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# “Entertainment for Retirement?": Silvergamers and the Internet

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In recent years, Internet video gaming has grown exponentially amongst a non-traditional and non-targeted group of gamers: those over 50 years of age. In the United States alone, elderly gamers have grown from nine percent of all gamers in 1999 to over 25 percent of all gamers as of 2009. The current study specifically examines elderly peoples' usage behaviors with Internet-based video games. Such participation has been aided by the fact that games are social in nature and are accessible in terms ownership and operation. The process of becoming an Internet gamer therefore requires little more than a simple computer, an Internet connection, and a desire to be entertained. Results show that so-called “silvergamers” prefer casual games as opposed to more complex and persistent games. In addition, this paper raises further insights into their behaviour as users, including usage time and expenses for game usage, and situates them within the context of elderly gamers as an economic potential group to be targeted more.

## Introduction

Over the last 20 years, the popularity of video gaming has increased exponentially. While video games, especially those on the Internet, are still designed and promoted for “typical” gamers (younger than 40), elderly gamers have emerged as an important and expanding audience. Between 1999 and 2009, this audience grew from nine to over 25 percent (ESA, 2010). At a glance, this elderly market seems incongruous with the stereotypical image of an Internet gamer. However, when one considers that elderly people tend to be financially stable and highly motivated to seek entertainment (Micheaud & van Soest, 2008; Carroll, 1998), and that they tend to expect high-quality information and communication technologies (Bradley & Poppen, 2003; Gilly & Zeithaml, 1985), this trend becomes less surprising. Elderly gamers have taken to playing video games in a variety of location, including nursing homes and senior centres (Borland, 2007; ESA, 2010; Ijsselsteijn, Nap, de Kort, & Poels, 2007). However, it remains unclear whether they are led by typical gaming motivations like competition, socialising, or escapism (e.g. Yee, 2007; Ryan, Rigby & Przybylski, 2006). Along with the social benefits of video games, research has suggested that gameplay can help improve motor skills and even relieve symptoms of Parkinson's disease (*Telegraph*, 2009).

This study concentrates directly on the usage behavior of the target group of elderly people with Internet-based video games. The focus on Internet-based games was grounded on their social character (Smith & Kollock, 1999) and the relative ease of ownership and operation (Schultheiss, Bowman & Schumann, 2008). In order to participate, Internet gamers do not necessarily need to own a modern computer or to understand the newest technology – let alone possess the physical skills of a professional athlete. In order to become a gamer, one only needs time, a computer, and an Internet connection to play – either alone or with millions of people around the world.

## **Internet-based games**

In order to understand Internet gaming more clearly and to be in a position to gauge the impact of different usages, it must be noted that Internet gaming is not a one-dimensional construct. Internet games and online games are not necessarily the same thing. Although Internet games can be online games, Schultheiss, Bowman & Schumann (2008) identify Internet games as being “games which can be accessed through the Internet and played without any media break”. As no external storage medium is necessary, Internet games can be used directly without buying a DVD/Blu-Ray or leaving home. That makes switching between different media (media break, often also referred to as media discontinuity or media disruption) in the overall game usage process unnecessary.

However, we distinguish between games which are played over the Internet, games which only use the Internet as a mode of distribution and games which are a mix of both; this distinction is important as the motivations for playing the respective modes of game, along with their respective usage behaviour, are expected to differ (Schultheiss, 2007). Although all online games are considered Internet games in the broader sense, each has distinct properties. To give a clearer view of these properties, we offer a typology of Internet games that makes distinctions based on their architecture and their usage. These two dimensions are discussed below, followed by the presentation of our typology.

### ***Game architecture***

When considering Internet game architecture, we identify two forms: client games (CGs) and browser-based games (BBGs). Whereas CGs require the player to download and install a proprietary client software in order to play the game, BBGs are games that can be played on any standard Web browser without any software installation. This is an important distinction, as it has implications for a game’s degree of accessibility. For example, a CG would have to be installed on one machine, meaning that the game could only be played by an individual when they have access to their own computer. Conversely, a BBG could be played by an individual on any computer with Internet access. This technical limitation can influence the player’s usage behavior.

### ***Persistence of game world***

Importantly for this study, games that possess long or ongoing time span are situated in a persistent game world, where games continues to exist while the player is not logged in. In contrast, casual games are played for much shorter periods of time, and are not persistent insofar as they end when player ceases to play. When considering the persistence of the game world, the distinctions between games that are mostly played over a longer period of time (weeks, months or years) and games which are used casually (usually in minutes or a few hours) are significant. From these broader categories, we are able to identify four types of Internet games: persistent client games, downloadable casual games, persistent browser-based games and casual browser-based games.

### Typology of Internet-based games

Using these two dimensions for our typology, we can identify four different categories of Internet games as presented in Table 1; each category is explained in more detail below.

<i>Architecture</i>	<i>Persistence of game world (usage)</i>	
	<b>persistent (long-term)</b>	<b>non-persistent (casual)</b>
<b>Client (downloadable)</b>	Persistent client games (e.g. <i>Silkroad Online</i> )	Downloadable casual games (e.g., <i>Bejeweled</i> )
<b>Browser-based (e.g., IE, Firefox, Safari)</b>	Persistent browser-based games (e.g., <i>Travian</i> )	Casual browser-based games (e.g., <i>Slingo Millenium</i> )

**Table 1.** Internet-based games

Persistent client games (PCGs) exist in different variations. Most common among them are the Massively Multiplayer Online Role-Play Games (MMORPGs; e.g. *Silkroad Online*, *Rappelz.*), although MMOs in several other themes have become increasingly popular (e.g., *Navy Field*). These games are designed as persistent virtual worlds, where gamers can log on and play at any time so long as they have the proprietary client software.

Persistent browser-based games (PBBGs) are sometimes referred to as long-term browser-based games. They share many of the features of the PCGs. However PBBGs are played via a Web browser and thus can be played on any computer with an Internet connection. Similar to PCGs, these games are usually multiplayer, although this is not a requirement of the genre. They are mostly free, but many offer ‘for-pay’ features, such as advertising-free interfaces and more user-friendly game options (Klimmt, Schmid & Orthmann, 2009). Famous examples of long-term browser-based games include *Planetarion*, *Kingdom of Loathing*, and *Travian*.

The collection of downloadable casual games and casual browser-based games are relatively similar to one another. There are literally millions of these small games on the Internet. They are typified by simple graphics and controls, and usually have very short-term objectives that can be met in a matter of minutes. These games are not persistent, and can be played online via browsers and offline as downloadable games. The only real substantive difference between these two categories of Internet games is the manner in which the games are played: downloaded vs. browser-based. Examples of Web sites that contain both types of these causal games are *slingo.com* and *realarcade.com*. For this study, we focus on downloadable casual games and casual browser-based games as a combined type of games because it makes no difference for their usage whether they are played using client software or a browser.

### Elderly people as gaming audience

The conventional target market for media products is aged between 18 and 49 years. In the case of video games, people over 34 are targeted less, and females are often ignored (Weiss, 2008). Elderly games have similarly been neglected by academic studies. There are several studies which show that typical gamers are male and in their mid-twenties (e.g. Yee, 2006; Schultheiss, 2007), but there are also some isolated studies (e.g. Goldstein et al., 1997; Nap, IJsselsteijn & de Kort, 2009; White et al., 2009) that could provide very specific indications

about physical and emotional well-being, concerns, knowledge, and user experience for video game usage of the elderly target group.

Although the studies by Griffiths, Davies & Chappell (2003, 2004a, 2004b) do not specifically deal with elderly gamers, they nevertheless providing interesting insights into adult gamers in general. Inspired by a secondary analysis of self-selected surveys of two thematic fan sites of the online game, EverQuest, Griffiths and Davies (2003) found out that a majority of those surveyed were adults 19 years and older, and they conducted a separate online survey. Here, based on a self-selected sample, a total of 540 players of the online game EverQuest were interviewed. The results show that younger people tend to play more often than older gamers, and that power in the game was important to younger gamers. The results may have been influenced on the basis that there were proportionally more women in the group of older respondents (Griffiths, Davies & Chappell, 2004a). The main problem concerning these results is the exclusive focus on the game EverQuest and the generalisation of “older players”, under which all players between 19 and 70 years were subsumed.

Grüniger, Quandt & Wimmer (2008) also concentrated on older gamers in their qualitative study. They asked what the specifics of older gamers were and how they made use of computer games in everyday life. They conducted a total of 21 interviews with computer gamers between 35 and 73 years of age. Of these, 16 were younger than 50. Again, the sample was very heterogeneous. Their results show that the older gamers are generally very technophilic (with a strong enthusiasm for new technology) and relatively loyal regarding the usage of a special genre, while their environment often reacts with strong prejudices on their hobby. Furthermore, they map out a typology of older gamers, dividing them into the following types: “casual player”, “issue manager”, “socializer” and “leader”.

Dogruel (2008) carried out a quantitative study about the acceptance and the potential of computer games for people over 50 years old. Her study undertook an experiment with a total of 91 seniors. The results show that the readiness for purchase or use of computer games in the target group of over 50 years can be explained primarily by the perceived benefits (e.g. information, theme, alternative media, and curiosity) by the gamers. The acceptance of a game, however, is mainly influenced by the perceived usability. The investigation of the potentials is based on a total of four games and led to four dimensions of elderly game usage: “adoption of education and learning content”, “training”, “adoption of media literacy” and “entertainment”.

In summary, it can be stated that there are first steps regarding the research of elderly gamers, the so called “silvergamers” (Adams & McCrindle, 2008). However there are only a few studies, of which some only focused on adult gamers in general, and not specifically on the target group of elderly gamers.

## **Research Questions**

To provide a deeper insight into the target group of elderly Internet gamers, and based on existing studies, the following three research questions (RQs) are posed:

1. How do elderly (50+) people use Internet-based games?
2. Which differences exist in usage behaviors between elderly and younger gamers?
3. Are there differences in usage behavior between retired people and the ones still working?

## Method

### *Procedure and participants*

Survey data (n = 460) was collected on elderly video gamers, and compared to a random sample (n = 417) of younger gamers from a larger data set of respondents. The overall self-selective sample (N = 10,659) was collected worldwide using a multi-language online survey. The surveys took some 15 minutes to complete, and participants were recruited by mailings, newsletters, and through gaming communities. Respondents answered questions about their socio-demographic data and usage behavior. The sample contained mostly participants from the European Union and the United States with an average age of 25.4 (SD = 10, min. 13, max. 87) years. Participants under the age of 13 were deleted because of legal reasons. The sample is male-dominated (82%, females 18%) and 38% are employed (50% still in education). About 43% of all participants are married or live in a partnership. This data is comparable to similar studies in the area of online gaming (e.g. Kim et al., 2008; Yee, 2006; Schultheiss, 2007).

The younger sub-sample is comparable to the overall sample (24.3 years, 17% females). Contrary to that, the elderly sub-sample is female dominated (62%, males 38%) at a mean age of 56.9 years (SD = 7, min. 50, max. 87). The elderly participants are mostly employed (45%) or already retired (34%).

### *Measures*

Variables examined include standard socio-demographics (such as the age of the gamers and job status), different types of Internet-based video games (casual, persistent, single-player, and multi-player games) as well as comparisons between elderly (50+) and younger (50-) players. Data collection was done using the MUSE-Framework (Schultheiss, 2011) and operationalization of the constructs person and usage.

**Game type:** Participants' favourite games were surveyed through a list that contained several hundreds of games. In the event that a game was not included, an open field was also included. We also asked participants to classify their favorite game to our typology of Internet-based games. The combination of classification and game allowed us to assign each participant to a type of Internet game.

**Game usage:** To examine the gamers' usage behaviors, we asked all participants for their estimated usage frequency (per week), their usage time on weekdays and weekends (per day), the money they spend to play their favorite game (in US \$ per month) and their willingness to pay (in US \$ per month).

**Analytical strategy:** On account of the mentioned research gap, our study was explorative in nature. In developing first general insights into usage behavior of elderly gamers, this study sought to take an initial step to close this gap. Consequently, this study concentrates on descriptive data analyses to examine usage patterns. Classical t-statistics are used to analyse group differences between elderly and younger gamers, as well as between retired and employed gamers.

## Results

### *Elderly game usage (RQ 1)*

Results show that silvergamers prefer casual games (57% weekly usage) and browser-based games (55%) as compared to the more complex and graphical persistent client games (19%). The results regarding usage time supports this argument, even though differences are less marked. Browser-based games are used at an average of 3.1 hours per day, casual games at an average of 2.9 hours and client games at an average of 2.4 hours. On weekends, usage time increases slightly (PBBG: 3.5 h, PCG: 3.6 h, Casual: 3.3 h). The economic potential of elderly gamers and different game types seems to differ. We can see that most money is spent on PCGs (US\$ 12 per month) and there is still room for more, as the average participant is willing to pay about US \$19.5. However, there is also a high economic potential for PBBGs (US \$4.9 paid per month; US \$7.9 willingness) and client games (US \$1.8 paid per month; US \$3.4 willingness).

### *Elderly compared to younger (RQ 2)*

Our results (see also: Table 2) show that Internet-based gaming behaviour differs between elderly and younger gamers. First of all, we can see that the favourite game type of the younger players is, in contrary to the elderly, PBBGs while casual games are less popular. This fact is underlined by a significant difference in usage time for casual games. Younger players just show about a third of the average usage time on weekdays in casual games, while we cannot find significant differences for PBBGs and PCGs. There also appeared to be no significant differences regarding the weekend usage for all examined game types between elderly and younger gamers.

		Persistent Browser-based Games	Persistent Client Games	Casual games
Frequency (at least once a week)	Elderly	55 %	19 %	57 %
	Younger	79 %	28 %	20 %
Usage time (per day during week)	Elderly	3.1 h	2.4 h	<b>2.9 h**</b>
	Younger	2.7 h	2.8 h	<b>1.2 h**</b>
Usage time (per day weekends)	Elderly	3.5 h	3.6 h	3.3 h
	Younger	3.4 h	4.4 h	1.7 h
Money paid	Elderly	<b>4.9 US \$*</b>	12 US \$	<b>1.8 US \$*</b>
	Younger	<b>2.5 US \$*</b>	5.2 US \$	<b>0.4 US \$*</b>
Willingness to pay	Elderly	7.9 US \$	19.5 US \$	3.4 US \$
	Younger	5.9 US \$	13.2 US \$	1.2 US \$

\*differences are significant at a 95% level  
 \*\*differences are significant at a 99% level

**Table 2.** Gaming usage: elderly vs. younger

In addition, silvergamers display a significantly greater willingness to pay for PBBGs and casual games than younger gamers. Hence, we are able to support existing studies (Micheaud & van Soest, 2008; Carroll, 1998).

### **Retired compared to employed (RQ 3)**

In terms of our comparison between retired elderly gamers and those elderly gamers who are still employed (see also: Table 3), it is possible to identify various differences. These mainly refer to the type of casual games, which, as noted, is the most popular game type for elderly gamers. Retired gamers were found to spend much more time playing casual games during the week and on weekends.

In the economic context, we found contradictory but non-significant results. The money spent on PBBGs and casual games increased in the group of retired gamers, while it decreased for PCGs. The willingness to pay for PBBGs also increased in the group of retired gamers, but decreased for PCGs and casual games.

		<b>Persistent Browser-based Games</b>	<b>Persistent Client Games</b>	<b>Casual games</b>
Frequency (at least once a week)	Employed	54 %	20 %	52 %
	Retired	50 %	15 %	63 %
Usage time (per day during week)	Employed	2.8 h	2 h	<b>2 h*</b>
	Retired	3.1 h	2.5 h	<b>3.7 h*</b>
Usage time (per day weekends)	Employed	3.5 h	3.7 h	<b>2.8 h*</b>
	Retired	3.2 h	3.2 h	<b>3.8 h*</b>
Money paid	Employed	4 US \$	8.3 US \$	0.9 US \$
	Retired	5.9 US \$	4.7 US \$	1.7 US \$
Willingness to pay	Employed	6.7 US \$	11.4 US \$	3.9 US \$
	Retired	9.2 US \$	7.5 US \$	2.8 US \$

\*differences are significant at a 95% level

\*\*differences are significant at a 99% level

**Table 3.** Gaming usage: retired vs. employed

## **Discussion**

We assumed that elderly gamers could be an important target group with economically usable potential. Our findings support this assumption. All in all, we can see a very high usage time through both social groups. In terms of the usage time of 2-4 hours per day, it must be said that this is in general a very high usage. Even though it is similar to several other studies on online and Internet gaming (e.g. Yee, 2007; Yee, 2006; Schultheiss, 2007), it is a very intense media consumption that could be biased by self-selective sampling methods.

At a glance, the low usage of PCGs but the high payment and willingness to pay for those complex and graphically dominated games seems to be contradictory. However, it can be explained by reference to two facts. On the one hand, sometimes basic fees exist and in-game purchases are more expensive. On the other hand, purchased in-game advantages could lead to less playing effort in the game.

A very interesting fact is that in all cases where significant differences could be found, elderly gamers use games longer, pay more, and show a greater willingness to pay. In all



other cases where we could not find significant differences, one could assume that there are still differences. They may have been hidden by the relatively small sample size in the group of retired casual gamers. Nevertheless, this small group of elderly gamers generally shows a more intense usage and economic potential than the younger group. This could be due to this group's greater amount of spare time and relative economic stability. Additionally, our findings concerning the economic potential not only support existing studies (Micheaud & van Soest, 2008; Carroll, 1998), they also reveal some of the economic implications of this over-looked segment of the gaming audience.

We found less significant results comparing working and non-working elderly gamers – whether this was a reflection of our smaller sample size in the elderly sub-sample or an actual indication of the lack of difference remains unclear. Such results nevertheless seemed to contradict what should be addressed in future research. As the elderly sub-sample is more homogeneous, fewer differences could be estimated. The contrary results between the money spent and willingness to pay in different game types could point out that there are different perceived benefits and/or usability in different game types, as already mentioned by Dogruel (2008). For example, less complex casual games could easier fulfill the elderly players' needs in media usage, information, entertainment, or curiosity than complex, competition oriented PCGs.

## **Limitations and Future Research Directions**

There are some limitations that need to be addressed. First of all, we used a self-selected sampling method to gather our data, which can lead to several methodological effects. Although this seems to be the most appropriate method to date, there may be more available data about the basic population of Internet gamers in the future. Statistic weighting could then improve our sample to a more representative one. Second, both age groups, elderly and younger, are still very heterogeneous. A group between 50 and 87 years possibly contains participants with very different socio-economic backgrounds. They may differ in education, occupation, social status and many more factors. This also applies to our younger sub-sample. Greater precision would require a clustering of smaller samples and further calculations with several influencing variables. Third, we used descriptive data and t-statistics to explore and get a first insight into the field of silvergamers. This should be deepened in further studies, where multivariate calculations are used to include more influencing variables.

## **Conclusion**

It can be concluded that elderly gamers in the Internet are a very interesting and economic potential target group that has overlooked by producers and providers of video games. We found out that elderly gamers prefer casual and persistent browser-based games and, especially regarding casual games, show a higher usage time than younger players. Moreover, the elderly spend more money to play Internet-based games. When elderly gamers go into retirement, they increase their gaming activities further and possibly show more economic potential when the game type delivers appropriate perceived benefits and usability for this group. This leads to further implications for game design and marketing. Games should be designed to fit the needs of elderly gamers, and business models could specifically address the elderly as a target group. Later on, marketers need to communicate the features which fulfill more elderly benefits and elderly peoples' needs in modern media entertainment. It seems that Internet game producers and marketers are neglecting the silvergamers at their own peril!

## References

- Adams, A. & McCrindle, R. J. (2008). *Pandora's box: social and professional issues of the information age*. Chichester, England: John Wiley & Sons.
- Borland, S. (2007). Elderly 'addicted' to Nintendo Wii at care home. Retrieved September 15 2012, from <http://www.telegraph.co.uk/news/uknews/1563076/Elderly-addicted-to-Nintendo-Wii-at-care-home.html>.
- Bradley, N. & Poppen, W. (2003). Assistive Technology, Computers and Internet May Decrease Sense of Isolation for Homebound Elderly and Disabled Persons. *Technology and Disability*, 15, pp. 19-25.
- Carroll, C. D. (1998). Why do the rich save so much? National Bureau of Economic Research Working Paper, No. 6549.
- Dogruel, L. (2008). *Computerspiele und 50+. Akzeptanz und Potentiale von Computerspielen bei Personen ab 50 Jahren*.
- Entertainment Software Association (ESA, 2010). *Essential Facts About the Computer and Video Game Industry*.
- Gilly, M.C. & Zeithaml, V.A. (1985). The Elderly Consumer and Adoption of Technologies. *Journal of Consumer Research*, 12, pp. 353-357.
- Goldstein, J., Cajko, L., Oosterbroek, M., Michielsen, M., van Houten, O., & Salverda, F. (1997). Video games and the elderly. *Social Behavior and Personality*, 25(4), pp. 345-352.
- Griffiths, M. D. & Davies, M. N. O. (2003). Breaking the Stereotype: The Case of Online Gaming. *CyberPsychology & Behavior*, 6 (1), pp. 81-91.
- Griffiths, M.D., Davies, M.N.O. & Chappell, D. (2004a): Online computer gaming: a comparison of adolescent and adult gamers. *Journal of Adolescence*, 27(1), pp. 87-96.
- Griffiths, M.D., Davies, M.N.O. & Chappell, D. (2004b): Demographic factors and playing variables in online computer gaming. *CyberPsychology and Behaviour*, 7(4), pp. 479-487.
- Grüninger, H., Quandt, T. & Wimmer, J. (2008). Generation 35 Plus. Eine explorative Interviewstudie zu den Spezifika älterer Computerspieler. In: T. Quandt, J. Wimmer & J.
- Wolling (Eds.), *Die Computerspieler. Studien zur Nutzung von Computergames*, pp. 113-134.
- IJsselsteijn, W.A., Nap, H., de Kort, Y.A.W., & Poels, K. (2007). Digital Game Design for Elderly Users, Proceedings of Futureplay 2007 (Toronto, Canada, 14-18 November 2007), pp. 17-22.
- Kim, E.J., Namkoong, K., Ku, T., Kim, S.J. (2008). The relationship between online games addiction and aggression, self-control and narcissistic personality traits. *European Psychiatry*, 23, pp. 212-218.
- Klimmt, C., Schmid, H. & Orthmann, J. (2009). Exploring the Enjoyment of Playing Browser Games. *CyberPsychology & Behavior*, 12(2), pp. 231-234.
- Michaud, P.C. & van Soest, A. (2008). Health and Wealth of Elderly Couples: Causality Tests using Dynamic Panel Data Models. *Journal of Health Economics*, 27:5, pp. 1312-1325.
- Nap, H.H., IJsselsteijn, W.A. & de Kort, Y.A.W. (2009). Age Differences in Associations with Digital Gaming. DiGRA 2009 Proceedings (London, 1-4 September 2009).
- Ryan, R. M., Rigby, C. S. & Przybylski, A. K. (2006). Motivational pull of video games: A self-determination theory approach. *Motivation and Emotion*, 30, 347-365.
- Schultheiss, D. (2011): MUse – A Framework for Reception-based Gaming Research. Proceedings of Think Design Play: The fifth international conference of the Digital Games Research Association.

- Schultheiss, D., Bowman, N. D., & Schumann, C. (2008). Community vs. soloplayer in multiplayer Internet games. *Proceedings: The [player] conference*: pp. 452-468.
- Schultheiss, D. (2007). Long-term motivations to play MMOGs: A longitudinal study on motivations, experience and behavior. In: A. Baba (Ed.), *DiGRA 2007 - Situated Play* (Proceedings of Digital Games Research Association International Conference 2007), pp. 344-348.
- Smith, M.A. & Kollock, P. (1999). *Communities in Cyberspace*. New York: Routledge.
- The Telegraph (2009). *Playing Nintendo Wii 'relieves Parkinson's symptoms'*. Retrieved September 15 2012, from <http://www.telegraph.co.uk/health/healthnews/5516351/Playing-Nintendo-Wii-relieves-Parkinsons-symptoms.html>.
- Weiss, T. (2008). Target Audiences for Online Games Advertising: US Research Review, Trendspotting Blog. Retrieved September 15 2012, from <http://www.trendspotting.com/blog/?p=517>.
- White, G., Harley, D., Axelrod, A., McAllister, G. & Fitzpatrick, G. (2009). Wii Gaming for older players: From motivation to appropriation, and usability to user experience. DiGRA 2009 Proceedings (London, 1-4 September 2009).
- Yee, N. (2007). Motivations for Play in Online Games. *CyberPsychology and Behavior*, 9, pp. 772-775.
- Yee, N. (2006). The Demographics, Motivations and Derived Experiences of Users of Massively-Multiuser Online Graphical Environments. *PRESENCE: Teleoperators and Virtual Environments*, 15, pp. 309-329.