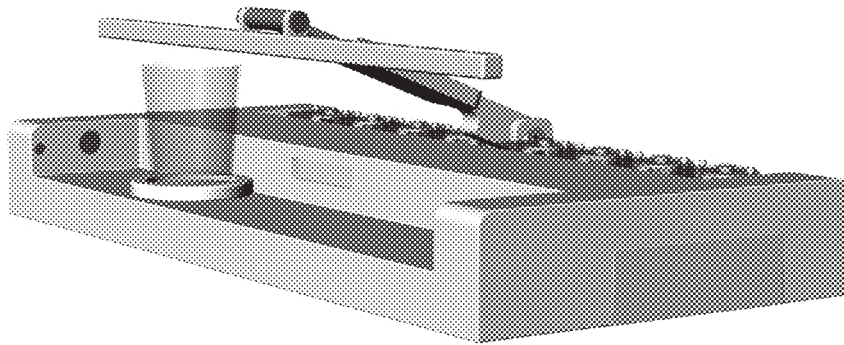
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PEOPLE

Thomas • Broomé • & •

Ingvar • Sjöberg ✓



BrainBar is a mechanical bar that mixes drinks according to the visitor's brainwaves. The bar reads the brain frequencies (EEG or electroencephalogram) in the alpha and beta wavelength. These wavelengths are generally considered to be synonymous with the states of relaxation and activity in the mind. Thus the BrainBar serves the drink most suited for you, at the moment of measurement.

BrainBar can be seen as a mediator or manipulator designed to give a party its perfect state of enhanced socialising, carefully adjusting the drinks served so that every guest stays within acceptable parameters for a »good« behaviour or, if the settings allow, a »bad« behaviour. By the use of alcohol and medical herb essences, the bar can emotionally equalize or polarize the group of guests. This can be seen as a sociological experiment exploring how much a person is prepared to submit to external forces and how far the person can allow a machine to intrude on the body.

The guest places the headband with biosensors on the forehead and then places the glass in the cylinder on the bar's front side, to begin the reading. The biosensors then measure the state of the guest's brain activity levels – shown with a flashing red light. The bar then administers the proper fluids for the guest's psyche from the eight bottles and when the lamp flashes green the guest is allowed to remove the glass and enjoy the drink. The person can then join the party, confident that the fluids reacting with the internal metabolism are going to enhance the experience of that particular social event.

As a confirmation on the measurement of the subject's state of mind, the guest also receives a receipt – for the payment of the drink.

MONOCHROMEYEA



KEYWORDS

information

reduction, image

overflow, data

plasticity



PEOPLE

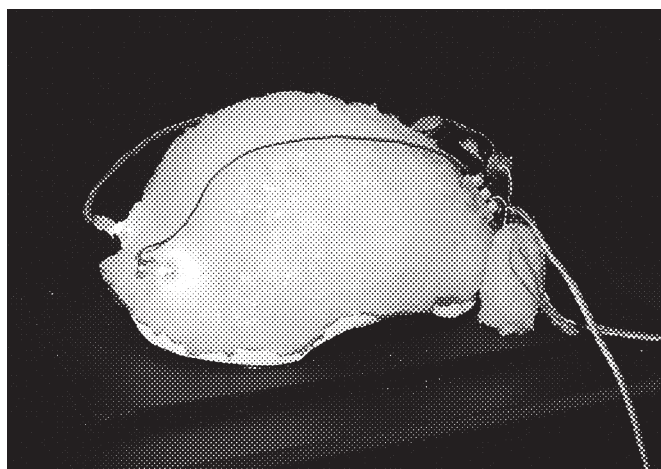
Arijana Kajfes

with Alberto

Frigo, Peter

Lundén &

Fredrik Petersson



Monochomeye is a portable device that enhances low resolution vision. A fingerholder contains one red, one green and one blue light sensor that read the environment as you point at it. It feeds back the color information to two tricolored (RGB) light diodes that emit two beams of light straight into the viewer's eyes. At such a low resolution, the viewer can only get color readings. They do not contain any information beyond the color that is registered at the point in space where the viewer points his finger.

Monochomeye is one of several optical machines that were built in an art driven research project about light and perception called »Occular Witness«. The project attempts to stake out the limits of human vision and it examines how information is malleable and how meaning is formed through image in a time when information is abundant and our culture is saturated with layers of processed imagery.

The breakdown of image reduces the information down to its basic elements – photons of light, and forces the viewer to make a fresh reconstruction of what he is witnessing. Deprived of the familiar guidelines that encode his field of vision towards a production of meaning – formal, contextual or other similar modes of recognition – he must rely on his deprived senses as he moves through the world.

REMOTEHOME



KEYWORDS

remote intimacy,

omnipresence,

mediating

architecture



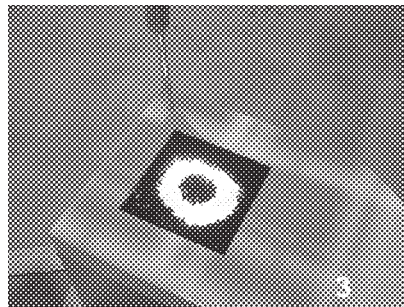
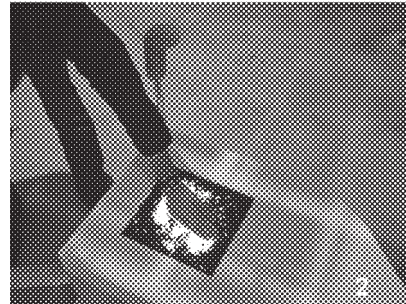
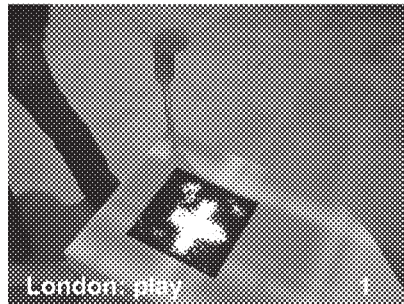
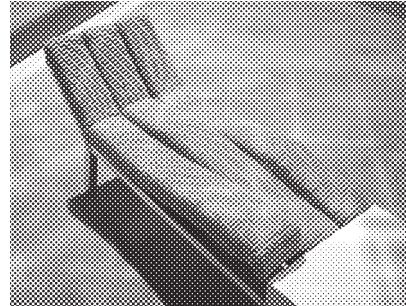
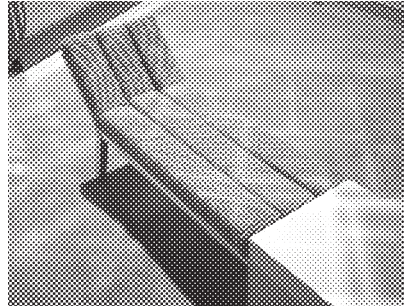
PEOPLE

Tobi Schneidler

with Loove Broms,

Magnus Jonsson &

Fredrik Petersson



The RemoteHome is a live prototype for a shared apartment that simultaneously exists in two cities. Time and space are bridged through a responsive and kinetic environment that is connected through the internet to enable intimate interaction between close friends over distance.

Digital technology is used to move beyond business communication and video conferences. It is used to intuitively extend a physical space over distance, a space that is considered private, but not fixed to one territory.

The RemoteHome experiments with different modalities of interaction, perception and scale. The personal scale is represented in reactive furniture objects. These elements provoke a direct engagement from their owner, but in fact they are just mediating artefacts between the remote spaces.

The architectural scale is addressing the space that is surrounding us, a state of immersion and spatial organisation.

Finally the translocational scale is describing spatially distributed, but not physical relationships, like looking at the two RemoteHome spaces as one topological entity.

This exhibition is presenting two connected, but separated interactive prototypes. A real life size prototype is standing in contact with a 1:10 responsive model of the space. The life and activity of each respective space is relayed to the other, and can be observed over a short distance in the gallery.

The *Busy Bench* is a responsive piece of furniture, representing the idea of sharing a space in a physical as well as mental way. The bench can be remotely occupied by the distant friend, causing the object to physically transform into another state of being.

*Ambient Scribbles* is a collection of light pods that are kinetically adapting their presence depending on the activities and agitation on the other side.

HELLHUNTS

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KEYWORDS

paranoia,

interpretation,

artificial

intelligence

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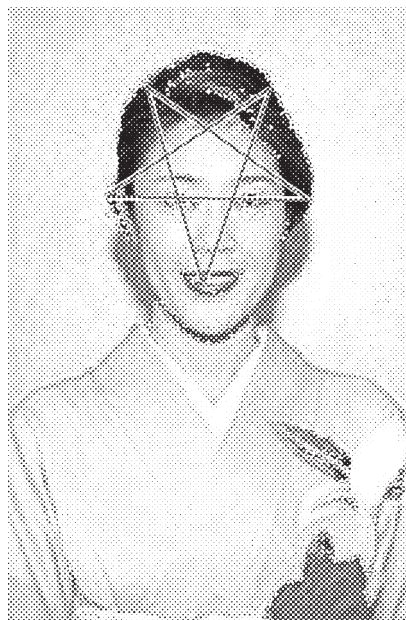
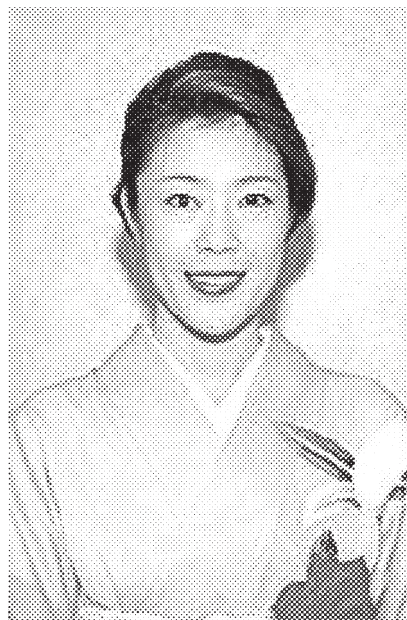
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PEOPLE

Thomas Broomé

with Olof Bendt &

Fredrik Petersson



HellHunt is an application based upon the use of so-called vision algorithms, a way of enabling computers to detect and distinguish geometrical configurations inside pictures. The active algorithm in this piece traces down the diabolic symbol of the reversed pentagram on images stored on the Internet.

When the program hits an image that corresponds with the algorithm, it draws the lines of the hidden pentagram on it. Furthermore, it saves the address of the page and sends an e-mail to it, kindly demanding the removal of the harmful image.

The piece was conceived in autumn 2000 and during the implementation process there were rumors and indications that governmental forces were also developing or had already developed similar computer programs. It all culminated with the devastating attack on the World Trade Center in New York on the 11th of September 2000, and the suspicion that the Al-Qaeda had used steganography to

conceal their correspondence. The exhibition where HellHunt made its first appearance opened just nine days later and by then it was no longer a speculation that similar programs were running around on the net, looking for messages and symbols in pictures that could be linked with various terrorist organizations. What separates HellHunt from the programs used by governments is that the latter has a person filtering out what the computers suggest as a picture containing harmful content. The HellHunt does not have this feature and therefore shows a more erratic paranoid behaviour.

This program is more about the mechanics of the mind than it is about computer vision. But when the paranoia of the world's different cultures is combined with new technology, it can become really ugly. The HellHunt piece shows that such a projection is in the mind of the interpreter. It is a projection of what you want to find in a picture and not what is actually there.

DELAYMIRROR@

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KEYWORDS@

awareness@shift, @

self-provocation, A

machine@vision@

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PEOPLE@

Tobi@Schneidler@&A

Magnus@Jonssonv



DelayMirror is a part of a larger project called the *RefashionLab*, which acted as a platform for a number of interactive installations that could redefine the culture and experience of a fictitious fashion store. The project was presented in Stockholm in 2001.

The DelayMirror is one of the simplest, but most provoking pieces in the RefashionLab. It plays with the visitors self-perception and self-esteem in a very unexpected way. Technically, it simply records a continuous video stream from a small camera mounted above the »mirror«. A computer then delays the signal by 3 seconds, and plays back the ongoing stream on a large plasma screen, which is mounted like a real mirror.

The original intention was to offer the visitor an unusual perspective on his own person, a viewpoint that is continuously changing, but not necessarily predictable. It would be the next best thing to having a pair of eyes on your back. However, the real

power of the installation unfolded when it was released for public consumption, from children to pensioners.

The effect of being trapped in the 3 second continuum, an unstoppable record of past moments, had an immense impact on each visitor. Young children loved the installation, using it almost like a playground, with an endless curiosity. That curiosity was displaced by suspicion and giggling with the teenagers. Turned to the age of puberty, a shift in the self-image obviously takes place that is extremely challenged by the DelayMirror. Adults were split into different types, those who obviously felt intrigued and self-confident, and those who instantly ran away. And of course actors abusing the piece as an experimental stage to produce their next persona.

Exhibition produced by Interactive Institute, SmartStudio with support from the Swedish Institute.

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