The affordances of learning planning in Second Life

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Second Life (SL) is one of several online virtual worlds that have become increasingly popular during the last five years. Residents in SL use an avatar (a computer generated representation of themselves) through which they move, communicate, build and trade virtually. Land costs Linden dollars (L$) to purchase and own. Although building in SL is free, it is regulated by an overlapping set of covenants on land as well as a nascent planning system.

The aim of this paper is to discuss the implications of SL for planning scholarship and practice. We begin with a brief overview of the role of planners' tools such as maps, 3D visualisations and artists' impressions. We focus on their use as political technologies to lay the ground for social movements, develop planning as a discipline and to inform planning decisions. We then examine the applications of SL to planning teaching drawing on field work inworld and existing literature. We conclude by highlighting some of the affordances of SL that planning academics and practitioners will need to consider to use SL in a sustainable way.

Introduction

The use of graphical and verbal visualizations have been an important political technology in planning practice since the early 20th century. The founder of modern planning, Ebenezer Howard, encapsulated the ideals of 19th century social reformers in a 2D form in his book *Garden Cities of To-morrow* (Hall and Ward, 1998), inspiring the construction of *Garden Cities* as a movement and a form which is still recognizable today. In planning practice the use of both paper and electronic maps to communicate the impact of future developments with stakeholders remains widespread. Other technologies that planners use to communicate the regulations, impact and scenarios surrounding future development include public meetings, planning policy documents and artists' impressions of future development.

The use of maps, meetings and policies by planners in this way is a more restricted version of the use of technology to create an 'imagined community'. As Anderson (1983) argues, the birth of 'print-capitalism'; newspapers and novels, in early 19th century Europe enabled people to imagine themselves as part of a wider community for the first time. This laid the ground for social movements such as nationalism which could easily be mapped onto the established imaginary community.

Planning attempts to work in the same way. By employing maps, 3D visualizations, policy documents and meetings it seeks to define a community of concern and to enact change. In some

cases the future can be defined using the diagrams and models of architects such as LeCorbusier or Lewis Keeble (Taylor, 1998). In other cases the future vision can be defined using allegories, such as Jane Jacobs' use of imaginary street scenes in her seminal work *The death and life of great American cities* (Jacobs, 1961).

A recent addition to these tools are 3D visualizations and their networked variants such as Second Life (SL). SL is one of the virtual worlds defined by Castronova (2005) as being any computer generated physical space that can be experienced by several people at once. SL combines the accessibility of the internet with the rich graphics of 3D interaction. It allows participants to move and interact with each other in a fictional landscape using a character called an avatar. Avatars can purchase land for Linden dollars (L$) and can place textured shapes or objects on the land and connect them together to build a dazzling variety of objects from skyscapers to jewellery. The ability to purchase land and build on it distinguishes SL from a number of existing virtual worlds such as Neopets, IMVU or Habbo Hotel. Unlike older text-based virtual worlds such as *Hunt the Wumpus*, newer 2D sims such as *Simcity* and games that use 3D graphics such as *Doom,* Second Life is highly visual, its aims are open-ended and it is without rules (Boellsdorff, 2008).

The media spotlight on virtual worlds has lead some educators to explore their potential in higher education contexts (NMC, 2007). This may be partly because of the alternatives they offer from the frequently transmission-focussed approaches to learning that are encouraged by university Learning Management Systems (Gibbs & Gosper, 2006) as opposed to encouraging 'reflective discursive interaction' (Ingraham, Watson, McDowell, Brockett, & Fitzpatrick, 2002). Virtual worlds have the potential to involve students actively in the creation and sharing of knowledge. The user-friendly 3D construction tools can enable students to visualize physical objects and materials, even those occurring at cosmic or nano scales; they can experiment with design, without incurring the challenges of cost or environmental impact.

Another educational application is the use of SL to support role playing and scenario building. Students can use an avatar to 'temporarily assume the responsibilities of an astronomer, chemist, or engineer without incurring real-world consequences' (NMC, 2007, p. 18). Oblinger (2006) advocates the use of online gaming and virtual worlds to provide experiences such as workplace interactions, terminologies and routines that have been previously unavailable in campus learning.

The importance of models and visioning to the intellectual development of planning and to the skills base of planning practitioners has caused some to argue that SL has a ready application in planning (Steins, 2007). Since planning is concerned with land, buildings and their impacts, the ability to build virtually and share 3D information online may provide virtual studio space in planning courses or could allow local authorities to share a preview of a proposed development over the internet. In an era where technology has increasingly more influence on education, and where appropriate technological methodologies are demanded by computer-literate students and clients (Horne & Thompson 2008), skills in using virtual worlds technologies may become mandatory for finding a planning job in the future.

While SL has potential to apply to planning teaching, the extent to which this can be actualized remains to be seen. The aim of this paper is to explore the intersection between current planning scholarship and SL and to propose how it can be used for teaching planning in a way that is accessible and simple. We wish to argue overall that planning educators need to recognise the affordances of technologies in supporting these processes before changes will improve their practices.

The following section begins by sketching out the history of the virtual in planning in two overlapping chronologies. The first traces the use of the virtual in planning to create imagined communities. The second history is more reliant on the increasing sophistication of personal computers and their use in creating maps that can be analysed and visualised. Given these histories and drawing on the work of Boellsdorff (2008), we go on to argue that the research on planning to date in virtual worlds relates in a limited way to teaching using SL.

Imagined communities: a brief history of virtuality and design in planning

As Pickles (2004) describes in his genealogy of mapping technology, maps have a similar role to newspapers in creating communities and controlling the social body. Planning theory in the early part of the 20th century made rich and extensive use of maps to determine the boundaries and contents of a community but also to unite a community around a common interest. The early planners used maps to sketch out a landscape of colonisation (e.g. Colonel Light's plans for Adelaide, 1837) but also for imagining a community (e.g. Howard's Garden City). Maps were essential in promoting a particular planning idea such as green belts. In the 1930s around London a series of maps were drawn up to promote the idea of the green belt to different sections within the government (Amati and Yokohari, 2007). Idealised maps of new town development were integral to the advance of modernist planning ideas by such figures as Lewis Keeble (Amati, 2008).

The importance of maps to create a variety of virtual worlds declined as the theories of architect-planners were surpassed from the mid-1960s onwards. The advent of systems theory in planning prioritised the economic and geographical relationships between components in an area (McLoughlin, 1969). The theories of Faludi (1973) emphasised planning as a process. While the visual application of virtual worlds in planning lapsed during this period virtual worlds were still fundamental to the arguments of those who sought to criticise planners' conception of community. In her seminal work on the post-WWII impact of the architect-planner generation, Jane Jacobs made effective use of allegorical descriptions of street scenes to re-create a virtual community that the planners had destroyed. More recently, Healey (1997) argued that communities in a globalised technological society were likely to spread across space and time, as it were being 'virtualised' through technology.

Each of the planning theorists who have invoked virtual worlds all do so in different ways but they all reflect reasons why planners should be interested in Second Life. The early pre-WWII planning theorists invoked visually rich virtual worlds that were sometimes utopian in their idealism. Similarly a strong utopian ethic exists in Second Life through the motivations of its founder Philip Rosedale and through some of the residents who may be using Second Life to create a utopian response to society. Others have argued that virtual worlds more generally may provide a 'third place' where Habermas' ideal speech, a communication based on relations of trust, sincerity, comprehension and legitimacy, can be approached (Steinkuehler & Williams 2006, cf. Allmendinger, 2002, p.123; Healey, 1997;).

A history of 3D virtual worlds and planning: simulation studies

A parallel but more recent history that more conventionally resembles that of 3D virtual worlds can be traced along the development of GIS and 3D visualisation in planning. Since the 1970s GIS has developed in line with the availability of data and the speed of computers (Bishop, 2000 p.111, Peters, 2008), although antecedents of GIS existed before computers (e.g. McHarg, 1969).Researchers such as Newton (1971) had foreseen the endless possibilities in GIS for

landscape planning professionals over three decades ago.

At the same time this work was underpinned by the deterministic understanding that validity could be attained by modelling reality. It was argued that as the models became more realistic they would serve as better aids to decision-making. The scientific nature of this work borrowed heavily from complexity theory that gave new life to scientific modelling of the interaction between people and landscapes (Koll-Schretzenmayr et al. 2004) The demand for faster, more realistic and more sophisticated visualisation was shared between researchers and the much more powerful and influential military and entertainment sectors (Sheppard, 2001). At the same time this research was advanced with the hope that these technological advances would enhance the experience of public participation (Krygier,1999; Kingston et. al 2000, Gonzalez et. al. 2007).

In the same vein a large amount of research has sought to show that big improvements to communication can be made by improving visualisation. Lange (1994) comments on the benefits of a visualisation to promote discussion and identify potential problems before an Environmental Impact Assessment takes place. Wissen et. al. (2008) provide evidence for how visualisation can facilitate better communication between planners, stakeholders and the public. They consider the value of 3D visualisations to be how it aids "understanding and communicating characteristics of landscape conditions by integrating visual and non-visual landscape information." (p.184). They found techniques that linked spatial distribution with information about the commidity's utilisation "animated the stakeholders to set up cause-and-effect chains that drew attention to problematic relationships that should be considered in a further analysis" (p.194). Similarly Horne and Thompson (2008) claim that because we recognise the three-dimensionality of the built environment in our perceptions, it is "important to be able to appreciate the built environment in this manner as well" (p.6). They argue that it is useful in educating planners for numerous reasons by providing a sense of 'immersiveness' for example. 3D visualisation "is understood more easily than an abstract 2D-plan" and encourages "public participation in the broader issues of the planning process" (Hehl-Lange, 2001, p.113).

Much of this research relied on heroic computing efforts by multi-disciplinary teams to produce increasingly realistic visualisations. Petit et al. (2006) use a web-based visualisation that projects several different visualisations of a development in Melbourne using a web browser. They employ a sandbox to enable participants in the planning process to construct their own variants of the development. Lange (2001), sought to refine virtual world models to approximate to a subject's real world. The validity of the models developed by Lange (2001) and others are strongly related to their 'realism'. A realistic model is said to be more useful to decision-makers in making decisions. A more recent trend has been to use existing 3D models such as Google Earth (Lloret et. al. 2008).

In SL, however, the 'subjects' are able to interact in unanticipated ways. They are able to create their own world and control it. They are able to borrow societal rules and normative ideas from the 'real' world and also generate new ones that are better adapted to their needs. As Boellsdorff (2008, 20) describes, SL relies on a difference between the virtual and the actual remaining in place. This is because the users of a virtual environment see the boundary between the virtual and the actual as necessary. Rather than blurring this boundary, crossing it can reinforce it as many studies in anthropology from gender studies to nationalism have shown (Boellsdorff 2008, 23). Furthermore, SL and its residents constitute a separate society with different rules and different modes of communication. The virtual world models that have been looked at are quite different to SL and this should have a significant bearing on how teaching and research are conducted.

However, while the work of visualization research in planning has contributed to an understanding

of a subject's reaction to a simulated environment it has failed to deal with some of the broader societal impacts of virtual worlds. Although this work might appear to superficially have applications in SL, this could only be achieved by limiting the use of SL to a simulated environment. While the research of 3D modellers was predicated on a planner as content provider and deliverer, in SL, residents are just as able to create their own rival content for development as planners. This 'levelling out' of the power-relationship between planners and the public is illustrated in the case of LaGuardia airport's new plans for a park in which residents of SL were encouraged to change the design of the 3D model according to their wishes as a contribution to the design process (see Steins, 2007 for a description).

Maybe they are angels?

Up until now the use of virtual worlds in planning has been confined to research because of the expense and difficulty of using the technology. SL has the potential to be a defining technology that makes the use of virtual worlds more widespread not only in teaching but also in business (Pratt, 2008). We now turn our discussion to teaching planning. It is important however to insert a few caveats about SL drawn from our own field-work and the existing literature on the application of technology in teaching.

Firstly, the divorce of SL from bricks and mortar issues in a teaching environment may be liberating but the extent to which skills and understandings learnt in SL can be translated into the actual world is unknown. The SL software limits the transferability of constructions in SL to the actual world. It would be difficult to make a building in SL and then produce a series of blueprints from it that could be used by an architect or planner. Interestingly, this weakness is expressly addressed in Google's sketchup tool where buildings can be superimposed on the user's version of Google Earth. Furthermore in conducting an assessment there is a danger that the importance of some aspects of planning in the real world may be missed in SL. For example in SL none of the buildings require roofs or assizes bringing to mind Pope John XXIII's query when he was shown blueprints for a Vatican office building that omitted toilets: "Suntne angeli? " ("Are they angels?") (Filler, 2008)

Secondly, SL like any teaching technology is susceptible to Gartner's hype cycle (Fenn et al. 2008). Here, emerging technologies go from a period of initial 'over-enthusiasm' sparked by press interest, through the stages of unrealistic and failed expectations, to practical application and mainstream adoption.

Several factors may contribute to the tendency for educational technologies to follow Gartner’s cycle into the downward spiral after the initial hype, including the complexity of educational contexts. Universities are constrained by institutional cultures and diverse stakeholder expectations. The rules and regulations put in place to ensure an equitable and secure environment for students to learn can in themselves work against innovation. The philosophy underpinning Web 2.0 tools such as virtual world technologies is in one sense liberating, offering the opportunity to throw off old ‘shackles’; in another sense these innovations have the potential to create chaos as the legacy of tradition is being challenged and disrupted (Hedberg, 2006).

Maintatining currency and responsiveness is challenging in universities where technical infrastructure, organisational policy and procedural frameworks struggle to respond to a changing environment. Academics are often ill-equipped and under resourced to recognise the affordances of technologies and then integrate them into an aligned ‘curriculum package’. The balance between relationship educational opportunity, technical capability and organisational supports (Gosper, Woo, Muir, Dudley, & Nakazawa, 2007) can be lost when a new technology such as virtual worlds is

launched into an often inflexible system. The disillusionment that results can easily lead to the downward slope of Gartner's cycle.

Where some of the real benefits and practical applications of the technologies emerge, a standing point is reached and a positive slope emerges. So how can the duration of the trough of disillusionment be reduced and movement up the slope of enlightenment be increased to the point where these technologies are adopted in sustainable practice? At an organisational level, strengthening the knowledge, skills and practice in each of the domains of 'curriculum', 'technology' and 'organisation'; as well as the inter-relationship and interoperable practice between them will help (Gosper et al., 2007). For individual academics, their understanding of the teaching and learning processes underpinning learning, their appreciation of the affordances of the technologies and their capacity to link the two into their curricula will facilitate the movement into more sustainable practices. The following is written with a view to facilitating the link between the technology and existing curricula in planning.

Using SL for higher level cognition in planning

With their capacity to immerse students in the process of learning, capture their activities and reflections and enable others to comment on and challenge these reflections in real time, virtual worlds have potential to be used as cognitive tools rather than simply more creative environments for engaging students with content. The virtual worlds technologies could be used to support students in the development of higher order skills, for example as they move into the domains of

Table 1: The use of virtual worlds in planning

Modes of use	**Capacity of online environments available before virtual worlds**	**Affordances of virtual worlds for higher order learning**	**Application in planning**
Virtual worlds as metaphors	Learners could **participate** in simulations or role play environments designed and programmed by others,	Learners can **create** their own characters and manipulate virtual worlds quickly and easily	Use role play and simulations – e.g. developers versus environmentalist
Virtual worlds as microworlds	Learners could **explore** phenomena in online environments and **manipulate** components as part of activities designed and pre-programmed by others.	In addition to exploring and manipulating, the capacity for 3D modelling enables participants to **analyse**, **evaluate** and also **create** their own learning environment. For example, they can diagnose problems and quickly and easily create solutions. They can also **refine** others' creations	Exploring the virtual world in field trips. Using SL to examine the difference in the concept of land and property in SL and the actual world. Using the brief history of planning in SL as an example of why planning exists.
Virtual worlds as tools	Tools such as discussion forums had **pre-determined structures** and communication was primarily limited to text or voice	Virtual worlds enhance earlier forms of online communication by adding **extra dimensions** such as movement.	Peer assessment exercises where students can comment on and explore each others 3D assignments

evaluating and creating procedural and metacognitive knowledge. They also have the capability to

employ a range of new communication options that older technologies do not, ‘conveying a sense of presence lacking in other media’ (NMC, 2007). For instance, they enable communication through gesture, the creation of artefacts and sound in terms of voice or digital imaging.

De Freitas (2006) offers a description of the modes of use of online immersive gaming environments which has been used as the basis for the following comparison between earlier online environments and virtual worlds (Table 1). While the media attention may wain before practical examples of the use of virtual worlds become widespread, this recognition of the affordances is only one aspect of attaining the slope of enlightenment; embedding the virtual worlds into an aligned curriculum is essential.

SL as a metaphor

A number of educational institutions have already begun using SL as a site for conducting simulations. SL provides an area in which participants can practice a procedure or experience an environment that may be difficult or costly to reproduce in the actual world. An example of this is the University of California, Davis where psychology students are given the opportunity to experience being in a hospital or being institutionalized as a schizophrenic patient.

This could be adapted for planning by thinking about a particularly difficult to reproduce simulation that would be better produced in SL. One of the most extreme activities of a graduate planner would be the experience of working with a developer in a confrontational situation.

SL as a microworld - virtual fieldtrips and exploring the difference between planning in the actual and virtual worlds

A number of existing areas provide sites for observation and commentary about development. A significant number of sims or islands in Second Life are built with a view to imitating the real world. Existing versions of London, Milan, Casablanca and Cuba to name a few provide material to be used in a first year assignment. Since so much of the development in Second Life is effectively unregulated it provides a rich medium for showing why planning exists. Another field trip could examine this area.

Another use could draw on recent work by the Seattle Law school. Here first year students were asked to participate in a deliberately 'naive' exercise that asked to look into certain fundamental tenets of property law and investigate whether these had translated into the virtual world (Townsend Gard and Goda, 2008). In October this year Linden Labs announced that they were moving to regulate adfarms (Linden, 2008, Au, 2008). These are large unsightly billboards that detract from the aesthetic experience of being on Second Life. While this problem is a classic one of negative externalities that many planners would be familiar with it had a curious Second Life twist. Since subdivision is also unregulated residents with houses that had a good view found that small pieces of land were being bought to construct an adfarm nearby this forced them to buy out the owner of the adfarm. A potential assessment exercise would ask students the implications for the real world of having development that was as unregulated as it is in Second Life.

An extension to the idea of the virtual field trip is to customise the online environment. One potential planning case that might be useful would be the creation of a typical new urbanist streetscape as opposed to typical suburban streetscape. Students could explore these areas and comment on how they could be improved. Another application would be to ask students to comment on how or design

what a planning office would look like in a virtual environment.

SL as a tool – Peer-assisted planning

A more elaborate use of SL would mean taking advantage of its asynchronous aspects. Texas State technical college is the first educational institution to offer a diploma entirely in SL. For their final assessment students are asked to take photographs and exhibit them. Others students are able to view these and submit anonymous comments in a drop box. This could be adapted to planning by asking students to lay out an area with buildings or design an infill development that met certain requirements. Because of SL's ability to store all of this data and have it available for viewing this type of exercise could work asynchronously giving students the ability to work and assess their peers in their own time.

Conclusions

This paper has argued that despite a significant engagement with virtual worlds in planning since the inception of the discipline, the application of a tool such as SL to teaching would be by no means straight-forward. This is partly because the research on 3D visualization and mapping to date has been framed as a tool to enable improved public participation but also because substantial barriers exist at the institutional level with introducing virtual worlds into teaching, as they do with any new technology. Nonetheless, we focus on three ways that planning educators could use SL in future, pointing out areas for future research.

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