Augmented Space in Artistic Production:
The Relationship Between Moving Image and Physical Environments

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Abstract. In this paper we establish a relationship between virtual elements and physical environments (both in the private as in the urban context). We review both theoretical and empirical works on which we base our methodology of performative-led research. The outputs are works that promote Augmented Space experiences in the artistic context with the purpose of creating new readings and experiences of the place through audiovisual installations and live performances.

Keywords: Augmented Space, Art, Moving image, Physical environment, Place

Introduction

The urban space is the starting point and the context for the development of this project. The reconfiguration of the city is more and more frequent, not only due to the constant use of mobile devices in the physical space, but also to the increasingly frequent presence of artistic projects in the urban context. The deep changes that, in the last years, have reshaped the ways in which we address and manipulate the image in the urban space, are fundamental to understand our object of study. In a society in which people are increasingly "stuck" on their individual screens, how do we enhance the gaze towards the physical space through new projection techniques in the public space? As we will show, the concept of Augmented Space can have different definitions and research paths. We analyze theoretical works and artistic practices, with a perspective based on artistic production and its technical and conceptual possibilities. Projects will be developed and subsequently analyzed in order to move towards new approaches in artistic creation. The works, presented as installations in public spaces, build a connection between the moving image and physical spaces. Thereby, we consider ourselves able to answer to our research question.

Theoretical context

We can describe Augmented Space as a convergent reality, which establishes a relationship between virtual and physical world.

According to Lev Manovich:

> ...derived the term 'augmented space' from the already established term 'augmented reality' (AR).10 Coined around 1990, the concept of 'augmented reality' is normally opposed to 'virtual reality' (VR).11 In the case of VR, the user works on a virtual simulation; in the case of AR, the user works on actual things in actual space. Because of this, a typical VR system presents a user with a virtual space that has nothing to

do with that user's immediate physical space. In contrast, a typical AR system adds information that is directly related to the user's immediate physical space.(2005, 224)

Manovich in *The Poetics of Augmented Space*, defend the evolution of this concept starting from the idea of the history of art itself, that is to say, in the sense of the evolution of the gallery, passing from a 2-dimension character, in the exhibition of paintings, to a 3-dimensional use of the gallery space, in which the observer has a dynamic interactive experience: "is the physical space overlaid with dynamically changing information" (Manovich. 2005: 1).

According to Manovich, Augmented Space rises as an architectural issue, because of the direct relation between virtual layers of information and the physical environment. In this way, we observe a change in contemporary practices; "To put it in another way, the layering of dynamic and contextual data over physical space is a particular case of a general aesthetic paradigm: how to combine different spaces together" (Manovich. 2005: 226).

Also authors such as Oliver Bimber and Ramesh Raskar, suggest hypothesis that could represent a development of Augmented Space. They refer to the concept of Augmented Space, like Augmented Reality Space, in fact, they foster the use of projection techniques in the physical space, like the *video-mapping*. They consider this technique to be fundamental to attain an Augmented Space experience through the immersion and interaction in the artistic context, "spacial displays detach the display technology from the user and integrate it into the environment" (Bimber, Raskar, 2005: 18).

In his article *The Politics of Public Space in the Media City* (2006), and specifically in the chapter *The Post-Broadcast Digital Era,* Scott McQuire tries to understand the changes in a *post-broadcast digital* culture, where we see the screens coming back to the public space, becoming an integral part of our everyday life and of urban infrastructures. McQuire argues that the first aim of screens and their most conventional use in public places is the broadcast of sport events or live concerts as well as news and advertisement.

If we think of the first cities that have used large size screens in public space we can affirm that they suffered from alterations regarding the way in which we inhabit public spaces, both on a social and an artistic point of view. The *media event* comes back to the public space through screens. In this sense, it is fundamental to mention the concept of *Media Building,* developed by Paul Virilio, in which he establishes a relationship with Middle Age cathedrals that work as information channels.

The relation between moving image and the urban space focuses mainly in questions of space and time matters, through the relation between cinema and architecture. Therefore, the video projection in urban space is a necessity of creating spaces of collective reflection e Segundo Holly Willis "...a series of interventions that allow people to participate not only in the interrogation of the stability of that power, but to imagine more open, engaged and mutable forms of public intervention and connection." (Willis, 2005, 93)

Nicholas Bourriaud uses the term *Relational Aesthetics* within an artistic perspective that represents a new way of thinking, defining it as a construction through social relationships. For him, three events were fundamental: a new socio-political context after the fall of the Berlin Wall in 1989; the technological development through the democratization of the access to mobile technology (portable computers and mobile phones) and permanent Internet access.

Bourriaud builds, then, a connection between art pieces from the beginning of the 1990s and the idea of the work of art in open space, with digital art increasingly rising and interactive (Bourriaud. 2009: 23). In his book *Relational Aesthetics*, he develops this idea and argues that art is organized as the sharing among objects, images and people, and also as a laboratory of living forms that anyone can appropriate of. As a consequence, a urban culture rises, where social exchange increases, together with the mobility of individuals and a strong development of infrastructures of communication (Bourriaud. 2009: 20).

Therefore, the artistic experience is linked to the interaction and participation of the user and we pass from the idea of an object that we only contemplate, to an experience in which the user completes the meaning of the piece

through his/her actions: "an art that has as a theoretical horizon the sphere of human interactions and their social context more than the affirmation of a symbolic space, autonomous and private" (Bourriaud. 2009: 19). In this sense, McQuire identifies some projects where we can see various examples of Relational Aesthetics, that is to say, the possibility of relation between architecture and public, turning urban space in a place for "public" discussion.

Nowadays, with the ever increasing quantity and development of screens in public spaces, we believe that, through artistic interventions, we can achieve a significant role in increasing consciousness to the social issues, and in our relationship with others, as well as with the notion of place in public space. Currently, due to the excessive use of mobile phones in urban spaces, we believe that we are loosing our relationship with others as well as with the physical environments that surrounds us.

Maurice Benayoun in is article Overscale Art in Public Space: from Play to *Dysplay* in Gigantic: Mediation Beyond Surface states the following: "Street art has reminded us again of the power of media when artists practice outside of the white box. For centuries the frame separated the art from the "real" world, a boundary which was questioned by the introduction of screen technologies. More recently the screen has expanded, invading the walls, the façades and now the very skin of the building itself. Light and image are covering entire buildings in a way that, beyond any previous definition of screen, the urban architectural complex has become a medium."(Benayoun, 2016: 381)

Practical References

To better understand the evolution of this concept we need to mention authors that deal with the issues that we have previously introduced. Even before the concept of Relational Aesthetics was established, authors such as Jenny Holzer and Krzysztof Wodiczko already made use of images in public places.

Jenny Holzer – creative interventions of a social criticism nature, characterized by ephemerality in public space. She seizes upon large-scale screens and buildings in public places and uses them as a physical medium for her interventions. In her work, she usually employs words to beget critical thinking, considering this kind of structure in the public space as a traditional form of media: control, access, content.

Krzysztof Wodiczko – projections in public space, through the first devices for image projection as slide projectors and later, video projectors. Wodiczko acts in several cities in the world and approaches questions essentially linked to immigration and its implication on themes such as the identity and the territory.

Segundo Wodiczko "it must critically explore and reveals often painful life experience rather than camouflage such experience by administering the painkillers of optimistic design fantasies". (Wodiczko, 1995: 29)

To establish the concept of Relational Aesthetics, McQuire takes, as a basis, the work of these authors:

Rafael Lozano-Hemmer – according to McQuire, he works on the main characteristics of the concept of Relational Aesthetics, among which, the relationship between real and virtual, involving the body in an interactive experience. The user can explore, in public places, the relationship with others, using the body as a vehicle of the experience, in collective or individual performances. This author allows us to understand the way in which we can use Interactive Digital Systems (IDS) in physical environments, enhancing the Augmented Space experience through participation.

Janet Cardiff - sound paths where we can move in space following a narration and audio instructions. Through the combination of fragments of narratives and sound effects, the artist succeeds in adding a new virtual layer to reality, attaining an Augmented Space experience. Following the conceptual work developed by McQuire, several authors have explored art in the public space:

Christopher Baker - discusses the lack of privacy that telephones and social networks have brought to the contemporary world. His purpose is to show that the opposite happens with mobile phones. Instead of being used to send a piece of information information to a specific receptor, they are used to send it to one or a group of unknown people.

Nordic Outbreak - This project integrates several different artists and reflects an open exhibition structure for the open museum and the contemporary ways of engaging with cities through moving image integrated with landscape. It reflects movement, memories and transition. It's a fundamental case study to understand the way the projects in public places may increase the physical interaction between people and the city.

Research Question

How can we enhance the experience of Augmented Space in artistic production, through the relationship between moving images and physical environments?

Sub-questions

In this experience, how can we increase the user's awareness on the use of the body in the urban space?

How can we establish a relationship between the user and the idea of place?

Research Methodology

"It not only expresses the research, but in that expression becomes the research itself" (Haseman 2006: 6).

Performative-led research will be our main methodology: with the article *A Manifesto for Performative Research* (2006), Brad Haseman, suggests that performative research should be developed through practice, being this activity central in the research, a pre-requisite. The already established qualitative and quantitative research methodologies present limitations when referring to practice-led research, particularly in the artistic context.

We want, then, to define our methodology through artistic practice as performative-led research suggests. The aim will be the exploration by practice that, according to Carole Gray's proposal, suggests that the research should be adjusted by practice, the context in which problems and challenges arise, elements that motivate the progress of the research itself. The author suggests, then, methods for acquiring data that we are familiar with (Gray, 1996). A *performative-led research* has its origins in qualitative methodologies, but intends to present the result in a performative way, that is to say, through the artistic process, or through the implementation of the projects with the consequent data analysis. The main difference between qualitative and quantitative methodologies is in the way conclusions are expressed. The results are presented not only in a symbolic way, that is to say numbers or words, but also through the artistic practice itself. Haseman questions: "how can presentational forms be understood as research? What makes a dance, a novel, a contemporary performance, the outcome of research?" and mentions the notion of performativity by John Langshaw Austin as a starting point. Austin affirms that "performative speech acts are utterances that accomplish, by their very enunciation, an action that generates effects".

Therefore, starting from the development of artistic projects, we will create a model to establish a relation between moving image and physical environments. The output of this work will then be the development of artistic projects that will be subsequently critically analyzed, and that will originate new perspectives on artistic practice. The results will be presented in the form of exhibitions in public spaces, for that audiences are able to actively participate. On the other hand we also aim at creating knowledge by producing and sharing texts and scientific papers in order to bring a contribution to the community.

Based on this study, we divide our methodology in 3 stages that constantly interact and influence each other, fostering the acquisition of data and new questions during the practice. We then try to establish a cyclic and continuous relation between artistic and scientific practice. The different steps that we will explain below, will not be static nor linear in time, but happening in parallel:

Stage 1 – Theoretical plan: as presented above, we begin from a definition of the concepts proposed in this project: analysis of the evolution of the key concepts: detailed review of the different practical projects.

Stage 2 – Practical exploratory plan in studio: the practical development of the research that started in 2014, began with the building of a cube-shaped metal structure, that has allowed us to test surfaces, projection techniques, video and interactive digital systems. To enhance the practice, we have used the cube with an experimental perspective to arise questions that will originate during the development of the projects. The cube is tested with different formats and ways of interaction that allow us to understand the better strategy of building a connection between moving image, the performer and physical environments, finding new experience models that we present shortly:

InBetweenTheBox (Figures 1 and 2) is an audiovisual performance that creates an immersive environment and explores the relationship between virtual and physical space. We challenge the border between these spaces promoting awareness of our body and its dislocation in physical environments.

braINbox (Figure 3) is an interactive audiovisual performance created with Muarts, Sininho and Tiago Salazar for the MIRA Forum artistic residency. The box is a medium between the physical world and the digital realm. In this case in particular, the physical world is physiological and is represented by the electromagnetic brain activity of the writer and the digital world is it´s translation into the digital realm. Technically, we have used an EEG Emotiv Epoc headset and a Max7 patch to acquire and translate the brain data into an audio-visual projection of his thoughts into a translucid cube (Figure 4)

Figure 1 and 2: Performance *InBetweenTheBox*

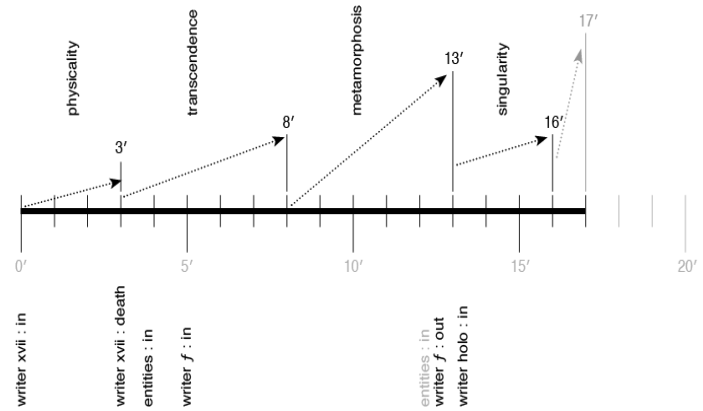Figure 3. Performance brainbox

Figure 4. Conceptual narrative flow

Serralves 40 horas (Figures 5 and 6) - A interactive collaborative construction of a narrative that combines the online world with the experience of the event, in order to conserve memory of the event. So through the application developed for this event (Max/MSP), they will be accumulated in the same projection, a unique visual history and the individual contribution of those who want to participate.
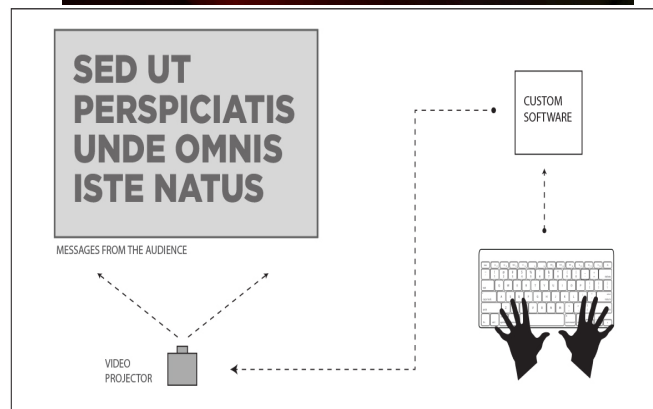

Figure 5 and 6. Installation Serralves 40 horas, technical details

Kobayashi 2001 (Figures 7 and 8) is a live audiovisual performance composed by live coding sound and audio-re-active visuals. It consists in the exploration of a non-linear narrative using images and sounds captured in the

physical world. Searching for their artistic potential and expressiveness, we use these digital recordings from our daily experiences as raw material for the performance. We explore a dialogue between Supercollider and Ixilang for music composition and VDMX and Resolume for video editing.
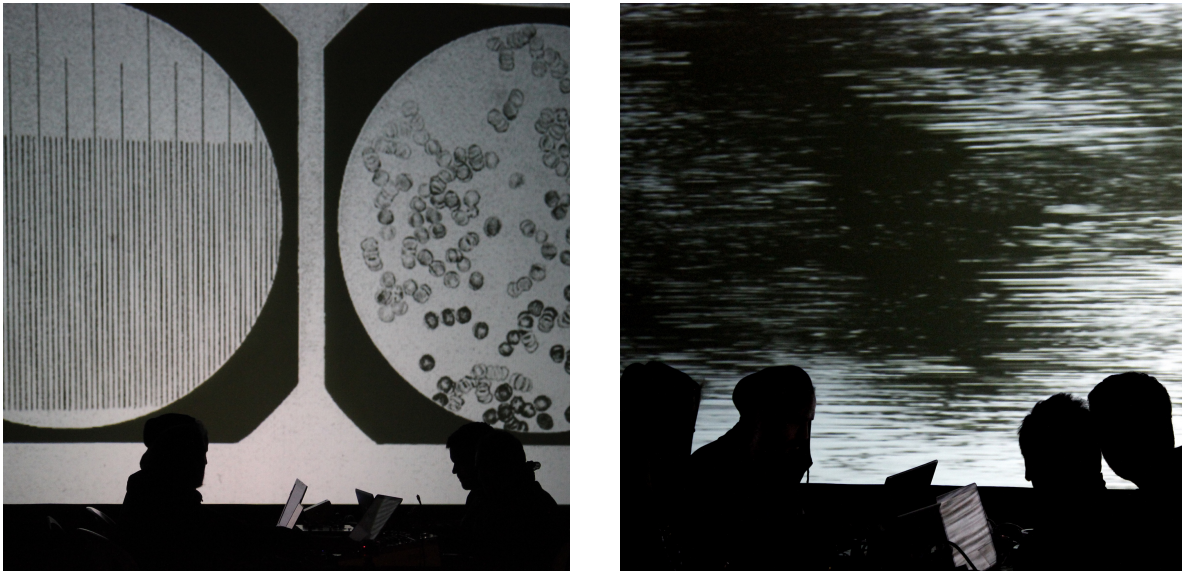

Figure 7 and 8. Peformance *Kobayashi 2001*

SINØ (Figures 9 and 10) is a live audiovisual performance composed by sound elements and audio-reactive visuals. The installation consists in a box made by a rectangular structure with multiple layers of transparent fabrics. We explore the relationship between the retro-projection and the body of the performer, creating a augmented space (between projected elements and the physical body) trough this mixed reality.
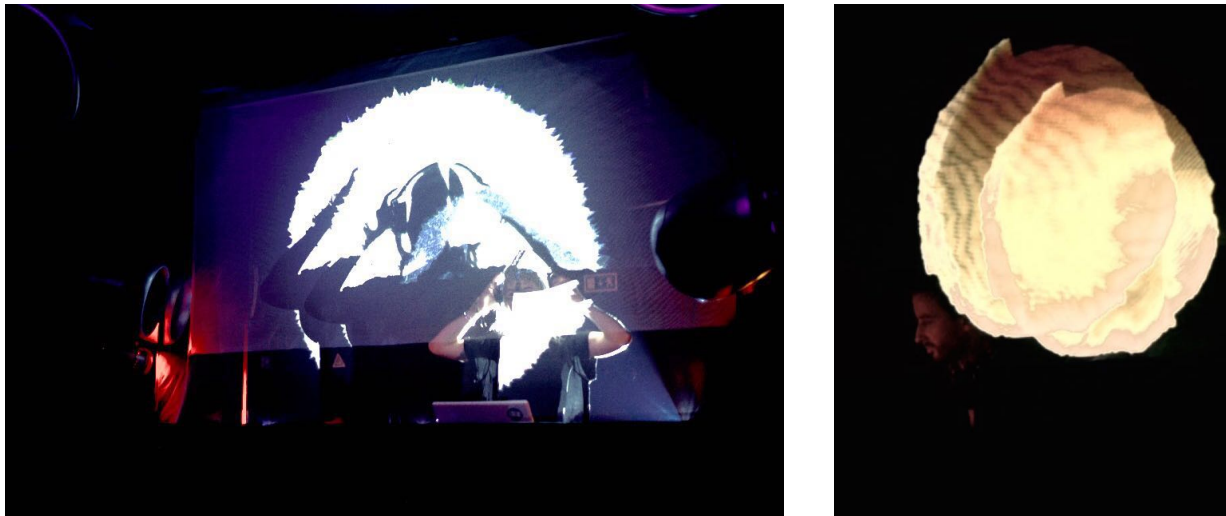

Figure 9 and 10. Audiovisual Performance *SINØ*

Stage 3 – Practical exploratory plan in the public space (Figures 11 and 12): After the tests of the stage above, we will approach the public space. We assume that the projects implemented in this phase, as far as technical aspects are concerned, will be already complete with the related data– such as robustness of the system, interactive digital systems design, modes of interaction, technical and physical characteristics in the implementation - to be able, in this stage, to exclusively work to promote the relationship between moving image and Public Space.

This practice-led research aims at establishing a constant and direct relation among the three steps of the project. Starting from these premises, we develop this project through the relationship between theoretical plan, artistic practice and its consequent reflection of results, with the purpose of finding innovative methodologies to enhance the experience in Augmented Space in the context of audiovisual interactive installations and in live performances (private and public space).

Figure 11 and 12. Testing video projection at Public Space

Future work

Based on stage 3 we aim to create Media events in Public Space. Trough the exploration of site-specific installations we want to promote the relation with the urban space and the idea of the place. We want to understand the methodologies and technologies that suit best for the work we propose. As such, we have as principal objective to understand how we are able to enable the relationship between people and the sense of place in urban space, through a number of artistic interventions. Thusly, during the next year, we will create two fixed places of projection in urban space, which will remain during a month as a way to understand if we have achieved the formerly mentioned objectives. It will be through our *in situ* experience that we will be able to extract data and will be able to reflect on future projects.

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