The Use of Natural and Artificial Light on Character Modelling and Character Relationships, Taking Days of Heaven and Whisper as Examples

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Abstract: Light plays a very important role in film and television, especially in terms of its impact on character shaping and relationship construction. This paper uses light as a starting point to analyse the effect of natural and artificial light on the portrayal of the characters taking the films *Days of Heaven* and *Whiplash* as examples, respectively. Furthermore, it compares the similarities and differences between natural light and artificial light in character modelling and proposes some suggestions on light modelling for practical shooting. The most important role of both natural and artificial light is to illuminate people. As natural light is scattered, it is mostly used as a base to restore a realistic and natural state of life. However, regarding natural light, special moments such as magical hours can be used to create a warm and ambiguous atmosphere. It is also possible to make use of existing shades to create rich light effects. Artificial light is very controllable and can be adjusted in terms of direction, colour temperature, softness, and texture to give different visual effects. The same person can be portrayed in different ways under different lighting.

Keywords: natural light, artificial light, film studies, characterisation, character relationship

1.   Introduction

Characters are at the heart of a story and usually a good story cannot be told without an impressive cast of characters, and the same is true in film. One of the goals of many films is to create memorable characters and a relationship that is exciting to be watched. Films are made up of visual images and sound, and the combination of visual images and sound presents a wonderful story and characters. Apart from the setting of the characters themselves, many elements in both visual images and sound play key roles in shaping the characters, such as their clothing, speech, expression, and the storyline driving the story. In addition to these, many visual elements such as scenery, camera movement, colour, light, and composition also play important roles in the portrayal of characters and their relationships.

Generally speaking, theatrical productions have a special make-up and costume artist who carefully tailors the character to the actor. In the process of designing light, it is inevitable to consider the effect of different angles, colours, and shades of light on the make-up and costumes, so the colours of the make-up and costumes can be blended with the light to produce the final effect of the stage performance. Furthermore, it is important to consider not only the relationship between light and the

make-up and costumes but also the overall aesthetics of the stage, so the characters and the stage are rendered more deeply into the hearts and minds of the audience. Therefore, in most plays, in order to better reproduce the make-up and costume colours of the characters, white light or soft light is usually used as the main colour [1]. The same is true in film. However, lighting in a film is not the same as lighting on the theatre stage. In the film, the gaffer has to consider the reasonableness of the light source. The analysis of the use of natural light in the following section follows exactly the same rationale, making use of the shades in the scene itself and different camera angles to make the light look comfortable and natural. In the 1970s, the influence of the French New Wave was spreading around the world. Bazin's documentary aesthetics and the New Wave's creative approach also found their way into New Hollywood. Almendros was invited by director Terrence Malick to participate in Hollywood cinema, and their collaboration on *Days of Heaven* became a landmark in the history of world cinema in terms of realist imagery. Almendros rejected the programmed lighting of the classic Hollywood theatrical aesthetic, which often contradicts the logic of reality, and he strived to recreate realistic images with natural light sources. After the 1970s, the camera equipment was "highly sensitive, fine-grained, sharp, and colourful". The T1.1 superpana-speed and Zeiss T1.4 lenses were also commonly used in the 1970s, and their ability to capture light was increased by a factor of 1-2 compared to the usual T2 and T2.8 lenses. The increased resolution of the camera and the enlargement of the lens aperture ensured the normal use of natural light at low light levels, all of which provided an objective basis for further exploration of natural light effects by Armando [2,3]. Technological advances have increased the opportunities for the use of natural light in many applications. However, in order to ensure the natural characteristics of natural light, it is also necessary to choose judgements based on the properties of natural light when shooting. Natural light effects that rely solely on technology or other photographic tools to assist are often unsatisfactory. Hollywood-style lighting is not entirely at odds with natural lighting effects; the two should draw on each other, which is one of the reasons why this article puts natural light and artificial light together for comparison.

Similarly, in *Whiplash*, although there are some dramatic-looking lighting effects, the gaffer has designed the lighting to make the characters look as natural and sensible as possible, which is a difficult aspect of cinematic lighting [4].

This article takes light as an example of these visual elements and explores how light shapes characters and deals with their relationships. Specifically, this article looks into two films, namely *Days of Heaven* and *Whiplash* [4,5]. They are compared with each other to uncover the commonalities and differences between natural and artificial light and their application in shooting practice. The analysis of the effects of the actual shooting in the film shows that the timing and angle of the natural light can be selected for different natural lighting situations. It is also possible to use natural light to present different shadows through some shades and special angles. In an environment with artificial light, the subjective initiative of the gaffer can be given great play to the adjustment of the colour temperature, texture, and intensity of the light to achieve the desired lighting effect.

2.   Different Characters and Interesting Character Relationships through Light

The famous cinematographer Storaro said, "Photography actually means writing with light; I try to portray the story of the film through light, trying to give that actual story a parallel so that you consciously or unconsciously feel and understand more clearly through light and colour what the story is telling" [6]. In an interview in *American Cinematographer's* Close Up column, 38 cinematographers spoke of their most revered contemporary cinematographer, and Spanish cinematographer Néstor Almendros came in second, only behind Vittorio Storaro [7]. Almendros went down in world cinema history for his unique natural lighting masterpiece *Days of Heaven*, which also won the Academy Award for Best Cinematography.

Light and shadow are indispensable and important elements in film and television, and they play very important roles in the picture effect. Whether it is to set the atmosphere of a scene or to shape the image of a character, light and shadow also guide viewers' sight, promoting the development of the plot and creating a three-dimensional sense of space. Characters are the souls of a story, and good characterisation plays a vital role in a story, especially in films, where many characters impress audiences. Light and shade also play an important role in the changing relationships between characters. The application of natural light in Days of Heaven and the application of artificial light in Whiplash are analyzed below.

2.1. The Use of Natural Light for Figure Modelling and Character Relationships

Natural light mainly comes from sunlight, which means that there are many uncontrollable factors, such as sunny, rainy, cloudy conditions, and other natural phenomena. Therefore, for natural light, the photographer focuses more on how to make the most of it. Rudolf Arnheim states in *Film as Art* that on the basis of the visual principle of light, the cinematographer can decide "what measures to take in terms of lighting, arranging shadows, deciding on the position of the camera in relation to the sun when shooting on location, adjusting the way reflectors pick up and reflect light, etc., so that he can shoot the same subject brightly or dimly, and can put a bright object in an equally bright setting or make it stand out in front of a shadowy background" [8].

The main characters in Days of Heaven are Bill, Abby, and a farmer. Bill brings his girlfriend Abby to a farm to harvest wheat, and they disguise themselves as brother and sister. With the relationship growing, Abby falls in love with the farmer, but the farmer also discovers that Abby and Bill are having an unorthodox relationship. Finally, the farmer knocks the trigger on Bill. The storyline may seem a little unexpected, but the love between Abby and the farmer is romantic and Abby is happier with the farmer than she is with Bill. The language of light in this film speaks to the changing emotions between Abby and the farmer which make Days of Heaven a masterpiece of natural light.

2.2. The Use of Natural Light in Fine Art

Director Terrence Malick is a naturalist and uses a lot of natural light to present the images, especially in the magical moments. The magical moments are the juncture between sunrise and sunset when the sky changes light and dark, a very distinctive but gentle moment in the day. Director Terrence Malick made full use of the light and shadows at this particular time of day to give audiences a visual feast of colour. How to make the most of natural light is a central issue in this film, and it is a challenge for both director and cinematographer. The film is warm in tone, with many references to classical landscapes. The concept of lighting in contemporary film and television photography comes from the history of Western painting, especially from the Renaissance onwards. It starts from Leonardo da Vinci's "fading method", Caravaggio's "wine cellar light method", to Rembrandt's "light and dark method". Rembrandt, Caravaggio, Vermeer, and Latour are not only influential in the world of painting but also important for the modern concept of light in the image [9]. The section below analyses the changing emotions between Abby and the farmer through natural light and how it shapes Abby's character.

2.3. Appropriate Use of Natural Side Light

Before the emotional relationship between Abby and the farmer takes place, it can be seen from the image that Abby's face is mostly not lit from the front but with side or backlighting. Although the lighting is in a natural light setting, the photographer chose the angle of the natural light very carefully. Smooth lighting works well in that and it can present the middle of the face as bright and then turn

darker in all directions. However, if not handled correctly, it can look a little pale and harsh. The use of sidelight can create problems because the illuminated parts of the face can appear too bright compared to the shadowed parts; alternatively, the shadowed parts can turn dark grey or black and lose detail, while the distinct divide between the two sides can be very damaging to the image. Yet sidelight has a fascinating abstracting effect and it may work with intentions, and inappropriate lighting conditions can be a source of creativity. Soft sidelight, perhaps after sunset, can produce luminous properties, softness, and a sense of space unmatched by other outdoor light. The bright side of a person's face does not overpower the shadowed side and there is no visible shadow line between the two sides [10]. In this film, the cinematographer mostly used soft sidelight to show people, which does not illuminate the face as clearly as smooth light but covers the face with a hazy layer. Initially, the light on Abby's face is mostly soft sidelight from a rearward source, as Abby's status as an ordinary worker on the farm at this time is non-existent and her relationship with Bill is hidden by her supposed brother-sister relationship. Her low status and her underground romance both keep her in the shadows. The soft side light from the rear brings more shadows to the face in addition to the soft side light, showing Abby's low status as a worker at this time and the ungenerous acknowledgment of her relationship and the suppression of her unspoken emotions.

2.4. The Use of Magic Hour to Add Ambiguity to Character Relationships

The first time Abby and the farmer meet face to face on the farm is a magical moment. The sky during this magical moment has a distinctive colour palette, ranging from light yellow to dark blue with an overall warm and ambiguous tone, and the natural light at this time is also soft sidelight. The soft sidelight makes the faces appear more ambiguous, especially when the hero and heroine are alone in the same frame, adding to the ambiguity and psychological changes. The scene in which Abby and the farmer meet for the first time changes from a panoramic shot of them in the same frame to a medium shot in which their facial expressions change, explaining the very romantic and beautiful setting in which they meet. From the later interviews, it is known that the director and cinematographer spent a great deal of time rehearsing the walk-through scenes, which was a choice he had to make in order to shoot in an effectively magical moment, less than an hour a day. Obviously, the result looks great, it creates a very dreamy atmosphere and a beautiful romantic setting for Abby and the farmer's changing relationship with plenty of magical moments in the film.

2.5. Appropriate Use of Natural Light in Terms of Direction, Position, and Angle

The light source on Abby and the farmer when they get married is soft diffused light and here the director and cinematographer did not interfere too much with the natural light, allowing the soft warmth of the natural light itself to shine on them and expressing the joy of their new marriage and the furthering of their relationship. After the farmer discovers Abby and Bill's perverse relationship, the farmer confronts Abby again in their bedroom. The cinematographer used the position of the window and the position of the characters to place the farmer in a backlit position. The shadows on the farmer's face are predominant, while the shadows on Abby's face from the farmer give both of them a lot of shadows, suggesting that their relationship is about to deteriorate. The photographer cleverly used the position, timing, and angle of the natural light to create the characters and their changing relationship.

3. The Use of Artificial Light for Figure Modelling and Character Relationships

Through the selective use of natural light, the effect of light on the figure can be different. Light can not only illuminate people's happiness, anger, and sadness but also express the character of the figure. For example, with hard light on a person, he will look tougher and colder but with soft light, he will

look softer. These are all uses and effects of the language of light in characterisation. This is true of natural light, and it is also true of artificial light. The difference is that artificial light has more freedom to be played. In a picture, artificial light can appear at any angle and in any place, as long as it makes sense, which gives the director and cinematographer great creative convenience. The following is an analysis of the use and role of artificial light in characterisation, using *Whiplash* as an example.

Unlike natural light, artificial lighting puts the control of the light entirely in the hands of the gaffer. Generally speaking, artificial lighting allows people to adjust the intensity, direction, softness, and texture of the light to achieve the lighting objectives. The adjusted light can be kept constant over a period of time, which has many more scheduling advantages than natural light. On the other hand, artificial lighting can give more light and shadow styling tricks.

3.1. The Portray of Fletcher's Character

Andrew and Fletcher are the two main characters of this film and both of them have crazy and paranoid love for music, especially jazz percussion. They are supposed to be mentors and friends, but in one training and performance after another, the conflicts between them are gradually intensified.

In the opening scene of the film, Fletcher emerges from the darkness of the corridor, and the light overhead illuminates Fletcher's face, which is unevenly lit from the front as the light comes straight down from the top. This makes Fletcher look very cold and ruthless, and with his smooth head and expressionless stare, Fletcher appears with an air of coldness that establishes the character of Fletcher as a person in the whole film. The opening scene of the film is a perfect example of Owen Rozman's lighting philosophy – "The simpler you can be with lighting, the better; use one light where you can, and no additional lights where you can use an existing source" [4]. Fletcher is lit mostly with overhead lighting, creating a cold and ruthless character from a lighting perspective. When Sean Casey died in a car accident, Fletcher remembers Sean with tears in his eyes in front of the jazz band. The illuminator's control of the lighting helped to create a change in Fletcher's character, as both a stern and cold teacher and an affectionate friend.

3.2. The Portray of Andrew's Love of Drumming

Again, in the opening scene, the two lights spaced out in the opening depth shot adds depth to the long corridor, and when the camera reaches Andrew, the light over Andrew's head is just like the beam of a spotlight on a stage, focusing on the whole scene, directing the audience's attention to the image of Andrew who concentrates on his drumming, and showing Andrew's obsession with drumming and his love of Jazz music. The same is true of another scene when Andrew plays drums in the practice room. In this shot, Andrew is lit from the shoulders up, and the oblique side light shows not only Andrew's facial features but also his eyes with tears clearly. However, this positive lighting style also expresses Andrew's desire to be a top drummer, showing Andrew's inner desire to progress.

3.3. The Relationship between Fletcher and Andrew

The relationship between Fletcher and Andrew changes subtly, as they go through their respective stages of struggle. When Fletcher and Andrew first meet head-on, the illuminator hits Andrew with two oblique side lights, one from Andrew's right rear and the other from Andrew's left front. They bring out the outline of Andrew's face and darken Andrew's face, a strong contrast to the earlier expression of Andrew's love for drumming. The unusual lighting of the characters' faces hints at an extraordinary relationship between Andrew and Fletcher. In the climax of the film, Andrew argues with Fletcher when he is informed that he is not the core drummer after arriving late to the concert due to a broken bus, and the facial lighting of the two characters is subtle. It is easy to assume that the cold tones are either natural light coming through the windows or artificial light simulated by the

illuminator, but in any case, the cold tones are a logical presence and the warm tones of the other half of the two characters' faces contrast with the cold tones. The different meanings of the cold and warm tones hint at what is about to happen, namely the deterioration of the relationship between Andrew and Fletcher. The simultaneous presentation of the warm and cold tones on the faces of the two characters expresses the more schizophrenic nature of both Andrew and Fletcher. One is the contrast between the strong light in front of Andrew and Andrew in the shadows, suggesting Andrew's next misfortune; the other is Fletcher's speech to Andrew, with the illuminator giving Fletcher a backlight with a large ratio of light, suggesting Fletcher's next ruthless tactics. Andrew is set up by Fletcher, leaves the stage, adjusts his mind to return to the stage, and starts to immerse himself in the performance. At this point, he is no longer subject to any outside interference but a man playing the drums frantically. The light behind him is like a halo around him and at this time he is the most dazzling on stage. Also, it is the glorious moment that Andrew dreams of and the ambient light creates the atmosphere, echoing the opening image of Andrew's obsession with drumming and his madness for the drums.

4.   Conclusion

The director and cinematographer of the aforementioned *Days of Heaven* chose to make full use of the most specific moment in natural light – the magic hour – to represent this ambiguous character relationship. The director and cinematographer also used different angles, buildings, and other obstructions to change the range of light and shade to portray the characters at different stages.

However, artificial lighting allows a great deal of freedom in terms of colour temperature and hue. Warm and cold tones can express the changing inner world of the characters and accentuate their images. This is difficult to do with natural light whose colour temperature is lower when the sun is high, especially after sunset and before sunrise. However, the colour temperature does not change significantly when it hits a person's face because natural light is diffused.

In summary, both natural and artificial light play very important roles in the shaping of the figure and the changing relationships between the characters. To better present the effect of the picture, sometimes it is necessary to light up through natural light. For example, it is vital to choose the right time, direction, and position. Sometimes it is also necessary to use some filters and shades to give better colours and light. However, when it is necessary to give a figure a specific modelling light, it is better to choose artificial light that can be regulated. No matter which option, the ultimate aim is to achieve the goal of making the characters and their relationships look more natural and fluid. Both natural and artificial light have their unique advantages and in the actual shooting process, the right choice has to be made according to the needs of the visual picture and the conditions of the scene.

The above conclusions are based on the analysis of two famous films and are not the result of practical filming. The conclusions need to be verified through practical filming to ensure that theory can guide practice. Subsequent research can incorporate problems and experiences encountered in actual filming to verify the above conclusions. To better guide practical shooting, more academic research needs to be done on the application of lighting to people in film and television.

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