

aura
the stuff
around
the stuff
around you.

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aura is a sonic multi-user augmented reality that allows users to effect a personal audio landscape through their actions within a defined space, and in doing so, they also alter the vista for other users. By focusing on non-verbal dialogues and communication, participants are encouraged to work together to create sonic tapestries through their relative movements. This paper introduces the work and then goes on to discuss the artist's personal experiences from its first exhibition.

1. INTRODUCTION

Augmented reality involves the overlaying of digital information onto real space. By moving through the real environment users experience the digital information at the location to which it refers. aura rejects physical interfaces (mouse, keyboard, screen) in favour of directional augmented reality to create a seamless naturalistic experience.

The aura project takes this even further through the full sonic augmentation of real space. Walking through the designated space wearing headphones and carrying an aura roving unit (Personal Digital Assistant [PDA] augmented to access user location and heading) provides full spatial listening that encourages the creation of "sculptures of the mind".

Using audio loops abstracted from bird song, the first public presentation of the aura system (Futursonic04, Manchester, UK[1]) went beyond the conventional approach within much locative media, where information is overlaid onto real space without accounting for user direction heading. Although such work can successfully set up a cultural tension between media and the location at which it is received, by keying into our expectations of the real world the relative physicality of the experience can be amplified. In aura, each user's location and heading is rendered audible to other participants within a 3 dimensional sound-scape that blurs the real world and artistic intervention. As users move they cause shifts in the sound-scape; pitch, timbre and sample vary in response.



Image1: Futuresonic04 at Urbis, Manchester, UK.

The content emerges from the interaction between participants. Actions by one user that may result in a pleasant effect may not carry over to the other users' experiences. Through manipulating the sound-scape heard by individual roving units, the work seeks to question assumptions of shared language and cultural references.

2. DEVELOPMENT

The aura project began as a study into the creation of sonic virtual environments and spatial awareness (funded by Arts Council England). Early attempts to address the ways in which an artist might describe a world using sound, yet rich enough that a user might be able to navigate it with the minimum of visual keying, proved complex and dissatisfying. On one hand it seemed that users were less able to project themselves into a virtual 3D sonic world than the visual virtual structures that are more familiar. However, they were able to map the sonic world and as a result they experienced an altered sense of spatial awareness.

The aura system grew from a desire to explore mapping and spatial awareness in artwork, rather than academic study. The transference of the work from a virtual environment experienced in front of a computer screen, to an augmented art form sited publicly, has been facilitated by a fundamental shift in my thinking about interface design and function. In aura, the user is no longer asked to enter into a representation of an environment through a visual interface (for instance, a mouse and screen), but instead engages automatically with the artist's intervention by virtue of their bodily proximity within the space. The apparent naturalness of this engagement is facilitated by the mobility and perceived invisibility of the technological interface. In other words, there is no interface to learn how to use and no technology to visually distract the user when using the system. Users navigate the augmented aura world by walking and turning, yet

sounds stay fixed, so the user is able to map or identify particular sounds with features in the real world. The sounds therefore function in much the same way as they do in the real world, with spatial and mental associations that fluctuate as the distance changes between them.

3. INTERVENTION AND MULTI-USER EXPERIENCES - Personal Reflections.

Probably the best metaphor for an aura sound world is to imagine walking through an array of audio speakers suspended in space. Each speaker represents a sound node and emits different audio depending on where you, the user, is situated. Fixed nodes have been used to create static walk-through sonic worlds, in which the user hears a number of audio loops that layer up on each other depending on their location and heading. These sounds are then augmented by the relative spatialised audio.



Image2: aura at Deleite, Barcelona 2004

Of the myriad issues that arose following the presentation at Futuresonic, a few resonate strongly with me personally. Prior to the exhibition I had been very concerned, unfoundedly to a degree I observed, about the audience's attitude to wearing the aura backpack and headphones in public, especially as the area allocated to the work was an open space favoured by a large number of local teenagers and also because there is another black plastic box on top of the aura headphones that signals that the user is clearly not using a standard personal stereo. Their actions' also distinguished them, as an aura user could be seen to stop, turn and step backwards and forwards as they located and mixed audio

samples. Consequently, this created an immediate physical link for the user - in order to hear a sound properly, they had to turn to look at it or move closer and in so doing, were forced to step over or go around the objects and people with which they shared the space. This fascinating juxtaposition lies at the heart of my interest in geo-locative artwork. I have found that through the aura system I can allow for very personal experiences to emerge from the user's time within the system as they move, linking sounds and location in a temporary individual relationship.

I have, for several years now, been making what can be termed as Digital Art Systems, these generally being characterised by some form of process producing output (mainly audio, though not exclusively) in reference to external input (such as user movement within a space) and some form of internal model. The output from these is not intended to be taken as a piece of fixed media, but as a record of the user's experience and as such my role of the artist has shifted from making 'media' to making 'media with potential' and I have found the challenge of such a role in the aura system very interesting.

As previously stated, the origins of aura lie in an interest of exploring the physical space in between the user and the world within which they are moving. In the virtual world it is very easy to physically anchor a sound in the environment and this is further enhanced by the 3D sound software and hardware available to produce a semi-realistic binaural rendering of the output. Augmenting a real space however is quite another proposition. Technical issues such as an unpredictable environment and processing power are tricky but surmountable and lie in the domain of the [artist as] engineer. If mapping a space sonically (as was an original intention of the project) is to be achieved, then developing mental links between the space and audio is key. One route is to use sound that directly references the space and Sonic Interface (Akitsugu Maebayashi[2]) is an interesting example where sounds are actually sampled from the real world in real-time. However, whilst I do not feel that such direct mapping is the focus of the artwork, there is an immediate link created in the user's head between hearing a sound and seeing its source. An artist seeking to create such a physical/mental link without obvious visual clues has to seek alternatives. Janet Cardiff[3] is an example of an artist who has excellently combined a creative vision with an appropriately controlling and enhancing technology - binaural recording (a system also used by Akitsugu). In terms of what I am seeking to achieve with aura Cardiff's walks place more emphasis on fixed pre-defined media, and Maebayashi's system does likewise with a system free of pre-recorded media. Seeing these two at ends of a descriptive continuum places aura towards the middle, relying on user movement to affect a system of mixing pre-recorded elements.

Realising that the 3D audio engine used for the current version of the aura system lacked the rendering power of hardware enhanced playback (and also being denied the automatic luxury of Binaural recording, as such systems fix the location and orientation of the sound in relation to the listener), I began experimenting with different sound sources and seeking a methodology that would key into the user's natural listening and mapping ability. The research yielded the

potential of constantly sounding loops and a series of layered pure tones appeared to work well. Seeking a more varied sonic experience I later introduced a wider range of audio sources. I finally settled on samples extracted from birdsong (as a lament to lost data transmission) that was distributed throughout the exhibition space, with other users' locations being represented by pure tones.

At one level the augmented world presented at Futuresonic ironically represented a slight shift back towards work that has an emphasis on media over user action as artistic content; the users' engagement with a grid of layering audio loops rather than directly with the space around them. On reflection this may have been in part technically driven, as the accuracy of locations derived from Global Positioning Systems can be somewhat variable. Likewise, as the hard graft of building the system from scratch in C++ continued close to the exhibition, the decision to ensure the development of audio content rather than technical innovation was made.

However, I feel that this mix of augmentation (fixed sounds that the user discovers or moves about) did not sit easily with (for me the more interesting) multi-user aspects of the work. Although I was pleased that people were spending from 5 to 10 minutes wandering around the aura world and in doing so were engaging with the space around them, I noted the potential for user to user interaction was lost through the richness of the static world. As a result, user to user interaction is something that next version of aura focuses on completely.

4. REFERENCES

1 <http://www.futuresonic.org>

2 Akitsugu Maebayashi, "Sonic Interface", viewable at <http://www2.gol.com/users/m8/>

3 Janet Cardiff, 1999 "London Walk" Artangel, London , Side Street Project, Los Angeles, (collaboration with George Bures Miller)

5. ABOUT THE AUTHOR

Steve Symons is an artist working solely with technologically mediated experiences. Previous installations have explored notions of generativity within sound based genetic structures, A-Life and simulation systems as a tool for media generation. He designs and builds the hardware and software required for his work himself. He is the founder of 'muio.org' an Art and Technology research organization.

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