

BA (HONS) WEB DESIGN

Interactive Sound

Sound Installation

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Brief

Working as part of a group you must produce a physical installation based around sound. Your installation can incorporate built structures, and can use physically generated, as well as recorded sounds.

You should consider the relationship between:

- Sound and space
- Sound and person

You should also consider how interactivity can be incorporated or experienced.

My Contribution

Research

My role within the group was to carry out research into sound installation art in order to give the group some ideas.

The Grove



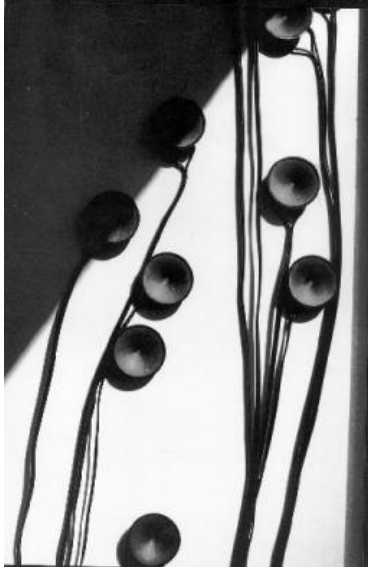
“This project consists of 18 matching, variable speed phonographs, each linked to 20 speakers suspended from the ceiling. A wood crate of vintage LPs by instrumental and vocal performers located at each turntable allows participants to change the sound environment interactively. With close to 400 speakers, the installation creates an immersive, orchestral canopy of evolving compositions.

The intention behind this collaborative, public instrument is to entice participants into an active role in shaping what becomes an auditory analog of socio-cultural space. Tinted lamps and picnic-style benches (crafted by Duffy) give the gallery the user-friendly ambiance of a festive urban park at twilight. The speakers—each painted in earthy shades of green, brown, orange, and gray—hang like fruit from a vine-like network of 16,000 feet of speaker wire and broadcast the sound from multiple sources throughout the space. This dispersal creates a sonic displacement that encourages participants to experience the piece from a variety of positions.”

<http://gargoyle.arcadia.edu/gallery/07-08/sean-duffy.htm>

Silent Music

Another piece of installation art is *Silent Music* which was created in 1995. This installation used several hundred wall-mounted loudspeakers and tape or computer-controlled MIDI instruments.



“*Silent Music* is an installation consisting of between 100 and 500 high-frequency "piezo" loudspeakers. Together with their attached wires these loudspeakers form plant-like structures, placed within the space to suggest either their seeking of light or their preference for lighted areas. The work is conceived for installation in either quiet public areas or exhibition spaces. The sounds of the installation are designed to colour the silence of the existing space.

The work broadcasts high, relatively quiet sounds made up of a mixture of natural and synthetic sources (sounds may be reminiscent of hearing the ocean from a great distance, of a light wind blowing through leaves, of water flowing somewhere nearby...). These high-frequency sounds and broadband noises are sometimes static in space, they sometimes move in slow waves across the installation area.

Just as this aural experience presents a mixture of natural and synthetic elements, so does the visual. Although the work is composed solely of loudspeakers and loudspeaker wire, these are placed in a manner which suggests life, growth and movement toward light. The work inhabits the space in much the same way as would plants. At the same time it projects the observer back and forth between perceptions of the familiar and the unfamiliar: between that which we perceive as being natural and alive and that which we perceive as being technical and artificial.”

http://iem.kug.ac.at/projekte/publications/bem/bem6/silent_music.html

Promenade

This piece consists of a number of sets of headphones positioned on a wall which each play an individual sound. Taking away the visual aspect of the object makes the sound more effective.



<http://www.youtube.com/watch?v=HNM37dnKnyc>

Sound Barrier

This sound installation is by Maia Urstad and consists of 130 CD and cassette players all stacked on top of one another to form a wall.



<http://www.todayandtomorrow.net/2008/06/02/sound-barrier/>

From the research I carried out, I have noticed that most sound installations use little or no visual aids so that the sounds are more effective so we need to keep our animation simple and concentrate on the sounds.

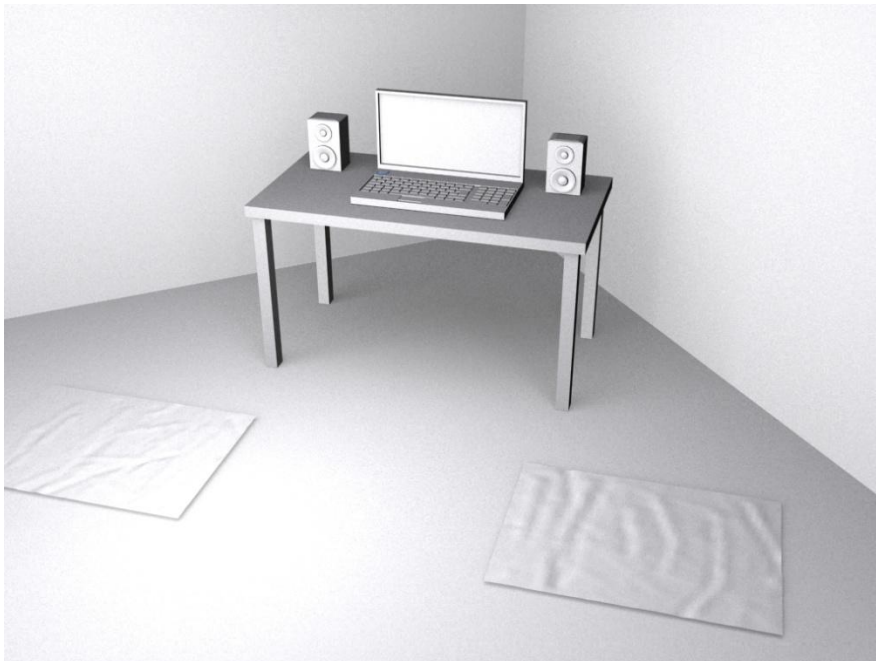
Sounds

As a group, we collectively recorded the sounds and decided on which ones to use. This involved recording footsteps in the snow outside and recording snoring sounds in the studio.

Proposal

Our group has decided to create an animation with sounds in Adobe Flash. This is then wired up to two pressure pads and the animations and sounds change according to which pressure pad is stepped on and then changes back to a default animation when the user steps off the pads.

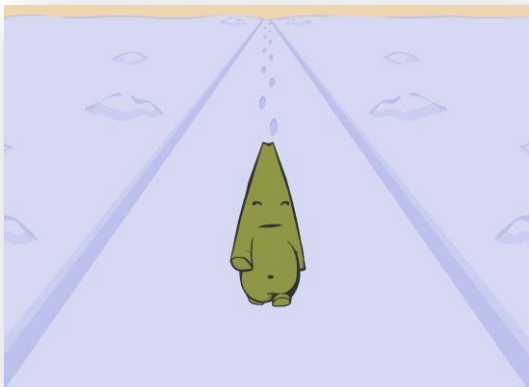
The sound installation will consist of a laptop or a computer with a monitor, two speakers and two pressure mats (as shown below).



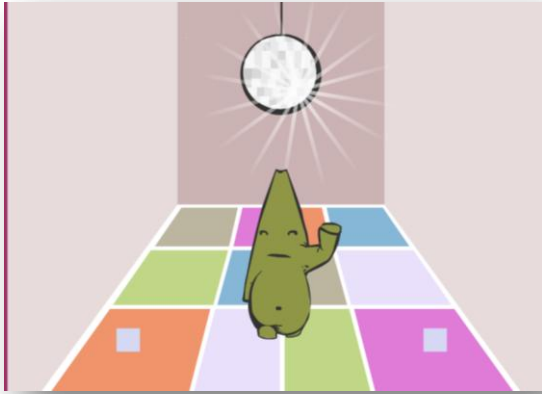
When the user approaches the installation, the animation on the screen will show a character sleeping and will be playing a song containing only one instrument, along with a recorded sound.



The user can interact with the piece by stepping on one of the pads; when the pressure pad is stepped on, it changes to another animation of a character walking in the snow, accompanied by a different music loop and recorded sound. This animation has a more energetic feel to it and so the music has more instruments and is more up-beat to reflect this.



A different animation appears when the user steps on the other mat; the animation shows the character dancing and is accompanied by lively music but no sound effects because sounds wouldn't be heard over the music in this situation.



Theory

The sound installation piece is going to be displayed in the sound room due to the studio's sound absorbent material. This material absorbs sound waves rather than allowing them to be reflected meaning there would be no reverberation, or echo. This means that the sound would be presented to the user just as it has been recorded and there would be no background sounds such as students in the corridor or vehicles outside. There may be some sound emitted from the laptop but this problem can be overcome by sound masking; raising the decibel level, or volume, of the music.

In order to create a piece that the user could become immersed in, it was important to take sound theory into account. Our project only required two sounds to be recorded, in addition to three music compositions.

The footsteps in the snow were recorded outside in real snow. Usually, the sound would be recreated in the studio but, due to the weather, it was more feasible to record footsteps on real snow. For this, we used a microphone with a sponge cover over it to reduce background noise such as wind and vehicles to create a crisp recording which could be used with our animation.

The snoring sound was recreated in the studio to prevent any reverberation or background sounds and to therefore allow us to control exactly how it sounded.

We created sound loops in GarageBand as this allowed us to determine the pitch, tone and tempo of the audio pieces. For example, for the lively animation of the character walking in the snow, we needed a music loop which was higher in pitch and faster in tempo to portray the mood of the animation and make the user feel the energy of the piece. The default or idle screen, which shows the character sleeping, uses a piece of music which is high in pitch but slow in tempo, much like a lullaby, to make the user feel more relaxed when viewing this particular animation.

Risk Assessment

Low level lighting will allow only the screen and the pressure pads to be clearly visible. The installation will have cables running from the pressure pads and speakers to the laptop. The risk factor can be reduced by covering the wires with a mat and by keeping them tidy and to one side if possible.

Evaluation

Overall, I feel that the sounds effectively reflect the animation which is displayed to the user; the pitch and tempo of the audio loops reflect exactly what is going on in the animation. In addition to this, pressure pads allow the user to physically control the installation which therefore makes the user feel involved with the piece as a piece of installation art should.

The sounds which we recorded were not affected by background noise even though one of them was recorded outside and the sounds were easily compressed and imported into Flash with no problems.

However, the snow sounds which the group recorded could have been improved by recreating them in the sound room. This is because it would allow us to utilise directional microphones and provide us with sound absorbent walls which would produce a higher quality sound with no reverberation.

Due to the laptop screen being small, the group decided to situate the installation in a different room to what we had originally planned to use as it had a projector and a larger space to place the pressure mats. As a result of this, we no longer had the sound recording studio and so we had to deal with the acoustics of the room (the reverberation) and the soundscape of noises from outside the room such as students talking and doors slamming.

The project could be improved by using more speakers to provide surround sound and by panning sounds from left to right according to what is going on within the animation. Directional speakers could also be used so the user can only hear the music when they are positioned in a specific spot. Each instrument from the music could then be split up into different tracks, each track playing through a different speaker. The music would then differ according to the positioning of the user; for example, if they were positioned slightly closer to one speaker, they would hear only the drum beat whereas if they were stood in the centre, they would hear the drumbeat and the other instruments equally.