THE CONTINUITY STYLE IN ARCHITECTURAL DYNAMIC VISUALIZATION

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Abstract

The term "continuity style" in cinema refers to a collection of cinematic conventions aiming at a realistic viewing experience without drawing attention to the elements of illusion used in the representation of 3D space on 2D film. The continuity style underlies the majority of narrative films produced to date and has had a significant influence on other genres, including documentaries. Despite the similarities in purpose, architectural filmmaking owes little to the cumulative knowledge of filmmaking encapsulated in the continuity style. While narrative films focus on the viewing experience, architectural animation tends to be dominated by integral 3D building models. We propose that key elements of the continuity style could be applied to architectural dynamic visualization in order to enhance both lay perception of architectural space and professional analysis of design intentions. These elements refer to four primary areas of architectural dynamic visualization: narrative, camera use, lighting and model structure.

1. Architectural visualization and cinema

In the tradition of verisimilitude that characterizes part of Western art, cinematic experience constitutes a more direct line of communication between subject and observer than painting, photography or literature (Monaco 1981): viewers share the spatial and temporal framework of the film (Bazin 1975). A film creates an illusion of 4D space with simple codes and conventions that require no particular education. The movement of the camera makes 3D space directly perceivable (Gibson 1979), while the time dimension can be compressed or expanded to fit the narrative.

After the first awkward steps in architectural animation there has been some interest in knowledge transfer from cinema. However, cinema has so far a limited influence on practice. Many architectural animations are poorly conceived and implemented, and function primarily on the basis of novelty value .This is not only due to technical errors such as inadequate lighting or poor cameras movement but also a result of conceptual confusion and narrative uncertainty.

What architectural visualization can learn from cinema is not so much technological tools and tricks but rather the subordination of technologies and techniques to an effective approach to storytelling (Rafi 1999). Nevertheless, the sequential structure of a film is a far cry from the multimedia world of architectural documentation, where multiple documents are coupled to verbal explanations in generally incomplete, frequently improvised and often incoherent presentations of a design. This probably explains some of the difficulties of architectural dynamic visualization (Serrato-Combe 2004).

2. The continuity style

The continuity style stresses narrative economy and seamless progression. It aims at a realistic viewing experience that does not draw attention to the elements of illusion used in the film (Katz 1991). The continuity style is usually expressed as a collection of mostly visual conventions. These include cinematic inventions but also elements deriving from theatre, literature and other art forms. These conventions are organized in a quasi-systematic structure reminiscent of proscriptive architectural styles like classicism or modernism (possibly also because of how it is taught in film schools). As these conventions were systematized in the Hollywood studios, the continuity style still underlies the majority of narrative films.

Many of the continuity conventions aim at the

preservation of spatial overview and orientation, e.g. the line of action: the imaginary line that links the main poles of action, (e.g. two persons in a dialogue) divides space in two parts. Especially in static scenes, it is advisable that cameras stay on the one side of the line. This allows for spatial consistency in viewing and helps organize camera angles and the shooting plan. Other conventions refer to the accentuation of aspects and parts in a scene by means of lighting, e.g. three-point lighting: a scene is generally lit by a bright key light, a fill light to one side and a back light. This stresses the 3D structure of the scene and facilitates distinction between figure and background. Lighting is also used to express mood and steer expectations. An underlit alley, for example, is typical of a search for a criminal or an ambush scene. The narrative economy is enhanced by continuity editing, which makes cuts or camera movement subservient to action and practically invisible to the viewer, thus rendering space and the registration of action as neutral as possible.

By transferring key elements of the continuity style to architectural dynamic visualization we can improve the effectiveness and efficiency of a number of primary areas (narrative structure, action planning, camera positioning and movement, lighting, model structure, pre- and post-production) towards a better support of both lay perception of architectural space and professional analysis of design intentions (García Alvarado and Monedero Isorna 2004).

3. Narrative

The presentation of architectural space can focus on two kinds of narratives. The first is activities that take place in this space, i.e. the film should include animation of user action. The second kind of narrative describes the structure of the design, relationships between parts and aspects, and requires animation of building parts. The main difference between the two is that the first addresses a wider audience, while the second deals with formal or structural matters that interest primarily building specializations.

The first test of the idea behind the narrative is the plot. This should present succinctly the logical basis that motivates choices. A plot such as “the atrium is the focal point of routes in the building and supports social interaction” offers opportunities for animations that indicate how the routes converge to the atrium and which social contacts are possible.

The translation of a plot into a film involves decisions at a variety of levels. One kind of decisions refers to the choice between descriptive sequences (e.g. an establishing shot) and episodic ones (e.g. the breakfast sequence in Citizen Kane). Architectural visualization tends to be mostly descriptive, with episodic sequences used in depicting events in construction or use. However, a film consisting of descriptive sequences tends to be vague with respect to purpose (Huang et al. 2001). Equally important for communication is the framing of a shot (open or closed). For instance, vistas between can be used to create closed frames in exterior scenes and through these illustrate the relationships between a building and its immediate context.

4. Action

The main focus of a narrative is action and action in the built environment refers primarily to human users. Architectural animations are usually devoid of users, with the possible exception of stationary figures. Introducing action by adding virtual users to a building model is still too expensive and cumbersome for most animations (Uddin and Tutar 2004). The lack of active users is usually compensated with camera movement. In most architectural animations the camera is assumed to be the eye of the user, not only in narrative terms but also physically (Temkin 2003). An explicit association between the eyes of a character and the camera for longer periods of time is an unusual device in cinema, as it creates a disconcerting effect: viewers do not want to identify with a single character. An alternative is to animate the design itself. Unfortunately, building elements move too little to provide sufficient action (with the exception of construction simulations).

5. Camera

The camera replaces not only the human eye but also a large part of the visual processing that takes place in the eye and brain in order to give the viewer the illusion of a stable 3D environment. As a result, camera positioning and movement can be markedly different to what one may assume to be natural for a viewer in a particular scene in the real world. Choices concerning lens length and diaphragm should be made purposely so as to create the appropriate field of view and depth of field. For example, Kurosawa has used telephoto pans (limited depth) in scenes involving action in foreground, middleground and background so as to concentrate on a particular level while keeping track of major changes in the rest by means of blurred movement. The same approach would also suit a multi-layered façade.

Cameras move in two ways: firstly, they revolve around one of the Cartesian axes. Pan and tilt shots (x and y axes) provide overview, while a roll (z axis) gives no additional information so it is less often used. In architecture, however, a rolling shot is an obvious choice for filming superstructure from the inside. The second kind of camera movement is from one point to another in space (tracking or "dolly" shot, crane shot). A tracking shot can be used to follow a subject or explore space in a single flowing shot that connects multiple story elements. A crane shot imitates the path of a moving subject without being restricted by it. It is used for grand establishing shots (e.g. in Citizen Kane) and for creating dramatic attention to a small part of the scene. In architecture it is the perfect choice for complex 3D movements such as walking up stairs. Finally, a zoom (technically a lens change) is frequently used as an alternative to tracking but with less perspective stability.

Each movement type has its own connotations which can be altered with the appropriate context. For instance, the tracking shot is generally calm and objective but in Godard's Weekend a tracking shot along a traffic jam is used to create tension through repetition. A similar shot along a colonnade would permit a rhythmical and compact overview of both the architectural composition and its immediate context. Less dramatic but equally effective and efficient is the establishing shot: a long shot establishing place, time and other necessary information (e.g. Hitchcock's opening track and pan shots in Rear window).

A direct improvement of architectural animation is the use of a line of action. Architectural designs offer more than enough such lines, e.g. the longitudinal axis of a corridor or of a colonnade, or the line of movement along such a structure or space.

6. Lighting

Architectural digital visualization aims more at accurate and precise light simulations, while cinematic lighting makes use of thee-point lighting in order to improve the legibility of 3D spatial structure in the 2D projection. The influence of lighting conventions is being reduced as faster film stock allows for greater verisimilitude but in architecture this would require a reliable light simulation which is generally not available for technical and practical reasons (Temkin 2003). Lighting also determines the tone and color of the film. This is important for the accuracy and precision of images, as well as for the atmosphere: Bergman used high contrast to stress isolated psychological relationships, while low contrast in Visconti films connect characters to the connotations of (usually lavish) backgrounds.

7. Model structure

The purpose of architectural dynamic visualization is not to depict some truth or reality but to convey particular information, usually on a specific part of aspect of a design and frequently indirectly (e.g. as atmosphere or impression). This suggests that the starting point for architectural animations should not be the available design documentation but the purpose and requirements of the particular visualization (Katz 1991). Design information can be incomplete and organized into partial model. For example, removing one of the walls of a corridor and placing cameras on that side returns better results than moving with a camera in the corridor, e.g. better viewing angles and quieter transition from feature to feature. Similarly, when we cut from a shot of a building façade

to a door, we assume that it is the door in that façade – there is no need for having a model integrating the two. A small-scale model of the whole and a detailed, full-scale of the door can provide perfect results at a much lower cost. While standard CAD software suffices for modeling in architectural filmmaking (Richens 1997), the holistic, integral 3D building models currently as the basis of design documentation are not necessarily handy for dynamic visualization (Chang and Szalapaj 2002).

8. Pre- and post-production

Pre-production in architectural animations amounts to organizing design information in animation sequences using storyboards. Post-production is dominated by the sensitive activity of editing (montage). This is more than simply cutting off unwanted material and connecting shorts smoothly and logically. It also involves constructing meaning, which may also emerge from the relationships between linked shots. Transitions form one subject to another can give the subjects a new meaning (Eisenstein 1970; Taylor 1998).

The use of special effects, including rear and front projection or glass shots is chiefly a matter of economy: it allows integration of resources (e.g. a film of the location as background) in order to reduce time and effort. However, we should not forget that this economy serves a higher purpose, namely to include additional information in a way that improves the legibility and completeness of the presentation. One particular effect that should be used more often in architectural visualization is the split screen, which dispenses with the need for cutting when moving from one place, viewpoint, action or abstraction level to another.

9. Conclusion

Learning from the continuity style should not amount to the imposition of stuffy academic rules but to the transfer of existing knowledge from a more advanced area in order to improve the performance and economy of architectural dynamic visualization. Continuity conventions form general guidelines that could be adopted in an animation unless there is good reason for something different. Even then it would be advisable to look first at cinematic reactions as sources of precedents for an alternative approach.

One of the main advantages of the continuity style is that it links goals and means in a transparent manner. It is not accidental that when notable film directors are asked about the meaning of their films their replies include technical matters: how meaning is constructed (Truffaut and Scott 2003). Taking advantage of possibilities and compensating for limitations can influence the narrative structure and the viewpoint of a film (e.g. in many shots of Hitchcock's Dial M for murder framing facilitates depth perception in stereoscopic viewing).

Another advantage of learning from the continuity style is exploring the purpose of architectural visualization: when confronted with the dilemma of having to reproduce a (yet non-existent) reality or create an illusion of space and time (Goldman 1996), we should probably accept the latter as more consistent with other vicarious products of architecture.

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