ISEA2015
Proceedings of the 21st International Symposium on Electronic Art
ISSN: 2451-8611
ISBN: 978-1-910172-00-1

Puppetree: a remediation of theatre, from spectatorship to co-authoring

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Abstract

By drawing parallels from theatre, this paper examines new paradigms in interaction models for the viewer (user) of interactive virtual worlds. Studying the changes in the aesthetic experience of the viewer from theatre to cinema to interactive virtual worlds, changing dynamics of the author-viewer relationship across these media are highlighted. Agency of both, the author and the viewer are discussed, establishing a case for exploring interaction models based on ideas of co-authorship.

Puppetree, a digital puppetry platform, has been developed as means to develop the ideas of co-authorship, taking inspiration from the position and agency of a traditional puppeteer. The platform is built with Intel's perceptual computing that uses a motion sensing technology to detect a user's hand and translate the movement to a puppet in a 3D environment. The direct hand-control allows the user to experience the virtual environment as an extension of his immediate physical reality vs. immersing into an environment as an avatar. Exploring narrative structures that shape user-experience in such environments is in further scope of this work which requires an understanding of the logic of interactive storytelling in digital media.

Keywords

Digital puppetry, remediation, theatre, Interactive Virtual Worlds, agency, aesthetic experience, co-authorship, interactive storytelling, perceptual computing, motion-sensing

Introduction

This work began as an an inquiry into the aesthetic experience of performing arts. Theatre seemed an appropriate starting point owing to its openness to an outsider to the field. Theatre is so close to life itself that any lack of formal knowledge of the field doesn't prevent one from engaging with it. From a new media perspective, interactive virtual worlds seem as remediation of theatre. The understanding of dynamics of performance have transformed into an attempt at developing models of interaction in interactive virtual worlds based on theatre.

Inspiration to adapt this approach of looking at interaction design as remediation of theatre is rooted in Brenda laurel's work, Computer as Theatre, in which she analyses classical dramatic theory to look at effective interaction design as effective drama. The central idea adopted from her work is the concept of 'agency', the ability to initiate action. In the course of this study, action and perception have emerged as the key factors of aesthetic experience. The relationship between the author and the viewer changes across media owing to the capabilities rendered by the medium. 'Distance' that separates the author and viewer is another player in the scheme of things and is a property of the medium.

To conceptualise and build models that further the case of this study, *Puppetree,* a digital performance platform serves as a potential ground. Developed with Intel's perceptual computing, it uses a motion sensing device to detect the hand movement of the user and translate them to a 3D puppet in a virtual environment, giving him the position of a puppeteer.

Remediation

All media work by remediating, that is translating, refashioning and reforming other media. [1] This work looks at cinema and interactive virtual worlds as acts of remediation of theatre. The similarities and differences of the media are mapped to see correlation to the changes in the aesthetic experience of a viewer through each medium.

Framework

To observe the changing dynamics of an experience across media, three fundamental points of study are chosen: the author, medium and the viewer (spectator). *Author* is the formal cause of a performance. *Medium* is the material cause of the performance. *Viewer* is the witness of the performance. The interplay between these elements if the focus of this study.

Theatre

The basic minimum for a performance to happen is a performer, a space and a spectator. The performer *acts* on the the space(the material medium) to give form to his thoughts and feelings. The aesthetic experience of the performer is in 'action'. The spectator receives the performance as sensory inputs. He gets acted upon by the space and engages in interpretation. The aesthetic experience of the spectator is in 'perception'.

In the performance space, there is a 'distance' (both physical and psychological) that separates the spectator from the performer. It is mentioned in the Indian theory of aesthetic experience (the *rasa siddhānta)* that the spectator is supposed to bear the nature of the author, which enables the spectator to experience *rasa* (aesthetic pleasure). [2] According to the Indian scholars, he should have the basic receptivity to attune himself to the level of the author. If his heart is at par with the imaginative mind of the author, he can experience this aesthetic pleasure. Thus, the aesthetic pleasure of the spectator is in traversing the psychological distance that separates him from the performer. The physical separation allows the spectator to see the performance as a 'whole' and position him in a perspectival space with multiple vantage points.

More commonly in theatre, there is an author (director) who puts together a performance while working with performer(s). Performer becomes a part of the author's medium of expression. The author can be seen as acting through the performer(s), and the spectator is now engaged in attuning to the mind of the author.

Theatre *to* Cinema

In cinema, the spectator's eye is extended by the camera. The 'observed' comes closer to the observer (spectator). Quoting Walter Benjamin, these close-ups satisfy the desires of the masses "to bring things 'closer' spatially and humanly," "to get hold of an object at very close range", thus giving a notion of control over the observed. [3]

In case of theatre, the author merely *suggests* a possible path for the perceptual movement of the spectator through the theatrical space, with the aid of the adapted narrative structure. But cinema as a medium allows the author to wire this path for the spectator by using the camera as extension of the spectator's eye and manoeuvring it. In effect cinema is actually placing more control in the hands of the author, enabling him to portray in detail what he wants the user to see. The spectator's perspectival space is narrowed and his movement is controlled by the author.

As compared to theatre, two types of 'agency' emerge in cinema: of the spectator, in moving closer to the observed and, of the author, in designing the path for the spectator's movement in space. However, the agency of the spectator can be seen as a subset of the agency of the author. Cinema works in a way that obscures the presence of the author in the space. So the spectator, immersed in the space, experiences his agency as independent of that of the author. The aesthetic experience of the spectator in cinema rests not just in perception but also in action (or rather an illusion of action in the larger scheme). The pleasure derived from this new possibility to get closer to the observed overpowers the experience of psychological movement through perception. With more control in the hands of the author over the experience of the viewer, the perspectival space of the spectator gets compressed by coming closer to the performance and, in effect, distancing away from the author.

Theatre *to* Cinema *to* Interactive virtual worlds

Interactive virtual worlds, as representations of physical reality in 3D environments, borrow from cinematic vision, specifically, through the mobile virtual camera. The difference in virtual worlds is that the camera is controlled by the user (spectator) and in fact, is identified with his own sight. [4]

In designing the user's experience through the virtual environment, the author attempts to make the user resonate with the logic of the environment. The author offers multiple viewpoints to the user that are all constructed to be coherent with the overlying logic of the environment. All paths for the user are designed to lead him to make connections in the world that the author wants him to make. The algorithmic approach to design makes it possible to present a coded movement through space as a process of discovery to the user. This illusion causes the user to mistake representation for reality. Perception is limited. This illusion lies in restriction of movement, concealed from the user by offering multiple options for movement and creating a notion of free movement. The user gets immersed in this restricted movement. The control placed in the user to manipulate his environment increases immersion and reinforces the illusion.

The spectator himself becomes the performer (character). And the presence of the author becomes more obscure for the spectator, in the perceived space of the experience. As compared to cinema, there is strengthening of the agency of the spectator in terms of control over his environment and also in the agency of the author in terms of control offered to her by computing technologies for detailed design of the virtual spaces and the movement of the user within.

New technologies not only change the interactions of the user with the medium but also influence the creative process of the author. In case of theatre, the performance is live. The author maintains the integrity of the performance through knowledge of the moment and improvisation. Cinema, on the other hand, is recorded and compiled by the author and, played back for the spectator. The author is making content to be consumed in future. So the author wants to exercise more control over what the spectator sees, and there is no possibility of any improvisation.

In interactive virtual worlds the performance unfolds as the user moves through it. The user becomes part of the performance. This brings back the live nature of theatre for the performer, and hence improvisation based on the user behaviour becomes necessary. But the author is still not

present at the time of the performance. Computing technologies allow the author to manifest part of their thinking in form of a computer program and act while the performance unfolds to the user.

Computing technologies place power in the hands of the author to control the flow of the experience and thus remove her need to be present during the performance. Though the interactive virtual worlds offer agency to the user allowing him to assume the role of a performer in the virtual worlds like in theatre, but the performer isn't able to establish a similar connection with the author. The performer can rather be seen as a puppet in the hands of the author, moving through a constructed path designed by the author.

Co-authorship

This discourse highlights the primacy of the author-viewer relationship in shaping the viewer's experience through a medium. While prevalent methods of designing interactions for the viewer in interactive virtual environments explore the idea of giving the role of performer to the viewer, another possible direction to focus is a position where the viewer's role resemble that of the author i.e. to design spaces where the author and the viewer come together to co-create. This creates scope for designing experiences for interactive virtual environments that leverage the power of emerging technologies to create platforms for co-authorship.

Puppetree

Puppetree is a performance playground inspired by the model of traditional puppet theatre. Placing the user in the role of a puppeteer, it forms a potential ground to conceptualise and build models of co-authorship in interactive virtual environments. Created with Intel's perceptual computing technology, *Puppetree* makes use of its 'close-range depth tracking' feature to capture the movement of the user's hand and translate it into movement of a 3D puppet in the virtual world. This allows the user to control a stringed puppet character in a 3D space similar to the traditional puppeteers.(Figure1)

Technology - Perceptual Computing

Popular motion sensing technologies like Kinect and Wii capture and translate the entire body movement onto the virtual world. Technologies operating at such scale and distance make it more intuitive to design environments where the body traverses the screen and becomes part of the virtual environment, i.e. embody a character in the virtual world.

The close range depth tracking feature of Perceptual Computing makes it possible for the user to interact with the virtual world without using the entire body. And it becomes more significant when the hand is given direct motor control in digital environment. We use hands in our natural environments to touch, grab and act on objects around us. The micro-control that we can exercise on our environment with our hands makes most of our natural interactions. Interactions driven by a hand movement in front of the screen automatically evoke ideas of environments that are composed of objects meant to be held and acted upon.

Agency of the puppeteer

Puppet theatre, when seen as an abstraction of theatre, makes the supremacy of the author's agency most visible. In drawing the similarity between puppetry and theatre, the performers appear analogous to puppets and the director to the puppeteer. By reducing performers to puppets, the dynamics of the author-viewer relation become more visible. The puppet master's interaction with the viewer is direct. The viewer is completely aware of the position of the author. The author puts together her physical reality in front of the viewer as she constructs it through puppets. Author, while playing different characters juggles between different perspectives that hold the composition. The suggestion of life in inanimate objects is a product of the narrative style of the puppeteer and the expanse of the viewer's imagination in accepting it as reality.

In *Puppetree*, the act of translating the user's hand movement to bring a 3D virtual environment to life has given a different meaning to the user's agency in a system. The user becomes the puppeteer. Instead of embodying an avatar in a virtual environment to assume agency in that space, the user now is imparting life to an object in the virtual environment through his actions in the physical environment, still retaining the idea of his physical self. Instead of becoming a part of a larger scheme of events, the user has the complete view of the happening and in fact, he is the one composing it.

Puppetree attempts to abstract the concept of agency of the puppeteer as in traditional puppetry and transposes this agency to the user of an interactive virtual environment. The user becomes an equal author of this experience. Puppetree has emerged out as a space for co-authorship where the user is co-creating the experience.

Figure1. User interacting with *Puppetree*

Discussion

Puppetree is an experiment in co-authoring that brings together the author of the virtual space and the user as the puppeteer to create an experience. The role of the new media artist while authoring the virtual space is to design interactions and flow that allows the user to create seamless experiences. In view of this, the form of the performance platform needs to evolve further,

Puppetree has been exhibited as an installation in gallery spaces where audiences have enjoyed playing with the puppet while getting a grasp on its movement. Currently, the platform allows room for engagement for a few minutes where the user (turned puppeteer) tries to get comfortable with the new controls offered to him and experiences being a puppeteer for the first time. It hasn't, yet, been put in an environment where the user could spend enough time with it to be able to create stories.

To design for an experience through *Puppetree* that sustains user's interest over time and utilises the true potential of the platform, further work is required in two areas: firstly, building a system of gestures that gives more affordance to the user and adds character to the movement and behaviour of the puppet; and secondly, in devising a narrative flow for the user of this environment that facilitates the user to engage in the act of co-authoring. Instead of an instructional mode, a method can be devised similar to the open-scores as used by the composers of improvisational music traditions that allow variability and create room for free play by the performer. Exploring models of interactive storytelling based on improvisational traditions and surrealist games like exquisite corpse, seems to be a direction to take further from here. As a parallel thought, there is scope for implementing this platform to be used by multiple users coming together to create stories on a larger scale.

Conclusion

This work takes on a journey to understand the interactive virtual worlds as remediation of theatre and compare the experiences of both the author and the viewer. It highlights the significance of the author-viewer relationship in shaping the experience of a viewer. Emerging technologies acting as extensions of our senses open up possibilities that can be exploited to invent new forms of the author-viewer relationship.

A work-in-progress, it proposes to build *Puppetree* as a performance platform that takes the idea of co-authorship further and evolves into a platform for interactive storytelling.

Acknowledgements

This work took shape in the premises of National Institute of Design, Ahmedabad, India as my major project for the masters course in New Media Design under the guidance of Prof. Ajay Tiwari and Dr. Jignesh Khakkar. I would also like to thank Intel for facilitating this investigation through their Perceptual Computing Challenge, 2013.

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Priyanka is interested in playing with technology and bending it to discover new forms of expression. Her works are driven to find new meanings at the known boundaries of human-computer interactions. As a New Media artist, her practice is focused at understanding our relationship with the environment and investigating technology's influence on our perception of it. She enjoys sketching as much as she likes to fiddle with code. She believes in connecting the knowledge of the old with the capacity of the new.