

PERFORMING THE BODY AND SPACE WITH SOMATIC SOUND

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Abstract

The paper explores embodied experiences through moving, interactive and somatic sound. Somatic sounds presents a new approach as to how the body of the user can become a dynamic material to shape embodied, corporal sensations. The project represents both an incremental improvement to full-sphere, immersive spatial audio sound experiences and a new take on embodied sound letting users touch sound and feel space.

Keywords

Somatic Sound, Somaesthetics, sound cloud, holophonic, interactive sound, electronic skin, haptics, touch interface.

Introduction

The paper explores how sound can be used to perform both bodily and spatial perceptions through a user-controlled, touch based system. It presents a novel approach as how to interactively involve the body of the user as a dynamic input in shaping embodied, corporal sensations through sound. Somatic sound can be defined as the live, embodied and multidimensional experience of sound as a corporal phenomenon.

The Somatic Sound project represents an iterative development in the area and history of immersive sound experiences. From a technological viewpoint somatic sound is an installation where the user can corporally and intuitively control, shape and experience a three-dimensional audio space. The project is built upon a touch-based system that composes real time, interactive user experiences inside a 3-dimensional full-sphere sound field. A spherical montage of 25+ speakers frame the space, effectively wrapping a live sound cloud around the user. This set-up allows physically precise directions and volumes of the sound. The full-sphere sound encompasses all users present as a physical and spatial experience.

The user can precisely move and compose the aural and spatial experience of the installation space by direct or indirect touch of a proximity sensitive, near-field sphere. This centrepiece of the installation is a sphere covered in pure gold. It functions as a touch sensitive, electronic skin.

Immersive spatial soundscapes

The somatic sound approach is related to a long track of developments in full sphere, immersive and interactive sound systems. One of the most known is the Philips pavilion from 1958, constructed by Le Corbusier with a 300+ loudspeaker setup configured by Varese and Xenakis. [1] Another is the Erotogod project, using interactive real time composition controlled by a bodysuit. [2] A contemporary research facility investigating many of the issues related to somatic sound, is the multi-channel loudspeaker setup of the Surrey Sound Sphere. [3] One novel addition in the Somatic Sound setup is the innovative use of the body-centred, golden sphere controller that allows users to effortlessly steer the flow of music through space in relation to their own bodies and actions.

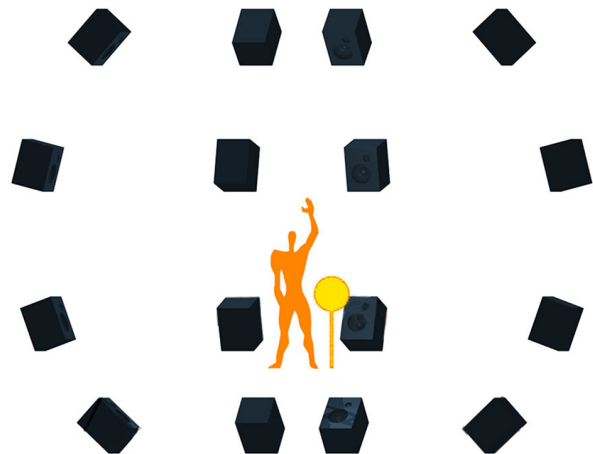


Figure 1. Somatic Sound Immersive Audio Set Up. ©Stenslie.

Technology

The somatic sound system is built around a touch sensitive golden sphere divided into 48 zones. Each zone is made touch sensitive through capacitive induction and controlled

through a custom built patch to Max/MSP. Each of the zones of the golden sphere is coupled to a separate loudspeaker/sound channel. In the experimental setups the top and bottom channels/zones were combined, rendering 34 up to 34 active output channels.

Artistic Experience

The somatic sound system has been performed on several occasions and with various sound contents (Dramatikkens Hus in Oslo 2012, Oslo School of Architecture 2013, Ichihara Biennial in Japan 2014). In the latest version of the system, named *Dead Voices* (2014), (performed at ANX, Oslo, Norway 2014) the user is immersed inside a 3D sound cloud made out of – or inhabited by- 77 different, distant voices. The title is directly related to the content as each voice is scripted as a story told by a dead person. Users of the installation affect and influence the invisible ghost sounds by touching the golden sphere. The voices portrait lost souls, hovering in limbo, themselves not knowing neither life nor death. During a two week exhibit at the users reported experiencing the sound universe and content as partly disturbing, partly compassionate.

By touching, caressing the sphere, voices are caught, pulled down to float around the user. The golden sphere lets the user become both a composer and a necromancer, trolling the dead voices into reality. Each individual voice is talking, telling and struggling to communicate. Every one of the 77 voices is an anxious attempt to create a dialog with the one who touches the sphere.



Figure 2. Somatic interaction with the golden sphere, functioning as electronic skin. ©Stenslie.

The combination of a multichannel touch interface with a full-sphere, immersive spatial sound system turns sound into a material for direct, somatic and dynamic experiences. The project demonstrates how innovative combinations of digital technologies and use of sound can shape spatial

experiences. The installation functions also a sound controller and instrument that both investigates and demonstrates how physical, interactive and three-dimensional sound systems affect our phenomenological perception of the world.

Artistic Methodology and Approach

Somatic Sound takes a practice-based approach to the investigation of how sound affects us. The project is built through an iteration of practice led explorations of how sound can i) be experienced in full-sphere, immersive spatial sound systems, and ii) how users haptically interact with arrays of proximity- and touch sensitive field sensors. [2]

The project is further inspired by the open, explorative question: how do we experience embodied, interactive sounds in an immersive, dynamic sound space? And how do sounds produced by haptic and kinaesthetic interaction affect the users experience? Departing from initial observations in beta versions of the system, the project investigates the open hypothesis that interactive experience of physically immersive, multichannel, holophonic soundscapes, is perceived by users as more affective and engaging compared to perceptually manipulative simulations of 3D surround sound such as stereo, 5:1, 7:1, THX and comparable systems. These simulations are highly effective in providing convincing experience of 3D sound.

So what is the addition of Somatic Sound? Sound is a physical phenomenon, produced through physically measurable waves. It exerts influence on our bodies, impacting us in several somatic ways. [4] In everyday situations we are actively tuned to our environments in an embodied way, listening to and reacting to sound sources from multiple sources and directions. Sound is so naturally perceived as being multidirectional. Yet traditional presentations of music –such as concerts, theatres and playback systems– mostly place users as passive listeners in front of a one-directional output. Users need to face one direction to perceive the sound output in the correspondingly ‘correct’ manner as conceived by the sound designer. Digital music systems have recently triggered an enormous production of music and systems for multichannel playback (THX, 5.1 etc), yet to get the most out of it, users need to face one main source. Preferably even sit still. This makes users consume and experience sound somatically passive. One reason for this is the difficulty and complexity involved in producing believably immersive experiences through 3D sound simulations. Interactive sound systems adds another dimension by allowing the user to enter the challenging role of being a real-time composer. This influenced the formulation of the open, explorative research question of what happens if we instead of simulating 3D sounds, creates a real spatial and immersive experience for sound?

Touching Sound, Touching Space

How can we describe what we have never experienced before? It is outside common, everyday experience to interact with a moving and immersive soundspace, that is, an actual physical space that changes its aural shape and expression according to users actions. Inspired by the philosophical framework of Somaesthetics, the Somatic Sound project presents as an incremental disruption in the way touch can be used to produce highly immersive and spatial sound experiences. [5] By touching the golden sphere, the user also reconfigures the spatial projection of sound, effectively influencing the architecture of the installation space. This gives the combined somatic effect of touching space and sound in an embodied manner. This can be described as *Embodied Sound*, produced with and through users active, haptic, living bodies.

References

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Author Biography

Prof. Dr. Ståle Stenslie is teaching and researching as a full professor in Art and Technology at Aalborg University, Denmark.

He is an artist, curator and researcher specializing in experimental media art, interactive experiences and disruptive technologies. His aesthetic focus is on art and artistic expressions that challenge ordinary ways of perceiving the world. Through his practice he asks the questions we tend to avoid or where the answers lie in the shadows of existence. Keywords of his practice are somaesthetics, unstable media, transgression and the numi-

Conclusion

Somatic Sound gives users the ability to perform, shape and experience space through the touch sensitive skin of the golden sphere. [6] In relation to ISEA 2015's theme of disruption, the project represents both an incremental improvement to holophonic experiences and a new take on embodied sound letting users touch sound and feel space.

The project adds several contributions to the field of immersive, spatial audio. The use of the golden sphere as a direct controller of sound in space allows new perceptions of sound. The new controller functions as an active, second skin that directly couples users actions to full sphere audio listening. This enables easy, intuitive navigation in multi-channel audio environments. Sound configurations such as Somatic Sound greatly influence our spatial perceptions, allowing for new variations of relational, in-situ dependent listening.

nous. The technological focus in his works is on the art of the recently possible - such as i) panhaptic communication on Smartphones, ii) somatic and holophonic soundspaces, and iii) open source design of functional and lethal art weapons for low cost 3D print.

He has been exhibiting and lecturing at major international events (ISEA, DEAF, Ars Electronica, SIGGRAPH).

His PhD is on Touch and Technologies, see virtual-touch.wordpress.com.