

# Body-Interactive Synchronization Audio-visual

Ken Byers  
University of the West Scotland  
Baltic 39, 31-39 High Bridge, Newcastle upon Tyne NE11EW

With the advent of full-body interactive technology, we are witnessing a growing interest in the role played by the body in shaping and also measuring experiences. Multimodal technology has brought our body back to the centre of the interactive experience. An increasing understanding, from various research fields, of the fact that body movement and posture affect the way we perceive and evaluate both ourselves and the environment raises new interesting and challenging questions regarding measuring engagement, in the interactive technological environment. Experimental practice examined if interactive art installations can be better informed by embodiment and body perception theory. This practice-based research developed a theory of embodied interaction and designed interactive tools for full-body movement interfacing with virtual 3D surround sound.

*Keywords: full-bodyInteraction, body-movement perception, embodiment, proprioception, active-perception*

## BIOGRAPHY

Ken Byers is a digital media artist based in Newcastle, UK. His digital media includes interactive, film, animation, sound design, experimental music, coding. He has shown digital media in UK and internationally. He gained an MA in Fine Art at University of Northumbria 1990, an MA in Media Production (Video & TV) University of Sunderland 2006, and is currently completing a PhD in Interactive Media at the University of Scotland. He explores human-machine-interaction, perception and consciousness from an embodied perspective in art interactive installations.

## OUTLINE OF USER EXPERIENCE

Body movement simultaneous interaction with sound and 3D causes synchronized meaningful interaction. Users are meant to experience meaningful aesthetic expression between their own individual body interaction creation of continuously changing visual and audio digital material. The experience of embodiment with audio-visual interaction causes a natural, aesthetic searching body-movement in relationship with the sound and visuals that in reflection brings consciousness back onto actions performed. Users can experience other body phenomena by disrupting proprioceptive movement in the technological surround, causing disorienting changes of speed, direction or the body's sense in space. Proprioceptive disruption causes sonic and haptic intensity until it stretches the body's boundaries beyond the realm of everyday sensory experience. Simultaneous body interaction with audio and visuals causes 'conscious reflection and change of perception,

users move in an unsure but meaningful way in finding their own new found worlds. It explores the gaps in seeing, hearing and feeling, which takes place at the level of bodily experience



Figure 1: Body-Interactive. InDialogue 2014

## RATIONAL OF CONCEPT AND RESEARCH

'Everyday corporeity, that is carried into interactive works based on technical systems create possibilities for new qualities of self-perception; as far as media can be used to reflect actions through direct depiction, through alienation, or through abstract visualization or signification.' Hansen (2004)

Through this research conceptual and experimental framework it sees the need for understanding user experience in interactive art, to develop user aesthetic meaningful engagement with body- interaction with 3D and sound. This research has several strands 1) Development of full-body movement 3D interactive art installations that explore meaningful interaction with audio-visuals,

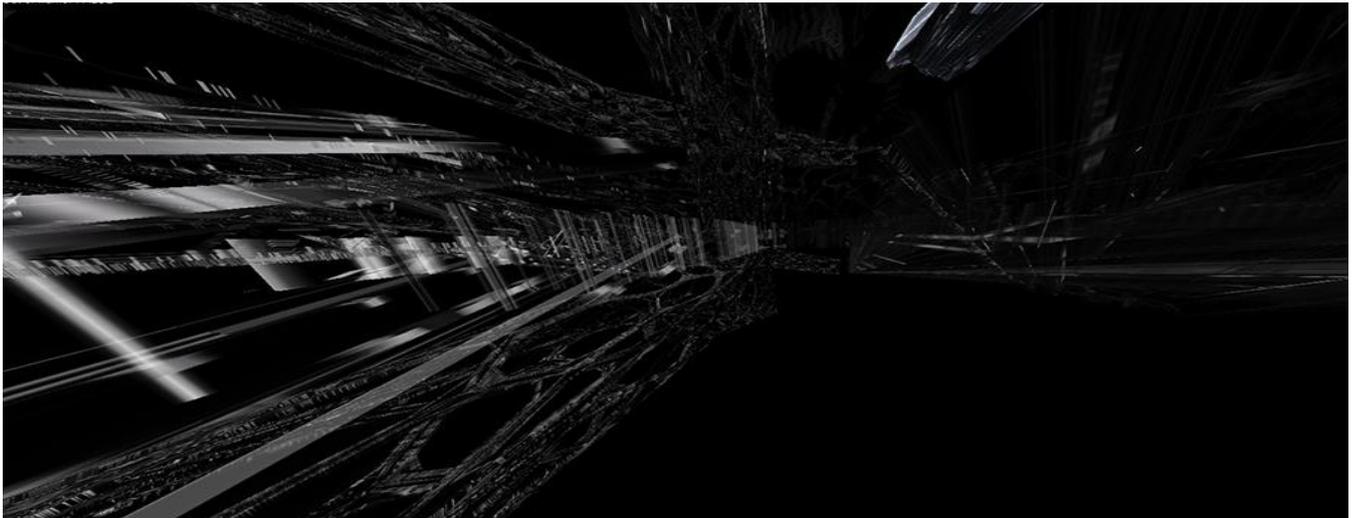


Figure 2: *Body-Interactive audio-visual 2016*

in the digital technological environment. 2) Development of a set of tools for the Kinect full-body motion tracking sensor for research and practice in body-movement perception 3) Explore body-movement sense perception in interactive audio-visu-als. Current knowledge places the body as not only the center of action but the center of perception, discussed in contextual review in thesis. It receives and returns movement and it is the action of the body that perceives. In view of this it seemed appropriate for research into body-movement sense perception and aesthetics to get a better understanding of what might be going on with the user/experiencers embodied movement in the interactive audio-visual in technological environments.



Figure 3: *Body-Interactive non-Cartesian 2016*

To broaden an understanding of full-body-movement perception and consciousness in motion based interactive audio-visual technological environments, whilst also considering how the body is being transformed or conditioned by technologies, during interaction. A series of full-body interaction audio-visu-als are explored in experimental practice to develop interactive designs informed by body perception theory. This was to develop a theory of interaction with an interactive design, for meaningful action,

full-body-movement interactive audio-visu-als. A set of tools were developed for interaction, informed by body-perception theory and thematic analysis.

### Research Questions

1. Can the design of Interactive art installations be informed by embodiment cognition and perception theory for a more creative response?
2. Is it aesthetically advantageous to make use of foregrounding the nature of vision and hearing in modalities of body-movement-sense?
3. What effect does disturbing proprioception in the interactive virtual environment have on perception and consciousness?
4. What is aesthetic experience in interactive 3D virtual environments and surround sound?

This research approaches interactive art from a phenomenological, psychological, and philosophical perspective, shown in the user/experiencer interaction, and interview transcribes. The relation between the body in motion 'active perception' and the interactive audio-visual environment forms a new aesthetic and new meaning. It is by action that interactive installations are triggered, therefore it is important to understand the relation between body action and meaning. Hansen (2004, 2006, 2011) Gallagher and Cole (2008) Massumi (2002, 2013)

### **TECHNICAL RIDER**

1. Interactive audio-visual spatial requirements are approximately width 5m x breadth 5m.
2. 3-channel projections (or single channel projection depending on projectors and space)
3. Surround sound ideally 5-8 channels with sub-woofer (or if not available stereo sound)

Work is adaptable for space and environment.

2 PC computers. Sensors. (I can provide)

If projectors and sound equipment not available I can provide one small projector and stereo sound. This will demonstrate the concept although ideally the interactive was designed for 3 projections and surround sound.

**Duration: Continuous**

### **ONLINE RESOURCES**

<http://interactionalmedia.com>

<https://www.youtube.com/anti-Cartesian>

[https://vimeo.com/home/myvideoshttp://interactionalmedia.com/public\\_html/assets/research.html](https://vimeo.com/home/myvideoshttp://interactionalmedia.com/public_html/assets/research.html)