Virtual Landscape Presence – Conveying the Experience of Place via the Web

Mark LINDQUIST

1 Introduction

Landscape architects operate within an increasingly globalized world. Collaboration on projects frequently occurs between geographically dispersed parties. Aided in part by the Internet and digital media in general, landscape architects have access to information, communication and collaboration tools that were unimaginable a generation ago; digital drawing exchange and video conferencing are now commonplace in many offices. These tools primarily provide asynchronous exchange of drawings and data, or enhance verbal communication by conveying physical gestures. They do not contribute to a real-time three dimensional spatial understanding of place. Virtually conveying the experience of being present in an existing or proposed place is the first step towards synchronous 3d design collaboration that is free of geographical constraints. To this point, tools must first be identified that allow for the conveyance of three dimensional spatial experiences virtually. This paper will evaluate web based technology that contributes to the qualitative experience of being present in a landscape. A case study will be offered describing how commercially available technology was used to present three dimensional design proposals over the internet by a group of students. The strengths and weaknesses of the tools used will be assessed, as will their relevance in contributing to a richer and more rigorous collaborative working model.

2 Presence

Presence; the experience of 'Being There' in a synthetic or virtual environment, has garnered much attention as a research topic in diverse fields of study. For many researching in the field of landscape architecture the discussion has been present for years without fully acknowledging the link. In other fields the double issue of presence, *Being* There, as in a remote location, or Being *There*, in relation to a real or imagined environment, has been discussed (ZHAO 2003). The issues and opportunities identified have much to offer the landscape architecture research community. With the proliferation of tools and techniques for internet based collaboration and collaborative design it is timely for landscape architects to engage with the topic of presence and how it can inform online collaboration.

3 Remote Immersion

Immersive visualization labs, which allow a viewer to look and move around in virtual space, have been used by planners and landscape architects for a generation and are

becoming technologically robust. The benefits of immersive visualization are that everyone has a synchronized understanding of the proposed design, rather than relying on the receivers‘ mind’s eye to fill in visual abstractions. This has been proven to be especially beneficial for collaboration involving those untrained in spatial design disciplines in some situations (BISHOP 2005, KWARTLER 2005). Removing a layer of abstraction for design decision making removes one impediment to success in a complex process, enhancing the ability of the vested parties to fully discuss the spatial ramifications of a proposal and any addendums. To date, this type of immersive collaboration has been primarily confined by technology to people being present within the same room. The globalizing trend of landscape architecture research and practice demands an in-depth understanding of telepresence of such immersion to provide the opportunity for collaborative design. The next step in the evolution of landscape representation is arguably removing the geographic barrier to the process; allowing remote viewers to experience the space “together” and leading eventually to interactive real-time 3d collaboration.

4 Immersion and the World Wide Web

Tools have been developed that allow for web-based visualization of landscapes (HONJO & LIM 2001). In addition, the opportunities for the use of photography and QuickTime VR for conveying real landscapes over the web have been presented (BLALOCK 2003). Nothhelfer argued for employing augmented reality techniques for landscape visualization over pure virtual representation (NOTHHELFER 2002). Despite documented web based landscape visualization, none focus on immersive aspects at either end of the system, thereby lacking the qualities of being present in a virtual landscape. This potentially can be attributed to the perceived complexity and cost of immersive tools, and time commitment involved in using the tools (DORTA & LALANDE 1998). However, technology developed in the immediate years following the assertion by Dorta and LaLande quickly made affordable and less time consuming immersive interaction possible (KALISPERIS et al. 2002), which was documented within a year of the web based discussions identified above. The success of real-time immersive visualization for conveying landscape experience with real-time 3d models has been discussed (DANAHY 2001), and was hypothesized in this experiment to be a valuable contribution to conveying landscape presence via the web.

5 Commercially available software

Students used a mix of augmented and virtual reality, as well as, ad hoc and purpose specific software in an attempt to convey both the existing and proposed site conditions of a site in New Zealand to remote participants in Toronto. Augmented software for presentation included ad hoc combinations of QuickTime VR (http://www.apple.com/quicktime/technologies/qtvr/), Microsoft PowerPoint (http://www.office.microsoft.com/powerpoint), Sketchup (http://www.sketchup.com/) and Skype (http://www.skype.com/), while Macromedia Breeze, now Adobe Acrobat Connect (http://www.adobe.com/products/acrobatconnectpro/), a purpose built web based collaboration suite, was used on its own.

6 Immersive Hardware

To evaluate the immersive aspects of each software technology, both participating parties used affordable immersive systems. The site for the presentation, in Wellington, New Zealand, was equipped with a four projector system that provided quasi immersion, owing to the 90 degree angle that the projectors were arranged as pictuerd in Figure 1. This was not a purpose built immersion facility, it was a software teaching lab, but was capable of approximating immersive effects to students presenting. The reviewers in Toronto used an immersive lab, comprised of a central screen flanked by two side screens for peripheral vision enhancement, providing a true hardware immersive experience as shown in Figure 2. The use of the immersive apparatus allowed for a full exploration of "presence" within the proposed landscapes and a comparative evaluation of each technology employed.

7 Workflow

Students researched and presented to each other various methods for web based presentations. Each participating student was free to choose the technology they deemed most appropriate for conveying landscape experience to a remote reviewer, based on their own and their classmate's presentations. The day of the presentations a Skype call was used as the baseline to keep communication channels open when moving through various presentation tools and software, which proved invaluable to the review process.

Fig. 1: Quasi immersive apparatus, Wellington, New Zealand student presentations

Fig. 2: Immersive apparatus, Toronto, Canada reviwers

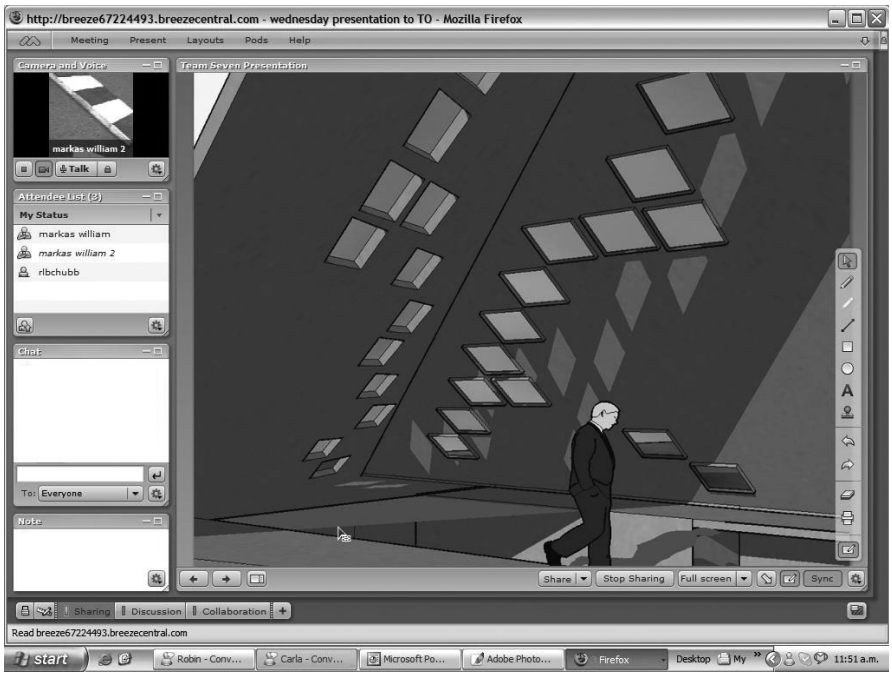

Fig. 3: Macromedia Breeze inerface

8 Software Evaluation

8.1 Macromedia Breeze

An all-in-one package, Breeze proved too distracting to fully convey the qualities of the landscape via the web in an immersive setting, owing to various menus and other on-screen interferences and lack of panoramic formatting as shown in Figure 3. Remote participants did not have to interact with the screen; those presenting controlled all activity and the sequence of still images, akin to a PowerPoint presentation.

8.2 SketchUp models with PowerPoint

Using a real-time 3d model was thought to be a very successful method for conveying landscape experience. Remote participants were required to download a Sketchup file to their computer, open the file, and navigate to various positions on their own. Based on research they compiled, students predicted the potential of moving around in space would allow the remote viewer to get a better sense of a proposed site when compared to more static technology and representation. However, it relied too heavily on the remote party having previous knowledge of how to move around in a 3d world using a particular piece of software and interface.

8.3 QuickTime VR

QuickTime VR proved the most successful for conveying landscape experience of both the existing site conditions, as well as, for design proposals via augmented reality in the form of photomontage. While this technology did not allow for movement through space, it provided a sense of looking about from a static point of view. Remote participants downloaded a file, opened it in Apple QuickTime, and were able to pan left and right, and up and down, giving a dynamic sense of looking around a static image.

9 Discussion

Much discussion has revolved around using interactive 3d models to experience place. However, there is some evidence that interactivity can be sacrificed with fidelity, as presented in the QuickTime VR scenario. The perceived interaction and control available to the viewer within an interface that is easy to navigate provided a balance between complexity of user interaction and dynamics necessary for the perceived engagement with a site. When compared to the complexity of navigating a student Sketchup model, the relative ease with which the remote participants could interact with the information overcame the static nature of the single image being viewed. In addition, the high fidelity of augmented reality, higher definition when compared to the relatively low fidelity of a Sketchup model, overcame the lack of movement through space. This is in line with recommendations made by Nothhelfer, as well as, findings in other disciplines relating to viewers perceived presence with content when viewing high definition television when compared to standard definition television (BRACKEN 2005). The use of higher fidelity

tools and techniques can in some instances surpass the qualitative experience of a landscape conveyed over the internet when compared to low fidelity real-time digital models.

10 Future Research

More research is necessary to further identify the so called ‘trade offs’ between fidelity and interaction in conveying landscape presence. In addition, this research poses further questions, mainly; can other augmentations successfully enhance landscape experience, or presence, over the web? Future research will investigate using audio to augment real-time models and QuickTime VR panoramas to determine what trade off there is, if any, between visual detail and audio sensory enhancements. The opportunity to ‘fill in the gaps’ of landscape experience via potentially less time consuming and more engaging techniques have much to contribute to web based collaboration and future working models.

11 Conclusion

Robust tools to visualize landscape space while collaborating via the web are in their infancy. Engaging with research that confronts this topic has the opportunity to contribute to a more successful online collaborative environment. As the practice of landscape architecture is increasingly involving specialization at the site level, while simultaneously requiring landscape architects be 'jacks of all trades' in terms of knowledge base, increased specialization and in turn collaboration very well may be the future of the discipline. Facilitating rigorous landscape design, evaluation and research, by promoting virtual collaboration between remote parties aided by a truer spatial experience, has the potential to aid the profession and in turn, the very real projects that are built.

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