

## Chapter 5

# Towards a Subjectively Devised Parametric User Model for Analysing and Influencing Behaviour Online Using Neuroeconomics

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### ABSTRACT

*The quantitative-qualitative and subjectivity-objectivity debates plague research methods textbooks, divide academic departments, and confuse post-modernists as to their existence. Those from the objective-quantitative camps will usually demand methods assume parametric principles from the start, such as homogeneity and normal distribution. Many of the subjective-qualitative camps will insist on looking and the individual meanings behind what someone is saying through their narratives and other discourses. The objective-quantitative camps on the other hand think anything that does not involve systematic acquisition and analysis or data cannot be valid. This chapter presents an approach to derive a parametric user model for understanding users that makes use of the premises and ideals of both these camps.*

### INTRODUCTION

Subjectivity is scorned by many scientists from the materialist traditions of positivism and materialism, but it could be argued that however much we try to fool ourselves scientific inquiry is inherently

subjective. Whether it is research participants who will answer a questionnaire differently each time they take it, or the researcher choosing between Verimax or Quartimax rotation based on the result they want, subjectivity is unavoidable. It is important therefore to move away from the perhaps

DOI: 10.4018/978-1-4666-5071-8.ch005

delusionary view that objectivity is desirable and needed. To hold onto such a view will mean that inaccurate models for understanding the way people work will mistakenly assume it is possible for all things to be, when they never are. What might be on a person's mind one minute will be out of it the next, and models of behaviour will have to take account of the chaos in the world and our minds that disrupt the internal and external environment on a moment by moment basis.

## **BACKGROUND**

Two decades after the introduction of the World Wide Web, advocates of user-centred design (UCD) have begun to accept that the understanding of Internet users goes beyond making interfaces easy to use. Nielsen (1993) raised the importance of designing interfaces that users would enjoy using as well as being able to use and one increasingly popular way of doing this is gamification. Gamification is the use of game design elements and game mechanics in non-game contexts (Deterding, Sicart, Nacke, O'Hara, & Dixon, 2011; Deterding, 2012; Domínguez et al., 2013).

Recently, gamification is widely used for increasing users' interaction and engagement in variety of domains such as business and marketing, health and wellness, education and training, corporate and vocational training, public policy and government (Hsu, Chang, & Lee, In Press).

Social motivations, especially related to social influence and whether the users find reciprocal benefits from using gamification, are strong predictors for how gamification is perceived and whether the user intends to continue using the service (Hamari & Koivisto, 2013). Compound Identity Theory for understanding self-concept in virtual environments. Compound Identity Theory suggests that a social actor consists of six 'selves' that in turn are made up of three 'component-selves'.

## **Parametric User Modelling Using Neuroeconomics**

Gamification is not simply a one-dimensional system where a reward is offered for performing a certain behaviour; rather, it takes into consideration the variety of complex factors which make a person decide to do something (Birch, 2013). One approach to modelling behaviour is to produce generic models of users through understanding them in detail. One approach to build and describe homogenised users is through parametrics.

Parametric modelling has most frequently been spoken about in human-computer interaction in relation to programming concepts such as objects and classes (Aggarwal, 2003; Szewczyk, 2003). Equally parametric testing of users to derive statistical models are usually developed using so-called objective techniques like questionnaires and other so-called quantitative approaches. The authors however argue that subjectivity is inherent in research studies both from the participant and the researcher. However many people claim they are being objective in looking at a dataset, when it is necessary for models to be constructed – by the researcher – materialist paradigms go out of the window as the researchers need to rely on their mind to construct a model or influence a dataset (e.g. through rotation), meaning research bias is inevitable. The rest of this chapter will look at how qualitative research approaches can be used to devise a testable parametric model for analysing and influencing behaviour in online communities.

## **The Role of Interviews**

Interviews are one of the most established methods of inquiry in various research disciplines. An interview allows for the collection of data based on the spontaneous reactions of others to questions. Whilst a questionnaire uses preformed questions that can result in researcher bias, interviews can be better at correcting this, providing questions are open ended and seek to elicit the interviewees

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