BODY EXTENSIONS AND REPRESENTATIONS WITHIN DISEMBODIED VIRTUAL SPACES

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ABSTRACT:

This paper documents a design driven inquiry that focuses on the question how the physical body of human beings is represented within virtual spaces. Using the methods of content analysis and participatory observation, we investigate the interfaces of a text-based and an image-based online role-playing game, so called Multi User Dungeons (MUDs), referring to their virtual body representations and their impact on individual performance, navigation and community interaction. Regarding the body as an essential benchmark of spatial orientation and communication due to its social, cultural meaning and its individual expressiveness, designers define the way of virtual embodiment by the development of their interfaces. In this respect, the investigation of 'body as interface' is an essential design research issue.

In this paper, we also vote for the utility of qualitative methods for design research purposes revealing social and cultural implications of design artifacts.

1. INTRODUCTION

Today's communicative interaction is highly influenced by information technology, which substitutes more and more physical body representations in face-to-face communication. Disembodied experiences have become a part of ordinary life. For this reason, self performances and interactions are often mediated by designed hardware and software interfaces.

Designers strongly determine the ways of individual representation and communication by their product and screen designs. They decide on the information architecture (which functions are available on the surface, which ones are buried in deep navigation levels?), the range of available options, the communication mode (e.g. asynchronous vs. synchronous), the modes of representations (auditory, image- or text-based), the entry modes (e.g. mouse-/keyboard related, voice-sensitive, tactile) and the interaction settings.

In this regard, they decide on the way we are and the way we act.

In this paper, we claim that the representation mode of digital interfaces has a crucial impact on virtual embodiment referring to individual performance, spatial orientation and interaction.

Using the body as reference point, we reflect the conditions of human beings in relation to the spatial and social, cultural dimensions of virtual environments. Online role-playing games or so called Multi User Dungeons (abbreviated MUDs) are suitable objects of investigation to examine, how the main bodily aspects are mediated by their interfaces. For this reason, we choose two MUDs with completely different interfaces in order to compare them in the respect of their effects on virtual body representations: LambdaMoo*, a popular text-based MUD, is contrasted with Second Life, the currently most popular and populated graphical MUD.

Sociological investigations use virtual environments in order to examine the social properties of the body, its cultural constructions and its impact on the development of virtual communities. Designers usually regard interfaces from a formal-aesthetic point of view, or from the perspective of usabiliy and interaction-design.

We add a completely new aspect to design driven inquiries in two respects:

☐ By taking the body as a benchmark for the development of digital interfaces

☐ By investigating virtual body representations from an interfacial point of view

Our interfacial analyses and reflections are guided by the following main and secondary questions:

Which impact do digital interfaces have on virtual embodiment?

☐ Is it possible to simulate the individually manifold expressiveness of the physical body in computer generated spaces?

☐ Which impact does a text-based, respectively image-based interface have on virtual body performances?

☐ Which freedom or limitations of creating 'textual and graphical skins' do exist?

☐ Which relations do exist between text-based and images-based body representations?

Which impact do physical body experiences have on virtual embodiment?

Furthermore – reflecting our results – we want to draw implication for the design practice, answering the following questions at the end:

☐ Can the physical body be regarded as a kind of reference point for evaluating the appropriateness of interface design?

☐ Is the body a benchmark for deducing general design requirements?

* In our abstract, we announced to investigate the text-based MUD 'Seifenblase' which we replaced with 'LambdaMoo', because it is using English instead of German Language.

2. BACKGROUND

2.1 HYPOTHESES

Our reflections and investigations base on four hypotheses:

☐ Human beings are potentially virtual subjects.

☐ All environments which result from interaction and communication, using language as resource and tool, could be regarded as virtual realities.

☐ Within virtual realities, the body is important due to its informational and not its physical quality: Its social significance and connotation has a strong impact on the interaction.

☐ The virtual embodiment is determined by the respective mode of the digital interface.

2.2 ABOUT THE TERM 'VIRTUALITY'

Referring to our hypotheses, we have an enhanced understanding of the term 'virtuality': In our sense of meaning, it is used as a synonym for immateriality. We regard virtuality as an anthropological property of human beings (Zwingenberger, 2003). Considering social, cultural and computer generated spaces as results of mental activities and the human mind as the incorporated virtual area of the body (Rötzer, 1995), we characterize all activities and environments which use language as a resource and tool, as 'virtual'.

In reference to Haraway's concept of cyborgs, this enhanced understanding of 'virtuality' has an advantage: It offers the possibility to interrelate social, cultural and computer generated spaces of interaction to get a deeper insight in the relationship between human beings and their environments and tools (Haraway, 1995).

2.3 ABOUT VIRTUAL COMMUNITIES AS SOCIAL LABORATORIES

Virtual communities, especially MUDs, have raised a lot of attention of the social sciences and still are very popular objects of investigations, because of their disembodied conditions (e.g. Eisenrieder, 2003/ Lübke, 2005).

The immaterial properties of the body become especially obvious in disembodied, virtual spaces, which are also active in social and cultural contexts. For this reason, virtual realities are regarded as social laboratories (Turkle, 1999). In distance to the physical conditions, the existing social and cultural implications can easily be revealed. Especially the bodily aspect of gender can be experienced and unmasked as a cultural construction.

For our purpose of research, we basically need to know which role the body plays in immaterial environments. Within these spaces, the body is primarily important due to its social and cultural meanings. It is indeed an interface with informational significance (Müller, 1996). The body communicates by its cultural connotations of its outer appearance and by its behavioral expressions. Face-to-face communication is accompanied by the language of the body delivering the context of individual meaning. Facial expressions, gestures, vocal intonations and accentuations are very important to understand the individual meaning of the communicated content (Müller, 1996). Moreover, they serve as benchmarks for the behavior and action of the counterpart. These qualities are missing in virtual environments. In the following, we will experience, how the body language is simulated by text-based and image-based interfaces.

3. METHODOLOGY

Our objects of investigation are two different virtual communication environments:

☐ LambdaMOO - a text-based online role-playing game.

☐ Second Life – a graphical online role-playing game.

We choose these two MUDs because of their completely different interfaces in order to compare them in the respect of their effects on virtual body representations.

Content analysis is used as primary method to investigate the different interfaces and its opportunities for bodily expressions.

Additionally, the method of participatory observation is used to evaluate the virtual experiences referring to the different modes of interfaces. For this purpose, one of the authors of this paper joined in the virtual communities as a text-based or graphical character. The observations are integrated into the results of the content analyses.

Five main categories of bodily expressions are defined as a matrix of investigation which structures the content analyses and observations.

Virtual body presence

☐ modes of existence or being there

Virtual personality / individuality

☐ forms of personal performance

☐ forms of non-verbal communication (facial expressions, gestures, vocal intonations and accentuation)

☐ modes of emotional expressions

Virtual actions and spatial movements

☐ modes of behavior and actions

☐ modes of spatial orientation and navigation

Virtual patterns of gender

☐ categories or models of gender

Virtual patterns of social behavior

☐ modes of communication and interaction

☐ community standards, behavioral guidelines and rules

These categories can be regarded as benchmarks for the interfacial rich- or poorness of virtual body representations.

4. RESEARCH RESULTS

4.1 CONTENT ANALYSIS AND PARTICIPATORY OBSERVATION OF LAMBDAMOO

LambdaMOO was founded in October 1990. It is the oldest interactive text based world with about 3000 regular members from all over the world. Normally, 100 – 200 members are connected at any given time. It is a pure text-based chat space, or better an adventure game where the members walk through different virtual rooms.

A MOO is a special form of MUD (Multi User Dungeon) with the ability to 'program' or create interactive objects. In this paper, we do not differentiate between these terms. MUD is used as general term to denote online role-playing games (Rex, Felis alias Richards, Rob: http://www.LambdaMOO.info/).

LambdaMOO bases on Telnet, a programme which is just able to display text.

4.1.1 VIRTUAL BODY PRESENCE

Figure 1: Cut-out of the Welcome Screen of LambdaMOO

If one joins LambdaMOO for the first time, one is just allowed to enter as a guest.

The virtual presence in LambdaMOO is indicated by the respective nickname. In this case, the participant called 'Magenta_Guest' [Fig. 1]. The name has been determined by the system.

Figure 2: Cut-out of common commands

Normally, the nickname of the virtual character can be chosen voluntarily or renamed whenever the player likes [Fig. 2]. The nickname is the first indication of the virtual existence of a body. It may already initiate any speculations about the personality or gender that a participant really has or prefers to have. Nicknames address cultural associations and codes, which lead to certain assumptions about the virtual and real person. For this reason, it is often recommended to choose one's nickname carefully and try to anticipate its connotations and meanings, it may cause (Scheidt, 2004).

In this case, 'magenta' is coded as female color in western culture. Members may think of a female character, if they read this name.

4.1.2 VIRTUAL PERSONALITY / INDIVIDUALITY

Figure 3: Cut-out of common commands

Basically, there are two ways to express personality in face-to-face interaction: By the outer appearance and by the content of communication with its attendant body language (facial expressions, gestures, vocal intonation and accentuation) (Müller, 1996). These qualities are not available in text-based environments (Becker, 2000).

Figure 4: Cut-out of tutorial

For this purpose, LambdaMOO offers the command to compose self-descriptions, the participant can use to characterize his/ her virtual representative [Fig. 3/ Fig. 4]. Members who are interested in other participant's descriptions can use the command 'look <player>' in order to read his/ her written profile.

Figure 5: Cut-out of common commands

Facial expressions, gestures or emotions can be expressed by words using the so called emote-command [Fig. 5]. This command is not limited to emotional expressions, it can also be used to describe any kind of action, a member currently and virtually does [Fig. 6].

Figure 6: Cut-out of tutorial

The self-descriptions are static. Referring to my observations, the written bodily expressions (facial, vocal expressions and gestures) are very short and standardized, because of the speed of communication which requires quick typing (Becker, 2000). Basically, the communicant is not always aware of his/ her non-verbal expressions within real interaction settings. In case of text-based environments, he/ she can consciously create their self-performances which lead to a higher level of communicational control (Scheidt, 2004).

Qualities of vocal expressions like intonation or accentuation are completely missing.

4.1.3 VIRTUAL ACTIONS AND SPATIAL MOVEMENTS

Virtual actions can be described by using the emote-command [Fig. 5/ Fig. 6].

Figure 7: Cut-out of common commands

In order to walk through the virtual space the participant is offered a set of commands referring to the main cardinal points. If more than one floor is offered, he/ she can use the command 'up' or 'down' in order to ascend or descend [Fig. 7].

All available directions are indicated by using the command 'go' [Fig. 7]. It depends on the current standpoint of the virtual character which directions are selectable.

Moving by the commands of cardinal points seems to be artificial compared to the movement within the physical world, where you walk intuitively around without being aware of the cardinal directions.

Referring to my participatory observations, I often felt disorientated, sometimes captured in a room, not really knowing where I wanted to go. I even felt lost, because of the inability to look out into the next room or floor in order to decide whether I was interested to go there. In this respect, I really felt limited by the interface. Nicknames and written dialogues blured into descriptions of chambers. Moving from room to room seems to me arbitrarily. Spatial orientation got better by referring to the map offered on LambdaMOO's homepage [Fig. 8]. It displays the different rooms with their original descriptions and the available move-commands (http://www.LambdaMOO.info/).
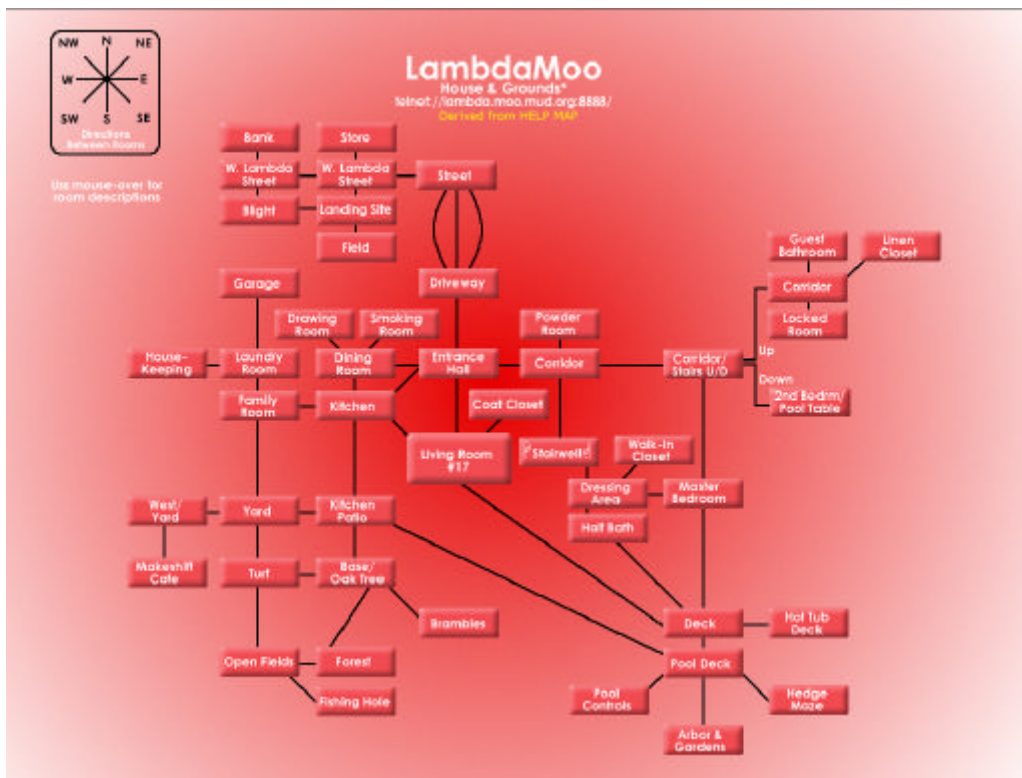

Figure 8: Room map from LambdaMoo's homepage http://www.lambdamoo.info/

```
How to Look Around
==================
  look
  look <object>
  look in <object>
  look <object1> in <object2>
  look me
  look <player>

How to Examine Objects
======================
  examine <object>
  @examine <object>
  read <note>
```

Figure 9: Cut-out of common commands

The standpoint of the player determines the view he/ she gets: Just the corresponding room description is offered. The spatial separation of rooms becomes evident by the changing of room descriptions and the changing descriptions of objects which are located there. The player can look at or examine these objects by using the appropriate commands [Fig. 9].

These examples show the impact of the real world: The move-commands attempt to imitate the spatial model of physical bodies in physical environments The pattern of physical movement seems to be especially important for spatial orientation (Kleinen, 1997).

4.1.4 VIRTUAL PATTERNS OF GENDER

The first indication of gender is the respective nickname of a virtual character (Scheidt, 2004). Furthermore, LambdaMOO offers a great variety of gender patterns [Fig. 11]. In this respect, it is a very resourceful and imaginative world. With its unconventional categories like 'either, Spivak, splat, plural, egotistical, royal', it offers spaces for imagination and even activates reflections about gender constructions beyond the bipolar model of the real world. Some gender terms are more related to personal attributes, temperaments (egotistical) or terms of social status (royal). From this point of view, LambdaMOO frees their participants being reduced to the restricted gender model of the physical world.

The selection of a certain gender category determines which pronouns are used when referring to the respective character [Fig. 11].

```
Characters & Gender
===================
  @gender
  @gender <gender>
```

Figure 10: Cut-out of common commands

The participant can change his/ her gender whenever he/ she likes [Fig. 10]. The default gender category is 'neuter'. Which gender mode is already chosen can be seen by using the command '@gender'.

Because of the possibiliy to choose the gender category voluntarily, MUDs are often regarded as spaces of pure gender or social laboratories (Turkle, 1999). The virtual choice of the opposite gender is called 'gender switching' or 'gender swapping'. The player can make experiences of the

opposite gender. Results from other analyses claim, that a man selecting a female character or a woman selecting a male character, often use stereotype images and show stereotype behavior instead of developing a distinctive personality of the opposite gender (Müller, 1996).

This bodily aspect is supposed to be the most guiding information referring to interaction contexts (Lübke, 2005). Knowing about the gender of the conversational partner, has a crucial impact on behavior: Being polite, e.g. opening the door for someone is often a decision made in dependence of the counterpart's gender (Müller, 1996). From this perspective, gender is not important as a quality of the physical body, but because of its social and cultural meaning.

Virtual female characters are offered more help, but they are also more often victims of harassments. For this reason, the gender category should be chosen carefully (Bahl, 1998). LambdaMOO has invented a certain gender category, called 'Spivak', to avoid molestation [Fig. 11]. "To adopt the spivak gender means to abjure the gendering of the body, to refuse to be cast as male, female, or transsexual." (Thomas, 2003).

Categories beyond the common model of male and female are supposed to cause confusion because they don't give precise behavioral instructions. For this reason, they are not used often (Bahl, 1998).

Figure 11: Cut-out of tutorial
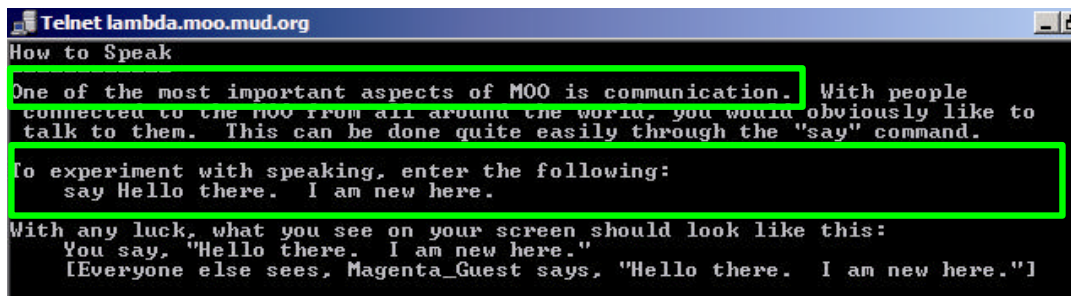
4.1.5 VIRTUAL PATTERNS OF SOCIAL BEHAVIOR

After entering LambdaMOO, one is offered the welcome screen, giving short information about this virtual communitiy, its standards and behavioral rules as well as the consequences in case of communicating/ acting inappropriately, but no command is mentioned which can be used to 'flag' or suspend someone in case of violations. The operators appeal to the self-responsibility of each participant for his/ her contributions. Especially researchers and journalists are addressed and requested to ask for permission to join in. This request could be taken as evidence for a general scientific interest of the investigation of these disembodied, virtual spaces of society [Fig. 15].

Figure 12: Cutout of common commands

By using the 'say-'command, messages can be posted which then becomes visible for all participants which currently share a room [Fig. 12/ Fig. 13].

Judging from the point of my participatory observations, communicating was the most attractive and most important activity referring to the development of an individual virtual body. By talking to other members, I became aware of my virtual existence. Most of the time, I was engaged in interaction, attempting to writing purposeful messages and concentrating on a precise selection of words and phrases. I was less interested in creating my virtual character by its name, category of gender and its profile or by descriptions of actions and emotions.

Figure 13: Cut-out of tutorial

In order to talk to participants who stay in remote rooms of LambdaMOO, a command for long-distance communication is offered [Fig. 14]. But to speak with players accidentally, it is completely useless. Long-distance communication requires address a certain participant by entering his/ her respective nickname and then adding a text message for him/her.

```
Long-distance Communication
=============================
  page <player> [[with] <text>]

Who's On-Line?
==============
  @who
  @who <playername>
```
Figure 14: Cut-out of common commands

In order to get an overview about members who are online or to asked about the status of a particular participant, the 'who's-online' commands are offered [Fig. 14]. The 'online status' is an indication of being virtually and physically existent.

```
                    *  Welcome to LambdaMOO!  *
                    ******************************

                  Running Version 1.8.3 of LambdaMOO

PLEASE NOTE:
   LambdaMOO is a new kind of society, where thousands of people voluntarily
come together from all over the world.  What these people say or do may not
always be to your liking; as when visiting any international city, it is wise
to be careful who you associate with and what you say.
   The operators of LambdaMOO have provided the materials for the buildings of
this community, but are not responsible for what is said or done in them.  In
particular, you must assume responsibility if you permit minors or others to
access LambdaMOO through your facilities.  The statements and viewpoints
expressed here are not necessarily those of the wizards, Pavel Curtis,
or Roger Crew, and those parties disclaim any responsibility for them.

NOTICE FOR JOURNALISTS AND RESEARCHERS:
   The citizens of LambdaMOO request that you ask for permission from all
direct participants before quoting any material collected here.

For assistance either now or later, type 'help'.
The lag is low; there are 110 connected.
connect guest


        Guests at LambdaMOO are warned that they are accountable for
        their actions here. In particular, Guests are warned that any
        mail or other form of communication sent to individual characters
        here, may be traced back to the site from which you are logged
        in; this information may be used in the event of a complaint
        against you and may be made available to someone acting in an
        official capacity.  Logging into LambdaMOO as a Guest implies
        that you have read and understood this warning and that you
        accept these facts - and that in the event of any need to use
        your site information in the aforementioned manner, you agree to
        its use.

Having read the above text, do you wish to connect?  [YES/NO]
Yes
Okay,...Guest is in use.  Logging you in as 'Magenta_Guest'
*** Connected ***
The Coat Closet
The closet is a dark, cramped space.  It appears  to be very crowded in here;
 you keep bumping into what feels like coats,  boots, and other people
 (apparently sleeping).  One useful thing that you've  discovered in your
 bumbling about is a metal doorknob set at waist level into  what might be a
 door.  Next to it is a spring lever labeled 'QUIET!'.
There is new news.  Type 'news' to read all news or 'news new' to read just
 new news.
Type '@tutorial' for an introduction to basic MOOing.  If you have not already
 done so, please type 'help manners' and read the text carefully.  It outlines
 the community standard of conduct, which each player is expected to follow
 while in LambdaMOO.
@tutorial_
```
Figure 15: Welcome screen of LambdaMOO

4.2 CONTENT ANALYSIS AND PARTICIPATORY OBSERVATION OF SECOND LIFE

Linden Lab, a software developing company in San Francisco, has enriched the virtual space by an interactive three dimensional vector graphic online world which is currently the most popular, most populated and fast growing online community with nearly 6 million registered residents in April 2007 (Blog Second Life, May 2007).

In the following, we investigate the ways of body representations by the graphical interface and compare them to the bodily expressions by the pure text-based interface of LambdaMoo.

The content analysis and participatory observations refer to orientation island. This area can be regard as the training camp of Second Life where new members are offered different tutorials in order to get the necessary skills for living in Second Life.

4.2.1 VIRTUAL BODY PRESENCE
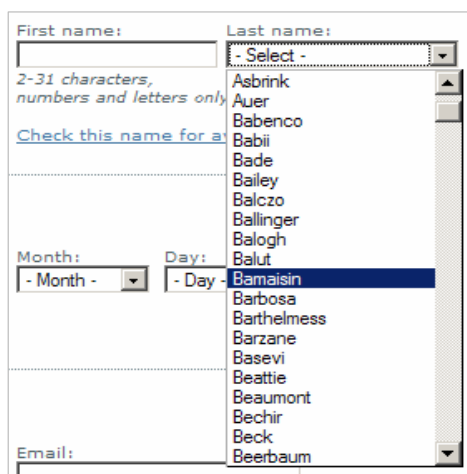
Figure 16: Registration

First, a name has to be selected. It can't be determined voluntarily. The participant has to select a surname out of a given list [Fig. 16]. The first name seems to be freely selectable. The availability of the combination has to be checked by the system. The process of acceptance can become an exhausting experience, because not every first name is combinable with the selected surname. In order to speed up this process, the system suggests some available combination of names [Fig. 17].

In contrast to LambdaMOO, it is not allowed to modify the name after the final confirmation [Fig. 18]. Later on, it is always indicated nearby the avatar.
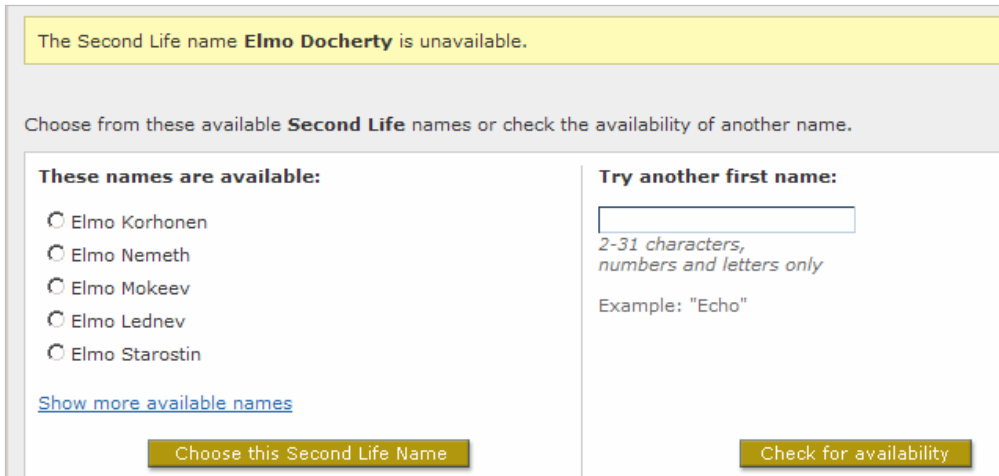
Figure 17: Availability check of name Suggestions of alternatives
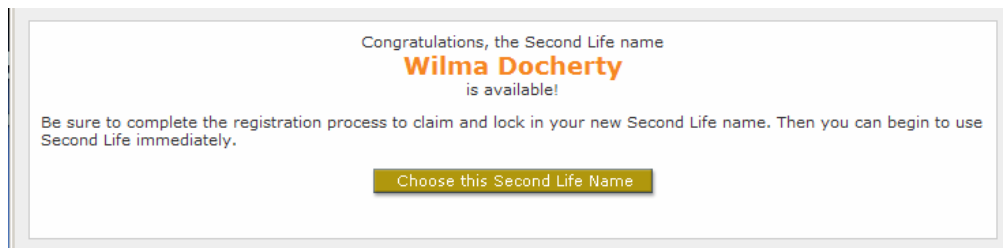
Figure 18: Successful acceptance of name
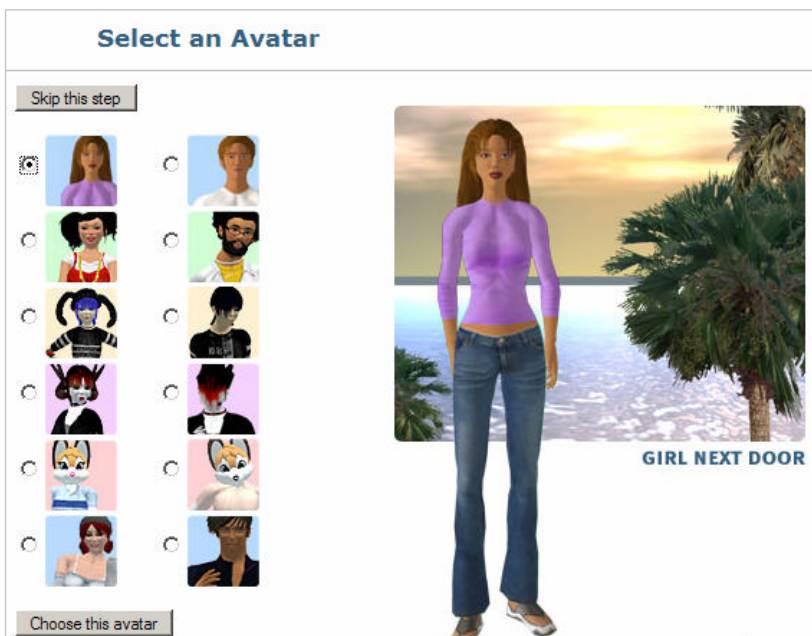
Figure 19: First set of avatars

After being registered by name, the new participant can select between 12 avatars. This set is a default offer which is presented to every new participant of Second Life [Fig. 19]. All of them can be regarded as attractive or at least exceptional. Old, fat or handicapped avatars are not offered yet.

Most of them are humanoid, except of one couple who represents something between human and animal. The set of digital representatives is divided into male and female characters.

The participant can choose between average teenagers (girt next door / boy next door), more urban citizens (city chic – female / city chic – male), fancy or sub cultural characters (harajuku – female / harajuku – male // cybergoth – female / cybergoth – male) or these in-between beings (furry – female // furry – male).

Every body in Second Life consists of a nickname and its graphical representation.

4.2.2 VIRTUAL PERSONALITY / INDIVIDUALITY

The graphical interface of Second Life offers a lot of opportunities to personalize one's avatar. Most of my time, I spent in modifying the appearance of my virtual character. In this state, I even felt disturbed when someone started talking to me. Referring to my observations, most of the other participants were also very engaged in the bodily modification of their virtual characters and not willing to talk.

On orientation island, it is possible to meet equal avatars which haven't been personalized yet. Then they still look like one of the digital representatives of the default set at the beginning.

Editing appearance

Figure 20: Metamorphosis of Lucca Tenk

I started with the harajuku male avatar. By using the appearance editor I create a completely new body and look [Fig. 20]. With this tool, a lot of details including bodily form, skin, hair, facial expressions can be modified [Fig. 21]. It is also used for dressing up. The appearance of the avatar can always be changed. If it is currently modified, the avatar is frozen.

The metamorphosis can also be initiated coincidentally. Randomization is possible in every category of body appearance [Fig. 22/ Fig. 23/ Fig. 24]. The examples of randomized modifications prove that is any kind of body can be created, also ones which are supposed to be less attractive [Fig. 22]. While my participatory observation on orientation island, I haven't seen any ugly avatar.

Figure 21: Appearance editor

Figure 22: Effect of body randomization

Figure 23: Randomized haistyle
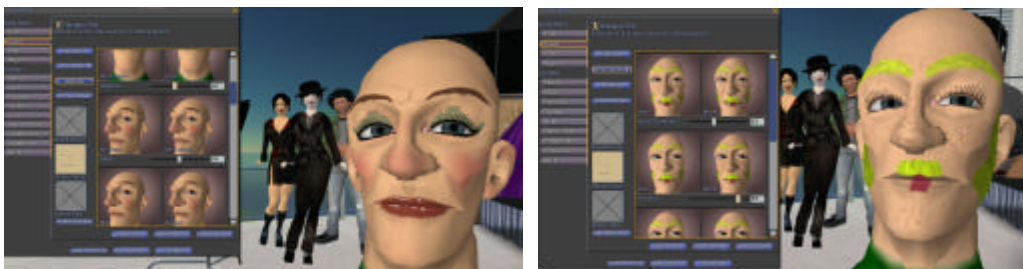
Figure 24: Make up for Lucca

There are potentially two possibilities to dress one's avatar: The clothes can be edited by the appearance tool with its color palette and the library of textures which can be extended by the participants if they like [Fig. 25]. The system allows to upload own shapes and textures to create a

distinctive appearance. Alternatively, the participant can buy a fancy outfit for his/ her avatar [Fig. 26]. For this purpose, the members first need Linden Dollars, the currency of Second Life, which can be purchased by real US Dollars.
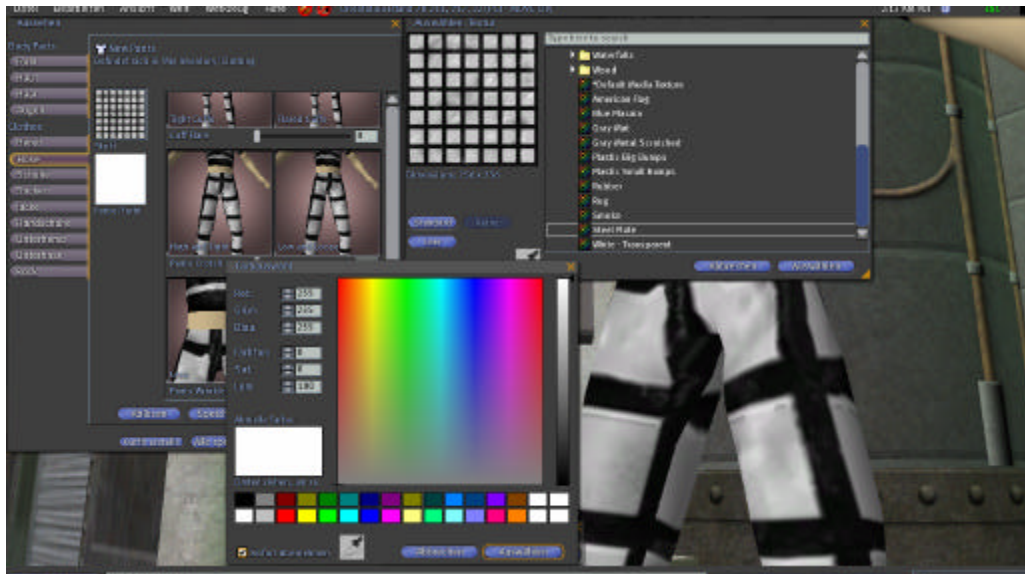
Figure 25: Using the appearance editor for dressing up

Figure 26: Purchasing outfits

Body Language

The interface offers a certain set of gestures also including some emotional expressions, e.g. 'cry' or 'embarrassed' [Fig. 27]. This default offer of body language can be extended, adding some gestures or even individually modify them [Fig. 28]. Some actions are accompanied by sounds or even a short vocal phrase. They last only for a few seconds.
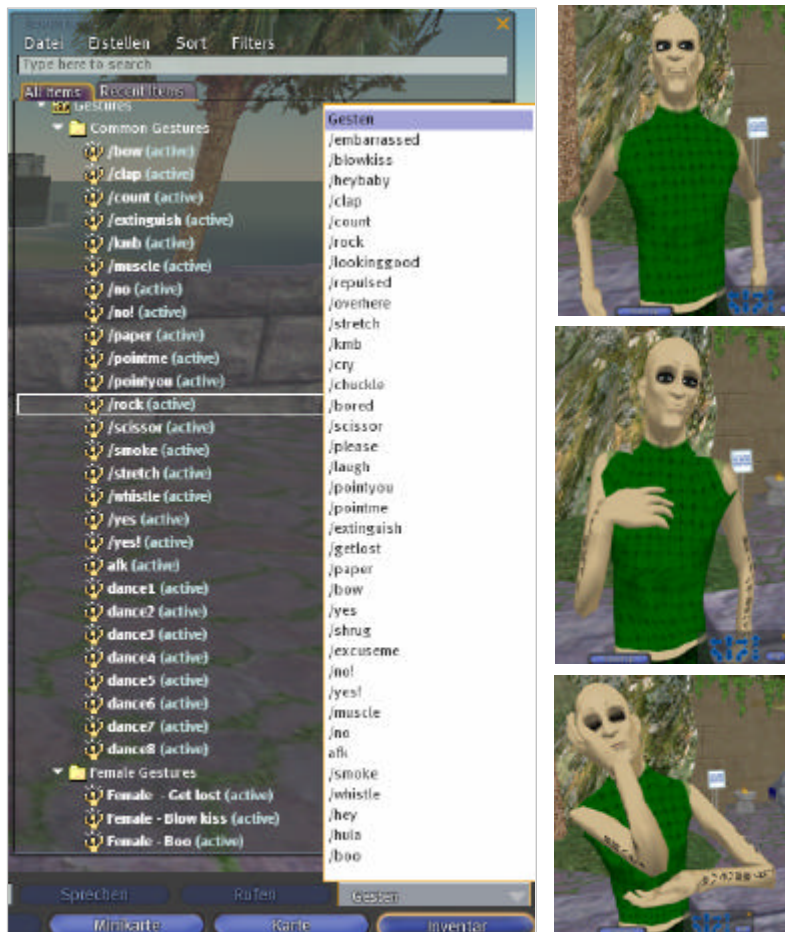
Figure 27: Default set of gestures and examples

Initiating a gesture, makes the avatar more vivid and especially human. Although the gestures are standardized sequences of facial expressions and / or motions [Fig. 27], they can change the relationship between participant and its avatar. Regarding my experiences, the gestures raised my empathy for the virtual character: When my avatar cried, I started to worry about him, when he laughed, I felt amused, when he was embarrassed, I thought 'how cute it is!', when he was afraid, I wanted to make him feel comfortable again – although I have caused its feelings. I really got a human relationship to my avatar. I did not regard it as a stand-in of myself, but as someone who I have to care about and to look for. These experiences show the crucial impact of body language on face-to-face interaction.

Compared to the bodily expressions of people in the real world, the virtual gestures do not really accompany communication. They can be used for getting in contact with other residents or drawing their attention (e.g. by 'whistling'). In this respect, they can enrich the interaction, but the interface does not offer to talk and gesticulate simultaneously.

Figure 28: Add and edit gestures

Profile

Figure 29: Profile window

Similar to LambdaMOO, it is also possible to enter self-descriptions or detailed characterizations in a profile window [Fig. 29]. It offers the opportunity to give information not about the virtual stand-in, but also about the owner of the avatar. This aspect is especially interesting: The interfacial structure of it mediates between virtual and real life, if the participant wants to connect his/ her Second Life to his/ her first. This example envisions the interrelation between virtual and physical self.

4.2.3 VIRTUAL ACTIONS AND SPATIAL MOVEMENTS

Most of the available actions and commands can be entered by the context menu, which is displayed by focusing the avatar and clicking the right mouse button [Fig. 30]. The model of navigation, offered in Second Life, nearly corresponds to the pattern of physical movement within the analog world. Instead of moving by cardinal points, a graphical navigation tool is offered which show the different directions of spatial movement [Fig. 31]. With this tool the avatar can walk around. In the displayed example of the left, the avatar has to stand up before being able to walk its way. Then the participant sees the back of his/ her avatar, taking its angle view. The graphical interface gives immediate feedback to directional changes.

A big advantage of the Second Life environment is the possibility to look out.

Figure 30: Context Menu of actions and commands

From the avatar's perspective, the participant can see remote objects and places. Moreover he/ she can immediately react to barriers and objects and navigate beyond them.

Moreover, the participant can change his/ her perspective in relation to his/ her avatar by changing the angle and the distance to it with the 'camera view tool' [Fig. 32].

Figure 31: Navigation tool

Figure 32: Camera view tool: Changing angle view and zoom

Freed from the restrictions of the physical body, the virtual representatives are able to fly and to teleport immediately to remote locations [Fig. 33/ Fig. 34]. For me, it was especially difficult to let

my avatar fly, because I quickly lost orientation. Due to this experience, I have noticed that flying does not belong to my ordinary patterns of spatial movement.

Figure 34: A dream has become true: Flying like an eagle
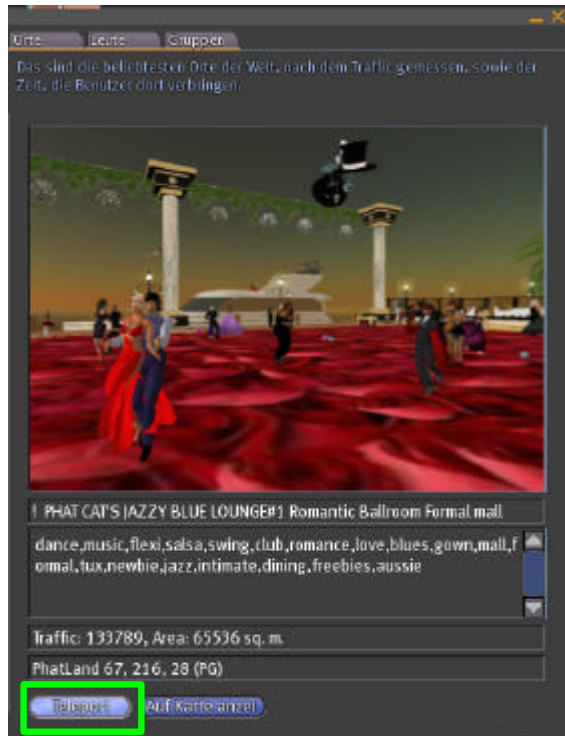
Figure 33: Teleportation to remote locations

4.2.4 VIRTUAL PATTERNS OF GENDER

Figure 35: First set of avatars

Second Life is a poor and conservative space referring to the bodily aspect of gender and especially in comparison to LambdaMOO. Avatars are just available in two different types: male and female [Fig. 35]. In this respect, Second Life is the virtual simulation of the first life with its bipolar gender model.

Figure 36: Avatar without genital

But if we have a closer look under the surface, a surprising discovery is made: Although male avatars look like men from behind and female avatars have breasts, both of them don't have genitals [Fig. 36]. The size and buoyancy of the breasts can be defined as well as their degree of distance to reach other. There is not a reason for the lack of genitals. I've heard that the participants have to care about the bodily completion of their avatars by provide/purchase genitals for them (Spiegel, 8/2007). The lack of a genital can be compensated by editing the appearance of a trouser: It is up to the owner of the avatar to create a small or a big genital area [Fig. 37].

Figure 37: Compensation of the missing genital by creating a genital area of the avatar's trouser

While renaming of an avatar is forbidden in Second Life, 'gender swapping' between the two available categories is allowed at any time. Also virtual transgender avatars can be created by the appearance editor [Fig. 38]. For this reason, the name is a more reliable indication of a virtual body than its outer appearance. This supports my impression that the modification of the avatar's body is one of the most popular activity in Second Life.

Figure 38: The female avatar Serafina becomes masculin

Figure 39: Male avatar Lucca as transvestite

Due to the detailed design tools, the participant can use his/ her imagination to create characters beyond the stereotype gender images [Fig. 39]. But he/ she can't influence the way, the avatar moves. The basic actions of movement are indeed tailored to the avatar's gender. They are determined by the way they are programmed. They correspond to the gender stereotypes, e.g. male avatars always stand, sit and walk bowlegged, while female avatars sit with closed legs and walk with swinging hips [Fig. 40]. These gestures are culturally connoted with masculinity and femininity. Finally, the avatars are captured in the bipolar model. Even if the gender is changed to the opposite, they behave corresponding to the determined body language of the chosen gender category – except for the male and female gestures.

Figure 40: Male avatars sit bowlegged // female avatars sit with cosed legs

Especially remarkable is, that the set of gestures consists of two parts: common gestures and female, respectively male gestures corresponding to the avatar's gender.

The categories of common gestures are identical referring to male and female avatars. Moreover, both types of characters behave in the same way in case of activating the same gesture which may base on the same technological code. The specified male and female gestures are often accompanied by vocal expressions. For this reason, they have to be tailored to the avatar's gender.

The default set of male gestures consists of 12 categories [Fig. 41] which are also included in the default female gesture set, but female avatars have 6 additional categories [Fig. 42]: Cry, embarrassed, hey baby, looking good, over here and please. They consolidate the stereotypes that women are generally more emotional than men, explicitly articulate their emotions (cry, embarrassed), love to coquet (hey baby), set a high value on their appearance (looking good) and are more polite (please) than men.
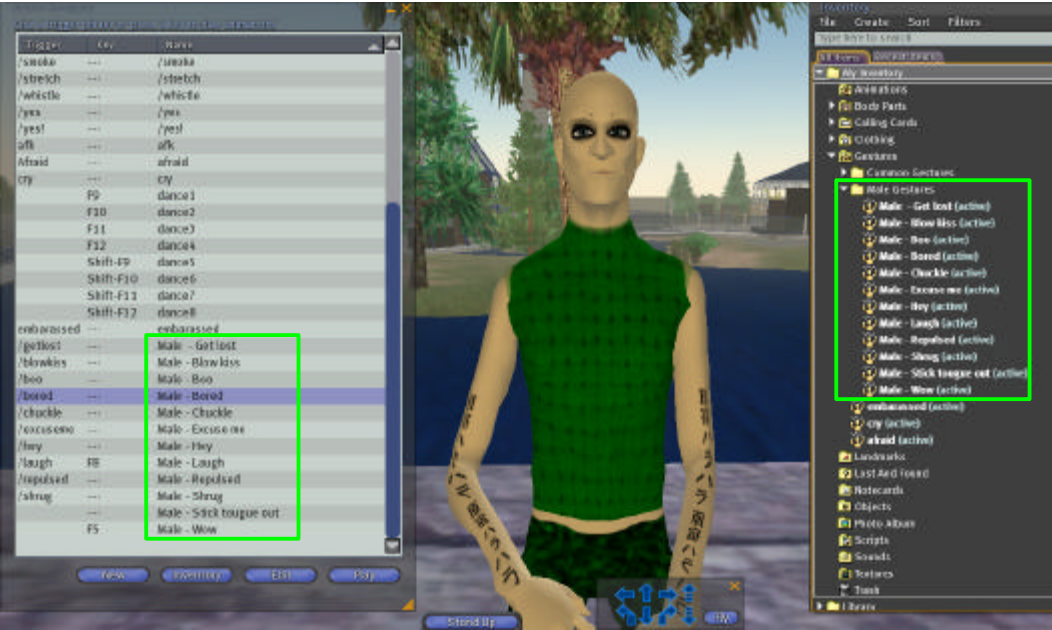

Figure 41: Default set of male gestures containing 12 categories

Figure 42: Default set of female gestures containing 18 categories

Tracing back to the case of 'gender swapping', there is one special case which is not consequently reflected by the system: When the gender category of an avatar is changed to the opposite, its gesture set stays the same. E.g. the masculine Serafina moves like a man, but its vocal expressions stays feminine. Moreover the clothes of Serafina do not suit any more since she has become masculine [Fig. 43].

In this respect, Second Life simulates the problem of authenticity that transsexuals also have in the first life.
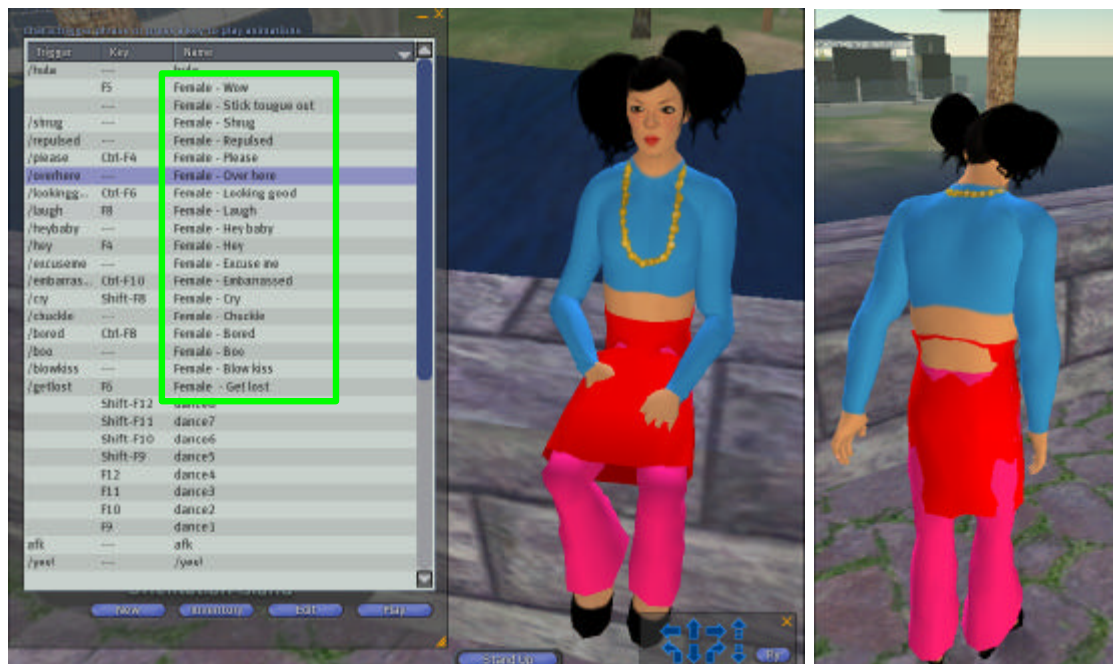
Figure 43: Serafina with its masculine body, its unsuitable outfit and its female set of gestures

4.2.5 VIRTUAL PATTERNS OF SOCIAL BEHAVIOR

After being registered and before entering Second Life, the community standards and behavioral guidelines are displayed. The 'law and order' of Second Life is called the 'Big Six' which give examples of inappropriate activities and their possible sanctions. The guidelines target the main issues 'intolerance, harassment, assault, disclosure, indecency and disturbing the peace' [Fig. 44].
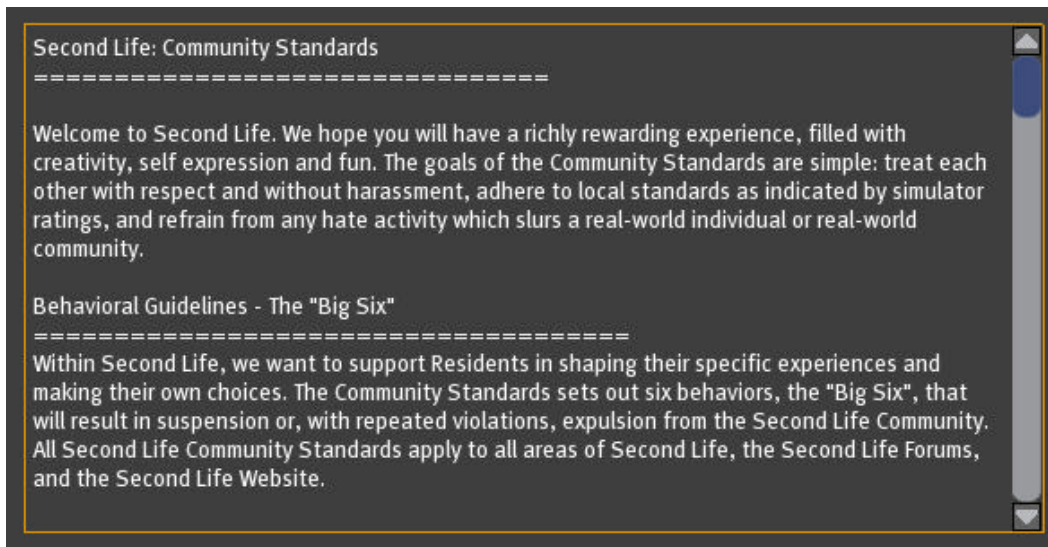
Figure 44: Cut-out of the behavioral guidelines and policies of Second Life

Even a kind of police exists in Second Life. Liaisons, being recognizable by their surname Linden, can be directly addressed, when a participant discovers violations of the community standards, or when his/ her avatar has become a victim of annoyances.

Virtual characters with this surname are Linden Lab employees in virtual disguise. If these security men are not around, an 'Abuse Reporter Tool' is offered [Fig. 45/ Fig. 46].
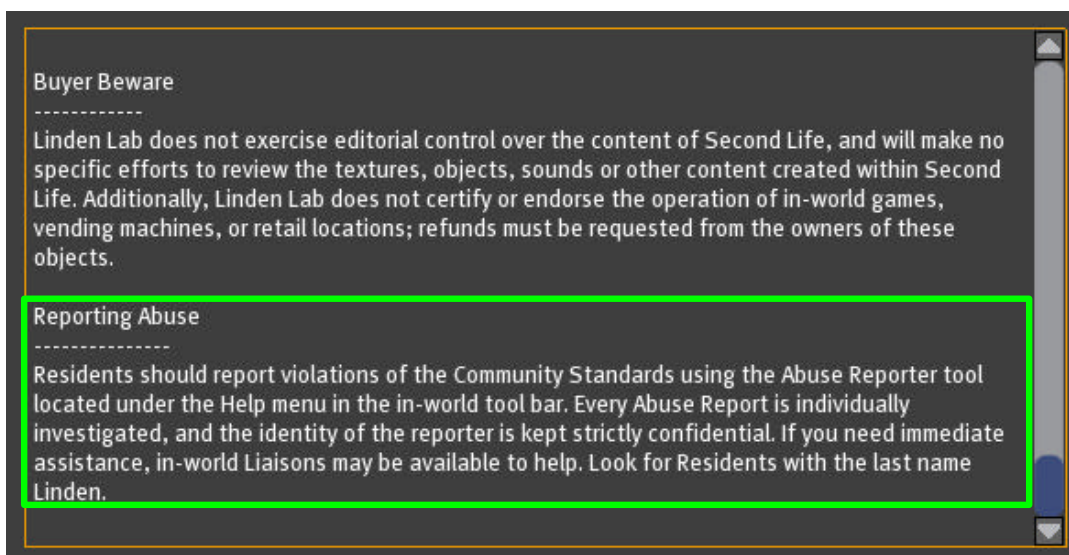

Figure 45: Cut-out of the behavioral guidelines and policies of Second Life
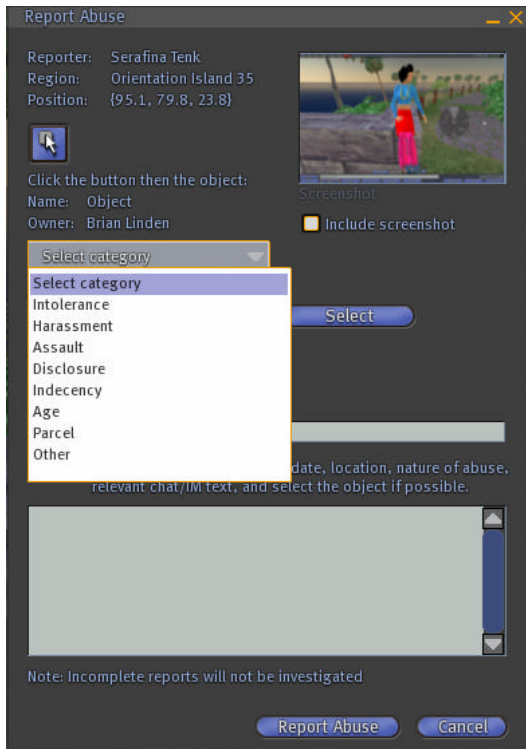
Figure 46: Abuse reporter tool

The filled-out report formula [Fig. 46] can directly send to the 'police department' of Second Life, which addresses the creators of Second Life: Linden Lab.

This example shows that virtual violations are taken seriously, even if a potentially inviolable and immortal virtual character is affected. Virtual experiences are understood as true experiences. Bad experiences, disregarding whether they result from the virtual or the - so called – real world, can cause mental injuries which are regarded as serious as bodily harm (Müller, 1996/ Bahl, 1996).This proves our hypothesis of the beginning that human beings are virtual beings due to their mental activities in a physical body. Operating mentally and living in immaterial environments, e.g. social, cultural or computer generated spaces, means - in our sense - to act virtually.

Figure 47: Visualizations of communication: Indication of messages and current creation of a message (Typing avatar)

Regarding the graphical interface of Second Life from a perspective of communication, it uses nearly the same patterns as LambdaMOO.

There are more than one possibility to communicate [Fig. 48]: Direct chatting works by entering a text message and confirming it by the 'say'-command. The message is then posted directly into

the graphical environment. When someone is currently writing, immediate feedback is given by his/ her avatar's gesture of typing [Fig. 47]. The posted message seems to be visually marginalized in relation to the surrounding graphical environment. Long- distance communication in the sense of LambdaMOO is possible by using the Instant Messenger which makes a direct talk with a remote participant possible, if he/ she is currently online. By selecting the command 'shout', the message is visible for all members of Second Life. From former experiences in text-based MUDs, I know that this command should be used carefully (LambdaMOO does not offer this opportunity). Shouting can disturb other members and can lead to a suspension of the virtual community.

Considering my observations, communicating with other residents was always hasty and not as intensive as in LambdaMOO. Talking to each other was reduced to tell where one comes from and how old one is.

In Second Life, the posted message fades out after a few seconds. This makes it much more difficult to continue a talk if a participant is busy with other things. In order to have a look at the previous communication process, the interface offers the command 'history' which diplays the interaction path in a separate window [Fig. 48]. Disappearing messages and the offer of the communication path on the second information level, emphasize the marginalization of text-based interaction in rich graphical environments. From this respect, Second Life is more related to graphically rich computer games than to chat rooms. In contrast to LambdaMOO, the personality of a virtual character primarily results from its outer appearance and not from its communicational behavior. The visual qualities of the graphical body dominate text-messages in image-based environments.
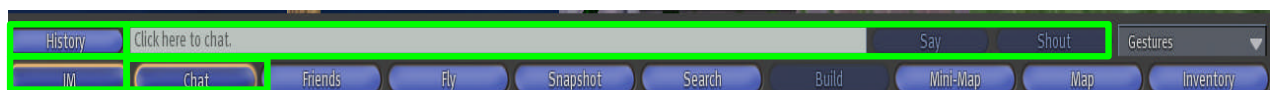

Figure 48: Cut-out of the bottom tool-bar

5. CONCLUSION

Our investigations and findings show that digital interfaces have a crucial impact on virtual embodiment and that the physical body is a reference point for their virtual patterns of bodily expressions.

Three aspects have to be especially considered in this content. The body is

- ☐ a spatial benchmark for navigating and moving

- ☐ a social benchmark for selecting suitable behaviors and actions

- ☐ a ethical benchmark for evaluating the appropriateness of behaviors and actions

The table below displays how the different bodily dimensions are treated by the interfaces of LambdaMOO and Second Life.

Virtual Body aspect	LambdaMOO (text-based)	Second Life (image-based)
Virtual body presence	Nickname	Nickname + Avatar
Virtual personality/ individuality	Self-description command	Appearance Editor Profile Window
	Emote-command	Set of gestures
Virtual actions and spatial movements	Emote-command	Set of gestures
	Moving-around commands: (cardinal points + up/down) Look-around commands	Navigation tool Camera-view tool Sit down /Stand up Teleporting
	Examine-object commands	Take-object command

Virtual patterns of gender	Neuter, male, female, either, Spivak, splat, plural, egoistical, royal, 2nd	Male, female
		Set of male / female gestures
Virtual patterns of social behavior	Chat-command: say	Chat-commands: speak / shout
	Long-distance-communication command	Instant Messenger
	Behavioral guidelines	Community Standards: 'Big Six'& Policy Abuse Reporter Tool

Figure 49: Comparison of tools and commands offered in LambdaMOO and Second Life

The comparison demonstrates that both interfaces use nearly the same patterns of embodiment which reflect the body in its different dimensions.

The text-based environment of LambdaMOO first seems to limit the virtual expressiveness of the body because of its restrictive interface of Telnet, which allows just textual contributions without formatting. For a new participant who is used to graphical user interfaces the environment seems to be a bit old-fashioned. Its surface reminds of a source code and its cryptic commands of an environment made for programmers and not for everybody.

In comparison, the graphical interface of Second Life seems to me more related to the analogous world and the conditions of the physical body. It supposes to offer a richer virtual embodiment because of its resourceful interface. The offered tools and commands a more complex and detailed than in LambdaMOO. Basically, they invite the participants to discover and play around. Therefore, the members are more engaged in finding out, how they work or which effect they caused. Moreover, some functions are offered at different points and are accessible from different information levels which encouraged the interfacial discovery.

Referring to spatial orientation, the graphical environment of Second Life offers more comfort because of its familiar pattern of moving around and looking out, we are similarly used to in our analog world.

Considering the aspect of individualization, the graphical richness leads to a more consolidated and frequently stereotype personal performance, while the textual body constructions of LambdaMOO open up room for associations and imaginations. Within the medium text, the body is endlessly malleable, not definitely determinable, but enough substantial to refer to. This aspect becomes extremely evident regarding the parameter of gender:

If one tries to transfer some gender categories of LambdaMOO into graphical representations, it is really difficult to imagine how e.g. a body of neuter, either, Spivak, spatial, plural or egoistical may look like. Within an image-based environment, the body appears either more feminine or more masculine. Even visualizations of transgender can be located on this bipolar scale, recognizing if feminine or masculine attributes dominate.

This mental experience may indeed lead to a general design formula: The less the interface is graphically determined, the more it is abstract, the more it encourages the recipient to be imaginative.

Moreover, communication in Second Life was a disappointed experience, while talking with other members in LambdaMOO was the main activity to develop ones virtual personality. These observations lead to a further conclusion which may be useful to consider in the design practice: Graphically rich interfaces draw attention to itself, while text-based environments encourage to communicate.

Finally, we can indeed confirm that the body can be regarded as reference point for the interfacial development, but it is not for evaluating the quality of an interface. It rather depends on the decision which bodily aspects shall be addressed by the interface, which modes of representation shall be used.

From our point of view, it is very important that designers are aware of the different bodily aspects which may be addressed and affected by their interfaces, because they design for physical human beings. For this reasons, they have a social and political responsibility.

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