AFFECTIVE FUNCTIONS OF DIFFERENT CAMERA MOVEMENT TECHNIQUES IN STORYTELLING

A PILOT EXPERIMENT ON THE IMPLICATIONS OF THE CAMERA MOVEMENT TECHNIQUES ON AUDIENCE'S EMOTIONAL ENGAGEMENT AND LEVEL OF IMMERSION

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Abstract

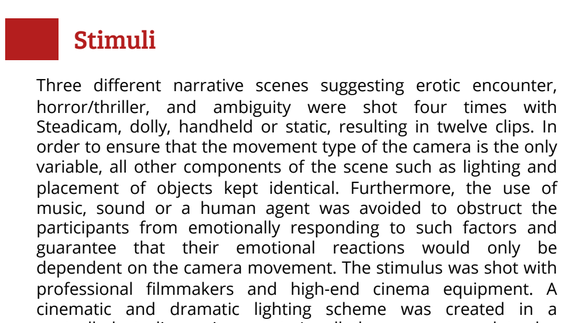
The significance of the moving camera has been grasped by the filmmakers as early as the end of the 19th century. Early moviegoers enjoyed the fascination provided by the moving camera as it traveled on the train tracks. Ever since emotional and perceptual implications of the camera movements have constituted an important part of the filmmakers" tacit knowledge. Most theories on the subject argue that camera movement is analogous to the human eye (Schonig, 2017), and its movement "is the closest approximation of muscular movement of the human body" (Barker, 2009). Hence, the perceptual implications of the moving camera on the screen resemble those of the bodily movement of the humans in the actual space. According to Gibson (1966), muscular movement "eliminates the ambiguity in static perspective and provides information for perceiving our surroundings". Therefore, "in the movies, when the camera begins to move, we are suddenly given the missing information as to shape and layout and size. We are there" (Brown, 2003). That is why the mobile frame is crucial for tailoring the audience's emotional and perceptual immersion into the world of the film. However, there are several ways of moving the camera such as dolly, handheld, Steadicam and so on. Even though their different implications are well known and exploited by the moviemakers, in scholarly writings this is often overlooked and the camera movements tend to be evaluated as a single notion. Thus, the current practice-based PhD thesis focuses on the varying emotional and perceptual effects of the different camera movement techniques by aiming to conduct a series of experiments.

Goals and Methodology

Current research combines moviemaking practice, film theory, and cognitive science. The main goal is to evaluate the subject of the different camera movement techniques from the perspective of emotion and perception. More specifically, the two chief objectives are to explore how four principal different camera movement techniques (Stedicam, dolly, handheld, static) impact the (a) audience's emotional engagement with onscreen events; (b) influence the degree of immersion. To this end, we shot a set of cinematic stimuli with a narrative, and with the aim of likening them to a genuine scene from a movie in order to provide a true movie-watching experience for the participants and obtain more convenient results in the context of film studies. The ultimate goal is to conduct a sophisticated experiment using neuroscientific and psychophysiological tools for measurement means. However, we first conducted a simple self-report type pilot experiment using the self-assessment manikin (SAM) scale and asking sets of questions.

Stimuli

Three different narrative scenes suggesting erotic encounter, horror/thriller, and ambiguity were shot four times with Steadicam, dolly, handheld or static, resulting in twelve clips. In order to ensure that the movement type of the camera is the only variable, all other components of the scene such as lighting and placement of objects kept identical. Furthermore, the use of music, sound or a human agent was avoided to obstruct the participants from emotionally responding to such factors and guarantee that their emotional reactions would only be dependent on the camera movement. The stimulus was shot with professional filmmakers and high-end cinema equipment. A cinematic and dramatic lighting scheme was created in a controlled studio environment. In all three scenes and twelve variations, the scene starts with the camera tilting up from the ground on which depending on the scene there are cues placed to imply the nature of the scene. For instance, in the horror scene, there are blood trails, whereas in the romantic encounter there are rose leaves. After the camera reaches eye-level, except for the stationary shots where the camera stays stable after tilting up, it starts moving towards a closed door by the means of either Steadicam, dolly or handheld, and stops right in front of the door.



Frame grab from the beginning and the middle of the Horror/Dolly clip

Experimental Design and Measurement Methods

44 participants have been recruited, and 4 different sets have been created randomly. Each participant watched only one camera movement variation from each mood in order to avoid familiarization by repetition. As a result, each participant saw 3 clips and each clip has been watched 11 times. The participants watched the clips alone in a dark editing room on a 27-inch iMac.

	EROTIC	AMBIGUITY	HORROR
Static	1	2	3
Handheld	2	1	4
Dolly	4	3	1
Steadicam	3	4	2

Set 1: AMB (HH) - ERO (STA) - HOR (DOL)
Set 2: AMB (STA) - ERO (HH) - HOR (STE)
Set 3: AMB (DOL) - ERO (STE) - HOR (STA)
Set 4: ERO (DOL) - AMB (STE) - HOR (HH)

Participants filled out an assessment form on a paper with a pen for each clip. For measuring the emotional responses we used valence and arousal scales of self-assessment manikin (SAM); and for the level of immersion we asked three questions: (1) On a scale of 1 to 5, how much did you feel involved in the scene?, (2) On a scale of 1 to 5, how much did you feel as if the camera was your own eyes?, (3) On a scale of 1 to 5, how much did you feel as if you were moving with the camera? The third question was not asked for the static clips.

Procedure

After signing a consent form, the participants were shown two test clips in order to familiarize them with the assessment form. The first clip was a one-shot scene shot with Steadicam from "Goodfellas", and the second clip was the handheld-shot opening scene of "Children of Men". After watching and rating the test clips, the participants watched the three clips from their assigned set. They had 40 seconds to fill out the form right after watching each clip. Each participant was given a 10€ gift card for a local bookstore after the procedure.

Results

The following tables demonstrate the numerical average of the ratings for each clip.

POSITIVE – EROTIC ENCOUNTER

	VALENCE 1 (Happy) - 5 (Unhappy)	AROUSAL 1 (Excited) - 5 (Calm)	Q1	Q2	Q3
Static	2,8	3,1	4	3,5	X
Handheld	2,4	2,6	3,5	3,9	4,3
Dolly	2,5	2,7	3,9	4,3	4
Steadicam	3,2	3,1	3,5	3,9	4,1

Q = Question

NEUTRAL – AMBIGUITY

	VALENCE 1 (Happy) - 5 (Unhappy)	AROUSAL 1 (Excited) - 5 (Calm)	Q1	Q2	Q3
Static	3,5	3,2	2,8	2,5	X
Handheld	3,6	2,6	4,1	4,5	4,2
Dolly	3,5	2,9	3,9	4	4,2
Steadicam	3,1	1,9	4,4	4	4,2

NEGATIVE - HORROR

	VALENCE 1 (Happy) - 5 (Unhappy)	AROUSAL 1 (Excited) - 5 (Calm)	Q1	Q2	Q3
Static	3,9	1,9	4,3	3,5	X
Handheld	3,9	2,3	4	4,1	4,2
Dolly	3,5	2,1	3,5	3,7	3,7
Steadicam	4	1,9	4,1	4,1	4,2

Conclusion and Discussion

Although the data has not been analyzed in detail yet, at first glance, contrary to our hypothesis, it seems that there is no pattern of significance between static-moving camera; or between different camera movement techniques. There are few possible explanations for the lack of clear results. First of all, the reliability of the self-subject assessment is unclear and a more sophisticated neuroscientific and psychophysiological experiment might reveal different results. Secondly, the experiment design might be problematic as it does not allow the viewer to compare the implications of the different camera movement techniques under the same condition. Hence, a different design could be applied in the future. In addition, a few participants voiced their opinion that the lighting scheme of the scenes looked "scary" irrespective of the intended mood of the scene. Although the valence ratings demonstrate that the clips were successful to induce the intended mood, the scenes could be color graded differently for the next experiment. One particular participant expressed that ambiguity of what the clip might be about caused excitement for him. This might be valid for the other participants as well, and it might have affected the credibility of the arousal ratings.

Currently, we are working on a prototype that will allow us to conduct the experiment online. This will enable us to recruit numerous participants and try out different experimental designs. Hence, it might help us to find the most accurate method before proceeding with more sophisticated experiments.

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