

# Invited Talk

## Meaningful Interfaces in Immersive Environments

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### ABSTRACT

While generic user interfaces are ubiquitous and customarily bland, the idiosyncratic interfaces developed in art practice over the last decades are significant because of their ability to embody meaning.

### Categories & Subject Descriptors

J.5 ARTS AND HUMANITIES

*Fine Arts*

### General Terms

Performance, Design, Experimentation, Human Factors, Standardization, Theory.

### Keywords

Interactive Art, Immersive Environments, Idiosyncratic Interfaces, Embodying Meaning.

## 1. INTRODUCTION

The history of interactive art exemplifies a complex set of negotiations between body and space - negotiations between the actual domain of the real body of the viewer and the real space she inhabits and the virtual domain of the represented body and represented spaces. For the artist making an interactive installation, the design of an appropriate interface is driven by the imperative to embody an explicit meaning in relation to the conceptual and functional identity of the artwork. As a consequence, the history of interface design in interactive artworks is a paradigmatic casebook of original and effectual solutions to specific and often very sophisticated needs. These needs are defined by precise intentions with respect to the content of the artwork, and by the exact experience that the artist wants to impart to the users. The following examples of the user interfaces that I have developed over the years in my art practice demonstrate this concern with the manufacture of operational meaning and an idiosyncratic set of body/space relationships in immersive environments.

## 2. EXAMPLES

### 2.1 Air Structures

In the *Movie Movie* (Knokke le Zoute, Belgium 1967) a horizontal inflatable projection screen allows the spectators to

physically enter and transform the cinematic space. Saturated with various forms of projected imagery, the more customary taut membrane here becomes a soft osmotic surface where the action of the viewers' bodies interpolate the space of fiction with the space of the actual. In *Book Plumbing* (London, England 1969) this bodily mediation of the image is further articulated as the spectators blow through tubes to inflate the variable forms of a projection surface which then constitutes an 'expanded cinema'. In the *Waterwalk* (Amsterdam, Holland 1970) the body of the user/viewer is encapsulated in a dematerialized sculpture - a transparent air filled plastic skin. The body becomes the force that puts this sculpture into motion, and in turn the sculpture enables that body to 'walk on water'. The prodigious capabilities of such an artwork brings the body into a new condition - not as a speculative but as an operative expression of new values.

### 2.2 The Legible City

Over the last decades, a growing range of delicate prosthesis that gives us pseudo-tactile access to what is untouchable affords our presence in the virtual domain. In *The Legible City* (Nagoya, Japan 1989) the viewer bicycles through a virtual city that is constituted by an urban architecture of letters and texts. The physical effort of bicycling in the real world is gratuitously transposed onto this interface into the virtual world - affirming the absurd yet euphoric conjunction of the zealous body in the virtual domain. This may be compared with the conventional interfaces, the keyboard, mouse, joystick, etc., that transpose minimal displacements of the body into media coordinates. *The Legible City* embodies single user interactivity through a purely individual and personal control of all navigation parameters. This lone bicyclist moves about in a city deserted of inhabitants, and the only other people he might take into consideration are the passive exhibition onlookers for whom he is in effect generating a unique performance of the work.

### 2.3 Revolution

In *Revolution* (Amsterdam, Holland 1990) the viewer has to continuously push a protruding steel bar to rotate and animate changing imagery on a monitor screen. Turning the monitor in one direction the viewer grinds virtual grain under a virtual millstone; pushing it in the other direction he provokes images of the last two hundred years of political revolutions. So the viewer's body, straining with effort, is an essential component of the formal, conceptual and functional figuration of this sculpture. Two expenditures of energy are conjoined - actual and metaphoric - and the viewer revolves and is revolved in the orbit of this mundane wheel of mediated revolutions.

## 2.4 The Virtual Museum

In *The Virtual Museum* (Linz, Austria 1995) the viewer's seated body moves itself effectively in the virtual space by simply shifting its balance in the chair forwards or backwards, to the left or right. The rotating platform on which he is seated forces the viewer's body to accompany the perambulations of his mobile virtual eye. Looking into the virtual museum the viewer sees that the chair he is seated in is empty and thus he confronts his paradoxical loss of physical body in the virtual domain. In exchange he gains an omniscient disembodied presence in this virtual environment, which the artwork then strives to annex to his actual body. Here then is also the issue of annexation of experience from within the virtual towards the actual and vice versa. Therefore it is appropriate that *The Virtual Museum* is an art museum, the paradigmatic space for such an undertaking.

## 2.5 ConFiguring the CAVE

*ConFiguring the CAVE* (Tokyo, Japan 1996) utilizes the Electronic Visualization Laboratory CAVE® technology, a stereographic virtual reality environment with contiguous projections on three walls and the floor. The user interface is a near life-size wooden puppet that is formed like the prosaic artists' mannequin, a figure that can be handled by the viewers to control real time transformations of the computer generated imagery and sound composition. Movement of the puppets body and limbs dynamically modulates various parameters in the image and sound generating software, while particular postures of the puppet cause specific visual events to occur. Most significantly, it is the action of moving the puppet's hands to cover and then uncover its eyes, which causes the transitions from one pictorial domain to the next. *ConFiguring the CAVE* embodies a meta-language of functional relationships between corporeal and spatial co-ordinates. These relationships are both physical and conceptual, reflecting the traditional attitude of conjecturing the body as the locus and measure of all things. At the same time it locates that tradition in a contemporaneous exigency that exposes the fragile covariance of person and representative surrogate body that find themselves (dis)located in a measureless space of reticular forms.

## 2.6 The Web of Life

*The Web of Life* (Karlsruhe, Germany 2002) allows persons to interactively influence the performance of an audio-visual environment by their imparting to it the unique patterns of their individual hand lines, thus giving symbolic and experiential expression to the action of connecting oneself to an emergent network of relations. This audio-visual environment is formed by an immersive conjunction of projected three-dimensional computer graphic and video images, together with a fully spatialized acoustic experience and a specially conceived architectural surrounding. This artwork is configured as a distributed network of installations – one large scale environment situated permanently at the ZKM in Karlsruhe and four others designed to travel to various locations around the world during the period of the project. User interaction at any location communicates with and affects the audio-visual behavior of all the installations. The artwork's algorithmic emergent tapestry of audiovisual and thematic correspondences is

activated and modulated by the patterns derived from the palms of visitors' hands that are being scanned and entered into the system from the local and remote input terminals.

These varied and always uniquely individual palm lines appear on the installation's screen, and then merge into and activate a singular sequence of transformations on the screen and the musical score that accompanies the imagery. The visual network is programmed as a self-organizing system, utilizing biology-derived metaphors such as neuronal growth. The topic of networking logic is at the core of *The Web of Life* project. As in the philosophy of the Net where we move from single user cause and effect models to multi-user emergent behavior models, *The Web of Life* sets out to create a paradigmatic and aesthetically formed exposition that both describes and evokes the core experience of that philosophy, thereby inviting and revealing the inexhaustible vernacular of shared individuated connectivity via the crafting of strategies that can re-embody the disembodied spaces of digital fragmentation.

## 3. CONCLUSION

While the operational and commercial advantages of a generic approach to user interface design is obvious, this implies their neutrality as carriers of meaning so that they can be effectively adapted to whatever context they are applied to. Art practice, having different conceptual and economic conditions of manufacture, is able to freely research the creation of idiosyncratic interfaces that can embody the variety of attitudes and experiences these works set out to express. Paradoxically we are moving towards a situation where the physical uniqueness of the interface embodies what is left of art's materialistic traditions – everything else is becoming subsumed in the immersive immateriality of its software codes and visualization artifices. These experiments in interface design point to a future where the manufacture of highly individuated user interfaces may become a cultural industry unto itself.

## 4. REFERENCES

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