

An Attention Model of Film Viewing

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Introduction

Watching a film is a constant struggle against distraction. These distractions can come in many forms; some come from within the film, while others come from without. The struggle against distraction is largely a matter of attention. When we sit in a darkened theatre, we are there to attend to the movie. The theater and the filmmakers employ a variety of tools to aid in keeping our attention focused. After all, it's in their best interests. In addition, viewers contribute to the process by employing different types of attention. How the movie keeps us in attention, and the types of attention we use, are important issues in understanding this struggle against distraction.

There are three distinct levels of attending to a film that will be considered. Each one in some way holds or captures the viewer's attention. The first level concerns attending to the film versus attending to the external circumstances of the film viewing experience (such as other members of the audience). The second level deals with attending to the film as a fictional story versus attending to it as a constructed world using sets, actors, sound effects and other artificial devices. The final level concerns attending to the diegetic or internal circumstances of the fiction itself (that is, what keeps the

story interesting). However, it must be noted that these three levels of film viewing fall under only two aspects of attention research. The first two levels are primarily matters of control of attention while the last level is primarily a matter of the manifestation of different aspects of attention.

Attending to the Film vs. the External World

When a viewer sits in a theater to watch a film, the screen upon which the film will be projected takes up only part of the total visual array available to the viewer. Even if the viewer does not tilt or swivel the head, the movie screen is not the only thing available to the visual system. What is built into this situation to hold the viewer's attention on the film and not on the rest of the visual array? Of the three levels of movie attention, this one is the easiest to consider.

As mentioned, this particular question is a matter of control of attention. Research done in this area generally breaks down control of attention into two categories. The first, stimulus driven or bottom-up attention, concerns the more automatic type of attention found when an object or image not related to the perceiver's goals nevertheless draws his or her attention. The second, goal-driven or top-down attention, is the more conscious type of attention used with deliberateness (Yantis, 1998). Attending to the movie versus other aspects of the visual array is a combination of these two types of attention. When a viewer enters a theater and sits down, it is with the intention of watching and attending to the film being presented. Movie viewing, therefore, always involves goal-

driven attention. Attention in this case is directed primarily to a specific spatial location. The movie screen defines the area to be attended to, and specific occurrences in the film define specific areas to which the viewer should attend. Numerous studies, including those by Posner and colleagues (as cited in Yantis, 1998), have shown that subjects can use goal-driven or top-down attention to attend to a spatial location. Shifts of attention over time are considered to work in a model analogous to a zoom lens. Attention is initially diffusely spread over the attended region. If more focused attention is called for, then attention "zooms in" on the particular location. The major point to be understood with this paradigm is that as the distance increases over which attention must be shifted, there is not a corresponding increase in time to traverse the distance. Numerous studies support this hypothesis but according to Yantis (1998), this zoom lens model was first proposed by Eriksen and St. James. The zoom lens model will be discussed in more detail regarding attention and the diegetic circumstances of the film.

If movie viewing is primarily a goal-driven activity at this level, how is stimulus-driven attention relevant? In any situation, there are numerous opportunities for stimulus driven attention to be activated by occurrences outside the goal-directed attention. Peripheral events and abrupt onsets are the two primary ways that attention can be involuntarily captured (Yantis, 1998). The atmosphere of film viewing is specifically created in order to keep peripheral events and abrupt onsets to a

minimum. The most obvious feature in this regard is that films are watched in the dark. In this way, the viewer is generally unable to see any peripheral events to the movie screen or the abrupt onset of a visual stimuli. Auditory stimuli can have a similar effect, and these two are ideally kept to a minimum. Audience members are encouraged to be quiet during the film and quality theaters have thick enough walls to keep sound from the other theaters out. When these attempts fail (a person stands up to go to the rest room, audience members keep chatting, or the gunfire from the action-adventure movie next door keeps intruding on the quiet romance) stimulus driven attention is captured and the goal-driven attention focused on the film is disengaged.

Attending to the Film as a Fictional Story

This second level is unique in that it refers not only to the visual stimuli on the screen, but the particular way in which one sees that stimuli. Is the stimuli perceived as a fictional world or simply a construction consisting of actor, sets and other artifice? Of the three levels considered in this paper, it is this level that has received the most attention from film scholars using empirical methods or data. Anderson (1996) has looked to research on play, arousal and framing in an attempt to understand why humans engage in non-survival behavior and ways in which they separate fiction from reality. However, this explanation has only limited applicability to how viewers are actually able to ignore the constructed nature of a film. Eitzen (1993) offers an explanation that is based in contemporary attention research. The explanation offered here is quite

similar to Eitzen's but employs the terminology of attentional research already established in the first section.

Again, control of attention is the key to understanding attention at this level of film viewing. Like watching a film in general, attention to the fictional world presented in the film is a matter of goal-driven attention. Most viewers, unless they are critics employed to examine the constructed aspects of the film, will purposefully watch a film with the goal of attending to the fictional nature of it. As Anderson notes, our ability to attend to the fiction of the film depends on purposefully hiding the constructed elements (Anderson, 2002). How a viewer sees a fictional world in a constructed film is beyond the scope of attentional research (see Anderson, 1996). What attentional research does explain is how a viewer is able to keep goal directed attention on the fiction. What might cause a viewer's top-down attention to be disrupted? The capture of the viewer's bottom-up, stimulus driven attention by the onset of some aspect of the construction. Makers of Hollywood fiction films realize this fact, at least intuitively, and so most fictional films are constructed to hide the artifice as much as possible. The style of editing employed in these films is often called "invisible" editing because of the attempt to hide the fact that a transition has been made from one camera angle to another. Costumes, make-up, and special effects are all given great attention so that the artificial nature of the film is hidden. Cameras, microphones, cables, and stands are all kept out of the frame of the camera so that the tools of making the fictional world are not obvious to

the viewer. This creates a situation, like that of the first level of film attention, in which any stimuli that might capture the viewer's attention and divert the goal-directed attention from the fictional story are hidden as much as possible.

The jump cut provides an interesting example of this phenomenon. The cardinal rule of editing two shots together states that the camera angle in the second shot must be from a different distance and angle than the first shot. If this rule is not followed, a jump cut results. The perceptual result takes one of two forms. First, an object may seem to shift or jump from one location to a slightly different location. Second, one object may seem to transform into another object. A perceptual explanation for the jump cut can be found in Anderson (1993). The reason why it is so disturbing, however, can be found in attentional research. The second shot of a jump cut is an abrupt onset that captures attention. Of course, abrupt onsets occur all the time in films. However, these onsets are expected within the fictional structure of the film. The instantaneous transformation of a human into a tree is not expected within the fictional structure of the film. The same can be said when a transition to a shot reveals a boom microphone at the top of the screen. Disruptions of goal-driven attention to the fiction are simply stimulus-driven involuntary shifts of attention to a different aspect of the film.

Attending to Diegetic Circumstances

This last level of film viewing attention involves the ability of the story to hold the viewer's attention. Of course,

there are a large number of subjective reasons why any particular viewer will continue to attend to a storyline or will become bored and shift attention to something else. However, there are certain tools that filmmakers can use to attempt to make the story hold the viewer's attention regardless of the viewer's subjective views of the story or subject matter. While the previous two levels required an understanding of control of attention, this final level requires an understanding of how attention is manifested.

LaBerge (1995) lays out three distinct manifestations of attention: selection, preparation, and maintenance. The first, selection, is simply the operation of choosing specific information to focus on from the incoming information and preventing distracting information from being processed. Preparation involves the operation of priming or directing attention to a specific stimulus before that stimulus actually occurs. Lastly, maintenance is the sustained attention to a particular stimulus for long periods of time with no immediate goal.

Based on these three definitions, film viewing would seem to be primarily a matter of maintenance of attention. Most films last 90 to 120 minutes or longer and seem to present no specific attentional goal for the viewer. Maintenance attention, like control of attention, can be considered as either involuntary or voluntary. LaBerge notes a number of examples of involuntary attention: a ticking clock, a car honking, or worrying over a remembered event. All of these examples are intrusive and direct

attention to themselves when it is not desired. They are considered under maintenance attention because of their sustained nature and the inability to ignore them. Clearly a movie is not of this nature.

Voluntary maintenance is less well defined. Watching a bird in flight or listening to music are both examples given by LaBerge of voluntary maintenance attention. As he notes, however, for these types of events to hold one's attention they must either change continually or sustain interest for some reason over a long period of time. Both a bird in flight and listening to music are examples, given by LaBerge, of the former: they maintain attention because of their continual changes (however slight). The maintenance of attention over a long period of time to an unchanging stimulus is extremely difficult. Attending to a radar screen for long periods of time is an example, and requires a great deal of concentration. Attending to movies does not, in general, seem like a difficult activity. In addition, movies obviously contain a great deal of change and are therefore much closer to listening to music or watching a bird in flight. However, are these activities truly maintenance attention and not selective and or preparatory attention? They certainly involve maintenance of some sort because of their length. However, if continual change is necessary for ease of attention, it may be these activities are simply made up of large numbers of selection and preparation attention, which work on a much smaller time scale. A closer look at selective and preparatory attention and their relationship to film viewing will

support this idea.

Before moving on, however, it worth noting that there are films that attempt to hold attention primarily through use of maintenance attention. Michael Snow's experimental film Wavelength (a 45-minute slow zoom across a room) or Andy Warhol's films Sleep (a film of someone sleeping) or Empire (a day long film of the Empire State Building) are examples of films that have little or no change and therefore depend more upon the viewer's use of maintenance attention to be viewed in completion. However, most fictive feature-length films depend heavily on constant change and therefore continual use of selective and preparatory attention to keep the viewer watching over long periods of time.

Selective Attention

As mentioned, selective attention involves choosing specific information to attend to and/or preventing distracting information from being processed. LaBerge defines a number of properties of the attended area of selective attention, but three in particular are important to consider here. The first two properties, size and intensity of the attended area, are related. A number of studies have proposed a model of attention in which attention could be focused widely across a display of objects, or more narrowly on a single object. Jonides' model (as cited in LaBerge, 1995) can be viewed as a two-process model, with the more diffuse setting being a parallel processing setting useful for searching for items that "pop-out" and the narrow setting being a serial setting for more complex searches. Eriksen's zoom

lens model (mentioned in the first section) is similar but presumes that attention can be focused anywhere along the continuum of diffuse to narrow. Lastly, LaBerge (1995), proposes an attentional gradient in which attention starts very diffuse to encompass a whole object, and then narrows as parts of the object are examined.

How does this fit with the attention viewers give to a fictional story in film? On the most immediate level, the ability to selectively attend to certain areas of the screen make the deep staging championed by Bazin possible. A static shot can contain a great deal of detail and the viewer can scan the screen at a diffuse level and then "zoom into" the area of the screen that seems of greatest interest. What is of greatest interest will depend on many factors. It may be the face of the star, the area of greatest movement, a costume of intense color, or any aspect of mise-en-scene that is either most relevant to the story or most visually interesting.

In addition, the zoom lens or attentional gradient model parallels quite closely the general editing pattern of many fictional feature films. Though there are specific exceptions, the conventional editing style starts with a long shot to establish surroundings. Once this has been done, a cut is made to a medium shot, to show in more detail the object of interest from the previous shot. The next shot involves a close-up, again focusing on an important detail of the medium shot. For example, a sequence might start with a long shot of a beach with two people walking along the shore, cut to a medium shot to reveal

who the people are, and then finally cut to a close-up of one of the people, revealing that he is crying. Even when the pattern is not so clear-cut, the director or editor cuts to medium shots and close-ups whenever more detail is required. This process parallels the zoom lens model of attention (and in fact, dollying the camera closer to an object or zooming in on that object is another way to reveal more detail). A viewer attends to the shot on the screen diffusely until a specific aspect of it is identified and the viewer chooses to focus attention more narrowly on that part of the screen. If done properly, the film will then cut to a closer view of the attended object or area. Again the viewer's attention is diffusely spread over the screen until a specific aspect of it is chosen to be focused upon (a face, for example). At this point the film will (or should) cut to a close-up of the face. Of course, unlike most situations in life, the director controls what the viewer looks at and when. However, a good director will anticipate where the viewer wants to direct attention and will cut to a shot of greater detail of that area (or might choose not to in order to frustrate the viewer).

The second property of the attended area is duration. Though knowledge of the exact length of attention to a certain area is imprecise, it lasts only a few seconds at best (LaBerge, 1995). Of course, an entire display may hold attention for longer periods since attention can be focused on specific areas of that display for different periods of time. Nevertheless, attention to a fairly static shot in a film cannot be sustained

for a long period of time. For this reason, filmmakers employ a number of tools to keep any specific shot from lasting too long or from remaining static for too long. The easiest method of achieving this goal is fairly rapid editing. If longer shots are used, filmmakers may use camera movements (pans, tilts, dollies and cranes), zooms, and complex blocking (movement of actors within the shot) to create change within the shot and therefore sustain the viewer's attention.

Preparatory Attention

Preparatory attention involves directing attention to an area or object prior to the time the stimulus is expected to occur. It is assumed that the appearance of the object and its temporal course are held in working memory (LaBerge, 1995). This is the only way that a person could know to expect the stimulus. Furthermore, memory of its temporal course will allow preparatory attention to reach its peak at the moment the event is expected to occur. Preparatory attention is generally activated by some type of cue that primes a person to act in a specific circumstance or expect a certain result. LaBerge makes a distinction between preparation and expectation. His example is listening to a piece of music and being surprised to hear the wrong note played. If the listener is not specifically listening for that note, an expectation (stored in long term memory) is violated. On the other hand, if a driver is waiting for a traffic light to turn green, he or she may be employing preparatory attention by watching the spot where the green light will illuminate and holding a foot over the gas pedal.

Filmmakers are able to use a viewer's preparatory attention to make a film more interesting. The clearest example of this can be found in the suspense/horror film. A scene in which a character enters a house alone is an often used device in suspense/horror films. In general, this situation is not enough to make a viewer believe something will happen to the character. However, if the filmmaker employs certain tools, preparatory attention can be engaged to prime the viewer. For instance, if scary music begins to play faster and faster, the viewer may engage preparatory attention and pay close to the part of the screen where a closed door is shown. Furthermore, as the music speeds up preparatory attention reaches a peak. LaBerge notes that this peak will soon decay if selective attention is not engaged. Therefore the filmmaker may use this limited time course to trick the viewer. That is, the hidden antagonist may suddenly appear at the height of the viewer's attentional peak, the hidden antagonist might not appear at all, or the hidden antagonist may appear just after the viewer's attentional peak has decayed. This will depend upon the director's intentions and skill.

Music is not the only tool used in this fashion. Increased speed of editing, different types of lighting and certain types of camera positions may all engage a viewer's preparatory attention. The filmmaker may also engage a viewer's preparatory attention to one area of the screen and then center a sudden action at another location. Finally, the viewer's preparatory attention may be engaged and an action may occur at its peak, but the action is unexpected. For instance, the character opens the

door of the room and turns on the light. Another character steps suddenly from the shadows but is the original character's spouse or friend, rather than the villain.

Another alternative would be to not engage the viewer's preparatory attention at all, and have a sudden appearance of a character or object. The slow build to an event versus the sudden appearance of an event parallels Hitchcock's distinction between suspense and surprise. Suspense involves cueing the spectator to an upcoming event, often with a deadline attached, such as the imminent explosion of a bomb. This makes use of preparatory attention. Surprise is the appearance of an event with no prior cue, such as the sudden explosion of a bomb previously unknown to the viewer. Clearly, preparatory attention is not engaged in this circumstance.

Conclusion

This paper has attempted to lay out a theoretical framework for understanding the inherent power of movies in terms of attentional research. Viewer attention plays a vital role in watching a film in general, watching it as a fiction rather than as a construction, and maintaining interest in that fiction. Control of attention and the manifestation of attention are the primary areas of attention research that are applicable. However, much work can be done to bring further detail and greater understanding to this issue. For instance, analysis of suspense films could be conducted in depth by linking suspense to different manifestations of attention. Understanding of specific attributes of preparatory attention would allow a

filmmaker to know exactly when to use different cues of suspense and how long they should last. Other areas of attentional research not discussed here may be relevant nonetheless. Research in neurological aspects of attention could also be introduced to research in film studies and linked to other neurological findings to provide a picture of brain activation during the complex process of viewing a motion picture. Though much more complex, films provide a similar visual array to many attentional studies. The possibilities of illuminating the activity of watching movies through attentional research are vast and should continue to be explored.

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