

Abstract

This thesis develops and presents a design methodology that enables designers to work with the moving body in the design and evaluation of interactive, immersive environments built on motion-sensing technologies. The notion of *making strange*, that underpins the methodology, calls for designers to re-examine and revitalise their assumptions and conceptions of the moving body through bodily-based movement inquiries.

This thesis addresses research questions about ways of understanding human movement, of describing and representing human movement and of accessing the felt experience of the moving body in the emerging field of movement-based interaction design. The research questions were explored through a series of three distinct, yet related, projects, each one focusing on different aspects of designing for moving bodies in interactive, immersive environments. The first project analysed an existing interactive product, Sony Playstation2© Eyetoy™, as a prototype of future movement-based interactive, immersive environments. The second project involved the design and development of a specific interactive, immersive artwork, Bystander. The third project worked with trained dancers and physical performers in a constructed design situation.

The contributions of this research are first and foremost the *design methodology of Moving and Making Strange*: a design approach to movement-based interaction that prioritises the lived experience of movement by both designers and users and values the creative potential of the experiential, moving body. It consists of methods and tools for exploring, experiencing, describing, representing and generating movement that enable designers to shift between the multiple perspectives of the mover, the observer and the machine. It makes particular contributions as follows:

- Laban movement analysis and Labanotation as a design tool.
- Moving-Sensing schema: Suchman's analytic framework adapted as a design tool.
- Extension of existing human-centred design tools to explicitly represent moving bodies, in the form of movement-oriented personas and movement-oriented scenarios.
- Patterns of watching: a catalogue of audience behaviour in terms of movements and stillness in relation to engagement with a specific interactive, immersive artwork.
- New methods for generating, enacting and experiencing movement, sourced from dance and movement improvisation practices.