

EverLab

Using Virtual Worlds as Testbeds of Social Science Theory

Justin Isaf
McGill University / National University of Singapore
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As any student, practitioner or “expert” in the field of social science will tell you, there are no absolutes in theory or implementation, social science is an inexact science. What works in one situation may be utterly disastrous in another. Studies contain more variables and more unknowns than can be controlled for and explained away. Variations in demographics, language, religion, history, gender, age, location and a whole host of other factors constantly change in human interaction and are virtually impossible to capture on paper in the form of statistics. Even the very action of studying a human changes their actions – physicists are confused by light behaving as both a wave and a particle, depending on how it is studied – humans are infinitely more complicated and fickle; Study a village on a Monday and you get different answers than on a Tuesday, a male studying a group gets different results than a female, an American will get different responses than a Singaporean and, as William Rathje (2001) and others have shown, self-reporting and actual behavior are often two very different things, yet Social Scientists attempt to pull unified and applicable theories from this mess of information and variables. These theories are then untestable in as much as the only way to test them is to implement them – and by the time a theory proves right or wrong the lives of very real people can have been very really affected. This, however, may not always be the case. This paper will look at how theorists and practitioners in the Social Sciences might be able to use emerging technologies to create virtual test beds for theories in significantly more controlled situations which can be molded in specific ways and from which significant raw data can be produced.

On line persistent virtual worlds have already been studied by economists¹, social scientists², and psychologists (just to name a few) because of their ability to reflect coherent socio-economic networks and structures even outside of the context of the “real world.”³ It is my belief therefore that if

1 Castronova 2001, 2005 ; Knight 2002

2 Joinson 2003

3 Castronova 2005

existing commercial virtual worlds created for entertainment can be studied in this way, then in the same vein, researchers could create virtual worlds with the explicit goal of studying – and testing – the effects of various social science theories on the communities which are created there, without affecting the lives of real people in real spaces.⁴ Because we can identify specific social trends in virtual worlds, albeit with certain *quid pro quos*,⁵ we can begin to shift what is learned from virtual testing to real world applications. We can of course never build a rural Indian village nor a post-genocide Rwandan town in a virtual world and populate it with representative people or conditions,⁶ and so would never be able to pre-test situation specific theories, but general trends which remain unanswerable in the real world due to uncontrollable variables could be investigated relatively easily. I am of course here talking about issues of community building, general political structures etc. which can show widely different results in slightly differing situations. These situations are often far too complex in the real world to fully understand. Simplified virtual models can, however, be created and studied with specific goals in mind, several existing worlds have already been looked at from this perspective showing surprising similarity to the real world, despite their relative simplicity.

The most famous of the studies of the relation and spillover between real and virtual world was done by Edward Castronova who studied the economics of the on line game *EverQuest*⁷ in his paper *Virtual Worlds: A First-Hand Account of Market and Society on the Cyberian Frontier* in 2001. In this, and subsequent papers, Castronova showed that even if “virtual world users are all males, huddled in their basements venting their excessive aggressions by killing dragons together”⁸ the evolution and

4 Bradley and Froomkin (2003) also argue that there are economic savings provided by such virtual tests in the area of legal institutions.

5 Mynard (2006) provides a good summary of literature on the existence of social trends in virtual worlds

6 Although Mynard (2006) argues that incentives could be used to draw players from developing countries into virtual worlds, the lack of comfort with virtual worlds or the technology which surrounds it, in other words the “digital divide” would probably hinder any real participation by users.

7 EverQuest <http://everquest.station.sony.com/>

8 Maynard 2006, 12

activities of the economies would show surprising similarities to generalized economies. Thus he was suggesting that although virtual economies (and by extension, virtual worlds) may not always hold representative populations, users in a virtual world act in economically rational, predictable and most importantly, studiable ways similar to general populations.

We have also seen the development of emotional links to characters (avatars) and items by players who controls them. For example, in his Declaration of the Rights of Avatars Raph Koster⁹ explicitly claims that avatars are not simply controlled by players but that they *are* the players in a community of emotionally and socially involved avatars:

...avatars are manifestations of actual people in an on line medium and that their utterances, actions, thoughts, and emotions should be considered to be as valid as the utterances, actions, thoughts and emotions of people in any other form, venue, location, or space...the potential transience of the community [does] not limit or reduce the level of emotional and social involvement that avatars may have with the community.¹⁰

This connection extends to an inherent “investment” in the character, world and society which emerges as Bradley and Froomkin note:

Their investment in the game would be closer to an investment in real life than the types of investments [subjects] tend to have in simple games. Some MMORPG participants prefer to live in the on line world than in the real world. Some players become 'immersed' in the games and begin to take their virtual life so seriously that they forget it is a game.¹¹

In extreme cases we even see the connection being so strong it manifests itself in real world murder, as in the case of Qiu Chengwei in China.¹²

Most importantly for this paper, we have also seen the formation of player-led government and legal structures such as in *A Tale in the Desert* (ATITD) and *Second Life*. ATITD has been designed

9 Raph Koster is seen by many as the be-all and end-all of MMORPG game designers. He was the Creative Lead for Ultima Online, the game which launched the MMORPG to where it is today, and Lead Designer on Star Wars Galaxies, one of Sony's biggest hits. He maintains a blog (<http://www.raphkoster.com>) on game design and is active on the mud-dev mailing list (<https://www.kanga.nu/lists/listinfo/mud-dev>)

10 Koster 2000 [emphasis added]

11 Bradley and Froomkin 2003, 29

12 'Game theft' led to fatal attack <http://news.bbc.co.uk/2/hi/technology/4397159.stm>

around the ability of players to build in new legal and social structures which are implemented and supported by the game's developers forming the basis for an in-game, player-led government structure.¹³ *Second Life* has gone as far as giving players ('residents') intellectual property rights, ownership and has allowed them to essentially run their own political world. This has been demonstrated by James Miller's Proposal for Second Life Resident Dispute Resolution System¹⁴ and has seen the establishment of multiple free press outlets run variously by residents,¹⁵ Linden Labs' employees¹⁶ and real world news agencies.¹⁷

It is not only the spillover between real world and virtual world which is important in the study of social science, but also the community which is formed within the world. Gattiker et al. (2001) suggest that there are five components to a "Social Community"¹⁸ and three dimensions along which Social Capital in these communities can be defined.¹⁹ It is easy to point to situations which lend credibility to virtual worlds as communities within these bounds. It is a common occurrence now that people are meeting future spouses in virtual worlds and games; conventions create real personal ties between community members; new members come and go as they please, often changing games or worlds if they do not feel ties to the community or world; in games especially, many players will have gone through "the grind," accomplished similar missions, been a part of the same back story giving them a common history and experience. I have even seen meaningful and heartfelt funerals and memorial services held in-world for those members of the community who have died in the real

13 Burke 2004, 11-12

14 The Second Life Herald 1/6/2005 <http://www.dragonscoveherald.com/blog/index.php?p=602>

15 Such as the Second Life Herald, <http://www.secondlifeherald.com/>

16 Linden Labs is the creator of Second Life and hired W. James Au to report for "New World Notes", NWN.blogs.com

17 Reuters recently opened an official news bureau in Second Life <http://secondlife.reuters.com/>

18 Gattiker & Hedehus, 1999 quoted in Gattiker et al. 2001, 167: (a) personal relationships making up a social network; (b) simple and open access to the community for interested parties; (c) personal meetings and understanding of each other; (d) dialogue, feedback, and shared experiences; (e) a common history.

19 Gattiker et al. 2001, 172; "Social capital in Virtual Communities can be measured in terms of Structure, Relations, Cognition"

world.²⁰

As the above shows, we can see economic, emotional and even social and democratic systems in place in existing virtual worlds which mimic much of the “real world” systems we, as social scientists, study. If these systems already exist in commercial game worlds, then can we use that technology and those techniques to build a world with the explicit goal of studying these and other social science issues and expect to get meaningful results?

Bradley and Froomkin (2003) argued that virtual worlds could be set up to explicitly study legal institutions, Maynard (2006) extended this argument to the study of economic systems. Both suggested that the technology behind virtual worlds which allow “multiple identical worlds in which designers have absolute control over the structure of both the world and its institutions”²¹ and which are “more controllable and modifiable than the real world”²² lend themselves to being a “fertile testing ground for a number of existing...beliefs and potential innovations.”²³ Bradley and Froomkin have suggested that complex theories might be un-suitable for virtual worlds to study for various reasons and technological limitations. Primarily, their concern is with the inherent simplicity of virtual worlds *vis-a-vis* the real world. For example, family relationships and responsibilities are not present in virtual worlds – marriage and divorce, child rearing, the in-laws, etc are not problems because they are not coded and the relationships happen at a distance rather than as immediate face-to-face issues. People don't need to eat or sleep in virtual worlds, time is compressed, you never die. Raph Koster (2006) sums this up nicely in his “lament” What are the lessons of MMORPGs today?:

20 WorldsAway, later AvaTerra (a now defunct division of Fujitsu Systems which once resided on Compuserve in the mid to late nineties) had an area dedicated to a memorial for members of the world who had died or left for health/personal conditions. Worlds of Warcraft has also seen large scale memorial services.

21 Maynard 2006, 2

22 Bradley and Froomkin 2003, 29

23 Ibid. 30

You not only can't go home again, you probably don't have one.
If you do, it's mostly to store stuff, not to live in.
There are no children.
Death doesn't really sting. Nerf, however, is incredibly painful.
There are no governments. Thus there are no laws. Instead, there are laws of physics.
There is no such thing as obesity.
Nobody's really from here, they just live here.
Night's really short.
Nothing sleeps.
There is no death; there is simply a failure to show up.²⁴

However, this has often been simply a lack of technological ability coupled with simple economic business sense. People aren't in a commercial MMOG to eat, they aren't there to fight with their spouses and they probably aren't there to actually die. However, new technologies are coming on line which, with sufficient effort, would allow for many of these missing elements to be coded in, or - with the advent of AI and adaptive modeling – grown. To take one example, Bradley and Froomkin point out that while “they do not (currently) have elected governments, and they do not have nations”²⁵ existing virtual worlds do have the foundations of these entities in guilds, factions etc. With single world (rather than sharded world²⁶) technology now reaching a mature phase, and with graphical representations of virtual worlds and characters becoming frighteningly realistic (for example see the work being done by Image Metrics in animated facial emotions²⁷ or the landscape rendering capable

24 Excerpts from What are the Lessons of MMORPGs today? Taken from <http://www.raphkoster.com/2006/02/24/what-are-the-lessons-of-mmorpgs-today/>

25 Bradley and Froomkin 2003, 33

26 Currently most MMORPGs run on multiple or instanced “shards” which are separate servers each running an identical game world capable of handling only a limited number of concurrent user connections. These servers have an upper limit on the number of concurrent users and a player from Shard A will never meet a player from Shard B even though they may both be standing at the same co-ordinates. Single world technologies, such as BigWorld (<http://www.bigworldtech.com>) fundamentally change this situation and bring those disparate groups of limited size and influential potential into the same world. Having the 7 million subscribers of Worlds of Warcraft spread across approximately 200 servers ('Realms') limits the scope and necessity of government, but put all 7 million on one server and a population and economy that rivals small countries emerges and all the political problems, and civil society solutions, which go along with it. In addition, many games have loading zones which reduce the realism of the experience, this is no longer necessary and allows a more immersive and realistic experience

27 Image Metrics <http://www.image-metrics.com/>

with vWorld technology²⁸ or the Offset Engine²⁹) the emotional bonds that we may feel with virtual characters and the number of those connections only stands to grow. The ultimate expression of this kind of movement in technology can be seen in predictions such as “The Matrix” trilogy where all interactions, emotions, feelings and connections are computer mediated in a massive single instance virtual world.³⁰

But technological ability and the existence of a community do not a study make. What makes a virtual world ideal for testing specific theories are three inherent factors in virtual worlds – duplicability (in the form of identical worlds), omnipotence (in the ability to change any feature and any rule at any time) and omniscience (in the ability to log, watch and collect data on literally every action that happens in the game world and compare that to self-reported actions).

Duplicability: The ability to create multiple identical worlds and populate them with a randomly or specifically selected population and repeat this as many times as is desired, and as test subjects permit finally gives a researcher the chance to rule out certain variables and questions which arise from uncontrollable real world situations. For example, is the growth of a certain type of political party the result of a specific cultural phenomenon or a political structure or the interplay of the two? This is a question which we cannot currently answer because of innumerable non-identical variables and anomalies which are present in real world comparative case studies but which can be controlled for in multiple virtual worlds. They could also be used to study gendered or situational self-reporting – the age old adage that “A village study conducted on the same day in the same place asking same questions to same people by a male researcher and female researcher could bring out different results.” We could in fact now ask the same questions on the same day in the 'same place' to essentially the 'same people'

28 Vworld Technology <http://www.vworldpowered.com>

29 Project Offset <http://projectoffset.com/>

30 I'm not saying all of our interactions will end up in a computer mediated environment, just that they physically *could*

(if the groups have been so selected) with a male avatar and female avatar on two different instances of the same world and study the difference.

Omnipotence: Researchers are obviously interested in looking primarily at one, or a small number of issues in their study and controlling for all others. Developers of virtual worlds hold “a form of sovereignty that the most absolute of absolute monarchs could only dream of”³¹ and that is the ability to change, dictate, enforce or allow anything right down to the law of gravity itself. Developers are gods amongst their mice and this allows researchers a massive amount of control over very specific changes and study variables. Even if coded laws are not written for every variable, as that would be virtually impossible, they are at the very least identical across iterations of the worlds unless the researcher specifically decides to change them. For example, if a researcher wanted to quantify the exact impact of free speech on the emergence of a political movement, it would be easy enough to set up a pair of worlds much like *Second Life* and allow free press and free speech in one and censor certain words and reports in the other. If questions of externalities arise in the report, then the researcher can set up and populate a third world, tweaking only the specific variable in question to see if it has any significant impact on the outcome. This can even be used in negative research – for example, seeing how many controls can be put on a population before they revolt, how quickly freedoms can be removed and what 'spin' can be successful in keeping populations happy with fewer freedoms.

Omniscience: As was mentioned earlier, Rathje (2001) proved that human beings tend to lie on surveys – they tend to give answers that they feel are expected. He proved this, and found out a great deal of other information, by sifting through household waste. Virtual worlds don't produce much household waste to sift through, but they do produce massive and searchable databases. It is possible to log every action, every word, every trade, every private message and every movement in a virtual

31 Burke 2004, 2

world. Anything and everything can be observed exactly as it happens, without bias or re-interpretation. The amount of data produced would be massive, causing problems in and of itself, but the wealth of knowledge that could be discerned or stumbled upon, and new research which might be suggested by this makes this one fact alone a worthy endeavor – but a dangerous one. The very fact that users know (and must know as their informed consent would be needed) that they are being watched could easily change their actions. However, many people today have chosen to trade their privacy for more personal web experiences, free gifts, products and services.³² Of course there are many pitfalls and drawbacks to using this kind of technology for research, but I will limit myself here to a discussion of the technological problems and leave the experimental challenges to those who design experiments.

The single greatest challenge to this form of experimentation is the real world economics of it. That is, how do you create a virtual world, populate it with enough people from a sufficient cross-section of your target group, keep them interested long enough to conduct the study and keep from making enemies in the commercial realm. It costs millions of dollars to create a virtual world,³³ hundreds of thousands of dollars a month to run even basic server infrastructure, any amount of money in advertising to find the hundreds of thousands of subscribers which will allow for even a few thousand simultaneous users and thousands more dollars to pay content management and “game mastering” companies to keep people interested in game. Even if it were possible to find a grant giving body willing to put up this much money, the impact of a well-conceived and fun world on the business models of commercial game developers could be dramatic and could lead to making enemies rather

32 Gmail is a good example of this – users knowingly submit to their emails and conversations being scanned and mined and the information sold to advertisers in exchange for a free service offering. The same applies to many “web 2.0” services such as Facebook, MySpace, and many blog sites. The most personal or personal information is being traded for a desired service. In this case, that would be a free or cheap game or virtual world.

33 Game development costs have begun approaching \$20 million dollars for big titles such as Worlds of Warcraft, according to C|net news. http://news.com.com/New+gateway+to+multiple+virtual+worlds/2100-1043_3-5983264.html However, new development platforms such as Multiverse (<http://multiverse.net/>) with little or no upfront platform costs are now allowing development costs to drop as low as \$10,000 for indi games, according to the people at Multiverse.

than friends with the people who can provide the most insight and expertise to help. In addition to the business technicalities, there is still the problem of the technological limitations which we still face today.

No system can be designed perfectly, humans have a way of finding loopholes, exploits, hacks, cracks, and general work-arounds for anything that coders put in their hands. This is one of the beautiful things about humans in virtual worlds and the real world – they will always find a way around something, tell them they can't do something and they will try harder to do it. In fact, many would claim that to say that a researcher can control everything in an avatar's life is far too deterministic and that simple technological scripting cannot provide answers for an infinitely complex and evolved human culture. However, I would note that it doesn't have to control the lives of the world's occupants, just reflect the control systems which are in place – and which are circumventable – in real life.

As I have attempted to show, virtual worlds can create at least basic microcosms of real life which can be manipulated, tweaked, logged and mined for data. The precedents for studying virtual worlds as “uncontrolled social experiments”³⁴ exists and the expertise to create worlds which are entertaining, engaging and immersive has long been developed within the commercial sphere. If researchers were to work with game developers on creating either specific research oriented virtual worlds, or commercial games with specific research goals in mind, then we could see virtual worlds – long since seen as the realm of geeks and nerds “huddled in their basements” - emerging as a legitimate social experimental tool which can inexpensively, and with little impact, study social science theories in much closer and controlled detail.

34 Burke 2001, 3; quoted in Maynard 2006, 3

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EverQuest. <http://everquest.station.sony.com/>

BBC News. <http://news.bbc.co.uk/2/hi/technology>

The Second Life Herald. <http://thesecondlifeherald.com/>

New World Notes. <http://nwn.blogs.com/>

Second Life: Reuters. <http://secondlife.reuters.com/>

Raph Koster. <http://www.raphkoster.com/>

BigWorld Technology. <http://www.bigworldtech.com/>

Image Metrics. <http://www.image-metrics.com/>

vWorld. <http://www.vworldpowered.com/>

Project Offset. <http://www.projectoffset.com>

C|net News. <http://news.com.com/>

Julian Dibbell. <http://www.juliandibbell.com/playmoney/index.html>