Silicon Luddite: A Studio Case Study for Utilising Digital Media Beyond Landscape Representation Techniques

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1 Introduction

This paper explores how an inexpensive version of Virtual Reality Modeling (VRML) can modify studio agendas while critiquing the standardized or template approach to design education through the World Wide Web. The studio case study explores mixed modes of delivery, critique, and student modeling investigations as a teaching and learning experiment. The paper presents a design studio’s outcomes when a significant proportion is conducted over the web. Further, a primary interest of the studio was to explore modeling languages pertinent to landscape architecture through collaborative and remote discourses. Landscape is experiential and ephemeral, yet landscape architects continue to struggle with representing it, in its constant state of flux. (CORNER, 1999) VRML allows an interesting simulation of landscape environments and therefore can be used as a means of exploring design propositions. While digital media is often utilized as a generative and/or representation device, the conclusions begin to question the significance and design of virtual space in Landscape Architecture. Finally, this paper asserts through a studio case study that design is an act of research and that design can offer research outcomes beyond technical and teaching methodologies. (GLANVILLE, 1998)

2 Studio Methods

The Silicon Luddite Studio explored and tested student design work in virtual space using the array of current software available in the RMIT Faculty and commonly available computer hardware. 3D Studio Max and AutoCAD were used as a primary tool to develop models for "real-time" walk through critiques. The projects then were transformed into VRML (code) and further revised and refined. In some instances VRML became generative as well as experiential… as often the case with new media. (LYNN, 1997) A central aim of the studio was to test student design work in 3D virtual environments over the Internet with critics anywhere in the world.

The first 6 weeks of the studio program were dedicated to the production and conversion of a previous semesters’ design studio project into Virtual Reality Modeling Language. The students were also required to provide access to and explanation of their models through the Internet. Many techniques were required to achieve the desired result within the hardware limitations. Landscape and terrain modeling is rarely used at RMIT; this studio provided a foundation to landscape students in some advanced and powerful techniques. 3D Studio Max also served as a highly visual collating environment for inputting geometry (or primary modeling), applying textural representation, and general scene development to create virtual models. Students became fluent with a palette of modeling packages
including directly editing the source pages of simple programming code and surviving in the world of Unix computers.

The next 4 weeks focused on developing a critique of the designs through this medium. Designs had to communicate through a set intelligences and compromises. Students responded and re-designed their propositions based upon virtual critics’, live critics’, and desktop critics’ comments. Intensive re-working and re-modeling was necessary. Developing fluency from this period enabled students to completely revamp their work in a very short period of time. The final 4 weeks allowed for refining designs and customizing the models to run as efficiently and effectively as possible on the limited capabilities of the presentation computers as well as developing web site presentations. It also implemented some experimental software to enable multiple critics to be present as avatars and communicate with each other inside the same design world.

3 Results and Discussion

The following discussion of student work solidifies key issues and constraints within the studio experiment. It also starts to address landscape as a virtual medium and the potential for exploring virtual landscapes as an end product rather than a model or representational strategy which attempts to simulate the real landscape. Leon van Schaik stresses this in an architectural context when he discusses Hani Rashid’s virtual Stock Exchange, “The institutional need for such (real) buildings is very limited, and will become more limited in time, as demographics dictate. The institutional need for these virtual environments is just beginning to emerge.” (VAN SCHAIK, 2001) Further, this paper asserts that designing virtual landscapes requires students to utilize the same analytical, organizational, temporal, and spatial skills to create inhabitable and readable models.

Josh Mc Dougall’s project was a critique of the traditional representation techniques employed in the design of terrain in Landscape Architecture. Students often struggle with contour mappings and sectional devices, which conventionally describe topographic relationships. Josh’s project explored the possibilities of experiential terrain modeling through VRML with the hope that it may overcome some of the shortcomings of the other forms of terrain representation. The site utilized for the project is the Federation Square site, previously known as the Jolimont rail yards in Melbourne. It is on the South edge of Melbourne's Central Business District and extends from Flinders St Station to Melbourne Park. An essential quality of the site includes its vistas to and from the city, to the botanical gardens and the sporting precincts. Josh initially investigated a number of quarries and construction sites. His design outcome folded the qualities of form, material, and scale he found in the quarries into the contextual, visual relationship of the site. Josh proposed a large shifting earthwork, which revealed and extended significant views within the site, a post-modern picturesque strategy.
Modelling the terrain for a large mound of dirt proved to be an overwhelming task. The technology and software available for terrain modeling at a very precise scale is geared towards engineers and very difficult to decipher. However, Josh managed to create a complex system of polygon shapes, which linked together to describe his earthwork. Josh’s VRML world proved to be quite interesting. One can walk through the site and see how the terrain manipulates the views inwardly and towards the context. In addition, the terrain surface texture can be removed (turned off) to expose the polygon structure. This allows the viewer to experience the magnitude and subtlety of the earthworks by comparing it directly with the existing grade. Thus, Josh utilized the technology to create a new representational system to describe topography, topographic changes and soil erosion processes. His model allows the viewer to literally walk over and through the undulating terrain, compare his proposed changes to the existing site’s form, and balance the results of shifting the mounds of dirt across the site. Traditional representational devices often struggle with time and process which are integral to landscape; Josh has developed a technique which explores
both simultaneously. James Corner stresses the importance of displaying the invisible aspects of landscape supplanting how it looks with knowledge of how it works as a physical and cultural process. (CORNER, 1992)

Fig. 2:  Josh McDougall’s terrain with surface turned off.

Fig. 3:  Josh McDougall’s terrain with surface turned on.
Landscape architectural design often struggles with form generation beyond programmatic placement. Darren Roach used Virtual Reality modeling as a form generating device as well as an exploration of sk8te (skate boarding, roller-blading, etc.) culture. Darren was particularly interested in how a technology, which removes or alters personal interaction of the actual, normative experience could inform the design of Skate Park. And then perhaps enhance it by offering a layering of information or links to other skate-able sites, styles, sub-cultural insights etc.

The site for Darren’s project is a current skate park currently located on the Queen Victoria Hospital site in the Melbourne CBD. It is located between La Trobe and Russel Streets on Swanston walk, well within the heart of the city’s commercial shopping and tourist district. The design critiques the standard approach to designed skate parks in that they are a collection of objects or obstacles which skaters through various methods appropriate. However, sk8te culture finds these places drab and relatively unchallenging which perpetuates the continual act of colonizing other skate-able spaces within the CBD. The VMRL model of Darren’s work started off with a series of terrain explorations. Once he perfected the terrain he initially sought to utilize, Darren discovered that some of his terrain mistakes were more interesting skate sites. The constant ability to totally reshape and re-organize spaces very quickly allowed Darren to generate and test multiply terrain models.

**Fig. 4:** Daren Roach’s early skating terrain models
Thus, VRML became a generative device and Darren became less precious about his initial design form because he was able to alter his ideas quite fluidly. In addition, Darren’s web allows the sub-culture to share knowledge; tricks and tips, good sites to do the “perfect grind” etcetera. It also provides a forum for soapboxing opinions or protests related or unrelated to the sk8ting sub-culture, all with effects occurring in the real world. However, the limitations of the media are the very rationale behind skating. It is the thrill or rush of pulling off the perfect jump, which is still unable to be reproduced. The bodily feelings and the pain of failure cannot be simulated. Virtual Reality can though, through the aid of animations and animated cameras’ reproduce the movements. According to Darren, “The sense of time slowing, floating, and speed is easily replicated as to the morphing of the mundane curb into the best curb I’ve ever sk8ed on!” Thus, this project discovers and attempts to communicate how sk8ers view the world and what are they seeing that others do not.

![Fig. 5: “Sk8te” Terrain via modeling as surface generator](image)

Aaron Stowe’s project essentially tested visual properties of Virtual Reality modeling and provided additional critique to traditional landscape representation devices. Although Aaron previously constructed two models, they did not allow the spatial qualities of the design or the material textures to be read. His plans and collages communicated the design’s intentions and ideas but not its scale. The mediums proved to be too static. Julia Czerniak continues this critique on traditional landscape representation as “stagnant, scale less, and plan generated for the most part.” (CZERNIAK, 1998) In addition to representation techniques, VR modeling enabled Aaron to engage in a deliberate process of design and re-design, testing and re-testing form, examination of textures and materials, and challenging the initial design’s program. Similar to Darren’s work, Aaron was able to continually generate, assess, and alter his models. This enabled him to attempt to achieve a hyper realistic design in which he hoped to clearly communicate the actual through a virtual
representation technique. Aaron states, “I have made a deliberate choice to represent the final design model in a "near-to-reality" manner as possible…I wanted to explore: How real is VRML? What are the boundaries and limitations of VRML? And does near-to-real communicate design better or just differently?”

Fig. 6: Aaron Stowe’s earlier work exploring memorials invading the city fabric.

The project site is on the current Enterprise Landing site on the edge of Melbourne’s CBD and the Yarra River. The initial design involved a Memorial honoring the Stolen Generation, which was generated from a shattering pattern. The pattern can be read from the overhead train lines and it transforms from the ground plane. Aaron altered the initial design form by generating a series of models, which utilized the shattered pattern beyond the initial site into the wider urban context. This resulted in an exploded form with strategically located shards along the adjacent roads, on Flinders Street, into the Yarra River and symbolically splintering the wharf. The new form lead to a rethinking of program and a subsequent re-defining of the shards. The shards, which exploded outside of the site, became street furniture such as benches, tram stops and shelters. Aaron documented the constant exchange between AutoCAD, 3dMAX and VRML and his progress as part of his web page discussion of his design. The visual record of how the forms evolved and transformed was exceedingly useful to remote critics and those interested in his design process. Students and designers often present their work in “final” form, thus leaving out significant influences, which helped to alter their design decisions. The web page media provided an easy way of recording and reflecting upon their processes. The VR model also allowed design to be experienced in a variety of modes; one could walk through the site, ride the train and look over the site, or view it from above as if you were situated in an adjacent office building. Further, Aaron’s generative process also enabled him to go beyond the initial physical boundaries of the site and to consider a design proposition which commented on the greater urban context.
Fig. 7: Aaron Stowe’s multiple design models

Jesse Sago’s and Susie MacFarlane’s projects pushed VR modeling past a generative device or representational strategy into a more conceptual dialogue about design and its intentions. They both assert that the act of designing a virtual world is in fact just as valid as the physical built space. While Jesse’s project asserts ultimately that the need for cemeteries can be met through virtual means rather than physical spaces, Suzie’s project declares that the text used to describe modeling language is ultimately what informs architectural space. They begin to question the need for normative design outcomes (meaning physical spaces) when the possibility of virtual space seems rather unlimited. Greg Lynn asserts, “This involves the assumption that the classical models of pure, static, essentialized, and timeless form and structure are no longer adequate to describe the contemporary city and the activities that it supports. It is technically and culturally inevitable that computer technology will facilitate new architectural spaces and fields.” (LYNN, 1996)

Jesse’s early modeling investigations revealed the “horror” of what he had originally designed in a cemetery studio. However, his initial design ideas were invested in the equity of death. He wanted to remove the history of Australian cemeteries with regards to religious and racial segregation. He also critiqued traditional cemeteries for excessive land requirements and environmentally degrading outcomes. Through further investigation, he also found that the majority of gravesites and interment walls are under maintained and not visited after the first year of death. He soon proposed that cemeteries should become virtual. Virtual memorials already exist enabling a diversity of “grave” types and styles, and virtual cemeteries could be a collection of these sites. Jesse argued that any cemetery form, grave marker, urn, etc could be accommodated in a virtual space. He also felt that a virtual cemetery would not reach capacity as soon as the conventional space. Obviously there are both culturally and socially significant issues which this design investigation begins to
query. However, it asks a fundamental question about normative practices in society and challenges the way in which designers’ propose solutions.

Fig. 8: Jesse Sago’s virtual cemetery

Fig. 9: Walking though a virtual repository for memories of the diseased.
Susie MacFarlane’s project, Real Life 2.0, poses the question, what do we want (to see)? She is interested in exploring architecture as both a sensual experience of space and a thing of the mind; a dematerialized conceptual discipline. Her investigations started with a proposed surf lifesaving club on the Middle Park beach. Initial models failed to situate the work within its conceptual dialogue; a space for seeing and a space for being seen. VRML uses a code-based language to describe complex polygons and their spatial relationships. Behind the flash of the models are many lines of text which build the world. Susie’s world explores text as literal architecture, as it informs the model, and as it links to a conversation she is having through the web links. In order to unravel her thinking and the conceptual development of her work, one must travel through her textually enriched model and stumble upon links which contain clues. This work also begins to questions the visual seduction (scopophilia) of virtual worlds, the web, and design representation in general.
4 Conclusions & Outlook

Digital medias such as VRML offer both pragmatic and conceptual outcomes. For instance, the immediacy of a product or mock-up models allows designers to make minor or major changes, insertions or subtractions, and produce comparative models to illustrate differences in a relative short period of times. Further, the ability to “walk-through” a design using a scaled avatar facilitates a sense of freedom to roam throughout the VRML world, enabling an emersive quality in the design representation. VRML also offers multiple views or strategic views from above, below, or inside, while suspending gravity to change the pace of movement to simulate different modalities of viewing (i.e. Walking, skating, or a drive-by in a car). Designers can choose to work with conceptual models or “near-to-reality” models which test textures and materials qualities through out a design at multiple scales. They can utilize a web-based presentation format which allows the viewer numerous levels of engagement with the design project. The studio offered multiple methods of providing feedback about design ideas: remote online critiques, peer critiques (anytime/ any place), projected 1:1 scaled emersive presentations, (similar to IMAX), and desktop critiques.

The Silicon Luddite Studio began by exploring the potential of some "scalable" digital technologies to enhance the juvenile language of spatial inquiry in digital media. Its program was also interested in a language pertinent to landscape architecture and a sense of inquiry that can be both collaborative and remote. Fundamentally the student projects question the actual medium of landscape in landscape architectural design. While much of
the work struggles with landscape representation, a critical body explores the potential of virtual environments as landscape design. Virtual Reality Modelling Language (VRML) allows a potentially new insight into simulating landscape environments and therefore can be used as a means of exploring design propositions. However, like the controversial subject of genetic cloning, perhaps we must start to take seriously the value of virtual environments over colloquial, real environments. What is “real” anyway? The emersive qualities of these environments speculate on experiential realms in a digital fashion. As landscape architecture considers its future in the 21st century, surely we must begin to consider virtual environments as an ecologically sound, socially conscious alternative.

5 References


