SENSORY CIRCUS
A cognitive System to move along within

Abstract: Interaction requires the body and the perceptual system of the individual in order to maximally involve the participant. Interaction requires various timescales: immediate satisfaction and longer term developments.

[Sensory Circus] embeds the public individual in a responsive physical environment, medially enhanced to involve the participant via the ears and eyes as well as the fundamental involvement of the body and its mass.

"...the mystery is not particular to conciousness; it pertains to other func-tions such as motion. Perhaps when we solve the latter, we also solve the former."   *A Damasio "The Feeling of What Happens"*

The project [Sensory Circus] is embodied in an interactive installation comprising an active, responsive and auto-generative audiovisual and architectonic system. The audience is central, and is principally responsible for their substantial contribution to the nature and dynamics of the whole environment.

Through the different types of interaction with the components present inside [Sensory Circus] as well as their physical presence, every visitor mutates from a passive viewer to an active protagonist.

The single components of the whole room installation motivate and encourage the audience to use the interfaces, that are intuitive in their operation and should thereby enlarge the usual definitions of interactivity between physical and virtual world in an intensive experience.

The usual interfaces (e.g. joystick or mouse) are replaced through specially constructed equipment, which demands an athletic whole body effort of the user. Instead of a narrow 2D-screen, several surrounding projections of rooms and floors, as well as multichannel sound systems activate every human sense.

The whole situation is generated by the following interdependent areas

A) Entrance area

o Realityshift - precondtioning space, stimuli intensified, as a preparatory prelude for the InterGame_BalanceSpace.

B) Playground

o InterGame_BalanceSpace - active microsituations, where direct and indirect possibilities of reaction are played out along the lines of body-scale interfaces

C) Reactive monitoring- & recreation area

o Systemic Bar **-** Chill out space, offering a glimpse into the systemic nature of the InterGame_BalanceSpace, automated sounds and drinks leading astray, yet with special possibilities of direct intervention in current affairs.

D) Proto-cognitive system

o The level of the installation that attempts to perceive the actions of the participants. As the attempts at ordering behaviour take place, the system reacts and feeds back into the entire situation in a way that could be interpreted as behavioural patterns and mood swings on the part of the system itself. .

A - REALITYSHIFT

As Realityshift we see the entrance area to the proper polymath space installation. It is the very moment at which it becomes clear that realitiy is being shifted.

Therefore we create a nine- to sixteen-piece *Carousel Labyrinth*. The shift of realitiy requires the visitor to manoever an individual path through the cylindrical carousels. Each component of the maze is identical, except the sense-irritations. A successful translocation requires that the visitor steps tentatively from door to door.

The planned experiments of stimuli should be kept simple in principle, indeed they irritate the basic human understanding of perception as they take up out of the ordinary phenomena and enforce them. (We want to introduce the following phenomena among others: acoustic erasement/displacement, polarised light, visual duplication, vectored sound,..)

Irritations around the senses of touch and balance will be investigated: floors that warp when tread upon, accelerating surfaces and ones that delay, decelerate or even prohibit loco-motion
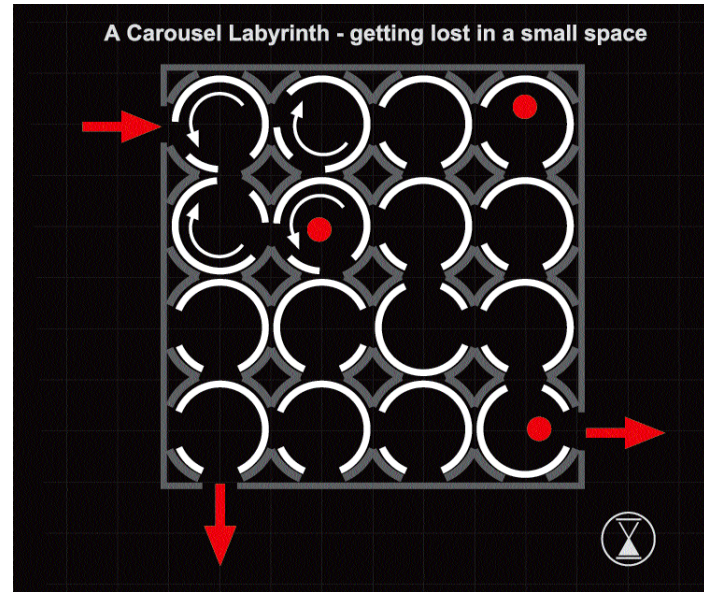

A Carousel Labyrinth - getting lost in a small space

The InterGame_BalanceSpace is the part of [Sensory Circus] where the visitor can interact most clearly with the given interface groups. An extensive playground, so to speak, with a multitude of interfaces alone and in groups scattered around. The interaction with the architecture as well as that between the visitors takes place here.

A certain and conscious motion of the visitor's center of gravity is needed for the effective usage of the interfaces, some of which are explained on the following pages.

The interfaces are fitted with feedback devices which allow the manipulation of the angles on incidence or the amplification or blocking of certain behaviours. The corresponding applications function similarly. The demands, design and difficulty are modifiable and controllable. The integration of force feedback is necessary not only to make the effects of the interfaces audibly and visually perceivable, but to extend the interaction into physical perception.
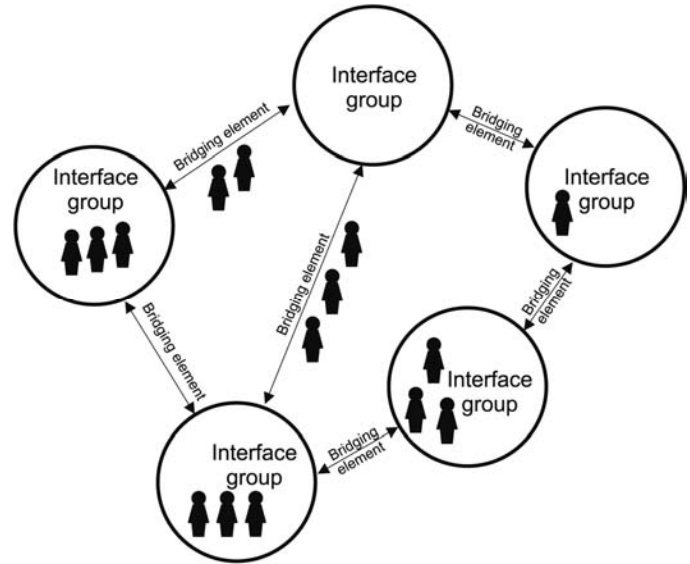
B.1 GRAVITRON

A circular or oval area, minimum 5m in the diameter, accessible over six different inlets; a floor projection, bordered with a loudspeaker system and six accessible input devices build the game scenario of *Gravitron*.

The input devices are equipped with an accessible surface (control platform), which can be tilted in any direction by the displacement of the body-weight of the user. They serve as an interface to the floor projected net-like space that fills the game area.

Besides functions of input into the game, the devices are created to receive forces based on the virtual application and transmit them "onto" the user: Force feedback is achieved via the integration of pneumatic activators. The devices, reacting upon the waves in the net-projection, are haptic, body scale and completely physical.

B.1 GRAVITRON

Projected active small objects on the net circle around one another, their mutual attraction is recognizable by gentle swinging into which their orbit relocates the net. By the use of one of the input devices the user is able to affect the gravitational field. Shortly after an actor clambers on one of the input devices, she/he lowers the gravity around her/himself with the exercised pressure of her/his mass, which leads immediately to a disturbance of the orbit of the circling planets and hurls them from their centric position. Each movement, each direction into which the user on the control platform leans, leads to appropriate irritations in the gravitational field and naturally affects the course of the circling body. The objects depart from their original orbit, to follow new paths determined by the players` actions, sounds emerging from within the objects

The strength of the gravitational field is not only acoustically and visually perceptible; the passing planets also attract to the control platforms physically via force-feedback.
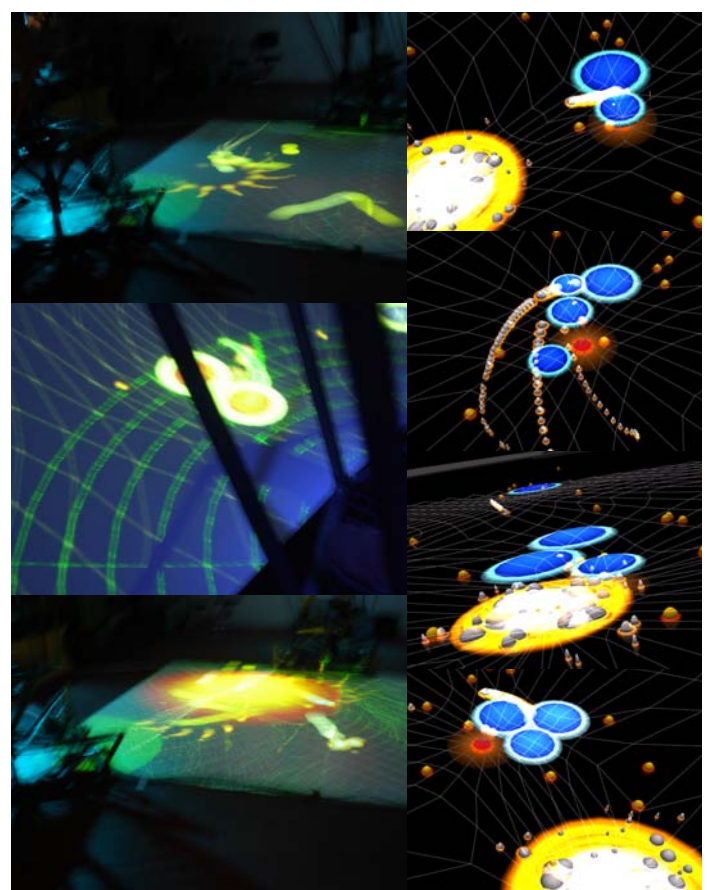
B.2 SONIC PONG

A simple interface group, that offers the possibility for two persons to play the aged, well-known, but adapted video game.

Not the conventional TV-monitor serves as game area but a 6x4 meter floor space. Ball and paddles are projected on the floor by programmed lights on the ceiling. The movement of the ball over the playing field is followed with looping audio fragments and distributed via a multi-channel loudspeaker system placed above the game area.
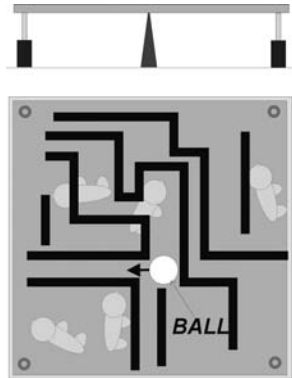
The control of the paddles is effected by a body-scale interface, conceived such that paddle motion is controlled by balancing by the movement of the player`s centre of gravity. Acoustic modulating of the arranged audio sequences from old computer games is made by a switching surface placed at the interface. Thereby the time (pitch & length), the space (selection of effects) and the angle (effect parameters) of the individual audio samples are changeable.
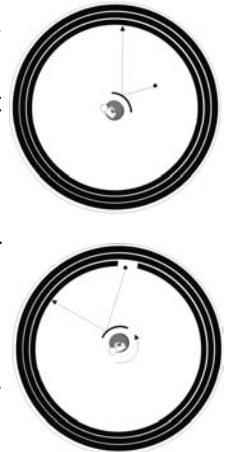
A four-metre square tilting platform, its inclination controlled by the distribution of weight of attendees over the surface. This distribution is measured and analysed. The inclination is transferred to a labyrinth positioned on the room`s ceiling - the ball moving through the labyrinth depending on the inclination of the labyrinth and thus the platform.

A hommage to the computer game classic "Arcanoid". The user stands on a platform surrounded by a cone-shaped projection surface. Shifting the body weight turns the platform around itself. Thus the user controls a paddle and a ball on the screen. The aim is to shoot out tiles on the top of the projection screen. Each tile triggers an audio sample of a spoken phrase. The temper of the read fragments depends on the machine mood, the user is able to construct meaningful/less messages audible in the entire installation space. According to the marksmanship and the provided audio-samples a more or less harmonic respectively rhythmical textual- and musical landscape is developed, which will be relocated selectively in the whole audioscenery of [Sensory Circus].

BALL

The challenge is to coordinate yourself with other people on an interface which demands you to balance and look up at the same time. Irritating normal sense, gravity operated in the false directions. At the end, the ball disappers up the hole.

B.5 LIGHTNING DISTRICT

Elements like the following will line different ways between the individual groups of interfaces.

A motion-sensitive grid, projected on the floor reacts optically and acoustically to the movements of the visitors.

The acoustic space is shaped by the various paths of the public, inviting the audience to an acoustic stroll and breaking down goal-oriented striding.

The grid is projected on the floor with two projectors, installed over the field. A camera registers the movements of the visitors. The grid reacts with changed visual representations and with acoustic attractions. For instance the fields on the floor change their colour upon entering and begin to rotate. At the same time a tone or sample is played. Surround sound makes it possible to position every tone on the field.

C - SYSTEMIC BAR

In order to provide a community spectacle that is more than distraction, an area needs to be created in which the people involved can indulge in lower intensity interaction, can perceive the possibilities of the situation, which allows insight into the current state of the system or even allows a limited level of modification of the system.

All services are automated, and can only be interacted with automatically. From the selection of channels on the observation monitors through to the selection and delivery of the refreshments, all takes place without the necessary intervention of human operators. The bar machines interact with the guests depending upon the general mood, which depends upon the behaviour of the public in the entire situation. The developments in the bar mirror the developments in the entire space. Even the level of current possibilities of interaction in the bar area is influenced trough the incidents in the InterGame_BalanceSpace
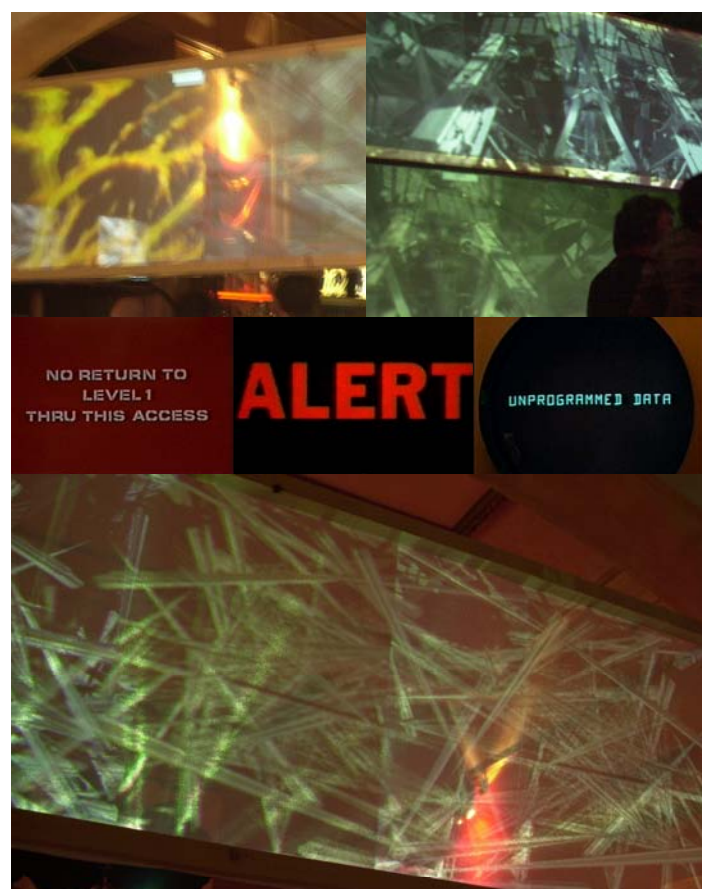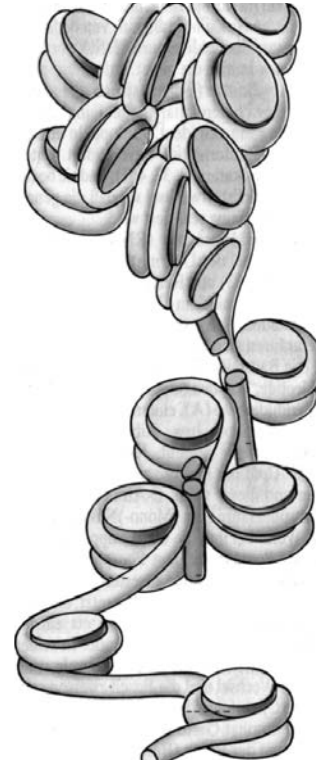
D - PROTO-COGNITIVE SYSTEM

The central component of Sensory Circus is a computer network interconnecting all the existing aspects (*Gravitron, Sonic Pong, Balanced Maze, Lightning District, Reality Shift, Break Out, Systemic Bar*) of the situation. This network is set up to register, perceive and react to all manipulations of the system.

Moments in which actions and the level of activity can be measured are almost endless. This starts with the entrance scenario, where it is possible to measure how many people enter the installation. Each person takes one path through the *Carousel Labyrinth* to the to the InterGame_BalanceSpace; the system can collect data on the various paths taken.

Furthermore it is recognizable, how long and how intensively entrants deal with the particular stimulus experiments. In the InterGame_BalanceSpace it is also identifiable how the audience is distributed on the different groups of interfaces, how temperamentally they handle the allocated interfaces, how playful they explore the different applications or how cooperatively they behave with present game partners. Even the Systemic Bar reports to us about (im)patience or inquietude of the attendees concerning the different possibilities of interaction.

These informations are collected, manipulated and distributed by a central computer. Distributed to many machines, the data is interpreted according to the functions of those machines. Strictly predetermined as well as stochastic and evolutionary models of processing are used to lead to effective medial and structural chande within the entire installation.

Graphic, acoustic and imaging levels react to the general mood in the space. Temperatures and light conditions may change. Functionalities of the interface groups diversify just as characters of the applications modify. Systems of labyrinths expand or narrow via doors. The entire space remains dynamic.

The result is a global audiovisual as well as haptic experience that once again acts upon the physical setup. The public individual should be absorbed by the various consequences, embedded in an apparently living organism with which they significantly (yet perhaps not entirely) manipulate.

A state, a frame of mind, a mood should be created/modelled and represented. Each action of the public calls forth a reaction from the *Proto-cognitive system* and every reaction to such as action is again a cause for a further action, once again a stimulus.

The main aim of Time's Up is the creation of experimental situations. Under particular consideration of active involvement of the public individual, Time`s Up constructs interdisciplinary media projects which take up whole rooms. Intuitive interfaces in connection with comprehensible applications are worked out and realised in the harbourside labs in Linz.

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