Virtual Reality Modelling Language (VRML) is an open standard for 3D multimedia and shared virtual worlds on the Internet. A VRML ‘world’ consists of a series of files that together describe the geometry and attributes of objects and terrain in a 3D scene. There are now several GIS programs with the capability to generate VRML from digital map databases, and this technical innovation provides an efficient means of generating landscape visualisations that can be viewed and interacted with using just a standard web browser. Such a development also has considerable implications for increasing public participation in landscape planning issues.

This paper describes our experience in using VRML as a visualization tool in a research project that sought to assess the scope for achieving more sustainable agricultural landscapes in part of Oxfordshire, southern England. The study encompassed an area that included 34 farms and particularly aimed to investigate the scope for greater co-operation between stakeholders to achieve whole landscape management. In the initial stages of the research, a digital database for the region was assembled in a GIS, and a series of interviews were conducted with stakeholders to define scenarios for landscape development in the area. Four scenarios were subsequently visualized as maps and VRML models, and the stakeholders were asked for their reactions to these. In particular, we aimed to assess the willingness of farmers to co-operate across property boundaries and to determine the amount of compensation they would require to implement the types of landscape changes envisaged (e.g. increased field margins or conversion of arable land to woodland or rough grazing). None of the interviewed farmers were opposed to the idea of redirecting their farm management towards a whole landscape strategy and all of them agreed that the visualizations had helped them significantly to form their views on the scenarios.

It seems fair to conclude, therefore, that the use of VRML was an important element in the success of the Oxfordshire study. The advantages of VRML include the portability of the visualizations and the manner in which viewers can select their own path through a landscape. We also found, however, that there were distinct trade-offs between the amount of detail with which individual features could be represented, the size of area shown, and the speed of interaction. In part of our research we needed to demonstrate the VRML models on a laptop computer, and this in turn meant that some aspects of the landscape had to be displayed in a more simplified and stylised manner than we would have preferred. It is also relevant to note that the geometric nature of VRML objects is not especially well suited to the representation of some natural rural landscape components such as hedges and other forms of vegetation.

In more recent research we have used our Oxfordshire database to compare VRML with other GIS-linked approaches to landscape visualization such as photorealistic rendering tools. There is little doubt that the latter can have an edge on VRML in
terms of characteristics such as degree of realism, but certainly not to the extent that VRML becomes redundant. With further experience it has also become apparent that there are several means of improving on our initial VRML models and we therefore feel that it is important that landscape architects and planners should be aware of VRML as a potential visualization technology.
**Silicon Landscapes: A Luddite Approach**

Author: Sue Anne Ware, Department of Architecture and Design, RMIT University, Melbourne

This paper explores how an inexpensive version of Virtual Reality Modelling (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 modelling investigations. A primary interest of the studio was to explore modelling languages pertinent to landscape architecture through collaborative and remote discourse. 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. The paper presents experimental model environments utilizing a range of tools suitable for spatial model evaluation across the Internet. This paper also 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)

**Studio Program**

Students tested their 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. 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 Modelling 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 modelling 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 modelling), applying textural representation, and general scene development to create virtual models. Students became fluent with a palette of modelling 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-modelling 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. 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.

Essentially the studio and this paper is an experiment which can be summarised as a conversation / discussion between the silicons and the luddites. They aim to dissolve one into the other rather than accepting the didactic which currently stands.

**TEXTS AND REFERENCES:**
“Immersive User Interfaces for Interactive Design of Forested Landscapes”

Authors: Duncan Cavens, Dr. Stephen Sheppard (Presented by Duncan Cavens) Collaborative for Advanced Landscape Planning University of British Columbia http://www.calp.forestry.ubc.ca

Rather than facilitate exciting new design, the current generation of landscape visualisation tools have tended to stifle creativity in design. Their cumbersome interfaces and lack of dynamic feedback with their data sources have forced the user to focus on the production of relatively fixed visual representations of designs rather than on the design of experience itself. This is understandable, particularly when one considers that for the last 30 years, the focus of software development has been to achieve the rendering of complex 3D imagery at interactive rates.

With the explosive pace of development of the 3D graphics industry and advances in computer science research, the field of computer graphics has almost arrived at the point where, given enough programmer effort, it is possible to visualize incredibly complex landscape scenes at reasonably interactive rates. The problem now becomes: what does one do with this power to visualize, and how will this assist landscape architects in their primary activity, design? For us, one of the most exciting prospects of this technology is the ability to bring a much wider range of individuals into the decision making process. Rather than restricting design to the designers, or forest management to professional foresters, computer visualisation technology should assist all stakeholders to participate in the design process. In order for this to be accomplished, however, a visualisation system requires the following:

- A setting which facilitates collaborative work with multiple individuals.
- A dynamic connection to data-driven models to allow rapid consideration of alternative outcomes and future conditions
- A user interface which allows the user to understand what is going on “behind the scenes”, directly manipulate the model, and quickly see the results of those manipulations in a 2D/3D presentation.

In this paper we introduce our prototype forest landscape design interface (developed by the Collaborative for Advanced Landscape Planning (CALP)): a system which facilitates landscape-scale forestry design decisions by users who are not necessarily designers or professional foresters. The system presents near-realistic images of forested landscapes at “life-size” scale, using a panoramic three-screen display, such as that operating in UBC’s Landscape Immersion Laboratory.

The system provides an interface to two forest models developed in the faculty of Forestry at UBC (FORECAST, a forest stand-level growth model and ATLAS/FPs, a forest harvesting model which operates at the landscape scale.) The system allows users to test design options and assess their impacts on both the visual appearance of the area in question and the ecological and economic implications. A central part of our interface is how it simplifies the user interaction process. Our user interface models the user’s conception of the task (forest stand, prescription, species, tree) rather than the abstract digital representation of the
problem (polygon, line and image). The interface is limited to the specific tasks required for the process. This allows the user to focus on the design task and not on the interface itself.
Digital Serial Vision: Movie Making for Landscape Architects and Architects

Authors: Madis Pihlak, ASLA, Stuckeman Center for Design Computing, Department of Landscape Architecture, Department of Architecture, The Pennsylvania State University and Joseph Blalock, ASLA, Department of Landscape Architecture, College of Architecture and Planning, Ball State University Muncie, USA

Digital video, animations, landscape architectural walk-throughs and movie making techniques; Essential tools in the repertoire of the Landscape Architect.

Introduction

Movement through space is how we understand our environment. There is no more powerful medium than the movie screen or streaming video on a website. Why do landscape architects not adopt movie making into our design arsenal? We can visualize what we are proposing to build before we build it. But what about the audience? Are our ideas and desired experiences adequately being expressed?

Both Ball State University and The Pennsylvania State University have substantial Digital Video Design Computing Facilities. Making a meaningful movie is a difficult task. It requires that a professor devote sufficient time for the student to learn the craft of movie-making and absorb enough of the moviemakers art to make a significant movie. In this age of instant communication and amazing production values from even the most mundane commercial advertisement, audiences are very jaded and have a very short attention span. For the landscape architect to break through and hold the attention of an audience takes considerable skill. Fortunately the hardware and software has dropped in price and time needed to learn the techniques of movie making has decreased as well. Making this within reach of the Landscape Architect.

Movie-Making Process

1. Story Idea Development
2. Story Board Development
3. Three Dimensional Site Model Building
4. Model Animation Testing
5. Real World Digital Video Recording (DV)
6. Movie Making (Premiere, Final Cut Pro, iMovie)
7. Post Production/ Editing
8. Digital Compression (Media Cleaner)
Conclusion

The ability to compose, manipulate and communicate in 3 dimensions and express it over time in animation and video, will become as pervasive a prerequisite for the designer as are skills in word processing. Landscape Architects design and think in 3D, visualize space and experiences; animation and video is a necessary tool to express ourselves.
Agents in the Landscape of Communication
– Experience and Categories of Space in Web-Based Visualization of Landscapes in Landscape Planning Communication

Author: Troels Degn Johansson, Danish Forest and Landscape Research Institute
Department of Urban and regional Planning, Ministry of Environment and Energy

This paper focuses on spatial experience and spatial categories in web-based 3D-visualisation with special reference to current strategies for landscape planning communication. Historically, notions of landscape are inseparable from pictorial art and media, and the point made in this piece is that that also web-media may influence significantly the way we perceive landscapes.

A popular categorical distinction in modern landscape politics and criticism is that of “land” versus “landscape”, i.e. the “land” of everyday-life and professional use versus the landscape as experienced by the more or less external “observer”; perhaps even the ideological “landscaping”, or “pictorialization” of landscapes (cf. Olwig 1996, 2000). French urban planner and philosopher, Paul Virilio, has recently taken up this dichotomy under the heading of “landscapes of events”, asserting that “today’s landscapes” are loosing their dimension of everyday events, and that the “land” (the culturally vivid land) in this sense therefore is vanishing into “landscapes”, into images.

Setting off from this perspective, the paper reformulates the land/landscape dichotomy in terms of taking interests in land-use via Internet-based visualization. An urgent question today is precisely whether current strategies for the politicization and taking interest in a future sustainable multi-use of the European agricultural landscapes might be realized by means of facilitating and encouraging such interests via the “Superhighway” of the Internet. This paper seeks to approach this possibility by discussing in detail what such “access” to landscape may imply in terms of the “land”/“landscape” dichotomy and the geographical concepts of space and place, which also seem relevant to discuss in this connection.

Moreover does the paper seeks to discover what landscape planning communication in these terms may be conceived of. Following a reading of French philosopher Michel de Certeau’s “Practice of Everyday Life” in terms of Internet “surfing”, the paper compares spatial experience in web-surfing with the traditional landscape and visualization categories of spatial experience. In this manner the article leads to an experimental distinction of separate levels of space in some dominant applications for web-based landscape visualization of today (i.e. interactive panorama, 3D models, 3D Multi-User Domains, live web-cams, animations, stills, etc.). This distinction appears quite similar to our categories of interactivity (suggesting a continuum of still higher degrees of interactive “freedom” as concerns choice of point of view in a virtual 3D-environment), but consists in fact of discrete levels of one-dimensional space, or “routes” for web-surfing. Accordingly, this distinction might provide a sustainable theoretical foundation for a classification of interactivity in applications and designs for web-based 3D-visualization of landscapes.

The material presented in this paper represents the main findings of a research project, “Web-based visualization of landscape change scenarios” (1998-2001); a project which forms part of the large, interdisciplinary research program, “Changing
Landscapes: Centre for Strategic Studies in Cultural Environment, Nature and Landscape History (1997-2001), which is financed by the Danish Strategic Environmental Research Programme. In the paper I will refer to a number of popular examples of web-based visualization of landscapes from my analyses and in addition to a demonstration project which compares various pictorial media for web-based visualization of landscape change scenarios in a common hyper-textual communication environment (Fig.1).

References:


Biography:

**Troels Degn Johansson** is a Ph.D. Scholar at the Danish Forest and Landscape Research Institute, Department of Urban and Regional Planning, Ministry of Environment and Energy, and an Assistant Professor at the newly opened Copenhagen IT University, Department of Design, Media & Communications. MA in Film & Media
Studies at the University of Copenhagen. President of the interdisciplinary research network, Nordic Summer University, 1999-2000, which is financed by the Nordic Council of Ministers. He is the editor and co-author of *Iconicity— A Fundamental Problem in Semiotics* (1999) and a number of other books and articles on media, aesthetics, and communications. Currently involved in a research project on the visualisation of landscape scenarios in web-served computer-mediated communications with special reference to afforestation scenarios and public planning communications. Spend a time as part of this project as an Academic Visitor at the Centre for Advanced Spatial Analysis (CASA), University College London. Another project involves the co-operation with contemporary art group Superflex and their geographical 3D MUD concept for planning communication, “Karlskrona2”.