

Introduction: *Designing form-in-motion as opposed to designing static form*

There are multiple scenarios for why a building skin may move, the most obvious being to provide interactive sun-screening. – this is the context of these animation studies. You are to undertake the sketch design of external sunscreens for the commonwealth bank tower and an urban ‘verandah’ spanning the dockside of the docklands site. We are interested at this stage in what happens when there is no direct sunlight on the building? Can these expensive systems be re-purposed to provide delight as well as practical benefit? Can they also embed information or operate as enlivening works of art at an urban scale? In this context, kinetic sunscreens potentially allow a new form of architectural composition. Rather than conceiving the external appearance of a building as a fixed artifact, frozen as the best static mix of performance and aesthetics, appearance can morph over time. One way to conceive of this opportunity is that multiple designs can be embedded in the same system - these might be considered ‘key frames’ that get revealed at different timescales.

Another approach, and the one that is the focus of this project, is to consider the design of the kinetics – the design of the movement, rather than the design of the individual ‘key frames’. Consider the example of a film of a bird in flight, where the key frames are the extreme points of the wings up and down motion. These key frames describe geometric position at discrete moments in time, but they do not describe the characteristic flight of different birds. The aesthetic of a birds flight is manifest in the ‘movement itself’. In a similar manner, the kinetic pattern of an architectural cladding or screening system does not reside in the extreme key frames, but is manifest in the motion as we perceive it in real time.

The focus of this two week project is on designing an individual range of kinetic patterns through experimentation with animation possibilities latent in a provided MAYA animation script. You are been asked to experiment with the variables that control the script by changing values in a simple configuration file. Think of this as a sketch design exercise, where you experiment with what is possible with the script and intuitively develop a range of personal ‘kinetic sketches’. In a subsequent exercise you will be required to consider how you might realize these kinetic sketches, but for now concentrate on developing kinetic patterns that to you that are aesthetically engaging, and / or embed information in a subtle manner.

*In order to give you focus these are the **three scenarios** for which you required to produce sketch designs.*

- (1) **Hour animation** (s) lasting between 20 and 30 seconds that produces an aesthetic pattern that also communicates the time of day i.e. an engaging and subtle way of transforming the kinetic sunscreens into an hour clock.
- (2) **Background animation** – (30 seconds) which add a subtle enlivening of the whole façade when the façade is providing sun shading. An analogy here is to the subtle movement of a tree, producing slow and subtle oscillation in shading patterns.
- (3) **Ambient animation** – (30 seconds) when the kinetic system is not required for environmental purposes it can operate as a low resolution ambient display that communicates information. Decide on a type of information appropriate to the site and embed relevant images or symbols that also have an aesthetic quality to their movement.

Learning objectives

To imagine a design aesthetic based on the design of movement

To gain knowledge of the variables that affect kinetics, the range of movement patterns possible, and familiarization with a design language for movement patterns.

To develop parametric design skills based on manipulating design variables.

Working Method

Utilize a supplied script that enables the design of animation patterns in MAYA. This involves experimentation with the script variables contained within a configuration script. In effect you have been given a parametric design – by altering the variables a wide range of unique animations can be produced.

NB There is no need to learn MAYA commands beyond manipulating your viewpoint and save / export routines. MAYA is the animation engines – once you have a range of animations these can be exported to 3D studio MAX and incorporated with building models designed in MAX or Rhino. Eventually these can also be imported into Esperient creator as an interactive real time model.

Timeline

Wed 19th Presentation on the morphology of kinetic pattern. Introduction to MAYA animation script.

Fri 21st Informal review of work in progress (Upload MAYA files to review site – animation studies)

Wed 26th Tutorials [5.16]

Fri 28 th Design review [design space]

Before Wed 2nd March - rate and critique each others designs online utilizing the provided references.

Requirements

Three refined animation designs (*hour, background & ambient*) for each site ie. 6 total animations.

Critique your design in relation to the provided references and describe your design design in relation to the morphology of kinetic pattern.

NB Uploaded and presentation instruction provided on Wednesday 26th

Assessment

Equates to 10% of total grade based on

Originality of animation patterns.

Each of the 6 animations submitted should be distinctive ie. NOT 6 x similar ideas

Aesthetic quality of animation – ie elegance, interest, engagement, excitement, delight

Elegance and originality in which information is embedded in the animation design.

References

Gabo, N. & Pevsner, A.:1920, The Realistic Manifesto, in BOWLT, J. (Ed.) Russian Art of the Avant Garde: Theory and Criticism, 1902-1934. New York, Thames and Hudson.

Rickey, G. W. (1963). "The Morphology of Movement." Arts Journal 22(4): pp. 220-231.

Moloney, J. ' Kinetic Architectural Skins and the Computational Sublime', Leonardo 42.1: pp. 65-70 (2009)

Moloney J. A Morphology of pattern for Kinetic Facades. In Tidafi, T, Dorta, T. & Woodbury, R , Computer Aided Architectural Design Futures (CAAD Futures) 2009. Dordrecht, Netherlands: Springer

Moloney J. , Building Skins as Kinetic Process: Some Precedent from the Fine Arts", in Kirsten Orr and Sandra Kaji-O'Grady (eds), Techniques and Technologies: Transfer and Transformation: IVth International Conference of the Association of Architecture Schools of Australasia 2007, Sydney: pp. 164 – 170 (2007)

Wisneski, C., Ishii, H. et al ' Ambient Displays: Turning Architectural Space into an Interface between People and Digital Information' , Proceedings of the First International Workshop on Cooperative Buildings (CoBuild '98), February 25-26, 1998