EMPOWERING PEOPLE WITH DISABILITY: AFFORDANCES OF VIRTUAL WORLDS AND SOCIAL MEDIA

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ABSTRACT

Information and communication technologies (ICT), including the Internet and a plethora of social networking applications, are important for people with lifelong disability in their day-to-day life. Such technologies offer possibilities and opportunities for this group of people to enjoy a range of new social interactions. Through the internet, people with disability are able to meet and interact with other individuals who struggle with the same issues or meet people sharing their interests.

Through this research, we compare empirically identified virtual world affordances for people with disability, to possible affordances offered by other social media. We introduce how other social media can offer some, but not all, of the same affordances. We introduce a conceptual model showing that the platforms with the richest social presence are more complex to use. This indicates that users to some degree will have to choose between the two. Nevertheless, virtual worlds and other social media offer new opportunities for people with disability to be a part of society and feel empowered in their lives.

1. INTRODUCTION

People with disability constitute a large group of the world's population. Approximately one billion of the world's population have some type of disability (Krueger and Stineman, 2011). People with disability experience barriers to social inclusion and entering the work force and are less likely to have interpersonal relationships outside of family ties (Ballin and Balandin, 2007). The feeling of being treated as different and not being seen as equal to people without disability is a challenge. This sentiment is due to society regarding people with disability as if impairment in one area of function invalidates their ability or access to opportunity in another area (Hammel, Magasi, Heinemann, Whiteneck, Bogner and Rodriguez, 2008).

While mobility and accessibility are key issues for people with disability, communication has also been identified as a key issue (Morgan and Balandin, 1997). Communication challenges affect the ability to interact with others and to initiate or maintain friendships. Communication is an important part of being connected and regarded as a member of a community or society; therefore, feelings of exclusion may affect individuals' ability to communicate and become involved (Jackson, 2006). Information and Communication Technology (ICT) has shown promise in aiding people with disability to overcome or reduce these barriers. ICT also empowers people with disability to experience independence, social connections, and inclusion in society (Renblad, 2003).

This study offers a new approach to knowledge about social media affordances. Information systems research tends to study how technology affects people without disability, which leads to assumptions

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about the nature of the abilities needed to utilize the affordances offered by technology. Thus, through this study we will gain a more nuanced understanding of social media affordances.

In addition, the notion of affordances is of great interest in information systems research (Hsieh, 2012; Seidel and Recker, 2012; Zammuto, Griffith, Majchrzak, Dougherty and Faraj, 2007), making this research timely and pertinent within the information system research community.

A major difference between virtual worlds and other social media is the complexity associated with using the systems. User acceptance studies show that ease of use is less important than usefulness in determining the use of virtual worlds (Fetscherin and Lattemann, 2008). Other, non 3D-based social media platforms, are seen as more easy to use (Cha, 2010). This could indicate that there is a difference between the affordances presented by virtual worlds as opposed to other social media. Thus, the central research question is expressed as follows:

How do virtual world affordances compare to other social media affordances?

To address this question, the research relies on the exploratory, qualitative method. The empirical portion of the study was conducted through participatory observation and in-depth interviews; data was collected from novice and experienced users of the virtual world Second Life™, as well as from a user study and technical capabilities study of social media.

2. RELATED LITERATURE

In this section, we present previous research relevant to our study. Section 2.1 provides an overview of the concepts of affordances and social affordances. This shows how the combination of user perceptions and technological capabilities together determine the usefulness of a given technology for the user. Section 2.2 shows why it is important to do research on how people with disability can use technology to lead richer lives. Sections 2.1, 2.2, and paragraphs 2&3 in section 2.3 are to a large degree based on work by Stendal (2014). Section 2.3 provides a brief overview of different social media technologies and their level of social presence, which relates to realizing the goal of including people with disability in society. Section 2.4 presents the main differences between different categories of social media.

2.1 Affordances and social affordances[3]

Psychologist J.J. Gibson was one of the first to define the concept of affordances as all "action possibilities" or capabilities latent in the environment. Affordances are objectively measurable and independent of the individual's ability to recognize them. However, there is always a relation to the actors and affordances are thus dependent on the actors' capabilities (Jones, 2003). According to Gibson, every object has an affordance, and offers the possibility for action (Hutchby, 2001). These possibilities can be seen as co-evolutions between humans and the environment (Bloomfield, Latham and Vurdubakis, 2010). Affordances are not there waiting to be utilized, they must be enacted and realized in practice (Leonardi, 2013).

When technology affords some kind of social practice or interaction, it is defined as a social affordance (Hsieh, 2012). The users' knowledge and technological skills together with the context of social interaction creates social affordances (Hsieh, 2012). Social affordances are the application of perceived capabilities for social practice, and the main difference from a "regular" affordance is how the technology facilitates social relationships, groups and communities (Sutcliffe, Gonzalez, Binder and Nevarez, 2011).

The social affordances lens has been applied to explore the implications of interactive ICT use on digital inequality. The objective of the study was to understand the relationships between user characteristics, digital skills, and how ICT is being used for social interaction (Hsieh, 2012). This study led to a proposed framework that provides directions for future research in online networking skills and ICT usage concerning social interactions and their implications for digital inequality (Hsieh, 2012).

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[3] This section is based on an earlier literature review and has previously been presented in Stendal (2014)

Analyzing technological capabilities, as well as asking how and in what situations certain affordances are manifested, provides an understanding of the affordances a technology offers people with disability. An affordance will be identified through how and when various action possibilities are available or unavailable to a specific actor in a particular setting (Bloomfield et al., 2010). Through a focus on these questions (Bloomfield et al., 2010), the affordances offered by social media to people with disability can be identified and understood.

The affordance perspective has been criticized because affordances, like objects and individuals, are subject to constant transformation (Glăveanu, 2012). To understand this constant transformation, the identification of affordances for people with disability is essential to ensuring further development of social media.

2.2 People with disability[4]

The World Health Organization (WHO) defined disability as follows:

"Disabilities is an umbrella term, covering impairments, activity limitations, and participation restrictions. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations." (WHO, 2015).

One of the difficulties people with disability experience is communication (Milner and Kelly, 2009), and this impacts their ability to interact with others and to initiate or maintain social connections and friendships (Greenwood, 1987). Communication is intrinsic to being connected and feeling part of a community or society, consequently communication impairments can give rise to feelings of exclusion from being an active citizen (Jackson, 2006). Community inclusion and being part of a society are realized to some extent by having the opportunity to talk and interact with a partner, friends, and others in the community (Milner and Kelly, 2009).

Another challenge for people with disability is the feeling of being treated as different, not being seen as equal to their non-disabled peers (Hammel et al., 2008). Additionally, the society treating people with disability as if impairment in one area of function invalidates their abilities or access to opportunity in another area is a concern (Hammel et al., 2008). This way of being treated is experienced as limiting and constraining for people with disability to fully participating and being a part of the society (Hammel et al., 2008).

2.3 Social media

Social media is defined as « a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content" (Kaplan and Haenlein, 2010, p. 61).

In 2004, Tim O'Reilly came up with the term web 2.0 when he examined the companies that were still thriving after the dot-com crisis. He found web 2.0 to be characterized by a focus on service delivery over technology, data sources that are more valuable the more they are used, services for niche user groups, collaboration and co-creation of content (O'Reilly, 2007). Web 2.0 has transitioned into social media, and has blurred the distinction between producer and consumer. Blogs, wikis, social networks and micro blog services have led to ever more user-generated content (Ritzer and Jurgenson, 2010). Tapscott & Williams (2008) have formulated four principles for user-generated content: Openness – Everyone is able to read and comment on the ideas of others. Collaboration – Working with others to create new content, using wikis, blogs and similar tools. Sharing – Sharing ideas with others, and allowing others to access your data. Global thinking – Publishing content in English reaches people all over the world, yet distribution costs remain the same. The ideology of social media and its focus on user-generated content is what makes social media a potentially interesting communication tool for people with disability. Figure 1 shows an overview of social media, based on the abilities for self-

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[4] This section is based on an earlier literature review and has previously been presented in Stendal (2014)

presentation and self-disclosure inherent in the medium. As this study is aimed at examining how people with disability can use technology to be more integrated in society, we have chosen to focus on the social media with a medium to high level of social presence and a high level of self-presentation.

		Social presence/ Media richness		
		Low	Medium	High
Self-presentation/ Self-disclosure	High	Blogs	Social networking sites (e.g., Facebook)	Virtual social worlds (e.g., Second Life)
	Low	Collaborative projects (e.g., Wikipedia)	Content communities (e.g., YouTube)	Virtual game worlds (e.g., World of Warcraft)

Figure 1 Overview of social media. From Kaplan and Haeinlen (2010)

As presented in Stendal (2014), three-dimensional social virtual worlds, such as Second Life, Active Worlds and There, present similarities to the physical world within virtual worlds, this environment offers people the opportunity to be relatively anonymous. Immediately after entering the virtual world, any individual has at least two bodies, a physical and a virtual one, creating a sense of duality (Taylor, 1999). Virtual worlds offer the ability to create an avatar that may represent the individual controlling it in a certain way. These virtual people are known as avatars and have a new name unrelated to their physical world name (Stendal, 2014). In addition to being a social venue, virtual worlds, such as Second Life and Active Worlds, are environments for educational initiatives (Bulu, 2012).

The three-dimensional environment of virtual worlds is crowded with avatars who can move around (Baker, Wentz and Woods, 2009) and interact through text-based chat, voice chat, and animations (Fominykh, 2012). There are many reasons why people engage in virtual worlds, including seeking information, socialization, and entertainment. Virtual worlds let people escape from physical-world constraints and pursue unique activities in which they meet and interact with new and existing friends and networks (Jung and Kang, 2010; Kay, 2007). Many people spend time immersed in virtual worlds because they offer an interactive and unique place (Lim, 2009). In addition, the virtual world environment offers rich possibilities, which allows individuals to be aware of information and create identity through the creation of places, objects, and avatars (Prasolova-Forland, 2012).

Virtual worlds offer a higher level of social presence (Kaplan & Haeinlen, 2010), but achieving this requires careful design considerations. Bulu (2012) shows that people's satisfaction with social worlds depends on a mixture of social, place and co-presence. The feeling of being somewhere, and being there with someone, allows the user to experience a feeling of immersion in the activities taking place in the virtual world, and these variables together influence the degree of user satisfaction. Farzan et al. (2011) found similar results in a study of Facebook communities. Designs that encourage social relationships between users, or emphasize the community aspect have more success in creating viable and thriving communities.

2.4 Different categories of social media

While the functionality of the social media services are similar (profile page, posts, liking, sharing and commenting), their focus and use differ:

Facebook and Google+ are both social networking sites, and have similar capabilities: They provide a news feed with content based on the people and groups you follow, and the hub of the social network is your own profile page, which is linked to the profile page of other users. Both sites allows users to communicate in several ways; through posting content and commenting on/liking posts, through instant messaging one-to-one or many-to-many. Users can publish text, links, video and images (Boyd and Ellison, 2007).

Twitter is a form of social network, where users post short text-based updates of 140 characters. Updates can include links and images. The user set up a profile page, and can follow other users. Conversations

on Twitter are centered around the individual user's profile name and hashtags rather than on posts, and this can be confusing to new users. The limitation of 140 characters means that conversations have to be short and to the point, and demands high writing skills from the user. Using Twitter effectively also requires very good communication skills and deep understanding of the Twitter culture (Marwick & Boyd, 2010).

Instagram and Vine are communities focused on visual presentations of content. On Instagram, users post pictures, while on Vine users post short videos of up to six seconds. Both services allow the user to set up a profile page and connect to others. Users have the ability to like and comment on content, and content can be tagged in order to reach a broader audience (Kaplan and Haenlein, 2010).

Second Life is a three-dimensional, multi-user virtual environment in which users can communicate and participate in a social network within the virtual world (Bell, 2009; Ferry, Gelfand, Peterman and Tomren, 2008). The representation of the physical world within the three-dimensional environment (e.g., light, sound, and motion) offers the user a feeling of being immersed into the virtual environment. In addition, because users are represented through an avatar, the feeling of presence, co-presence, and social presence is evident. Virtual communities typically emerge and grow based on common interests, for example around political issues, business concepts, hobbies, health topics, religion, and education to name a few (Blanchard, 2008).

3. RESEARCH METHOD

This exploratory study included two groups of participants, a group of novice users and a group of experienced users of the virtual world Second Life. All participants were over the age of 18, diagnosed with a lifelong disability, able to give informed consent, had access to and were able to use a computer with broadband. Aligned with previous research Second Life was chosen due to (1) the large number of users, (2) the range of activities available and (3) the wide range of opportunities (i.e., business, education, and leisure) (Schultze and Leahy, 2009). Because of these particular features Second Life is a suitable platform for both new and experienced users to explore and prosper in the virtual world. All participants gave informed consent and understood that they could withdraw from the project at any time with no reason given and no penalty. Ethical clearance for the research was obtained from the Norwegian Social Science Data Services (NSD).

3.1 Participants

Over a period of 8 weeks in 2011-12, the 11 participants met with the first author in weekly sessions lasting one and a half hours, and engaged in different activities in Second Life. In the fourth and eighth week of the study, all participants were interviewed about their experiences in the virtual world. Interviews were conducted by phone, in order to keep the Second Life session times solely for activities and in-world interactions.

Table 1 summarizes the characteristics for participants in this study. To ensure the anonymity of the participants, all avatar names are pseudonyms.

Group	Participant	Disability	Location	Primary language
Novice	Pevit Torana	ID	Norway	Norwegian
	Mix Mofat	ID	Norway	Bulgarian/Norwegian
	Solvita Silka	PD	Norway	Norwegian
	Trinaka Lika	ID	Norway	Norwegian
	Rolatina Endora	ID	Norway	Norwegian
	Gjagra Gralt	PD	Norway	Norwegian
	Missara Melsa	ID	Norway	Norwegian
	Siltar Siana	ID	Norway	Norwegian
	Sophy Salk	ID	Norway	Norwegian
	Artol Merlit	ID	Norway	Norwegian
	Leos Marth	ID	Norway	Polish/Norwegian
Experienced	Agonra Sircka	PD	USA	English
	Kalnika Gublic	PD	USA	English
	Sunger Alista	PD	USA	English
	Ahroun Wolf	ID	USA	English
	Maria Butterfly	PD	USA	English
	Kirana Merkini	PD	South Africa	Finnish/English
	Landira Crunge	PD	USA	English

Table 1 Participants in this study Abbreviations: Mild to moderate intellectual disability (ID) and physical disability (PD).

The experienced users participated in two longer in-depth interviews of approximately two hours, to explore their experiences with the virtual world. All interviews with the experienced users were conducted in Second Life, in private instant messaging (IM) or private voice chat.

While the novice participants offer the ability to understand the initial challenges and opportunities experienced when engaging in the virtual worlds, including the experienced users of Second Life offers the opportunity to better understand the social affordances such technology provides people with disability when used over time. Including the experienced users was important to ensure the data in this study also included long-term effects for people with disability. The data from both novice and experienced users complement each other and ensure a more complete picture of the experiences of virtual worlds.

3.2 Analysis

The data analysis for this paper is based on the capabilities of virtual worlds for people with disability identified in initial work (Stendal and Molka-Danielsen, 2013; Stendal, Molka-Danielsen, Munkvold and Balandin, 2013). To conduct the initial analysis content analysis was used. Content analysis is used to identify, code and categorize primary patterns in interview and observation data (Patton, 2002). Interview data from various individuals were grouped together and along with observations were analyzed for different perspectives on common issues (Patton, 2002), which were considered important for understanding how people with disability experience the social affordances offered by virtual worlds.

Hsieh (2012) suggested theorizing about social affordances creates a link among social environments, interaction, and technologies. The second data analysis was conducted using mind-mapping and drawing connections based on the results from previous coding to ensure a larger picture and identification of the affordances offered. Using an hermeneutic approach is in line with the interpretive research tradition (Walsham, 2006).

3.3 Identifying social media affordances

When identifying the affordances of social media for people with disability, we no longer had access to the participants in the original study. Therefore, the approach to identifying the affordances of social media was somewhat different. Based on the identified virtual world affordances, we examined the socio-technical capabilities of selected social media (Facebook/Google+, Twitter, Instagram/Vine), and

made a judgment about how social media could support this affordance. These capabilities were drawn from an earlier study of social media capabilities (Stendal, Molka-Danielsen, Munkvold and Balandin, 2012; Stendal et al., 2013), and we compared the identified capabilities with the observed wishes of people with disability in the original study of affordances. The selection criteria for social media was 1) the service should have a medium or high social presence and high self-presentation in Kaplan & Haeinlein's (2010) classification scheme, and 2) the service should be among the most used social media sites and globally available (using Alexa.com's ranking).

The reason for only examining high self-presentation/social presence services is that we believe these to be the most relevant services for including people with disability in the wider society, in line with the concerns of Hammel et al. (2008). The reason for focusing on the most popular services in each social media category was simply that the chance for finding a community is bigger in a medium with more users. The different social media and their differences were presented in section 2.4.

4. FINDINGS

The affordances of virtual worlds have been identified through observation and in-depth interviews (Stendal, 2014). In table 2, we present an overview of the six virtual world affordances, and compare these identified affordances with the possible affordances of social media.

Affordance	Virtual Worlds	Social media
Communication	The ability to communicate with others through various means in the virtual world	The ability to communicate with others, mainly through text. Video communication is also possible in some Social media channels.
Mobility	The ability to move around in the virtual environment, independent from others and physical constraints	Except for "moving" from one section of the site to another, or between sites, Social media do not provide this affordance.
Personalization	The ability to choose what to disclose and customize representation through an avatar	The ability to choose their online identity through selection of topics for discussion, the information being shared and the images used to represent identity.
Social inclusion	The possibility to experience social inclusion, create and maintain friendships, and experience close interpersonal relationships in the virtual world	The possibility to experience social inclusion through connecting with others in social networks
Personal development	The possibility of personal growth and learning in the virtual world	The possibility of personal growth and learning through content creation, discussion.
Joint activity	The ability to engage in activities together with others in the virtual environment	The ability to engage in activities together with others, mostly in text-based activities.

Table 2: Virtual Worlds and social media affordances

In this section we present the six affordances, identified through previous work by Stendal (2014), and how they are represented through virtual worlds and other social media as suggested in earlier research (Stendal and Molka-Danielsen, 2013; Stendal et al., 2013).

4.1 Communication

The "communication" affordance offers the *"ability to communicate with others through various means"* (Stendal, 2014, p. 67). Communication is known as one of the main challenges people with lifelong disability encounter in the physical world (Jackson, 2006), which indicates this affordance as an important factor for engaging in virtual worlds for people with lifelong disability.

Virtual worlds offer the affordance communication through both text and voice. For people with a hearing impairment, the text feature offered by virtual worlds gives them a new and improved way of communicating with a much larger group than they experience in the physical world. While text communication is an affordance for people with a hearing impairment, others see the voice feature offered by Second Life as an affordance. People with a physical disability, which hinders their ability to use the keyboard efficiently, find the voice feature a very important tool for communication. The voice feature offers this group the opportunity to communicate even when text communication affordance is unavailable or a constraint. *"I'm deaf, so I only use text in SL. So, it's actually EASIER for me than RL. I just choose to hang around with people willing and able to use text only."* Sunger Alista

Social media can facilitate the affordance of communication for some disability groups. Mainly through text, but in some services also through video. For people with a hearing impairment, text-based communication can be a rich form of communication. For cognitive disability, a service such as Instagram can be valuable, as it offers people a way of expressing themselves through visual means. This would however require some preparation and facilitation in setting up and connecting accounts, and bringing together people with similar disability. Social media do not have a voice feature in the same way as virtual worlds, so people with a physical disability would perhaps not see social media as offering this affordance.

4.2 Mobility

This affordance is defined *"as the ability to move around in the environment, independent from others and physical constraints"* (Stendal, 2014, p. 71).

Virtual world technologies, offer the ability to engage in a wide range of activities relatively free from their physical constraints and limitations imposed on them by the physical. The virtual worlds offer people with both physical and intellectual disability the opportunity to move around in the environment without being dependent on family members or other caregivers. The affordance of mobility offered by the virtual worlds, visiting locations from the safety of their own home, is a very important factor for people with lifelong disability. *"... it gives me a sense of independence. I can teleport, travel, without planning, preparation or giving notice to anybody. I can time travel, visit new places easy."* Maria Butterfly

Social media do not have the same sense of "place" as virtual worlds. Users can move between groups, accounts and rooms, and some might see this as the affordance of moving. This would however require a great deal of commitment from the user.

4.3 Personalization

The affordance "personalization" is defined *"as the ability to choose what to disclose and customize online representation"* (Stendal, 2014, p. 72). In the physical world, people with lifelong disability experience prejudice due to their disability (Hammel et al., 2008).

Virtual worlds offer a representation of self and there is a relationship between the physical and virtual self, in addition to the relationship with others when engaged in the virtual world. The personalization affordance was experienced as a great value offered to people with lifelong disability. The ability to choose what do disclose was expressed as a great advantage. Only two of the experienced participants chose to disclose their disability through their avatar. *"I chose that because I wanted maximum exploration. Wanted to know how it was to not to be in a wheelchair. I don't really talk about disability in SL. I don't see myself as disabled, I don't fixate on it. I truly don't feel myself as disabled, it is all physical."* Maria Butterfly

Social media offer people the opportunity to construct their own online identity, or to play with multiple identities through different accounts and services. Through the topics they choose to discuss, the information they share and the images they use to represent themselves, people with various disabilities can choose how they want the world to see them. In cases of visible disability, social media offers less of a personalization affordance as there is no possibility of creating an avatar, except for through the profile picture.

4.4 Social Inclusion

"The affordance "social inclusion" refers to the ability to experience feeling part of a community, creating and maintaining friendships, and experiencing close interpersonal relationships" (Stendal, 2014, p. 75). In the physical world, people with lifelong disability experience challenges when wanting to socialize (Ballin and Balandin, 2007).

Virtual worlds offer the ability to meet as equals, which to people with lifelong disability may not be experienced in the physical world. One of the main reasons people with lifelong disability engage in virtual worlds is the social aspect they offer. Creating and maintaining connections, friendships, and close relationships are possible through virtual worlds, and the opportunity to communicate through various means (e.g., text and voice) offers people with lifelong disability a safe environment to explore the social connections they can encounter. *"hmm. I'd have to say* both [one-on-one and community connections] *are important. One to one leads probably to good friendships, but the community connection gives a sense of belonging"* Landira Crunge

Social media offers the same ability to meet other people, create friendships and communicate, without the disability being visible in the same way as in the physical world. This is perhaps most true in social networks such as Facebook and Google+. However, it might be more of a challenge to create and maintain friendships with someone when text is the only communication medium available, and when there is no avatar to represent the user.

4.5 Personal Development

"The personal development affordance is defined as the process of personal growth and learning" (Stendal, 2014, p. 77). Feeling as part of society and being able to give back and help others is important for people with lifelong disability in the physical world (Hammel et al., 2008).

Virtual worlds offer environments in which people with disability are able to be independent of outside assistance and take advantage of the mobility affordance. Through the mobility affordance, people with disability also have the opportunity to explore and take advantage of the personal development affordance identified through this research. Feeling as part of society, being able to give back, help others, to learn and an increased feeling of well-being through the virtual worlds, creates an added value for people with lifelong disability. *"I volunteer, yes, in several capacities. I do one-on-one mentoring with a handful of folks, meeting once a week for an hour. And am currently involved in a marketing and planning project for a nonprofit wth a large inworld presence."* Sunger Alista

Social media offers different environments, which for some people with disability might be seen as offering personal development. Instagram and Vine can provide a sense of personal development for the visually inclined, and Facebook, Google+ and Twitter might provide the same for those who prefer to communicate through text. Especially for text-based communication, this requires a certain skill level. People with cognitive disability might not be able to crack the social code of Twitter, for example.

4.6 Joint Activity

The affordance "joint activity" offers *"the ability to engage in activities together with others in the online environment"* (Stendal, 2014, p. 80). Mennecke et al. (2010) stated the feeling of participating in a collaborative task increases the experience of virtual worlds and motivates for continuous use of the technology.

Virtual worlds offer an environment in which the feel of a physical world is present, with exception of sense of smell or physical touch. Engaging in activities together with others was reported as an important factor for the participants. Over time, the participants began to feel immersed in the virtual

world and a feeling of being an actual participant, not simply a person controlling the avatar. The majority of the novice participants expressed being impressed by the scenery and liveliness of the environment, but some did not feel they were actually engaging in the activities. *"Mostly now it's just good friends, some who I go dancing with, or sailing, or surfing, just enjoying each other's company"* Landira Crunge

Social media provides users with some possibilities for joint activities. Most of these are text-based, such as discussing in a Facebook post or on Twitter. Instagram and Vine could be used for joint activities such as using hashtags to create a set of images or videos on a given topic, but again this would depend on the disability, and might also require some facilitation by a third party (especially in cases of intellectual disability).

5. DISCUSSION

As Kaplan and Haeinlen (2010) show, social media can be defined based on their social presence and level of self-presentation. We have examined the affordances offered by social media and virtual worlds for people with disability. As a response to Hammel et al.'s (2008) call for research on how to include people with disability in the wider society, we have chosen to focus on those social media that provides the combination of high self-presentation and medium to high social presence.

Our findings show that virtual worlds and social media to some extent can offer the same affordances for people with disability. However, for most of the affordances the differences in social presence between virtual worlds and other social media could be an indicator that social media presents these affordances to a somewhat lesser degree. Virtual worlds presents the user with a richer experience, as the user navigates through a 3D representation of the physical world. The user also creates a 3D avatar to represent herself, which acts as a marker of identity. In social media, the user depends a lot more on the content that she creates and shares in order to create her own virtual identity, and the possibility to move around is limited to moving from one profile or group to another. As Bulu (2012) shows, user satisfaction is connected to social presence, the feeling of being in a "place" and co-presence with others. The sense of place is perhaps the presence lacking most in social media. Farzan et al. (2011) found that social media could create a sense of community as well, but that this requires more work and imagination from the user in order to be successful. Thus, we argue that for people with disability, virtual worlds offer a richer experience due to its 3D immersive environment. On the other hand, social media still provides people with disability with some of the same benefits, and with less of a barrier to entry.
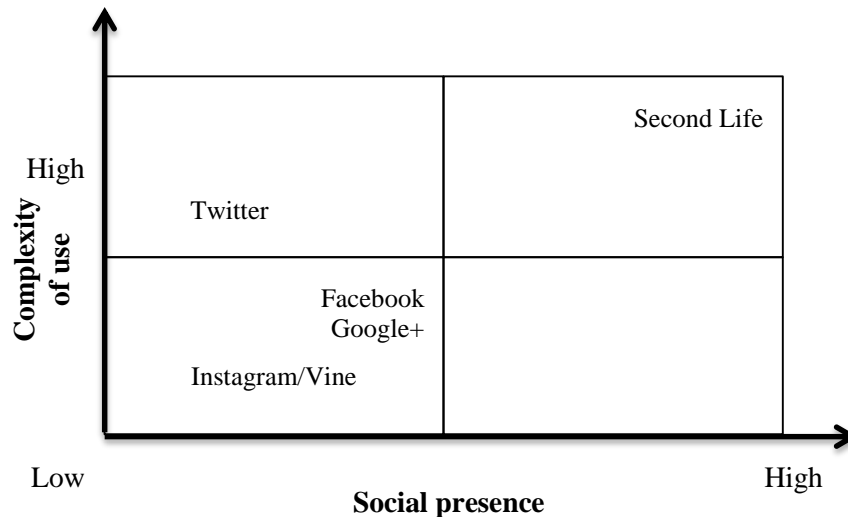
We propose that social presence is only part of the equation. Equally important is the medium's complexity of use. Earlier studies have shown that virtual worlds are seen as less user-friendly than social media (Cha, 2010; Fetscherin and Lattemann, 2008). Simplicity – in terms of easy to understand user interfaces, a limited number of features and clear communication of user value is seen as essential (Constantinides and Fountain, 2008). This is reflected in the number of users of the different services. Second Life has around 36 million user accounts[5], while other social media has several hundred million users[6]. A complex system can be a barrier for people with a certain disability, thereby excluding them from the affordances offered by the virtual world.

The experiment reported on in this paper required a lot of effort from the side of the researchers in setting up and introducing users to the virtual world of Second Life. In Figure 2, we present a matrix of social presence and complexity of use for the services examined in this paper based on the simplicity criteria presented by Constantinides and Fountain (2008).

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[5]http://www.engadget.com/2013/06/20/second-life-readies-for-10th-anniversary-celebrates-a-million-a/ /

[6] http://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users

Figure 2: Matrix of social presence and complexity of use

Second Life presents the highest level of social presence, but is also the most complex service to use, as it offers many features and a complex user interface. You need a computer with enough processing power to run a 3D environment, meaning that many people will have to buy new and expensive equipment. Creating an avatar and understanding the environment (navigating, interaction with people and objects) is also challenging for many people, as this requires both knowledge and time.

Twitter has a lower level of social presence, mainly because users are limited to 140 character messages. We argue that Twitter is also complex to use effectively, as the service has its own culture and lingo that can be hard to understand for outsiders (Marwick and Boyd, 2011). However, Twitter, being limited to 140 characters limits the amount of key strokes and makes more rapid communication (Hemsley, Palmer and Balandin, 2013), which makes Twitter a suitable medium for people with disability.

Facebook and Google+ are less complex to use than both Twitter and Second Life. You still have to register for an account, and understand how to navigate the site (Boyd and Ellison, 2007), but there is no single culture to contend with, no avatar to create and no learning curve for integrating with objects. It offers a richer social presence than Twitter simply because you are not limited to short texts. You can post videos and photos, participate in groups and pages for various interests and on various topics and the rules of communication are less strict.

Finally, content communities such as Instagram and Vine have an even lower complexity of use than Facebook and Google+. Both services are accessed through a smart phone app, and the app shows you step by step how to set up your account and how to get started with using the service. Social presence is also lower than Facebook, Google+ and Second Life, as the user is limited in what she can do with the application (post videos/photos, like and comment, use hash tags). For some users, especially those who express themselves visually, this could well be a reason for using these services.

The only quadrant that is not represented in our model is the combination of high social presence and low complexity of use. As such, there is still room for developing social media that does an even better job at providing the affordances needed to help people with disability to be more included. The perfect solution does not exist. Instead, users have to decide between social presence and complexity, with the more complex virtual worlds offering the highest levels of social presence.

6. CONCLUSION

In this paper, we have applied the concept of social affordances to virtual worlds and other social media. The purpose of this work was to aid people with disability being empowered by using these technologies. Our research is based on an observational study of people with disability in virtual worlds, as well as a study of social media capabilities. The first study identified six affordances of virtual worlds, and the

second study allowed us to compare these identified affordances with the capabilities of social media in order to examine if these same affordances exist in other social media. Our findings show that while many of the same affordances exist, social media with a lower social presence might not be quite as useful. Further, we have shown how high social presence can be more difficult to use compared to media with lower social presence. This indicates that learning and support is needed in order to take advantage of the high social presence medium of virtual worlds.

A limitation of this study is the lack of empirical evidence when comparing virtual worlds with other social media. This shows there is a need for future research to tackle this challenge. In addition, the identified affordances may not be the only affordances offered by virtual worlds and other social media this needs further investigation. We suggest that future research should empirically investigate the affordances offered by social media to people with lifelong disability. Further, future research should focus on specific disability groups and the challenges each of these groups face when using and participating through various social media. Finally, we suggest research into how to the gap between high complexity and high social presence, in order to make the most useful channels available for more user groups.

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