ARCHITECTS ON ARCHITECTURAL FILM AND ANIMATION

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Abstract. As part of our inquiry about the practice of architectural film and animation and where it might go, this paper presents the results of interviews with architects on space, and on animation. We present their rich sense of space, and explain how they structure architectural film and animation. We found that architects wish to convey the subjective impact of design, but don't know how to connect film editing techniques to architectural ends. Computational design could fill this gap with, for example, drag-and-drop editing patterns.

Keywords. Architectural film and animation; concepts of architectural space.

1. Introduction

"Architecture is frozen music" — JW von Goethe. Movement through and around architecture plays the music. Architects use moving images to document, and to communicate data and experience. Not only do moving images include moving objects and flythrough animations, they also include sequential still images (drawings, renderings, photographs). Use of moving and sequential images is part of architectural practice. On one hand, architects have a rich sense of space, but they vary widely in their sophistication with respect to the craft of architectural film and animation. On the other hand, filmmakers and animators bring the sensibilities of their own profession to the representation of architectural space. We expect that a comparison of these two groups will help us to understand where architectural film and animation can go. We hope this understanding will (1) assist architects to specify filmic

representations of architecture; (2) provide further inspiration for creativity in architecture; and (3) inform computational design of unfilled gaps in software support for design.

This paper presents the results of our exploratory question "What do architects think about space, and about architectural film and animation?" Our interviews with filmmakers about how they handle architectural space are ongoing at the time of writing. Thus any comparison of how architects versus filmmakers approach space is for the future. Nevertheless, this paper presents the ideas of space as spoken by 17 architects, and shows that the practice of architectural film and animation has yet to reach its zenith.

2. Background and methods

We contextualised our research within previous work on architectural animation, like Rafi's (1998) study of architectural animation in architectural firms, and works of Kwon and Nagakura (2004), Alvarado (2008), and Chatzitsakyris and Nagakura (2005), which associated camera movements with spatial forms. Our overall plan was to interview both architects (some with experience in architectural film and animation) and filmmakers (mostly ones who have portrayed architectural space). This current paper, however, will focus on the concepts of architects in regards to this matter.

To understand filmic representation of architectural space, especially by architects, we also need to understand the concerns that architects have about space. We initially devised a collection of parameters that appeared to govern architectural film and animation, and gathered an extensive list of spatial archetypes that have two aspects: form and experience. That is, we selected forms that can be revealed sequentially by means of camera movement. We found archetypes in architectural literature, and in film. The film shots provided further examples of archetypal forms, and supplied them with associated typical camera movements.

The interviews with architects proceeded as follows: (1) they viewed a set of images, films, and animations depicting buildings and spaces; (2) they were asked to describe the spaces and explain what they thought was important in the viewed content; (3) they were asked to describe how they thought the spaces should be animated or filmed; and, finally, (4) they were asked to recall and describe experiences or films that left strong impressions of space. The architects were encouraged to express whatever they wanted to say on the subjects of space, and space in film. Table 1 shows where the 17 architects received their architectural education, and other architecture-focused experience.

The analysis was by *qualitative description* (Sandelowski 2000). Note, an inherent property of semi-structured interviews is that not all topics are discussed at the same level of detail with all of the participants. Resulting concepts rely on the rhetorical power of their evidence. We read the interview transcripts for the architects' remarks on (1) space, and (2) architectural film and animation. Then, within these two categories, we inductively grouped and arranged the remarks according to concepts that they seem to exemplify. We also read the transcripts for remarks that could be examples of the use of our spatial archetypes.

TABLE 1. Architects Interviewed.

	Architectural Education	**Other Architecture-Focused Experience**
RL	Canada	Animation, education
RW	USA	Education
NS	Pakistan	
RS	Mexico	Some animation
JP	Serbia	
DM	USA	Experimental animation
MK	Canada	
MM	Iran	
VS	India	Little animation
YN	Saudi Arabia	Animation, graphic design, education (architecture and design firm owner)
EM	Saudi Arabia	Education
SM	Saudi Arabia	Education, animation for several projects
SG	Saudi Arabia	Education
AH	Saudi Arabia	Education
BS	Saudi Arabia	Education
RK	Iran	Photography, some animation
DQ	USA	Photography, animation

3. Results

We first present our findings on architects' concepts of space, and then we present their approach to animation, where there is general consensus, and on what they differ.

3.1. ARCHITECTS ON SPACE

Overall, the architects blended their discussion of space with consideration for designed dialogue, context, and non-geometric ideas of space that contrast our spatial archetypes. We take all these concepts to be inseparable aspects of *architectural space*.

Designed dialogue: Architects will subjectively *read* a building for its design, interpreting from the building's manifest forms the organising system that generated it, such as the sense of order, or whether it adhered to minimalism, and so on (RW RL JP). The participants were generally unapologetic about their subjective approach. To them, a space was a designed dialogue between its various qualities—old/new (RS JP MK), inside/outside (MK NS RS JP MM DQ), private/public (RS), solid/transparent (JP DM MK), intimate/ open (SM), natural/man-made (NS), material qualities such as texture and reflection (NS AH), and conventional/unconventional (RW JP). Responses varied when the work was a structural masterpiece (JP), or sacred (SM BS SG), exhibited glory and pride (EM), or inspired "awe" (MM YN SM). They were also aware of social contrasts that some works involve, like the co-presence of rich and poor in public places (EM). The modes of dialogue include juxtaposition, and sequential revelation (SM)—where travel through a space can conceal and reveal other spaces. The architects were sensitive to whether a space is best presented in terms of textural experience or as conceptual form (RW MM).

Context: Their description of architectural spaces usually included the context of the spaces. Context includes historic background (RS), the purpose of the building (RS MK), and the site where it is located (RS). The designed dialogue may include the context; the building's views may frame the exterior (MM); its forms may play off the landscape (DM); a tiring walk up a hill to get to a building is part of the character of the building (AH).

Architectural space: Form in space was, unsurprisingly, central in the architects' concerns. Architects themselves will claim that they think primarily in terms of disembodied, abstract, functional, geometric forms and 3D models (DM MK SM). Nevertheless, they were concerned about far more than pure geometry. For example, they brought a variety of terms to bear on the notion of scale. They talked of scale as being a means to understand relation (DQ), such as the difference between human scale (DM) and small scale (SG AH BS) or urban or architectural scale (DM). Scale shows magnitude (DM). It can get larger as someone approaches it (DM). RL talked about the Taj Mahal of Agra seeming close enough to touch, as seen and framed from inside the main gate, because (1) geometric alignments in perspective form flat-looking patterns, and (2) only blue sky can be seen behind it, so it "forms its own

horizon." Then, as one steps forward out of the gate, breaking the alignments and seeing the surrounding buildings, the Taj becomes both huge and far away in the landscape. YN talked about scale invoking dread, while SG, AH, and BS (interviewed together) mentioned scale as experienced versus the sense of scale as conveyed through TV.

There must be "space to breath" (NS). Space includes distancing and placement (EM), and has a perspective effect (RL MM). Not only must different spaces be recognisable, their social purposes must also be recognisable (RL). How people circulate through spaces is important, and must be self-evident to them (MK RL)—"the lines lead you" (JP). RL talked of space being generated by area around visual points, and lines by eye movement from point to point. The experience of architecture has key moments (RL MK DM) and key spaces (MK). Lighting is crucial to the experience of space (RL SM MM). All the architects talked of details as an integral part of the experience of a space; for example, the details of how things come together (DQ). Memory is also an aspect of experiencing space, not only to navigate and appreciate the contrasting qualities in succession, but also to return to a place much later to find that it has changed, and to try to remember was it was like before (AH).

Spatial archetypes: Our spatial archetypes comprise *open space*, *landmark*, *shaft*, *court/rotunda*, and *path*, *grid*, *labyrinth*, *shaft*, and *court/rotunda*. Path includes *arcade/nave*, *tunnel*, *clearance* (movement down a path from a constricting space to an open space), *layered* (a path that is accessed visually, with a beginning here, and an end there, with framing layers in between).

We found that when the architects referred to spaces that could be classified according to our archetypes, they spoke in terms of subjective, experiential, and (especially) emotional effect. For example, RL on the Ayah Sophia approaching a sense of sublime *open space*: "The size gave the feeling of awe. Made me feel like nothing. Nations and empires, leaders have come and gone. And I am nothing. The dome sits on skinny legs, and I felt a totality of space." Similarly, SM mentioned how a closed space will frame an open space (*clearance*), on one hand the closed space giving a sense of security, and on the other hand giving a sense of "wow" when one passes into the open space. Both JP and BS recalled *tunnels* that were used to deliberately evoke disturbing emotions. EM talked of *layered space* as being still.

While most talked about *path* in the context of architectural film or animation, RL explicitly talked about path for the design and experience of architecture. He drew on a white board the path between a gate to the Taj Mahal to the Taj itself. He laid down the significant points on the path, from right (the gate) to left (the Taj), then laid down a layer of information on those points, from left to right, and then laid down another layer of information, from right

to left. Similarly, his video of the same, comprising a sequence of cross-faded photographs of the Taj with overlaid graphics, passes over the path sequence twice with different graphics each time (Smith 1994).

3.2. ARCHITECTS ON ARCHITECTURAL FILM AND ANIMATION

Purpose driven: Because an architectural film or animation is not the prime artefact, the effort spent on it and its style suffices to serve its intended outcome (YN DQ). For example, an animation might be used, to give an idea of a building's shape (*turning table-top* animation) (YN), or, to impress a potential client that the architects are the right people to do a job (music video) (DQ), or show the geometric or computational techniques that produced the architecture (RL MM). YN associated realism with final marketing—"selling it on a map is difficult", and told of a case where someone abused realistic animation to sell real-estate that didn't exist. Many people have difficulty imagining 3D buildings from 2D images (YN NS DM). YN said that they don't do big animation for commercial purposes, only for internal use to understand design. EM used animation only for big, complex projects: at the conceptual stage for designers to visualise, criticise, and modify, and at a developed stage for clients to see textures and materials.

Building as artefact vs. building as experiential: The filmic treatment of a building depends both on the purpose of the animation and on the building. As mentioned in the section on space, the architects were sensitive to whether a space is best presented in terms of textural experience or as conceptual form. For example, RK talked about treating the Guggenheim museum as an artefact, highlighting its pure forms before moving into details. He contrasted this approach with treating a house more experientially.

Dominant approach for building as artefact: The dominant approach to portraying a building as an artefact is to first show the overall form—framing the building, its shape, on a large area by means of a bird's eye view (DM EM JP), focusing on scale, grandeur (AH), key structural things (MK) like façade, roof, closed or open spaces, contrasting spaces (DM), and symmetry (RK). Then the camera graduates to a human-level first person point of view to enter the building through an inviting entrance (MM RK), and shows key impressive design features and details (MM AH), focusing on certain natural responses, like when you look up at a ceiling (EM MM), or down at a floor (EM).

Diverse camera use: The architects demonstrated diversity in their discussion of how to use the camera. RM thought flythrough should have both high and low angles, whereas SM eschewed bird and ant angles as being "aesthetic" and having no emotional effect. RK claimed that wide angles should be used to show space, and still camera to show small spaces. SM and RK advised to

use many points of view and angles. The camera can move or zoom to show details or make something swell to fill the frame (DM JP MK DQ), and it can dwell on deep perspective (NS). Time lapse can show changes and uses of the environment (DM). The form of the space can constrain the camera, for example, a camera will likely follow a spiral and or rise up and down in the Guggenheim museum (DM). "Cuts are inserted when the space is boring, like a corridor" (RK). A presentation may also include 2D images, likely starting with the façade (EM).

Dominant smooth camera: They generally desired to make the camera smooth, if not continuous (AH DM NS); cuts should be minimal, and made to feel smooth. Yet the camera speed should exhibit variety (NS DM). Pacing is important (AH); RL talked about timing camera and action to coincide with the architectural features on which it is staged.

Camera path: Generally, the camera will follow a path (AH MM SM), that is a sequential revelation by means of a "realistic" *walkthrough* that observes a "logical order" of key shots (NS JP DM RK MK); a human does not walk through walls (SM NS MM) (though DM talked about violation of the natural my walking the camera across water, and portraying a real space but from a dream point of view). Nevertheless, the actual sequence of spaces can be somewhat arbitrary in practice (observation of SM's work), or driven by the need to be dramatic, by, say, moving from a small space to a large one (EM). They differed on whether to be complete, or show samples of the spaces: "For us, we focus on the customer of a villa. I show him how beautiful the building is. I won't follow a path. I can immediately go to the bedroom and focus on the view. But if I'm doing this for a contractor or a bigger company, I have to show the path and all the spaces" (AH). In contrast to following a path, RW talked about a focus on moments—with sequence being somewhat arbitrary.

Desire to portray designed dialogue: When talking about architectural film and animation, the architects expressed the desire to portray the rich dialogue between a building's various qualities (explained in the section on space) (NS JP DM MK EM RK RS SM DW MM), and emphasised texture and light (RW MM JP AH). Mystery and spirituality were also qualities of interest to be portrayed (NS MK AH EM), via dim lighting, night, twilight, low ceilings, labyrinth, secret doors, and sound. Finally, some were interested showing by animated transparency what could not be normally seen (RL NS DQ).

Use of human figures in space: "People are props" (DM). "Viewers can't imagine or understand space without seeing people" (RK). They provide aesthetic realism (SM RK MM), and scale (AH). They are used when the place would look dead without them (AH). They are shown at particular moments when they interact (DQ), or are doing meaningful actions (SM AH). One should

show their flow (NS), eating and drinking (JP), shopping (MK), happy in a spa (RK), romantic scenarios of friends and couples (SM). However, people can distract from the space (AH). Don't show too many of them (SM). MM and EM expressed discomfort with showing any people in private or semi-private areas (MM EM). AH said they should not be used in religious buildings. "If you want to show something as a spiritual place, you should remove this crying baby sound. … Don't show people lying down, or beggars" (SM). AH was interested in using people to show the effort of walking uphill to get to a particular building. In contrast to "people as props", JP suggested interviews with residents, and MK suggested a tour given by a receptionist.

Figure 1. Jianbbei atrium cut away, courtesy Davis Marques.

Spatial archetypes: Path was the most obvious spatial archetype that the architects indicated, but here as a camera path as opposed to a feature of architecture. They widened *objects of interest* (a subcategory of *landmark*) to include *narrative objects*, such as moving curtains suggesting blowing wind (EM), suggestive sounds (AH), and "*atmosphere setters*", such as a flying birds (SM).

Critique of 3D architectural animation: DQ critiqued 3D architectural animation, pointing out that 3D animation rarely gives more information than a still image, and spoke of the unfounded desire for 3D animation and flythrough as arcane. "If I stand at one street corner, and I walk down the street looking at a building, I probably understood the shape, form, organisation, material, texture, and the exterior in the first few seconds. I didn't need that whole walk-along." Flythrough has redundant information, whereas the goal is to maximise the information from an animation. Furthermore, although "it is easy now to do realistic rendering, that is not necessarily a good thing; it is an issue of focus and communication." 3D animation is rarely worth the significant cost and effort. (Due to lack of skilled people and considerable

cost and effort, EM outsources architectural animation). DQ favours a mixed approach to telling stories in space that relies primarily on cross-faded stills usually producing a "30 second quick narrative through a series of views of a project." Animation (mixed approach) "unfolds experiences" that "have an element of time, that necessitate using animation and video to talk about how things change as one interacts with different pieces within the architectural space" (DQ).

4. Discussion

These are some of the recommendations we found that address the dialogue between the way architects think about space, film and animation:

Better understanding of the mismatch between what architects desire to show and the film techniques that they use: As experts in their field, architects showed a nuanced understanding of architectural composition and a deep concern for how people experience it. This understanding seems to defy easy categories, though our initial spatial archetypes were recurring terms. We thought that they would know less about film technique than what we found. We presume that the their approach to animation is what they think is effective. Unsurprisingly, there was a mismatch between the things architects said about architecture (the rich designed dialogues) and how they spoke about rendering architecture as a moving image— architects don't know how to connect film techniques to architectural ends. Now we have a better idea of that mismatch. To illustrate, architects think that a building should be presented in a logical spatial order. However, this logic turns out to be somewhat subjective. For example, architects think it is important to capture the "wow" of moving from a constricted space to an open one. That is, we believe that architects are more interested in showing the subjective impact of a design than showing one space then another just because they are beside each other. In many cases, subjective impact is best communicated by editing, but very little was said about editing (e.g. shot/counter-shot, cross-cut, split screen) or filmic composition (e.g. synchronic, diachronic, metonymy). Similarly, architects are very interested in including the dialogue between a building's various non-spatial qualities (old versus new, memory, recognisable social spaces, awe, mystery), but said very little about how they would do this.

Need filmic composition and editing: There are filmic ideas to explore in the context of architectural film/animation. For example, AH's interest in using people to show the effort of walking uphill to get to a particular building raises the notion of Gilles Deleuze's (philosopher of film) idea of the *time image*, in which we can see at a glance, say, someone's exhaustion, and thereby get an image of time, without having to view a whole episode. Similarly, RW's sug-

gestion to focus on moments was intriguing, because moments can become disconnected in time, and edge toward a kind of surrealism, like in Fellini's *Juliet of the Spirits* (1965)—a walkthrough can become the memory of a walkthrough, where the mind is free to skip around; disconnected moments can coalesce around special objects.

Need careful handling of people: Architect's seem to rely on mythical or shallow portraits of what people are like and do, in sharp contrast to, say, the studies of behavior in museums, or the studies of cooperative work. What would more careful portraits of people in architectural spaces reveal?

Drag and drop editing: CAD animation tools make it easy to run a camera along a spline curve. But, for architects to portray their nuanced understanding of architectural composition, and people's experience of it, they also need ready-to-hand editing tools. We cannot expect architects to become filmmakers, therefore they should also have easy access to libraries of example editing and composition. Imagine a scenario where an architect drags and drops an editing pattern onto a selection of spaces, and the system figures out how many cameras, how to move them and cut between them, how many frames to render, what lights and details to use, and more.

Acknowledgements

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