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Spaces in between us: a qualitative study into the impact of spatial practice when learning in *Second Life*

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This paper will present a study that explored the perceived impact of spatial practice in *Second Life* (SL) on teaching and learning from the point of view of participants in higher education (lecturers, developers and researchers). Narrative inquiry was used to access stories and experiences of space and spatial practice from staff perspectives. The findings indicated that ownership, spatial violation and replication were the concerns raised by participants in relation to spatial practice. However, participants also suggested that an understanding of social cues, spatial negotiation and spatial consideration were important issues to address for effective teaching to occur in SL. The findings of this study suggest that there remains relatively little in-depth understanding of the way space is implicated in learning in SL and that spatial practice also requires further research, in order to better understand their pedagogical implications when using SL as a learning space.

Keywords: learning spaces; space; spatial practice; *Second Life*; qualitative research

Introduction

This study was undertaken in order to understand staff perspectives about the ways in which spatial issues may or may not affect teaching and learning in *Second Life* (SL), a virtual reality environment created by Linden Research, Inc. What is interesting is that anecdotally SL is being used in higher education, in the UK at least, because staff are trying to try to imagine, develop and use learning spaces in different ways. Such exploration of new and different spaces would seem to suggest that spatial practices within SL may shape social and pedagogical production. Carr, Oliver, and Burn (2010), for example, have suggested that conventions in SL tend to be less structured and less predictable than in face-to-face teaching. The control of physical space and the way in which it is valued and represented is evident through office spaces, organisational practices and classroom layouts in both schools and universities, that notably correlate with both pedagogy and practice (for example, Rogers 1983; McGregor 2004). Yet, spaces such as SL tend to interrupt such practices, and power related to university island space remains largely divorced from university management. This therefore results in questions about the impact of such a shift on learning and teaching, and indeed, Carr, Oliver, and Burn (2010) also argue that SL brings with it a sense of ambiguity in the teaching role, which in turn can result in staff appearing unsettled in their role. The article begins by examining the rationale for the examination of space in higher

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education, and SL in particular; it then presents the methodology and findings of the study, reflecting on the relationships between issues of space, pedagogy and context.

Rationale and literature

What is central to this paper is the argument that space makes a difference to pedagogy, particularly in 3D virtual worlds. Virtual worlds such as SL are one of the many expanding territories across the terrain of higher education. However, the reason that it is important to understand and study space is because it is important to know about spatial practice in relation to pedagogy and 'the specializations that are accomplished through everyday activities, representations and rituals' (Shields 2006, 149). There has been an increasing interest in the notion of space in higher education and more recently on physical space. For example, a literature review was undertaken to 'inform the design of learning spaces for the future, to facilitate changing pedagogical practices to support a mass higher education system, and greater student diversity' (Temple 2007, 4). The review examined the built environment, the organisational nature of higher education, how universities are governed and managed (including changing relationships with their students), and factors influencing the learning process. However, there has been relatively little consideration of the ways in which space is seen both as a site of learning and as a site of power, in learning spaces in general and in immersive virtual worlds in particular. For instance, the social architecture of universities tends to represent different ideologies – the lecture theatres of tradition and knowledge, the carpets and beanbags of innovation. Further, as Dourish (2006) noted, the exploration of spatial development beyond traditional work places is legitimate, but he suggests that there is a need for a view of space that does differ radically from traditional space discourses. Dourish suggests instead that space and place are 'products of embodied social practice' (301) and that therefore we need to understand the relationship between spatiality and practice (Skold 2012). Although increasingly lecture halls are designed so all can see and hear, with multiple screen and internet connects, in the main they remain spaces controlled and managed by the lecturer. By contrast, in spaces such as virtual worlds, students become not just creators but makers of knowledge, and such a position appears to shift and interrupts issues of power and control in the learning spaces. Yet, the control of space and the way in which it is valued and represented is also evident through timetables, meetings, teaching and office spaces, and organisational practices. This ordering belies the way that university learning spaces shape not only student learning and tutors' practices but the very nature of higher education itself, as Lefebvre has argued:

> *Social space is a social product* … space thus produced also serves as a tool of thought and of action; that in addition to being a means of production it is also a means of control, and hence domination, of power; yet that as such escapes in part from those who would make use of it. (Lefebvre 1991, 26, original emphasis)

Further, de Certeau (1984) has highlighted the relationship between spatiality and practice, suggesting that it is important to recognise the way people create meaning for spaces, which it would seem is (or should be) a central concern for those using, designing and researching the use of immersive virtual worlds for learning in higher education. Thus, the reason it is important to understand spatial practice in relation to pedagogy is because many of the arguments that have been used to underpin the use of 3D virtual worlds for teaching have been based on the perception that such spaces promote a social constructivist view of learning. However, many of these arguments are misplaced since *Social constructionism* suggests

that individuals construct reality with each other, knowledge is relational and that it may be uncovered by examining interactions and meaning making between and among individuals (Berger and Luckmann 1966). *Constructivism* suggests that individuals create their own realities and that it is those which researchers must explore (Piaget 1951). However, the difficulty with the argument for constructivism is that there is often a focus on the technology and the affordances of technology, rather than the social development and the deployment of its use. What is perhaps important then for lecturers in higher education is to examine perceptions of the ways in which learning spaces are being created, developed and then understood. Research into understandings and use of space, along with the impact of representations of space in SL, remain areas that are relatively under researched. However, research by Reeves and Minocha (2011) indicated that staff tend to adopt a user-led design approach for developing teaching in virtual worlds. In practice, staff first design spaces, and then adapt and improve them based on feedback from students. Reeves (2011) argue that creating a learning space appropriate for students in SL is important to a large degree, but that it is important that staff and students co-design spaces, so that the resultant SL spaces are ones in which students want to learn. In particular, they have suggested that there needs to be a relationship between the pedagogy and the design of learning spaces.

- Pedagogical underpinning (e.g. constructivist, exploratory) and the learning activity should guide the design of the learning spaces.
- Consider replicating real-life teaching methods and spaces in the first instance until the users are comfortable with the SL interface.
- Design learning activities that require students going to other islands for exploration and data collection.
- Design activities that promote active learning through role playing, reflection, 3D simulations and 3D modelling.
- Design activities that demonstrate the value SL provides in comparison with real life or 2D learning environments.
- Exploit the flexibility and ease of bringing out objects from the inventory to set up learning spaces in real time in SL to match with the learning activity (Reeves 2011, 53).

There have been a number of studies on proxemics in immersive virtual worlds (Beale and Creed 2009; Särkelä et al. 2009; Yee and Bailenson 2009) and there have been studies that have explored interaction in virtual reality, the nature of embodiments in multiplayer games and immersive virtual worlds, as well as the impact of immersion on learning. Yet, few studies have examined what might broadly be termed spatiality in SL, although authors such as Benford and Slater have explored this to some degree (Benford et al. 1995; Slater et al. 2009a, 2009b). Recent literature in this area indicates that real-life proxemics tends to play out in immersive virtual worlds, but not always in ways found in previous studies. For example, a study by Slater et al. (2009a) sought to examine whether visual realism induced greater presence of participants in immersive virtual environments and found that improved visual realism tended to enhance realistic behavioural response. Further, Llobera et al. (2010) examined whether the rules of proxemics (that in varying distances between people can influence skin conductance responses), could be reproduced in an immersive virtual reality system when virtual characters enter the personal space of human participants, and found that people exhibited heightened physiological arousal the closer they were approached by virtual characters. Finally, Kastanis and Slater (2012) sought to examine the extent to which people tend to respond realistically to immersive virtual environments and by and large maintain socially appropriate distances between themselves and the virtual characters they

encounter. This unusual experiment used a reinforcement learning (RL) method to train a virtual character to move participants to a specified location. They explain:

> Based on proxemics theory we predicted that when the character approached within personal or intimate distance to the participants, they would be inclined to move backwards out of the way … This method opens up the door for many such applications where the virtual environment adapts to the responses of the human participants with the aim of achieving particular goals. (Kastanis and Slater 2012)

However, in the main, these predominantly quantitative studies did not examine the relationship between spatiality and staff perspectives about how and why spatiality might affect pedagogical practices.

Design, methodology and methods

Reeves (2011) point out that there is little published research or evaluation of the design of learning spaces in 3D virtual worlds and few case studies. This study sought to explore the ways in which staff in higher education affirm and challenge spatiality and representations of space created with/in SL. The argument for undertaking this research emerged from a perceived gap in the literature relating to spatial understandings, use and practice in SL and the impact of learning and teaching in SL.

Narrative inquiry was adopted since stories are collected as a means of understanding experience as lived and told, through both research and literature (Clandinin and Connelly 1994). This was important in this study as stories invariably reveal actual practices more than responses derived from interview accounts. The theory behind narrative approaches in social research may be traced to the work of scholars such as Dewey, Geertz and Bruner. Dewey suggested that life is education (Dewey 1938), a key view of many narrative researchers. He emphasised the human capacity to reconstruct experience and thus make meaning of it. Geertz (1973) argued that narratives are stories about ourselves and are central components of most cultures. Bruner stated that 'to narrate' derives from both 'telling' (narrare) and 'knowing in some particular way' (gnarus); the two tangled beyond sorting (Bruner 2002, 27).

The process of sharing and debating 'stories' is vital to the understanding of space and spatial encounters. This is because narrative requires recounting events to construct *with* the reader a particular way of 'knowing about', which as Martin (2008) suggested, moves towards meaning making. Bruner (1990) also believed that narrative is a process of meaning making, particularly when encountering unusual events or issues. Although some researchers would argue that narratives are structured with a beginning, middle and an end, held together by some kind of plot and resolution (Sarbin 1986), narratives in this study were not expected to have a plot or structured story line, but were seen as interruptions of reflections in/on a storied life and thus are also affected by issues of representation. Narrative approaches, such as that adopted in this study, generally focus on developing understanding through an exploration of story, interpretation and discourse (Leggo 2008). Barone has argued that traditional research seeks to unpack and understand the real state of the world, whereas narrative seeks to depict peoples' experiences and in doing so provide 'a degree of interpretive space' (Barone 2001, 150).

Ethics, truths and plausibility

Following the submission of the study to the ethics board, participants were asked to sign a consent form, but I chose to do this after I had returned the interview transcripts since it

seemed a more ethical stance because it acknowledged that consenting to use of data before participants know what they thought or said in relation to the research topic was necessarily problematic. This is because informed consent is ongoing and does not end when participants sign an informed consent form; rather, it is a process of continual negotiation (Kvale 1996; Macfarlane 2010). Informed consent may be achieved by full disclosure, adequate compensation and voluntary choice. In practice, it means striving for a balance between over informing and under informing (Kvale 1996). Yet, as Macfarlane (2010, 20) suggests, asking participants to sign a consent form is 'a defensive and quasi-legal means of trying to "protect" the university and to some extent the researcher, from litigation or other accusations of wrong-doing'. However, confidentiality was maintained as far as possible, and principles of research governance were adhered to, following Economic and Social Research Council guidelines (2010), in terms of:

- The negotiation of and interpretation of the data to ensure that the rights and opinions of those involved in the study were respected.
- Subjects being informed about the purpose, methods and intended possible uses of the research, what their participation in the research entailed and what risks, if any, were involved.
- The confidentiality of information supplied by research subjects and the anonymity of respondents was respected; and anonymity as far as possible extended to interviews and screenshots of avatars.
- The research participants' involvement was seen as participating in a voluntary way, free from coercion.

It was also vital that the study was plausible: Plausibility in qualitative research is a technique for ensuring rigour in qualitative research that involves locating the truths and the realities in the study, adopting a critical approach and acknowledging the complexities of managing 'truths' in research (Savin-Baden and Major 2012). *Plausibility* emphasises the idea of ensuring quality *with* a reader, being compatible with the constructionism paradigm, which holds that the knower and the known are interlinked and truth is negotiated through dialogue. Plausibility involves creating meaning with a reader by appearing worthy of belief in terms of philosophical framing, tradition, methods, analysis and interpretation. Thus, form, content and meaning become one, and criteria become largely aesthetic. Such criteria have been described by Whittemore, Chase, and Mandle (2001), Sandelowski (2002), and Major and Savin-Baden (2010). These approaches include writing with explicitness, vividness, creativity, thoroughness, congruence and sensitivity. Several specific strategies aid in demonstrating the quality of a research product at an aesthetic level.

To shift from truth to truths goes beyond a move from positivism to interpretivism, it is a position where we acknowledge that truths are complex and fragile, and need to be seen as places where issues of power, consent and negotiation are mediated by our own values and biographies.

Methods: the research in practice

Sampling

A purposive sampling method was adopted to recruit participants; and a 'maximum variation' sampling technique (Patton 1990) allowed a small sample to be selected on the basis of diversity, in an attempt to reflect the research context. I also used the known sponsor approach – asking those I knew whether a particular person whom they knew might offer a

different perspective from their own. In practice I contacted participants who had been using SL for more than 3 years, since I anticipated they would have experience and views on spatial practice in SL (Table 1).

In practice, data collection occurred as follows:

Data collection

An initial review was undertaken of existing data available, via databases and Economic and Social Data Service Qualidata. Data were collected through an in-world discussion as well as interview-debates with participants and analysed interpretively through analysis of transcripts to examine the subtext of data. Data collection took place in two phases: firstly at an in-world meeting in order to prompt thinking and discussions about spatial practice, and secondly at interview to collect stories and reflections in order to gain thick description. The balance of meetings and interviews was decided on the basis that thick description and stories would be more likely to gain through interviews; hence, the meeting was designed as a scoping mechanism in preparation for interviews. Data collection therefore took place in two phases:

Phase 1

An in-world meeting of key informants ($n = 7$) with consent forms sent out by email to those invited and on a note card in world. This meeting focused on a number of questions relating to space and was recorded through text chat, screenshots and some short film. The focus of the meeting was to discuss the understandings of 'space' in SL and the impact (or not) of spatial issues on teaching and learning. What is worthy of note is that the space chosen was open with benches provided, as in Figure 1 below, but during the discussions of space, those attending the meeting chose to change the space in to something which they felt was a more comfortable space, as in Figure 2.

Phase 2

Interview participants using narrative inquiry about:

(1) Their reflections on the in-world meeting.
(2) Their thoughts about uses of space in SL.

Table 1. Overview of participants.

Participant	Role	Experience of SL
Michael	Consultant in SL development	7 years as designer and innovator in virtual worlds
Rachel	Head of university e-learning unit	4 years as designer, builder and teachers
Kay	University educational developer and part-time e-learning student	3 years as a student in SL
Lawrie	Head of university life-long learning unit and educational developer	3 years as a teacher in SL
Jon	University lecturer in drama and media	4 years as a teacher in SL
Alastair	University lecturer in computing and media	3 years as a teacher in SL
Pete	Professor in human computer interaction	10 years in immersive worlds

Figure 1. The meeting space in SL. Linden Research, Inc.

Figure 2. The space adapted by participants. Linden Research, Inc.

A general email had been sent to a number of people asking for participation in an in-world meeting and a further email sent to a range of experts who might be prepared to be interviewed. Those selected were chosen as they provided a wide range of backgrounds, perspectives and experience on the issues being studied. The interviews sought to use an interview – discussion format in order to gain stories and so reflect the methodology of narrative inquiry (using prompt questions just as a guide). This meant that I sought to gain thick

description. Geertz's definition of thick description (Geertz 1973) involved observation of social life captured through dense descriptions, which thereby allowed for generalisation and interpretation.

Data analysis and interpretation

Data were analysed by examining thick description which involved not just reporting detail, but also demanded interpretation that went beyond meaning and motivations to examine subtext, interpretively. In practice, this meant identifying themes and patterns of response across the in-world meeting as well as the later interviews. In particular, interpretive interactionism (Denzin 1989) was utilised to explore influences and practices. This tradition, developed by Denzin (1989), appears to be a reaction against the behavioural approach of symbolic interactionism. Essentially what Denzin suggests is a more critical stance towards meaning making, which takes account of cultural representation, gender, issues of class and biography. He argues:

> You must interact with significant selected others in your ministry context to uncover local theories of interpretation … When the researcher has done so; he or she will have uncovered the conceptual structures that inform the subject's actions. Unless the researcher accomplishes this, he or she will be ignoring the subject's point of view. (Denzin 1989, 125)

Denzin is suggesting that through understanding how participants interpret, it is possible to uncover the structure of meaning, which in turn guides the researcher's interpretations. In interpretive interactionism, the researcher's focus is on understanding the logical structures of participant meaning making, which provides a focus for the interpretation. Thus, data were analysed with an interpretive stance and findings were then transformed into concepts, ideas and models. The process involved reviewing important patterns and connections among themes and ensuring that iterative cycles of interpretation occurred. In actuality, this meant that not only were data compared and condensed, but also themes, metaphors, ideas, concepts and contexts were revisited and rethought.

Findings

Although the themes that emerged from these data largely related to space and spatial practice, other issues also became apparent through the stories told and the metaphors employed. This section presents the findings that emerged from participants' stories, in terms of an overarching theme of Spatial Practice and subthemes of: *Spatial negotiation, Ownership, Spatial violation and Replication*.

Spatial practice

SL in Lefebvre's terms would seem to be both a representational space, in which it uses and encourages the use of symbolic images, and also a representation of space. Spatial practice is defined here as the way in which space is produced and reproduced in SL. In this study, spatial practice seemed to transcend the created infrastructure of the SL spaces, which included the design and ownership of spaces, and the ways space was seen and used by residents. Spatial practice represents the way in which space is produced and reproduced in particular locations and social formations. It is a space that is located between daily routine and the practises and infrastructure of daily life that affects it, impact on it and ultimately organise it.

Yet, boundaries around conceptions of time and space have moved, and so we have created different kinds of 'spaces'. For example, learning, knowledge, relationships, communication, home and work places are no longer seen by tutors and students as static, bounded and uniform but instead as ongoing, variable and emergent and in this paper is referred to in terms of spatial negotiation, ownership, spatial violation and replication. Spatial practice is important to teaching and learning because the multimodal nature of learning in and through virtual worlds has created new teaching and learning geographies in diverse disciplines and higher educational settings.

Spatial negotiation

The issue of spatial negotiation overlapped to some extent with social cues, but in the main referred to participants' engagements with others in SL in terms of the cultural use and management of space. The issue of spatial negotiation is often ignored in teaching and learning in face-to-face learning. As Temple has suggested 'The connections between the design and use of space in higher education, and the production of teaching and learning, and of research, are not well understood (2008, 229)'. For example, Kay reflected on the SL meeting undertaken as part of this study:

> I was conscious of somebody getting up and moving away from me because I was behaving oddly … and when I went in, I thought, right, I need to go and sit there and it does look like one person per chair and it's the sort of spacing you do when you're on the beach and you work out exactly what the halfway space between the two people on either side of you is and you do this in SL as well, so you position yourself, you're not encroaching other people's space too much. (Kay)

Whilst her self-consciousness related to an overarching discomfort with SL, her awareness of her behaviours and real-world proxemic beliefs were applied to SL. Kay's perspective was similar to that of Alastair, who spoke of spatial negotiation essentially in terms of 'cost':

> There is always that sort of mental overhead in communications within this virtual environment that is not there in real life. There is always the overhead of, how do I operate myself to sort of, left, right arrow, move around here – that sort of thing. (Alistair)

He referred to 'overhead' several times in the interview indicating the personal cost and difficulty of communication, movement and interaction in SL compared with RL. Michael's concerns were more about how it was possible to enhance SL communication, both between avatars and amongst avatars and chatbots. However, a different stance on spatial negotiation was raised by Pete, who spoke of the collision of SL and RL spatial practice in terms of hybridity:

> … what's going on is people are constructing very hybrid relationships, complex new kinds of spaces that involve a mixture of adjacency and overlays. So in some of the artistic works like Uncle Roy All Around You, you've got at some point a sense that a virtual world is overlaid on London or whatever but at other points a much more sense that you're looking into something through the screen. And the artists … create a complex hybrid spatial structure and this requires new kinds of understanding of space …

Adjacency as referred to by Pete emerges from the idea of the concept of a mixed reality boundary which is where there is a two-way portal between the physical and virtual worlds.

In practice, this means that in a physical office, it is possible to make it appear to be adjacent to a virtual office; it is as if the virtual office is an extension beyond the screen: they are not overlaid; they are next to each other. Such in-between world collisions (symbolised by adjacency and overlay) would seem to point to the need for increasing understanding of the relationship between spatial practice, spatial structures in SL and issues of identity. However, in terms of pedagogy the relationship between learning in face-to-face settings compared with SL is important in relation to spatial negotiation because in face-to-face teaching, proxemic spatial relationships are rarely recognised or valued (Temple 2008), whereas in SL, they are because space is seen and used differently, as participants pointed out. Therefore, issues of spatial negation tend to interrupt learning in diverse and both helpful and unhelpful ways. Ramsden (1984, 1992) suggested that a student's perception of the learning context is an integral component of his learning. The learning context is created through students' experience of the constituents of the programmes on which they are studying, namely teaching methods, assessment mechanisms and the overall design of the curriculum. Therefore, students, as Ramsden suggests, respond to the situation they perceive, which may differ from that which has been defined by educators. Yet, often, however, much it is denied, educators tend to think of learning contexts as static environments. What this brings into question is how these new learning contexts can be used, enhanced and managed by staff.

Ownership

The subtheme of ownership related largely to staff owning space in SL, which emerged from a need to have a home or sense of belonging. The impact of the issue of ownership in teaching and learning has come to the fore recently in a number of studies on student engagement; these would seem to have some pedagogical relevance here. For example, Wimpenny and Savin-Baden (forthcoming) undertook a qualitative research synthesis which revealed that when students are engaged in meaningful learning that they value, the potential for learning something new increases. The studies also exposed that engagement with learning is a subjective experience, yet consistently students expressed the importance of tutors adequately conveying genuineness and empathic understanding to student learning, and acknowledging students' struggles, insecurities, pleasures and pains. In this study, the way participants spoke of ownership in many ways linked to de Certeau's (1984) delineation of spatial practice as being strategic and tactical. Strategic spatial practices are associated with power and control, whereas tactical spatial strategies relate to the way in which people create their own meaning for spaces. Both strategic and tactical spatial practices were seen here in the theme of ownership. However, notions of ownership did differ across participants. Michael, a consultant in SL development, and Rachel, a head of an e-learning unit in a post 1992 university, both spoke of feeling 'homeless'; until they owned a parcel of land. Michael explained:

> … it wasn't until I actually got my piece of first land, and then started to build my own house on that piece of first land that I then really felt rooted in SL. So it was almost as though you felt homeless up until that point.

For Kay, a part-time e-learning student and an educational developer in a traditional university, and Jon, a lecturer in theatre studies at a post 1992 university, ownership related more to the symbols of SL. This included such experiences as items being returned to them in SL or being excluded from territory by other residents. Kay explained:

> I'm very interested now from some conversations I've been having about territorialism … you know, 'you can't come on my land especially if you're going to behave like that' and I can understand it but what's that going to mean? And is it the same kind of territorialism you get in the real world? it reminds me a wee bit of Lord of the Flies, you know … starting a whole civilisation from … on an island and what happens.

The idea of the breakdown of civilisation occurring in SL, the policing of activities by Linden Lab and the complexity of managing a virtual civilisation or community were all areas that also emerged when staff spoke of spatial violation.

Spatial violation

In general spatial violation was talked of in terms of 'griefing', which generally relates to being attacked in some way in SL. Face-to-face abuse, violence and offensive behaviour are condemned when it occurs in classrooms and carries consequences. However, hidden and covert practices in virtual spaces can have an impact on learning in ways staff may be unaware of. For example, in this study, the kinds of griefing participants described were as follows: 'showers of interesting photographs over us' in a SL church service (Rachel), bumping and virtual rape. While this was seen predominantly as symbolic violence toward the avatar, other instances related to spatial practice. For example, Lawrie, an expert in educational development from an e-learning development unit in a traditional university, explained how he had lent some space to a group of staff in the higher education community to run a competition he was unable to attend:

> Well I saw the screen shots of it and stuff the next day, so I went into in-world and all this crap was all over my island. They hadn't tidied up after themselves, and that really annoyed me … I just thought, well you know, I lent you my island, and you've strewn it with rubbish, and then just wandered off like a bunch of kids.

Michael, the SL consultant, also spoke of spatial practices which he felt were a violation of the space he owned:

> … almost from day one when I bought my piece of first land, somebody was building stuff right in front of me … Then he was building on the edge of his parcel, but his stuff was extending straight into my space by up to almost five metres …

The issues of ownership and violation were both areas that staff spoke of in terms of 'territory'; the invasion of personal territory, the management of territorialism and violations to both personal and owned space. In terms of teaching and learning, territory has been discussed by Hargie and Dickson, and Benford and colleagues. One of the difficulties with the notion of territory in SL is that it is not controlled or operated in ways that are inherently similar to real-life physical spaces. Despite this, participants did bring or impose RL practices on SL. The consequence was that when RL practices were imposed, it tended for some to result in disjunction, a sense of disorientation or stuckness. Hargie and Dickson (2004, 69) identify four territories in RL: Primary territory, Secondary territory, Public territory and Interaction territory. Although these are useful delineations for RL when applied to SL, the application required adaptation, and perhaps, one way of undertaking this is presented in Table 2 below:

The whole issue of territory and how it is seen, designed and managed would seem to transcend personal and proxemic territory, which is exemplified in the innovative model of

Table 2. Real life and SL understandings of territory.

Territory	Real life (following Hargie and Dickson 2004)	SL	Implications for SL learning
Primary territory	An area that is associated with someone who has exclusive use of it	A parcel of land bought by an individual for their own use	Privacy for staff away from public space of the university island and a place to experiment and build in private
Secondary territory	This is where there is no right to occupancy, but people may still feel some degree of ownership of a particular space such as sitting on the same seat every day	The shared use of university island space, where staff who have built or used a space over time feel it belongs to them and resent the use of it by others	Clarity of ownership and spatial practices particular to a university
Public territory	An area that is available to all, but only for a set period such as a parking space	Space in SL such as the mainland where everyone has access	Misappropriation of space and griefing
Interaction territory	A space created by others during interaction. Thus when a group is talking to each other in a shopping mall others will walk around the group rather than disturb them	Tendency to join in conversations in SL, unlike RL. Therefore interactional territory norms have changed in SL	Interrupted teaching session or strangers joining teaching and adding to it in unexpected ways

spatial interaction developed by Benford and colleagues in 1993 (Benford et al. 1994) for use in virtual environments. A number of other studies built on this virtual model, but as yet it is not a model that has been adapted for SL. The authors argue that it is a model that provides flexible support for managing conversation between groups, which can be used to control interactions and to understand how learning is occurring in small group teaching in SL.

Replication

Almost all participants discussed the practice of replicating real-life buildings. The practice of replication is troublesome to authors such as White and LeCornu (2010), who have pointed out that replication of buildings invariably mimic RL buildings, despite SL learning activities not necessarily requiring replication of RL for learning to occur. Further, Boardman (2009) suggests that staff need to consider issues of design that relate to ensuring students engage, that the buildings, objects and activities are both relevant and believable, that they are easily navigable and that they help students to focus on what is to be learned. She suggests that the questions that need consideration are:

(1) What do you want built?
(2) What is the learning outcome?
(3) How detailed does it need to be?
(4) Do you have a picture?
(5) Do you have a mental model and can you draw it?

Although the suggestions Boardman makes are arguably not entirely new, what is important is that the learning activities in SL buildings and spaces are being designed specifically for use in SL – not just adapted for use from old practices.

For some participants, in this study, there was seen to be a value in replicating buildings, such as providing simulation settings for police and midwifery students or as representational space to showcase the business or university. However, there were mixed views as Michael argued:

> What do you think about the way people use space in *Second Life?*
>
> Very boringly like real life. And it's interesting how we've struggled to break away from the conventions of how the physical world works, in the virtual world … Because what on earth's the point? There is no need to move inside ceilings and walls.

Lawrie and Jon also commented that some of the building seemed somewhat pointless – such as boats and boat rides. However, there were considerable discussions about the value of a roof – which in the main seemed to be being used as a metaphor to discuss spatial access to buildings and the imposition of particular practices by both the designers *of* SL (LindenLab) and the designers *in* SL, other residents. For example, the building limitations and size of avatars imposed by LindenLab were seen as problematic by Lawrie and Jon, who as designers in SL felt this hindered creativity. Kay considered that preventing people gaining access to buildings and spaces resembled practices seen in early or immature civilisations and issues of spatial practice also overlapped with issues about SL proxemics.

Discussion

These findings indicate that pedagogic design, spatial design and spatial interaction are all important pedagogical consideration when choosing to teach in SL. It was by examining perceptions of spatial practice in relation to pedagogical use that this study sought to examine the perceived impact of spatial context and practices on teaching and learning. As Winner has argued:

> If our moral and political language for evaluating technology includes only categories having to do with tools and uses, if it does not include attention to the meaning of the designs and arrangements of our artifacts, then we will be blinded to much that is intellectually and practically crucial. (Winner 1980, 125)

Minocha and Reeves (2010) have argued for the importance of learning space design, since it influences student learning and engagement, which is why this study sought to understand perspectives of spatiality and spatial practice in SL. However, to date, space and spatiality in 3D virtual worlds such as SL have been somewhat taken for granted, which has resulted in a tendency to overlook or ignore, not only the way teaching within it is spatially constructed, but also the impact it has on the spatial norms of learning. Further, McWilliam (2005) has suggested that new possibilities for teaching and learning necessitate a rethinking of curriculum design; new technologies themselves cannot be relied upon to change anything. It would seem that the attention of some has been centred on the relationship between the pedagogy and the technology, whilst the attention of others has been focussed on the multiple perspectives that individuals bring to the learning encounter, based upon prior experience, knowledge, and the influence of culture and worldview (Gergen 2003). It

is argued here that the findings indicate both are important, but first and foremost that the pedagogic design has to be correct, before the spatial design and resultant spatial interaction occur. The findings of this study suggest that when both designing spaces for SL and teaching in it tutors need to consider:

- The ways in which particular social cues and communication can be developed in SL to enhance rather than distract from teaching.
- The extent to which replication is a valuable practice in SL and whether it helps or hinders learning.
- The ways in which spaces might be violated and how this might affect teaching and learning.

Yet, what still seems to be missing from *knowing* about space in SL is the understanding of pedagogy in SL and RL practices and the way it affects everyday activities in higher education. There also seem to be design or architecture issues – not just how we design SL spaces, but the assumptions that are made about space and places in SL in relation to pedagogy and spatial practice. It is almost as if neither spatial practice nor architecture nor even design issues connected with synchronicity have been considered fully when deciding to use SL, and then creating spaces for teaching in SL. However, what does seem to be evident is that space is produced by and through performance, that there is no one kind of space and that it is constantly mobile. If pedagogic and spatial design were fully developed and engaged with, they would increase immersion and therefore engagement in learning in Paul (2009) suggests the need to emphasise practice over location. The implication is that by understating practices with games and 3D virtual worlds, it may then be possible to understand engagement by exploring what people 'do' in these learning spaces. Further, as Dourish (2006) points out, the growth of mobility, mobile technology and information bring to the fore questions about practice and spatiality, and he suggests that technological practices are spatial practices' (301). However, perhaps what we are really beginning to deal with here is what Thrift (2006a) has termed 'augmented existence'. The notion of augmented existence is the idea that it is not just the tagging and integration that is affecting our lives, but the fact that the meta-systems themselves become a new means of categorisation (Thrift 2006a, 2006b). Possibly then, SL does not create its subjects as much as the world within which the subject exists (following Lazzarato 2004). Thus, what worlds and spaces such as SL might bring to teaching in higher education are new notions of community, different understandings of space and spatial practices, and recognition that learning spaces are increasingly hybridised, extended and mixed.

This study indicated that it is important in higher education for staff to understand the importance of territory, spatial practice and communication when teaching and learning within SL. Further, what SL appears to offer to staff in higher education is not just a new or different space but a different territory and a space of overlay. For many staff, it offers a place symbolising innovation and a space for identity exploration, a space that, in general, is not interrupted by university management and structures and which offers an opportunity to play away at a number of levels. What this study appears to highlight, more than anything else, is the need to continue to explore both spaces such as SL in terms of their impact on teaching and learning in higher education, as well as the kinds of preparation needed for staff and students in relation to space and spatial practice in SL in terms of ownership, violation and identity management. However, staff also need to consider areas such as SL architecture, and whether replication, symbolism and allegory is helpful for learning, and the extent to which SL spaces should be designed as ones of interruption rather than of replication.

Using SL in higher education is seen by many (e.g. White and LeCornu (2010) as a space that privileges and demands experimentation, but it also presents the possibility for gaining new knowledge and capabilities (learning even) in ways not possible through lecture-based media. Virilio has suggested that space should be experienced through the movement of the body, the fusion of movement and dwelling (Virilio 1996), so that the space is essentially ludic. Teaching, learning and play bring a sense of boundary pushing and pedagogic interruption. Tilted planes and displaced forms should perhaps be seen as the lost dimensions of spatial practice in higher education that should be (re) inhabited. Oblique, tangential, junk spaces, spaces of the uncanny (following Freud 1919/2003) perhaps will provide the kinds of interruptions and disturbances needed for a higher education that reaches beyond many of the current performative practices.

Conclusion and recommendations

There seems to be currently little understanding of the way space is implicated in the construction of learning in SL, and notions of space and identity often become confused intertwined and overlay one another – this needs to be unpacked. This study generates the following pointers as to future practice: There are a number of concepts relating to pedagogic and spatial design and spatial interaction that require further exploration in order to deconstruct and understand spatiality in SL. These include identity, embodiment, immersion and emotion. The practices and metaphors related to understanding space and spatial practice in SL and the way SL is framed is central to the consideration of its impact on pedagogical understandings and its pedagogical use as a medium. This is because space is implicated in the construction of SL as a learning space, yet it remains largely ignored in terms of research studies. In terms of teaching and learning in higher education, exploration and experimentation with spaces such as SL offer the opportunity for staff to continue to challenge the fixed-ness of place, boundaries, knowledge and learning in order to help students to know the world. As Thrift (2006a) suggests:

> In other words, they want to do 'situated' in new ways that encourage innovative hybridization and interference. Specifically, the spaces they are attempting to design: (1) are porous and dynamic; (2) link all manner of flows presented in all manner of registers together; (3) take the affective intelligence conveyed by spaces to be a serious component of their being; (4) are therefore viscerally potent; and (5) can reorient the directionality of knowledge. These series of worlds are somewhere between: between actual physical constructions and virtual simulations, between places and flows, between maps and *derives*, and between invention and repetition. (Thrift 2006a, 194)

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