ENHANCING SPATIAL EXPERIENCES THROUGH DIGITALLY AUGMENTED SPACES:

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This article will be discussing Augmented Reality in a trans-disciplinary approach to discuss the possibility of enhancing the experience of space through our bodies by augmenting it digitally in a 3d setting. The article will be searching for how could the experience of space enhanced digitally in terms of body-space interaction and what might be the consequences of this change.

The Library+ Project. Cybertectonics Of Space. Copyright: Serhat KUT.

Introduction

It has been two decades since Weiser had put forward the vision of Ubiquitous Computing in which he was foreseeing the shift away of computing from a desktop centered state towards a pervasive computing with smaller mobile devices distributed throughout the space (Weiser 1991). Today this vision is being realized with the emergence and pervasive use of tablet devices and smart phones connected wirelessly to public or private networks and each other as well. And supporting this vision, wearable computers and head mounted displays (HMD) has been much more accessible for end users in terms of price and ease of use.

The 1990s has been the era of virtual reality and most of the discussions in economy, politics, architecture and urban design theories were focused on the notion of cyberspace experience. However among the emerging new media and digital interaction technologies the Augmented Reality (AR) technology

enabling to overlay the digital information over the physical space is turning back the discussion on the physical space again. But this time a physical space which is augmented with dynamic digital media.

Cybertectonic Space

The term Augmented Reality is broadly being used for the Computer Vision technology which enables overlaying 3d registered digital dynamic media on physical space (Azuma 1997). But on the on the other hand in a wider perspective, in terms of spatial experience, any situation enhancing, transforming or manipulating our experience of space may be understood within the context of Augmented Reality. Emphasizing this point of view Manovich brings up the concept of Augmented Space, re–conceptualizing augmentation as an idea and cultural and aesthetic practice rather than as a technology (Manovich 2006).

In this perspective Augmented Space may be considered as a new space or transformation of the physical space with digitally overlaid data and even as a new realm providing a place for Being–in–the–world (Heidegger 1978).In another terms Augmented Space is a new realm containing virtual elements in a real physical space. Here reality and virtuality are not considered to be opposite concepts but they are viewed as lying on the opposite sides of the reality–virtuality continuum (Milgram et al. 1994) where Augmented Reality is located somewhere in–between.

Regarding McLuhan's perspective involving media as an extension of human body (McLuhan 1995) Augmented Reality can also be discussed as a new medium extending our bodies and therefore providing new possibilities of space experience. And from now on to pull back the attention from the computer vision technology to architectural domain, the new in–between space experience made possible by Augmented Reality will be called as cybertectonic experience, coining the words cybernetics/cyberspace and architechtonics. And the new space produced via cybertectonic experience will be called as cybertectonic space.

Within this context it might be concluded that Augmented Reality is not just a Computer Vision technology providing possibilities for overlaying digital media on physical space but more than that Augmented Reality is a concept strictly related with spatial experience and bodily perception and therefore in an ontological perspective it provides a new in–between place in the continuum of real and virtual and thus resulting a new problematic domain in Architecture that should carefully be considered. This new problematic domain might be a ground for understanding the structure and qualities of cybertectonic experience and how cybertectonic space is produced.

Library+

The Library+ project is a pilot study that has been experimented with undergraduate architecture students of Istanbul Kultur University Department of Architecture at the main campus library. The main goal of the project was to create an Augmented Reality scene in the conventional setting of a library by overlaying digital information over the physical space to provide a new realm for cybertectonic experience and observe, discuss and evaluate possibilities of cybertectonic space in an architectural point of view.

The hardware used in the project was a backpack system consisting of a laptop computer and a Head Mounted Display and the open source AMIRE marker tracking based augmented and mixed reality authoring tool has been used as software. Marker based augmented reality authoring software makes it possible get much more precisely set scenes in the physical space than gps based systems and yet easier to install and setup compared to RFid tag based systems since the only thing needed to register any digital object in the physical space are black and white patterns printed on papers which are called markers. AMIRE, not only making possible to overlay digital data on physical space but it also allows yo to design some interactive scenes according to parameters like distance of the body from the digital object, distance between two objects and markers and some logical operators like if and then. With all these parameters much more interactive cybertectonic spaces could be created and this interaction is not just pressing buttons and triggering some events more than that and most importantly the scene is interactively constructed based on body gestures and the movement in space, turning around objects, bending over and etc.

Therefore the cybertectonic library space is not only a physical space ornamented with digital media, it's a space which is open to interact with, a space that encourages bodily perception (Merleau–Ponty 1996) of the digital, which is intensively connected to or extending the physical.

Concluding Observations

We have experienced that Library+ offers a completely new library experience rather than searching the catalogs in the computers and accordingly finding the books in the appropriate shelves and reading them eventually. The space encourages one to discover the library space and reveal the hidden information between shelves or books and leading him or her to possibly unexpected results or experiences. The cybertectonic space of the Library+ changes the linear and usual process of research or reading experience happening in a library and we have also observed that the movement of the body dramatically changes in the cybertectonic library experience as expected.

Supporting the cybrid principles that Anders has mentioned earlier (Anders 2008) we have found that reciprocity between the physical and the virtual elements of cybertectonic space is an essential issue which should be undertaken as a key principle when creating cybertectonic experiences. Otherwise, the weak relationship of physical space with the digital content may prevent to create meaningful cybertectonic experiences when aiming to enhance the experience of space.

As a conclusion it could be told that Augmented Reality technology brings up a new problematic domain in to Architecture that should be discussed in terms of experience of space. The cybertectonic space is capable to change the conventional experience of space and therefore as an extension of our bodies it is letting us to have new experiences of space, leading us to get in a new ontological state of Being. With the emergence of smart phones and tablets, the concept of ubiquitous computing has the potential to create ubiquitous cybertectonic experiences and we believe that further work in architectural domain is essential to understand and interpret the cybertectonics of space.

References and Notes:

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