I Hear NY3D: an ambisonic installation reproducing NYC soundscapes

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Introduction

The “I Hear NY3D” project’s aim is the capture and reproduction of immersive soundfields around Manhattan. This required the consideration of how to best capture and reproduce these recordings, the presentation of simultaneous multiple soundscapes, and a means of interaction with the material. This portion of the project is focused on the installation reproduction of the soundscapes. Specifically, the technology, the development process and the aesthetic goals used to guide the piece.

Goals for an ambisonic installation reproduction

- The goal for this installation was to create an engaging experience, which builds on the strengths of soundscape practices by including immersive locative data in the reproduction of the captured locations.
- Some of the key strengths of soundscape practices, as related to our project are:
  1. The ability to aurally experience a location safely away from any hazards or distractions that may exist in the physical space.
  2. The ability to quickly experience multiple locations without any loss of time between experiences or the need to physically travel between them.
- This project also aimed to keep the data in an audio format that is transportable to a variety of reproduction systems and likely to be supported for many years to come.
- Finally, this installation needed to create a means of interacting with and experiencing the locations in a way that offers the most opportunity to:
  1. Focus on the specific sonic and location qualities of sources in the captured soundscapes.
  2. Experience the dynamic quality and locative information of each soundscape.
  3. Discover and explore the relationships between locations.

Design Process and Deployment Details

SOFTWARE

This project utilizes SuperCollider and the Ambisonic Toolkit. This allows for the real-time playback and matrixing of B-Format ambisonic audio files to an immersive playback system and real-time rendering of these files to binaural formats.

VOLUME REPRODUCTION

The capture process for this project also included SPL data. By using the same SPL measurement device during the reproduction of soundscapes this installation is able to recreate these soundscapes at the same volume levels.

MULTI-SOUNDSCAPE REPRODUCTION

This project is capable of reproducing multiple soundscapes at the same time. This allows listeners to create connections between the soundscapes not possible through solo reproduction. This also means that multiple soundscapes can be positioned around the soundfield, while maintaining qualities of their original location encoding for comparison to each other.

SPEAKER ARRAY

For the public presentation of the installation and all development an immersive 16-channel speaker array inside a semi-anechoic chamber was utilized, allowing for full periphonic ambisonic reproduction.

INTERFACE

The initial deployment of this system used a hardware based interface. This interface consisted of a printed map of Manhattan with buttons corresponding to locations or sets of locations that could be reproduced in the space. There were also LEDs which illuminated the soundscape/s currently being reproduced in the system. This interface was then placed in the middle of the room, encouraging participants to stand in the “sweet spot” for listening.

Conclusion

Soundscape practices preserve unique locations at moments in time and afford those incapable of visiting them an opportunity to experience their sonic qualities. Equally important, soundscape practice allows listeners the ability to observe, study, and create relationships to specific locations and between locations that, in many instances, would be impossible in the actual physical location. The “I Hear NY3D” project successfully incorporates these strengths and builds on them with the use of encoded spatialization data and sound level measurements, not captured by traditional soundscape practice. This creates an opportunity for participants to learn about, experience, and discover to connections to and between these locations that would be difficult in the actual locations or even over traditional stereo means of reproduction.

Selected References


http://www.ambisonictoolkit.net/wiki/tiki-index.php

Further Information

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Come to the AES 3D Audio Environments workshop Saturday, 12-5 pm at NYU Steinhardt, 35 W. 4th St. (Bus will leave from Javitz Center)