

# Beautiful to Me: Identity, Disability, and Gender in Virtual Environments

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## ABSTRACT

*This paper examines the portrayal of disability, gender, and identity in virtual communities where representation is a matter of convenience, style, or whim. A survey was conducted of groups, identifying themselves as disabled, with a focus on gender, in the virtual space, Second Life. Four distinctive categories were analyzed in this study: groups associated with disabilities or being disabled, race/ethnicity, gender, aging, and sexuality. In the “real world”, the visual cues that activate schemas serve as an explanation for the stigmas and ensuing isolation often felt by people with disabilities. In Second Life, where the visual cues are removed, users with disabilities are associating with others who identify as being disabled. Additionally, gender appears to play a role in the group (i.e. “communities”) found in Second Life. Regardless of binary gender framework, the differences between the groups that are externally classified as having some degree of disability, and those who choose to self identify, or affiliate with disability related groups, have rich import for the sociology of online communities as well as for the design and characteristics of games.*

*Keywords: Disability, Disclosure, Gender, Groups, Identity, Membership, Representation, Second Life*

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## INTRODUCTION

“On the Internet, nobody knows you’re a dog” - the famous caption of a cartoon by Peter Steiner published by *The New Yorker*, speaks to the fact that a degree of anonymity exists for users of the Internet. The mutability of identity: gender, race, and portrayal of physical identity, is considered by many a liberating condition. A great

deal of commentary exists on the “inflation of desirability” in the world of online interactions, especially in synthetic, simulated environments like Second Life where one can never be sure of the actual identity of an individual (or if indeed, it is actually a “real” individual, rather than a software simulacrum). Other virtual environments such as Facebook, while not a simulated environment, offer similar opportunities to shape or manage the representation of actual identity.

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Any discussion of identity and portrayal, online or otherwise, presupposes that there is an “other” – the audience, community, or observer who perceives the individual. While community has historically been geographically and physically constructed, online communities are generally communities of self selection rather than automatically attributed membership by virtue of locale (Baker & Ward, 2002). This paper examines the nature of virtual disability, gender and identity portrayal, in which representation is a matter of convenience, style or whim, within the boundaries of the community. To explore this idea, we conducted a survey of self-identified groups (i.e. communities), in the virtual space, Second Life. The Second Life platform was chosen because it offers unique opportunities for self expression and identity development within an immersive environment. In Second Life environments personal and group identity are related mainly, but not solely, to the ‘avatar’, embodiment with interactive and immersive characteristics (Bortoluzzi & Trevisan, 2009). For this study, immersivity is crucial because “digital environments allow us to transform our self-representations dramatically, easily, and in ways that are not possible in the physical world,” which is of even greater significance because “Collaborative Virtual Environments allow [for] geographically-separated individuals to interact via networking technology, oftentimes with graphical avatars” (Yee, 2007).

The importance of this work is twofold as well as cyclical. First, the development of a theory, Disability Schema Theory, an extension of Schema Theory, will provide future researchers a foundation for continuing the discussion regarding both gender and disability in both the virtual and real world. This continuation could lead to what we refer to as the “level playing field” in the real world, similar to that which exists in the virtual world. Secondly, any movement toward understanding what causes stigma for people with disabilities including gendered stigmatization, can be used to help reduce that stigma therefore creating a world where people with disabilities are no longer marginalized and will be considered equal members of the

society in which they live. Additionally, while this shifting kaleidoscope of identity is itself of interest, a more interesting phenomenon is one of individuals who choose to make apparent and explicit, conditions of their disability. This paper explores alternative expressions of gender and disability that occur in a virtual environment.

## **Identity, Disability, and Gender in Virtual Environments**

“Cyberspace has been cast as a post gender, post-human world, where the ‘lived’ body or ‘meat’ is be [sic] left behind in the real social world. It has been suggested that there is an absence of a physical body in cyberspace, and instead, a disembodied free floating electronic/cyber self or cyber-persona manifests itself in netspace.” (Ward, 2001, p. 189).

Published research typically has focused on either gender representations or disability representation in virtual environments, but rarely both. The extension of the digital divide to encompass the idea of a disability divide is further hindered by the minimal representation of women with disabilities. Yet in one aspect of digital “life” more than twenty percent of gamers are believed to have some degree of functional limitation (Ingham, 2008).

Research involving virtual environments has often included the study of individuals with disabilities, typically of individuals who frequent chatrooms and other venues of discourse constructed to address the interests of the disabled community. Little attention, however, has been paid to the inclusion of users with disabilities, specifically women; in general non-targeted virtual environments open to everyone, such as Second Life. Additionally, the question of how individuals identify themselves in these virtual environments has gotten little attention in the literature.

This paper reports on an exploration of the representation of gender, disability and identity in Second Life in order to develop a framework for understanding nuanced communities of communication in virtual environments. The framework draws upon Schema Theory,

coupled with literature on online identity and representation to provide the groundwork for our empirical study. Specifically, Gender Schema Theory, a prior extension to Schema Theory is discussed as well as a new extension, Disability Schema Theory.

## Schema Theory

Schema theory articulates the process of creating a perception built on the preexisting schema (i.e. cognitive structure) coupled with new incoming information (Bem, 1981). According to Bem, a schema helps to shape an individual's perception allowing individuals to attach meaning onto vast amounts of incoming information. A schema develops after an individual repeatedly observes similar events (Fiske & Taylor, 1984). Eventually the observed characteristics and behaviors will be incorporated into a preexisting schema or a new schema will be developed (Perry, Davis-Blake, & Kulik, 1994). Park and Hastie (1987) found that schemas can be learned through explicit instruction as well as vicarious observation. Perry et al. (1994) noted that if an individual repeatedly observes exceptions to existing schemas, a new *subschema* may be developed. Subschemas allow an individual to retain their original schema while allowing for a newer schema incorporating the observed variations (Perry et al., 1994). Once schemas are formed, they are stored in long term memory and may be used in conjunction with other schemas, or alone, as the basis for judgments and decisions based on judgment (Perry et al., 1994).

Bem (1993) defined gender schemas as schemas developed within individual role expectations based on the biological sex of the individual under observation. Creation of a gender schema usually occurs when an individual observes or is taught that certain behaviors are attributed to one specific gender (Perry et al., 1994). Although the formation of gender schemas begins at a young age, as individuals mature cultural differences may challenge the attributes of those schemas (Lemons & Parzinger, 2007). In addition to cultural differences, an individual may challenge or reject traditional

gender schemas and thus become gender non-conformists who form and use non-traditional gender schemas when processing information based on observed behaviors, thus rejecting traditional gender roles (Bem).

Bem (1993) noted that there are two antecedents to gender schema theory; social learning theory and cognitive-development theory. Social learning theory informs gender schema theory by noting that discourse and the social structures of a culture help determine the gender schemas that are formed by a developing child. Bem added that cognitive-development theory helps to explain an individual's self-identity constructed using the gender schemas formed as a child.

The following quote from Latour illustrates the construct of a schema based on the observation of a person with a gun:

*You are a different person with a gun in your hand. Essence is existence and existence is action. If I define you by what you have (the gun), and by the series of associations that you enter when you use what you have (when you fire the gun), then you are modified by the gun – more or less so, depending on the weight of the other associations that you carry. This translation is wholly symmetrical. You are different with a gun in hand; the gun is different with you holding it. You are another subject because you hold the gun; the gun is another subject because it has entered into a relationship with you (Latour, 1994, p. 33).*

If in place of the gun, we substitute a wheelchair, the person becomes associated with the wheelchair therefore informing the construction of a schema based on a perceived condition or disability, extending the general schema theory to construct a disability schema theory. If gender schema theory lends itself to the internalization of gender expectations based on the biological sex, then disability schema theory could lead to the development of internalized notions derived from the observation of individuals with one or more (visible) disabilities. This of

course becomes more complicated when dealing with non-visible disabilities, or when the observer is aware that conditions of disability exist, but they are not readily apparent. For example consider the dissonance that can occur when observing an individual who parks a car in a “handicapped parking” spot, has plates or a tag identifying them as having a disability, yet apparently walks “normally” into a store.

### **Online Gender Identity**

The notion that online identity can be more fluid than “real life” identity is pervasive in the literature and takes into account the different ways in which attributes of identity including gender, age, religion, cultural heritage, etc., manifest in online as opposed to physical settings (Bowker & Tuffin, 2007; Whitley, 1997; Suler, 2002; Nowak & Rauh, 2005) Because of the relative absence of objective identifying information or cues, and the use of text based communication, individuals can depict themselves in whatever form they choose, allowing freedom from embodied identities (Coates, 2001). Furthermore, the lack of cues can create an environment where individuals can explore alternative aspects of identity, including gender (Roberts & Parks, 2001). In computer mediated environments, decisions regarding gender presentation are an important element in an individual’s overall self-presentation (Samp, Wittenberg, & Gillett, 2003).

Online gender identity does not necessarily map onto the biological “sex” or gender of the user. Roberts and Park (1999) reported that users may choose to gender swap when representing themselves in the computer mediated environment. However, research regarding the degree or frequency of online gender swapping has been inconclusive. While Roberts and Parks found that between forty and sixty percent of users admitted gender-swapping, Samp et al. (2003) reported that only 28 percent of their respondents had admitted to portraying themselves as the “opposite” gender. Samp et al. (2003) had hypothesized that individual’s

with strong gender schemas (either masculine or feminine) would be more likely to gender swap in a computer mediated environment than those who were gender neutral (more androgynous). Kacen (2000) reported that women have a greater tendency to mask their true gender identity in a computer mediated environment. Kacen (2000) added that since physical appearance can be so significant in the formation of gender schemas, online gender identity may be superfluous. Computer mediated environments free the user from the necessity of adopting normative binary gender rules and presents the user with fluidity regarding the presentation of one’s online gender identity.

### **Online Disability Identity**

“Models of disability provide a framework for understanding the way in which people with impairments experience disability. They also provide a reference for society as laws, regulations and structures developed that impact on the lives of disabled people. There are two main models that have influenced modern thinking about disability: the medical model and the social model.” (Open University, 2006) According to Thoreau (2006), the often criticized medical model defines disability as sickness or impairment and a deviation from normality. Thoreau stated that the social model is defined by the barriers, mental and social, imposed by a nondisabled society on people with disability. These barriers limit or remove the opportunity for community and often lead to oppression (Bowker & Tuffin, 2002), particularly for people with disabilities for whom the presence of a disability can be largely undetectable. People with visible disabilities (those that can be seen), are often marginalized and undervalued in society (Bowker & Tuffin, 2007), and those who live with autism and other cognitive disorders suffer additionally from a lack of awareness on the part of people unfamiliar with such disorders. Individuals develop schemas through observation which can lead to social stigmas for people with disabilities (Goffman, 1986).

However, in computer mediated environments people with disabilities have the opportunity to “level the playing field” by controlling the image that is “viewed” (Bowker & Tuffin, 2003). Functioning in these environments can offer people with disabilities the opportunity to escape from the isolation and stigma frequently associated with disability (Dobransky & Hargittai, 2006). By operating in a medium where visual perceptions are not the primary element, physical disabilities can be masked leading to what Bowker and Tuffin (2006) described as a “more positive, socially valued identity” (p. 64). However, prejudices are not removed by computer mediated environments. In fact, the “level playing field” provided by the lack of visual cues creates an option for people with visible disabilities that they are not afforded in “real world” situations. Instead, in the computer mediated environment, people with disabilities have the option or choice of whether or not to disclose their disability. This choice can either mitigate much of the prejudice or can put situational control into the hands of people with disabilities. This led us to our first research question:

RQ1. Do people with disabilities identify as disabled in Second Life?

Computer mediated environments offer people with disability the capacity to represent their identity based on personal choice, independent of any actual physical characteristics, and thus the ability to counter the potentially negative schemas they face. In a discourse analysis study, Thoreau (2006) found that people with disability tended to represent themselves as disabled through the use of humor and irony using both nonmedical and generic descriptors. Therefore the decision to disclose the presence or absence of disability is controlled by the individual and is only considered relevant when it is specific to the context of the conversation (Bowker & Tuffin, 2002). Bowker and Tuffin added that removal of the conceptual presence

of disability was seen as positive by respondents who indicated a greater level of acceptance after disclosing a disability, likely due to the absence of visual cues in computer mediated environments. By operating in an anonymous environment, these respondents are able to experience an identity that offered a level of “able bodied-ness” and acceptance not experienced outside of computer mediated environments.

Although there is some literature on the characteristics of participation of people with disabilities in online settings (Curran et al., 2007) very little extant literature appears to exist that captures the actual characteristics of individuals with disabilities online. In attempting to provide context and some degree of linkage with the “real” (i.e. “non-virtual world”) we draw upon Cardinali and Gordon (2001) for analogous statistics. They note that much of the prior research regarding gender and disability has focused on males in both disability studies as well as feminist studies (Cardinali & Gordon, 2001). Cardinali and Gordon (2001) also provided the following statistics:

- Men with disabilities are nearly twice as likely to have jobs as women with disabilities
- 42% of men with disabilities are in the labor force but only 24% of women with disabilities
- 12% of women with disabilities have full time employment as opposed to 30% of men with disabilities
- Women with disabilities who are employed full time earn 56% of what full time employed men with disabilities earn.

In the absence of a robust “census” of people with disabilities online, we suggest the statistics above as a surrogate for online participation. This gap in the research only serves to highlight the need to level the playing field through computer mediated environments. Further research is clearly needed to not only understand the role of computer mediated en-

vironments as the great equalizer, but to find ways to translate that into opportunities for women with disabilities in the physical world.

### **Characteristics of the Second Life Platform**

At first glance, it would appear that online virtual worlds with their emphasis on 3D graphics and complex interface controls have little to offer people with disabilities. On the contrary, virtual worlds serve as a form of augmented reality where users transcend physiological or cognitive challenges to great social and therapeutic benefit. A number of intriguing developments exist within the accessibility sector, particularly for users of Linden Lab's Second Life framework: haptic input devices for the blind, virtual regions developed according to universal design principles, communities dedicated to people with cognitive disorders, the use of the avatar as counselor, applications in higher education, and customizable personae that either transcend or represent a disabled person's self-identity. Therefore with the increased ability to participate on a "level playing field," it is possible to engage in interactions with other inhabitants in a way in which specific physical characteristics are a matter of preference rather than default of visually apparent as they are in the real world. As noted above, the fact that people choose to portray themselves as "augmented" or enhanced is not surprising, but that individuals would intentionally portray themselves as disabled, potentially facing the consequential results of negative disability schemas, is of interest, which led us to our second research question:

RQ2. Given the lack of visual cues, are there groups created in Second Life that are specific to people with disabilities? Are any of these groups gendered?

When Second Life achieved mainstream attention at the close of 2006, collective attitudes regarding virtual worlds were still evolving. These graphical landscapes, built from bytes of code and populated by self-made identities

called avatars, offered virtual residents the opportunity to construct new forms of social and physical interaction. A virtual world is a simulated three-dimensional (3D) environment accessed through a computer. More than a flat (2 dimensional) website and utilizing the same technological aspects as games; virtual worlds are typically accessed via the Internet. Participants then interact with their environment, and with other users of the environment through a presentation layer consisting of such features as animated avatars, customizable objects, instant chat messaging and voice-activation. The use of virtual worlds has been explored for many purposes spanning entertainment, socialization, education and commerce industries.

Virtual worlds are sometimes considered an extrapolation of "serious games", a software or hardware player application developed with gaming technology or design principles, intended for use beyond pure entertainment (Hinton, 2006). These programs have been developed and deployed for such purposes as education, marketing, advertisement, workplace training, or health awareness. The main difference between a "game" and a virtual world is in the objective: game players expect to be confronted with obstacles that are intentionally built into the software, while users of virtual worlds seek to engage and navigate their way through an environment empathetic to achieving user-centered goals (Smith, 2009).

Second Life, the virtual world platform developed by Linden Lab, has attracted the most wide-spread attention and name recognition outside of specialized gaming communities. While other applications such as Blizzard's World of Warcraft, boast greater numbers of simultaneous users, they tend to focus more on goal-driven gameplay rather than on social interaction (Hinton, 2006). There are other multi-user virtual environments, for example the IMVU platform, that provide such tools for peer-to-peer collaboration as 3D messaging, personalized profile pages, developer tools and group forums (Caoili, 2008).

From an assistive technology standpoint, it would appear that gaming interfaces and

virtual worlds have little to offer people with disabilities. Consider that the experience is largely visual in nature, with multiple interaction paradigms offering deep levels of customization. User inputs often require extensive hand/eye coordination to precisely control an avatar's movements. Some applications use non-persistent sound and fading messages to deliver information; for users who are unaccustomed to this level of multitasking, the resulting cognitive load can be topically severe.

It is interesting, then, that a new form of social literacy has begun to take shape. There exists a vital demographic of virtual world participants with a wide range of disabilities: visual impairments, motor skill disorders, degenerative illness, limited mobility, and cognitive difficulties. Many of these users utilize virtual technology to great social and therapeutic benefit. For these users, avatar-driven 3D environments serve as more than a game (Deeley, 2008). Virtual worlds operate as a form of augmented reality, one where it's possible to transcend a user's physiological or cognitive challenges into something extraordinary.

### Types of Virtual World Users

To fully understand this emerging paradigm in assistive technology, it's important to recognize how people use virtual world gaming software. Users can fall into any of three categories: *augmentationists*, *immersionists*, or *experimentalists* (Duranske, 2008). All have applications of relevance to people with disabilities. Augmentationists view the virtual world as a means to enhance their real life existence. They view their virtual personae as extensions of their identities, and they are more willing to disclose their real life identities to others in-world. Many who conduct business online such as attorneys, who practice aspects of virtual law, feel comfortable representing themselves with an avatar that closely resembles their real life appearance (Duranske, 2008).

Another practical example of an augmentationist would be someone with a visible disability who chooses to represent him- or

herself as authentically as possible. This user will go so far as to outfit his or her avatar with a wheelchair, dark glasses, a guide dog, or other visual attributes representing their disability.

First-time users tend to start off as pure augmentationists, but they do not remain that way for long (Duranske, 2008). Within a short time, it's possible for a person to become proficient at making choices regarding her or his avatar's appearance and functionality. Some users with disabilities will take advantage of this feature by making the experience easier to navigate. For example, a visually-impaired resident of Second Life may dress her avatar in light colors to help visually track her location on the screen.

It is at this stage that augmentationists become immersionists – people who view virtual worlds as an alternative parallel to their real life existence. These types of users generally keep their real life identities separate from that of their avatars, with the idea that the two streams will never cross paths (Duranske, 2008). An example of an immersionist might be someone with Aspergers syndrome who exploits the anonymity of virtual worlds to practice social interaction skills.

Some avatars employ radical means to differentiate their virtual experience from real life, choosing to discard any attributes common to disability. Rather than depict themselves as “broken” with wheelchairs and canes, they make themselves available for such enjoyable activities as walking, running, surfing, dancing and riding horseback. For people with disabilities that prevent them from engaging in these real-life physical activities, virtual worlds offer a unique opportunity for users to simulate the experience at an immersive level. Interestingly, virtual reality applications have been used to augment rehabilitation therapy for patients struggling with the loss of a limb. Research demonstrates that the brain's perception to pain can be reduced when it is “tricked” into operating a replicative appendage (Ramachandran, 2006).

A third group of virtual world users are the experimentalists, who use virtual worlds as a controlled laboratory to conduct training or

educational sessions. Experimentalists usually take the form of educators and trainers, or perhaps a counselor working with patients dealing with substance abuse. Another example of an experimentalist might be someone who seeks to gain empathy by undergoing a simulated experience. The Sacramento Mental Health Center in Second Life, for example, provides a virtual replica of their real-world facility, including an authentic representation of a schizophrenic episode. With visual hallucinations and subliminal voices providing an accurate depiction, the site provides visitors an opportunity to directly experience what someone with schizophrenia may go through (Deeley, 2008).

Given that so many different types of users exist in Second Life, our third research question seeks to understand whether or not people in Second Life (avatars), group together/associate with other similar “bodied” avatars. Therefore, our third research question asks:

RQ3. Based on search term identifiers, do people appear to associate with others who identify with specific characteristics (i.e. disabilities) or genders when the cues that reinforce schemas are not apparent or observable?

## Methodology

In order to explore the identity representation of disability as well as gender identity in a virtual world environment, a survey was conducted of member groups in Second Life, the virtual world chosen for this study. Given the size (in terms of number of participants), malleability, and the presence of formal agencies and groups associated with specific groups/causes currently using the platform, it was the most representative research environment. Specifically, the survey was designed to answer the following research questions:

RQ1. Do people with disabilities identify as disabled in Second Life?

RQ2. Given the lack of visual cues, are there groups created in Second Life that are

specific to people with disabilities? Are any of these groups gendered?

RQ3. Based on search term identifiers, do people appear to associate with others who identify with specific characteristics (i.e. disabilities) or genders when the cues that reinforce schemas are not apparent or observable?

The data for this analysis was collected through the above activity between March 30th and April 15th 2009, using an avatar account maintained by one of the study’s authors.

The Second Life platform is particularly useful as it offers the freedom of representational choices that range from near correspondence to the real world to complete abstraction. This range of use cases provides a variety of unique perspectives spanning multiple types of disability: vision, motor skill, mobility and cognition. In essence, Second Life chose to mirror the real world in many important aspects in order to provide a place that feels familiar and comfortable, while granting freedoms not possible in the real world (Ondrejka, 2004). Interestingly, while Second Life was designed to mirror real life, users can choose a completely different experience. Creation of an avatar as representation of one’s self can take on dimensions not possible in the real world. For instance, people with visible disabilities may choose to create an avatar with no disabilities. The question then becomes, if the visual cues that reinforce schemas are removed, how do people identify themselves with respect to gender or disability? Do people choose to associate with others who are similarly abled or gendered when the cues that reinforce schemas are not visible? Given the lack of visual cues, are there groups created in Second Life that are intended to attract people that identify as disabled? Are the groups specifically gendered?

Methodologically, concerns have been raised in the literature about the validity and complexity of conducting behavioral research solely within virtual spaces. Yet, many virtual worlds like Second Life present evolving cultures with their own social institutions that

are becoming more significant to society at large (Noveck, 2004). A growing number of researchers have demonstrated the feasibility and importance of developing research methodologies that keep up with the realities of technological change (Boellstorff, 2008). Therefore, ethnographic and other empirical research and analysis are critical to understanding how group identities are different in immersive virtual settings than they are in the traditional “real” world. This study surveyed groups that identified themselves as having a disability and focusing on gender identity, in addition to referencing minority and sexual orientation identity groups for comparison. One of the issues present in this study relates, iteratively, to the focus of the study - self-*disclosure*. For instance, in the subject platform one of the rationales for the “game” of second life is the ability or rather, the characteristics of malleability of representation of character. We are interested here in capturing evidence of the phenomena of representing oneself in a manner, which, in the real world, disability, is characterized as a functional limitation. The fact that individuals choose to represent themselves in a realist representation rather than in a fantasy manner can be somewhat counter intuitive relative to the typical practice. Having established that, indeed people choose to express themselves as they *\*are\** rather than as what would be considered “typical” is a first and necessary step in understanding the phenomena. We would expect that subsequent research would involve in-world ethnographic interviews individuals to develop robust understanding from subjective perspective.

There are an estimated 185,000 groups in the Second Life platform, which has a population/user base of approximately 16.5 million registered users (Linden Labs, 2009). It should be noted that this figure potentially inflates the number of unique users that log into the platform every 60 days (1,353,522 users within 60 days of the April 17<sup>th</sup> log-in) (Linden Labs, 2009). For context, the *Encyclopedia of Associations* has information on over 135,000 nonprofit organizations worldwide (Encyclopedia of As-

sociations, n.d.), although obviously an identity group and a recognized organization are not by any means equivalent.

The groups selected for this study were identified using the search feature designed into the Second Life architecture. The tool allows a user to search on specifically designated entities or keywords. The keyword/search engine approach has been used successfully in a number of different applications, especially in exploratory designs. (Beard et al., 2009; Fang & Lee, 2009; Norris, 2009). Through the search function one can conduct searches for services, groups, individuals, places, events, etc. Group database records in Second Life contain standard information: a group charter (can vary in length); identification of group owners and visible members; a log of all notices distributed by the group in the last 14 day time frame, and any land associated with the group. This latter condition reflects the fact that in order to purchase land from Linden Labs, a group must be formed to which the land is then deeded. Once the search results were returned, the mission statement of each group was read to verify that the group’s main focus pertained to the keywords that were searched. For a group to be included (indicating that there was a degree of relationship to one of the target variables, “disability” or “gender” or “sexuality”) several criteria had to be met:

1. Within the name and/or charter of the group, does the group use the terms “disabilities,” “disabled,” or suggest the presence of “handicap or impairment”?
2. Did the group have more than one member; and is the group English based (non-English terms were not used in the search).
3. Is gender specifically noted by group members?

## Data Analysis

The data collected for this study was strictly descriptive in nature. For this foundational study, the individual cases were categorically sorted within and analyzed for patterns within the groupings of the keywords used for the search.

Table 1. Key search terms by group

Gender	Race/Ethnicity	Disability	Aging	Sexuality
Female Woman Male Masculine Transgender	African American Hispanic Latino Islamic Muslim	Disability Disabled Handicap Impaired Muscular Dystrophy Aspergers Blind Learning disorder Aging Wheelchair	Retired Aging Geriatric Geezer Old	Homosexual Heterosexual Bisexual LGBT Gay Lesbian Queer

Four distinctive groupings were analyzed in this study: groups associated with disabilities or having a disability, race/ethnicity, gender, and sexuality. Table 1 shows the search terms used for each of these group designations.

Basic average and summation tests were conducted to analyze for patterns that would signify that deeper analysis is warranted. Simple comparison tests were also conducted on membership statistics within these groups (both the groups that were returned during the search and the groups that actually met the criteria).

## Results

### Comparison of Groups

The total number of groups that were returned within the search varied greatly. The numbers ranged from the Race/Ethnicity grouping returning 101 keyword matches to 1283 matches based on the Gender keywords. The percentage of these groups that actually passed the search criteria discussed above also varied greatly. The Sexuality grouping had the highest passage rate with 87.8% of groups originally found to represent the criteria specified in the questions above. The Aging group had the lowest passage rate of 18.9%. Figure 1 depicts this variance.

Figure 2 highlights that the Gender and Sexuality groupings have a greater representation within the Second Life architecture. The Disability groups represented only 5% of the total number of groups that passed the search

criteria filter, while the Aging group represented an even smaller amount, 2% of the total number of groups returned in the search.

Figure 3 depicts the comparison of the average size of the groups within the Second Life architecture, taking into account that groups with only one member were not counted in this analysis.

### Disability Grouping

The disability-identified groups had a great deal of in-group variance. Compared to the whole group, the disability group was significantly less represented as compared to the gender and sexual orientation groups. The tables below highlight these trends. Table 2 highlights the specifics of the disability associated groups analyzed for this paper. Table 3 gives a more nuanced description of the specific groups that represent the disability grouping: a total of 10 keywords were used for the data collection. Of the 65 groups that met the search criteria, the average group size was 30.75 members. There was a difference of 53.3 members between the lowest and highest average number of group members.

In comparison, an estimated 19.4% of non-institutionalized civilians in the US (approx. 48.9 million people) have a disability with about half of these individuals being considered to have a severe disability (Kraus, 1996). According to Mobility International USA (2009) and the United States Access Board, there are at least 53 formal disability groups (real life groups) in the United States. When comparing estimated

Figure 1. Comparison of search returns vs. actual number of groups that met the search criteria

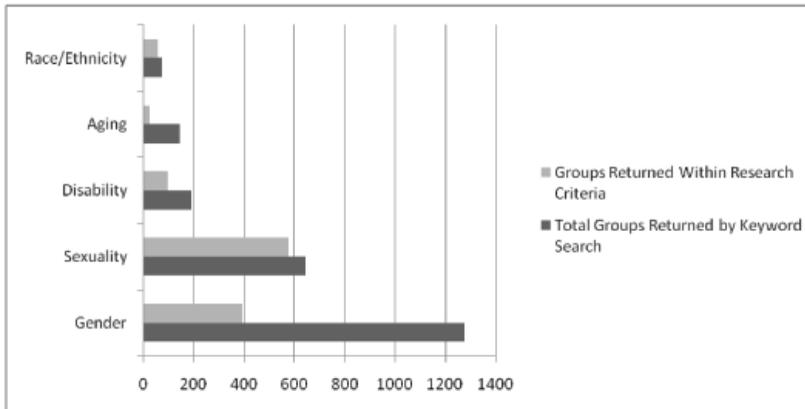
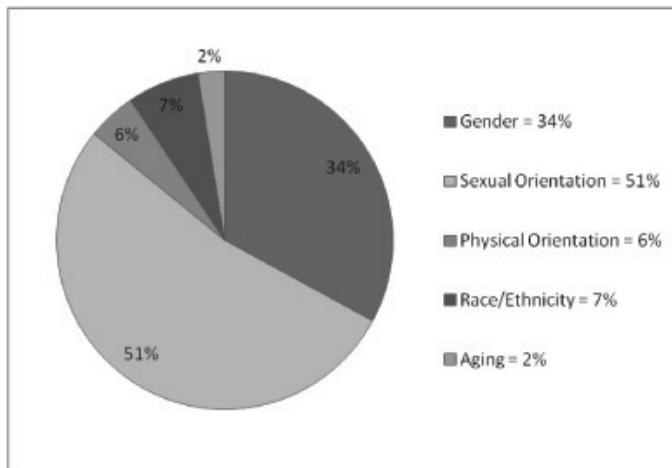


Figure 2. Percentages of groups found within search criteria based on keyword



populations to numbers of estimated disability groups, the numbers are striking. There is one “real life” group for every 5,000,000 U.S. citizens while there is one group for every 215,000 Second Life citizens, who may reflect the comparative ease of identification, and formation of communication based groups in a virtual setting.

For comparison, the same analysis for disability groups was applied to one of the comparator groups. In the physical world, we find that groups representing the Lesbian, Gay, Bisexual, and Transgender (LGBT) in the U.S. are estimated to be around 135 (rough

estimate of formal groups by the US Small Business Association and the National Gay and Lesbian Task Force Foundation, 2009). When comparing estimated populations to the number of estimated LGBT groups, the numbers are even more polarizing than the disability numbers. There is one group for every 2,000,000 U.S. citizens while there is one group for every 29,000 Second Life citizens. While this pattern seems enlightening, further data collection and analysis needs to be obtained, specifically in relation to groups sizes of the real-world groups, so that populations can be

Figure 3. Average number of avatars in associated groups

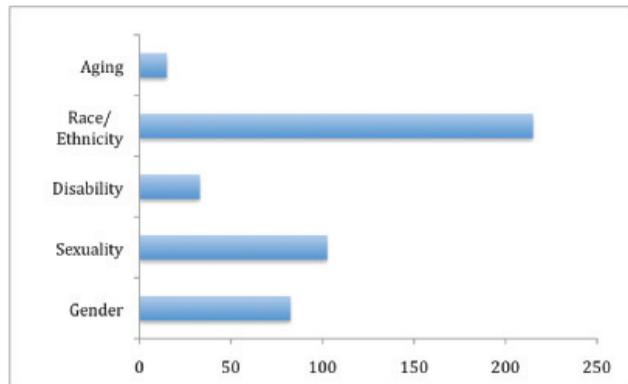


Table 2. Disability group statistics

Total number of groups returned	166
Total number of groups meeting criteria	65
Average population of group	30.75
Std Deviation	57.998

Table 3. Disability group specific data

Key Term	Total number of hits returned	Total number of hits meeting the specified criteria	Average group size
Aspergers	2	2	18.50
Disability	67	14	63.71
Disabled	5	5	50.40
Handicap	23	21	54.57
Impaired	5	5	10.40
Muscular Dystrophy	7	4	12.25
Blind	35	2	25.00
Learning Disorder	11	6	42.20
Aging	7	2	5.50
Wheelchair	4	4	25.00

normalized in order for a formal comparison to be made.

Given that this study is exploratory, future research might probe this condition further. The use of a multimodal system of in-world surveys, and interviews, in addition to potential social

and cultural modeling and potential software analysis tools appears to be an appropriate next step. The use of purely descriptive data and statistics, while highlighting patterns, does not give us enough to claim there is a statistically significant correlation that exists.

## CONCLUSION

Not surprisingly, if virtual places are any reflection of underlying social construction the number of individuals gendered or otherwise who choose to represent themselves as having a disability is relatively small. The meaning of this observation is somewhat complex to interpret as it is uncertain as to 1) whether this suggests that people with disabilities choose to alter their identity based on characteristics, or abilities (or lack thereof), or alternatively, 2) whether people with disabilities are under-represented in the virtual/gaming population, or both. Statistics on income and information and communication technologies (ICT) use, suggest that people with disabilities have a much lower rate of Internet use, and it would be a valuable exercise to conduct exploratory research to examine the relationship between income and other accessibility issues and the lower Internet usage rates among people with disabilities (Dobransky & Hargittai, 2006).

Of particular interest, this work developed a foundation for future disability research by extending schema theory to include disability. This new extension, disability schema theory, has both online as well as “real life” application. Application of disability schema theory to interpretation of Second Life research seems to suggest similar perceptual impacts that also occur in the physical world. In the “real world”, the visual cues that activate schemas can serve as an explanation for the stigmas and ensuing isolation often felt by people with disabilities.

In Second Life the visual cues are removed unless a conscious effort is made to create a representative avatar. In the case of an avatar created without disability, study results suggest that Second Life users with disabilities are still associating with others who identify as having disabilities. This finding helps us to probe research question number three: Based on search term identifiers, do people appear to associate with others who identify with specific characteristics (i.e. disabilities) or genders when the cues that reinforce schemas are not apparent or observable? This is an area that is ripe

for future research. In world interviews might probe users (avatars) regarding their actual disability status/identity in order to answer questions regarding the choice to either identify or not identify as a person with a disability. Additionally, in world interviews might seek to answer questions regarding decisions to associate with others who identify with similar disability status, especially in an environment where visual cues are removed. Because of the exploratory nature of this study, this was in fact a limitation of the current study.

In response to research question number two: Given the lack of visual cues, are there groups created in Second Life that are specific to people with disabilities? Are any of these groups gendered? Gender appears to play a role in the groups (i.e. “communities”) found in Second Life. This is evident in the number of groups that were identified using the keyword ‘gender’. Interestingly, groups such as “Gimp Girl” are specific to people who identify as both female and disabled. In fact, avatar wheelchairs are available for purchase at the Gimp Girl site and a number of avatars exist that are depicted as wheelchair users. Future research might delve further into refining both gender and disability schema theory in an effort to determine their ability to explain the choices an individual makes when deciding whether or not to identify (online) as a person with a disability as well as within the traditional binary gender paradigm. It is especially interesting to note that groups exist as a “safe space” for those who identify within the criteria of the group under review. Groups such as Gimp Girl exist not only in Second Life, but also have a presence on the Web as well as on the social networking site, Facebook. Another area for future research would be a replication of this study within social networking sites such as Facebook and MySpace.

As noted above, research suggests some 20% of gamers have some degree of disability (Faylor, 2008; Ingham, 2008) in contrast the results of our empirical examination of membership of disability related groups shows that < 1% of total groups in-world self-describe or

affiliate with disability. This is an interesting answer to research question number one: Do people with disabilities identify as disabled in Second Life? A reasonable response to these relatively stark observations might be to conduct additional in-world survey and interview research, in Second Life as well as other virtual platforms, with both avatars that self-identify as disabled, as well as with individuals who choose not to so identify but who may in fact be disabled. Another interesting question for future research is ‘Why do some people with disabilities choose to gather within gender specific Second Life sites?’ We believe that both within and outside of the binary gender framework, the differences between the two disability identified groups, those externally classified as having some degree of disability, and those who choose to self identify, or more accurately affiliate “visibly” with disability related groups, have rich import for the sociology of online communities as well as for the design and characteristics of games. More practically, the applied value of this inquiry is in the potential for the development of new employment and community engagement applications as well as providing suggestions about new approaches to developing virtual and online environments to facilitate enhanced participation in society. Additionally, any research that serves to lessen the stigma felt by those who identify as disabled and those with visible disabilities will help to “level the playing field” in the real world, similar to that which exists in virtual environments such as Second Life.

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