

The QuickTime VR format provides an accessible, portable viewer for delivering the scene with interactive navigation.

The present research project linking visual and acoustical documentation of environmental conditions is being conducted in fulfillment of the M.S. thesis. This research project is developing a method of integrating high-dynamic-range spherical panoramic photography with interactive Ambisonic audio information in order to generate interactive maps of environmental conditions.

CONSTRUCTED vs. ‘NATURAL’

As in other contemporary discussions about urban ecology, where the human-made constructed environment is not treated as somehow distinct from ‘nature,’ it is important to recognize that soundscapes both ‘natural’ and ‘unnatural’ are inextricably interdependent and entwined with visual representations of things which traverses both. The very nature of sound propagation is such that various sources at even great distances apart combine to create the rich tapestry of our soundscapes. Attempting to isolate sounds—or more accurately, the resulting acoustic effects of sounds propagating within and because of an environment—is highly complicated. Understanding the relationships of various sound sources within context (regardless of their origin) is important to developing more sensitive design approaches to archiving, preserving, conserving, repairing, or constructing meaningful soundscapes.

BEYOND STREETVIEW

Navigation has enjoyed a paradigm shift in recent years, as global information agents such as Google and Bing have leveraged a wealth of both satellite and street-level photography to replace the formerly flat graphics we have been accustomed to for generations. The techniques being developed in this research project could easily be integrated into such current extensive gathering efforts. Imagine if Google’s Streetview also included local soundscapes!

Environmental maps incorporating the interactive documents generated in this project will provide the basis for studies which will both document the particularly complicated soundscapes of Pebbels Island, as well as allow us to evaluate cross-modal perception models using real context.

Ultimately, the goal is to create an effective and convincing advocacy instrument for analyzing and addressing noise pollution pervasive in the built environment which is threatening a variety of endangered habitats. Truly sustainable design must do more than address energy consumption concerns, but must also address ecological impacts resulting from rapidly deteriorating soundscapes.

How might acoustic ecologists achieve this level of interactive documentation with our diverse sonic environments? Could we supplement increas- ingly popular spherical panoramic photography with a layer of ‘steerable’ ambisonic audio, using recent developments in B-format processing to derive higher angular resolution for user navigation? To meaningfully address the complexities of our dynamic and interwoven sonic environments, it is necessary to acknowledge the vast range of acoustic knowledge (or lack thereof) among stakeholders and policy-makers. In order to facilitate productive discussion among acousticians, ecologists, planners, designers, and citizens, this project is developing such a method to document, seamlessly link, and represent the full-range visual and aural fields. These interactive documents will be simple to access and navigate, and will not resort to inartistic abstractions to represent field data.

WYSIWYG – What You See And Hear Is What You Get!

The author holds a BA in Integrated Arts from Bard College, where he studied experimental music composition and non-narrative filmmaking with composer and theorist Benjamin Boretz. Having trained with master luthier Norman Roe in Devon, UK, he has designed and constructed several guitars, electronic instruments, and loudspeaker systems. He was the first student to complete the dual degree Masters in Architecture and MFA in Architectural Lighting Design at Parsons The New School for Design in NYC. He grew up in South Carolina, spent formative time in Russia and Venice, and has lived most of his adult years in Chicago and along the Hudson River. He enjoys teaching and listening, and believes passive solar design will save us.

ABSTRACT

The Architecture 2030 Challenge maintains that the constructed environment is responsible for nearly half of the world’s energy consumption. Architects therefore have a crucial role to play in addressing climate change. Criteria for sustainable design practice and the passage of time itself are difficult to fort, noise propagation, weather effects on materials, and relationships which are not put: an architect tends to neglect those effects as well as societal, economic, and inter-disciplinary pressures. Early research interests have focused on the relationships between desired and undesired noise phenomena perilously overlooked by visual representation in design. The author’s position on architecture as a way of representing field data which is accessible, immersive, and multi-sensory: The inter-discussion between acousticians, ecologists, planners, designers, and citizens, this research project is developing a method of integrating high-dynamic-range spherical panoramic photography with interactive Ambisonic audio information in order to generate interactive maps of environmental conditions. This is important to developing more sensitive design approaches to archiving, preserving, conserving, repairing, or constructing meaningful soundscapes.

INTERDISCIPLINARY RESEARCH

Previous research interests have focused on phenomena perilously overlooked by visual representation in design. The author’s position on architecture as a way of representing field data which is accessible, immersive, and multi-sensory: The inter-discussion between acousticians, ecologists, planners, designers, and citizens, this research project is developing a method of integrating high-dynamic-range spherical panoramic photography with interactive Ambisonic audio information in order to generate interactive maps of environmental conditions. This is important to developing more sensitive design approaches to archiving, preserving, conserving, repairing, or constructing meaningful soundscapes.

THE PROBLEM

Much of this work involves developing an audio-visual mapping methodology, but there is also a case study underway to test the techniques. Just north of Troy, at the intersection of the Mohawk and Hudson Rivers, lies the area’s largest state park: Peebles island. Although it is secluded and surrounded by several significant sources of aesthetically desirable noise in the form of river rapids and waterfalls, such sounds of ‘nature’ and the river canopy do very little to mask the profound industrial noise presence of the Mohawk Paper processing plant nearby. How to sufficiently convey these complex and difficult acoustical relationships between desired and undesired noise sources in an otherwise copacetic visual setting?