Chapter 18
Empirical Research Methods in Virtual Worlds

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ABSTRACT

This chapter summarizes current empirical methods in virtual world research. Since 2001, virtual worlds have become an important form of social media and a new forum for human interaction. Researchers have begun to study virtual worlds both for their inherent interest, as well as for insights about broader human behavior. This chapter addresses the quality of data obtained, as well as early experience with surveys, experiments, ethnography, and direct observation in virtual worlds. The conclusions are that virtual worlds are a valid location for empirical research and many methods from the "real" world are suitable for deployment. Virtual worlds also present challenges in terms of technology and the nature of society, and researchers must not overlook these challenges.

INTRODUCTION

Over the last few hundred years the social sciences have pursued a variety of methods, which attempt to explain, understand, and predict human behavior at both the individual and societal level. Experimental economics, historical analysis, game theory, computation, and mathematical modeling are just a few of a wide range of techniques

and tools that have been applied. As science has progressed these methods have been refined, and retooled each providing its own piece to the puzzle of social science theory.

Occasionally, a new tool or technique comes along that promises to provide researchers with access to information about the world that was previously unobtainable or intractable. In doing so, it provides new perspectives and insights into biological processes and social interactions. The microscope, calculus, probability theory, game

theory, computer, and fMRI, are all examples of this type of tool. We argue that a virtual world is also such a tool. This chapter will explore key developments in virtual world research. In doing so it will examine two different methodological approaches (experimental and observational), and two different data collection techniques (survey and dataveillance) that share a common theme. They free the researcher from the burden of data collection and take advantage of large-scale databases and the computational power of virtual worlds to provide huge datasets that can be generalized to the real world.

BACKGROUND: VIRTUAL WORLDS - REAL PEOPLE

One of the chief criticisms of virtual world research is that virtual worlds are simply not real. That the players in them are interacting in a contrived environment and so a virtual world is not suited for providing generalizable information to the real world. Williams (2010b) identifies this criticism as what he calls a mapping problem. The implications are strait forward. If human behavior mirrors real world behavior then virtual worlds are suitable environments for drawing conclusions about individual and group behavior in the real world. If no fidelity exists to the real world, then they are not.

The evidence suggests that virtual worlds lie somewhere in between. That even in play-acting environments, human behavioral theories continue to hold water. The Stanford Prison Experiment and its follow-ups strongly suggest that people who are consciously play-acting a role nonetheless behave as if the role was real (Zimbardo, 2007). The fact that players of virtual worlds have committed murder and suicide over events within them certainly suggests that these events matter to those involved despite the fact that the worlds are fanciful by design.[1]

This evidence is all indirect, and so the question of whether virtual world behavior maps onto "true" human behavior remains open. However, researchers in communications have tackled this question directly. Byron Reeves and Clifford Nass (1996) summarize a long series of experiments targeting cognition showing that people seem to treat media as real, apparently because of the simple fact that the brain evolved before media existed. More recently, Nick Yee and Jeremy Bailenson (2007) have coined the term "Proteus Effect" to describe the phenomenon of a person treating his or her virtual body as if it were a real body. In one example from their studies, they found that people given a taller avatar in the virtual world act, in that world, more confidently. A result that maps to the real world as observations have shown that height predicts social confidence. From their studies, Yee and Bailenson demonstrate that many features of human behavior in the real world map onto virtual behavior. Furthermore, traditional experiments applied by behavioral economists underscore these conclusions. As it is accepted that experiments, which place subjects in a more or less artificial laboratory or survey environment that is conceptualized as a game, map onto real world behavior (e.g., Fehr et al., 2002; Dohmen et al., in press).

Mappings from the virtual world have been studied in other contexts. Recent research seems to indicate that macro-economic behavior and collective outcomes map into the real world. Castronova, Cummings, et al. (2009) constructed a small-scale virtual world to conduct an experiment which mapped the theory of supply and demand. On a larger scale and using player data provided directly by Sony Online Entertainment, the makers of the virtual world *Everquest II*, Castronova et al. (2009) found that the aggregate economic behavior of *Everquest II* was slightly more unstable than one would expect, but in general tended to follow the real world.

Determining where virtual world behavior mimics real world behavior is quite important for

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