The Pervasive City

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ABSTRACT

New-media artistic engagements with city-making are challenging our understanding of time and space. With the advent of GPS-inspired art and Web 2.0, the relationship of citizens with their physical spaces and urban experiences is put at stake.

GPS mobile devices allow transposing audiovisual recordings from different spaces while the social Net provides a participative medium to reconfigure local spaces and emotions. On the one hand, locative art delivers augmented environments to the user navigating through a specific site. On the other hand, net art expands our understanding of the role played by collective perceptions and memories within and beyond the city.

The overlay of both media produces an evolutionary audiovisual archive by the interaction of visitors with both the site and the website, the local and the global, which let it be up-dated and interesting for public collaboration in innovating or enhancing the spatial practices of the contemporary city.

This paper explores some emerging urban applications of mobile, embedded and distributed media architectures, as well as the role of networked communities in the construction of the environment.

Categories and Subject Descriptors

H.2.1 [**Intermedia**]: Ubiquitous and ambient media.

General Terms

Performance, Design, Experimentation.

Keywords

Locative art, pervasive technologies, Web 2.0, online and physical public space, networked participation in urban policies.

1. INTRODUCTION

Behind the apparent efficacy of urban policy in city-making, the representation of citizens in interaction with physical space through urban regulations remains unaddressed.

Figure 1. Top: Floating Cloud Structures, Fuller and Shoji Sadao, 1961. Middle: City of Hemispheres, Superstudio, 1971. Bottom: AZCA, Financial District of Madrid, 1954-1989.

How to trigger enhancement into depressed spaces through the use of pervasive technologies? How to interact with those technologies and the immersion in augmented environments? What kinds of agencies could we then insert in the renewal processes of the city? What role could we citizens play through the interplay of the real and the virtual, as well as of open spaces and ubiquitous technologies?

The amplification of human environments has been imagined by architects since the sixties. Visionaries like Buckminster Fuller and Superstudio envisioned different ways to deal with pervasive technologies with the aim of injecting progressive urban qualities into space (see Figure 1).

On the one hand, Buckminster Fuller was a pioneer in drawing a theory of ephemerality, [1] a concept inherent to the production of technological devices, whose furthest advancement consisted of achieving more and more mechanical advantage with less and less material. He imagined a series of floating "cloud structures" as satellites able to house an entire city, with thousands of people living inside and travelling from "cloud" to "cloud" or to ground.

On the other hand, Superstudio imagined a city as a sarcophagi-like lake (occupied by millions of people), where souls were reanimated by a series of flying communicative spheres or sensors (perhaps moved by telekinesis), feeding the occupants with sensory information from the environment [2].

Dealing with ubiquitous technologies in dialogue with the project of the city responds somehow to a speculative test of modern urban policies, that is, to something like a participative management of spatial data as well as of new forms of inhabitation of open public space.

With the advent of Web 2.0, public participation in city's issues and spaces comes on the scene to challenge social change. Open source programs like Flickr, Youtube, Google Earth, Mediascape, etc., allow new forms of visual editing and spatial mapping. In addition, the social Net, the other name for Web 2.0, provides not only an interactive virtual space for users, but also a collaborative vehicle to reconfigure the relationships of citizens with each other, as well as with their physical spaces. Supported by mobile devices, GPS-inspired art can be technologically delivered as an interactive architecture to the user navigating through a specific site. In that way, locative art performances can be intended to transpose audiovisual records or memories from other cities and regions (i.e. spatial translations of foreign cultures), as well as provide, through the Net, a participative instrument to manage and redesign the spaces and emotions of the local city.

Within Web 2.0 sphere, locative art can become an evolutionary performance, an increasing archive by the interaction of the visitors, which let it be up-dated and interesting for public engagement in city-making.

Thus, the intersection between the applications of the Net and mobile GPS devices with physical space opens up new individuals' artistic engagements with the evolution of social and urban policies. As a case study, this paper introduces the artistic intervention in AZCA titled "In Hear, Out There," created by Maria Prieto, Matt Green, and Andrew Henley in Spring of 2008 at Medialab-Prado in Madrid.

2. "IN HEAR, OUT THERE"
2.1 Regarding the site
"In Hear, Out There" is a locative art installation anchored to the central space of AZCA, the modern financial district of Madrid. AZCA is a modern city within Madrid; in fact, it is the most contemporary Madrid. The central area of this block is considered enormously interesting as to situate the project within, since it presents a deteriorated but at the same time sophisticated labyrinth of pedestrian paths through multilevel, multifunctional open spaces that are linked to major corporations as well as to the daily life of its surrounding residents. Also, AZCA was a modern commercial center which turned into a global financial hub, built as the modern heart of Madrid metropolis and led by local politics and geopolitics towards the European socio-economic integration.

"In Hear, Out There" takes AZCA as an uncompleted canvas. The project deals with an intercultural dialogue between place and memory, in the interplay of digital technologies and the history of the mentioned space. The ambition of this exploration is to get a fresh sense of urbanity through situating that audiovisual material, which is determined under a twofold intention: firstly, to inject intensive experiences to the citizens' transience through the park; and finally, to evoke certain urban memories, taking into account distinct unbuilt urban projects, which were designed in past decades with the aim of demonstrating the most modern, 'European' civic space in Spain. Regarding some historical accounts, this project injects the sensation of three public amenities into the chosen space, which were previous designs for AZCA: an Opera House, a Botanic Garden, and a Library. Accordingly, the project evokes this forgotten expectation through the creation of an urbanscape inspired by three of Madrid's most emblematic facilities: Teatro Real, Real Jardín Botánico, and Biblioteca Nacional. Sounds and images of those institutional sites are spatialized in AZCA's central park in three differentiated rectangular areas (see Figure 2).
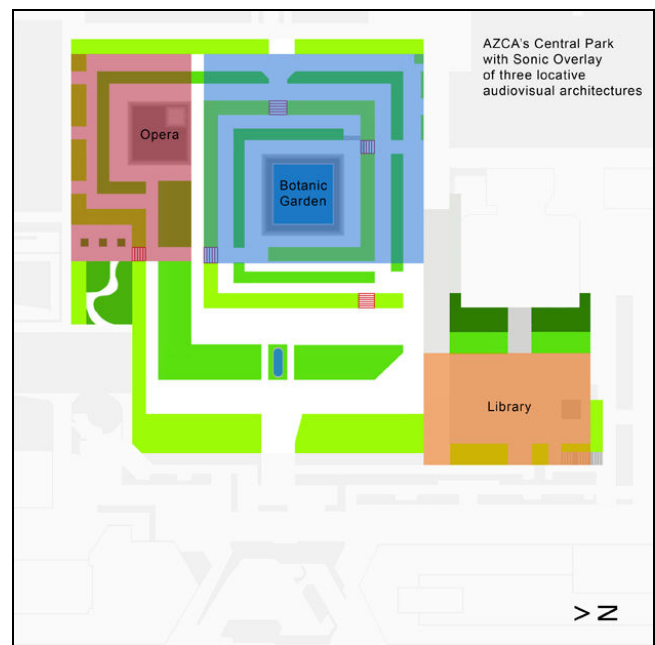

Figure 2. Central Park of AZCA.

2.2 Locative art

"In Hear, Out There" is an augmented, genuine urban experience. Interactivity is worked out through the use of GPS and mobile technologies which intelligently deliver audio-visual content to an individual navigating through the site.

The locative art work is delivered through a PDA mobile device and developed according to the GPS position of the user. Through this technique, fully rendered 3D sound architectures are formed. These are accompanied by exemplary visualizations, each of them related to a specific environment (see Figure 3).

Figure 3. Visual overlay of Botanic Garden.

During the exhibition of "In Hear, Out There" between March 27 and May 18, 2008, a PDA device could be booked out at the main desk at the Medialab-Prado (Madrid), where visitors could also ask for instructions for the audiovisual navigation.

The visitor is to inhabit a virtual urban environment where structures and bounds are expressed through sound composition delivered through headphones. The participant is asked to walk around a mapped space as the device using GPS tracked his or her walk through the site. The audio develops according to the user position within the park. The co-ordinate data is used to alter the sound material and to register when new visual representations are provided to the user. When within one of three mentioned rectangular areas, the visitor would be also presented with a series of images from each created site. The user can expect to be able to walk around a virtual opera hearing the audience gather within the auditorium or enjoy the interval within the main bar. S/he would also be able to experience a musical performance within this space, as well as to fully navigate through a virtual library and a botanic garden.

"In Hear, Out There" is seen as an augmented, urban environment to bring a believable urbanized, cultural, and natural experience when wandering through that so far unperceived space. The management of all the audiovisual information is sought to create a spectrum of radical, urban experiences enclosed by three "sensitive architectures", where the overlay of sounds and images sympathises with the surrounding field. As such, this artistic, interactive work seeks to revitalize that open, green, public space for the city.

2.3 Net art

"In Hear, Out There" is intended as a collaborative, unlimited montage of the contemporary city. Its website houses an audiovisual presentation of the project upon an interactive editable map. The aim is to provide a means for the upload and download of audiovisual data from and into mapped locales. The process of the project leads to create a new map of Madrid, by posting "In Hear, Out There's" audiovisual architectures, as well as specific concepts which are listed in the blog section of its website. There visitors can download up-dated information about ongoing actual and theoretical transpositions of audiovisual contents in Madrid by clicking on the pins (see Figure 4). With this platform the project aims to challenge further collaborative spatial interventions and urban thoughts and experiences. Visitors can upload their sounds and images along with their comments, as well as use the drag and drop interface (by using the authoring toolkit provided by Mediascape, www.mscapers.com, an open source software) to place their audiovisual material onto both the actual map and the selected physical space.

As a final remark, this project is regarded closely linked to the idea of allowing its performance as an "evolutionary exhibition," an ongoing display that becomes an archive of itself by the interaction of the visitors, whose archiving and leaving of audiovisual imprints let it be up-dated and ever interesting for public engagement by a network community. In this way, "In Hear, Out There" aims to become a never-ending composition of the modern city, an emerging pervasive city that leads somehow to a certain perversion of its own mapping.
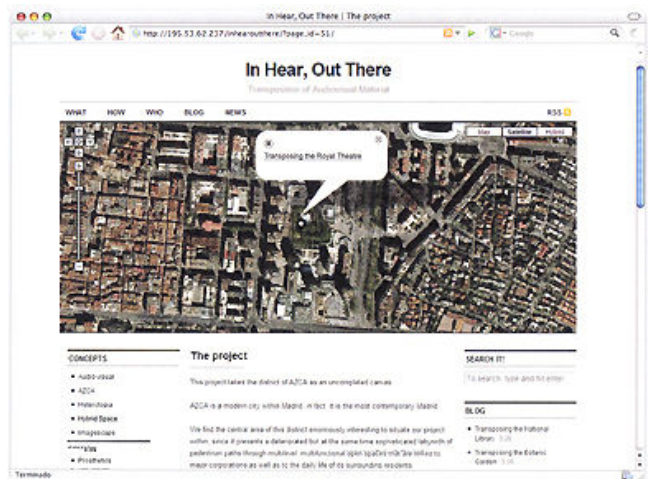

Figure 4. Collaborative urban design tool.

3. THE CITY AS PERVASIVE MEDIA
3.1 Technically ubiquitous

Locative and pervasive technologies are used in the creative process of "In Hear, Out There" for the transposition of audiovisual material within Madrid, that is, the mediation of urban values from one ideal space onto a space under very improvable conditions. The project consists of conceiving of a new cartography of urban experiences, a map that will transform the collective imaginary of Madrid's landmarks. It is developed by overlaying media representations of several places. The result of this combination is a hybrid space, a space that keeps the

experience of each space distinguishable (here or there) as well as allows the experience of a mutually spatial enhancement (here and there).

For the transposition of audiovisual material, GPS and sound-video recording equipment are used in the visits to the three selected amenities in Madrid. Sounds are examined, evaluated and edited regarding the virtual architecture that is to be situated in AZCA. Through the editing process several soundscapes are combined to shape not only the experiential narrative according to the characteristics of the selected space but also the immersing experience in the resulted hybrid space.

This work is created by mapping soundscapes (from recorded sounds pertinent to the everyday life occurring inside each of the chosen places) with Mediascape. This program is compatible with a GPS create tool for the distribution of downloaded sound samples. Mediascape is also used to design and upload an interface with navigation instructions specific to the project in the user's mobile device or PDA [3] (see Figure 5).

All these actions are documented through the process of the project, thinking in developing it further and beyond Madrid (e.g. transposing media from New York to Madrid, from Madrid to London, and so on, so that cities become gradually culturally hybrid). In addition, the experience accounted during the creation process of this artistic and technological experiment advances technical endeavours and creative openings for both the creators and the users in the face of future projects.
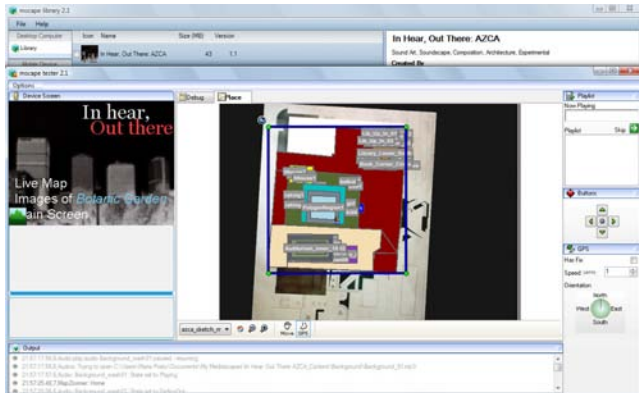

**Figure 5. Above: Mediascape mapping.
Bottom: Interface for "In Hear, Out There".**

3.2 Space out

The exploration of the relationship between digital technologies and physical space will change our perception of the city accordingly. From "In Hear, Out There's" intervention in AZCA, space is pursued as a contested territory in order to render missing, forgotten, hidden urban experiences. Under this view, this location-based art project somehow surfaces the heterotopic condition of AZCA as a challenging situation to be re-examined at the face of current urban planning and urban design practices.

How can our sensibility be realized and expanded by pervasive computing? How can audiovisual contents be instrumental in forwarding a more fulfilling experience of the city? And, how can augmented space drive to urban regeneration?

The aural and visual experience within the architecture created for the three amenities in AZCA's central park provokes a new state of mind in the visitor. The user is inside a space which is enclosed by other space. One space is a support of trajectories. The other space is a support of sensory recreation. One space is not necessarily as big as the other. Sizes and scales don't have to match. They are not at issue here. What minds is the intensity of the experience coming from the synchronic combination of the actual physical space and the situated media.

The visitor starts reading the actual space in multiple fashions. S/he listens to sounds coming from elements that are somehow "present" there (e.g. sounds like the water pouring out of a fountain, kids talking and laughing, birds singing, little stones being stepped on). The user is able to see images from outer spaces which match with the view in front of him or her, by imagining real the dimensions of that site already placed around.

The test of the qualities emerged from the augmentation of AZCA's space requires the visitor to improvise an original performance through a set of interconnected soundscapes and imagescapes. His or her movements delineate new readings of space. Furthermore, this creative agency produces other modes of inhabiting open space, as well as of embodying spatial frictions and emotions specific to the resulted hybrid space. As feminist philosopher Elizabeth Grosz puts it, "space does not become comprehensible to the subject by its being the space of movement; rather, it becomes space through movement, and as such, it acquires specific properties from the subject's constitutive functioning in it." [4]

"In Hear, Out There" is an interface where space and body become mutually descriptive, and more intensively. From its on-site exploration, this project aims to continue speculating about new spatial readings of AZCA by introducing other agencies to participate in constructing an open source, body sense design tool for urban planning in the future. This intervention in AZCA is undertaken, on the one hand, to enhance its spatial qualities, and on the other hand, to start a conversation about empowering space as an urbanizing, interactive technology.

3.3 Interactivity

Location-based net art practices, as shown throughout this paper, inspire further opportunities to manage new media technologies for both urban entertainment and enhancement. On the other hand, sharing creative explorations of the city can be seen as a set of individuals' artistic engagements with both physical space and

the Net to be integrated as design contributions to future social and urban policies.

Audiovisual transposition can be a good practice to emotionalize the city's reference points as well as to reconsider the cultural effects of its traditional, conventional, official landmarks.

From "In Hear, Out There" platform, visitors can create and publish imaginative environments of audiovisual interplays between the sounds and images they deliver from one place to another. In each transposition, the user charges a site with new meanings, values chosen from an outer space to enhance or balance a misused place within the city. Our reading of the city's map changes accordingly to our sensory amplification. Landmarks are contested with new sensory channels in the shaping of the city. The map is perverted as the user re-maps the urban fabric by (re)charging its open spaces sensorially.

The aim of this locative net art project is to trace unexpected and multi-sensorial landscapes in the city, and also to manage and redesign the spaces and emotions of the selected playground in which the experiment and performance takes place (see Figure 6).

Once one feels "here" those remote spatial values, the architecture of the actual space cannot be seen as before; new media affects our vision of the place and entangles us in initiating a new practice of urbanism.

By virtue of the interplay of GPS and the Net, transience through physical space becomes transience through digital networks, and vice versa, blurring the boundaries of any enclosing reality. Thus, it seems that the space we "really" inhabit is a communicative device, which is also another space, suspended between digital networks and physical space.

This project is a start to develop notions of a network community mapping their environments and of an autonomous system able to remap these inclusions onto new places. The city turns into an unlimited cartography; it becomes an online hybridization by the imaginary of a network community. Will this new media transposition be able to lead us to a new spatial condition, a planetary situation, like a world just city? [4]

Figure 6. Video demonstration of sonic overlay of Opera.

4. CONCLUSION

Location-based art installations combined with net art applications place citizens in the face of an experience which equips them with abilities to chose and locate urban values in a frequented or familiar space. The comprehension of those values stimulates participation in the creation of the city, in its physical improvement in dialogue with the enhancement of its invisible qualities. In a certain sense, the city becomes a (literal) sensorial extension of its citizens.

"In Hear, Out There" is an interactive scaffolding anchored to the central space of AZCA. This project situates a new understanding of urban space. Its performance consists of transposing audiovisual contents from different parts of Madrid to construct three "audiovisual architectures." The immersion requires taking a mobile device which geolocalizes the visitor while s/he perceives distinct sonic and visual qualities superposing to the existing site when wandering within apparently diffuse-limit soundscapes. Likewise the user can download Mediascape, upload it in his or her mobile device or PDA, and start creating a new project.

As a conclusion, this research is intended as a contribution to our comprehension of the decision-making process of contemporary urban policies, as well as a contribution to its articulation with the representation of public open space through mobile, embedded and distributed media architectures.

5. ACKNOWLEDGMENTS

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