STARS

University of Central Florida
STARS

Electronic Theses and Dissertations, 2004-2019

2010

Ethnographic Reflection On Group Formation In Blizzard's "world Of Warcraft"

John Christopher Spottke
University of Central Florida

Part of the Anthropology Commons

Find similar works at: https://stars.library.ucf.edu/etd

University of Central Florida Libraries http://library.ucf.edu

University of Central Florida

STARS
Showcase of Text, Archives, Research & Scholarship

ETHNOGRAPHIC REFLECTION ON GROUP FORMATION IN
BLIZZARD'S "*WORLD OF WARCRAFT*"

by

JOHN CHRISTOPHER SPOTTKE
B.A. University of Central Florida, 2006

A thesis submitted in partial fulfillment of the requirements
for the degree of Master of Arts
in the Department of Anthropology
in the College of Sciences
at the University of Central Florida
Orlando, Florida

Fall Term
2010

ABSTRACT

Cyberanthropology or the anthropology of cyber space/culture is an emerging subfield of cultural anthropology that deals with the varied integration of human beings and technology. This specialized area of study focuses on topics ranging from new technologies used in ethnographic research to information and communication technologies utilized by specific societal groups. Communication technology encompasses the World Wide Web, email, and online multiperson interactive spaces such as chatrooms and video games. In this work, I ethnographically investigate human social interactions in the online gaming realm of *World of Warcraft*. On the whole, the expanding numbers of virtual communities in existence today offer new and exciting realms for social scientists in general, and anthropologists in particular, to expand their knowledge of social interaction. During the period between August 2007 and May 2009 I "lived" with the players of *WoW* as a participant observer. The culmination of this research spotlights virtual group formation and dynamics from an anthropological perspective and is intended to pave the way for future research.

ACKNOWLEDGMENTS

TABLE OF CONTENTS

INTRODUCTION

Cyberanthropology or the anthropology of cyber space/culture is an emerging subfield of cultural anthropology that deals with the varied integration of human beings and technology (Escobar et al. 1994). This specialized area of study focuses on topics ranging from new technologies used in ethnographic research to information and communication technologies utilized by specific societal groups (Carter 2005, Escobar et al. 1994, Macek 2004). Perhaps more compellingly, it also examines the physical integration of technology into human bodies or cyborgs. For the purposes of this ethnographic research project, I focus on one specific area of cyberanthropological research: communication technology. Communication technology encompasses the World Wide Web, email, and online multiperson interactive spaces such as chatrooms and video games (Wilson and Peterson 2002). In this work, I ethnographically investigate human social interactions in the realm of online gaming. With new and qualitatively distinct modes of human communication and interaction, the cyber world presents challenging research opportunities for anthropologists and others in the social sciences.

Cultural anthropologists depend on ethnographic fieldwork as the core method of gathering information about target communities. Through the traditional field technique of participant observation, whereby a researcher lives among members of a local culture for an extended period of time, qualitative and quantitative research data is collected. Specifically, this data gathering technique involves direct observation of community members in their everyday routines, participation in local social, political, economic, and religious activities, and frequent interaction with members of the community. Like their more traditional counterparts,

cyberanthropologists also utilize many of these same methods. Generally speaking, however, the definition of the 'field' portion of fieldwork tends to differ significantly for cyberanthropologists.

Unlike cultural anthropologists studying bounded and territorialized communities in the physical/material world, cyberanthropologists tend to focus on virtual communities in the deterritorialized regions of cyberspace. These virtual communities exist in the disembodied space created between interconnected computer networks. With no physical space parameters, residents or users can occupy multiple locations simultaneously and traverse the seemingly infinite areas of cyberspace in the blink of an eye. Cyberanthropologists, thus, confront a 'field' that is in many respects more malleable and nebulous than what most anthropologists have studied in the past.

One current iteration of communication technology within the realm of cyberspace is interactive online gaming. Alternatively described as "persistent worlds" or "massively multiplayer online role-playing games" (MMORPG's), these virtual domains encompass a subset of games for hundreds, if not thousands, of players to participate in simultaneously (Kent 2003). Social scientist and economist Edward Castronova (2001:6) in his paper "Virtual Worlds: A First-Hand Account of Market and Society on the Cyberian Frontier" describes a virtual world as being defined by three primary features:

> - Interactivity: it exists on one computer but can be accessed remotely (i.e. by an internet connection) and simultaneously by a large number of users, with the command inputs of one person affecting the command results of other people.

- Physicality: people access the program through an interface that simulates a first-person physical environment on their computer screen; the environment is generally ruled by the natural laws of Earth.

- Persistence: the program continues to run whether anyone is using it or not; it remembers the location of users and things, as well as the ownership of objects.

Presently, users can access dozens of virtual worlds that range from fantasy based worlds such as Blizzard, Inc.'s *World of Warcraft* (*WoW*) to social networking worlds like Linden Research's *Second Life*. Although these worlds can vary stylistically, they all tend to follow a standard premise. That is, users interact with one another in real time via computer graphic interfaces. Significantly, these interactions sometimes have measurable real world effects. Most often, these effects are economic as players can receive real monetary payment for virtual resources like goods and services. Surprisingly, these payments can also be emotional in nature such as the development of social bonds (Turkle 1997).

Virtual world interaction effectively takes place through the use of avatars, graphical representations of the users' selves. In some worlds, avatars may be anthropomorphic, perhaps even duplicates of the users' real world forms. In others, elves, dwarves, dogs, dragons, motes of glittering dust, or various other characters can represent them. Age, gender, species, and morphology are generally fluid concepts when users create their avatars. However, once avatars are created, their physical forms tend to remain immutable. Anonymity in the virtual world typically extends as far as protecting users' actual identities unless they choose to reveal personal details. Avatars, conversely, are known within virtual communities by their actions just as a person would be in a real community. Perhaps more notably, just as they exist in real world

3

communities, there are social patterns and rules regarding moral conduct within virtual worlds. Exclusion or marginalization within a virtual community because of personal actions is a possibility that all users face (Filiciak 2003).

On the whole, the expanding numbers of virtual communities in existence today offer new and exciting realms for social scientists in general, and anthropologists in particular, to expand their knowledge of social interaction. The overall aim of this study is to forge one path of many into these new territories.

VIRTUAL SPACE

The virtual world that I will analyze in this research project is the aforementioned *WoW*. My decision to examine this particular world is based on its vast online population. Recent statistics show over 11 million members worldwide (Blizzard 2008). If *WoW* were a US state, it would rank 7th most populous between Pennsylvania and Ohio according to the 2000 U.S. Census. This places *WoW* as the largest current virtual world. The planet on which *WoW* takes place is Azeroth. It resembles Earth in terms of physics, climate, atmosphere, and geographic variety. Azeroth contains myriad natural resources – animal, vegetable, and mineral – that are harvested and exploited by its inhabitants. Stylistically, *WoW*'s game environment most closely resembles a medieval fantasy world, whereby science and magic are readily available for acquisition and utilization. Technologically, Azeroth appears to be somewhat past the medieval stage as gunpowder and steam engines exist, albeit in rather crude forms. A gold-based economy following market principles of supply and demand is also present with the price of goods and services fluctuating accordingly. Notably, there are occasional spikes for luxury goods but overall the economy is healthy and stable.

WoW's real world user community is widely varied in terms of ethnicity, as can be expected considering members are from numerous cultural backgrounds depending on their physical geographic location (Yee 2005). Much like children in the physical world obtaining citizenship from their birth country, membership in the global virtual community is given as a right of birth or, in this case, avatar creation. Upon arrival in Azeroth, a new user can choose to be guided through a set of tasks designed to acclimatize him/her to the interface. Users are pretty much free to do as they will after this preliminary phase. From this point, it is perfectly feasible

for a user to proceed as a hermit, one who lives alone with little to no social contact beyond interacting with others for needed supplies. Users may also choose to be a survivalist, one who disdains any and all human assistance and prefers to live solely by their own skills. These latter users live on the fringes of mainstream society, harvesting resources, supplying their own personal needs, and having only minimal contact with external groups of persons. Such individualized characterization tends to be the exception in *WoW*, as most users – approximately 89%, according to data gathered by Nick Yee (2008) – band together with others in groups called 'guilds'. Guild groups can be any size, from a handful of individuals to thousands of users. As guild size grows, delegation of responsibilities to members occurs to maintain stability. Such task delegation suggests a hierarchical social dimension to guild organization.

With grouping systems and development of status seemingly emerging spontaneously within the context of *WoW*, salient questions about community formation within cyberspace emerge. What are the factors that stimulate social bonding in virtual spaces? If these factors can be identified, do they align with any real world stimuli? Are these factors part of a finite set that can indicate repeatable results in similar situations? Accordingly, the main goal of this project is to determine the root causes of group formation in *WoW* from an anthropological perspective by experiencing this world as a guilded and non-guilded player. Clarification of such questions may elucidate the workings of virtual communities and provide insights as to how and why large virtual world populations can replicate, or diverge from, their real world counterparts.

But to what degree are virtual worlds like real-world spaces? Any 'place' is defined by some kind of built in natural morphology. There are several key qualitative differences between virtual spaces and physical spaces. As Lawrence Lessig (1999:14) points out, the key difference

between these domains is that virtual space architectures and rules are largely inorganic. In online environments, the placement of walls, ability to walk or fly, and anything else constraining or enabling user behavior is a result of carefully programmed code. Some code is in place to enable and restrict behaviors, but sometimes does so in ways unforeseen by the programmers. There are also social rules and the equivalent of laws[1] that inform and impact behaviors in virtual space. Social rules are generally informal and player enforced, and thus may change from region to region – region in this instance referring to game. An example of such a rule is the proscription in most MMORPG's against "ninja looting" or stealing items or rewards from a group kill and then promptly logging out of the game to escape the inevitable wrath of other participants in the kill. The remaining group members will usually make general announcements in a game's virtual town after such events occur. Offenders usually have a difficult time finding future hunting partners after such infractions.

Practically every online game features "mechanics," which can be broadly thought of as the incentives of group gameplay. Some groups may find that after repeated play, they like to specialize roles or interact with other users whose actions they can predict and depend upon. It seems that game mechanics and social architectures may have significant influence on resulting social formations and interactions within these virtual spaces. They possibly influence maximal group size, group incentives to remain together, and the roles necessary for group success by providing rewards that could not otherwise be obtained. An underlying dynamic may be that the very real and personal social impacts of virtual space equally reflect the coded and artificial social architectures of the game world and the individual players and personalities involved. This is not to say that all behavior is controlled from above. *WoW* players exhibit a wide range of

evolving, original, and sometimes rebellious behaviors ranging from the creation of their own computer codes[2] to the staging of mass in-world events[3]. However, the game world's underlying structure and rules have a clear influence on what kinds of users play, what they do, and how and why they interact with one another.

<div align="center">Concepts</div>

Two important ideas that real world anthropologists often consider when examining population size and group dynamics, particularly among traditional societies, are carrying capacity and fissioning. The former entails a theoretical maximum population, which can be supported utilizing a particular set of resources (Barnard and Spencer 1996:597). The latter involves the splitting of groups within a given society based on political alliances (Barnard and Spencer 1996:605).

Both concepts have important implications for understanding how groups are formed within the context of *WoW*. Carrying capacity, as discussed in more detail later, may be a primary factor behind group size in *WoW*. Resources can be a concrete limiter to guild growth. If groups cannot provide the necessary resources to maintain the comfort level of its members, then those members may go elsewhere to meet those needs. The specific level of comfort required varies from group to group. The distribution of those resources within groups, assuming a non-egalitarian society, can cause internal conflict, which may ultimately culminate in group fissioning.

LITERATURE REVIEW

Although anthropologists have, thus far, made slight contribution to the study of virtual worlds, a considerable body of literature has been generated by other researchers (Hine 2000). The Palo Alto Research Center (PARC) in California is one such research group. As a government sponsored research institution, PARC has been able to attract the leading multi-disciplinary researchers to focus on a variety of subjects. The PlayOn division of PARC, comprised of members of a variety of disciplines – including anthropology – has been at the forefront in studying the dynamics of cyber worlds for the past several years. Moreover, numerous statisticians have done data collection in *WoW* to gain better understanding of the motivations behind player choices such as job types, skill sets, and average amounts of time spent in the world, to name a few (PARC 2005).

The current literature on cyberspace with any sort of focus on virtual world interaction covers a variety of topics including economics, psychology, anthropology, and communications studies (Rheingold 2003). However, most anthropological research in this genre has focused on real world user interaction rather than those taking place in cyberspace (Mathy et al. 2002; Reed 2005). The few ethnographic studies of virtual world communities available are now rather dated and primarily focused on older generation software with minimal, if any, graphical aspects (Curtis 1997; Fischer 1999). While important sources on the methodology of virtual community research, the subject matter they deal with – namely small multi-user games that serve no more than a few dozen players simultaneously – are now woefully out of date.

David Bell (2001, 2003) and David Hakken (1999, 2003) have produced several books and papers discussing the role of anthropology in cyberspace. These works tend to concentrate

on matters of methodology and guidelines for cyberethnography rather than an actual ethnography of a specific virtual community. Significantly, they stress that cyberspace cannot be studied externally; researchers must enter the virtual communities to better understand them (Bell 2001:2). Richard Bartle, former psychologist and programmer of the first text based virtual community, has recently begun researching virtual worlds (Lastowka and Hunter 2006). His more notable work, *Hearts, Clubs, Diamonds, Spades: Players Who Suit Muds*, examines the underlying motivations of users in virtual contexts. He classifies users into four basic types: (1) achievers – those who seek items or rewards to gain prestige; (2) explorers – those who gain enjoyment from being the first to find something or gain knowledge others do not have; (3) killers – those who derive pleasure from conflict with intelligent opponents; and (4) socializers – those who care only for the interaction with others as opposed to interaction with the world itself. This division is currently used in a 30 question web-based survey, known as the 'Bartle Test', which presents users with a percentage based determination of their own virtual motivations (Bartle 1996).

Equally relevant are the works of Castulus Kolo and Timo Baur, a physicist and anthropologist respectively. Their paper "Living a Virtual Life: Social Dynamics of Online Gaming" (2004) most closely aligns with the essence of this research project in terms of scope. In this work, Kolo and Baur focus on the realm of Ultima Online, a first generation graphical virtual world that opened on September 24, 1997, and how user interactions in this virtual space carry over into physical life. Specifically, they demonstrate that it is possible to conduct research in graphical virtual worlds and that user movements and social interplay, whether they are online or offline can be operationalized.

The current state of anthropological research on cyberspace is in flux. Several graduate level studies seeking to shed light on various aspects of virtual community, and even *WoW* in particular, are starting to appear. Anthropology departments at institutions such as University of California Irvine and Massachusetts Institute of Technology (MIT) now offer courses specifically pertaining to virtual worlds. As the number of researchers focused on virtual domains increases, the quantity of published research will also grow. At this point in time, my study represents one of the first to deal with virtual group formation from an anthropological perspective and is intended to pave the way for future research.

MATERIALS AND METHODOLOGY

From a foundation of interdisciplinary reading, including psychology, sociology, and anthropology, I posit that several possible factors explain how group behaviors develop in the online and offline environment based on functionalism, interpersonal attraction, or sociobiology. These include (1) scarcity of resources, (2) safety in numbers, (3) biological compulsion, and (4) programming design. Scarcity of natural resources is a concept that implies, due to uneven distribution and mishandling, the amount of resources available is finite. Although natural resources are sometimes plentiful in the real and online worlds, the manufactured items created from these resources are often scarce. This typically leads to hoarding of the natural resources in order to make use of them for personal manufacturing or as economic 'bargaining chips' to obtain needed items and/or other materials. It would seem that safety in numbers is something of a misnomer. Membership within a group does not necessarily guarantee a single individual's survival. However, statistically it is more likely that a group moving together has a better chance for most members to survive encounters with dangerous wildlife than a single person does (Bednekoff and Lima 1998), therefore herd-mentality benefits the majority. Some animals see groups as threats, or strong enough wholes, which can deter attacks, whereas single individuals may be construed as weak or easy prey.

Biological compulsion is the possibility that social interaction is a genetic trait passed down through generations. It is possible that in early humans, and their antecedents, the compulsion to interact with others was a positive trait that was carried on through natural selective processes. Although difficult to prove at this point, there are current studies trying to determine if certain genes can cause a proclivity for certain compulsive disorders (Karayiorgou

et al 1999). If it is shown that one compulsion can be genetic, it stands to reason that others may as well – although this argues somewhat against free individual will. Programming design within the context of online gaming also denies free will. If specific programs are designed so that achievement is prohibitively difficult for individuals, then group membership becomes less a matter of choice and more one of a necessity.

<div align="center">Methodology</div>

A number of methods are utilized to collect data for this project. These include direct examination, participant observation, focused survey (see Appendix: Survey Questions), (semi-) structured interviews, and published data analysis.

Direct examination and participant observation in this project involve creating one or more avatars in *WoW* to pursue both the solo survivalist and interactive guild member paths within a time period extending from fall semester 2007 to the end of spring semester 2009. This dichotomous strategy raises a relevant question. That is, are there notable differences that make one path more viable or preferable than the other? In the guild path, glimpses may emerge about how the group dynamics contribute to an understanding of responsibility delegation. Similarly, matters concerning how status elevation is articulated may be clarified. In the solo journey, similar elucidation about levels of security and social status analogous to those of grouped players may emerge.

While participating in a guild society, opportunities for discussing individual player motivations related to personal choices intensify. For instance, why do individual players select particular groups or how do they actually achieve elevated social status, assuming status is

achieved and not ascribed? This particular method is, I feel, the most viable approach for gathering data pertinent to my thesis research objectives.

Cyberanthropology provides new and compelling opportunities for ethnographic research. In this work, I utilize methodologies that both parallel and diverge from traditional anthropological data gathering techniques. These approaches help tease out important issues related to group formation and dynamics within *WoW*.

ETHNOGRAPHY

Due to a long interest in the subject of cyber communication and interaction, I have been a resident of the virtual world of *WoW* since mid-2004. My multiyear background in *WoW* has both its benefits and its drawbacks. The main benefit is an ability to function adeptly in specific virtual contexts. Having 'cut my teeth' in these environments some years ago, I do not have to experience the hardship of learning the interface or making inadvertent social *faux pas* that novices may encounter. Less beneficially, this insider or native view raises the possibility of biased research, even during the creation of my avatar. Although I was bound by *WoW*'s programming in creating a virtual representation that visually belonged in the world, my choice of name – 'Researcher' – instantly labeled my character as an outsider. This name choice was, however, helpful in drawing attention when seeking subjects for interview, which will be discussed later.

The social world of *WoW* is divided by the programmers into three factions: the player controlled (1) Alliance; (2) Horde; and (3) artificial intelligence (AI) controlled Neutral races. This latter faction interacts equally with Alliance or Horde factions depending on prior interactions. Each player faction is further subdivided into five races – race in this case refers to an actual species differentiation as opposed to ethnicity. The Alliance is comprised of: (1) Human; (2) Gnome; (3) Dwarf; (4) Night Elf; and (5) Draenei. The Horde consists of: (1) Orc; (2) Troll;(3) Tauren; (4) Undead; and (5) Blood Elf. Each race is bilingual, speaking a common faction language and, in certain situations, its racial tongue. The two player controlled factions cannot converse with each other. Any open speech by one faction is rendered unintelligible to the other by the game software.

The final aspect of avatar creation requires the user to choose one of ten classes (see Appendix: Classes). Class, in this context, is defined as the skill set a character will use to advance in the world. Examples of the available classes[4] are: (1) Warrior; (2) Priest; (3) Shaman and (4) Mage. Not all classes are available to every race, primarily due to physiology – for instance Blood Elves, a physically frail species, would make poor warriors but their evolution near potent magical sources makes them excellent mages. My familiarity with the different classes and types of players who utilize them facilitated my choice of one that is perceived by other players as largely social and non-threatening. With these factors in mind, my 'Researcher' avatar was alternately deleted and recreated as an older male Human priest and young male Tauren druid in order to gain the widest amount of data through social interaction. Also helpful was my familiarity with both class choices, for I could effectively participate in any group-based activity and pull my own weight.

When I officially began my ingame research in August 2007, I had very limited contact with other players. I took this opportunity to travel a lone path through the world – observing other players from the edge of *WoW* civilization but not interacting with them. After a few days, I began to recognize several of the names that I encountered while previously gathering. There was no outward sign of interaction between these resource harvesters, though they could have been conversing privately. Similarly there did not seem to be very much conflict over individual herb or metal ore resource nodes. It is possible for two players to collect from the same source – an outcropping of iron, for instance, will yield several chunks of ore – but such actions are considered impolite in *WoW* society[5]. An analogous situation would be taking something out of a stranger's shopping cart at the supermarket. Technically, the item is not yet theirs, as it remains

unpurchased, but doing so would nevertheless still be considered rude. There were times when I observed two players approach the same plant or game animal from opposite directions, but very rarely did the second one to reach the item show any visible displeasure over a missed opportunity.[6]

Eventually, I headed into the larger Azeroth towns. Urban life, at first glance, seems very hectic. After spending so much time in the wilderness without much social contact, it was a bit of a shock to be in the city. I could only imagine what it would be like for those players who only came to town rarely. I decided to set myself up in local inns and greet passerby. In *WoW* it is easy to differentiate between guild and non-guild players as the former wear tags, or sometimes tabards showing their guild crest and colors.

At this early stage of my research, only two weeks in, I concentrated on talking to the non-guilded to see their views on the world. My "Researcher" designation was a successful icebreaker in engaging and conversing with other players. Many players wanted to know what I was researching. I even had several players stop me as I was travelling from one area of Azeroth to the next and ask about my name. In September of 2007, I interviewed 37 players about their choice to play solo.

The overwhelming response to the question of 'why play solo?' was politics. That is, using calculated tactics and strategies to advance individual fortunes in relation to others. Most of those interviewed had previously been guild members and felt that the only way to advance was to know the right players. For example, Raze, a lone male[7] player with a different answer, said, "I don't like people measuring my worth by what bunch I belong or don't belong with. I'm a person, not a number, so I do things my own way." Although all of the interviewees admitted

17

that life was more difficult while playing solo, there were times when being with even a small group was helpful to accomplish certain tasks.

After completing the solo portion of my research, I then initiated efforts to find a guild. As a possible consequence of *WoW*'s immense population and popularity, there are numerous external information sources about this game world. By utilizing available resources at wowcensus.com that examine guild size and race/class makeup, I narrowed down my search for a temporary guild.

I never imagined the quest to find a suitable guild would be so difficult. My previous experience in online gaming (and that of many of my interviewees as I would later find out) was that finding a good guild "just happens." The reality, however, is that any of the established guilds were either: (1) extremely tight knit groups that did not readily accept outsiders; or (2) groups so focused on achieving specific objectives that they only accept certain types of players – those that fit a specific race/class combination *and* have already achieved a level of personal success that allow them to survive in specific environments – to expedite such goals. This latter type is usually comprised of a large number of players – 50 or more – that fall into Bartle's 'achiever' category.

An example of the achiever type is Rainbow, a high level warlock who was accepted into the largest raiding guild on the server. I was fortunate enough to begin communicating with this him before his acceptance as his free time became increasingly limited afterwards. During our early interactions I noted that Rainbow was an alpha personality – very driven and extremely self confident. His stated goal was "to be the best warlock this game has ever seen." After our initial March 2008 interview, Rainbow regularly kept in touch with me. I went hunting with him on

several occasions and watched him test himself in wild scenarios of his own design. "That elite[8] is too easy by itself. I'm going to grab some adds to make it interesting" was not an unusual thing to hear, even though said elite is a creature that usually takes three people working together to kill. Most times he emerged victorious, although sometimes he did not. Every time he failed he went right back with new strategy until he won. Rainbow moved from guild to guild over the six months we communicated. In each guild he joined, he would quickly assume the top warlock position and then begin looking for another challenge. After almost five months of grinding out instances with various guilds to get better gear and hone his craft, Rainbow got his shot – an audition run with Midnight, the top raiding guild on Suramar. It was unsurprising to anyone who knew Rainbow that he was accepted and quickly ascended this new guild's ranks. What was somewhat surprising was the fact that he stopped ingame socializing. On rare occasions I would hear from him. These were usually truncated discussions that ended with something like, "Sorry man, I have no free time anymore."

Towards the end of August 2008, I logged in and found a mail message from Rainbow. His entire guild was moving to a different server for more competition. I replied that I was sorry to see him go and that I would miss our chats, although he didn't seem to have much time for them lately anyway. About a week later, I received a private chat from a character name I didn't immediately recognize. This was not an altogether unusual experience, but the tone of the message indicated that I probably knew the person. It turns out that, until I had mentioned his lack of time for chatting, Rainbow had been so engrossed in his raiding that he had completely overlooked it himself. My one offhand comment had forced him to focus on his actions and the motivations behind them. He had created this new character specifically to socialize and ensure

that he would not be tempted to go off raiding. When questioned further, he revealed that, even though he had proven he could kill bigger creatures alone, that he worked so hard and grouped to do so "because that's what's expected."

Looking at an achievement-focused guild from the outside is much like looking at a military organization. Much like the armed forces, these guilds are very stratified in a hierarchical fashion. Most often at the top of the command chain is a single leader who makes guild decisions, although I have observed several situations whereby the leadership is a duo or trio.[9] These decisions are passed down to second tier players who are known variously as officers, council, or elders. The officers implement the leaders' policies by delegating tasks to the next tier of players, the class or profession leaders. Class and profession leaders, from my personal observation, shoulder most of the guild management. It is their task to insure that guild members remain fed, equipped, and well trained. The lowest levels of the guild chain are average players who are typically assigned individual tasks such as resource gathering or training to become more proficient at their class. Failure to carry out directed tasks at any level of the chain can result in some kind of disciplinary action. This type of censuring can vary according to the nature of the offense. Punishments can range from denial of participation in guild events to loss of status within the group or even group expulsion. Group dismissal, usually reserved for those who fail either intentionally or spectacularly, can affect a player's status permanently within *WoW*.

Guild membership is recorded publicly on several websites, most notably Blizzard's official *WoW* site. Part of the acceptance process into any large guild is a 'background check' performed by designated guild officers. These officers will check the records and contact any

previous guild of which the applying player has been a member in order to screen potential troublemakers. If, for instance, Player X was dismissed from Guild Y for falling asleep when he was supposed to be safeguarding a gathering group, and wild animals summarily ate guild members, the likelihood of him/her being accepted into a new guild is very low.

This acceptance process can take quite a long time depending on the type of guild applied. Among other things, factors affecting time include (1) guild size, (2) how often the guild admits new members, (3) guild class needs. Seven of my interviewees reported that their application had taken approximately eight weeks to process. Thus, given that my new character was largely unspecialized and, therefore, unsuitable for the needed or valued positions, I had to find a different option to pursue internal organized guild observation.

Using data I drew from wowcensus.com, I contacted ten small guilds to inquire about openings. I received two promising responses from the groups known as Eternal Destiny and Nightfall Syndrome. The first guild is a recently formed group of 15 players who all knew each other offline. The officer I met, Sanet,[10] informed me that the group was trying to expand their ranks in order to penetrate some of Azeroth's more dangerous regions to exploit the rarer and less contested resources there. The second group is an already established but smaller guild with a membership of around 65. During my ingame meeting with the leader of this guild, Jade, I discovered that she was also a graduate student doing research in virtual worlds although in the field of psychology. Over the course of several more on-line discussions, I explained the nature of my research and received provisional permission to join her guild. The main stipulation was that I needed to present my case to her guild officers at their next scheduled meeting, around Thanksgiving 2007.

It was during this meeting that I began to grasp the seriousness with which guild players take their responsibilities. The officers' primary concern was that my research not harm, offend, or otherwise disturb the guild members. I was required to obtain permission from each individual member (who would inform an officer of their consent) before I was allowed to interview anyone. A secondary concern voiced by a guild member named Negara, who was in charge of guild supplies, was that I "pull my own weight [while a member]. Slackers aren't welcome in this guild. Everyone works." After agreeing to their terms and displaying my ability to perform assigned tasks (my character was a gatherer of herbs and animal skins), I was accepted as a member of Nightfall Syndrome.

Between Thanksgiving and the end of 2007, I interviewed 35 of my fellow guildmates. Many of them had left other guilds for various reasons prior to joining Nightfall Syndrome. One member, Antress, had been a high-ranking member of one of the largest guilds on this particular server. During his interview, I asked him if he would have made any different choices, and he replied, "Fuck no! I love being part of a guild. Even though I didn't particularly enjoy having to constantly be online and keeping track of everything in [guild name removed] I had tons of fun and met an assload of people. I still talk to most of them today." Antress parted ways with his former guild because real life concerns limited his time online, leaving him unable to fulfill his guild duties.

Similarly, Jade left her former guild and created Nightfall Syndrome "because I was tired of the politics and backstabbing. I'm just here to have fun and try to help others do the same." The majority of the members I spoke to had joined this particular guild because of the "friendliness of the people." I heard story after story about the lone player out hunting or

gathering and getting into a dangerous situation, then being rescued in some spectacular fashion by a member of the guild[11]. During my three months with Nightfall Syndrome, I was impressed by how well the group meshed in personality. I personally observed very little conflict between members, and Jade or other guild officers quickly resolved any difficulties I did see.

In March 2008, at the completion of my study with this particular group, I said goodbye to my guildmates with a large round of thanks and promises to keep in touch. Jade personally invited me to create a new character and permanently rejoin the guild. I thanked her for the invitation but I have to consider possible future conflicts that may arise from my researcher status in their world such as being viewed as disloyal to the guild by joining another, even though it would be for research rather than personal reasons.

My time in *WoW* following the survivalist and group paths proved enlightening for several reasons. First, it confirmed the effect of resource availability on the capacity of groups to expand and thrive. Second, it indicated that inter-guild politics is a much larger factor on group splintering than originally thought. Finally, it suggested that, although it is possible to survive with minimal social interaction in *WoW*, the majority of players find group participation preferable to the difficulties of subsistence alone.

When considered altogether these findings highlight the inner workings of group formation and dynamics within MMORPGs. Significantly, they demonstrate how the anthropological concepts related to carrying capacity and fissioning are reflected in online games such as *WoW*.

LIMITATIONS AND IMPLICATIONS

Limitations

There are several possible relevant outcomes of this study. There is always the possibility that group formation is inherently part of the game world's design. In other words, the programmers have created a funnel effect, repeatedly compelling players toward situations where the path of least resistance favors grouping for self-preservation. Unfortunately, this particular issue may be the most difficult to verify as virtual world programmers are notoriously tight lipped about the internal workings of their product, especially if it appears they are interfering with players choosing their own style of gameplay. It is also possible that group formation is a real world cultural carryover of social norms and traditions. Interestingly the global acculturation occurring from virtual interactions online may negate this effect depending on how the various cultures blend. There is also the very likely possibility that I have missed an important factor that could appear later, in which case this project would need to be revisited to incorporate new information.

Another concern is the concept of carrying capacity as applied to virtual society. In the real world, populations increase and decrease partially due to the birth of new humans and the deaths of others. In *WoW* there are no births and, although characters can die in battle, there are no permanent deaths. The analogous actions in a virtual world would be some players subscribing to *WoW* and others quitting. In many cases the subscribing could be likened even more to a family gaining a new member. The impetus for many *WoW* subscribers to join is pressure from family or friends. New players will very likely spend the majority of their time playing with the real world friend or family member and join their group/guild - community

population +1. Surveys taken in this study show the majority of players interviewed joined to play with a friend/family member. The original member, on the occasions they were available to interview, usually indicated a sense of excitement, happiness, or enjoyment while playing *WoW* and wished to share. Players who choose to quit *WoW* are the game's mortality rate. Reasons for quitting are as varied as the users quitting and are far beyond the scope of this study, but can be explored in depth in Nathan Dutton's 'Participatory Quitting'(2007). Of importance are the players who quit due to being unhappy with the game, because they can and do cause other players to quit as well. Happy players generally equates with population increases, while dissatisfied players tend to precipitate membership decline.

Originally used in biological ecology, carrying capacity at its simplest is the point at which no further population expansion can occur within an ecosystem (Odum 1959:183). Carrying capacity was marked as the upper limit in population graphs. Although referred to as 'measures' in the early texts, carrying capacity did not actually reflect hard data – rather it was inferred through observation of natural population growth curves(Ricklefs 1973:509;Kormondy 1976:112). In anthropological theory, the simplest definition is: "the maximum number of organisms or amounts of biomass which can maintain itself indefinitely in an area, in other words, a homeostatic equilibrium point" (Zubrow 1971:128). This simple version may have been possible to work with in a virtual world provided the definition of 'area' is sufficiently broad. Unfortunately the simple definition is rarely, if ever, used, the addition of qualifiers being far more commonplace.

The most common of these qualifiers specify that carrying capacity refer to a particular form of land use, or level of cultural development, specific environmental circumstances, and a

level of exploitation such that resources are not depleted (Allan 1965:469; Brush 1975:806; Cook 1972:25; Street 1969:104). Difficulties arise when trying to find analogous situations in *WoW* as exist in the real world to align these qualifications with. In *WoW*, there is no 'land use' as one would see in the real world. Players cannot choose how to use the land – with rare exception, either a plant/mineral is present in an area or it isn't. If it is, it always will be; if not then no amount of effort on the part of the player will cause that to change – ever.

Level of cultural development applies somewhat. Mounted travel abilities would affect the amount a single user could gather in a specific period of time. An area that would take six players an hour to harvest might be cleared in the same amount of time by two or three players on ground mounts, or just one on a flying mount. In addition, advanced crafting techniques could allow players to harvest items they previously could not.

In *WoW* there are no 'environmental circumstances'. There are no natural disasters, no droughts, crop blights or destructive pests. It isn't possible to deforest an area causing topsoil runoff and decreasing arable land. It *is* possible to deplete resources in an area, although this isn't quite the misfortune it would be in the physical world. If a village depletes a field of pineapple, then they have to wait until the next growing season to obtain more. If a guild harvests every lichbloom in a zone, they have to wait 15-30 minutes for it to respawn. Using carrying capacity as an abstract theory doesn't work as well as hoped when applied to *WoW*, perhaps as a method of measure would fare better.

The purpose of using carrying capacity as a "measure" is, ultimately, to gain a specific figure that represents the maximum total population a given area can support. The various data considered in this calculation include, but are not limited to: area of land, productivity,

consumption level, and individual caloric need (Bayliss-Smith 1975:285). Area of land is relatively easy to calculate once a particular resource is chosen. Productivity is of similar difficulty – that is, once the variables of travel speed, pack space, and gathering skill are known. Consumption level, if one adjusts the definition slightly, can also be determined, although it has more variables to take into account: (a) the resource, (b) is the resource being gathered for a single use or is the gatherer also a crafter that uses said resource as an ingredient, (c) is the resource in demand to the point that it is worth more unrefined than in a finished product, (d) is the resource seasonal and needed in storage. The major stumbling block in trying to use carrying capacity as a measure in *WoW* is caloric need. Characters have do not need to eat. Eating and drinking in *WoW* is an optional activity used in role-playing and/or to gain statistic bonuses for fighting. Not one character in *WoW* has ever experienced, much less died from, starvation or dehydration. Using carrying capacity as a form of measure also suffers from fundamental issues when applied to virtual populations.

The largest of the limitations in this study is the sample size. Although I spent the better part of 18 months interviewing and interacting on a personal level with *WoW* players, I may have come into contact with a few hundred individuals out of a population of millions. This small cross section of *WoW* society is very likely too small to portray a definitive example of the population as a whole.

<div align="center">Implications</div>

The possible implications of this study are far reaching, but technology has yet to reach quite so far. If sufficiently advanced virtual worlds can be quantified using standard anthropological methods, then this opens up exciting new areas of fieldwork. Imagine entire

cultures to analyze with a fraction of the difficulties of real world interaction. Material costs are

minimal, travel is practically nil unless required for face to face interviews, and health hazards

are all but eliminated.

CONCLUSIONS

At study's end, I have spent more than a year immersed in a virtual society. I actually feel comfortable with using the term society at this point. Pixels and electronic networks aside, *WoW* players interact in ways virtually the same as real world groups. There is joy, laughter, anger, tears, the satisfaction of a job well done, playful rivalry, and even deep abiding hatred. I have met players who selflessly give of themselves to others each day, and those who proudly try to exploit others. While I question just how far my field experience can go towards generating definite conclusions about virtual world group formation, I do think that, at the very least, I have laid the groundwork for future research.

I think that overall, I left my data-gathering phase with more questions than when I entered. I do feel that my relatively limited samples of player perceptions tend to support the idea that grouping together is, as one of my interviewees put it, "something people do without noticing it." I found that many times my questions, although simply stated, required a good amount of thought on the part of respondents. There were times when my interviewees would come to new realizations about *WoW* after the simplest of questions.

If being part of a group is, in fact, just 'something we do' then this may support the idea of social interaction as a largely inherent biological imperative. Alternatively it may be that players learn that it is easier to perform complex tasks with others. My interviews and observations with *WoW* players lead me to believe that the majority of these users are shaped by a herd-based mentality. I truly believe that this question needs an answer and that virtual world study might be an avenue to obtaining this answer. This point may suggest future research trajectories regarding group functions and dynamics within MMORPGs.

29

ENDNOTES

1. The Blizzard enforced rules aka "laws" can be found at
   http://www.worldofwarcraft.com/legal/termsofuse.shtml (Section 9 - **Code of Conduct**).

2. The programmers of *WoW* created a framework for the users to write small original programs to run concurrently with the game client for the purpose of enhancing and customizing individual play experience. These programs are called 'addons' and are intended to be available to the entire player base. Enterprising players created addons that provided their users with significant advantages (faster killing, GPS tracking, or automated gameplay for example) over those who did not use them. Some would even charge users real money to gain said advantages.

3. In 2006, a real world female player, a member of a Horde guild *Malediction* on the Illidan server, died of a stroke. Her ingame guild mates orchestrated a guild wide event – a virtual funeral. Unfortunately they announced the event on public forums and an Alliance guild, *Serenity Now,* orchestrated their own event – the mass slaughter of every funeral participant. This event remains one of the most viewed *WoW* videos on YouTube. (http://unrealitymag.com/index.php/2009/05/15/the-10-most-popular-world-of-warcraft-videos-of-all-time/)

4. These are only four of the ten possible class choices available to *WoW* players. The Blizzard described definitions of these classes are:

   a) Warrior - Warriors can be a raging berserker or an iron-clad juggernaut, capable of withstanding tremendous attacks while protecting their allies from

harm. They have a wide variety of attacks that do everything from cripple their enemies, to dealing massive amounts of damage in a single retaliatory blow, and enhancing their allies' fighting ability with battle shouts. They excel at fighting multiple opponents at once, gaining rage from every blow dealt or received to unleash their attacks. Warriors are a versatile class with a variety of play-styles to choose from.

b) Priest - Priests are the masters of healing and preservation, restoring their wounded allies, shielding them in battle, and even resurrecting their fallen comrades. While they have a variety of protective and enhancement spells to bolster their allies, priests can also wreak terrible vengeance on their enemies, using the powers of shadow or holy light to destroy them. They are a diverse and powerful class, highly desirable in any group, capable of fulfilling multiple roles.

c) Shaman - Shaman are the spiritual leaders of their tribes and clans. They are masters of the elements, using spells and totems that heal or enhance their allies in battle while unleashing the fury of the elements upon their foes. Shaman can wear medium armor, and even wield massive two-handed weapons in combat. They are a versatile class that can wade into battle, restoring their allies while hurling elemental bolts of lightning at their enemies.

d) Mage - Mages wield the elements of fire, frost, and the arcane to destroy or neutralize their enemies. They are a robed class that excels at dealing massive

damage from afar, casting elemental bolts at a single target, or raining destruction down upon their enemies in a wide area of effect. Mages can also augment their allies' spell-casting powers, summon food or drink to restore their friends, and even travel across the world in an instant by opening arcane portals to distant lands.

Classes not mentioned but also available are Druid, Hunter, Rogue, Paladin, Warlock, and Death Knight.

5. This mechanic, although in place at the time of the study, was changed in January 2009. Only one person may harvest from a resource node – first come, first served.

6. I did witness an altercation in which a hunter killed an animal but before she was able to skin the hide from the creature, another beast set upon her. While the first player was distracted by her current situation, another player came by and skinned her kill. When the hunter realized what had happened there was a *very* public argument in which the offending party was verbally dressed down in language that cannot be repeated here.

7. Gender is applied based upon the persons avatar. I have not made any physical observations to verify a player being male or female.

8. Elite monsters are much more powerful versions of their regular counterparts. They are typically either special quest monsters, or monsters that are found inside dungeons. They can be identified by an "Elite" tag next to their name and a special dragon border around their target window.
(http://www.worldofwarcraft.com/info/basics/monsterbasics.html)

9. This example of guild structure is meant as an overview and should not be taken to represent the structure of every large guild. A guild, as with any complex social organization, is similar to a living organism and will change, albeit slowly, to suit its environment.

10. All player names, even though they are already pseudonyms, have been changed to prevent possible identification of individuals.

11. I have to assume that some of these stories have been embellished, although it is possible that I stumbled into a group of superheroes.

APPENDIX A: CLASSES

Classes

	Death Knight	Druid	Hunter	Mage	Paladin	Priest	Rogue	Shaman	Warlock	Warrior
Class abilities	Uses runes as a magical focus to weaken others	Uses nature magic to assume animal forms	Unsurpassed tracking skills. Can tame and train beasts to fight	Spellcaster specializing in fire, ice, and arcane magics	Uses divine gifts to protect and serve	Can heal or smite with the power of prayer	Expert in stealth and the use of hand weapons and poisons	Tribal spiritual leaders. Manipulate primal elemental forces (earth, air, fire, water)	Uses power and minions obtained through demonic ritual	Master of weapons, tactics and combat arts
Constitution	Physically strong. Heavily armored	Varies dependent on animal form	Variable strength. Medium armor	Physically frail. No armor	Physically strong. Heavily armored	Physically frail. No armor	Variable strength. Light armor	Variable strength. Medium armor	Physically frail. No armor	Physically strong. Heavily armored
Primary Function*	Melee Offensive damage	Healer	Ranged Offensive damage	Ranged Offensive damage	Defensive protector	Healer	Melee Offensive damage	Healer	Ranged Offensive damage	Defensive protector
Secondary Function	Defensive protector	Ranged or Melee Offensive damage			Melee Offensive damage	Ranged Offensive damage		Ranged or Melee Offensive damage		Melee Offensive damage
Tertiary Function		Defensive protector			Healer					
	*Primary is the most common function. If secondary or tertiary functions are available, players may perform those as a primary role instead.									

APPENDIX B: SURVEY QUESTIONS

Survey Questions

Generic questions:

1. Are you now or have you ever been in a guild? If so, how did you become a member?

2. If you are not part of a guild, what are the benefits of solo play?

3. If you are part of a guild, what are the benefits of guild membership?

4. If you were to have the choice to make again, while retaining all of your current knowledge, which would you choose? (Guild vs. No Guild)

5. Describe your average daily activities in game.

Guilded questions:

1. Explain the rank system in your guild (if any). If you do have a rank system, is there any way to increase your rank? How?

2. What function/role do you play in the daily operation of your guild?

3. Are there others in your guild that perform the same function?

   3a. If so, how do you apportion tasks?

4. Are there any conflicts based on class or profession within the guild?

   4a. How are such conflicts resolved?

Non–Guilded questions:

1. What are the specific reasons behind your choice to play solo?

2. Are there times when you form temporary groups or alliances with other players?

    a. Are there any particular events or outside influences that cause you to group with others?

3. Do you visit the large cities or towns often?

    a. What activities do you engage in while in cities/towns?

4. Are there any difficulties or conflicts you've encountered while playing solo that you imagine those in a group wouldn't have?

    a. How did you resolve the conflict?

APPENDIX C: IRB PERMISSION

University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901, 407-882-2012 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Notice of Exempt Review Status

From: **UCF Institutional Review Board**
FWA00000351, Exp. 5/07/10, IRB00001138

To: **John Spottke** and **Rosalyn Howard**

Date: **April 10, 2008**

IRB Number: **SBE-08-05573**

Study Title: **Perceptions of Group Interaction in World of Warcraft™**

Dear Researcher:

Your research protocol was reviewed by the IRB Chair on 4/10/2008. Per federal regulations, 45 CFR 46.101, your study has been determined to be **minimal risk for human subjects and exempt** from 45 CFR 46 federal regulations and further IRB review or renewal unless you later wish to add the use of identifiers or change the protocol procedures in a way that might increase risk to participants. Before making any changes to your study, call the IRB office to discuss the changes. **A change which incorporates the use of identifiers may mean the study is no longer exempt, thus requiring the submission of a new application to change the classification to expedited if the risk is still minimal.** Please submit the Termination/Final Report form when the study has been completed. All forms may be completed and submitted online at https://iris.research.ucf.edu.

The category for which exempt status has been determined for this protocol is as follows:

2. Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey or interview procedures, or the observation of public behavior, so long as confidentiality is maintained.
   (i) Information obtained is recorded in such a manner that the subject cannot be identified, directly or through identifiers linked to the subject, **and/or**
   (ii) Subject's responses, if known outside the research would not reasonably place the subject at risk of criminal or civil liability or be damaging to the subject's financial standing or employability or reputation.

A **waiver of documentation of consent** has been approved for all subjects. Participants do not have to sign a consent form, but the IRB requires that you give participants a copy of the IRB-approved consent form, letter, information sheet, or statement of voluntary consent at the top of the survey.

All data, which may include signed consent form documents, must be retained in a locked file cabinet for a minimum of three years (six if HIPAA applies) past the completion of this research. Any links to the identification of participants should be maintained on a password-protected computer if electronic information is used. Additional requirements may be imposed by your funding agency, your department, or other entities. Access to data is limited to authorized individuals listed as key study personnel.

On behalf of Tracy Dietz, Ph.D., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 04/10/2008 04:34:21 PM EDT

IRB Coordinator

REFERENCES

Allan, W.

 1965. The African husbandman. Edinburgh: Oliver & Boyd.

Bartle, Richard.

 1996. Hearts, Clubs, Diamonds, Spades: Players Who Suit Muds. Journal of MUD Research, 1:1

Barnard, Alan, and Jonathan Spencer.

 1998. Encyclopedia of social and cultural anthropology. London: Routledge. http://www.netlibrary.com/urlapi.asp?action=summary&v=1&bookid=40338.

Bayliss-Smith, T.

 1974. Constraints on Population Growth: The case of the Polynesian outlier atolls in the precontact period. Human Ecology. 2:259-295

Bednekoff, Peter and Steven Lima.

 1998. Re–examining safety in numbers: interactions between risk dilution and collective detection depend upon predator targeting behavior. Proc. R. Soc. Lond. 265:2021-2026.

Bell, David.

 2001. An Introduction to Cybercultures. London: Routledge.

 2003. Cybercultures: The Key Concepts. London: Routledge.

Blizzard Entertainment.

 2004. World of Warcraft.

 2008. World of Warcraft® subscriber base reaches 11.5 million worldwide (press release) http://www.blizzard.com/us/press/081121.html

Brush, S. B.

1975. The concept of carrying capacity for systems of shifting cultivation. American Anthropologist. 77:799-811.

Carter, Denise.

2005. Living in virtual communities: ethnography of human relationships in cyberspace. Information, Community & Society. 8:2. 148-167.

Castronova, Edward.

2001. Virtual worlds: A first-hand account of market and society on the cyberian frontier. CESifo Working Paper Series 618. Center for Economic Studies and Ifo Institute for Economic Research. California State University, Fullerton.

Chandler, A. D.

2000. Strategy and structure: Chapters in the history of the American industrial enterprise. Cambridge, MA: MIT Press.

Cook, S.F.

1972. Prehistoric Demography. Addison-Wesley Modular Publications No. 16.

Curtis, Pavel.

1997. Mudding: Social Phenomena in Text-Based Virtual Realities. Culture of the Internet. Ed. Sara Kiesler. Mahwah: Lawrence Erlbaum. 121-142.

Dunbar, R.

1998. The social brain hypothesis. *Evolutionary Anthropology: Issues, News, Reviews 6*, 178-190.

Dutton, Nathan T.

2007. Participatory Quitting: Quitting Texts and World of Warcraft Player Culture.

Epstein, J. and Axtell, R.

1995. Growing Artificial Societies: Social Science from the bottom up. Brookings Institution Press, Washington.

Escobar, Arturo, David Hess, Isabel Licha, Will Sibley, Marilyn Strathern, and Judith Sutz.

1994. Welcome to Cyberia: Notes on the Anthropology of Cyberculture. Current Anthropology, 35:3. 211-231.

Filiciak, Miloslaw.

2003. Hyperidentities: Postmodern Identity Patterns in Massively Multiplayer Online Role-Playing Games. The Video Game Theory Reader. New York: Routledge. 87-102.

Fischer, Michael M.J.

1999. Worlding Cyberspace: Toward a Critical Ethnography in Time, Space, and Theory. Critical Anthropology Now: Unexpected Contexts, Shifting Constituencies, Changing Agendas. Ed. George E. Marcus. Santa Fe: School of American Research. 245-304.

Hakken, David.

1999. Cyborgs @ Cyberspace. New York: Routledge.

2003. The Knowledge Landscapes of Cyberspace. New York: Routledge.

Hine, Christine.

2000. Virtual Ethnography. London:Sage.

Karayiorgou, M., C. Sobin, M. L. Blundell, B. L. Galke, L. Malinova, P. Goldberg, J. Ott, and J. A. Gogos

1999. Family-Based Association Studies Support a Sexually Dimorphic Effect of *COMT* and *MAOA* on Genetic Susceptibility to Obsessive-Compulsive Disorder. Biological Psychiatry 45:9. 1178-1189.

Kent, Steven L.

2003. Alternate Reality: The History of Massively Multiplayer Online Games. http://archive.gamespy.com/amdmmog/week1/

Kolo, C. and Baur, T.

2004. Living a Virtual Life: Social Dynamics of Online Gaming. Game Studies 4:1-26.

Kormondy, E. J.

1976. Concepts of Ecology. Englewood Cliffs: Prentice-Hall.

Lastowka, F. Gregory and Dan Hunter.

2006. Virtual Worlds: A Primer. New York: New York University Press

Lessig, L.

1999. *Code and other laws of cyberspace*. New York: Basic Books.

Linden Labs.

2006. Second Life.

Macek, Jakub.

2004. Defining Cyberculture (v. 2). http://macek.czechian.net/defining_cyberculture.htm

Maczewski, M, M.A. Storey, and M. Hoskins.

2004. Conducting Congruent, Ethical, Qualitative Research in Internet-Mediated
Research Environments. Readings in Virtual Research Ethics:Issues and Controversies.
Ed. Elizabeth A. Buchanan. Hershey: Information Science. 62-78.

Mathy, Robin M., Marc Schillace, Sarah M. Coleman, and Barrie E. Berquist.

2002. Methodological Rigor with Internet Samples: New Ways to Reach
Underrepresented Populations. CyberPsychology & Behavior. 5(3): 253-266.

McGee, R. J. and Warms, R. L.

2004 Anthropological Theory: An Introductory History. McGraw-Hill, New York.

Miles, R. and C. Snow.

1995. The new network firm: A spherical structure built on a human investment

philosophy. *Organizational Dynamics*, *23*, 5-18.

Mintzberg, H.

1978. *The structuring of organizations*. Englewood Cliffs, NJ: Prentice Hall.

Odum, E. P.

1959. Fundamentals of Ecology. Philadelphia and London: Saunders.

PARC

2005. Collecting Data from World of Warcraft.
http://blogs.parc.com/blog/2005/05/collecting-data-from-world-of-warcraft/

Read, Dwight W. and Steven A. LeBlanc.

2003. Population Growth, Carrying Capacity, and Conflict. Current Anthropology. 44:1.
59-85.

Reed, Adam.

2005.' My Blog is Me': Texts and Persons in UK Online Journal Culture (and
Anthropology). Ethnos. 70.2 : 220-242.

Rheingold, H.

1993. The Virtual Community: Homesteading on the Electronic Frontier. New York:
Addison-Wesley.

2003. Smart mobs: The Next Social Revolution. New York: Perseus Books Group

Ricklefs, R. E.

1973. Ecology. Newton: Chiron Press.

Street, John M.

1969. An Evaluation of the Concept of Carrying Capacity. Professional Geographer.
21:2.   104-107.

Taylor, T.L. and Jakobsson, M.

2003. The Sopranos Meets EverQuest: Socialization Processes in Massively Multiuser Games. Digital Arts & Culture Streaming Wor(l)ds Conference Proceedings.

Turkle, Sherry.

1997. Constructions and Reconstructions of Self in Virtual Reality: Playing in the MUDs. Culture of the Internet. Ed. Sara Kiesler. Mahwah: Lawrence Erlbaum. 143-156.

Warcraft Worlds.com

2004. http://www.warcraftrealms.com/census.php

Wilson, Samuel L. and Leighton C. Peterson.

2002. The Anthropology of Online Communities. Annual Review of Anthropology 31:449-467

Yee, Nicholas.

2005. The Daedalus Project. 3.4

Zubrow, E. B. W.

1971. Carrying capacity and dynamic equilibrium in the prehistoric Southwest. American Antiquity. 36:127-138.