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Janelle Robyn Humphreys
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Shadows of another dimension: A bridge between mathematician and artist

A thesis submitted in partial fulfilment of the requirements for the award of the degree

Doctor of Creative Arts

from

University of Wollongong

by

Janelle Robyn Humphreys

BA (Mathematics and physics). Macquarie University

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2009

CERTIFICATION

I, Janelle Robyn Humphreys, declare that this thesis, submitted in partial fulfilment of the requirements for the award of Doctor of Creative Arts, in the Faculty of Creative Arts, School of Art and Design, University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. The document has not been submitted for qualifications at any other academic institution.

Janelle Robyn Humphreys

15 March 2009

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ABSTRACT

The fundamental idea that provides a pathway through this exegesis is the Möbius strip. It is examined in relation to the mathematical influences on my art practice and consequently identified in the work of the Australian Modernists.

The other key link is the “bridge.” The aim is to “bridge the gap” between my roles as artist and mathematician through an analysis of the making process of my painting and sculptures. Further, I establish a visual link between the Sydney Harbour Bridge, the Möbius strip and Australian modernist paintings.

The Möbius strip is introduced as a model for the paintings of William Robinson, contemporary Australian landscape painter. The Möbius strip is further established as a three-dimensional cross-section of the four-dimensional Klein bottle. It is the discussion of the similarities between shadows, cross-sections, and projections in relation to my practice which facilitates the understanding of the link between the Möbius strip and the fourth dimension.

My art practice is examined in relation to several mathematical properties including space-time sequences, systems of rules, non-Euclidean grids, transformations and the topology of the Möbius strip. Of particular importance in this analysis is the idea of the projection from one dimension to another and the associated connection to the properties of the Möbius strip.

The relationship between the Sydney Harbour Bridge imagery and the Möbius imagery is the final link forging the connection between the Australian Modernists and the Möbius strip. The Möbius strip trope is identified in several modernist Australian paintings including paintings of the Sydney Harbour Bridge. Subsequently, the influence of the fourth dimension and non-Euclidean geometry on Australian Modernism filtering through from the northern hemisphere is established.

The understanding of the relationship between the Möbius strip and the fourth dimension gleaned from my art practice was instrumental in detecting this mathematical influence on the Australian Modernists.

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