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Negotiation of space in *Second Life* newbie interaction

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ABSTRACT

Interaction in virtual worlds takes place in a spatial context. The interactants respond in various ways to this context but they also discursively create various spaces in their interaction. They negotiate spatial orientation through the use of linguistic deictic elements, create co-presence and joint attention through the gestures and positioning of their avatars and they need to handle screen space as well as the physical space of their surrounding. We discuss the theoretical underpinnings of the interdependence of interaction and space and its application to one specific virtual world, *Second Life*. We focus on a group of newbies, who participated in a workshop to experience computer-mediated communication in a virtual world and had to engage in classroom interaction and independent group work. We discuss how the participants try to organize themselves in the virtual reality of *Second Life*, while situated in different locations in the physical world, and we demonstrate how the interactants rely on space for their orientation and interaction within the virtual world and how the physical world is brought into the online interaction.

1. Introduction

Interactants in physical and virtual life have at their disposal a large array of resources to orient themselves in space and to negotiate such orientations with their interlocutors. For example, they may use linguistic spatial deictic elements such as *here* or *there* to create a common point of view (Hausendorf, 2003; Hanks, 2005, 2011), orient their bodies/avatars towards each other to signal availability to talk and/or they can discursively create (virtual) spaces, for instance, by delivering a lecture and thereby transforming a communicatively more neutral or multi-purpose space (e.g. a clearing in a wood) into a lecture theater (see Weibel and Wissmath, 2011, for empirical work on spatial presence and flow in a variety of computer games). However, as Pearce (2008) points out

> [e]ven from their earliest, most primordial instantiations, video games have struggled with the representation of space on the two-dimensional, albeit dynamic, plane of the screen, requiring players to develop a sense of spatial literacy, that is, a mode of conventions for 'reading' game space. (Pearce 2008; 1)

Like other virtual worlds, *Second Life* uses analogies from physical life. This means that 'reading game space' heavily draws on physical life conventions with respect to creating spaces (e.g. buildings, objects, landscapes). However, virtual worlds are also different worlds in which conventions can be taken over only to a certain extent and need to be adapted or created anew (cf. Herring, 2012). For example, *Second Life* also provides affordances such as flying and teleporting that are different from physical life. There is in fact a doubling of the person sitting at his/her computer and the resident in *Second Life* (see Boellstorff, 2008; 135, who talks of virtual and actual embodiment). Furthermore, there are spatial challenges in communicating since avatar gestures cannot be used as effectively as in physical life, and disrupted turn adjacency occurs in chats (e.g. Herring, 1999).

In this paper, we set out to uncover some of the layers in which interaction and space are related in virtual worlds, and we take one particular virtual environment, *Second Life*, as an example in order to reflect on its affordances of spatial orientation. We observe a group of *Second Life* newbies, i.e. computer users with no or very little experience in *Second Life*, in their struggle to gain spatial literacy through explicit and implicit negotiation of space. In Section 2, we introduce the concept of an online virtual world and introduce *Second Life* to provide a backdrop for our discussion. In Section 3, our data sources are introduced and our methodological approach is outlined. In order to illustrate our observations in Section 4, we draw on our own experience with the virtual world and data from our case study of *Second Life* newbies in their

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interaction with each other during a class taught in the virtual world. We look at how these users tried to come to terms with the spatial affordances in the virtual environment of *Second Life* and how they engaged in negotiations of space.

2. The virtual world *Second Life*

Second Life is an online platform that was launched in 2003. It is widely referred to as a virtual world, i.e. a three-dimensional virtual space that can be accessed via virtual embodiments (avatars) through which users can interact verbally and non-verbally (Yus, 2011; Herring, 2012). Upon registration, users get to select a user name and an avatar through which they can access the virtual world. The choice ranges from humans, animals, fantasy creatures such as vampires and dragons to mechanical devices such as robots or buses. There are thousands of different places for exploration and interaction within *Second Life*, ranging from lecture halls, seminar rooms, cafés and clubs to ephemeral landscapes or even virtual brothels. *Second Life* is accessible all day long so life does not stop within that world. *Second Life* has already been elaborately described elsewhere.[2] In this section we focus on the two aspects most relevant to our study: the spatial affordances of *Second Life* and the affordances *Second Life* offers for interaction.

2.1. Spatial affordances

While the computer-screen on which the virtual world is accessed is of course two-dimensional, Yus (2011) points to the illusion of three-dimensional space that is created in virtual worlds. *Second Life* is thus different from the early online game worlds where space was created and imagined with purely linguistic means (e.g. Carlstrom, 1992; Deuel, 1996; Cherny, 1999; Paolillo and Zelenkauskaite, 2013). In contrast, the new technological innovations allow *Second Life* to re-create elements of our physical world such as islands, the sea, forests, buildings or chairs in virtual space. The avatars through which users[3] navigate that space can walk, run, fly and teleport in this virtual world. What users see within *Second Life* is tied to their respective avatars: By default users have a first-person perspective of their avatar with a tracking camera, i.e. the virtual camera adopts a slightly raised position immediately behind the avatar providing a view of the avatar's back and the approximate field of vision of the avatar. Users can, however, also manipulate camera angles and make use of the affordances that allow them to move their avatars independently from the first-person perspective.

While *Second Life* is made up of different islands, residents do not need a ship to cross the water to visit them. Instead, they use landmark links, which help them to directly teleport to a new location. Once the avatar has materialized in the new location, s/he can start exploring. Usually, islands have signposts that offer teleports to points of interest on the island, but there are also paths and maps that help residents to orient themselves. Landmark links can also be found with a browser type search function. Keywords such as “museum” or “club” will result in a list of landmark links that can be used for teleportation. Residents can save their landmarks in their personal inventory (Screenshot 1) and can share these links with other residents. Importantly, once residents have befriended each other, one of them can, at any point in time, easily send the other an invitation to join him/her at his/her current location since one's friends are listed in their inventory.[4] This is possible as soon as both residents are online. The use of the teleporting function is so pervasive that people will not actually walk or hike to distant locations, but will share landmarks and will then teleport there (see Frohwein et al., 2008; 35–36).

Walking, running, jumping and flying are quite often employed to explore new spaces. Especially flying allows residents to gain a quick spatial understanding of an island since flying high above the island provides a bird's eye view of the buildings and landscape below. Walking and running allow users to discover intricately designed islands, e.g. walking up stairs or taking elevators and discovering new rooms in buildings or strolling through meadows and along lakes.

In addition to flying and teleporting, the platform offers enhanced maps which are unique to *Second Life* and do not exist in physical life. These island maps provide residents with the location of other residents via green dots as well as giving them the ability to zoom in and out. This allows them to find locations where other residents congregate and teleport directly to where avatar interaction is currently taking place. A small-scale ‘mini-map’ can be kept open as a window on the screen (see Screenshot 1 on the right). Especially when teleporting to a new island, this mini-map allows users to quickly assess whether they are alone or whether there are other avatars in the vicinity. As Goel et al. (2013; 266) point out, “one of the most salient [of our conclusions] is the necessity of taking into account the importance of the presence of others in a virtual environment to an individual.” Indeed, gaining knowledge about the co-presence of other people in our immediate environment that we achieve quickly with glances in physical life is here achieved with a technical affordance.

2.2. Affordances for interaction

Second Life offers a number of affordances that allow residents to interact with each other (for introductions see, for instance, Antonijevic, 2008; Boellstorff, 2008; Hodge et al., 2011; Pojanapunya and Jaroenkitboworn, 2011; Boellstorff et al., 2012). Table 1 provides an overview of these affordances.

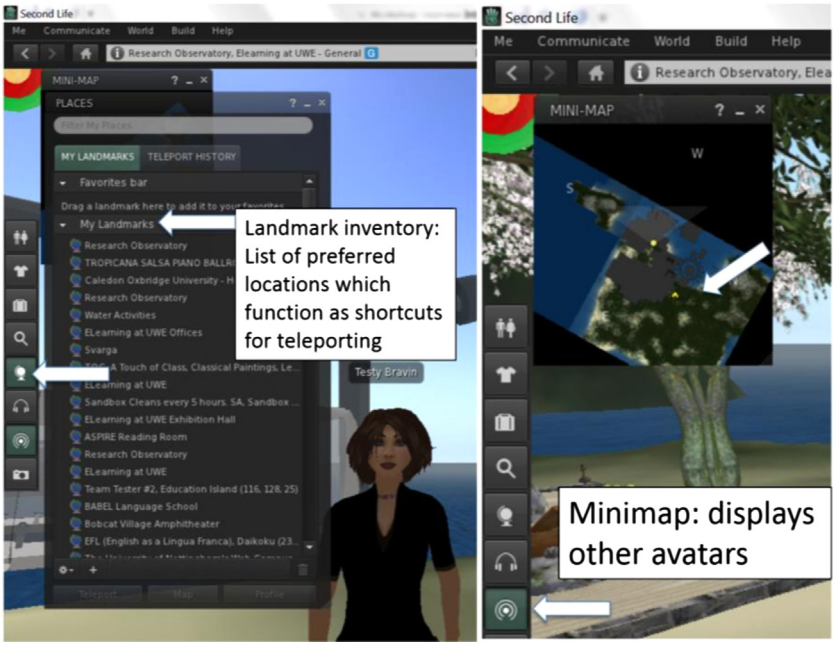
The main language-based channels for interaction in *Second Life* are open chat, voice over IP and instant messaging (see also Biebighäuser and Marques-Schäfer, 2009). Through open chat, users can post a text that can be seen by other users in a chat window (see left side of Screenshot 2). What is posted in the chat window is only available to those residents who are within proximity of each other, such as in the seminar room in Screenshot 2. This set-up imitates the ability to overhear a conversation in the physical world. The set-up is similar for voice over IP: Users can stream their voice into a particular location within *Second Life* and this voice can be heard by users that are close enough. Instant messaging is a way of text-based private talk (see window on the top right corner of Screenshot 2), which can only be seen by one or a number of selected residents. To communicate via instant messaging, residents do not need to be in the same place within *Second Life*. Different means of communication are usually simultaneously used as can be seen in Screenshot 2.

With respect to avatar positioning and the range in which chat can be received, *Second Life* imitates and highlights certain spatial aspects of interaction in physical life, such as the distance between

[2] For elaborate introductions to *Second Life* see for instance Boellstorff (2008) for an ethnography of *Second Life*; Bruns (2008) for its collaborative aspects; and Wagner (2008) for its beginnings and history. Specific features of *Second Life* tend to change from time to time. Our description is based on the features as we encountered them throughout our own research between 2012 and 2015.

[3] We wish to make a clear distinction between the users, i.e. the physical-world computer users sitting at their computers, the residents, i.e. virtual identities inhabiting *Second Life* and the avatars, i.e. their virtual online manifestations in the shape of a person, an animal, a phantasy creature or an object (see also Abdullah, 2015).

[4] As newbies tend to be overwhelmed with learning how to navigate when first entering the virtual world, we made sure in the class we taught that the group leaders insisted that all the group members befriend each other so as to be able to find each other again.



Screenshot 1. Screenshots of landmark inventory, minimap and added explanations for orientation. (All screenshots are taken from our data collection recorded with the permission of The University of Western England (UWE) on their *Second Life* island).

Table 1
List of interaction possibilities in *Second Life*.

Language-based affordances	*Avatar-based affordances*
– Text-based chat	– Avatar appearance
– Instant Messaging (IM)	– Avatar movements
– Voice-over IP	– Avatar gestures (e.g. laughing, nodding, clapping)
– Notecards	
– Action scripts	
– Billboards, road signs, etc.	

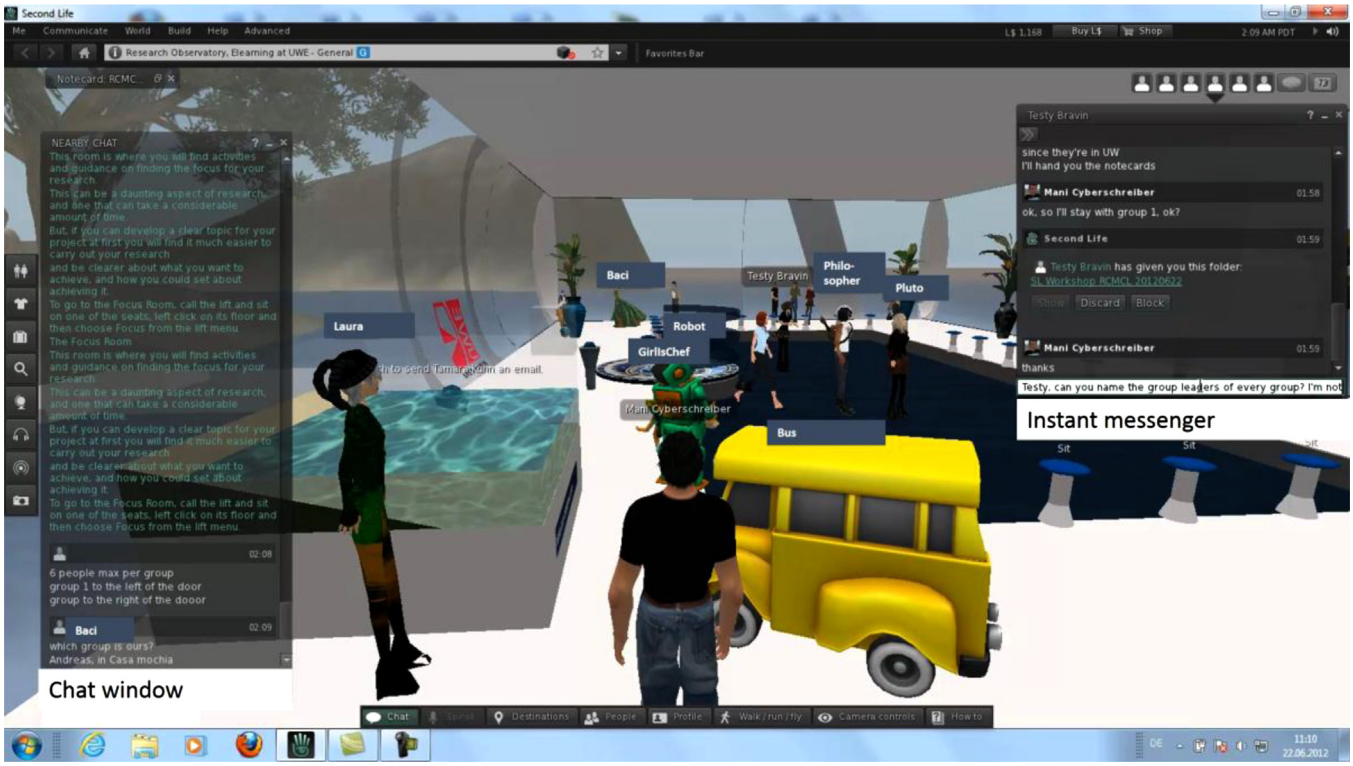
interlocutors, their orientation (face-to-face, parallel, joint focus on third party), but there are also clear differences. In physical life, hearers can usually locate the source of a sound in their surroundings. In *Second Life,* users may use the default setting of an overhead camera but other perspectives are possible without this being manifest to their interlocutors. One avatar may "hear" another avatar (i.e. may be able to read the other's chat contributions) without being aware of its position if it is not in the field of vision. Thus, perceivable sounds (i.e. voice over IP) and the text in the chat window do not reveal the direction of their origin within the virtual space in which the avatars interact. Alternatively an avatar hiding behind objects in order to eavesdrop may easily be spotted by another if the correct camera perspective is chosen or the mini-map is used.

Despite the fact that *Second Life* imitates three-dimensional interaction, the platform is nevertheless heavily text-dependent. In addition to the already mentioned chat and instant message windows, the residents' possessions, location inventory, etc. are organized into folders that can be accessed via pop-up and roll-down menus (see list of icons on the very left of Screenshot 2). When entering a new island, 'notecards' appear in folders that are then opened in the form of small text windows on the screen. There is also an abundance of textual information on the islands themselves, ranging from street signs to information billboards. Action scripts (such as 'sit' to sit on a specific chair, or 'dance' to activate a dance script) are also flagged with linguistic markers. Navigating the screen interface can, therefore, become a challenge since the screen can easily get cluttered, as can be seen in Section 4.

Second Life also provides a number of interactional affordances that are based on the avatars. The appearance of an avatar, for instance, can be largely manipulated by *Second Life* users. While newbies can choose a generic avatar type upon logging in for the first time, experienced residents usually spend considerable time, effort and often also expense on personalizing their avatars (name, hair style, clothes, accessories) and can thus send out visual messages that might entice other residents to comment on their appearance (Frohwein et al., 2008; 25–31) or that reflect their identity or role (Gottschalk, 2010). Additionally, all the avatars come equipped with pre-defined gestures (such as laughing, signs of boredom, clapping), which can be activated by keyboard short cuts or by clicking on the set of gestures in a pop-up menu. Most importantly, avatars can move freely within the three-dimensional virtual space. As soon as more than one avatar is present in a location, avatar movements thus become part of interaction: Residents can approach each other. They can turn their face towards another avatar or turn their back on him/her. Thus, avatar movements can be used to signal involvement as well as availability for interaction (Goel et al., 2013).

3. Data and methodology

Our data collection stems from a class on *Second Life* jointly taught by Jucker and Locher. The class was integrated in a summer school on research methodology in computer-mediated contexts (RCMCL, see also Bolander and Locher, 2012). Approximately thirty students of



Screenshot 2. Communication windows and group of avatars (meeting room, UWE). (For interpretation of the references to color in this screenshot, the reader is referred to the web version of this article.)

about a dozen different nationalities took part. The point of the class was to give the students the possibility to experience a virtual world and to reflect on potential linguistic research possibilities and challenges at the same time. As preparation, the students registered in *Second Life* and picked an avatar. We first introduced the students to the virtual world in a physical classroom setting. Then in groups the students dispersed to different physical locations from where they entered the virtual world and moved to the same virtual meeting point (see Screenshot 3[5]). There the students were split into different groups and given a task to fulfill (such as exploring an island, participating in a classroom workshop, playing a board game, etc.). The groups were assigned a group leader who had been trained previously to ensure that the group members would not lose each other and could manage the task.[6] After 60 minutes, all students reassembled in the virtual classroom before breaking off for lunch. In the afternoon, we met again for a debriefing session. Berger joined the part of the class that took place in *Second Life* and recorded his experience with a screen-recording program (Camtasia). All in all, we thus have a number of different sources that document the experience: our notes as observers and participants in the interaction, the chat logs of seven students saved after the event, screenshots, screen-capture videos collected during the virtual world part of the class from the perspective of Berger's avatar (85 min.) and notes on the debriefing of our experience.

In order to enter *Second Life*, each user needs to register as a resident and create an avatar with which they ultimately enter a non-public space. Collecting data within this non-public virtual world is not without its ethical challenges (see Boellstorff et al., 2012; Sadler, 2013; Bolander and Locher, 2014). In fact, the platform and the owners of individual islands are quite clear about requesting that researchers ask for permission when recording. For this reason, we made sure to use only screenshots for which we have permission. We also informed all the students at the beginning that we intended to record our interactions in *Second Life* and gained their written consent. All avatar names apart from our own have been changed (Berger: Mani Cyberschreiber; Jucker: Harry Ubert; Locher: Testy Bravin). The University of Western England (UWE) generously allowed us to use their *Second Life* island as our data collection site and to record our interactions.

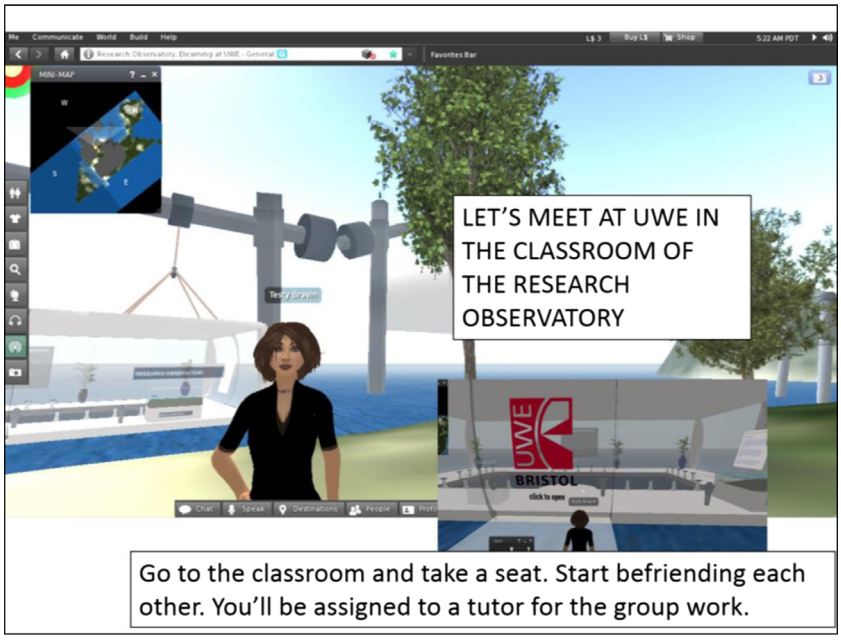
The methodology that we employed for this study was to approach the data set in an explorative manner by combining participant observation with active participation (Eysenbach and Till, 2001). Our first step was to identify that the 'negotiation of space' is a topic that is not only of academic interest but also crucially important for the newbies in the sense that they had to learn how to navigate space in *Second Life* or they could not have participated in class. As a matter of fact, any *Second Life* resident needs to gain this 'spatial literacy' (Pearce 2008; 1) in order to participate in this virtual world. We thus wondered how our newbie student residents navigated the spatial challenges that the virtual world *Second Life* posed them. Second, discussing our experiences and observations in light of 'space' in the team, allowed us to identify five nexuses of interest in which we observe our newbies negotiating and navigating the virtual space:

(1) establishing co-presence and joint attention;
(2) negotiating a common perspective;
(3) navigating and coordinating within virtual space;
(4) coordinating the different layers of space (the quasi three-dimensional world, the screen interface, and the space of the human in the physical world); and
(5) the spatial/physical experience of the avatar.

The categories are fuzzy and not mutually exclusive. In other words, while we present these issues separately, it is important to stress that navigating space in *Second Life* often means negotiating them simultaneously. As a last step, we identified extracts in our

[5] The students were asked to 'befriend' each other, i.e. to offer and accept friendship to each other's avatar, since this would allow them to find each other again in case they got lost in virtual space.

[6] As we soon realised, the metaphor, "getting lost in virtual space" can take on a very literal meaning in the context of *Second Life*.



Screenshot 3. Instructions during the physical life classroom session (UWE).

data where we have evidence of the negotiation of space that might serve as examples of gaining spatial literacy. They are presented and discussed here in order to illustrate the five themes.

The presented insights are thus the result of our experiences and the discussions with our colleagues and students. We want to stress that the data gained from the classroom interaction at RCMCL show how one particular set of newbie residents negotiate the virtual world. We thus do not claim any generalizability. Experienced *Second Life* residents, for instance, might tackle space navigation in different ways. Nevertheless, we found it especially interesting to document and analyze how newbies react to the affordances and restrictions of virtual space when they are confronted with it for the first time.

4. Negotiation of space in *Second Life*

As mentioned above, navigating space is a crucial part of *Second Life*. Our newbies could not stay put after entering the world, but had to make their way to the UWE classroom and participate in the group work we assigned. All the tasks involved spatial movement (e.g. to a different classroom or island, but also less obvious tasks as forming a group of avatars and creating a joint focus of attention). Before the students were sent in groups to perform tasks in *Second Life*, we introduced them to the orientation affordances that this virtual world offers as described in Section 2, being well aware that a theoretical introduction to the spatial affordances is different from the actual experience. Using Pearce's (2008; 1) comments on 'spatial literacy' and 'reading game space' quoted in the introduction as a starting point, we now turn to a discussion of the five nexuses of interest in which we observe our newbies negotiating and navigating the virtual space (see previous section).

4.1. Establishing co-presence and joint attention

As mentioned in the introduction and quoted from Goel et al. (2013; 266), "one of the most salient [of our conclusions] is the necessity of taking into account the importance of the presence of others in a virtual environment to an individual," i.e. establishing co-presence.[7] Due to the *Second Life* affordances described above, every user will in fact be confronted with a slightly different picture of what appears on his or her screen. This is because the avatar perspectives (i.e. the orientations of the avatar) will differ and because the users will have different text windows open on their screens (chat, instant messenger, note cards, etc.). Just like in physical life, developing a common perspective or focus of joint attention can thus become quite a challenge for newbies. In this section we have a look at the arrival of the newbie residents in *Second Life* and their first attempts of establishing co-presence and joint attention in the virtual setting.

All participants of the course were asked to teleport to UWE island, a place in *Second Life* with several buildings, a lawn, a meditation garden etc. The first sign of the presence of the newbies on that island was system-given: once they teleported to the new location, their avatars appeared. Shortly after that, most newbies announced their arrival through a greeting and/or were greeted by the users already present, such as in (1) (see also Screenshot 4):[8]

(1)
1 Baba: hey the monte verita connection has arrived
2 GreenDress: ohh that was quick
3 Testy: hello there
4 Testy: excellent conditions here
5 Tiger: hello!
6 Baba: are you rcmcl?
7 Testy: hello Robot2

While an avatar can only be seen if it is in the field of vision of another user, the greetings appeared in open chat that could be seen by all nearby users independent of their perspective. A greeting exchange can thus serve as a "perspective-independent" signal for one's virtual presence and, if it is replied to, as a mutual confirmation of each other's presence.

As Goel et al. (2013) emphasize, co-presence and joint attention can also be established through avatar movements. The newbies in our case first used their avatars to explore virtual space without much

[7] For an extensive literature review on the role of joint attention in physical and virtual co-presence, see Goel et al. (2011).

[8] Typographical errors and non-standard language have not been corrected in the examples.

Screenshot 4. RCMCL participants convene in front of the UWE classroom after teleporting to the island.

interaction: they tried out different ways of moving such as flying and walking into different directions and they started to explore the island. Interestingly, after some minutes, a number of avatars assembled in front of the seminar room, all facing each other (Screenshot 4). In physical life, facing each other is not only a flag for having each other's attention but also allows interactants to see each other's facial expressions and to be in an optimal position to hear the other speak. This is different in virtual life, at least in the case of *Second Life*: Facial expressions are not relevant for interaction and the chat inputs can be received independent of the direction a user is facing.

The positioning of avatars turns what is an important aspect of communication in physical life into a visual sign of whether the user is available and willing to interact also in virtual life. Goel et al. (2013) put it as follows:

> One feature [of visual-aural perception in virtual worlds] is the support of many-to-many interactions in the virtual space such that when an activity is underway, the space allows a person to discern whether another is available for interaction based on what her avatar is doing […]. For example, an avatar walking toward you may signal that the person represented by the avatar wishes to interact with you. (Goel et al., 2013; 269)

In that sense, facing another avatar can be both, a signal to other users that they have one's attention and a way of discerning that one has other users' attention, in short, a means to create joint attention.

4.2. Negotiating a common perspective

The task of the workshop participants was to meet in the UWE classroom where they would get further instructions on group work. The choice to meet in a classroom, which provides chairs that face towards the center of the room was no coincidence, but rather a conscious decision on the part of the instructors. We wanted to exploit the room's architecture to facilitate joint attention (Hausendorf, 2012, 2013; Hausendorf and Schmitt, 2013). Through the furnishing of the room, the architecture thus flags or invites a particular joint attention.[9] While the participants should have entered the room and taken a seat, in fact the newbies did not immediately do so. Many struggled with the technicalities of how to make their avatars sit on the seats available. In addition, they succumbed to the novelty of the space by inspecting the elevator, chairs, plants and set-up of the classroom. They thus adopted a ludic and explorative approach to the new environment.[10] A further challenge was that students appeared only one by one or in small groups so that it was difficult to keep those who had arrived first patiently seated. Testy's work thus turned out to be quite challenging as every avatar who entered the room had to be greeted, assigned to a group and handed a notecard with instructions. In order to manage the classroom, Testy repeatedly used the microphone as well as the chat window to remind the group members to take a seat (e.g. "okay, everybody sit down", Chat, Screenshot 5). The newbies in our study were able to benefit from watching each other comply with the request and thus develop a joint purpose and perspective. Screenshot 5 shows Testy in the middle of the room (red circle added for better visibility), having placed herself towards the center of attention of the gazes of the avatars, and the majority of the residents are successfully seated around her.

Screenshot 6 serves as an illustration for the negotiation of a common perspective during the phase in which the summer school participants are sent off to do group work. The screenshot is from Mani Cyberschreiber's video log (we see his back in front of the yellow bus) and thus shows Berger's computer screen. The general chat window is open on the left. It displays system

[9] Hausendorf (2012) discusses how lecture halls can facilitate, structure and flag specific forms of interaction. However, interactants can also creatively turn any space into a meeting place and a lecture hall can be used for other purposes than lecturing.

[10] Indeed, we often observed this ludic and explorative spirit in our students and ourselves. Our newbies explored the huge space that *Second Life* provides (flying around, walking around, teleporting) and they tested the many invitations for clicks to induce an action (e.g. to sit down, to open a door, to dance). We also observed how they tested which laws of physical space apply in virtual space too and which do not (e.g., trying to walk through a door without it being open). See also Section 4.5, which provides examples of how some newbies perceived the spatial attributes of their own avatars.

Screenshot 5. RCMCL participants move into the UWE classroom and start taking seats to create a joint focus (red circle around the instructor Testy Bravin in the middle of the room added for better visibility). (For interpretation of the references to color in this screenshot legend, the reader is referred to the web version of this article.)

generated information on the purpose of the room in green and then shows two chat contributions. On the right we see an instant messenger window in which Mani Cyberschreiber is writing to Testy Bravin, who is in the middle of the room, organizing the newcomers into groups for the group work.

Testy wrote in the open chat (visible to all avatars) and reminded users of where the groups should convene so that they could start befriending each other and meet their group leader as shown in extract (2):

(2) (Open chat)

1	Testy:	6 people max per group
2	Testy:	group 1 to the left of the door
3	Testy:	group to [= two to] the right of the door
4	Baci:	Which group is ours?
5	Baci:	Andreas, in Casa mochia

Mani, who was observing this interaction, perceived that the newbies had difficulties following them and asks Testy to clarify in private instant messenger window (3):

(3) (Mani's instant messenger)

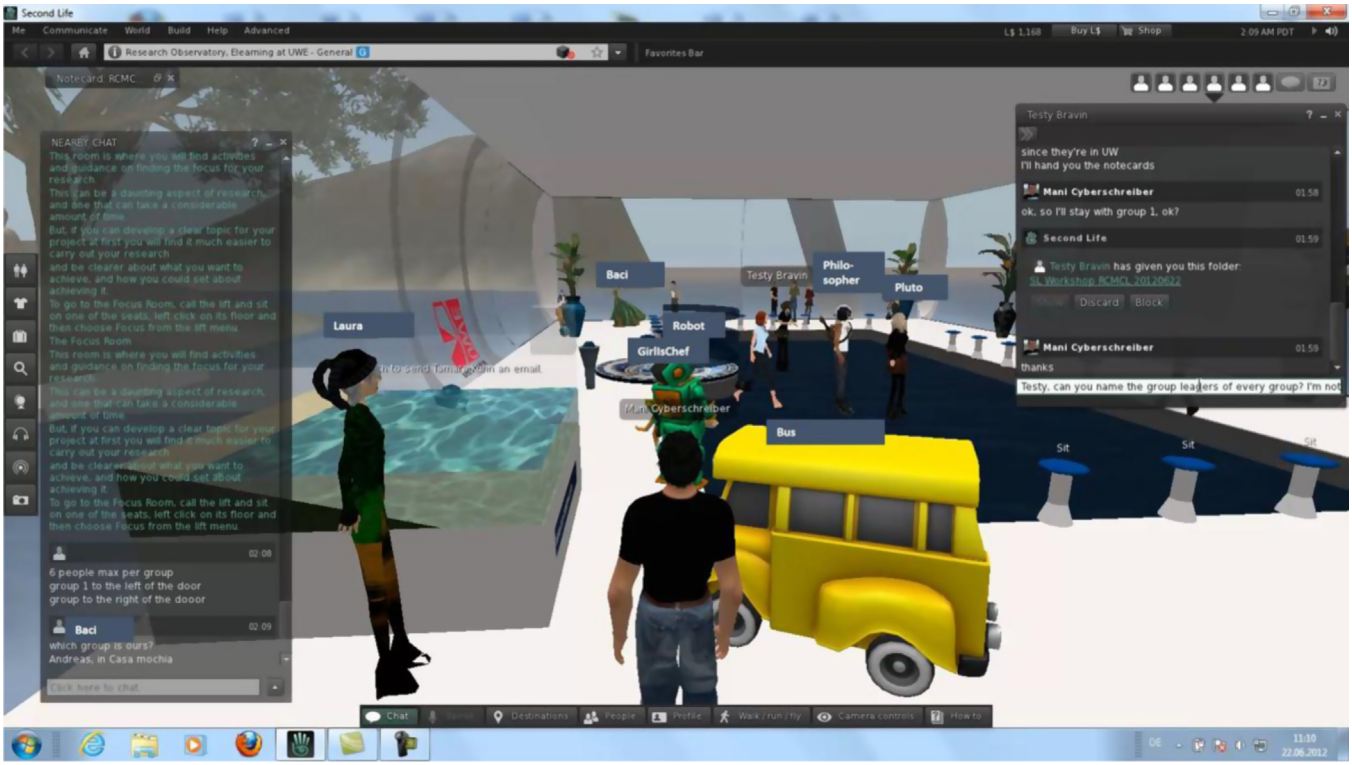
1	Mani:	Testy, can you name the group leaders of every group?
2		I am not sure which left or right you mean/which perspective

What we find worth pointing out here is the request to clarify the joint perspective and to establish common ground (Clark, 1996). Mani seems to assume that the instructions 'left and right of the door' will be dependent on the avatar perspective and, as these are different, can thus be misunderstood. In fact, he puts forward the idea that a physical life analogy will not work. As a matter of fact, however, the physical life assumption that – no matter where one is positioned within a closed room with only one door—, there will only be one interpretation of left and right of the door is still valid. Since all the avatars teleported outside of the room and had to walk towards the classroom and then open the sliding door (visible on the left in screenshot 6 with the red UWE logo), it is safe to assume that they now all share the common understanding of being 'inside a room'. Having said this, Testy recalls that she found Mani's comment valid and was looking for other ways of directing the group members into the corners of the room (pointing out the plants and location of the group leaders). Only in retrospect when discussing this excerpt among the authors of this article, did we realize that we, even as fairly experienced residents, had wrongly assumed that the physical life analogy would not work at this moment and that space in virtual life must somehow work differently. We thus find evidence that users easily make analogies between physical life space and virtual life space (architecture, opening doors, etc., as shown in Section 4) but that common physical life space notions may also be challenged in interaction.[11]

4.3. Navigation and coordination within virtual space

As part of the experience that we wanted the summer school members to gain, we asked the *Second Life* group leaders to convene their group members and to move them to pre-defined locations in *Second Life* in order to engage in a task, and then to return to the UWE classroom. We were especially interested in observing how this dislocation would be managed and how space would be negotiated.

[11] It is to be expected that more seasoned residents have fewer problems with spatial deixis in *Second Life*. The examples discussed in Section 4.2 refer to the negotiation of a joint spatial perspective rather than to directing other avatars to a different location within *Second Life*. For the latter, as Frohwein et al. (2008; 36) report in a case study of asking *Second Life* residents for directions, residents use landmarks to teleport there (see Section 2.1).



Screenshot 6. RCMCL participants convene in the UWE classroom (previously presented as Screenshot 1). (For interpretation of the references to color in this screenshot, the reader is referred to the web version of this article.)

Extract (4) takes place in the meeting room at UWE. Florence has formed her group and prepares to move them to an explorer island where they have to pursue the task of finding a temple.

(4)	1 Florence:	lets go to [explorer island]
	2 Laura:	and singing to myself
	3 Florence:	are you all friends with me?
	4 Philosopher:	Florence, you gave us a folder – what shall we do with it?
	5 Robot:	Flower can you sit down on the elevator
	6 Laura:	what? there's a folder? um, where can I find this/
	7 Florence:	if you open them you see instructions we will go to [explorer island] I'll teleport you
	8 Flower:	yes, sorry. Having sitting difficulties
	9 Robot:	bus, can you 'sit down' in the elevator
	10 Laura:	we are friends, right, @Florence
	11 Teleport completed from Elearning at UWE	

Florence takes over the lead and suggests going to the explorer island where the group task will take place (line 1). In order to coordinate this task, she asks whether she has befriended everyone since this will allow her to invite the group members to join her by teleporting (line 3). She then explains that she will teleport herself to the island and will send the group members invitations to teleport (i.e. messages containing a location link) from there (line 7). She then leaves the UWE classroom (line 11) in order to do so.

Note that extract (4) shows text from the open chat window in the UWE meeting room. As a result we can also witness interaction from the other groups. In this case Robot, another group leader, attempts to direct her group members, Flower and Bus1, to move to the elevator provided in the classroom and to take a seat (lines 5, 8–9). This is necessary because the elevator only carries people when they sit down on the seats provided. Both group leaders thus make sure to exploit the *Second Life* affordances for spatial movement.

Extract (5) shows members of Florence's group after the successful teleport to explorer island. It is important to point out that this island does not provide an architecture which would facilitate or suggest a particular joint activity purpose such as the UWE classroom which offers seats and an enclosed environment for discussions (see above). Instead, the group members have to explore the island which contains lush vegetation, hills, winding paths, staircases, rivers and temples. As part of their task, the group is looking for a temple and coordinating the search process.

(5)	1 CMC Linguist:	*where* is our music temple?
	2 Laura:	oh, excellent
	3 Florence:	i don't know
	4 Laura:	you're *here*.
	5 Florence:	shall we find it?
	6 Florence:	may be up the stairs?
	7 Florence:	where the others?
	8 Florence:	lets try to find it and just teleport each other
	9 Laura:	no clue. no clue.
	10 CMC Linguist:	*is this the temple*?
	11 Florence:	i don't think so
	12 CMCLinguist:	let's find it then
	13 CMCLinguist:	*follow me*
	14 Philosopher:	Florence, altes haus! wie gehts?? ∗strahl∗ {'Florence, old house! How are you?? ∗beam∗'}
	15 Florence:	schlecht {'bad'}
	16 Florence:	finde den temple nicht {'can't find the temple'}
	17 Florence:	∗grins {'∗smirk∗'}

18 Philosopher:	ist das nicht der tempel?? ∗*umschau*∗ {'isn't this the temple?? ∗looking around∗'}
19 Florence:	nee ich bin jetzt dort {'nope, I'm there now'}
20 GirlIsChef:	Hey you're *here*!
21 CMCLinguist:	*found the temple*

Hausendorf (2003; 252) argues that deictic expressions are used to socially construct the speech situation as a joint "interactive achievement". This is what happens in extract (5) in a virtual context. As has been well documented on deixis in chats (e.g. Frobenius, 2013; Beißwenger, 2013), the residents make use of spatial deixis in an attempt to create a common perspective and common ground as shown in the highlighted words in (5) (see Clark, 1996; Abdullah, 2015). In contrast to CMC chat that is not embedded in a virtual world, however, our avatars can draw and refer to their immediate and shared virtual life surrounding (see also Abdullah, 2015). Together they negotiate what paths to pursue and jointly help each other to find the location on the island. While Florence first suggests going "up the stairs" (line 6) to find the temple, she then proposes to find it (probably individually) and teleport each other (line 8). However, CMC Linguist takes the lead and invites the other avatars to follow him (line 13), i.e. he walks through the landscape which provides paths and stairs in a densely forested jungle and the others follow. At the end of extract (4), which also contains a brief exchange in German between Philosopher and Florence that displays the chat conventions of using asterisks to mark actions, they arrive at the temple, where GirlIsChef is already expecting them.

4.4. Coordination of different layers of space

One of the challenges for the newbies clearly consisted in simultaneously managing three main layers of space: First, the quasi three-dimensional virtual space through which they navigate their avatars (examples of this can be found in extracts (1)–(5)). Second, the space of the two-dimensional screen interface, that consists of chat windows, notecards or the user's inventory. Third, the physical space through which users 'navigate' their human bodies.

The challenge of managing the screen space, i.e. keeping on top of all the different windows that contain information on their screen, was a recurring theme. To recall, next to the actual virtual surrounding, there is an open chat window, and further windows (instant messenger, notecards, etc.) may clutter the screen. Evidence of this challenge can be seen in extract (4) above where Philosopher asks about a folder that Florence handed to each individual group member: "Florence, you gave us a folder – what shall we do with it?" (line 4). The challenge is that the group member first needs to notice that this action has taken place. Apparently, Laura has not realized that she was given a folder and asks where she can find it: "what? there's a folder? um, where can i find this" (line 6). She thus explicitly enquires about the spatial organization of where to look on the screen.

Similar evidence can be seen in (6), which takes place before (5). Florence had teleported ahead to the explorer island and sent teleport invitations. As none of her group members joined her, she returns to the UWE meeting room and asks for the whereabouts of her group (line 1).

(6) 1 Florence:	hey guys didn't you get my teleport
2 Philosopher:	nope
3 Philosopher:	@Florence
4 Florence:	ill go to [location] and send you offers again
5 Florence:	ok?
6 Philosopher:	ahhh.. its in the messages!

In line 6, Philosopher discovers that teleport invitations appear on the top right of the computer screen where messages are displayed as well. He shares this insight with the other members, which ultimately results in a successful teleport from the UWE meeting room to the explorer island.

The fact that the physical environment of the users has an impact on how the virtual avatars act and vice versa has been documented in a number of studies. Mondada (2013), for example, shows how physical and virtual context can function as a resource in the case of two young men who are sitting on a sofa next to each other when playing a virtual soccer game against a team of other users. We also found evidence of this in our data. In (7), which takes place just before extract (6), Laura refers to a summer school member who is sitting next to her in the physical setting (line 4).

(7) 1 Florence:	I'll get Summer School just wait here
2 [location] wasp whispers:	Welcome to a guided tour of [location]
3 Teleport completed from [location]	
4 Laura:	< physical life name > is sitting next to me at Bar Brio, so he helpfully just verbalized what group we were in.
5 Philosopher:	well, we just annotated all four group tasks, then installed a corpus uery tool and then analyzed the text automatically.
6 Laura:	and yes, I probably should have clarified, "Indiana jones"
7 Florence:	hey guys didn't you get my teleport

Florence is still struggling to get all her group members to teleport to the location of the group task (line 1), while Laura still seems to be in doubt about which group she actually belongs to. She reports in line 4 that a fellow summer school member, who is sitting next to her in physical life, provided her with the solution to her question. What is also interesting here is that there seems to be no split between the avatar 'me' and the user 'me'.

4.5. Spatial/physical experience of the avatar

The last issue we would like to raise is the users' spatial experience of their avatars. As Frohwein et al. (2008; 28–31) point out, residents spend considerable time and money on developing and customizing their avatars, and comments on the avatar appearance constitute a typical conversation starter. In the case of our newbie residents, we also observed many comments on the shape and size of each other's avatars. As most had never been in *Second Life* before, they did not have time to customize their avatar appearance much. Instead, upon registering they chose one of the many generic figures provided by *Second Life* (women and men, cats, a panda bear, dragons, robots, a big yellow bus, etc). As it turns out, for the newbies it became a conversation topic to discuss the space their avatars took in the virtual life and whether their size would influence their interaction options.[12] The experience of a user in our study who chose a big yellow bus as avatar serves as illustration. The considerable bulk of this avatar can be

seen in Screenshot 2 above, especially in relation to the seats provided in the room. When Bus1 arrives in the UWE meeting room at the very beginning of the virtual session, she explicitly comments on this (8):

(8) 1 Bus1: hi. My bus can actually sit but it takes up like 5 seats. amazing…
2 Mani: show us!
3 […]
4 Bus1: My bus is sitting now. But it's too big to fit the chair

In (8), Bus1 clearly demonstrates that she is fascinated about the size of her avatar and she is encouraged by Mani's comment ('show us!'). Already in extract (4) above, which occurs after (8), the group leader Robot also makes size salient in line 9 by using single quotation marks when asking "bus, can you 'sit down' in the elevator", whereas no single quotes are used when asking Flower, who has chosen the shape of a human avatar, the same question in line 5 (extract 4). In the continuation of the session, her group leader, Robot, leads Bus1 and the other group members to explore a UWE room in which they need to read billboards on research methodology and then convene at a later stage to discuss how this teaching environment works. Screenshot 7 shows the white billboard in the center of the picture. In order to be able to properly read it, the avatars have to activate scripts by touching dots.

Bus1 encounters problems touching the dot to the left of her (just below the billboard), so Robot, as the group leader, attempts to offer help (9):

(9) 1 Robot: May be you should try with changing your avatar to a person or an animal?
2 Do you know how to change your avatar?
3 […]
3 Bus1?
4 Bus1: I'll try
5 Robot: okay
6 [bus starts modifying the appearance of her avatar]

Robot, who is also a newbie, suggests that Bus1 should change her avatar (line 1). The assumption is thus that the bus, due to its bulk and probably absence of arms, is likely to encounter problems in touching the dot and activating the viewing script. We can thus see how an analogy to the physical life is made and transported to the virtual life. This assumption is accepted by Bus1 who changes her avatar from that of a bus to that of a much smaller dog with wings. However, as the continuation of extract (9) shows, the shape and size of the avatar is not the problem (extract 10, lines 1–2):

(10) 1 Robot: Is it working now?
2 Bus1: No:-(
3 Robot: Ok. Hang on. I'll be back in a second.
4 [trying out commands]
5 Robot: bus1, make sure you sit on the 'sit' seat, not on the hover seat, then try the green globe
6 [Bus1 managed]
7 Robot: Ahm I see it works now
8 Bus1: Yes, I'm so happy
9 Robot: very good:)

[12] See also Locher and Mondada (2014; extract 4) where we briefly discuss how one RCMCL participant perceived the choice of an avatar in the form of a cat.

Once it becomes clear that the winged dog is not better at performing the task, Robot looks for a solution elsewhere and finds it in executing a different sequence of actions (line 5). We therefore witness how the two newbies make assumptions about their avatars' size and affordances, which are then changed in interaction. As a matter of fact, all the avatars have the same set of affordances at their disposal (movement, 'eye' gaze, gestures, etc.), no matter the actual surface appearance. The point of interest to us is that the newbies make physical life assumptions on space and affordances that are then changed in the virtual life context.

5. Conclusions

Drawing on data from a number of newbie *Second Life* residents, we showed how *Second Life* imitates and thus highlights spatial aspects of interaction (e.g. the distance between interlocutors, orientation, gestures, etc.). Our newbies could be observed in their negotiation of virtual space as they familiarized themselves with the use of the orientation affordances in *Second Life*. They were engaged in negotiating a common perspective, keeping the group members spatially together and coordinating movements within the virtual world. This enabled them to navigate the communication possibilities of the screen interface, to negotiate physical life and virtual life, and finally to explore the spatial/physical qualities of their avatars. It is striking that, while many analogies to physical life are made, the users showed no problems accepting experiences such as teleporting or flying that have no direct precedence in physical life. This virtual world thus provides an invitation to its residents to also adopt a ludic and explorative approach.

Our sample is too limited in size and scope to argue that we have witnessed the complete appropriation of spatial literacy for the interactants in this new environment, but we feel confident that we have been able to explore instances of negotiation and navigation of space that might lead to such a learning process. As the platform combines interaction forms that are potentially known from other activities the participants engage in (chat, instant messaging, reading information on notecards and billboards, etc.), we also argue that the virtual world *Second Life* taps into previous knowledge of e-interaction.

Second Life is only one example of a virtual world with all its spatial and communicative affordances and complexities. In fact, as a specific platform for interaction on the Internet it may already have eclipsed its heydays. But it serves as an example of the complexities of communication in today's world. We communicate both in physical life and in virtual worlds, and in many situations the boundaries are blurred and fuzzy. The newbie users of our small-scale case study had to learn to navigate in a new and complex environment, and linguists have to learn to describe more complex interactive realities. Further research delving more into learning processes of acquiring literacy in virtual space and the appropriation of different virtual settings for communicative purposes is clearly in order.

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Screenshot 7. Reading a billboard, group work at UWE.

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