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The Animation of Dynamic Architecture

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Introduction

The most valuable resource in education is student time and the greatest asset is the ingenuity of student minds. CAD technology now offers enormous potential to education, but limitations in time and funding, prevent its use to the extent possible within practice. Therefore, after dealing with 'awareness', 'attitude' and 'limited applications', our most important role in education is to encourage innovation. The third year of the honours option course at De Montfort University takes this as its theme and challenges students to explore and exploit innovative applications.

One particular area of development has been exploring the dynamic aspects of architectural design which go much further than the well-established 'fly-through' sequences. A great deal of architectural design and design development depends upon dynamic issues which range from movement joints to construction sequence. A visual understanding of these dynamic issues drawn from appropriate computer animations can now be an effective factor in design.

Discussion

A previous paper (LYONS and DOIDGE 1993) described the use of animation in understanding structural philosophy and the dynamic effects of movement joints. This paper shows how video/animation can illustrate the complex sun patches generated by sunlight penetration through a solar responsive wall. The south-west wall of Jean Nouvel's Institut du Monde Arabe in Paris (ELLIS 1987), features a screen consisting of several thousands of iris diaphragms based on four different geometric patterns with strong cultural references to the Arab mashrabiya; the wooden screens used for privacy but which allow the passage of cooling air movements. These control and filter sunlight penetration in response to solar intensity. Cheung (1994), has animated a computer model, illustrating how each type of iris diaphragm opens and closes, generating screen forms and their associated sun patches. Combined with the sun's motion, the iris diaphragms cast elaborate moving shadows illustrating both time and sunlight intensity.

The video illustrates the potential of dynamic computer animation as a design tool, offering students and professional designers opportunities to explore and powerfully communicate time-dependent effects.

References

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