

THE USE OF DIGITAL SPATIAL NARRATIVES TO EXPRESS DESIGN IDEAS AND CONCEPTS

MICHAEL YIP AND JIM PLUME
The University of New South Wales
Australia

Abstract. This paper reports on work undertaken by design students over the past couple of years experimenting with the advanced use of digital media to understand and express complex design concepts. The students are required to move beyond the conventional use of such tools to model design intents, and to challenge preconceptions of the nature of representation through spatialisation of the relationship between signifier/signified/referent, and through digital 3D sketches. These have become known as digital spatial narratives. The purpose of this paper is to expose and reflect on the outcomes of these thematic explorations. It discusses both the techniques that have emerged in their formation as well as the broad range of animation types that have resulted from that process.

1. Background

The context of this paper are explorations in the advanced use of digital media to express complex design concepts in an elective course taken primarily by senior architectural design students in the Faculty of the Built Environment at the University of New South Wales. The students undertaking this course are already highly skilled in the use of rendering and animation tools.

The basic ideas spring from the classic work by Stanley Allen at Columbia University on the art of perspective (Allen, 1992), but translate and extend those principles into a digital spatial narrative using high-end animation tools. Specific writings by Baudrillard (1983), Bloomer (1996) and Virilio (1994) are also given to the students. In drawing a parallel between the key terms of visual design theory and the political dimension of perspectival construction, the course seeks to articulate a two-fold objective:

- to operate as a forum where the 3D digital vocabulary is examined, criticised and taken beyond conventional 3D modelling;
- and, in undertaking that process, develop and use visual strategies that provide commentary on the selected source material.

To that end, students work with selected source material that becomes the vehicle for these explorations. The course has now been run on four occasions since late 1998, twice where students have been free to select their own source material. On one occasion, the nominated sources were examples of Australian post-colonial art in which imagery is overlaid on top of traditional landscape scenes to express reflections on cultural and political themes. This served as an extremely rich vehicle for experimentation since it was already heavily laden with thematic content that could be creatively manipulated in the digital realm. Another rich source of material employed as a vehicle for this course was the Sydney Garden Palace, constructed in the late 1880's as the main exhibition building for the World Expo and tragically burnt to the ground soon afterwards. This provided an ideal architectural vehicle for digital exploration, leaving behind as it did only a fragile memory of its form, but with a technological legacy that has reverberated well into the 20th Century (Proudfoot, Maguire and Freestone, 2000).

The course operates in two modes: on the one hand as a multimedia-aided lecture, but also as a digital studio with tutorials and critiques on sketches and examples. A specific range of topics is explored in the lectures, including: the process of iterative transformation of media through 2D, 3D and animated forms; cinematic sequences; and non-linear video editing. The studio project itself requires students to collect text and visual information, explore ideas of a particular theme, and produce a series of digital video animations to present a spatial narrative based on the specific topic.

Source materials may include: in 2D, vector graphics, scan textures, free-hand sketches, hand painting and ink drawings and other digitally modified images; in 3D, meshes, CAD models, terrain data; in video, captured video or animation sketches; and in audio, recordings of music, sound effects, speeches and synthesised audio files.

2. Techniques

This section briefly describes the range of techniques that have emerged from these explorations, covering the following four major types: transmutations in the role of the viewer; cyclical self-referral; transferred behaviours and modifiers; self-evolving forms and processes. These have all emerged from the opportunities provided within 3D Studio Max to manipulate 3D animated objects.

Perhaps one of the most obvious techniques is to explore and manipulate the notion of "viewer" and to challenge the traditional role of the viewer in visual animations. Using a three-dimensional medium, students are encouraged to dissect and then reconstruct a variety of spatial languages, including the languages of perspective, anamorphic projection, theatre and film.

In this process, concepts such as the camera, picture-frame, projection and foreground-background relationships, all become individual objects with their own relationships to other objects being constantly redefined.

Similarly, the notion of multiple viewports in a 3D program suggests a multiple reading of one or more representations of a spatial re-construction. This occurrence of simultaneous realities can be shown through multiple projections of the scene with composite filming techniques. Allen (1992) describes this condition as seeing through the “electronic eye”.

By overlaying on this a process of cyclical self-referral, the studio exercises begin to challenge the representation of three-dimensional visualisation tools. Students learn to digitise and articulate spatial languages into objects and entities, quickly becoming aware that this process can serve as a vehicle for both the construction and critique of digital space.

These conceptions are further enhanced by a consideration of the object-focused nature of digital space. In this context, objects include every entity that makes up the “scene” including environment characteristics (like background, lights, etc), surface textures and mappings, cameras, and any other imported or constructed object. These are arranged in an inheritance class hierarchy with the “scene” at its root. Sets of sequenced modifiers called stacks can then be associated with objects at any level in that hierarchy. In this system, the notion of modifier is very broad and goes beyond various transformations to include all kinds of properties, attributes and behaviours.

Within that conceptualisation of digital space are endless opportunities for exploration. The modifier stacks lead to the idea of process-based design, where layers of information and design decisions are placed in a particular order. The order of these layers can be easily switched and manipulated, resulting in a totally different set of outcomes and providing fertile ground for creative exploration.

Similarly, those layers of process can be cut, copied and pasted from one stack to another allowing the designer to transfer and link behaviours and modifiers in quite unexpected ways. This opens up a whole new world of possibilities, specific to the parameters of those stacks.

Further, this experimentation with visual parametric instructions and the animated quality of such parameters suggests a new type of interaction between the designer and the design. By creating interdependent behaviours, the designer is able to construct complex self-evolving forms and processes. These can be allowed to evolve freely in the animation to express eloquently the symbiotic relationships inherent in spatial narratives.

The practice of design within a spatialised object-focused environment creates unlimited opportunity for visualising multiple thoughts simultaneously as interactive procedural narratives. Using three-dimensionalised texture and layers of imagery, students are able to overlay complex ideas within that spatial environment. For further inspiration, students are encouraged to study

contemporary visual media, including theatre, art, film, MTV, animations, and web motion graphics, etc. Such media inspire creative thinking in terms of thematics, camera angles and narrative. These techniques can be translated to the digital space through animation and digital video editing.

3. Observations

Some interesting observations emerge from these studio exercises.

Digital sketches became as inspirational as hand sketches as a result of using richer and more textural means of input.

The translation from manual to digital and from digital to manual processes introduces inherent “noise” due to factors like the surface of different types of paper, dust and compression of certain still and video imagery. Such noise tends to be amplified with multiple translations between two-dimensional, three-dimensional and video formats of the media. It can become quite influential within the design process. Mishaps and accidents become a significant driving force at the creative edge.

The processes inevitably develop a dialogue between an object and its environment. In strong projects, the experiential narrative that emerges from the blurring that occurs at such boundaries is frequently explored.

Superimposition between layers of readings are effective in working with complex and culturally rich ideas, while any number of the layers can be read at the same time. Juxtapositions of parallel events can form a strong visual dialogue in the video composition.

Time, scale, distance and speed are common points of departure for the development of digital video sketches. Speed and its visual culture (as embodied within the art of animation and filming) will continue to be addressed. The dynamic visual play on memories, connotations and sequence of flashing images against speed and time is developing as a new form of literature.

As Michael Foucault has stated (cited by Roemer Van Toon, 1995), “The present epoch will perhaps be above all the epoch of space. We are in the epoch of simultaneity; we are in the epoch of juxtaposition, the epoch of near and far, of the side by side, of the dispersed.”

4. Conclusion

Works produced in this elective course open up a new horizon of possibilities by unlocking the potential of a layered multimedia environment. This is the place where new media presentation meets the imagination within the design realm. It is inter-weaved within the process, not just hovering on the

surface of representation, but dissecting and redefining the way we approach and understand the relationship between the signifier, the signified and the referent of representation. The image itself becomes a living entity, changing the way we construct the image itself, blurring the boundary between what is presenting and what is being presented.

The designer's role is constantly shifting between being an observer and being a participant. The object/environment itself changes and mutates, often suggesting its own construction or reconstruction.

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References

- Allen, S.: 1992, Projections: Between drawing and building, *Architecture and Urbanism*, **4** (259), 40–67.
- Baudrillard, J.: 1983, The ecstasy of communication, in H. Foster (ed.), *Postmodern Culture*, Bay Press, Port Townsend, Wash.
- Bloomer, J.: 1996, Hypertextual picturesque, *Games of Architecture: Architectural Design Profile No 121*, Academy Editions, London.
- Proudfoot, P. Maguire, R. and Freestone, R. (eds): 2000, *Colonial City, Global City: Sydney's International Exhibition 1879*, Crossing Press, Sydney.
- Van Toon, R.: 1995, Architecture against architecture-radical criticism within the society of the spectacle, *file+arc.graz, 2nd Internationale Biennale Film und Architektur*, Graz/Austria.
- Virilio, P.: 1994, *The Vision Machine*, Indiana University Press, Bloomington.