Playing the Game: Notes on Games, Play and Gameplay in Interactive Installations

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ABSTRACT

In the practice of building large scale interactive situations, we have followed various paths in order to achieve maximal effectiveness. This paper investigates some of those paths and the way that they relate to the practice of games and gameplay. Considering these practices, we find that there are strong connections of both these areas to the theories and practices of contemporary theatre. One of the main connections is the idea of a game or installation as a form of structured public improvisation.

This paper investigates these three aspects, game(play), large scale interactive installations and contemporary theatre, and brings out some of the ways that they can be seen in our work and work of colleagues working in related areas. We find several ways that theatrical theory can be used to improve the details of large scale interactive environments as well as gaming spaces.

General Terms

Gameplay

Keywords

Play, Games, Gameplay, Interactive Environments, Structured Improvisation, Physicality

1. INTRODUCTION

We aim to build worlds, realities of a kind, in which the visitor can be immersed for the period of their visit. The world should be complete, familiar and yet strange, easy to obtain access to yet filled with surprises. These realities are, for the visitor, temporary and for the most part they are not permanently installed. For this reason the term "Transient Reality" has been coined to describe them and we, as their producers, might be called "Transient Reality Generators."

Our basic approach is to build worlds that visitors can inhabit for an arbitrary period of time. In the same way that we do not go through my life collecting points, in whatever abstracted form they might be, we do not want the visitors to an installation to feel that they are meant to collect some kind of points. There is no goal; rather, the goal is to incite a *process* of thought and discussion, of action and reaction. We want them to feel free to explore the world that we have built, to think and talk about the possibilities of the world, to talk about it with their co–visitors, just as you may talk about a cloud's form or the swirling eddies in a stream with your partner during a walk in the bush. In general, the visitor should play in the space, exploring the possibilities of the space with a similar freedom as a child explores the world. However adults, the main visitors to such spaces, do not act as children. Having lost, or at least misplaced, the desire to freely explore, especially in public, adults need to be led gently into a state of exploration. One technique that we have found most useful here is to set up situations that resemble, in some way, a game. A game has a well-structured beginning and end, a curve of some kind that may or may not correspond to a narrative arc; it is a well–known structure for interactive experience. Through this avenue of gameplay, adults can be encouraged to become less distanced, to overcome their fear of contact with the devices and to begin to explore the possibilities of the space. As a result of this merging of gameplay and interactive installation work, we have become aware of the tight connections between the two. Moreover we have become aware that both areas have a strong collective tie to the field of contemporary theatre, mainly along the lines of dissolving the actor-spectator (or expert-lay) divide and the incorporation of structured improvisation into the public pieces. In contemporary music we see a similar but opposite movement. Around the time that theatre was taking on improvisation as a part of its performance, several musical developments were converging upon extreme freedom in musical improvisation. Although this would lead us outside the main threads of our discussion, it is worth noting that structured forms of improvisation have long been a part of musical performance. We will briefly outline a contemporary form later in the paper and describe several pieces that use a form of structured musical improvisation in interactive and performative pieces. The elements thatwe wish to discuss are then:

- Longform improvised theatre

- Games and gameplay environments

- Interactive environments

- Improvised music.

Their relation is that they all use forms of constrained public improvisation as their base. These connections will be explained, investigated and expanded upon in the course of this text.

2. EXPERIMENTAL SITUATIONS AND PROTOSCIENCE

This first section will try to describe in general the field in which we have been active, to show the general structure of the systems that we develop and present.

Our projects are large scale, medium term, interactive, mechanical and media-enriched environments, to use a somewhat technical description. Other terms that are used are experimental situations and transient realities, which touch upon other aspects of how the situations work, in particular the social aspects. Lying between the areas of Augmented Reality and Augmented Virtuality, the field has also been called Mixed Reality, however this is primarily a technical term ignoring the social and narrative aspects of the situations. In general we take a large (several hundred square meter) space, divide it using temporary partitions in order to obtain a certain architectural structure, then populate this space with local interactive devices that are bound together over the entire space to produce a global and local interactive experience. Our environments are aimed at groups of people and the social aspect of the experience is vital. We avoid the use of the word "user," preferring expressions like "visitor" or "player" which maintain a balance of activity, responsibility and agency.[1] A visit may last from a few tens of minutes through a few hours, the environments are set up for a few days to a few weeks. Thus we refer to these environments as medium term, both in terms of the duration of a visit and the timespan over which visits and return visits are possible.

The local interactions are highly physical, requiring the player to balance upon objects, twist, turn, run and otherwise use their entire body to act within the interaction. The responses to movement, whether audiovisual (graphics, video manipulation, sound effects) or physical (pneumatic effects, swinging) are immediate and direct. It is these local interactions that immediately grab the visitor's attention, that allow an interaction with low latency and immediate feedback. These interactions are often wrapped in various game-like metaphors, where for instance the visitor is invited to simply play a game in an unusual way, using large scale body motions rather than thumb movements. One of the goals in these spaces, if we may use such a term, is the opening of options for the visitor, the building of "agency" in the sense of the ability to perceive, use and extend their options. This is closely related to the development of "'child-ness', a joyful readiness for anything, which dissolves much of the . . . fixities of the work-and-leisure culture" ([7] p. 181 referring to [1]) in that we want to open our visitors' eyes to the wonder of the world and embark upon this attempt by the construction of situations that are somehow familiar yet extended with a form of absurdity and strangeness that makes them again wonderful.

A second level of interaction and composition exists on the level of the architecture of the space. The ordering of experiences, the variation of perspectives, the necessity to become physically active in order to break down the inhibitions of visitors to "art" spaces, the choices that the visitor can make in their choice of route through the environment and the implications of these choices all lead to a second level of variation. This level of choice is in contradiction to

a classic museum route, where the curators have selected a definite, unique path through the exhibition in order to pass on certain messages in a certain way, not unlike the single path through an Ikea showroom. For instance an object that appears to be interacting with the visitors at an earlier stage of their visit is later revealed to be controlled by other visitors' vocalisations later in the experience. Here we see another element that we find important in the experience. The visitors are not merely observers, but begin, by some intrinsic drive, to determine connections between events in the space. One interpretation of this drive is the claim that we all attempt to assemble our experience into stories. One of our ways of understanding the world is to make a lot of little stories, causal connections among the events that we perceive. Another related interpretation, suggested to us by the late Swiss anthropologist Bob Fischer, is that we are enabling and encouraging the visitors to participate in a discover of the world and so allowing them to be what he calls "protoscientists" in the sense that they work by observation and limited experiments rather than by constructing theories and conducting carefully controlled experiments. They are like the predecessors of the development of the modern scientist. Throughout their journey in the space, the visitor is offered differing perspectives upon the events in other parts of the space and so becomes aware of other interpretations and explanations of the behaviour of the systems. This is very much part of a scientific process seen as a game and will be touched upon later in this article.

The third layer of interaction occurs at a global scale. The summed effects of all actions and reactions in all the local interactions in the space feed into a collective system that reacts to this massive data input in various ways. This system attempts to order, categorise, analyse and perhaps even control the localised interactions and to pass on this analysis to be visualised in certain spaces that are set apart from the localised interactions. For instance we have used a lounge-like environment at the end of the various paths through the environment. This lounge is filled with a range of screens and an ambient algorithmic soundscape that respond to the general actions of the environment. Virtual newscasters tell of the activity levels in certain spaces, calling attention to trends like some ticker-tape reading financial analyst. Video cut-ups select from a databank of raw materials and live cameras depending upon the relative use of interfaces, the soundscape remixes snippets of songs to approach a certain global mood. The lounge area, separated from the interactive spaces yet filled with their collective effects, is a place that visitors can move away from the need to interact and can restart the social game of discussion and analysis, without having left the environment. Being within the aesthetic and physical boundaries of the whole environment, the barrier to re-entry is low. As they discuss their experience, or see other perspectives upon the spaces and gain new insights, they can easily return from the lounge into the main playing area and take up the game with a new perspective.

These three levels of interaction are also, as briefly alluded to above, three types of game. One main claim for the rest of this article is that games and interactive environments are closely related and moreover, they share a common relation to the field of theatre. Common elements that will be addressed later are then the physicality of these three areas and their relationship to freeform, unguided yet structured improvisation.

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[1] "Agency" in the sense of the capacity of persons to create situations, to use and extend options.

3. THE THEATRE OF EVERYDAY LIFE

Our principal claim is that the three terms; Game, Theatre and Interactive Art are heavily related areas of endeavour. In particular, Games and Interactive Art are closely related and can both be usefully understood to be extensions of an idea of theatre.

We have stated from the outset that our main area of interest is "An improvement of the theatre of everyday life" [10]. We maintain that interactive environments are, in general, a form of theatre, where we collect four main extensions to the term theatre that have become relevant in the past half century:

- The abolition of the stage.

- The abolition of the special status of the actor.

- The inclusion of (structured) improvisation.

- The inclusion of (media) technology.

There are many forms of theatre that include some of these aspects. Technology has always been used in theatre, this is by no means a significant extension. However the presence of technology onstage, being used[2] by the actors themselves, is somewhat new. Richard Schechner's "Environmental Theatre" negated the special status of the stage, Street Theatre leaves the confines of a segregated theatre space completely. Happenings are events where the border between audience and actors becomes porous. The degree of improvisation in a theatre experience varies wildly, from the standard capacity to work around muffed lines through to long-form free improvisation. We claim that standard theatre, extended by these four aspects, becomes something that is still theatre in a useful way. The fundamental aspect of theatre, the presence of people in the same room, acting and being perceived acting, remains fundamental in this extension. "Theatre now becomes an interactive event from and for all participants" ([5] p 39) and, in the same way that a game has no pure spectators, neither does theatre or interactive installation work.

Craig Lindley claims, in a similar way, that "Live Action Roleplaying Games (LARGs) are improvised theatre without an audience" [8]. Note that the claim that there is no audience is problematic; actions with no audience are not theatre (see above), merely actions. The presence of an audience is necessary and we claim that the other players in a LARG form that audience. A LARG invites the players to slip into the role of some character and to act out the actions of that character in an environment that allows that character to be played. The collection of suitable props, the decisions about certain events in the LARG, the structure around it lead to a complete environment for the players. This is not restricted to just LARGs, but applies to many types of games that occur away from a board. A game is a system (of rules and devices) in which players improvise, with or without a goal.

This idea of physical games being spaces in which players can act freely within the limitations of the game using whatever props and technologies are appropriate works in both directions. Theatresports[3] is a competitive and low-attention-span take on improvised theatre, is a case in point, and is widely regarded as a game. But avante-garde improvisors are approaching the game idea in theatre more intensely. The development of a whole swathe of "forms" for improvisation (from highly unstructured and abstract forms including the "Harald" (1967), "Albert" (2001) and "City Life" (2005) to highly structured forms such as the "Tapout"(1997) and "Ella Meant..."(2004)) can be regarded as a technique where rule systems are found for constraining and guiding the development of improv pieces, forcing the development to move into certain areas. These new, long-form structures in improvised theatre have emerged in the past few years throughout an international network of festivals and small independent groups.[4] Here we are once again dealing with environments for structured improvisation and some musical equivalents will be discussed below.

Our core claim is that the participation of a person in an interactive environment is an act of structured improvisation, just as in a game. Rather than being allocated a role or assuming one, each individual is coaxed into creating a role that is a form of themselves and playing that role in the mere act of being themselves exploring the space and its possibilities.

Sally Jane Norman of Newcastle University has used the expression "Skinner Biotope" [12] to describe theatrical as well as interactive installation works. In this expression we find two terms that lead to two areas of special interest for our work.

"Skinner" leads us to the philosophy of behaviourism. In some sense the use of the term Skinner here acts as a technique to cancel the interest in the inner workings of the visitors, the machines, the systems. It is not, really, relevant what the actor onstage does in their time away from the stage, rather we are only interested in their performance and what that performance brings us during the period of the theatrical event. And whether they are method actors or very good fakers is, in essence, irrelevant. In the same

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[2]The ongoing argument how to tell, and how important it is, whether the media effects are caused by the actions of the actor (or dancer; we will remain with the term *actor* to include all performers) or whether they are just moving with the media in a well performed choreography, is difficult. We contend that this argument becomes moot when every member of the audience is able to use the equipment and perceive that the connection is immediate. However the fact that they are using the technology in public, co–creating the total experience, indicates that this is still a theatrical experience.

[3]The use of the word "sport" here brings to mind another whole area of gameplay. One might say that sports are a form of game. Rugby, soccer and the like certainly fall into this usage, but other physical activities are more problematic. Mountaineering used to be a leisure activity for the well-to-do. At some point the competitive aspect arose, the first person up some peak was praised. This was then followed by the sportification of climbing, first routes, then competitions on artificial routes. But after this is all over, the remaining joy of mountaineering is the experience, a climb that is a challenge for the climber, an elegant move, a stroll in the hills as autumn turns the trees to fire. The idea that this is precisely a game, is perhaps one main thread of this article.

[4]A long existing festival is the Seattle International Improvisation Theatre Festival, other festivals have taken place irregularly, usually organised by one of the active groups. Groups that are highly active include Unexpected Productions in Seattle, USA; Narobov in Ljubljana, Slovenia; Twisted-Theater in Vienna, Austria and The Crumbs in Winnipeg, Canada.

way, in interactive installations the various participants in the installation are not aware of each other's backgrounds, inner thoughts, motivations or any other psychological underpinnings. The system itself, as it reacts to the actions of the visitors, is also unaware of any of their inner workings. For the visitors, the implementation details of the devices in the space are not of high interest: it is the way that the act and react, the causality[5] between events that is of interest.

"Biotope" is an expression that brings to mind a complete, semiclosed system, a system that is in certain senses self-explanatory. The cycles of consumption and waste, cause and effect, flows within the invisible walls of the system as well as the flows that puncture those walls, these are the defining elements of the system. The system echoes certain aspects of the self-defining nature of autopoietic systems [9]. I am unsure whether this idea of a biotope is meant to fall into these ideas of an autopoietic system, but in a certain sense it does, if we take the definition (as many do) somewhat loosely and define where the system is active. As noted above, the interactions of interest are behavioural. As such, the behaviour does not cross the boundaries of the environment. The system does not take account of the socioeconomic background of the visitor and the visitor is only interested in the behaviour of the system as it responds to their interaction. In the sense that the environment works well, as when a theatre environment works well, the visitor forgets the outside world. The act of suspension of disbelief is effective and the visitor is taken entirely into the behavioural world of the system. As mentioned above, we consciously include a lounge area into the total environment because this allows a variation of intensity without leaving the space, so the visitor is still within this system. As the system is based upon behaviour and as a result of its actions it modifies the behaviour of the visitors to wile away the hours within the environment, one might say that it is in this behavioural sense, autopoietic.

The self-perpetuating behavioural closure requires from the visitor a form of suspension of disbelief, related to that suspension in theatrical work. The suspension of disbelief allows the visitor to perceive behaviour completely, not asking (technically) *how* but (relationally) *why* these things behave in this way. This is the behaviourist idea: for instance it does not matter whether the visuals are created with any particular program and projected using some particular technique, the important aspect is the behaviour of those visuals, especially dealing with how they interact with the visitor. Or perhaps even more so; the visuals are a representation of a process happening somewhere else (in some machine, or other networked players) and this representation allows an understanding of that process' behaviour. The behavioural/Skinner idea lets the visitor ignore what the inner workings are, but also lets them try to make connections just behind the representing surface. Similarly a suspension of disbelief takes them out of a seat in a theatre and lets them see the behaviour of the character and interpret what is happening immediately behind that behaviour, that is, the character not the actor. That is (part of) what happens when theatre "works."

Note that a suspension of disbelief is not the same as a noninvolved attention, the back–leaning "critical posture" to use Johnstone's [6] idea. In fact it would be arguable that a suspension of disbelief allows a heightened perception of the environment, a form of hyperattention. In a state of hyperattention, say in a football match, the players are concentrated only upon the game, not upon the cameras and the screaming fans. The game is the behaviour that is interesting, they are totally involved, and not thinking about the advertising revenues that make their playing and their outrageous fees possible. The "how" is advertising (and other stuff) and the "why" is the game. A cynical viewer sees the game and thinks about the stupid amounts of money being pumped around and the celebrity status of certain players and do not get the chance to believe the game and thus "get" it. Only when suspending disbelief can one get into the whole vibe: perhaps for the fans this includes the objectively idiotic practice of screaming in the stands, public sadness when "my" team loses and other things that are not possible in the real world. Not only does an interactive environment form its own closure in an autopoietic fashion, but these special places open visitors behavioural possibilities in unexpected and important ways.

This combination defines theatre as a closed system of behaviour. This system may or may not be like our commonly accepted world, but it is a system that is in some sense well-defined, has borders and is, within those borders, consistent. Most importantly, it is based primarily upon the perception of the actions of the players in that world. This is closely related to Just Merit's concentration [11] upon the three poles of Control, Perception and Biomechanics in thinking about the public individual. The idea of the public individual is a person in a public space, the person as they are met by strangers and associates in everyday life. This model of the public individual acknowledges that no knowledge of the inner workings of the person can be gained, all we can know is the actions and reactions, their behaviour and our models of it. He uses the expression Biomechanics to include the automated systems of behaviour, in particular those that have crossed from conscious to sub- or preconscious behaviour. Based upon an analysis of this model, we have argued [2] that not only can the public individual be examined from this perspective, but the actions of interactive systems can also be so analysed and described. This duality between the models of interactive systems and the models of the visitors to these systems is an interesting result in that it demonstrates that the interplay between system and visitors is not one–sided, rather it is a collaborative co-structuring of the shared environment[14]. The system, or more likely, parts of the system, can be regarded as a type of actor in the space in the same way as the visitor. The inner workings of the system are as irrelevant as the inner workings of the system's parts: the exact programming details, the type of data

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[5]Note that the theorising of how the parts fit together, the protoscientific analysis of the event chains, is of major interest. The truth of the implementation is hardly relevant, but the swarm of possible explanations for behaviour is often highly interesting. We regularly observe explanatory gestures exchanged between visitors, laughing explanations of one person's fanciful imagination. Lasers, electromagnets and the whole history of Science Fiction invention is brought to bear on the attempts at understanding. We find this to be fundamental to the interactive experience. That the visitor, later in their visit, discover other, contrary or expanding explanations, is to be hoped for. Tomasso Toffoli of Boston University has said "Science is the stories that scientists tell about the games that scientists play" (Data Ecologies Symposium, May 2005) and we would like to think of all our visitors as protoscientists playing the exploration game in our spaces.

transfer, the mechanism hidden inside the rolling ball, the video manipulation technologies are all incidental. We are left with a group of actors[6] all following free actions within certain guidelines for a collective action. Whether we think of these guidelines as the rules of a game or the script of a theatre piece becomes perhaps a matter of choice.

We have seen several reasons to bring theatre, games and interactive new media into a central core to be treated as one. We are left with the basis of a group of people and devices physically sharing a space and co-structuring the properties of that space together according to some guidelines. With this core understanding of what binds these three elements together, the rest of this article will investigate certain interactive environments.

4. THE SPIN SERIES

This section explores some of the game aspects of the SPIN interface and the environments that we developed with this interface. In particular we emphasize the positive aspects of physicality that were found and explain the lacking physicality that remains a problem in the interface and its programmed environments.
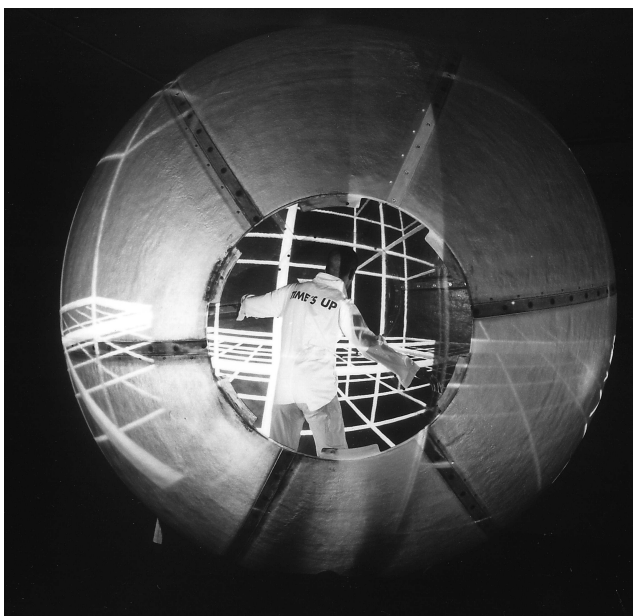

Figure 1: The Spherical Projection Interface seen through the open portal. Photo: Saxinger

In 1999 we developed and in 2000 we premiered the Spherical Projection Interface SPIN.[7] The three meter diameter translucent sphere of SPIN is mounted upon a base that allows it to roll in any direction. A visitor can enter the sphere, the portal is closed and they can freely walk in any direction. Four projectors arranged around the sphere project a suitably distorted image upon the sphere, the combined images merge to form an encompassing panoramic view around the visitor. As the visitor walks or runs in any direction, the rotation of the sphere is tracked and used to adjust the perspective of the images so the viewer has the subjective experience of walking through the projected space. This tight connection between the intuitive and natural motion of walking and the projection of the space makes the immersive character of the experience very strong. This connection, the focus upon the body, has been made central in the installations BodySPIN and BodySPIN++, where the heartbeat, breathing and some muscle movement of the visitor were used to control fundamental aspects of the virtual world. For instance in the "Breath Surf" environment, the breathing of the visitor was used to create waves in the water upon which the user floated, like the "Waterwalk" balls developed by the artists Jeffrey Shaw and Theo Botschuijver.[8] As the breath–induced waves approached, the player would begin to run forward and could then catch the wave, surfing through the shore breakers onto the beach.

For these environments, we developed certain abstract goals for the players. For instance, in Breath Surf the goal was to reach the beach. The other environments also had goals. These goals helped the players orient themselves, to get an idea of what they could do. However visitors who decided to work towards these goals at the expense of all else came out somewhat disappointed. This goal-oriented behaviour led to some players ticking off all the environments, then wondering what's next, like a mountaineer who never stops for the view because there are still a few more 5000m peaks on his list to be crossed off, then wondering where to go after the last one is done. The latest environments, developed for the travelling show "Crash Test Dummy,"[9] have used these body functions to a lesser degree, focussing upon the navigational aspects of walking inside the virtual spaces. With the increasing performance of computer graphics systems, we have been able to integrate more and more details into the environments, to add layers of playful interaction as we go. This extra complexity leads to worlds with deeper interactions and more room for play and exploration. Weird physics such as "sticky walls"[10] add layers of strangeness and offer extra possibilities for exploration, the ceiling and walls becoming as accessible as the floor.

However the largest obstacle to the development of successful, immersive environments in systems that are completely rendered is the fact that every detail needs to be programmed. We have not yet reached the stage where we can, to use the phrase coined by Maja Kuzmanovic and Nik Gaffney of FoAM and used by, e.g. Wilson in [13], "grow our own worlds" within the innards of the computer, or (better still) reaching out into our everyday physical world. But we, they and others are working on it.

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[6]It might be more appropriate to use Bruno Latour's theory of actants, where individual actors are replaced with actants that include the subject, things, instruments and the local situation. In order to deal with these ideas this seems to be a useful tool and worthy of development, but this margin is to narrow to contain it.

[7]http://www.timesup.org/spin

[8]Inflated transparent and opaque plastic objects (balls, tetrahedra, etc) in which a person could be enclosed. The object then floats and as the person walk inside the object, they walk across the water. Seen for instance in the James Bond film "Diamonds are Forever."

[9]http://www.crashtestdummy.net

[10]also known from the Wallace and Gromit film "The Wrong Trousers"

5. LEVERAGING THE PHYSICAL

One of the common realisations of newbie graphics programmers, whether they are developing games, simulations, virtual realities or engineering visualisations, is that the amount of computation needed to simulate the physics of our world is immense. One of the earliest computer games was Lunar Lander, where the player would attempt to land a lunar module safely upon the moon's surface, using rockets to slow the fall safely. The computation of the laws of gravity and acceleration, position and rotation and that old bugbear collision detection were (and are) hard. Recently we have seen the development of a number of physics libraries, computer code libraries that do a lot of this modelling efficiently[11] and there is even talk of dedicated hardware to do physical modelling.[12]

We have taken a very different approach. Rather than attempting to simulate reality, to develop Virtual Reality environments, we have taken it upon ourselves to build Real Virtualities: spaces that are real and contain certain properties of virtual spaces. The massively parallel computational system known as physical reality manages to do a lot of the collision detection and gravity simulation, it remains our part to add elements of strangeness, of virtuality to the spaces in order to make them attractive and of interest.

This approach is being used by many similarly minded groups to build interesting spaces. A series of environments using these ideas have been developed by FoAM[13] in collaboration by the Topological Media Lab[14] and Sponge.[15] These environments, including tXoom, trg and tGarden, have developed a long way from their origins as compact environments utilising camera tracking and projections onto smart clothing units (tGarden around 2001). The last in the series, "trg" (meaning "place" in Slovenian) has seen the smart textiles move from the bodies of players to cover the walls and floor of the entire space, creating an environment that is soft and flexible, enhanced by projections and soundscapes adding layers of texture and play over the already playful dynamics of tensioned elastic fabrics.[16]

We have used the physicality of installation work consistently to maximise the effect of strangeness, to raise the possibilities and probabilities for exploration (there is no impulse to explore the well-known and we are not coercing our visitors into discovery). Not only in the physicality of the installations, utilising the real world as a model of itself, but also making the physical acts essential to the whole interaction. Making the interaction large-scale, requiring that the visitor acts with their whole body, adds levels of involvement that simple finger tapping cannot reach. The use of the body leads to a form of performance and "Performance is really constituted [and] self-referential (the actions *mean* what they do)" ([4] quoted in [5] p 33). This manages to work as a way around the "crisis of new media" and allows the situations to carry on having meaning. Not only do actions of a whole body in space cause effects and have meaning in
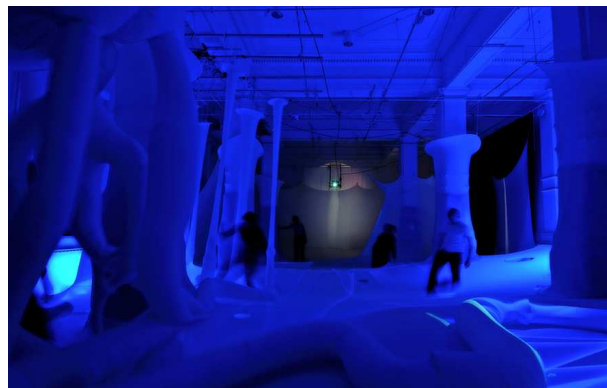

Figure 2: The FoAM environment "trg" in KIBLA, Maribor, Slovenia 2005. Photos: Damjan Svarc

the system as it reacts to those motions, also the motion itself has meaning and by carrying out the motion the visitor is entering into a meaningful interaction. This aspect ties closely to one of the central tenets of Antonio Damasio[3] that motion and emotion are tightly bound facilities. By undertaking certain activities, we gain immediate access to certain core parts of consciousness, somehow (and this relates to many of the hard problems of consciousness research, thus no one really knows how this 'somehow' might get replaced with an explanation!) making the motions important. This connection is also heavily utilised in Constantin Stanislawski's "Method of Physical Action" techniques that inspired Lee Strasberg's "Method Acting." Stanislawski underscores the ability of the body, of an actor's control and manipulation of their body, to generate authentic feelings. Stanislawski used these very physical improvisational techniques in training and rehearsal, but not (as far as we can determine) for performance. This technique has been picked up by improvisational theatre and seen to be vital in that an improvising actor can only trust their instincts and instincts are exactly what Stanislawski's methods train. We contend that the use of physical motion in gaming and installation work greatly enhances the visitor's experience and that there is a vast mine of knowledge that can de derived from the fields of theatrical improvisation and training.
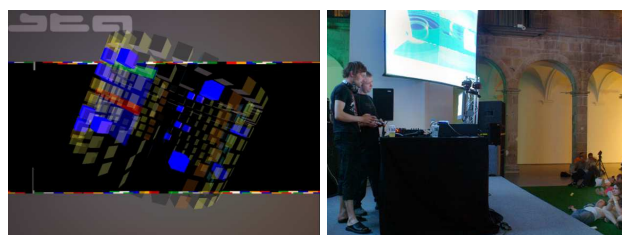

Figure 3: Left: Fijuu percussive elements. Right: Live Images of Fijuu being performed at the festival Sonar. Photos: Oliver and Pickles and Advanced Music S.L.

This act of using the physicality of performance as a way of adding some meaning to performance has been exploited by Stephen Pickles and Julian Oliver with their project "Fijuu"[17] which combines an open source game engine and the

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[11]http://www.ode.org is a general system, many similar systems have been implemented in commercial and noncommercial game engines.

[12]http://www.ageia.com and even Microsoft are getting into the game (June 2006).

[13]http://www.fo.am

[14]http://topologicalmedia.concordia.ca

[15]http://www.sponge.org

[16]http://www.fo.am/trg

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[17]http://www.fijuu.com

sound programming environment Pure Data[18] to make a performance engine for abstract soundscapes. However the entire control mechanism for this game is through a self–built world in the game engine and the control of that world is through classical gamepads. The performance of this piece involves the two playing the game (or are they playing an instrument?) to produce the soundscape (almost as a side-effect). However the physicality of the manipulation of the gamepads, as opposed to the abstract laptop mousing so prevalent among the other purveyors of similar music, gives their performance a special character. It is interesting to note that, within the community of electronica, the use of game control pads is regarded as highly physical, whereas in our world of interactive environments, the gamepad is at the lower level of physicality.

6. IMPROVISATIONAL MUSIC GAMES

This section discusses some ideas for gameplay in music, one performance piece which makes some of the problematic aspects of the game structure clear and two Time's Up pieces that attempt to use the ideas of compositional or improvisational play within a gameplaying environment.

The musical improvisation games including "Cobra" composed by John Zorn are pieces of quite some complexity for a small ensemble and a conductor, who acts as the referee of the game. The games involve a large number of props, headbands and hats, a lot of hand signals and the players are involved in paying visual attention to the referee as well as their coplayers. The rules determine who plays when, how playing time is allocated and shared, who follows whom. As a result of the highly visual nature of these instructions, the players are permanently distracted by their actions, the donning and removing of hats, the silent hand signals of the referee. Somehow this disjunction of game elements and musicality leads to shattering of focus, to an internal inconsistency for the audience.
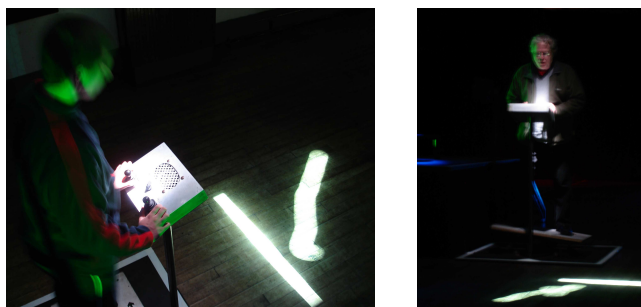

Figure 4: Sonic Pong, the left image showing the player hitting the ball back (the long exposure shows the path of the ball and the paddle) and modifying the sounds using the control panel, the right image showing the platform from the playing field side. Photos: Time's Up

The game "Sonic Pong" has been built as a physical game of the computer game classic Pong. The players stand on platforms, controlling their paddles by tilting the platforms from side to side with their feet. The paddles and the ball are represented by lights on the floor, using moving head

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[18]http://puredata.info

lights rather than a video projection in order to achieve the high contrast of black and white Pong. At this level the game is clear, the players accumulate points when the opponent misses the ball and lets it past, until the winning score is reached. The game is physical, the players feel with their bodies, chasing the ball with swings of their weight upon the platforms. The second layer of the game is the looping samples that follow the ball across the playing field. The looped samples are taken from classic computer games from the 1980s. When a player hits the ball, they are given the opportunity to modify the sample using a small console mounted in front of the platform. The manipulations of the sound are subtle, pitch shifting and subsample selection, simple resonance and filtering effects. Then the modified sample is looped back across the playing field following the ball. The other player then has the chance to modify the sample again and play it back across the field. As the small effects accumulate, the dynamics of the parameter manipulation interfering and enhancing one another, new sounds begin to appear. As the game goes on, the players begin to spend more and more time concentrating upon the manipulation of the samples, pulling stranger and stranger sounds from the simple starting samples. Then the inevitable happens: although it is quite simple (the paddles are large and the ball moves slowly) there is a necessity for a bit of concentration and one player lets the ball slip through. One point gone, but more importantly, the sample is replaced by a new one and the process of making it strange starts again.

Figure 5: The Cavity Resonator, two players with the screens showing their perspectives on the playing field. The right image shows an Elvis wannabe giving it his best. Photos: Martina Zagreb and Time's Up

The Cavity Resonator emerged from a series of experiments with using spatial metaphors for sound arrangement and playing. A virtual space consisting of a bordered plane is used as the arrangement space. The player stands upon a platform, navigating through the virtual space by twisting their feet, the pneumatic muscles swinging them around in rhythm with their steering twitches. When they sing or speak into the prominent 1950s style microphone, their vocalisations are recorded and displayed as a trace on the surface of the projected virtual world. As they (or other players) pass by this trace, they hear the recorded sounds played back. Like a turntable, the speed of travelling over the trace determines the speed of playback. Travelling in circles, the players can lay down loops, playing along with their previous sounds or laying down interfering patterns, assembling cacophonies or resonant tones. This environment is less ex-

plicitly game oriented, there being no explicit goal, but it allows and even requires a certain degree of playfulness. A Karaoke aspect is introduced as a form of game, with certain parts of the playing field being permanently laid out with old Elvis tracks to sing along with. This is used to encourage the players to get their hips swinging and "Sing with the King" to dive into the game. We have observed Elvis impersonators and looping note holders, but perhaps the strangest player was a 40-something man, dressed somewhat like an executive, who was navigating simply backwards and forwards, screaming into the microphone and then rolling back to revel in the playback of his own screams, adding layer upon layer to the inhuman cacophony. His look of intense animalistic joy was quite profound.

7. CONCLUDING REMARKS

The visitor to an interactive environment is confronted with a complex world of behaviour. Their actions and reactions to the actions (and reactions) of the space are free within certain boundaries, thus a form of structured improvisation. The space of an interactive environment is a Skinner Biotope as is theatre, thus we can talk about the visitor's experience as a form of improvised theatre. Structured musical improvisation was also discussed and some examples of interactive sonic improvisation games were presented.

Through all these possibilities for playful exploration the centrality of the physical experience remains. This physicality appears in many forms; the "Empty Body" of Butoh dance/theatre being highly appropriate, where the practitioners desire and work towards a "dance of existing rather than expressing." Similarly a visitor to an interactive environment or in an immersive gaming situation is primarily involved in existence and is not expressing anything other than their existence and experience in that space.

Interactive and performative media arts practitioners have picked up and used many of the tools of games and gameplay in their work. Games remain one of the formalities best understood by the general population and are a standard way of "breaking the ice" in many social situations. Games are, to a strong degree, defined by a rule base and a goal. Artists, on the other hand, can be rightly accused of breaking rules and having evasive, ever–changing goals. The artists' use of the idea of game, of the technologies of gameplay, is filled with re-use, re-purposing, inversion, addition and subtraction and all other forms of manipulation that can be imagined. Artists are one of the breeds of people who seem still to regard play as something vitally important and not just in terms of playing the game. Perhaps then the artist's role is, as phrased by Sha Xin Wei, director of the Topological Media Lab, "to rescue play from the carcass of game"[14].

In the above, we have tried to describe some of the ways that we and others have used the ideas and technologies of games and gameplaying in order to compose and construct experimental situations that are highly immersive and leave a strong mark on the players. We continue to believe that gameplay is vitally important in these systems, but do not want to be suckered, or let our visitors be suckered into unhealthy gaming behaviour. Play is the essence of the Game-Art interface, and will remain so.

8. ACKNOWLEDGMENTS

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