A Conceptual Framework for Designing Wearable Technology

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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 and data collection in this thesis was approved by UTS Human Research Ethics Committee (UTS HREC reference number: 2012-267A).

Jeremiah Nugroho

25 March 2013

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PREFACE

"…the designer's task is to produce 'the solution'." (Cross 2006, p. 7)

This thesis is the result of an almost 4 year period of research within the Faculty of Design, Architecture and Building at the University of Technology Sydney (UTS) where I was given the opportunity to grow as an academic researcher. The research discussed in this thesis is within the field of wearable technology by looking into its design process.

In the period between 2007-2008, I became deeply interested by the world of digital media while studying to complete my Master's degree at the University of Sydney. A particular course named Digital Culture was a pivotal subject as I experienced an epiphany of how digital technology has advanced, transformed and influenced our quotidian life. The discourse on pervasive and ubiquitous digital media pulled my interest towards the study of Cyborgism, where I encountered the possible physical representation of the future.

A small project in mid 2008 produced a pilot study on a performance piece titled *Wireless Gamelan*, which became part of the final research report in finishing my master's degree. This project was the beginning of my personal academic inquiry into the fusion between human and technology. Initially, I tended to value the extremity of embodying technology, thus physically representing the term cyborg. Human skin became a limiting boundary, which needed to be blurred (or permeated) as to efficiently transform oneself into a cyborg.

When this research project began, I explored literature and existing bodies of works closely related to Cyborgism, which led me to the inquiry: rather than penetrating the skin, why not embrace the skin as part of the integration between man and technology. This realization has extended to the point where I can clearly understand that integration does not necessarily mean embodiment. How do you achieve integration between man and machine? The answer possibly lies in understanding the design process of wearable technology, explored in this thesis.

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ABSTRACT

Previous studies showing the shortfalls of Wearable Technology demonstrate the lack of attention to aesthetics and the absence of an approach that positions the user importantly in the design process (Co 2000, Orth 2001, Boehner et al 2005, Dunne et al 2005, Waitier 2003, Viseu 2005). This thesis attempts to tackle this problem by understanding the design process in Wearable Technology. It explores the field of design thinking from the designer's perspective specifically in Wearable Technology, where interdisciplinary discourse integrating fashion, human-computer interaction, fine arts and the digital media culture merge and are intertwined.

Existing and related design theories of Wearable Technology have allowed extraction of design attributes of Wearable Technology that is holistic and flexible. These design attributes were then reflected on in semi-structured interviews involving designers who have experienced designing Wearable Technology. The resulting phenomenological analyses from the transcripts were then compared to the offered design attributes to further understand how these design attributes behave in the design process of Wearable Technology.

The research findings in this thesis offer a new conceptualization strategy for Wearable Technology designers that includes a set of design attributes and their characteristics in design process which are beneficial in understanding the design process itself. This conceptualization strategy and its application to Wearable Technology design render the possibility for designers to understand the user progressively during the design process.