Chapter 34
Agent-Based Modelling of Emotional Goals in Digital Media Design Projects

James Marshall
Swinburne University of Technology, Australia

ABSTRACT

The authors promote agent-oriented models to identify, represent and evaluate high-level abstractions of digital media design projects. A major aspect is the introduction of emotional goals, in addition to functional goals and quality goals to describe feelings such as having fun, being engaged and feeling cared for. To establish emotional goals, digital media design methods and processes were employed including the development of emotional scripts, user profiles, mood boards and following an iterative participatory design process. This approach proved to be highly successful, not only to represent emotional goals such as fun, tension and empathy, but also to facilitate the ideation, creation and progressive evaluation of projects. The process supports communication between designers, developers and other stakeholders in large multidisciplinary development teams by providing a shared language and common artefact. The process is demonstrated in the development of a Multiplayer Online Role Play Game (MORPG) called Aspergion that promotes respect for people with Asperger's Syndrome.

1. INTRODUCTION

Human interaction with technology is ubiquitous and the objectives of software are widening from the utilitarian, to the facilitation of rich and engaging human interactions. *"Interaction with technology is now as much about what people feel as it is about what people do."* (McCarthy & Wright, 2004). Computing and software is increasingly pervasive and integrated throughout our lives making the consideration of human factors fundamental to the development of successful products and systems. "We do not just admire technology; we live with it. Whether we are charmed by it or indifferent, technology is deeply embedded in our ordinary everyday experience." (Pacey, 1999).

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Computing and software has moved from the workplace, into our personal lives rendering socio-cultural aspects increasingly influential (Iacucci & Kuutti, 2003). Meta-issues outside of the technical system, such as lifestyle and social structures, have become more important and need to be considered in design (Dourish, 2001b; Randall Harper & Rouncefield, 2004; Rheingold, 2003).

Realising emotional factors is fundamental to design disciplines, from industrial and communication design to architecture and fashion design. In each case, collaboration with manufacturing, science and engineering experts is required. The current challenge for the emerging field of digital media design is to develop mutually beneficial partnerships with software engineering, as architecture has with civil engineering and industrial design has with materials science.

As digital technologies increase in complexity and collaboration with other disciplines is necessary, a trans-disciplinary approach for developing sociotechnical systems is required, where digital media design practices may be incorporated into software engineering. Agent-oriented models show potential, not only to identify and realise emotional goals, but also to provide an overall progressive evaluation of these goals as we will demonstrate in this paper.

The overall objective of this research is to facilitate the creation of digital media design outcomes including sociotechnical systems that positively affect people's emotional state or wellbeing. We claim that this can be achieved by incorporating creative design processes that explicitly identify emotions as high-level goals into existing agent-oriented models (AOM) to provide a shared language between stakeholders and support project design, development and evaluation. We also propose a colour-coded evaluation system to easily communicate the progress of projects to all stakeholders and serve as a form of acceptance testing.

2. EMOTIONAL GOALS IN DESIGN

Sociotechnical systems are complex interactions between people and technology. They can be defined as a system that includes hardware and software, has defined operational processes and offers an interface, implemented in software, to humans.

Sociotechnical systems exist to support human activities, such as guarding of a building, trading, planning a route, and flirting. (Sterling & Taveter, 2009)

The consideration of emotions is important in the development of many sociotechnical systems. If a computer game does not feel fun, we will not play it; if an ecommerce website does not feel trustworthy (irrespective of the actual security) we will not purchase from it; and if a social networking application does not feel engaging we will not use it. We describe these as the *emotional goals* of the system, which we define as goals that aim to affect people's emotional state or wellbeing. These include basic emotions such as happiness, sadness, fear, anger, surprise and disgust, human factors like engagement and more abstract descriptions of feelings such as fresh, cool, wicked and fun.

Emotional goals, often described by designers as the *look and feel* or *values* of a product, have always played an important role in design considerations (Desmet & Hekkert, 2009). The industrial designer Hartmut Esslinger who worked on Apple product lines from 1984 to 90 expresses the importance of