Construction Processes: Digital Video and Façade Components

CATHERINE VENART
Dalhousie University

Introduction

"Architecture exists, like cinema, in the dimension of time and movement. One conceives and reads a building in terms of sequences the architect works with cuts and edits, framings and openings..."[2]

Architecture and cinema are experienced as immersive conditions that are 'walked' through in time and space. In cinema, the two dimensional moving image is created through a combination of an active camera in a three-dimensional space and a passive viewer which produces a similar effect to our experience as an inhabitant moving through a three dimensional architectural frame. These two spatial constructs, the cinematic image and the architectural glass façade, are investigated through constructional processes and perceptual understandings of two and three-dimensional space. A set of relationships between viewer/inhabitant, and the frame & 'the view' are hypothetically tested in an attempt to reconnect the physical/material structure and the visual/perceptual structure of space. Exploring our spatial understanding reveals the interconnectivity between these two cultural modes of production. Architecture, in this case the glass façade, can potentially be informed and reinvigorated through an investigation of the cinematic use of frame and threshold to control perception.

On first reflection the glass facade and the cinematic image both act as optical apertures, seen to be 'transparent' presentations of 'real scenes' whether the 'exterior or another world'. Both 'hold' or frame, if only partially or momentarily, an understood three-dimensional reality or experience of space which extends spatially and temporally beyond itself and thought of as "less a thing than a trace of a movement."[3] These traces produced through material qualities or production processes are held, at once visible and invisible, enclosing and dividing the interior on and between exterior. It is here on the threshold that "a new reality" is created, "something which is outside the logic of realism,"[4] which at the same time become invisible, we "see past...and through"[5] moving beyond the frame to the distant view or moving image.

In crossing these thresholds the spatial condition is expanded, from two-dimensional to three-dimensional, from being perceptible to tangible, from abstract image to concrete reality and reverse. The mechanism of framing a transparent and partially reflective material, as Colin Rowe and Robert Slutzky suggest in *Transparency: Literal and Phenomenal,* is manipulation of both the physical/material qualities and the perceived phenomenon where a three dimensional spatial organization renders a 3D space as a 2D perception.[6]

Method, Discussion & Results

Through a series of 'transitions or threshold constructions' both the cinematic image and the architectural glass facade component are examined as parts of the whole within an established framework of the perceptual (relationship of frame, view and passage) and through processes of construction (relationship of material qualities and structural systems) as a means to control relationships across the in -visible 'threshold'

and between viewer and view. Each 'hold' or frame, if only partially and temporally, an understood three-dimensional reality or experience of space, which extends spatially and through time beyond itself and are therefore central to the larger spatial construct of the building and the film.

The threshold constructions can be controlled through the following means, which combine to develop a series of conceptual models. In constructing the cinematic image there are two points during the construction process that transformation of meaning and understanding can occur. First point of manipulation of meaning is through the means of capture and then the second is through techniques of editing. In the architectural façade component transformation of meaning and understanding occurs through the movement of the viewer/inhabitants in relationship to the physical - frame. The next point of transformation is through manipulation of relationships between the material (glass & ceramics) to the exterior 'view' done through frame to surface transitions and the various material qualities produced, i.e. transparencies and opacities. This is done through the visual, structural, constructional parameters and production process. Three parallel models of analysis are developed in both digital video images and glass facade components investigating them as 'material' constructs. In specifying capture and editing in digital video the threshold condition and viewers perception of space (surface to three-dimensional understanding) is manipulated, similarly in the architectural façade component physical (constructional and structural) and visual relationships are manipulated to create various transparencies and opacities of surface and structure, which causes both a depth of surface and perceptual effects. In all cases a sense of movement within the static material construct is developed in relationship to specific movement of viewer/inhabitant, to give a somewhat ephemeral quality to this façade.

The architectural models are based on the typical façade, composed of identical components or bays, which set up for the inhabitant a connection and boundary between the interior and exterior space. As inhabitant the relationship to the facade is conceived initially as invisible - viewed
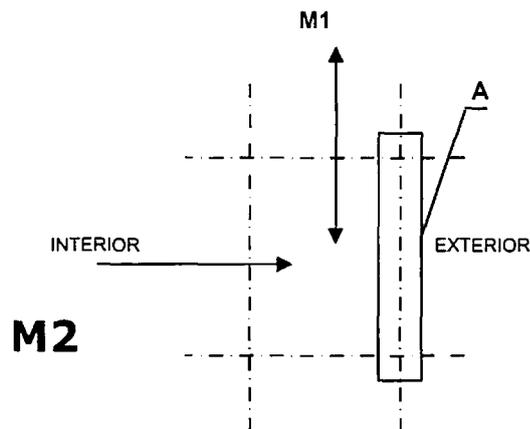

Figure 1.0. Sketch typical Facade study area

through or past - interrupted only by structure/frame and material phenomena of reflection. When in fact how the façade is engaged - whether the inhabitant moves perpendicular or parallel to it, considering periphery vision, focus, cone of vision as well as the speed of travel all effect the perception, connection and effect of the material, glass and the facade structure on that perception/view.

The first pairing of digital video images and glass façade components, are analyzed through the relationship of a viewer moving parallel or at slight angle to the frame and view. Therefore as noticed in the digital video sequence the focus duration and periphery edge to frame distortion of camera/viewer perception was dependent on the angle of movement, depth or distance to frame element and the speed of travel. This jump between in focus frame was enhanced through two factors, distance of camera/viewer to surface and frame element, distance between layers of framing and opacity or transparency of these frame layers.

In the physical façade model surface patterning of vertical stripes differing in thickness and varying opacities could be transparent or semi transparent structural frames or surface elements mechanically applied (ex. silk-screened paint/UV-coating (either gold warm or silver cool)) used front and back of two layers of plate glass, which create this 'curtain effect'. This optical effect is mainly seen in the periphery as the eye focuses on one layer /strip and the next jumps into focus. This jump from one layer to the next creates the sensation of movement in the facade similar to a curtain blowing in
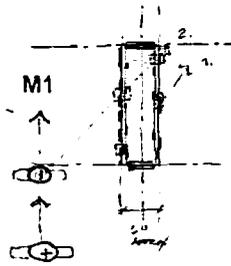
Figure 1.1. Sketch of set up of first study
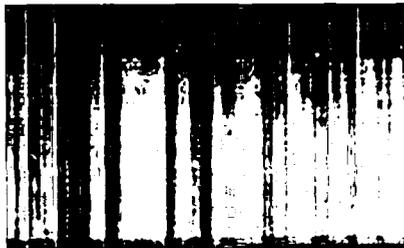

Figure 1.2a. interior view

Figure 1.2b. exterior view

Figure 1.2. 3-D model, by Michael Brodie-Venart

the wind. It is this optical jump between focus points on either layer (depth between the two layers) and movement of focal length or distance of viewer/ camera to surface, which creates a more or less dramatic effect of movement. This perhaps is similar to film maker Jacques Tati's use of the reflective qualities of the modern glass façades of various buildings in a suburb of Paris in *Playtime* (1968), where the glass façade is used to reflect and juxtapose the touristic monuments of that city (Eiffel Tower, Louvre...) in their surface. This compression between reflected and framed space within a surface condition of glass uses the three-dimensionality of architecture combined with its materiality to reveal the larger mechanism at play - transcribing the everyday onto a theatrical viewing plane. A similar idea is done in Sejima's *O-Museum* in Lida, Japan(1995-99). Here tension is created between the surface condition of the facade, room and

view beyond through the application of a silk-screened pattern on the glass.

The second study was a study of moving through a set of frames, i.e. moving perpendicular to the frame structure and therefore also the view. This was done through zooming and then tracking the relationship between focus points and blur of the frame structure along the trajectory of movement. This seemed to create a thickening of the frame in relationship to the view focus due to a dramatically changing relationship of focus points on frame layers as one moves from interior to exterior or through the facade to a distant view. As in the first example an optical jump occurs between the frame layers (structure) within the depth of the façade itself.
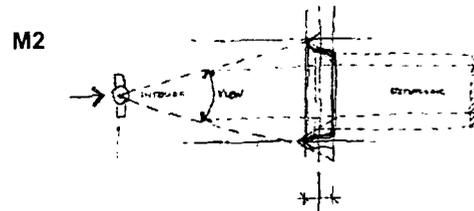

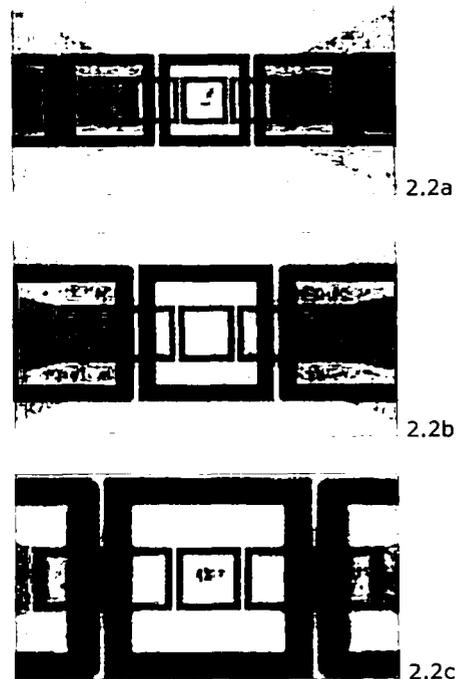Figure 2.1. Sketch of set up

2.2a

2.2b

2.2c

Figure 2.2. 3D rendering trial 12" depth btwn layers - series of still's moving through - 3-D Analysis Model of DV footage Michael Brodie-Venart (2005)

This obscuring or blurring of the structural frame is produced through slowing down and expanding the visible or in-focus edge of frame structure. Therefore in obscuring or blurring visual recognition of the edge or frame condition, the spatial clues, of edge transitions between surface to surface or surface to frame, become optically distorted changing surface, frame edge, depth perception and view. In blurring through overlaying focus points together recognition of the edge frame/structural frame become distorted in relationship to a distant view. This optical jump at a point between the two sets of frames and a compression of focal lengths into one image / physical structure. In Giuseppe Tornatore *Cinema Paradisio* (1988) 'Alfredo' turns the projector into a public square using a building and an unwitting resident becomes part of the two-dimensional reality or scene of the film being projected. Similarly in Pat O'Neill's *The Decay of Fiction* (2003) the architecture of the Hotel and the event (Ted Kennedy's murder) are overlaid with what appears due to its transparency to be two-dimensional figures, which appear like memories from the space of the hotel i.e. two-dimensional image and three-dimensional space are overlaid temporally within the sequence of the film. The artist Felice Varini in his piece 'Between sky and ground' does the reverse distorting urban space through a superimposed geometry of lines. The order of lines generates a deceptive impression of urban form, which is an illusion.

The third study investigates this obscuring of edges within the surface and view through manipulating both the focus and the depth of field clues given to the viewer/inhabitant. In knitting several partial views together. This creates movement within the frame and between the layers, which are not continuous throughout the frame. Potentially this could either surface structural elements (either opaque/transparent) or embedded information or material change (as with solar chips...) which manipulate the pure view, it could also be a breaking down of the frame into smaller segments which structure the façade and manipulate view in and out creating optical distortion, obscuring view and physical depth of surface at the same time creating multiple focus points spatial transformation through joining physically spatial clues of structural elements and the surface which leads to a flip flop of spatial information through changes in focal length and/or focus points.
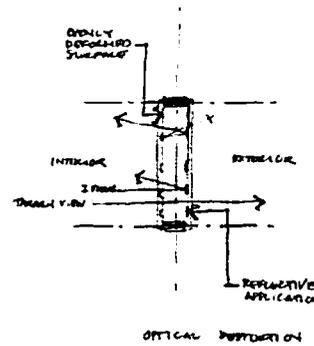

Figure 3a. Sketch of study

Figure 3b. Wave façade 3-D Model Michael Brodie-Venart (2005)

In the film *The Matrix* manipulation of time and space is uses by slowing down or freezing the action as the camera circles 360 degrees around the characters, each shot is then merged or knitted together to create 'Bullet-time' spatial effect. James Carpenter's 5th avenue facade in New York City and SANAA's *Centenary Exhibition of Arne Jacobsen*, 2002 both – perceptual use manipulations of the material glass through surface and or smaller pieces of the whole composition to distort relationship of flat surface and ones view of and through.

Conclusion:

In manipulating the boundary relationship or ' threshold' in the previous examples "a fusion of the exclusive imageries" of opposites "protection and exposure, shape and shaplessness, definite and infinite..." calls upon architecture to "again question its instrumentality, functionality and existence on the level of materiality", perception and practicality in order as Juhani Pallasma suggests "to touch the deeper levels of consciousness, dream and feeling..."[8]

In focusing on perception and construction processes, there is an attempt to re-engage the inhabitant in architecture. In 'The Invisible Mask' Andrea Kahn suggests: "The architectural object is not taken in with the rapt attention devoted to painting and sculpture, rather it is absorbed incidentally..." "looked past."[9] This oversight of architecture's potency creates an unwitting dismissal of its own power upon the viewer or user. In reinvesting in the relationship between the embedded power of the material and perceptual qualities of architectural constructions, architecture is not just walked through or looked past but compels engagement between material as both structure, aperture and image, of and for view.

Through perceptual and constructional explorations the 'detail' - the cinematic image and the architectural glass facade component - is developed. The architectural and the glass facade is reinvigorated through an investigation process of construction and perceptual relationships in the cinematic structure. In investigating perceptual understandings of two-dimensional image, three-dimensional architectural space and the haptic (both a physical and phenomenological understanding of space) the spatial construct is pushed. The spatial understanding of the inhabitant, viewer and creator is engaged, revealing the power of architecture control the space. It is through a process, which crosses disciplines of cultural production that changes inherent in our spatial awareness are understood and our cultural ethos is reflected directly in our experience.

Bibliography and Refernces

Barthes , Roland "Plastic" *Mythologies*, Hill and Wang NY,1972 (pp 97) [3]

Carpenter, James, *5th Ave Façade* NYC New York City

Colomina, Beatriz 'Photography', *Privacy and Publicity,* MIT Press 1996 (pp 80) [4]

Kahn, Andrea 'The invisible Mask', *Building Drawing Text* 1993 Princeton Arch Press (pp 86) [5,9]

Moholy-Nagy, L. "Space -Time Problems", *Vision in Motion* Paul Theobald & Company 1961,(pp 244) [1]

Rowe ,Colin and Robert Slutzky, *Transparency: Literal and Phenomenal*, Birkhauser 1997 [6]

Pallasma, Juhani, *The Architecture of Image.- existential space in cinema*, 'The Poetics of Image - Andrei Tarkovsky: Nostalgia', Rakennustieto oy Helsinki 2001 (pp 91)[8]

O'Neill, Pat, *The Decay of Fiction* 2003

SANAA, *Centenary Exhibition of Arne Jacobsen*, Copenhagen 2002

Sejima, *O-Museum*, Lida Japan 1995-99

Tauttenbury, Kester 'Echo and Narcissus', *Architecture & Film*, Architectural Design, London 1994 (pp 35) [2]

Tarkovsky, Andrei *Sculpting in time - Reflections on the Cinema*. The Bodley Head, London 1986 (pp 110) [7]

Tati, Jacque *Playtime* 1968

Tornatore, Giuseppe, *Cinema Paradisio* 1988

Wachowski, Andy &Larry, *The Matrix* 1999