



# EPN REPORT



## Second Life

### The Second Life of Virtual Reality

The Hague, December 1st 2006

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## **Second Life, the Second Life of Virtual Reality**

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The Hague, EPN - Electronic Highway Platform, December 2006

First issue October 2006, Original in Dutch: "Second Life, het Tweede Leven van Virtual Reality"

Translation by Sophie van Everdingen

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*The EPN platform is a Dutch non-profit foundation that functions as a centre of knowledge and a think tank regarding the influence of the use of ICT in society. We therefore collect and create several kinds of information that provide more insight in new developments in which ICT plays a central role, as is the case with Second Life. Our participants include companies, politics, governments, universities and consumers and employees organizations (see [www.epn.net](http://www.epn.net)).*

## Management summary

A completely new category of virtual internet sites has come into being during the last decade. It is the visitors themselves who have populated, built and used these sites which were essentially empty in the beginning. Neither on the moon nor on Mars but in these virtual worlds have new communities taken up residence. The actual meaning of “virtual” is “not real” or “the essence of something not specified by name” however in this category of virtual worlds more and more relationships (economic, social, cultural and legal) have developed with the physical (real) world.

The inhabitants of the virtual worlds spend a good portion of their day there, maintain their social contacts there and earn money there as well. Artists exhibit their art, concerts and other performances are given and there are cinemas where films are shown which were actually filmed in the virtual world which we call “Second Life”. Visitors who have built houses or developed objects which can be used in the virtual world sell these through E-bay, slboutique.com or in their virtual store in Second Life. The virtual currency has an exchange rate and can be converted to Euros or Dollars. There are exchanges where one can speculate with virtual money and virtual land. There are project developers who create popular places where one can combine pleasure with virtual living and working.

The world of industry has also discovered the virtual world: there are ads for Coca Cola, IBM, Philips, Toyota and Adidas while Vodafone has created an in-world sms-service. Designers and companies such as Starwood Hotels use the virtual world an ideal place to obtain feed-back about their ideas. Others see it as a showroom to exhibit their art and designs. In the future, the virtual world will undoubtedly form an interface to the real world: think of virtual shopping in a supermarket, a clothing store or a furniture store where one could choose or design furniture and then try it out. Consumer goods such as cars or household gadgets can be tried out.

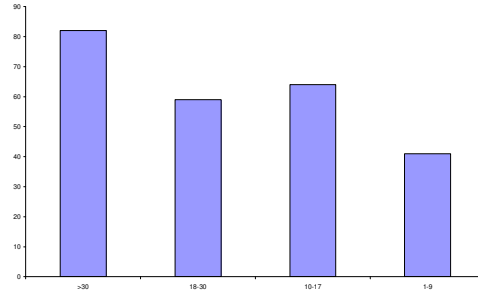
As visitors spend so much time in these virtual worlds, their psychological well-being and economic status in the real world are partially dependent upon their virtual success and contacts. The distinction between the physical (real) world and the virtual world tends to disappear. As the distinction between these two worlds fades in the experience of the visitors, one speaks of “inter-reality”. When these virtual worlds continue to grow and develop, they would then seem to offer practically unexplored opportunities for our society, in economic, cultural and social terms. For this reason, EPN decided to do research about the virtual worlds.

EPN explored the consequences of the fusion of virtual and physical reality in the areas of economics, rights and well-being by researching the new opportunities which this fusion offers our society.

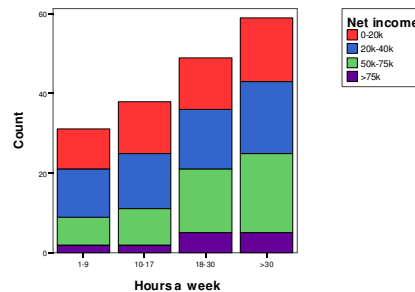
In one of these worlds, Second Life ([www.secondlife.com](http://www.secondlife.com)), EPN took a survey. 246 of the 273 inhabitants of Second Life responded to the survey questionnaire. A part of this group was also willing to be interviewed and this occurred subsequently by telephone.

It is wise to be somewhat cautious in drawing conclusions. The survey pertains to an a-select sampling of the population of Second Life, given the fact that the researchers approached the respondents actively. The selection of locations was also not random. The researchers tried to visit as many different locations as possible but those which were secured or protected could not, of course, be used. For these reasons, the population of Second Life which responded to the survey was most likely not a random sample but focused upon experienced and frequent users. Nevertheless, we may draw some interesting conclusions:

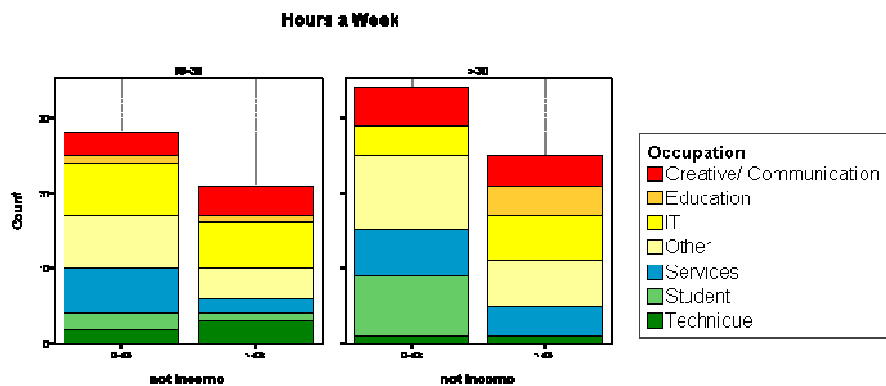
1. A considerable portion of those surveyed stated that they spend more than 20 hours a week in the virtual world, Second Life. A large group indicates that more than 30 hours would be the amount of time which they spend there. The telephone interviewees affirmed this information. They are truly active for so many hours and are inclined to underestimate the time spent rather than overestimate it.



2. A considerable portion of those surveyed stated that they have a good income level outside of Second Life. They are able to combine their activities in Second Life with their family life and work. The interviews indicated that the activities in Second Life were spread over evening hours, breaks at work and often a portion of the week-ends.

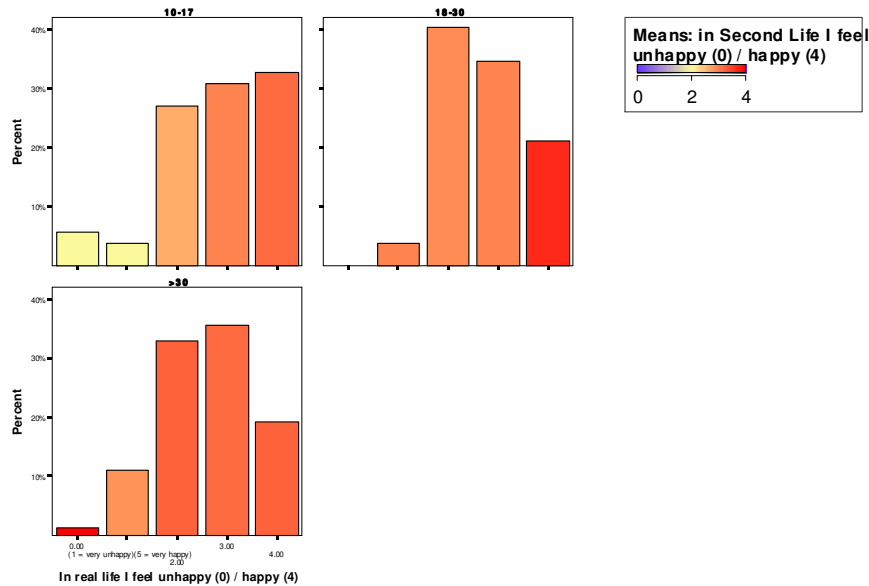


3. It is striking that those surveyed who spend considerable time in Second Life frequently belong to the creative or IT professions. These professions offer relatively high incomes and are populated by those who call themselves “producer”, or one who makes things. It appears that a creative vanguard (IT and creative professionals) has ensconced itself in Second Life.

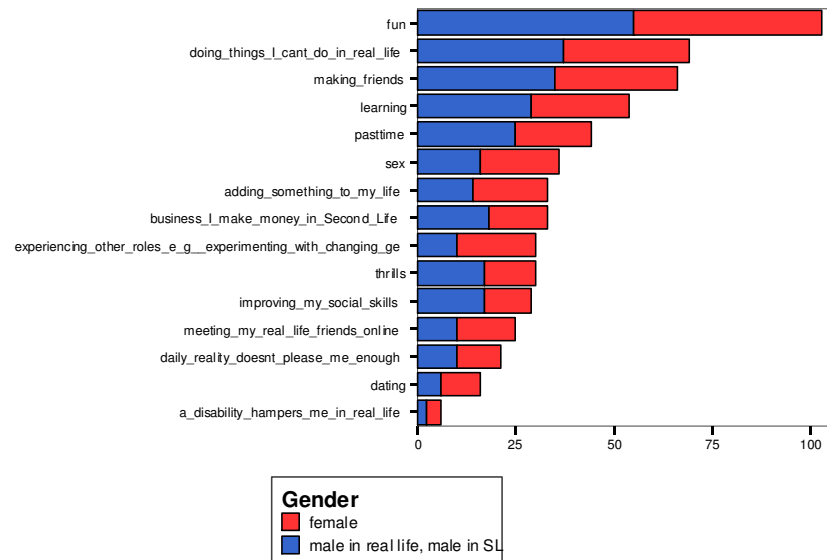


4. Many of those surveyed who indicated that they spend considerable time in Second Life were women. They are frequently better educated than the men, often at university level.

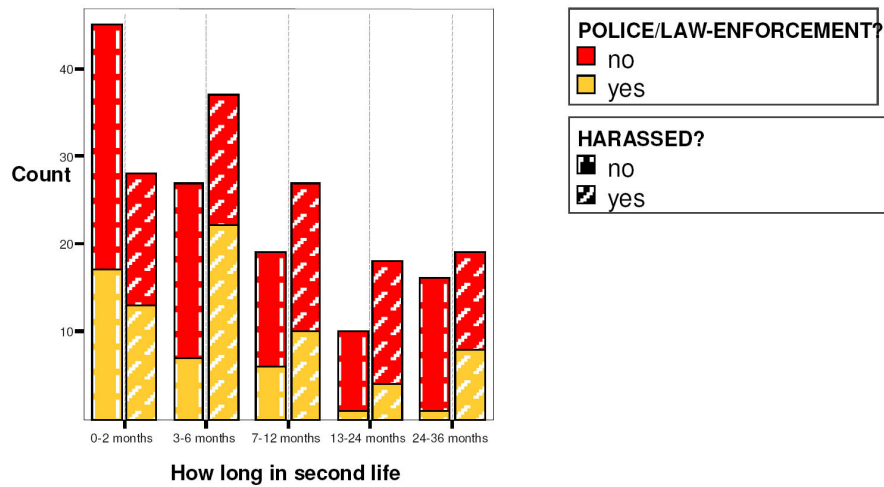
5. The group that spends a lot of time in Second Life is not only economically but also socially privileged. There is a strong correlation between well-being and success in Second Life and well-being and success in real life. The number of friends one has in the real world correlates strongly with the number of friends one has in Second Life. In this sense, the hypothesis that “the rich get richer” is supported in Second Life. They who are talented and successful socially and economically in the physical world belong to the group in the virtual world which feels most content. There is, however, a small group which feels less comfortable in the real world but has discovered fantastic social possibilities in Second Life. This is true for some retirees, unemployed, housewives who are bound to the house by certain circumstances, those who are ill or physically challenged.
6. The chart below represents the number of hours per week spent in Second Life. How happy one feels in real life is put on the x-axis. The color of the block indicates how happy one feels in Second Life where red is happiest and yellow is least happy. One can see that, in the group of 16 hours or more, those who feel unhappy in real life also feel unhappy in Second Life. In the group 18-30 hours there are no longer those unhappy in real life”. Those who feel less happy are happier in Second Life . The relationship between happiness in real life and in Second Life is strong in the group 30 hours and more except for those who are unhappy in real life. They are happier in Second Life. In the group are several people who are house-bound because of circumstances, illness or a handicap.



7. The motivation to participate in Second Life is diverse. Both men and women mention their hope to make friends or to experience things which are impossible in real life. The possibility of earning money is a less significant but nevertheless important motive.



8. Judicial/constitutional: Second Life appears to be a large social experiment. Visitors form societies and make their own rules. They find their own ways to maintain their standards and values. There are, just as there are in real life, visitors who enjoy harassing others. Products are sold. Some objects can be copied at will; others are subject to copyright rules. All sorts of social and economic problems which manifest themselves in real life do so in Second Life as well. A considerable number of visitors to Second Life have had negative experiences, especially in terms of harassment. The number of beginning visitors that has less than positive experiences is not so large. Those who spend more time in Second Life complain about these negative experiences. There are members of both groups who form a sub-group which would like to have more formal rules and regulations and would like to have them enforced. The largest portion of this sub-group comes from the beginners (0-2 months) and from the group which has been in Second Life for 24 months.





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## Introduction: background, hypothesis and research methodology

In the past decade, the increase of graphic possibilities and bandwidth has enabled the development of MMORPGs (massive multiplayer online role-playing games).

In these games multiple individuals are in the same virtual location at the same time. Where one used to imagine individually through dreams and stories, 'reality' is now actively and jointly created in virtual spaces. One of the most well known examples is *World of Warcraft*, a Tolkienian world in which quests have to be undertaken.

More recently, a new category of virtual worlds has come into existence, in which competitive and narrative elements are absent. Visitors themselves are required to populate, build and exploit these empty spaces. The new reality that is thus created is, remarkably enough, not entirely 'virtual', but is becoming gradually more linked to our physical reality. Inhabitants have relationships with one another, they earn part (or all) of their actual income there, are educated at the 'real' Harvard University and visit concerts of Duran Duran and U2. As the physical and the virtual world seem to merge into one, the distinction between the two – in the experience of the visitor – begins to fade.

In his dissertation 'Architecture of a Cyber Culture' (2003), Van Kokswijk describes this phenomenon as 'interreality': the hybrid and absolute experience of physical and virtual reality.

Interreality is the creation of a hybrid total image of and in both the physical and virtual worlds.<sup>1</sup>

Interreality means that – in the experience of the visitor – there is no clear distinction between the physical 'real' world and the virtual 'artificial' world. The one is increasingly integrated into the other and vice versa, while connections between the two become closer.

These close connections beget a whole range of social, legal and economic implications. Especially since the number of visitors to virtual realities has started to increase exponentially. Virtual realities appear to facilitate new forms of public service and economic activity in the physical world. These activities can often be initiated with minimal investment and instruction. In the near future, virtual worlds could offer practically unexplored opportunities for our society. Therefore, EPN decided to research these virtual worlds.

EPN explored the consequences of the fusion of virtual and physical reality in the areas of economics, law and well-being by researching the new opportunities which this fusion offers our society.

For this project the virtual world *Second Life* by Linden Lab ([www.secondlife.com](http://www.secondlife.com)) was selected. *Second Life* is an example of the new category of virtual worlds which have no embedded objective or narrative. There is no enemy to defeat or level to reach. One could speak not of a game but of a play. Targets are set by the inhabitants themselves, or not. Linden Lab claims merely to offer a platform for inhabitants to initiate activities. They are the ones who make this – essentially empty – world accessible and inhabitable: they build houses, create objects, start activities.

As *Second Life* is closely connected and similar in appearance to our physical 'real' world, interreality is likely to surface here.

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<sup>1</sup> Kokswijk, Jacob van (2003). *Architectuur van een Cybercultuur*. Universiteit Twente, Twente.

In order to explore the consequences for economics, law and well-being, a wide survey was held under 273 visitors of *Second Life*, who were approached by researchers at various locations throughout *Second Life*. 246 interviewees finished the questionnaire, which means there was a surprisingly low non-completion rate of 10%. After the results were analysed, the conclusions were presented to a proportion of the respondents in telephone interviews and subsequently discussed with David Fleck, co-founder of *Second Life*. On 19 September 2006 the concept report was discussed by a group of experts, among whom were Advisory Board members drs. Christian van 't Hof (Rathenau Institute), Ir. Dr. Jacob van Kokswijk (University of Twente), Dr. Laurens Mommers (University of Leiden), Prof. Dr. Wim Veen (Technical University Delft) and drs. Geert van de Velde (independent legal consultant).

After a short introduction to *Second Life* and the link with interreality, the methodology of this exploratory research is explained, after which the results concerning well-being, economics and law are presented.

## Introduction *Second Life*

In order to get a better understanding of virtual worlds in general, and *Second Life* in particular, it is important to touch briefly upon the development and character of *Second Life*.

Virtual worlds have existed ever since human beings started dreaming. In a dream, one enters a world that may appear real, but which is not. Dreaming is an individual experience; by talking about a dream this individual experience becomes a shared one. Thus, telling stories can generate a collective image among its audience.

Information and communication technologies have given virtual worlds a new character, with stories being exchanged simultaneously. On the Internet, for example, virtual communities are formed in virtual space, which anyone with a computer and an Internet connection can access.



Prim Attack, an *in-world* developed game

Due to improved calculation capacity and larger data streams, this virtual reality can foster more ‘inhabitants’ while, at the same time, it starts to resemble physical reality more and more. Online games such as *World of Warcraft* are not exactly like the physical world we live in, but sufficiently realistic to draw the player in. In these virtual worlds it is possible to create one collective reality, in a way dreaming could not and storytelling only partially. In addition to these games, *Second Life* offers a platform without a narrative element, where a social environment is created – as it is in the physical world – by the inhabitants themselves.

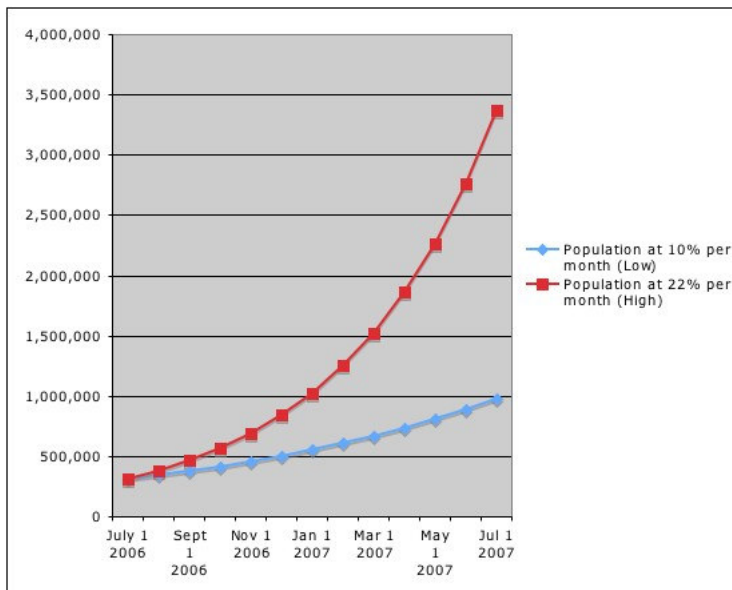
*Second Life* is a virtual world where one can interact with the environment. This environment is made up of quite a realistic graphic representation of our physical world. The graphic component is only constrained by the individual user's computer capacity and data streams. The first thing a new visitor sees is a modifiable puppet, called an 'avatar', that enables you to move through the virtual world. With this avatar, you can fly, teleport, or walk to practically any place within *Second Life*. Moreover, you can meet others, create objects, go to parties, buy kitchens and, through the introduction of commerce, earn money in a currency called 'Linden Dollar'.

*Second Life* is exceptional insofar that all of the content, such as clothing, cars, movies, houses, games, etc., is designed by the inhabitants; it offers a special tool for developing objects (cars, UFOs, flowers, vending machines, road surfaces, computers), which Linden Lab leaves up to the inhabitants. In *Second Life* some things are possible; others are not. Flying and teleporting are not possible in the physical world, but they are in *Second Life*. On the other hand, tactile experiences such as touch are not (yet) possible in *Second Life*. *Second Life* is divided into two parts, one for children and one for adults. Although exchange takes place to a certain extent, the two parts are essentially different. There are laws, too, in the shape of TOS (Terms of Service) and community standards. These 'laws' are nothing more than a code of conduct and Linden Lab claims not to want to get involved in politics or security.

#### *Second Life* Facts:

- Open to the public: 2003
- Beginning of rapid expansion: spring 2006
- Number of inhabitants May 2006: 165,000 ~ September 2006: 780,000 ~ November 2006: 1,700,000
- Turnover in *Second Life* among inhabitants September 2006: US\$ 6,4 million
- Number of fulltime enterprises September 2006: 3100

*Second Life* is interesting among other reasons for its rapid increase of inhabitants. Larger virtual communities such as *World of Warcraft* grow steadily, while *Second Life* is currently experiencing a more extensive expansion, the numbers of which indicate that it could be of serious influence.



The chart shows two possible curves. In reality, the expansion of *Second Life* resembles (exceeds) the most extreme one (shown in red).

Prediction by Reuben Steiger



## *Second Life* and interreality

With the construction of a parallel virtual world, the virtual gets more and more closely connected to the physical world. Many visitors of virtual worlds spend a significant part of their time in it: their well-being in the real world can quite possibly depend on their well-being in the virtual world, especially in virtual worlds that resemble the physical world. In the future, income and well-being in the physical world will become more and more dependent upon income in the virtual world, through a fusion of economies. When more and more people visit virtual worlds, difficulties arise in terms of rights that can only be arranged from the physical world: think of copyright, rights of property, but also the maintenance of norms and values.

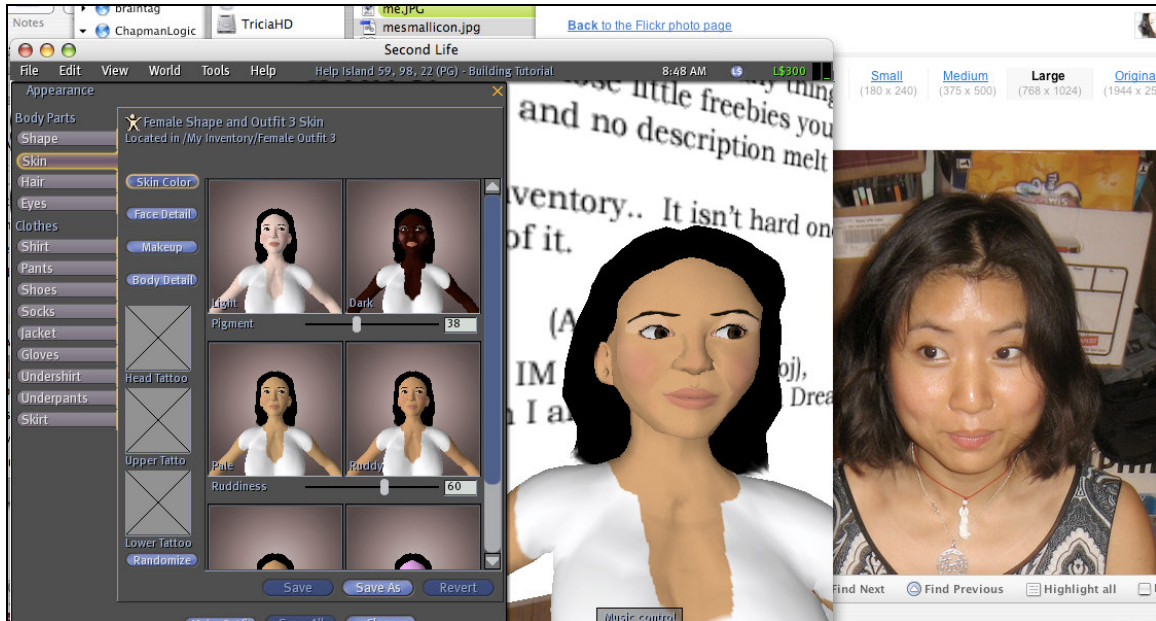


Photo by Tricia Wang

*Second Life* progressively merges with the physical world. Graphically, it is merely bound to the limitations of the user's hardware. This will result in deeper immersion and, through the resemblance to the physical world – as to what is possible and what not – a higher experience of interreality is expected, that is to say a hybrid and absolute experience of physical and virtual reality.

## Methodology, results

With this research, EPN does not aim to test a particular hypothesis. It serves merely as an exploration of the area in question. 246 ‘inhabitants’ of *Second Life* were approached to give their opinion on well-being, economics and law, particularly in their relation to, and impact on the physical world. On a meta-level it indicates that – considering the fact that both research and accompanying methodology in this field are still emergent – further research (explorative as well as hypothesis-testing) on virtual worlds, and their impact on the physical world, is warranted.

### Sampling, selection

In all, 246 out of 273 questionnaires were filled out and subsequently analysed. When interpreting the data, it is important to realise that the sampling cannot be considered as representative for the population of *Second Life* for several reasons:

- Respondents were not approached based on an a-select sampling; researchers approached them actively whilst residing in *Second Life*. They tried to visit as many locations as possible: both popular and less popular locations. These locations, however, were not chosen completely randomly either. Moreover, researchers could not include visitors of areas which were secured or protected.
- The number of people who spend few hours a week in *Second Life* exceeds the number of people who spend many hours a week in *Second Life*. Nonetheless, there is a larger chance to encounter someone who spends many hours a week in *Second Life*. Therefore, the research focuses on the group of inhabitants who claim to spend nine hours a week or more in *Second Life*. For this research, in particular, this is an interesting group, as they are more likely to be affected by interreality and because they give relatively good answers.
- Research was limited to the adult world of *Second Life*. The so-called ‘teengrid’ has not been visited: researchers chose to focus on adult visitors. For a few months now, however, age has not been checked in *Second Life*, as a result of which some of the respondents are, in fact, underage.
- The identity of respondents was not checked. Context was only checked later, in the telephone interviews. It was necessary to believe respondents at their word, which is precarious in an environment that obtains part of its attraction from anonymity and the playing of different parts.

### Sequence effects, response behaviour

During the completion of a questionnaire, a number of aspects can influence the validity of the conclusions. Some respondents will try to complete it with minimal effort; others start seriously, but barely read the final questions. In multiple-choice questions, the first options are generally read more carefully than the last. In this paragraph, a number of these aspects are considered and it is argued as to how far they influence the validity of the results.

When a lot of respondents start a questionnaire, but do not finish it, the question arises whether those who did complete the questionnaire are representative for the researched population, given that respondents who had either no time or no patience to complete it, were not included in the survey.

For this survey, the completion rate of the questionnaire was remarkably high: 246 out of 273 (90%). Moreover, when contact details were requested for a more in-depth interview, 115 respondents entered their email address. This indicates that they took the survey seriously. From the open questions at the end of the questionnaire all respondents answered at least one, which suggests that the survey resulted in a high-quality dataset.

The questionnaire contains a number of multiple-choice questions. The alternatives respondents could choose from were always listed in the same order. As a result, there is a risk of sequence effects: alternatives that are listed first are more likely to be chosen than the ones below. When drawing conclusions, the potential consequences of these effects should be taken into consideration and if possible, it should be checked if they could produce an alternative explanation of the results.

## Reliability of the answers

Virtual worlds derive part of their charm from the possibilities to experiment with identity: gender, role, personality. An online questionnaire is therefore problematic, because it is difficult to ascertain whether respondents answer truthfully. Answers can be coloured by social expectations: all the more because they are asked about behaviour which is normally anonymous and which takes place in a virtual world. When interpreting the results, the possibility that these answers were prompted by social expectations should be taken into consideration.

A number of indications, however, suggest that these effects – which could have made the survey invalid – had no significant influence on this particular survey:

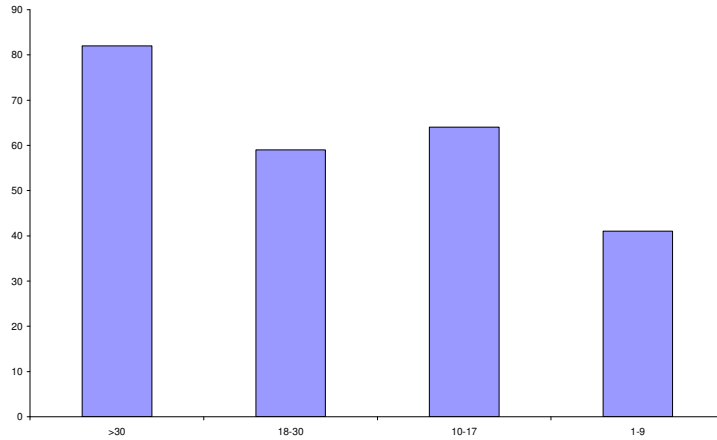
- Researchers first made contact with potential respondents and did not ask them to complete the questionnaire until they had actually ‘spoken’ to them in *Second Life*. In one particular case, an under-aged visitor, who could not respond properly to questions in this first encounter, was thus filtered out.
- Respondents, too, would not start completing the questionnaire spontaneously: only after researchers had spoken to them and asked them explicitly to participate, they were willing to complete the questionnaire. This can be seen as an indication that respondents only cooperated if they were truly motivated. Individuals who were not interested or did not have the time (22), could state this beforehand.
- The trouble it takes to complete the questionnaire makes it unappealing to ‘pretend’: it would make the survey lose its appeal. The fact that more than 90% of the questionnaires were completed, including the final open questions, can be taken as a sign that the questionnaires were taken seriously on the whole. The respondents were also asked to let the researchers know when they had finished the questionnaire, so they could tell them what they thought of the survey and if the questions gave them the opportunity to say everything they wanted to.
- In the questionnaire, respondents could state whether they wanted to be contacted to elaborate on their answers. In the follow-up interviews, their answers (and the noteworthy aspects about them in particular) were discussed: some of the questions were asked once more. Inconsistencies were found on several occasions, although never large ones. Of course, it is still possible that those who were not interested in a follow-up interview have given unreliable answers. Additionally, interviewees were presented with the provisional conclusions and asked whether these corresponded with their own experiences. Regarding the conclusions on gender and gender swapping (in the physical world and in *Second Life*), interviewees largely disagreed with each other.

In the next chapters, the results of the survey are presented, starting with a demographic breakdown of the respondents, after which the results are analysed using combined data.



## Description of the sample

### Hours a week



Hours a week	Number	Percentage
>30	82	33%
18-30	59	24%
10-17	64	26%
1-9	41	17%
Total	246	100%

Most of the respondents come from the group that spends more than 9 hours in *Second Life* (83%). A notably high percentage (33%) spends more than 30 hours a week in *Second Life*.

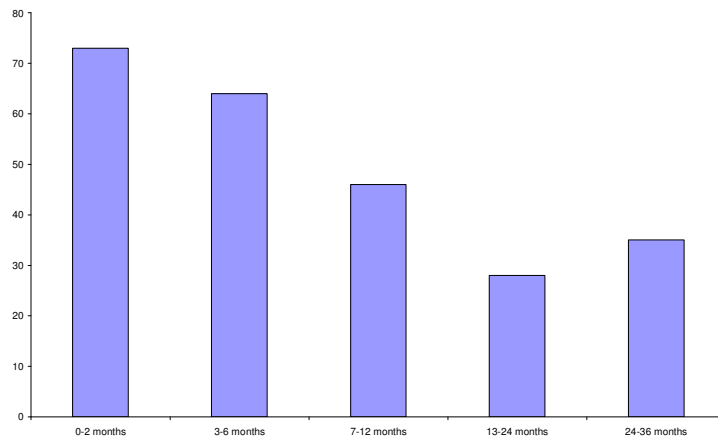
### Interpretation

It should be noted that respondents can interpret 'hours a week spent in *Second Life*' in different ways: To 'spend' can be understood as being 'logged on' without being actively present. The way you can have the radio or TV on, without anyone watching it.

In the follow-up interviews the question was posed what 'time spent in *Second Life*' actually meant to its individual users and how *Second Life* was embedded in daily life. So-called 'chair camping' (that is, to sit down in a chair and let everything pass you by) was not widespread among respondents.

With direct questions such as 'hours spent in *Second Life*' it is difficult to obtain accurate answers: respondents can easily underestimate or overestimate. In the follow-up interviews, interviewees were asked about their schedule of day and specifically about the incorporation of *Second Life* into it. It appeared that, in their answers in the survey, they underestimated rather than overestimated the time spent. A possible explanation is that the interviews were sometimes held several months after completion of the questionnaire and that interviewees had started to frequent *Second Life* more often in the meantime.

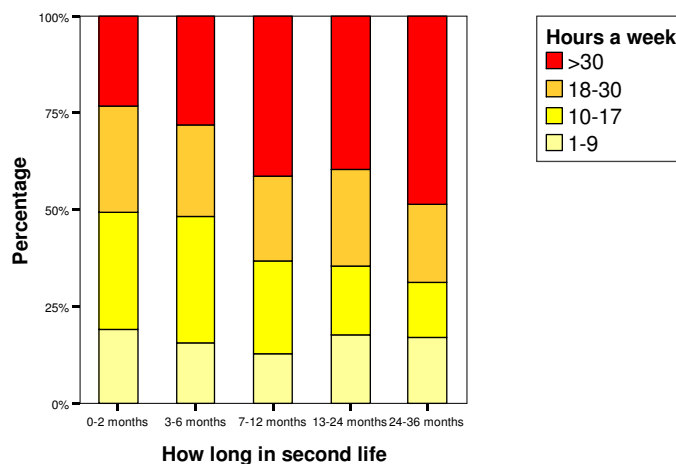
## Membership in months



## Interpretation

The division of months spent in *Second Life* results in a curve which could have been steeper if an a-select sample had been taken: the number of people who have been a member for 0 to 2 months is probably higher than the number shown here. The chart shows an increase in the category of more than 24 months. This is probably due to the fact that this is a rest category: had it been split up into more defined categories, it would have resulted in a declining curve. Moreover, an overrepresentation of this group can be attributed to the fact that they are often frequent and intensive users and were therefore more likely to be encountered by researchers.

## Hours a week, membership in months



The number of hours a week weighed against the membership in months shows that, the longer users are subscribed, the more time they tend to spend in *Second Life*. The expansion of the group that spends more than 30 hours in *Second Life* is particularly remarkable. The number of respondents who spend 1-9 or 10-17 hours a week in *Second Life* decreases slightly among respondents who have been around longer.

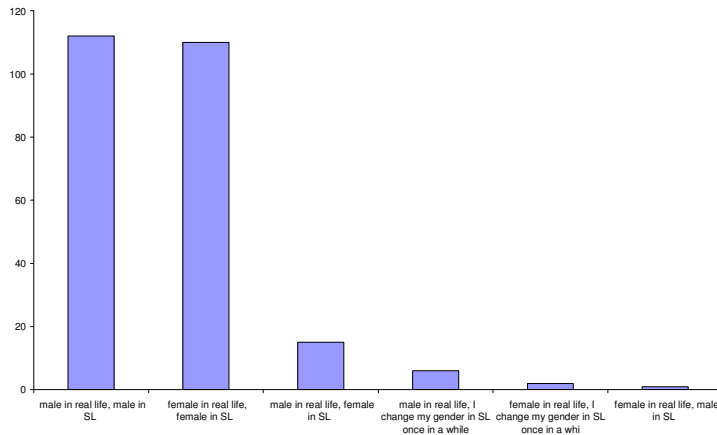
## Interpretation

As respondents have resided longer in *Second Life*, the group that spends more than 30 hours a week in *Second Life* becomes larger. Additionally, there is a considerable group that spends 17-30 hours a week. Still, *Second Life* does not lose its attraction to those who invest little time in it. Training, for example, is not required to participate. Hence, *Second Life* can still be interesting without investing time or developing skills.

The number of inhabitants who spend more than 30 hours a week in *Second Life* does, however, increase among those who have been a member for a longer period of time. It appears that there is a higher drop-out rate among those who spend less than 30 hours in *Second Life*. If *Second Life* were to have addictive qualities – that is to say, the longer your membership, the more hours you spend in it – a more extreme pattern can be expected. In that case, the percentage of users who spend more than 17 hours a week in *Second Life* would probably increase more.

Note: the group of people who spend less than 9 hours a week ('light users') in *Second Life*, is underrepresented in this survey in respect of the general population, particularly in the group of inhabitants who have been a member for 0-2 months. In case of addiction, most people who spend less than 9 hours a week in *Second Life* are in the 0-2 months group. On the other hand, since they are underrepresented in each group and the chance of finding light users in each one of these groups is similar, a decrease of light users should become visible.

## Gender



GENDER	Total
Male in real life, male in Second Life	112
Female in real life, female in Second Life	110
Male in real life, female in Second Life	15
Male in real life, I change my gender in Second Life once in a while	6
Female in real life, I change my gender in Second Life once in a while	2
Female in real life, male in Second Life	1
Endtotal	246

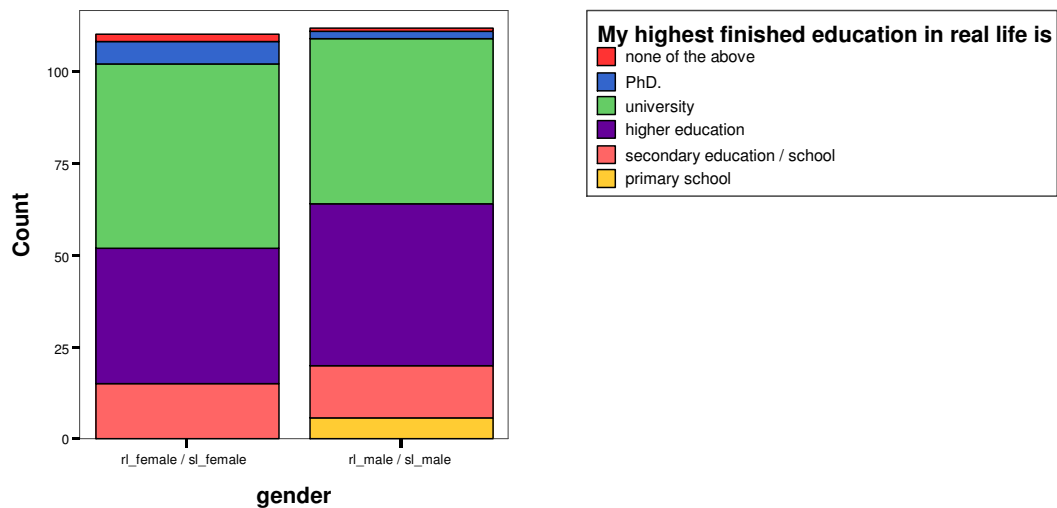
The number of female and male respondents in the survey is as good as equal. A small percentage of both men and women (10%, N=24) experiment with gender.

## Interpretation

A virtual world, more than any other place, allows one to experiment with sexual characteristics. It is therefore remarkable that only 10% claim to do this. A possible explanation is that respondents lied about their real gender. Another possibility is that they see *Second Life* as a place where it is actually easier to be ‘themselves’ and make contact with other people. In the follow-up interviews, this question brought about a lively discussion. Arguments varied, but on the whole, interviewees were not surprised by this percentage. Among interviewees, these ‘gender swappers’ were mostly known as men who assume a female body. From this angle, the numbers present a different image. Out of the entire population of male respondents (133) it appears that 21 (16%) swapped gender. According to interviewees, this was a more realistic percentage.

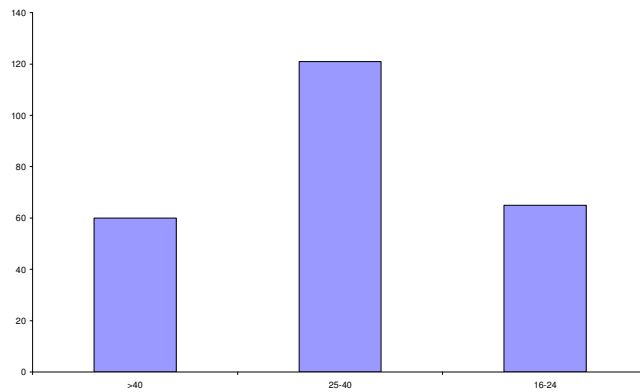
Furthermore, the interviewees believed that an avatar is often a reflection of the person behind it, which makes swapping unnecessary. David Fleck, co-founder of *Second Life*, acknowledged this. He stated that individuals, after an experimental phase – in which all possible forms of expression are tested – create their own avatar after their own image, ‘at the most more attractive’.

## Gender and education



It is worth noticing that the average level of education of female respondents is higher than that of male respondents.

## Age



AGE	Total
>40	60
25-40	121
16-24	65
Endtotal	246

Among respondents, the 25-40 group is most strongly represented (50%).

## Interpretation

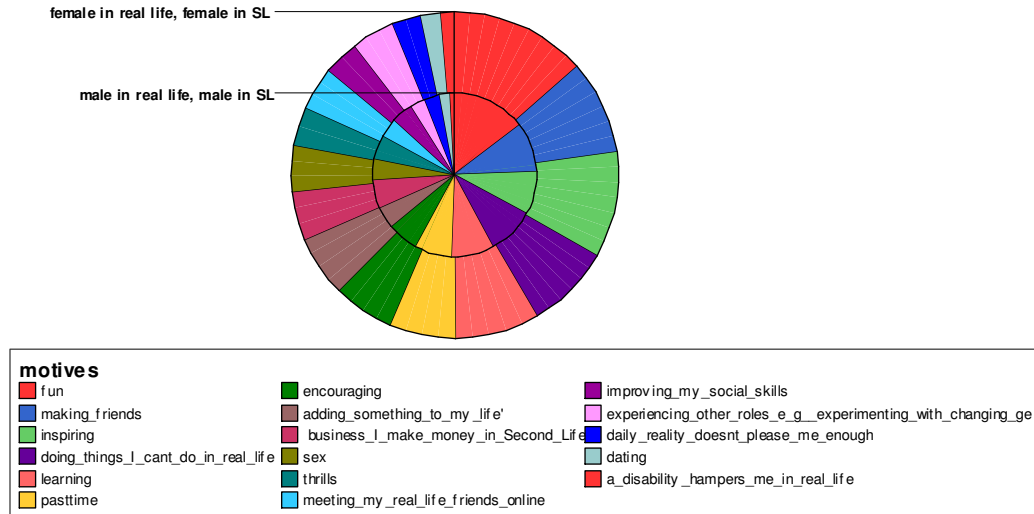
To check the validity of this data for possible extrapolation about the general population, a comparison with Linden Lab's population data was warranted. According to Fleck, the average age of *Second Life* users is 31. The exact average age of the respondents cannot be calculated from the data of the survey, but it is clear that the point of gravity is on the 25-40 group and that the younger and older age groups are more or less equally represented.

The average age in this survey could be slightly higher than the average age according to Linden Lab. There were a couple of senior citizens in the survey. Moreover, the 'teengrid' was excluded from the survey, resulting in an upward bias, which also attributes for the high percentage of women in the sample. In general, women start playing games and visiting platforms on a higher age than men. Therefore, the high percentage of women in the survey is not surprising.



Studying outside Harvard University. Photo by Pathfinder Linden

## Motives for participating in *Second Life*

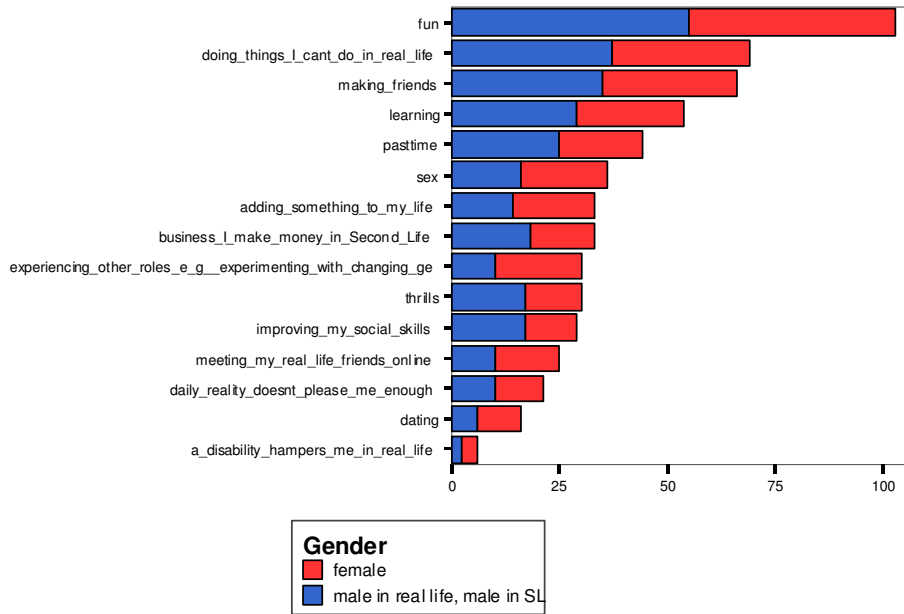


In the survey, respondents were asked what their motives were for participating in *Second Life*. The chart below shows these motives, differentiated to gender in the physical world.

The motives were sorted by 'number of times chosen'. Remarkably, 'sex' comes 11<sup>th</sup>. It is the social aspects that most respondents put first. 'Earning money' comes 9<sup>th</sup>. There are not many differences between men and women: women are more divided in their preferences than men, but on the whole they have similar motives. Only in 'experiencing roles' there is a majority of women.

The absolute figures show that 'fun' is head and shoulders above the other motives: it should be noted, though, that 'fun' was at the top of the list of options, which could account for (part of) its popularity. Nevertheless, the social aspects seem to prevail. This is practically equal for men and women. The low ranking of 'sex' could be a result of social expectations. It appears to be a controversial motive: a number of respondents indicated explicitly that they were displeased with visitors who have this as their primary motive. 'Making money' is a subordinate motive for most visitors.

It is worth noting that 16 out of 246 respondents indicated that they have a disability in the physical world and that this is a motive for them to visit *Second Life*. From the follow-up interviews, an individual emerged who admitted that *Second Life* had a therapeutic effect on psychological problems through self-help groups in the virtual world.



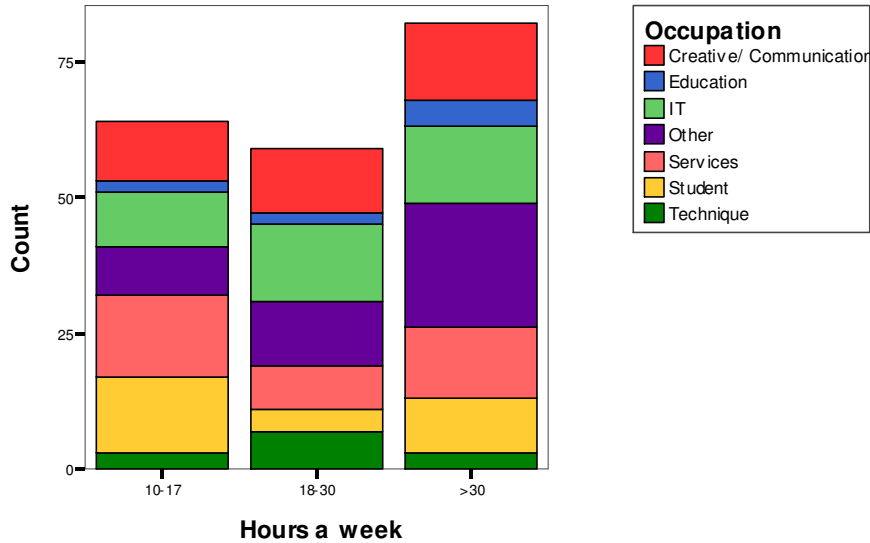
## Interpretation

These results may have been influenced by sequence effects: motives were presented in a fixed order. The possibility of sequence effects cannot be disregarded. Then again, the motive ‘doing things I can’t do in real life’ was 12<sup>th</sup> on the list (out of 14) and ranked 4<sup>th</sup> by respondents, whereas ‘pastime’ was 2<sup>nd</sup> on the list and ranked 6<sup>th</sup>.

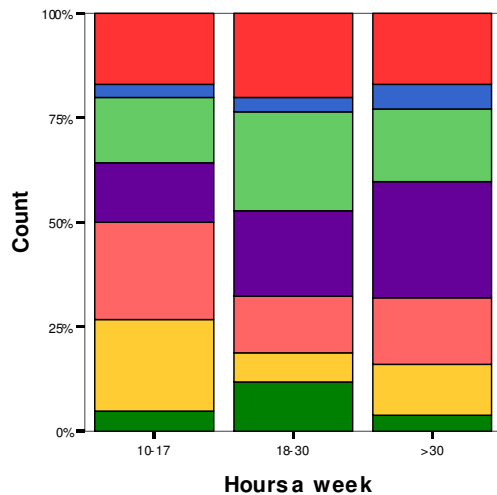
Researchers composed this list more or less intuitively, in consultation with inhabitants. Some motives seem to differentiate well, while others do not. In all probability, some important motives have not been mentioned yet. Further research is warranted to develop and validate this list. Motives that have not been listed were, for example, the following:

- Looking for inspiration (commercial / love life)
- Attention, forum function (one can be heard), look-at-me, raise status
- Present own ideas from *Second Life* or physical world

For whom is *Second Life* attractive: employment, income, hours a week

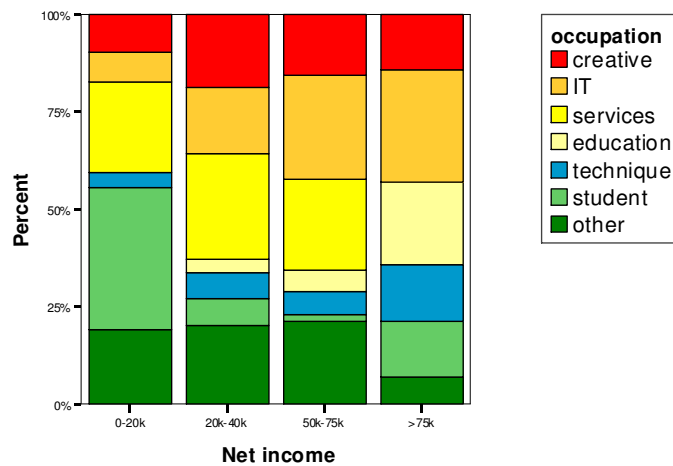


Respondents were asked to enter their occupation. These were categorised into 7 groups: *education*, *technical*, *student*, *creative*, *IT*, *public service* and *other*. Respondents from the groups *technical* and *public service* are generally less educated, e.g. accountants, bank employees or shop assistants. *Creative* consists of artistic and language-oriented jobs. *IT* entails all jobs in Information Technology, i.e. designers, programmers, project leaders etc. The group *other* is made up of a mixed company: not only housewives belong to this group, but also senior citizens, unemployed, ill and disabled people.

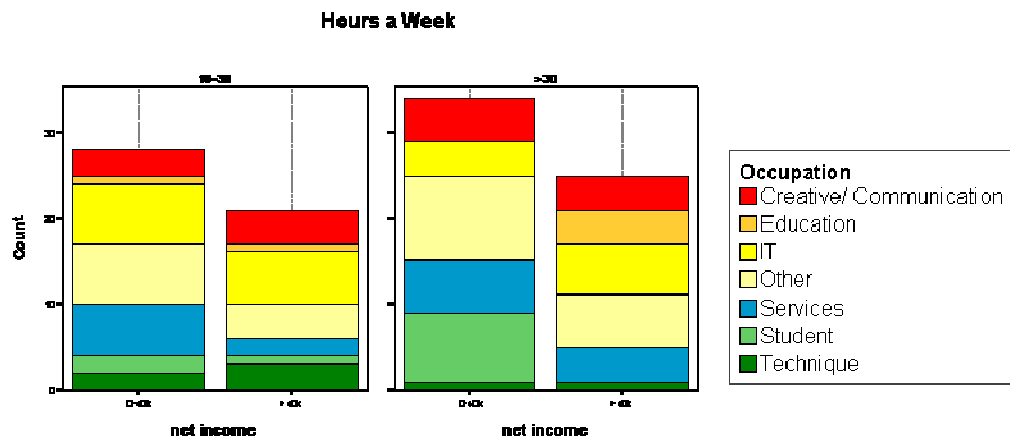


In the group that spends more than 18 hours a week in *Second Life*, are a lot of IT professionals and creative individuals: especially in the 18-30 hrs group. Students and public servants generally spend less than 17 hours a week in *Second Life*. Remarkably, the 'others' are well represented in the 30 hrs and over group. These can be people who work in *Second Life*, unemployed people, senior citizens or those who did not enter their profession in the survey.





Creatives, IT professionals and those employed in education comprise the highest income groups whereas the lowest consist of mostly students. Most of the ‘others’ have an income between US\$ 20,000 and 75,000. If you want to do serious business in *Second Life*, you need money: it is therefore notable that the ‘others’ are represented in all the income groups and not predominantly in the highest.

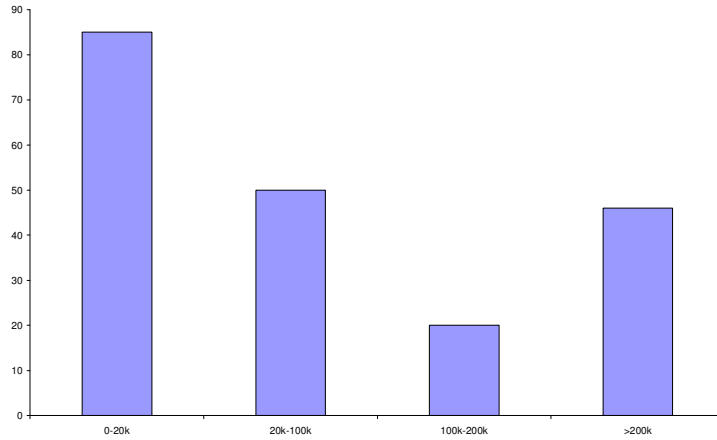


The income group that is represented the most among respondents, weighed by hours a week and net income, is the US\$ 20,000-75,000 group, who generally spend more than 30 hours a week in *Second Life*. The composition/breakdown of this column is quite interesting:

- *technical* and *student* are not represented
- *creative* and *IT* are represented more strongly than in the other columns (IT in particular)
- *public service* is strongly represented
- *other* is represented more strongly than in the other groups
- *education* stands out: it is practically only present in the 30 hrs and over group and in the highest income group. Moreover, 4 out of 10 claim to own more than US\$ 200,000 in possessions in *Second Life* and another 3 out 10 refuse to give any information about this.

## Economics

### Possessions in *Second Life*



VALUE (L\$)	Total
0-20k	85
20k-100k	50
100k-200k	20
>200k	46
Endtotal	201

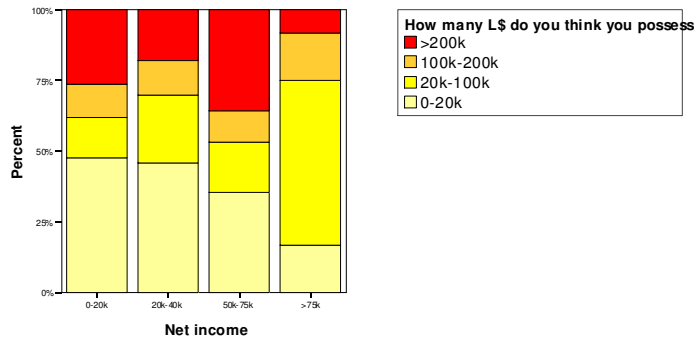
300 Lindendollar (L\$) ~ one US Dollar (US\$)

The chart shows a U-shaped curve: in fact, an upturned U (a normal distribution) would be expected, as it is in Western countries in the real world: a solid middle class with small groups of poor and rich on either side.

### Interpretation

These charts show that there is no solid middle class in *Second Life*. People are either 'poor' or they earn a lot. The group with more than L\$ 200,000 stands out in particular: instead of shrinking, it is expanding. This could be explained, however, by the fact that there are no further means of categorisation above this amount.

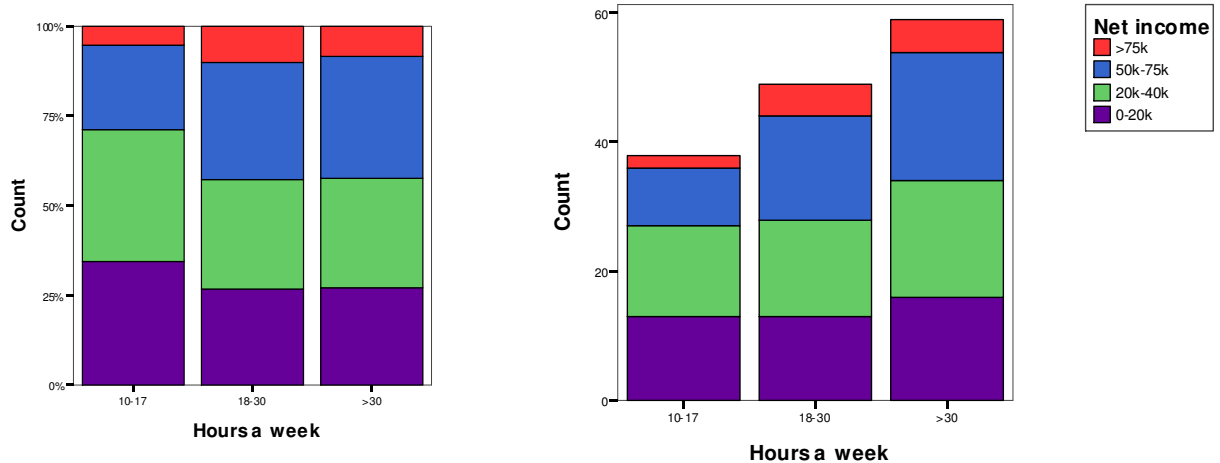
## Possessions in *Second Life*, hours a week



### Interpretation

It appears that an individual's net income in the real world cannot predict much about his or her possessions in *Second Life*. When asked about real income and property, they turned out to be of some significance, but they cannot be considered a dependable indicator for the possessions in *Second Life*. Those who stated that they had more possessions in *Second Life* than in the real world could be skilful *Second Life* entrepreneurs, investors who buy land and let it accumulate value or people who lied about their possessions. In other words: even without 'real' money it is possible to gain property. The physically 'rich' do not necessarily have a lot of possessions in *Second Life*.

## Income, hours a week



One of the negative effects of frequent participation in *Second Life* could be the loss of a real income. 42.4% of the respondents who spend more than 30 hours a week in *Second Life* claim to have an income of more than US\$ 50,000 a year.

## Interpretation

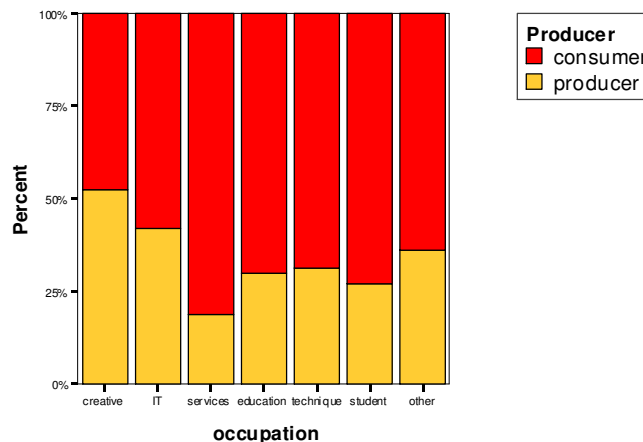
This is an interesting figure: many hours in *Second Life* and still a high income. Several explanations are possible:

1. They earn (part of) their income in *Second Life*
2. The group who spends more than 30 hours a week in *Second Life*, treat it like the TV that it is on without anyone watching: they are logged in, but do not participate actively. Hence, there is no reduction in income. The follow-up interviews have hitherto not supported this hypothesis, since interviewees indicated that they spend most of their time in *Second Life* actively.
3. Only those with a significant income can allow themselves the luxury of spending this amount of time in *Second Life*: it costs time and money. It could even be seen as a condition to spend so many hours in *Second Life*. It is, however, not a compulsory condition: those with a smaller income can still entertain themselves in *Second Life*.
4. Alternatively, those who spend more time in *Second Life* might be inclined to put down a higher income in the survey than they actually have.
5. It does cost some money to enter *Second Life*: a powerful processor, a powerful graphic card and a decent Internet connection. Therefore, the group with a higher income has been represented in *Second Life* for a longer period of time and more frequently than any other group. *Second Life* is attractive for those who can plan their own time: for example creative, well-paid jobs (freelance designers, writers). They can develop concepts in *Second Life* as a diversion from regular assignments. The chart below supports this hypothesis: those who have the jobs (and the income) with the space to plan their own time also spend the most time in *Second Life*.
6. *Second Life* is hot and trendsetters often come from this group. For these people, it is fashionable to spend a lot of time in *Second Life*.

This argument obviously requires further research. People with creative jobs and the liberty to plan their own time, have the opportunity to spend a lot of time in *Second Life*. Furthermore, to them it can be an inspiring environment. This creative vanguard has discovered *Second Life*.

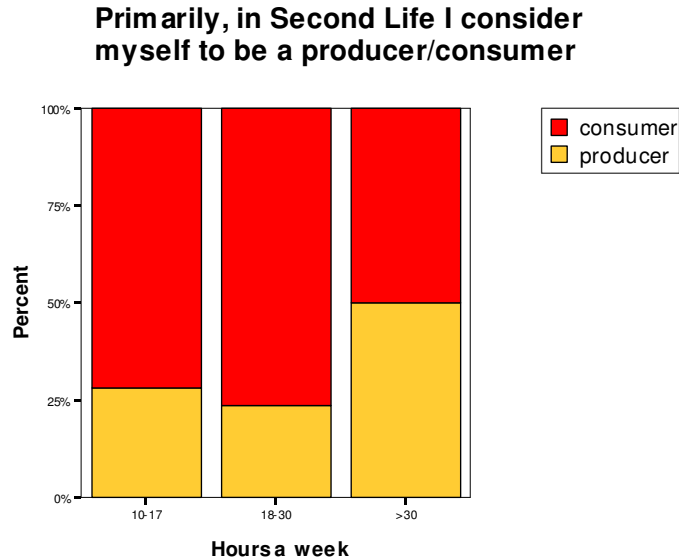
## Producer/consumer

It is worth noticing that the same groups, i.e. creative (over 50%) and IT (over 45%), provide the most 'producers', those that produce objects and/or organise events in *Second Life*.



## Interpretation

It appears that, to designers, *Second Life* is a playground where they can experiment and get inspired. IT professionals can utilise their skills in programming and developing functionalities. Incidentally, the percentage of producers in other groups is in the order of 25%: this is considerable. Being a producer is not restricted to professionals only; it is also possible for other visitors.



## Gender, hours a week, producer/consumer



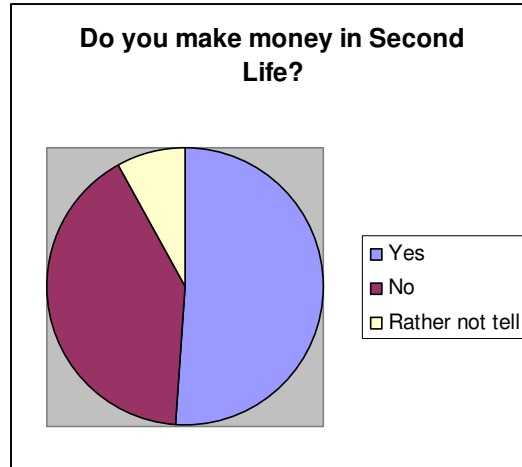
In the group that spends more than 30 hours a week in *Second Life*, the number of female visitors is higher than that of male visitors. In the same group, the number of producers is higher than in the other groups.

## Interpretation

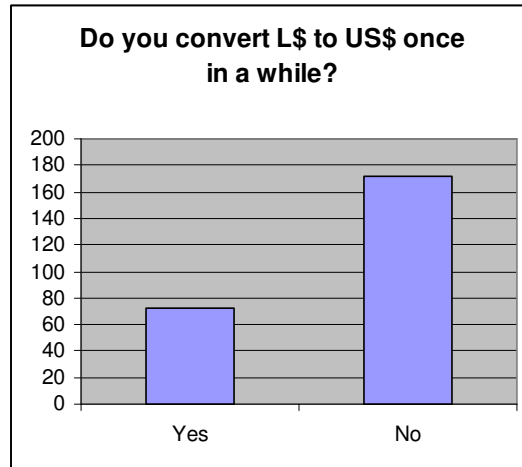
To a large amount of women, *Second Life* appears to be an appealing environment. Becoming a producer is perhaps not very easy: most producers spend more than 30 hours a week in *Second Life*. There are, however, also producers in the groups who spend less time in *Second Life*.

## Enterprise

The financial figures are interesting in view of 'entrepreneurship'. By comparing the four questions, an entrepreneurial profile has emerged: individuals who claim to be entrepreneurs, who make money and actually exchange this into US Dollars.



125 (51%) of the respondents claim to earn money in *Second Life*. 'Earning money' is, however, a flexible term: one can be an actual entrepreneur, but there is also the possibility of 'camping', which means parking the avatar in a virtual club and getting paid for it. Therefore, another criterion was employed: whether respondents actually exchange their Linden Dollars into 'real' money. 52 out of these 125 (41%) claim to do so.



This chart shows the absolute figures. 30% of all 246 respondents claim to convert virtual dollars into real dollars from time to time, which is 41% of those 125 who earn money in *Second Life*, as stated above.

These remaining 52 claim to earn money and exchange it. This indicates entrepreneurship. In order to check if this is similar in their experience, a comparison with their idea of producing and consuming is necessary. 39 out of 52 (75%) indicate that they see themselves as producers.

In conclusion, 16% of those surveyed fit the entrepreneurial profile.

## Well-being: integration of *Second Life* into daily life

### Well-being

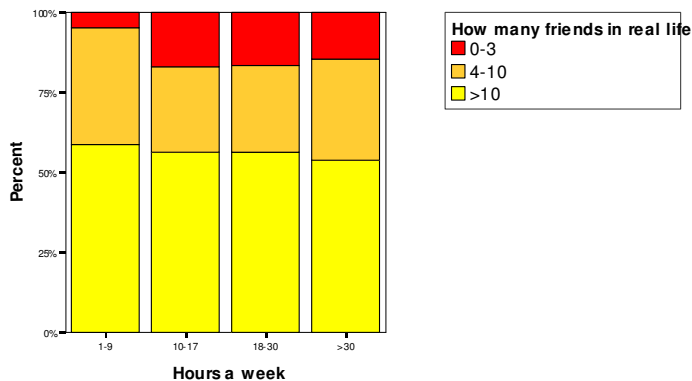
What kind of influence has *Second Life* got on the well-being of visitors? Is *Second Life* addictive, does it disjoint visitor's lives or is it integrated and can it enhance daily life?

In the survey, respondents were asked whether they felt like they were addicted. Answers could be given on a scale of 1 to 5, with 1 representing 'no, not at all' and 5 'yes, very much'. From direct counts, it emerges that 40% estimate themselves over average (4 or 5).

The word 'addiction' is not entirely appropriate for the excessive playing of games. In literature, this is called 'compulsive use'. Indicators for compulsive use were translated to *Second Life*:

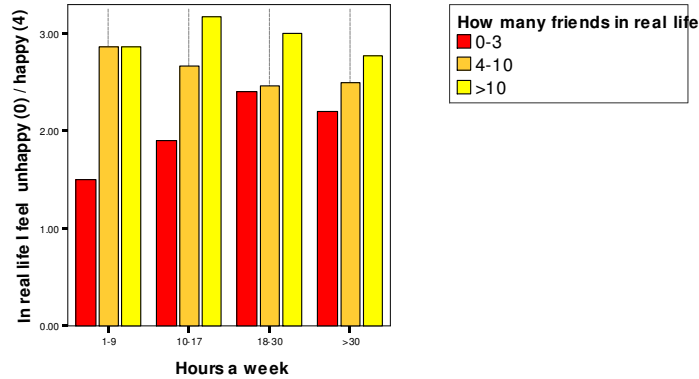
- Amount of time spent on/in *Second Life*
- Less social contacts in the physical world than in *Second Life*
- Lower level of psychosocial well-being
- More pleasant contacts in *Second Life* than in physical world
- Higher sense of appreciation in *Second Life* than in physical world
- More challenging/exciting life in *Second Life*

Time spent in *Second Life*, number of friends in the physical world, happiness in the physical world



The number of respondents with up to 10 friends is more or less equal in all groups, regardless of the hours spent in *Second Life*. The number of respondents with 0-3 friends in real life, does increase slightly as the number with 4-10 friends slightly decreases.

This image contradicts the assumption that *Second Life* would have a bad influence on visitors' social lives. On the other hand, the number of people with fewer friends is bigger in the group that spends more hours a week in *Second Life*.



Only those who have 0-3 friends and spend less than 15 hours a week in *Second Life* gave –on average– a negative answer to the question: ‘do you feel happy in the physical world?’ (2=neutral).

Those who have 0-3 friends and spend more than 15 hours a week in *Second Life*, score mildly positive on this question. All other respondents answered more positive, of which those with more than 10 friends claimed to be happier still than those with 4-10 friends.

Still, there is a light decrease in ‘happiness’ as one spends more hours a week in *Second Life*.

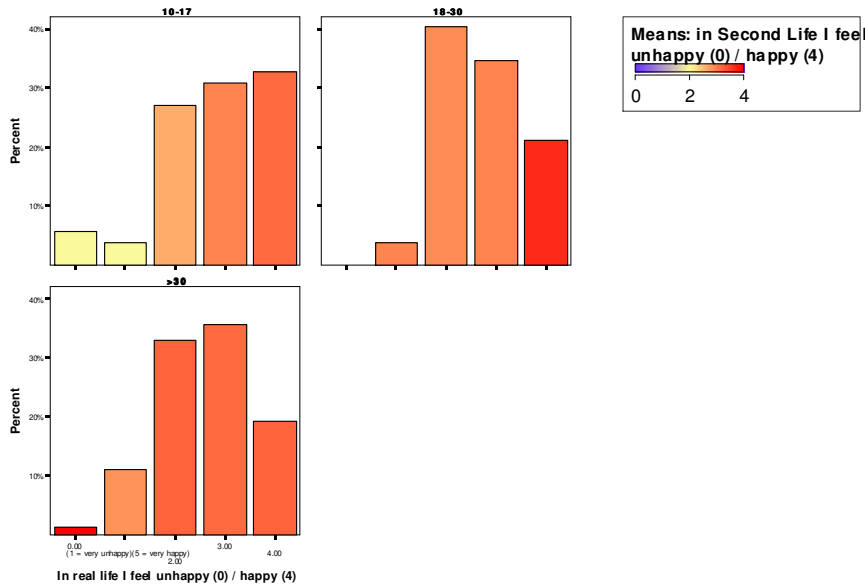
### Interpretation

These results show that, in spite of large amounts of time spent in *Second Life*, this does not automatically have a bad influence on visitors’ social lives. On the contrary, it seems that it can have a therapeutic effect on those with few friends: as they spend more hours in *Second Life*, they start feeling happier in the physical world. *Second Life* does not close this group off from the physical world; it actually seems to support them. The number of visitors with few friends does increase slightly in groups that spend more hours in *Second Life*, but the number of visitors with more friends remains the same in all the groups.

The reverse hypothesis – that a rich social life is a requirement to enjoy *Second Life* – does not hold. The group of ‘socially skilled’ does not increase as more hours are spent in *Second Life*: it remains the same.

This image seems to support the hypothesis that *Second Life* is appealing for those with good social skills. It should be noted, though, that the term ‘social skills’ has different connotations: in real life one can influence others with the blink of an eye. This component of social skills cannot (yet) be carried out in *Second Life*. In the textually and visually based *Second Life*, ‘socially skilled’ can represent ‘being able to read between the lines’ or ‘being able to look prettier’ by knowing how to alter ones avatar. For those with a lot of friends, *Second Life* has a mildly negative effect on their happiness in the physical world. On the other hand, it has a positive effect on those with few friends.



Happiness in *Second Life* and in real life, hours a week

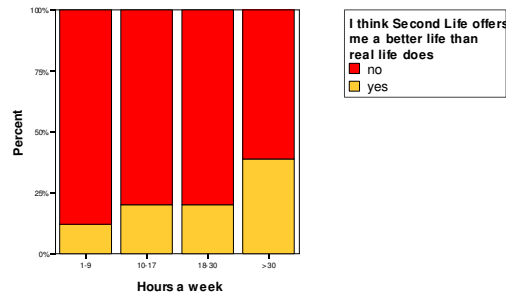
The chart above indicates respondents' happiness in the physical world and in *Second Life*, divided into number of hours a week spent in *Second Life*.

Respondents who claim to feel happy in the physical world, also claim to feel happy in *Second Life*. Some respondents feel a little less happy in *Second Life* than in real life. For the 18-30 hrs group the correspondence between happiness in both worlds is the strongest. Those who spend less than 30 hours a week in *Second Life* generally feel happier in the physical world. The only exception is the group who claims to feel extremely unhappy in the physical world: this small group claims to feel extremely happy in *Second Life*.

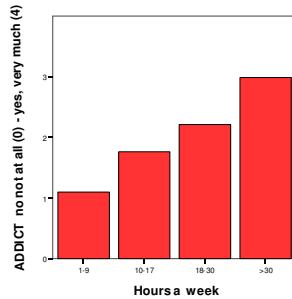
## Discussion:

Respondents who claim to feel happy in *Second Life*, also feel happy in the physical world: this hypothesis does not hold for those who spend more than 30 hours a week in *Second Life* and feel unhappy in the physical world. The relation is strongest for the 18-30 hrs group: the happier they feel in real life, the happier they feel in *Second Life*. The relation is weakest for the under 18 hrs group. The hypothesis that the more hours one spends in *Second Life*, the unhappier one feels in the physical world, does not seem to hold. The socially skilled, who feel comfortable in the real world, also feel most comfortable in *Second Life*.

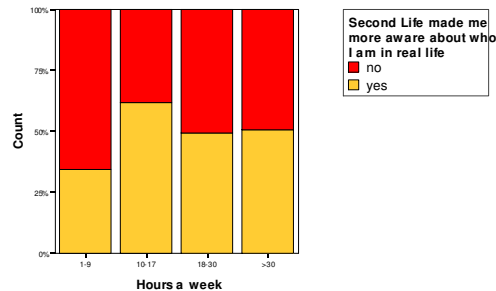
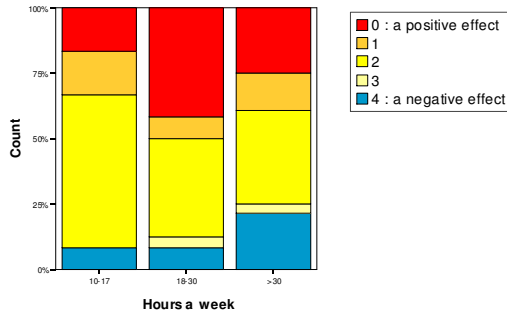
## Quality of life



With the question “Can *Second Life* offer a better life than the physical world?” the majority of the respondents disagreed. Still, from the group that spends more than 30 hours a week in *Second Life*, 30% think that *Second Life* does offer a better life than the physical world.



## Influence of *Second Life* on relationships in the physical world



Among respondents, the opinions were strongly divided on this subject. Over 75% answered neutrally or positively. Most negative answers came from the group that spends more than 30 hours a week in *Second Life*.

Regarding compulsive use, it can be concluded that – relative to those who claim to feel addicted (approx. 40%) – there does not seem to be any indication of it when looking at the other criteria that normally point towards compulsive use. It should be noted that respondents were not asked whether they ever had the feeling that they wanted to stop but could not, and whether it had any influence on their social network. In this respect, we should be cautious when drawing conclusions.

Nevertheless, real and virtual life seem to have integrated well, and are linked together almost seamlessly. A fusion has taken place that does not require the elimination of either 'first life' or *Second Life*: there is a balance between the two that allows one to get by in both. This is a good example of interreality.



Dutch politician Ad Koppejan, Christian Democrats (CDA). Photo by Wild Winger

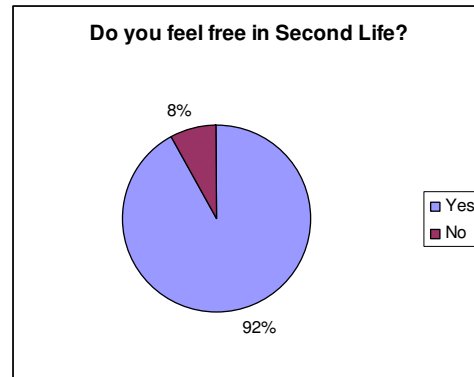
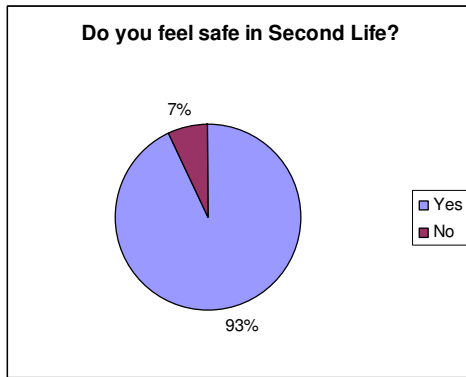
## Law

The questions in this category were primarily posed based on the image that was outlined by Linden Lab in a presentation. Here, the possibility of forming a state was discussed. What is the definition of a state? What does it require? To form a state, you need three things:

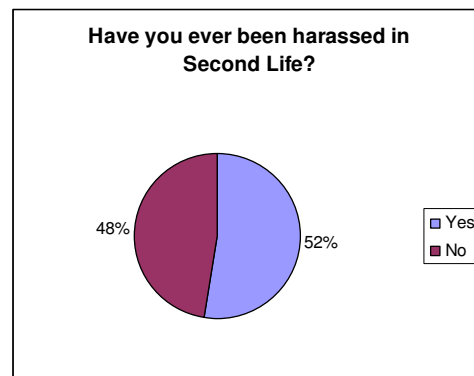
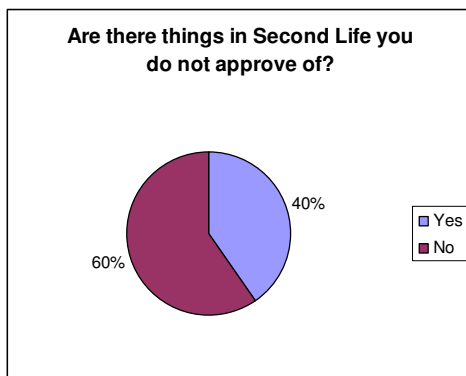
- Territory
- Inhabitants
- Constitution

Additionally, nowadays you need international recognition, which is centrally organised by the UN. The first three conditions seem to have been met, albeit virtually. But is such a thing actually desirable among inhabitants?

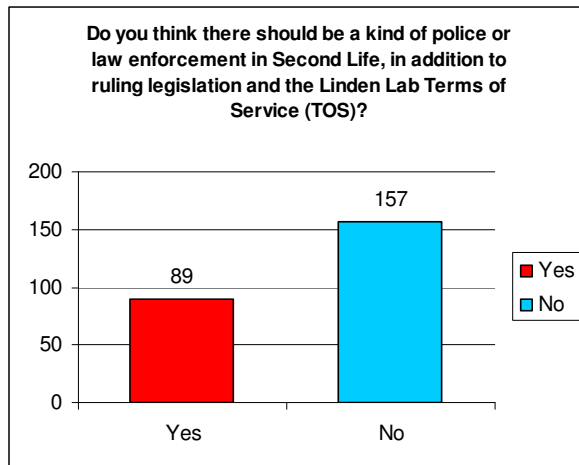
The questions on freedom and safety presented below were asked because a state should safeguard freedom and safety, among other things. These questions were answered with an overwhelming ‘yes’; on the whole, people feel free and safe in *Second Life*.



In contrast to the physical world, the feeling of safety does not correspond to how people experience the situation ‘out there’:



More than half of the respondents admits they have been harassed (this includes, among other things: ‘imprisoning’, stalking, gossiping and using inappropriate language) and 40% indicate that certain things should not be permitted in *Second Life*. Thus, the question arises whether there should be another form of security, next to the one that Linden Lab supplies:



On the Internet forums, people often complain about the insufficient security in *Second Life*. 36% of the respondents ask for security.

At present, security is executed by Linden Lab, the creator of *Second Life*. Additionally, some take their own right, as can be concluded from the account of one of the interviewees: *"If someone bothers me, I'll gather some of my friends who can help this attacker to the other side."*



Jurisdiction by Linden? Photograph by Wild Winger

The concrete wish of the inhabitants regarding security should appear from further research.

## Conclusions

### Conclusions from the data

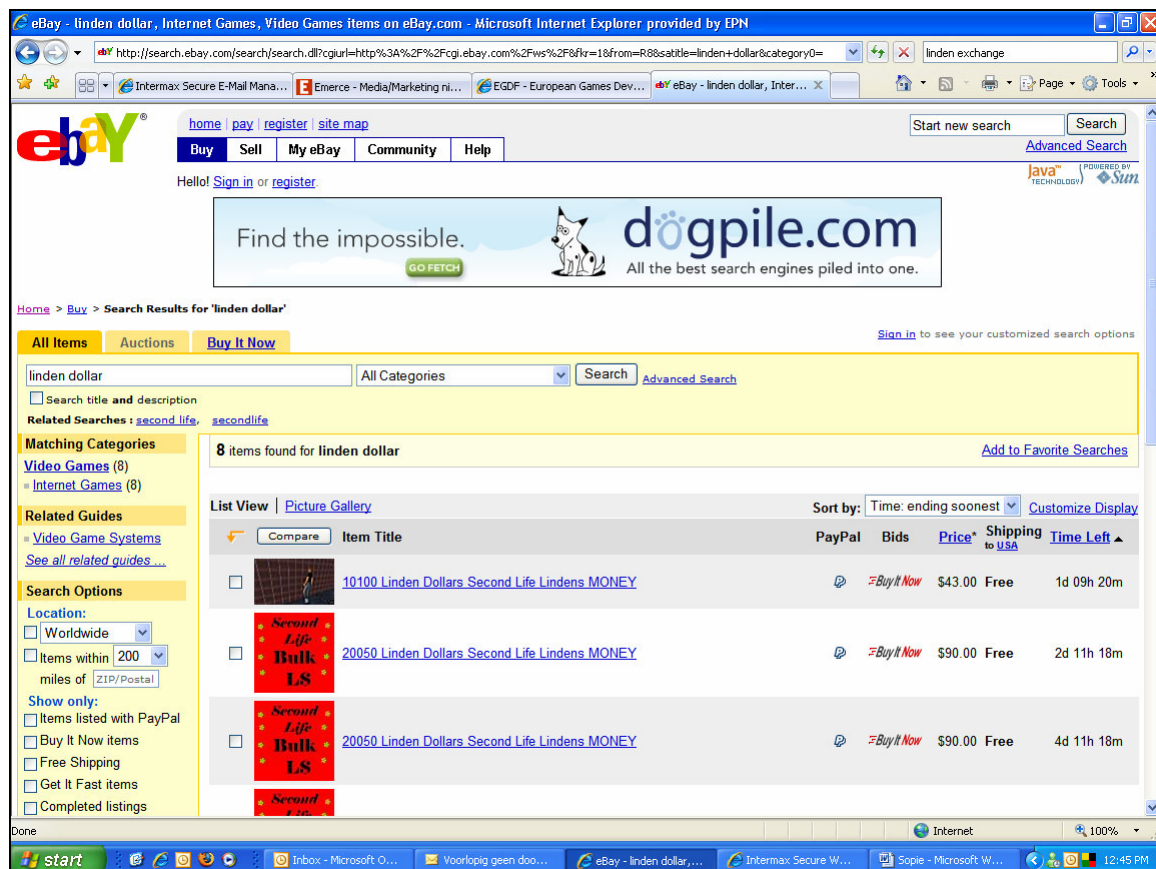
In the main categories economics, well-being and law, a number of provisional conclusions can be drawn, which will illustrate the need for further research.

#### Economics:

Financially, *Second Life* contains a group of very privileged individuals; in the group that spends more than 30 hours a week in *Second Life*, over 40% have an income of over US\$ 50,000. Moreover, there is a creative and innovative vanguard. A group that stands out, is the group of creatives, IT and communication professionals. Together, they form the catalyst of economic and cultural development in the knowledge economy.

In 2004 the Dutch *Innovation Platform* selected the creative industry as a key area. The advisory report *Creativiteit, gewichtloze brandstof van de economie* ('Creativity, weightless fuel of the economy'), presented by Platform member A.H.G. Rinnooy Kan, pleads for a national programme and international promotion of the Dutch creative industry.

The economy of *Second Life* merges with the physical world; earned L\$ can be exchanged for 'real' currency. Around 16% of the respondents have an entrepreneurial profile. They claim to earn money and exchange it, for example through eBay or LindenXchange.



### Well-being:

An important issue, which has arisen with many technological developments throughout history, is that of addiction. In this context, it is often referred to as 'compulsive use', meaning, in this particular case, the degree of compulsion related to being and interacting in *Second Life*. Indicators such as 'amount of time spent on/in *Second Life*', 'number of social contacts in the *Second Life* different from physical world', 'level of psychosocial well-being' and 'appreciation of social contacts in *Second Life* different from physical world' do not point towards serious addiction, although the general feeling of happiness slightly decreases with intensive use. Kraut's theory<sup>2</sup> 'the rich get richer' appears to be substantiated by the results; those that are socially stronger in the physical world, will endure in *Second Life* better than the socially weaker.

Nevertheless, it appears that *Second Life* can function as a therapeutic 'tool'. From the data emerges that those with few friends in real life feel happier as they spend more hours in *Second Life*. Also, they can attend sessions organised by self-help groups, which have a therapeutic effect.

### Law:

The figures indicate that respondents generally feel safe and free in *Second Life* (both scored over 90%). Even so, half of the respondents admitted to having been harassed. 40% claim not to agree with particular things that take place in *Second Life*. Although the majority considers the present 'regulation' to be sufficient, a large group (36%) wants more security, although not necessarily by Linden Lab, but in some other way.

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<sup>2</sup> Kraut, R, et al. (2002) 'Internet paradox revisited', Journal of Social Issues (58) 1.



## Conclusions regarding the hypothesis

EPN explored the consequences of the fusion of virtual and physical reality in the areas of economics, law and well-being by researching the new opportunities which this fusion offers our society.

### Economics:

Innovative groups are strongly represented and spend a large part of their production time in *Second Life*. This could stimulate a range of new forms of public service, both in the physical and in the virtual world. In the Dutch Golden Age, bringing together creative talent has resulted in a massive expansion, economically as well as culturally. Possibly, *Second Life* could offer such a platform for innovative forces. The idea of a hybrid world that emerges from a fusion of the physical and the virtual world, led to many creative ideas among respondents.

The economy of *Second Life* is global. For the average Dutchman, it will not be interesting to invest in its economy. Putting up a business that exceeds the Dutch average income requires a lot of time and input. In Third World countries, however, where the average income is significantly lower than in the Western World, it is a lot easier to earn a relatively large amount. In South Korea, they have been able to profit from the so-called “law of the disadvantageous lead”; because of the lack of any data-infrastructure, a broadband infrastructure could be set up easily and the economy progressed rapidly. This raises the question if *Second Life* can be used as development aid<sup>3</sup>.



Computer in a computer

The advertising world has also discovered *Second Life*. Coca Cola is already present and Toyota and Adidas recently launched products in *Second Life*. Here, they can try out new products and find out if they agree with the taste of the ‘inhabitants’. But there are more opportunities: if an institution (modelled after a TTP) can convince avatars to supply personal information, ‘narrow casting’ could get a whole new meaning; two avatars who look at the same billboard could be presented with completely different advertisements, based on their personal profile.

<sup>3</sup> As was recently suggested by Ms Arda Gerkena, member of the Dutch Parliament for the Socialist Party (SP)



In respect of interface, a Dutch respondent provided a glance into the future, using Albert Heijn, Holland's largest chain of supermarkets, as an example. At the moment, we scroll through Albert Heijn's online shop in 2D; she was able to imagine a situation where you do not even have to leave *Second Life* to have their products delivered to your doorstep. Shopping in *Second Life*'s Albert Heijn would mean you no longer have to browse categories in Internet Explorer to find the right product; you would be able to chuck the desired item right into your virtual trolley. In light of this, one could imagine an interface such as *Second Life*'s (once it is linked to html) becoming a computer-human interface.

#### Well-being:

A large amount of respondents spend over 24 hours a week in *Second Life* – for many this is even more than 30. This large amount of time does not lead to any alarming characteristics of compulsive use, such as distorted social relationships in the physical world, feeling better in the virtual than in the physical world, the higher appreciation of friendships in *Second Life* than in the physical world or the neglect of responsibilities and tasks in real life. On the contrary, those who do well in real life, appear to manage equally well in *Second Life*. Those who have trouble coping in real life, also have a harder time in *Second Life*. Kraut's theory 'the rich get richer' is very much applicable to *Second Life*.

In addition, there is a small group of people who have fewer opportunities in real life, for example those whose mobility is impaired by handicaps, housewives who are duty-bound at home or senior citizens who have withdrawn from a working life.

In *Second Life*, they will find a world with numerous opportunities to develop themselves, make contacts and move around freely. Some will even find psychological support in *Second Life*.

A fusion of real and virtual life has certainly taken place, with virtual life connecting to real life almost seamlessly. A fusion has taken place that does not require the elimination of either 'first life' or *Second Life*: there is a balance between the two which allows one to get by in both. This is a good example of interreality.

#### Law:

*Second Life* has become a breeding ground for new forms of co-existence and communities, ranging from completely anarchist to centrally ruled totalitarian communities. In their own domain, visitors can establish their own norms and values and can find a way of maintaining them. Even so, 36% of the respondents ask for better safeguarding of the rules developed by Linden Lab and for more norms and values. Will a law enforcement emerge? And if so, will it be controlled top-down and how will it take shape? As a rule of law or a democracy? In an expert meeting, Laurens Mommers prompted a law enforcement that would be run bottom-up; he suggested that Linden Lab would not be able to keep everything under control and that security is a problem as it is. Possibly, an (informal) law enforcement emerges from within.

How this could affect on companies who want to enterprise in *Second Life* (and therefore want a certain form of legal security) turned out to be a critical issue.

Privacy appeared to be another theme. The things you tell someone else in *Second Life*, you may not want to become public in real life. If this privacy is breached through a hack and avatars are linked to the individuals behind it, in how far will this be problematic?

Furthermore, *Second Life* is an excellent environment to experiment; with a whole new judicial system, for example, or the checking of hypotheses. The so-called 'contract theorists' assume that, in a young environment, contracts will be formed automatically, because they ensure smooth and efficient transactions.

This hypothesis can only be executed through deduction, but in a virtual setting, it can be tested through induction.

## Prospects

In the aforementioned expert meeting – held at EPN-participant KPN at 19<sup>th</sup> September 2006 – experts from both the industry and universities instigated a broad discussion concerning the applicability of virtual worlds such as *Second Life*.

Following this meeting and other connections (discussion with David Fleck (Linden Lab), ‘Spelend leren’ seminar TU Delft, PicNic ’06 Crossmedia congress, discussions with Jacob van Kokswijk and Philip Rosedale), this paragraph aims to offer a preview of the possibilities that the future holds for *Second Life*.

The idea that *Second Life* and comparable virtual environments are increasingly integrated into the physical world, sparked off a discussion concerning the impact, which might include compulsive use. The hypothesis stated that, if indeed it could easily be integrated, it would have barely any consequences for well-being in the physical world. From the discussion that followed regarding the EPN report, which can be considered hypothesis-posing, it appeared that further research is warranted. Especially regarding how people deal with these kinds of developments and how they can be integrated in their lives.

How will this integration take shape? Will it become a new interface between human beings, whereas the 2-dimensional Internet is still merely an interface for information? In this respect, knowledge management was discussed and how the linking of knowledge and human beings is important. As the results show, an innovative vanguard resides in *Second Life*. Philip Rosedale at PicNic ’06: “Whereas browsing the Internet used to be an individual experience behind a computer, *Second Life* has made it into a communal and social happening.” But are these creative and innovative people going to find each other or is the group of IT professionals (which, combined with the creatives, is so valuable) going to hang around in its own community and vice versa?

Is *Second Life* a tool that can bring people together and will this graphic and social interface gain the trust that is required to stimulate a high level of collaboration? How can education, both academic and in-company based, profit from this? Insofar as observed, education in *Second Life* is a mere copy of the physical world: a virtual classroom where a teacher instructs a group of students. This is an obvious result of the developmental phase that *Second Life* is still in at the moment; everything that takes place, is primarily made to appear like it would in the physical world.

From a seminar organised by TU Delft it appeared that several Dutch colleges and universities are interested in teaching in a virtual world such as *Second Life* (in a similar way to how this already takes place at Harvard). It must be possible, however, to develop new forms of education. This is still ... and further research is warranted. Learning to start up and run a new company (including all the limitations, problems and consequences it comes with) could be only one of many possibilities.



Adidas store in Second Life

From an economic perspective (which was, for the companies present at the expert meeting, strongly linked to the judicial component), the question rises whether *Second Life*'s economy is actually stable.

If a large bank wants to do business in *Second Life*, it cannot have the monetary stability of a banana republic. There should be a financial institution to check and regulate cash flows. This institution should be independent from Linden Lab, which is currently in control of *Second Life*'s economy (a propos 'with a system such as the American Central Bank uses' as said by David Fleck).

Furthermore, it could be interesting to research the global economy, which differs from a capitalist economy in so many ways; there is no scarcity of natural resources, there are no non-tradeables and the large middle-class seems to be absent.

The judicial component is clearly important, as institutions that seriously want to invest and enterprise in a virtual world are going to want a certain form of legal security.

Law in *Second Life* is organised both bottom-up and top-down. For serious order issues, the physical judicial system applies and a physical judge can pass judgment on right or wrong. At the same time, something is emerging bottom-up, for example when individuals take their own right, but also through petitions.

On the other hand, as it turns out, top-down rules do not always apply to situations in virtual worlds. Moreover, security has become particularly difficult now that *Second Life* is rapidly expanding. A more systematic research on the formation of rules in virtual reality and their safeguarding is warranted.



*The EPN platform is a Dutch non-profit foundation that functions as a centre of knowledge and a think tank regarding the influence of the use of ICT in society. We therefore collect and create several kinds of information that provide more insight in new developments in which ICT plays a central role, as is the case with Second Life. Our participants include companies, politics, governments, universities and consumers and employees organizations (see [www.epn.net](http://www.epn.net)).*