

## ANALYSIS OF FILMMAKING TECHNIQUES FOR ARCHITECTURAL ANIMATIONS

Rodrigo Garcia ALVARADO

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Digital animation provides a new possibility to exhibit architectural projects, but it must address some features to properly show the building design. This paper (1) exposes a review of diverse moving images presentation of architectural environments in order to identify principles to be considered when display building projects through digital animation. It studied scenes of twenty productions; eight famous movies from different ages, like examples of major filmmaking efforts; six documentaries of historical buildings, as specific productions targeted to display architectural environments; and six digital animations remarked or prized in recent contests, like examples of new technologies in the professional realm. The paper describes in particular the scenes of two movies ("Metropolis" and "Bladerunner"), one documentary (on "Basilica of San Marco", Venice) and one digital animation ("Urban Prototype"). The review was based on three scales of cinematographic representation: the composition of image, the takes or sequence of images, and the general montage of scene. Making a record of takes during the sequence, extracting some frames, getting the point-of-views and drawing the environment or building filmed. It analysed graphic properties of images, cameras' location and movements, duration of takes, sounds, transitions, order and meanings developed according overall production and cultural situation. The main characteristic revealed was visual fragmentation of the display of architectural environments, expressed in the graphic diversity right through different takes to the scattering of camera views in the environment filmed. However, the presentation of place is sustained by a perceptual and narrative integration during the sequence. Therefore, the analysis identified cinematographic characteristics that could be used in animated presentation of architectural models to develop an expression of both spatial conditions and meanings of the design. Besides it suggests that exhibitions on time should evolve from a mere chronological prolongation to become an expressive construction.

## INTRODUCTION

Digital animation provides new possibilities to exhibit architectural projects. 3D-models of building designs can be displayed through animated views, composed by sequences of images through the same optical phenomena as cinema and television (Kolarevic, 1998). These visualizations usually involve a tour around the building model or through its interior. But architectural professionals do not have experience in dynamic presentations and the animation software concentrates on modelling, appearance and moving elements, then usually architectural animations are brunt and quick exhibits. There is a lack of specific guidelines for creating animated presentations of building projects. Several authors have suggested studying the ways that cinema show architectural environments, mentioning certain films or technical concepts (Bridges, 1993; Mark, 1997; Temkin, 2003), although by without an exhaustive review of the features involved. This paper exposes an analysis of diverse filmic productions in order to identify principles to be considered when displaying architectural projects through digital animations.

The analysis regarded commercial movies, since they synthesis main filmmaking experience. In addition the study also it studied a number of documentaries on buildings in order to explore productions more specifically targeted on displaying architectural environments. It also reviewed recent digital presentations so as to include the incipient use of new technologies. When selecting the films to be studied, it consulted books dedicated to cinema and architecture (like Neumann, 1986; Ramirez, 1986; and Vila, 1997) and it chose the frequently mentioned films at 15-20 year intervals to represent historical evolution. Documentaries were chosen from some libraries and universities, generally dating from the 1980s onwards. Attempts were made to select documentaries with a variety of relevant themes and origins, and some were borrowed from cultural collections or made by specialists in architectural exhibitions. Digital presentations were compiled from those awarded prizes or special mentions in some recent competitions (**Table 1**).

In total, eight films, six documentaries and six animations from different epochs were selected for review. In the films, the first scene showing one of the most used architectural environments was reviewed. Analysis was based on three scales of cinematographic representation as set out in diverse technical manuals (Bordwell and Thompson, 1995; Katz, 2000; Ward, 1997): the individual image, the sequence of images or takes, and the general montage of scene or presentation. In the case of the individual image, aspects such as format, composition, balance, depth of field, size of shots, visual angle and pitch were examined. For the takes, time length and camera movements were reviewed. Finally, for the montage, attention was paid to the set of takes, continuity, distribution of viewpoints, sound, graphic transitions, narrative development and meanings involved.

In order to carry out the analysis, firstly, all productions were recorded in a similar digital format. In each scene or presentation the takes were then identified (through recognising abrupt changes of views), and their respective time lengths and movement examined. Still images representative of the initial or middle part of each take were subsequently separated out in order to study visual composition. Graphic treatments were used to review formal configuration, balance, contrast, etc. Other cultural and technical information was also collected on each production, particularly other scenes in the film in the same places or information

about the buildings or projects shown. Drawing plans and sections were collected or made of each filmed environment. Then, all camera positions were identified through tracing of the perspective from still images of each take. Several camera positions were identified during takes with movement in order to determine the camera trajectory. Lastly, graphic schemes were drawn up, summarising conditions of composition, length of takes, distribution of cameras and a narrative analysis, reviewing the visual resources used and the cultural precedents in an attempt to understand the technical principles and meanings applied.

	<b>Movies</b>	<b>Year</b>	<b>Director/Producer</b>
1	Intolerance	1916	D.W. Griffith
2	Metropolis	1927	F. Lang
3	Citizen Kane	1941	Orson Wells
4	Mon Oncle	1958	J. Tati
5	2001, Space Odyssey	1968	S. Kubrick
6	Blade Runner	1982	R. Scott
7	Total Recall	1990	P. Verhoeven
8	Episode II, Attack of Clones	2002	G. Lucas
	<b>Documentaires</b>		
9	Ville Savoye	1973	BBC
10	Saint Marcus	1985	Bauerischer
11	Chapel on Water	1989	M. Blackwood
12	Royal Palace of Madrid	1992	Planeta
13	Robie House	1992	Planeta
14	Royal Palace of Prague	1992	Falken Verlag
	<b>Animations</b>		
15	Pabellón de la República	1992	Soft
16	Higway Station	1998	Stephen James
17	Urban Prototype	1999	Takuji Maeda
18	Insurance Building F.L.Wright	1999	DiSimone and Kosinski
19	RockBridge Church	2001	Hirahara and Vidalle
20	The Cathedral	2002	Platige

Table 1. List of productions studied.

## EXAMPLES OF ANALYSIS

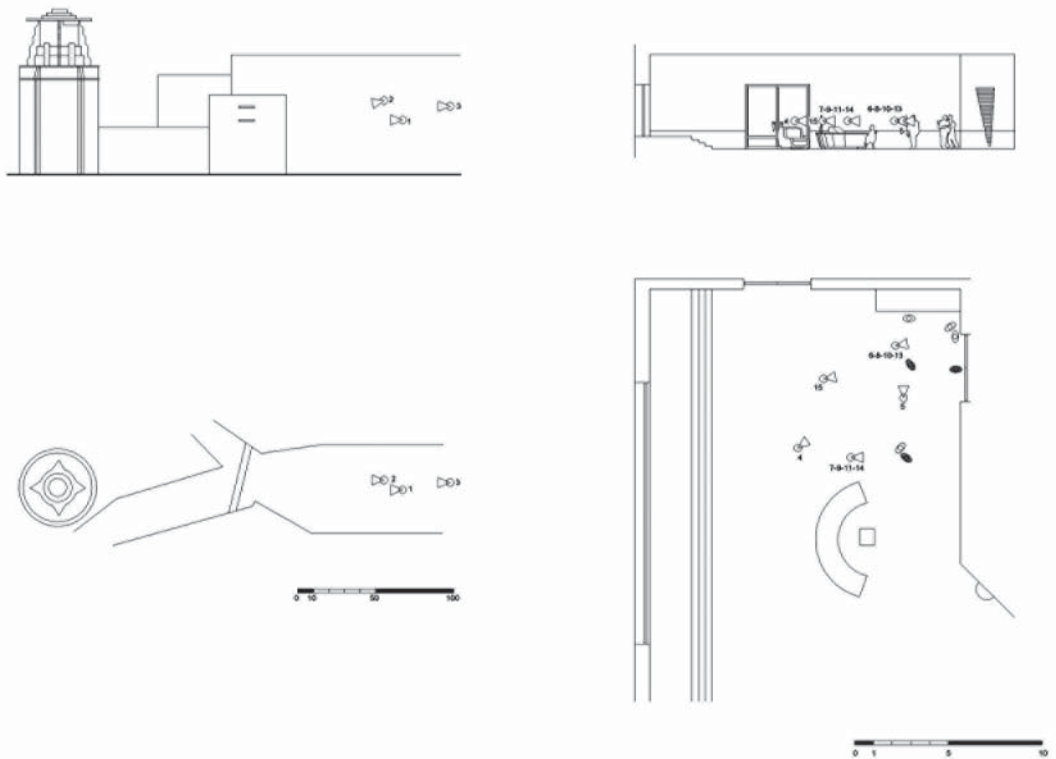
### METROPOLIS, FREDERSEN'S OFFICE

This film was directed by Fritz Lang in 1927 and it has received extensive recognition for its display of architectural environments (Neuman, 1986; Herranz, 1998). It portrays a hectic futuristic city, divided between the workers who labour and live underground and the dominant classes dwelling in the upper levels. The office of the 'master' of the city John Fredersen, at the top of a big building, is one of the most frequent locations in the film. The first scene to show the office begins with three fixed takes of the urban environment at the base of the building (**Figure 1**). The scene then develops over twelve shots, with only the first showing the spacious room with the main character walking. The others are close-ups of the actors, focusing on their exaggerated gestures typical of silent cinema, with one brief caption that drastically summarise the dialogue. The scene depicts the distressed arrival of Fredersen's son who has just witnessed an accident underground. One assistant comforts him but the father remains immutable. The images have central compositions, with alternating figures and emphasised volume by lighting contrast. Camera positions change abruptly from distant shots of the building to the office (**Figure 2**), without establishing any relationship between the spaces and



Figure 1. Takes of Metropolis scene.

Figure 2. Plan and Section with positions of cameras in the scene of Metropolis.



characters, or using any camera movements (even though movements have been used since 1910). The length of takes swings from 20-26 seconds (at the start and finish of the film) to 2-4 seconds in several intermediate takes. The verticality and stability of the buildings in the first takes seems to relate with the impassive attitude of Fredersen, and the son's agitation with the urban traffic. In any case, this limited spatial presentation allows expression of spatial qualities of monumentality and powerlessness, such as have linked with a criticism of technological development, ideologies of the masses and capitalist domination of the epoch (**Figure 1, 2**).

#### BLADERUNNER, TYRELL CORPORATION

The concentrated spatial display of *Metropolis*, could be due to the technical limitations of the time of silent movies. However, *Bladerunner*, another film well-known for the environments shown (Neuman, 1986; Herranz, 1998), but made over fifty years later, presents fairly similar characteristics. This film, directed by Ridley Scott in 1982, tells how a police officer, Deckard, must hunt down some human-like robots (called 'replicants') in a representation of Los Angeles in 2019. The headquarters of the Tyrell Corporation who make the robots is one of the most used locations in the film. The first scene in this building starts with several in-flight takes following Deckard's ship, alternating with close-ups of his face. These are followed by some thirty views of a darkened reception room, with general takes alternating with shots of the characters; including Rachel, a young assistant with whom Deckard holds a blunt dialogue.

Composition of takes also tends to be simple, with shapes that change visual weight at the sides, some diagonal forms and low pitch of camera, emphasising depth of field with scarce illumination. Exterior takes follow an approach along a helix trajectory, but only in short parts. Interior takes use the space more extensively, but without any camera movement and barely showing the general space, rather focusing on the protagonists. The length of takes is more repetitive, in series of several seconds each, with few longer shots. The overall spatial impression is gathered from several different viewpoints, not following a continuous trajectory, but generally progressing from the exterior into the interior. The camera focuses on one half of the building and one specific room within, with no attempt to show where they are located or how the characters arrive. All the scenes in the films studied share this characteristics, with less time to each take in most recent movies (and bigger amount of takes per each scene), and increasingly sophisticated compositions and movements.

The montage in this case seems to contrast Deckard's resignation with the magnificence of the building and the room, both of them using a mixture of references to ancient civilizations and futuristic design. The visual narrative undoubtedly portrays the individual up against the institution (as also explored in *Metropolis* and other movies), but suggesting technological disillusion and redeeming humankind in an allusion to the oil crisis and social disappointing of the time (**Figure 3, 4**).

#### DOCUMENTARY ON THE BASILICA OF SAN MARCO, VENICE

The concentration of the shots and spatial simplicity of the aforementioned scenes can obviously obey the narrative requirements of the films. Nevertheless, documentaries dedicated solely to displaying buildings also share some characteristics. One such example is a presentation of the Basilica of San Marco in Venice, Italy, taken from a collection of cultural videos widely distributed around the world and made by the Munich company Bauerischer Rundfunk in the 1980s. The building is displayed



 16:28 <b>Toma 1</b> 2 seg. <i>Dolly In</i>	 16:30 <b>Toma 2</b> 3 seg.	 16:33 <b>Toma 3</b> 4 seg. <i>Travelling Der.</i>
 16:37 <b>Toma 4</b> 2 seg.	 16:39 <b>Toma 5</b> 9 seg. <i>Dolly In</i>	 16:48 <b>Toma 6</b> 2 seg.
 16:50 <b>Toma 7</b> 13 seg. <i>Dolly In</i>	 17:03 <b>Toma 8</b> 3 seg.	 17:06 <b>Toma 9</b> 2 seg.
 17:08 <b>Toma 10</b> 2 seg.	 17:10 <b>Toma 11</b> 2 seg.	 17:12 <b>Toma 12</b> 4 seg.
 17:16 <b>Toma 13</b> 2 seg.	 17:18 <b>Toma 14</b> 1 seg.	 17:19 <b>Toma 15</b> 4 seg.
 17:23 <b>Toma 16</b> 4 seg.	 17:27 <b>Toma 17</b> 1 seg.	 17:28 <b>Toma 18</b> 4 seg.
 17:32 <b>Toma 19</b> 3 seg.	 17:35 <b>Toma 20</b> 3 seg.	 17:38 <b>Toma 21</b> 9 seg.
 17:47 <b>Toma 22</b> 3 seg.	 17:50 <b>Toma 23</b> 5 seg.	 17:55 <b>Toma 24</b> 6 seg.
 18:01 <b>Toma 25</b> 4 seg.	 18:05 <b>Toma 26</b> 3 seg.	 18:08 <b>Toma 27</b> 4 seg.
 18:12 <b>Toma 28</b> 5 seg.	 18:17 <b>Toma 29</b> 4 seg.	

Figure 3. Takes of Bladerunner's scene.

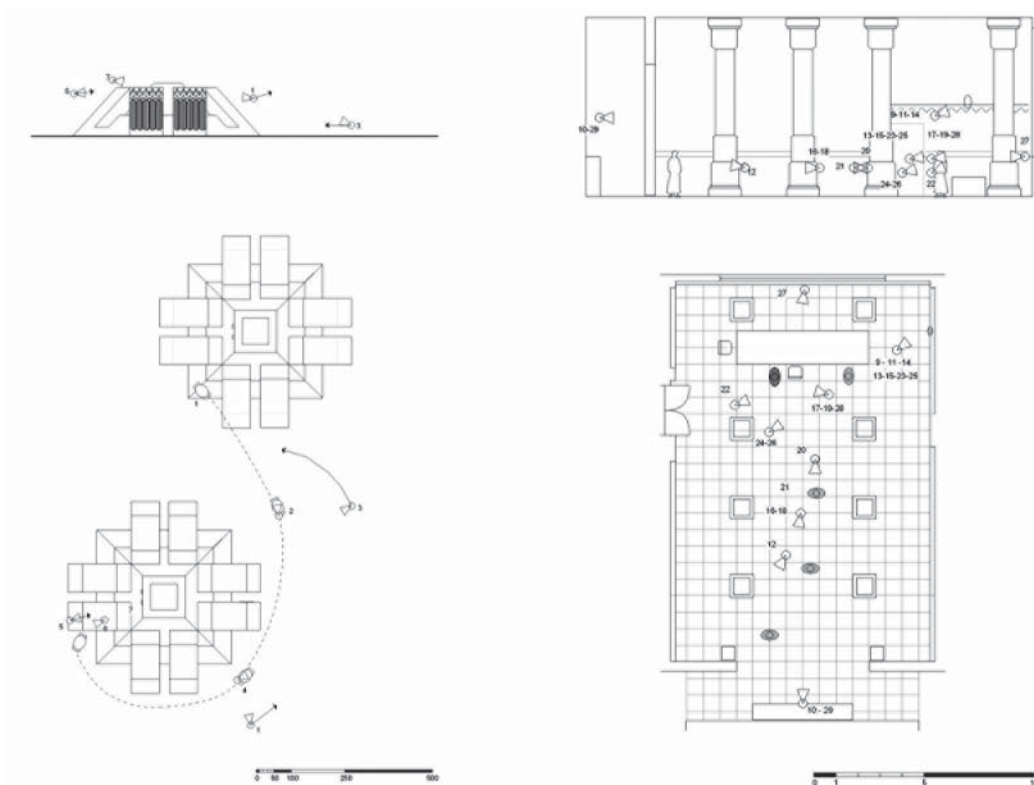


Figure 4. Positions and movements of cameras in *Bladerunner's* scene.

in seventeen takes lasting a total of three minutes, a length similar to the film scenes analysed. It starts with several exterior views of the building, followed by some interior shots and finishing with a few exterior close-ups. Camera movements are only used for the interior and these are restricted to slow, strongly angled rotating takes that pan in a circular motion round the cupolas.

The takes display a varied and careful composition, with distant elements used on images to emphasise depth of field. Angle shots in various directions are used, but in certain sides or parts of building. No takes are repeated although some are similar to others. Several shots show small moving elements (birds, lapping water, etc.) that catch the attention and suggest depth. Camera positions are organised into an approaching sequence but do not follow any strict tour. Interior views are only in the centre of the main nave; and the final takes focus on the roof and small details of the façade. Most shots are at eye-level. Takes vary in length and the longest are for the interior rotating views. The montage displays graphic variety starting with the silhouette of the tower and using the cupolas as a reiterative element. This visual display is accompanied by a voice-over describing various features of the building that falls silent during the longer takes, like leaving us alone to admire the monumental interior. Thus, an alternation between the objective and the subjective narrative is achieved in the presentation. The presentation tries to simulate an ordinary visit, emphasising only a few aspects of the building such as the urban landmark provided by the tower and the astonishing effect of the cupolas. Surprisingly, there is no image of the facade looking onto the plaza or the cross-shaped plan, considered to be the basilica's main architectural innovation (Grandese, 2001). These aspects are mentioned in the commentary but are given little emphasis, with focus placed on other more qualitative or living features (Figure 5, 6).

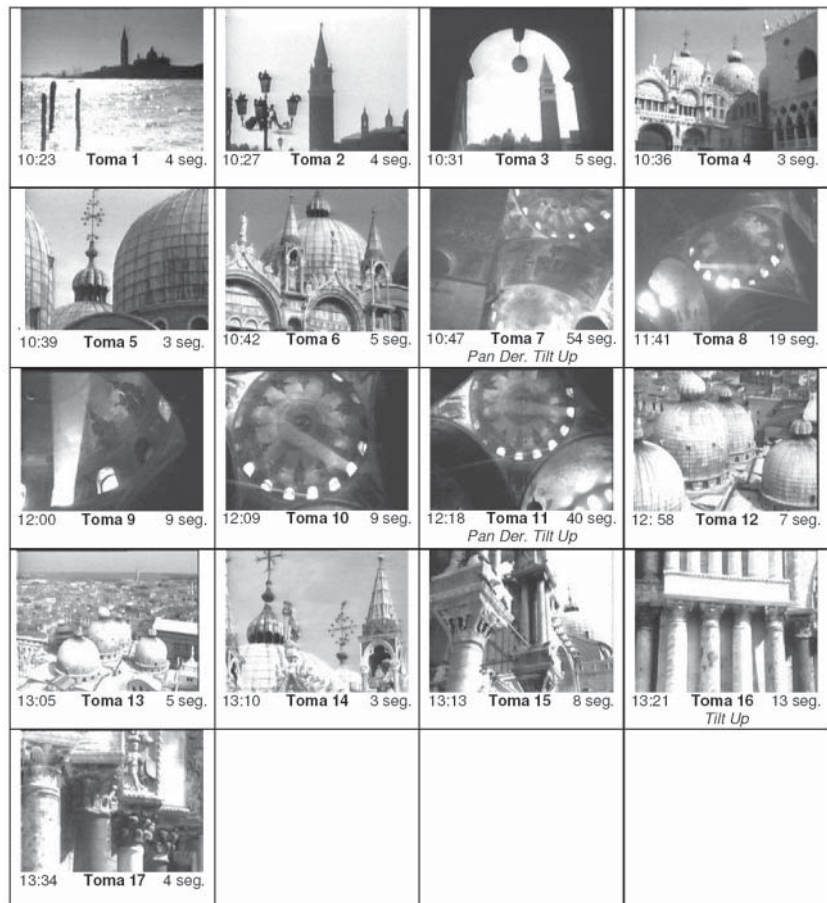


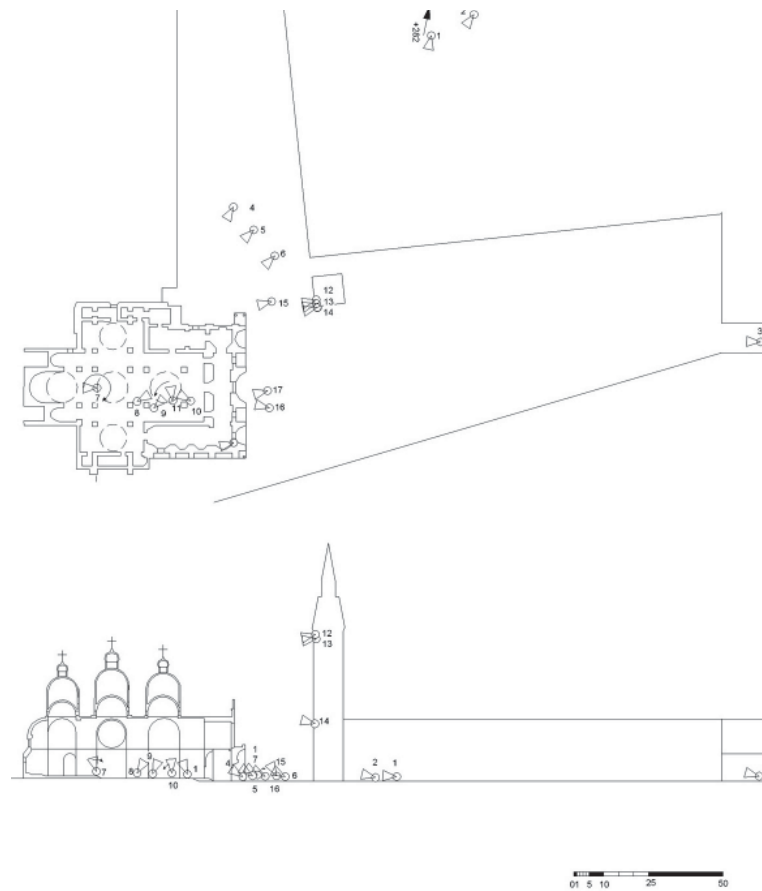
Figure 5. Takes of San Marco's documentary.

#### ANIMATION OF URBAN PROTOTYPE

Recent digital presentations frequently display appealing graphics and special effects. However, in the Autodesys competition in 1999 one exhibit in particular stood out as a particularly effective display of the architectural proposal despite using a simple model; also the exhibit in question was given special acknowledgement and awarded a local prize. The presentation was the final project for a Masters' degree in Architecture by Takuji Maeda from Ohio State University with guidance by Lisa Tilder.

The presentation has ten takes lasting a total of almost three minutes. The first shot is a night view of urban traffic, followed by the project title and general ideas of the design. An external view of the model is then shown, with moving elements and written information superimposed. The presentation continues with a couple of aerial takes looking down upon the roof elements. This is followed by an extensive pedestrian tour through the interior of the project, progressing upwards and stopping at certain points where partition walls slide away. The presentation closes with simultaneous views of sections, plan layouts and timetables illustrating space occupation during the day, followed by the final credits, all accompanied by background music. Like the previous examples, views are organised from more general exterior shots towards the interior, although spatial range is more limited due to the small size of the project, and also avoids broader references or details. Besides, the sequence lacks the variety of shot directions and lighting skills of the films and documentaries. Angled views provide perspective while also





**Figure 6.** Positions and movements of cameras in San Marco's documentary.

attempting to show all the volume (despite the tight-fitting location) and pass through the whole interior, a frequent strategy of architectural animations. This approach succeeds in displaying the main features of the project and progressively revealing the intentions of the design, using a variety of visual techniques with simple, almost schematic digital modelling. The project thus constitutes a good example of a presentation of an architectural design that manages to portray the situation and specific attributes of the project without expending excessive amounts of work on sophisticated developments (Figure 7, 8).

### SUMMARY OF FILMMAKING TECHNIQUES USED IMAGE

The images predominately use a 4:3 horizontal format, although the most recent films and animations tend to opt for more panoramic proportions. However, the latter is not relate to more visual information (bigger shots or more elaborate compositions), but seem rather to look for strengthen the perceptual relationship with the viewer (by widening the perceived visual angle). Also, the visual composition show a predilection for edges and vertical axes (of characters and walls), with darker tones for the lower third of the shot, perhaps to conserve a sense of gravitational stability. The shapes tend to be slightly unbalanced, combining the need to centre the subject and make the image more dynamic. Figures tend to be placed to the left, seemingly to compensate more visual weight of right side, so viewpoints of the buildings tend to be closer to left faces. However, there is a tendency to alternate the angle or weight of consecutive shots, providing diversity to maintain interest. Besides, a hierarchy of shapes is

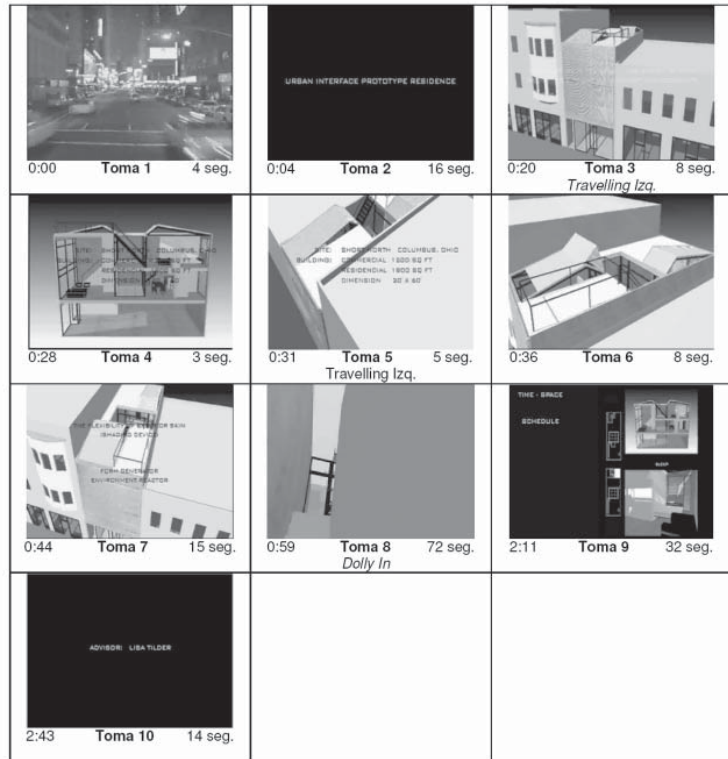


Figure 7. Takes of Urban Prototype Animation.

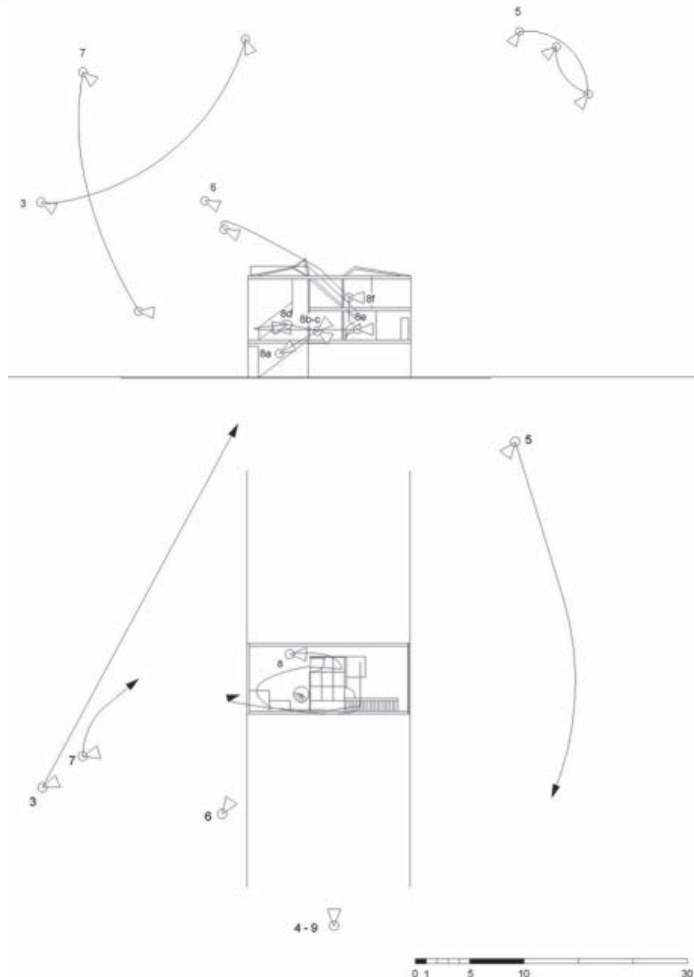


Figure 8. Positions and movements of cameras in Urban Prototype Animation.

expressed, establishing simultaneous focal points of interest through three or four different aspects (size, position, figures, contrast or movement) to ease visual understanding of images. Film scenes display more elaborate compositions, while documentaries show reduced parts of the buildings, both creating visual tension. This helps achieve a mix of constancy and variety that combine to deliver a tense continuity usual in movies (Hochberg and Brooks, 1996).

Depth of field is constantly used through perspective views or differently lit backgrounds, using only a few elements to express the spatial features of the place. Digital productions tend to illuminate the models evenly and use more frontal and general shots. Varied positions of shots in relation to the buildings or rooms is evident (i.e., a range of distances from the facades or walls), with a combination of long, medium and close-up shots presented in a progressive and alternating manner. These bear little relationship to the time length of takes, camera movements or scale of the places, serving expressive rather than informative purposes.

An average visual angle of 47.91 degrees is used, measured from the frame width and nearly equivalent to a visual cone of 55 degrees diameter or a photographic lens of 42 millimeters. This aperture avoids spatial distortion at a regular distance, although for building pictures or perspectives is recommended more wide angles (it is probably used to provide more visual information but demands in turn close and attentive observation). This predilection for a reduced visual field is probably motivated by the desire to avoid complex compositions and achieve a more distant position for the viewer, in line with to provoke a narrative sequence rather through design parts.

In the case of camera pitch, animations prefer high-angle shots (probably due the ease of locating aerial viewpoints on a digital model), while the documentaries focus on low-angle shots (due to the obvious difficulties in raising a camera above ground level). On the other hand, the films tend to use a pedestrian (eye-level) line of vision parallel to the ground or slightly pitched, which dilutes the consciousness of the viewer, providing a sense of omnipresence.

In all the productions analysed, the camera stands an average of 28.8 metres from the buildings or background of rooms. This distance is more regular in the animations and documentaries, while in the films it varied widely, between 3 and 70 metres, suggesting the latter seek more to emphasise the spatial situation than display the environment. Exterior takes are few and distant, while interior takes are close-up and densely concentrated. In the case of the horizontal angles, shots from the left side prevail, with a 30 to 45 degrees angle, although the films demonstrated a wider variety, showing how this technique is fundamentally used to express the volume, but also to provide graphic variety and spatial orientation. The distribution of camera viewpoint attempts to span the content by parts, and seek out the figurative and semantic possibilities by a wider variety.

#### TAKES

In the scenes reviewed the different takes lasts an average of 10.71 seconds, which seems an adequate length to show a spatial condition. However, the most recent cinematographic productions use shorter takes and consequently a bigger amount and wider variety, not following a particular sequence, but obeying the narrative, giving emphasis through longer takes and diversity through shorter ones. Almost all the takes in the films had

moving elements inside the image, they are usually centred and lighted, expressing the volume of the bodies or depth of places, thus holding the viewer's attention and providing a sense of space.

In contrast to what one might expect, these scenes showing architectural environments use limited camera movement. Despite the fact that in digital modelling it has often been assumed that moving the viewpoint of the camera is the main way of showing a design, the presentations analysed favour a variety of views with few camera movement. Indeed, the more common movements are panning rotations than actually changing positions, and these have slow, brief and simple trajectories. Also in the cinematographic productions the average distance of aerial trajectories is close to the length of one facade (73 metres), but usually distant from building and turning a corner rather than travelling in a straight line. Pedestrian trajectories travel roughly part of the length of a large room (8 metres). Many animations, on the other hand, travel around the whole building or right the way through it. Besides speed of travel tends to be slower in scenes, they move aerially at an average of 25 metres/second while pedestrian shots move at 0.75 metres/second, less than a leisurely walk. Camera rotations or panoramic takes use a length close to the size of the visual angle (43.9 degrees), rotating the whole image and lasting about 6 seconds. In films, these brief and simple visual movements probably are used to provide graphic dynamics, in contrast to the supposedly descriptive role assumed for camera in the animations. Filmic trajectories tend to be in diagonal to the walls or lightly curving with an angled view to emphasize the volumetric display.

#### MONTAGE

The presentations studied generally last about three minutes, with between 12 and 30 takes, which seems an adequate length of time and amount of views to display a spatial arrangement with diversity to maintain interest. The "metric", or sequence of durations, varies, increasing or decreasing irregularly (like "waves"). Sometimes the montage of durations begins with a longer take to show a new situation, or at the end, suggesting some kind of culmination. The graphic relationships or transitions between takes are mostly direct cuts, though occasionally dissolved. More complex transitions (such as are popular in presentation software) are rare; changes of views do not seem to be regarded as a hindrance in need of concealment.

Camera distribution in the scenes reviewed seems mostly to be defined in terms of building closure. The first takes are always distant exterior shots, followed by close-ups or interiors, occasionally finishing with the exterior once more. This sequence echoes a 'visit' to the place, but in a discontinuous manner (entry into the building is rarely shown, or merely insinuated). This underlying order contrasts with the dispersed viewpoints, which follow neither a linear sequence, nor visual directions. This reveals a condition implicit to the scenes, apparently appealing to the viewer's intuitive orientation. In the animations this same objective has led to the intense use of long camera movement, that is, a more direct representation of a visit, with aerial flyovers that repeatedly enter and leave the building.

In the films and documentaries, exterior shots are generally taken from the same side of the building. In the older films, viewing axes are held within a tight angle of vision, while more recent movies use wider angled positions, covering two or three sides of the building (but one of them is not showed). The vertical height also presents a range of location, starting from a position slightly above the building top (showing elevations more



than roofs) and continuing down to pedestrian level. Also, a sequence of paired views with opposite angles is often used for the elevations (like the cinematographic concept of "reverse angle" or "shot-countershot").

Interior filming locations and directions also demonstrate regularity. In the film scenes shots are normally taken in a single room, in its central axis, around the actors, and slightly lengthened along the depth of the space or its circulation (from or towards the entrance). The documentaries also focus mainly on main spaces, with cameras placed more on the periphery and focusing at eye-level or slightly below. Only one side of the space is usually shown (two or three walls), assuming a kind of intuitive extension to the exterior. In the films and documentaries studied, numerous paired interior takes also use reverse angle shots, sometimes for dialogue between actors, but also to display the different sides, without moving the camera. Many views are taken in pairs at 120° to 140° angles of difference, preferably starting from the left, which tends to be further off and higher. Also, a third central view is normally used (angled slightly upwards) at the start and close of these sequences. In contrast, the animated presentations often follow the directions of the viewpoints that make up the continuous trajectories.

The combination of pedestrian and aerial shots lends a diffusively objective and subjective character to the filmic exhibitions, apparently in order to involve the viewer while maintaining him or her independent of the content. Showing only some of the outdoor and indoors boundaries offers a theatre-like sensation to the viewer, while at the same time the incessant variety of camera positions and shot directions expresses a sense of intrusion and general understanding of the environment. This technique provides perceptual references and visual variety simultaneously to create a consistent and dynamic spatial impression.

The film productions compensate for the visual variety with similar graphic elements of the actors and their surroundings (forms, tones, illumination, etc.), which suggest continuity of time and space. This is weaker in the older productions and more evident in the last ones and documentaries, but both use a mix of highlighted and subtler aspects. Alternating similar views and visual directions also lends continuity (refuting the need to maintain a single viewpoint). The usual animated presentations propose a more explicit spatial integration without the use of perceptual elaborations. Some productions present takes with on-screen text to orient the content and declare creators, or provide explanations or list the different uses of the spaces or circulation routes. Most of these productions place a soundtrack over the filming to bring together the exhibition and contrast visual changes with continuity. In the films, dialogue obviously predominates, but music, sound effects and even silence are also used. In the documentaries, a voice-over is usually used to comment on general information about the work or on details that are not fully displayed. Different techniques are used to unify and complement the presentations without excessive dramatisation, so the visual display remains the protagonist.

The storytelling enforces a spatial and narrative interpretation in order to understand the general situation. Most of the presentations display a decreasing order of sizes and closer locations, acknowledging a general sense of orientation at the outset of the exhibition that emphasises the spatial expression. However, this organisation is sometimes varied, starting with close-up shots, and only later revealing the general place as a

'surprise'. Some presentations culminate in medium or long shots as if to express a distancing from the subject. In this regard, the spatial order of the takes seems a relevant structure for exhibition, but one that can be varied. Additional information is sometimes provided to situate the presentation in a specific framework of time or geography, or to impart certain qualities or techniques.

The shorter takes in the scenes tend to reveal more detailed elements, such as the body expression or dialogue between actors, which insinuate relevant qualitative aspects, while the views reiterate visual content, thus focusing particular attention on activities and their connotations. The documentaries also display an expressive focalisation and deviation. This reveals a central content or emphasis that satisfies basic expectations of a presentation in time (i.e. the need to discover something new within its course). The film productions possess a qualitative connotation, expressed through different means than those used in the initial takes. In this way, the emphasis is progressively revealed, inversely to the spatial density, as 'suspense' or 'dramatic tension' that gradually unveils the general sense of the scene (in *Metropolis*, the imperturbable power; in *Bladerunner* the technological impotence). This content is related to prior or later scenes, establishing variance in the plot. This effect is subtler in the documentaries, but relationships are established with the general theme (in *San Marcos*, the living experience of the monumentality). The animations, on the other hand, show indifference to the global situation and even omit evident relationships. The main theme of the filmic sequences also questions certain prevailing concepts, defining a conflict, although not very explicitly but in a way that generates a degree of intellectual interest or later reflection.

With regard to content, although the films reproduce historic architecture of the past or future, this is not a predominant aspect, nor is it presented in an accurate or complete manner. The fact that these movies have become the most significant visions of architecture in movies indicates that they constitute more a diffuse evocation than a representative environment. The method of visualisation also tends to differ from traditional methods of architectural representation; views are partial or clipped, taken from diverse angles to create unbalanced or contrasting compositions. This reiterates how moving presentations differ from still illustrations (being more than a simple prolongation of a fixed view) and distance themselves from the exhibited totality through varied dynamism. The animations, with their predilection for broad views with sweeping and reiterated movements, omit relevant aspects and lack intellectual elaboration or sensitivity. In this sense, animated exhibitions become more a means of ratification than the subversion that films and documentaries would seem to seek, not least in order to stir up interest and arouse attention.

## CONCLUSIONS

This paper tells the review of some film scenes, segments of documentaries and digital animations showing architectural environments. A selection of four of the productions studied is presented alongside a summary of the features identified in the images, takes and montages. Although the samples and procedure used are certainly limited, there suggest a variety of conditions that could be used in animated representations of projects to improve their expressivity. Besides, a special relationship can be acknowledged between moving images and architecture, regarding the representation of spatial qualities, that sets them apart from conventional graphic exhibition and closer to living experience.

The main formal characteristic revealed in these dynamic architectural presentations is their visual break-up, expressed in the graphic diversity that can be seen from the composition of the image right through to the camera positions and narrative set-up. The segmented nature of the presentation is sustained through a perceptual integration that has been used in film montage since the beginning of cinema to broaden the narrative capacity of the film. This technique differs from both the commonly used continuous visualisation initially adopted by architectural animations and the sense of totality of conventional still representation. Meaningful general development compensates and unifies this visual dispersion. This approach encourages a fragmentation of the architectural contents and yet these remain connected through the graphic conditions and semantics. The productions examined also reveal a constant balance between aspects that lend stability and diversity. Stability is usually given by implicit global conditions, such as the horizontal plane, spatial orientation and the continuity on time, while more local aspects provide diversity, such variety of graphic composition and views, thus offering simultaneously constancy and interest.

These visual media also displays independence from the accurate organization and details of the built environment. Coherence or sophistication of design is irrelevant to the expressive outcome, which rests more on visual techniques and narrative development. This gives some relief of the technological resources that usually impose such strong demands on equipment and time in order to elaborate detailed models; but instead of that suggest a dedicated reflection in the development of presentation. However, it is important to be aware of the difference between a professional resource for the diffusion of building projects, and the film productions that have a wider reach. Then, animated presentations should be targeted according requirements of the design commitment. But sensitivity of material and constructive issues should be reach by other media closer to physical reality. At the very least, these visual conditions encourage in architectural animations to intimate a variety of characteristics of a project, above and beyond merely formal modelling, thus providing substantial communication of the design intentions.

Therefore, the cinematographic characteristics seem to suggest that animated presentation of architectural models could achieve a level of expression that embraces both spatial conditions and relevant meanings of the environment. These two aspects go beyond mere visual reproduction and configuration of places, approximating more to vivid perception. As experienced in cinema, moving images do not imply optical continuity, but rather visual and narrative development. These aspects are related to the everyday conditions of the project, but also transcend these, to reach an expression encompassing human experience and the fundamental values of the architecture. In this way, exhibitions on time should evolve from a mere chronological prolongation to become an expressive construction.

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Anahtar Sözcükler: mimari canlandırma (animasyon); görüntü; film çekimi; CAAD.

## MİMARİ CANLANDIRMA SİNEMASINDA FİLM ÇEKİM TEKNİKLERİNİN ANALİZİ

Sayısal canlandırma sineması mimari projelerin sunulduğunda yeni bir olanak sağlarken, yapı tasarımının kimi niteliklerini doğru biçimde ele almayı da zorunlu kılıyor. Bu makale, mimari çevrelere ilişkin çeşitli sinemasal imgelerin sunumuyla ilgili genel bir değerlendirme yapıyor ve mimari projelerin sayısal canlandırma yoluyla sergilenmesinde gözönünde bulundurulacak ilkeleri saptıyor. Sekizi sinema tarihinin farklı dönemlerinden ve büyük yapımlardan; altısı, özgül mimari çevrelere sergilemeyi hedefleyip tarihi yapılar üzerine çekilmiş belgesellerden; ve altısı da son dönemlerde yarışmalarda profesyonelliği ve yeni teknoloji kullanımıyla dikkati çekmiş ya da ödül almış olan sayısal canlandırma örneklerinden olmak üzere, toplam yirmi yapıyı bu inceleme sırasında çalışılmıştır. Araştırma, "Metropolis" ve "Bladerunner" gibi iki sinema filmi, Venedik'teki San Marco Bazilikası üzerine yapılmış "Basilica of San Marco" belgeseli ve "Urban Prototype" adlı sayısal canlandırma örneğine özellikle eğilmektedir. Değerlendirme, 'görüntü kompozisyonu', 'çekimler ya da ardışık görüntülerin kuruluşu' ve 'sahnenin genel montajı' olan,



sinematografik ifadenin üç ölçeğinde temellenmektedir: Ardışık kuruluş içindeki çekimler kayda geçirilmiş, kimi çerçeveler özelinde bakış-çekim noktaları saptanmış ve filme çekilen çevre ya da mimari ürün çizilmiştir. Görüntülerin grafik açıdan değerleri ortaya konarak, kamera konumları ve hareketi, çekimlerin süresi, ses ve geçişler incelenmiş; kültürel ortam açısından ve bütün yapım yoluyla elde edilen düzen ve anlam çözümlenmiştir. Ana bulgu, mimari çevrelerin sergilenmesinde gözlenen, farklı çekimler yoluyla geliştirilen ya da çekim yapılan çevre içindeki kamera açılarının değişmesiyle elde edilen ifadeyle sağlanan, görsel parçalanmanın (*fragmentation*) varlığı olmuştur. Öte yandan 'yer'in varlığı ve bütünlüğü, algıya ve anlatıya dayanarak sağlanmaktadır. Dolayısıyla çalışmanın getirdiği çözümler, mimari çevrelerin sunumunda, özellikle sayısal canlandırmada kullanılacak sinematografik özellikleri tanımlayarak, mekansal koşullar ve tasarımda etkin olan anlamların ne olabileceğini ortaya çıkarmıştır. Çalışma ayrıca, zamanla ilgili sergilenişlerin yalnızca bir kronolojik sergilenimle desteklenip ondan evrilmesi durumunda bir kurgusal ifade kazanacağını da ortaya çıkarmaktadır.