

Interactive Art,
Immersive Technology
and Live Performance

Andrew Bluff

University of Technology Sydney

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Certificate of original authorship

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Andrew Bluff

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Abstract

This research explores the impact of combining interactive art and immersive technology with live performance. An interactive system was designed to combine the movement of human performers with physical simulations in order to generate complex visualizations that respond to the performers in real-time. This system was used prominently in a series of live performances including dance, music and physical theatre. The performances and system evolved symbiotically throughout this practice-based research. The capabilities of the interactive system was inspired by the demands of each live performance and, in turn, each performance was inspired by the evolving capabilities of the system. A number of immersive technologies including 360 degree stereoscopic visuals, surround sound and physical modeling were added to the system and explored within the context of live interactive performance.

Self-reflections of the researcher's role as interactive artist and technologist is provided. These reflections suggest that the underlying system should be built as flexible and as scalable as possible to cater for different sized venues and budgets. A basic framework is provided for building such a system, utilizing open source software, pre-existing hardware and the flexibility of modern network architectures.

Two major works are examined in detail, a physical theatre show and an immersive installation, both paying homage to the classic Australian children's novel, *Dot and the Kangaroo*. Interviews with the performers, artists and key contributors of these productions were conducted. These interviews were analyzed using grounded theory techniques to gain

insights into the use of interactive and immersive technologies within the productions and how it impacted their professional craft.

The interactive technology was found to bring an element of ‘aliveness’ to the visuals, but were most successful when tightly integrated with the physical choreography to portray a specific part of the narrative. The interactive components were perceived to assume many different roles within these productions including that of character, digital set, theatrical mask and lighting state as the artists attempt to identify with the technology through their own personal knowledge base and expertise. The 360 degree visuals of the interactive installation immersed the participants in a digital depiction of the Australian bush, and invited a sense of exploration and play. The large scale installation allowed multiple children to experience the work simultaneously, while live actors promoted a richness of movement and facilitated social interactions amongst the participants.

The artistic productions, technological system design and findings based on interviews, analysis and self-reflection are presented as contributions towards the relatively unexplored intersection between interactive art, immersive technology and live performance.